

ESTABLISHED 1876

Wells Brothers Co. Division

Greenfield Tap and Die Corporation

Greenfield, Massachusetts

U. S. A.

C MANUFACTURERS OF

Little Giant

Screw Cutting Tools and Machinery

Catalog No. 34

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Wells Brothers Company of Canada, Limited, Galt, Ontario

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Greenfield Tap and Die Corporation

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General Information

To avoid possible misinterpretation, use catalog terms when ordering.

We assume no responsibility for goods lost, damaged or delayed in transit, but offer our best services to the purchaser in tracing or facilitating the filing of claims.

Orders should specify whether goods are to be shipped by freight, express or parcel post.



Guarantee

We will replace, without charge, any article that proves defective in workmanship or material.

WELLS BROTHERS COMPANY DIVISION

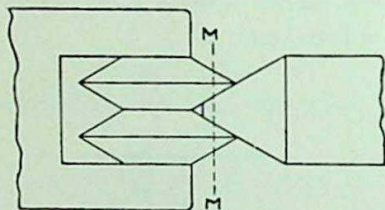
Greenfield Tap and Die Corporation

Greenfield, Massachusetts

Note.—Prices given in this catalog are list prices, subject to discount, which will be quoted upon application.

Pitch-Diameter

The outside diameter of a screw thread has little to do with the fit. The bearing or contact of a properly made screw is upon the angular thread wall—not upon either top or bottom. Therefore, the only proper way to measure a screw or threaded bolt is by a thread caliper, micrometer or gage which gives the exact pitch-diameter. Pitch-diameter is defined as “the measurement on the angle of the thread at an imaginary line (called the pitch line) located in the threads between the top and bottom at a point where the width of the tooth and space are the same and equal to one-half the pitch,” but in practice can only be secured from a bearing on the angular thread wall midway between top and bottom, as indicated in the attached sketch at the dotted line M.....M.



All *Little Giant* taps and dies are carefully gaged many times during the various manufacturing processes and their work will be found to correspond to standard gage sizes.

Lead

“Lead” is defined as “the distance a screw thread advances (longitudinally) when given one complete revolution.”

If the distance between threads on a $\frac{9}{16}$ " screw is $\frac{1}{12}$ inch, the pitch is commonly expressed “12 threads per inch.” If the same screw travels 1.003" when given 12 revolutions, the lead is said to be long .003" per inch. If it only travels .997" the lead is short .003" per inch.

Little Giant taps and dies are thoroughly inspected for “lead” and are held within a range of tolerance so minute as to have no effect upon the fit of the work.

These close measurements, both for “lead” and pitch-diameter, are unusually accurate for screw cutting tools and insure perfectly interchangeable work.

Lubricant

Machine oil is a positive detriment. A tap will do better work dry.

Extensive experimental work in our own laboratory and the experience of many large users of taps and dies have proven conclusively that animal lard oil or sperm oil gives the best results.

It should always be borne in mind that as speed increases the lubricant becomes more important.

Definitions of Terms

Attention is called to the glossary of terms used in the production and inspection of screw threads, appearing on pages 264 to 267 inclusive.



"V"-Thread Caution

There is no "standard" to the "V" thread. For many reasons manufacturers were compelled to modify the theoretical formula to meet practical conditions.

Please note carefully the formula given on page 290 which we supply when a "V" thread is requested.

Special Service

Our product is by no means limited to the scope of this book. Customers having requirements not met by tools described in this catalog are requested to send us their specifications.

A wide experience in solving screw-threading problems for particular consumers, enables us to prescribe accurate and efficient means for meeting our customers' needs.

This branch of our business has grown to such proportions that one of our factories is now practically devoted to this class of work. The men and the equipment here are thus peculiarly fitted to help you out of your screw cutting difficulties.

Wells Brothers Company Division

Greenfield Tap & Die Corporation

The Little Giant Double Bevelled Die and Collet

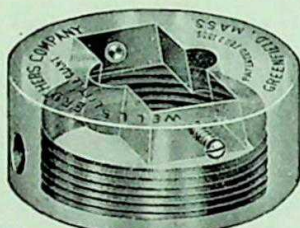
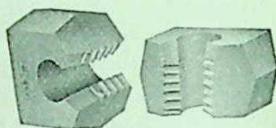


Fig. I, The Cap



Patented Feb. 23, 1915

Fig. II, The Die

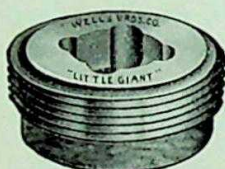


Fig. III, The Guide

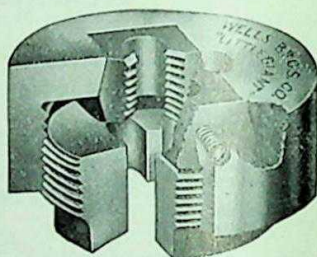


Fig. IV, Die and Collet

The die proper is in two pieces (Fig. II); each half having two cutting edges. The die can be easily and quickly removed from the cap and the cutting edges sharpened on a thin emery wheel.

The die is held in a cap (Fig. I). The edges of the die are bevelled to the same angle as the bevelled edges of the slot in the cap. A small screw at each end of the slot enables the workman to adjust the halves to the exact size.

The die is bevelled on both sides to permit reversing the die so that work may be threaded either through the guide or from the face, determined by the character of the work to be done. On account of this patented feature the same die may be used in our threading machines as well as in our screw plates.

After the die is laid in the slot in the cap, a screw-guide (Fig. III) wedges it tight. The die is thus held in a three-angle grip, the surest grip known to the science of mechanics. It cannot tilt out of alignment.

When the screw-guide is tightened, the whole (die, cap and screw-guide) becomes practically a solid die, possessing all the rigidity of a solid piece of metal. Yet it is easily taken apart, the die sharpened, and re-assembled. Because of this feature the *Little Giant* Die has become known as the "adjustable solid" die.

In the view of (Fig. IV) a portion has been cut out so the relation of the parts can be seen.

Standard Collet Sizes

A Collet Consists of a Cap and a Guide



COLLET 1 1/4" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
A1	23/64"x3/4"	All sizes A1 Dies



COLLET 1 5/8" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
A10	1/2"x1 1/8"	All sizes A10 Dies



COLLET 2" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
1/4" No. 1	1/2"x1 3/8"	3/16, 1/4, 9/16" Bolt
3/8" No. 1	19/32"x1 3/8"	3/8, 7/16, 1/2" Bolt



COLLET 2 3/4" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
1/4" No. 5	1/2"x1 3/8"	3/16, 1/4, 5/16" Bolt
3/8" No. 5	19/32"x1 3/8"	3/8 and 7/16" Bolt
1/2" No. 5	27/32"x1 3/4"	1/2, 9/16, 5/8, 1 1/16, 3/4" Bolt



COLLET 2 3/4" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
7/8" No. 5	1 1/32"x2 3/16"	13/16, 7/8"
	Round Ends	1 1/16, 1" Bolt



COLLET 4" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
1/2" No. 20	27/32"x1 3/4"	5/8, 11/16, 3/4" Bolt
7/8" No. 20	1 1/32"x2 3/16"	13/16, 7/8"
	Round Ends	1 1/16, 1" Bolt
1 1/8" No. 20	1 1/4"x2 1/2"	1 1/16, 1 1/8, 1 1/4, 1 1/2" Bolt



COLLET 4 1/2" in Diameter

NUMBER	DIMENSIONS OF SLOT	TAKES
7/8" No. 25	1 1/32"x2 3/16"	13/16, 7/8"
	Round Ends	1 1/16, 1" Bolt
1 1/8" No. 25	1 1/4"x2 1/2"	1 1/16, 1 1/8, 1 1/4, 1 1/2" Bolt
1 3/8" No. 25	1 1/2"x3"	1 5/16, 1 3/8, 1 7/8, 1 1/2" Bolt

Little Giant Dies

Cross Sectional Dimensions and the Cutting Sizes Regularly
Accommodated in Each

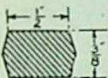
A1 Die Blank



CUTTING SIZES
No. 0 to 16 Inclusive
Machine Screw
1/16 to 9/32 inch.

FITS
A1 Collets

A10 Die Blank

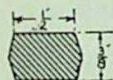


CUTTING SIZES
No. 14 to 24 Inclusive
Machine Screw
1/4, 5/16, 3/8 inch Bolt

FITS
A10 Collets



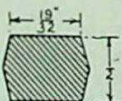
1/4" Die Blank



CUTTING SIZES
3/16, 1/4, 5/16 inch Bolt
1/8 inch Pipe

FITS
1/4 inch No. 1 Collet
1/4 inch No. 5 Collet
1/4 inch Full Mounted Stock
1/4 inch Machine Collet
1/8 inch No. 280 Pipe Stock

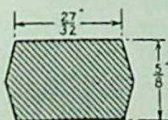
3/8" Die Blank



CUTTING SIZES
3/8, 7/16, 1/2 inch Bolt
1/4 inch Pipe

FITS
3/8 inch No. 1 Collet
3/8 inch No. 5 Collet
3/8 inch Full Mounted Stock
3/8 inch Machine Collet
1/4 inch No. 281 Pipe Stock

1/2" Die Blank



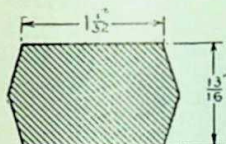
CUTTING SIZES
1/2, 9/16, 5/8, 11/16, 3/4 inch Bolt
1/8, 1/4, 3/8, 1/2 inch Pipe

FITS
1/2 inch No. 5 Collet
1/2 inch No. 20 Collet
1/2, 5/8 and 3/4 inch Full Mounted Stocks
1/2 inch Machine Collet
No. 260 Pipe Stock
3/8 inch No. 282 Pipe Stock
1/2 inch No. 283 Pipe Stock
No. 200 and 201 Trio Pipe Die Stocks

Little Giant Dies

Cross Sectional Dimensions and the Cutting Sizes Regularly Accommodated in Each

$\frac{7}{8}$ " Die Blank

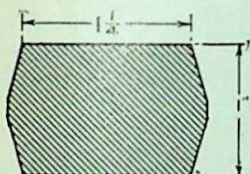


CUTTING SIZES
 $\frac{13}{16}$, $\frac{7}{8}$, $1\frac{1}{16}$
 1" Bolt

FITS

$\frac{7}{8}$ " No. 5 Collet
 $\frac{7}{8}$ " No. 20 Collet
 $\frac{7}{8}$ " No. 25 Collet
 $\frac{7}{8}$ " Full Mounted
 Stock
 $\frac{7}{8}$ " Machine Collet

$1\frac{1}{8}$ " Die Blank

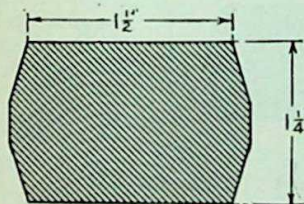


CUTTING SIZES
 $1\frac{1}{16}$, $1\frac{1}{8}$, $1\frac{3}{16}$,
 $1\frac{1}{4}$ " Bolt

FITS

$1\frac{1}{8}$ " No. 20 Collet
 $1\frac{1}{8}$ " No. 25 Collet
 $1\frac{1}{8}$ " Full Mounted
 Stock
 $1\frac{1}{8}$ " Machine Collet

$1\frac{3}{8}$ " Die Blank

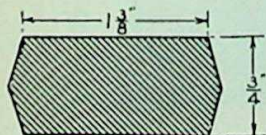


CUTTING SIZES
 $1\frac{5}{16}$, $1\frac{3}{8}$, $1\frac{7}{16}$,
 $1\frac{1}{2}$ " Bolt

FITS

$1\frac{3}{8}$ " No. 25 Collet
 $1\frac{3}{8}$ " Full Mounted
 Stock
 $1\frac{3}{8}$ " Machine Collet

No. 1 Pipe Die Blank



CUTTING SIZES
 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$,
 $\frac{3}{4}$, 1" Pipe

FITS

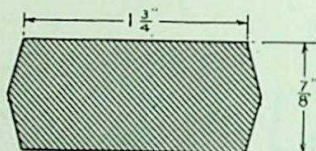
No. 261 Pipe Stock
 $\frac{3}{4}$ " No. 284 Pipe Stock
 1" No. 285 Pipe Stock
 No. 210 and 211 Trio
 Pipe Die Stocks
 No. 220 and 221 Duo
 Pipe Die Stocks
 No. 1 Machine Pipe
 Die Collet

Little Giant Dies

Cross Sectional Dimensions and the Cutting Sizes Regularly Accommodated in Each

No. 1½ Pipe Die Blank

CUTTING SIZES
¾, 1, 1¼"
Pipe

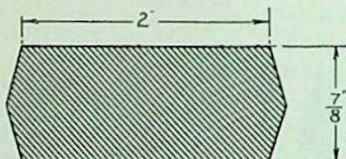


FITS
Nos. 261½ and 286
Pipe Stock
and No. 230 Duo
Pipe Die Stock



No. 87 Pipe Die Blank

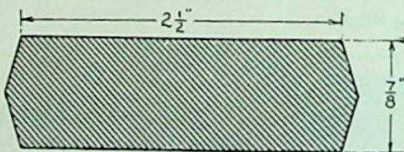
CUTTING SIZES
1½" Pipe



FITS
No. 287 Pipe
Stock

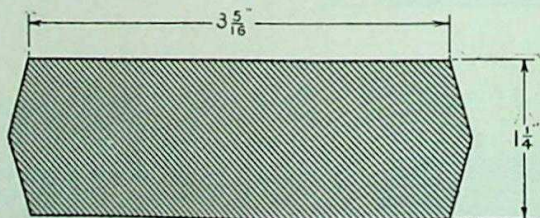
No. 2 Pipe Die Blank

CUTTING
SIZES
1¼, 1½, 2"
Pipe



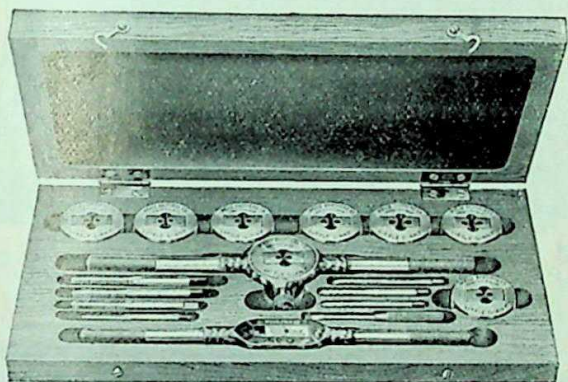
FITS
Nos. 262 and
288 Pipe Stock
Nos. 240 and
241 Duo Pipe
Die Stocks,
No. 2 Ma-
chine Pipe
Die Collet

No. 3 Pipe Die Blank

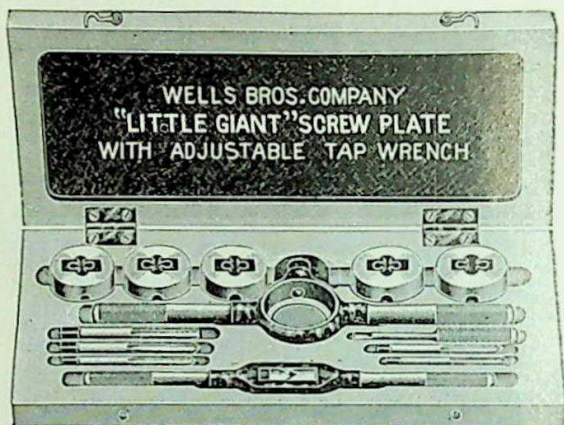


CUTTING SIZES 2½ and 3" Pipe
FITS No. 3 Machine Pipe Die Collet

Screw Plate Section



Single Stocked Screw Plates



- No. A1 5 Sizes $\frac{1}{8}$ 40, $\frac{5}{32}$ 36, $\frac{3}{16}$ 30, $\frac{7}{32}$ 28, $\frac{1}{4}$ 20
 Plug Taps; Dies; $1\frac{1}{4}$ " dia. Collets; Stock $7\frac{1}{2}$ "
 long, and Adjustable Tap Wrench No. 0 ($7\frac{1}{2}$ "
 long). Weight $2\frac{1}{2}$ lbs.

\$6.50



- No. A2 7 Sizes $\frac{7}{64}$ 50, $\frac{1}{8}$ 40, $\frac{9}{64}$ 40, $\frac{5}{32}$ 36, $\frac{3}{16}$ 30, $\frac{7}{32}$ 28, $\frac{1}{4}$ 20
 Plug Taps; Dies; $1\frac{1}{4}$ " dia. Collets; Stock $7\frac{1}{2}$ "
 long, and Adjustable Tap Wrench No. 0 ($7\frac{1}{2}$ "
 long). Weight 3 lbs.

\$8.00

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 116; Dies, pages 80-81; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Single Stocked Screw Plates



No. A3 10 Sizes $\frac{7}{64}$ 50, $\frac{1}{8}$ 40, $\frac{9}{64}$ 40, $\frac{5}{32}$ 36, $\frac{11}{64}$ 36, $\frac{3}{16}$ 30, $\frac{13}{64}$ 30, $\frac{7}{32}$ 28, $\frac{15}{64}$ 28, $\frac{1}{4}$ 20
 Plug Taps; Dies; $1\frac{1}{4}$ " dia. Collets; Stock $7\frac{1}{2}$ " long, and Adjustable Tap Wrench No. 0 ($7\frac{1}{2}$ " long). Weight 4 lbs.

\$10.50



No. A10 7 Sizes $\frac{1}{8}$ 40, $\frac{5}{32}$ 36, $\frac{3}{16}$ 30, $\frac{7}{32}$ 28, $\frac{1}{4}$ 20, $\frac{5}{16}$ 18, $\frac{3}{8}$ 16
 Plug Taps; Dies; $1\frac{1}{4}$ " dia. Collets for sizes $\frac{1}{4}$ " and smaller, and $1\frac{1}{8}$ " dia. Collets for sizes $\frac{3}{16}$ " and larger; 2 Stocks $7\frac{1}{2}$ " and $13\frac{1}{2}$ " long, and Adjustable Tap Wrench No. 4 (9" long). Weight $5\frac{1}{2}$ lbs.

\$11.50

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 116; Dies, pages 80-81; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Single Stocked Screw Plates

with *Little Giant* Dies and Plug Taps

"A" Series

Fractional Inch Assortments

		1 1/4" diameter Collets	
No. A1	5 Sizes	1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , (2 1/2 lbs.)	\$6.50
A1 1/2	7 Sizes	1/16 ⁶⁴ , 3/32 ⁵⁰ , 1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , (3 lbs.)	8.00
A2	7 Sizes	7/64 ⁵⁰ , 1/8 ⁴⁰ , 9/64 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , (3 lbs.)	8.00
A2 1/2	10 Sizes	1/16 ⁶⁴ , 5/64 ⁶⁴ , 3/32 ⁵⁰ , 7/64 ⁵⁰ , 1/8 ⁴⁰ , 9/64 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , (4 lbs.)	10.50
A3	10 Sizes	7/64 ⁵⁰ , 1/8 ⁴⁰ , 9/64 ⁴⁰ , 5/32 ³⁶ , 11/64 ³⁶ , 3/16 ³⁰ , 13/64 ³⁰ , 7/32 ²⁸ , 15/64 ²⁸ , 1/4 ²⁰ , (4 lbs.)	10.50

Machine Screw Assortments

		1 1/4" diameter Collets	
No. AA1	4 Sizes	4/36, 6/32, 8/32, 10/24, (2 1/4 lbs.)	\$ 5.50
AA2	5 Sizes	4/36, 6/32, 8/32, 10/24, 12/24, (2 1/2 lbs.)	6.50
AA3	6 Sizes	4/36, 6/32, 8/32, 10/24, 12/24, 14/20, (2 3/4 lbs.)	7.00
AA4	7 Sizes	4/36, 6/32, 8/32, 10/24, 12/24, 14/20, 16/18, (3 lbs.)	8.00
AA5	6 Sizes	2/56, 3/48, 4/36, 5/36, 6/32, 8/32, (2 3/4 lbs.)	7.00
AA7	10 Sizes	2/56, 3/48, 4/36, 5/36, 6/32, 8/32, 10/24, 12/24, 14/20, 16/18, (4 lbs.)	10.50

Each of the above screw plates contains Stock 2 1/2" long; Adjustable Tap Wrench No. 0 (7 1/2" long); Plug Taps; *Little Giant* Dies.

Fractional Inch Assortments

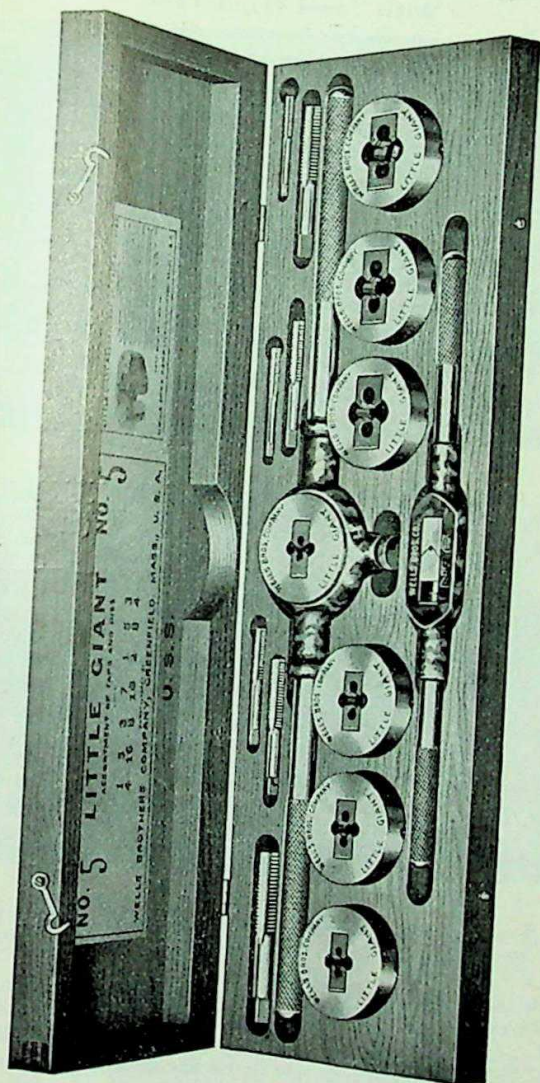
		1 1/4" diameter Collets for 1/4" and smaller	
		1 5/8" diameter Collets for 5/16" and larger	
No. A10	7 Sizes	1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , 5/16 ¹⁸ , 3/8 ¹⁶ , (5 1/2 lbs.)	\$11.50
A14	3 Sizes	1/4 ²⁰ , 5/16 ¹⁸ , 3/8 ¹⁶ , (4 lbs.)	6.25

Machine Screw Assortments

		1 1/4" diameter Collets for No. 14 and smaller	
		1 5/8" diameter Collets for No. 16 and larger	
A12	8 Sizes	4/36, 6/32, 8/32, 10/24, 12/24, 14/20, 16/18, 18/18, (5 1/2 lbs.)	12.75
A16	10 Sizes	4/36, 6/32, 8/32, 10/24, 12/24, 14/20, 16/18, 18/18, 20/16, 24/16, (6 1/2 lbs.)	16.00

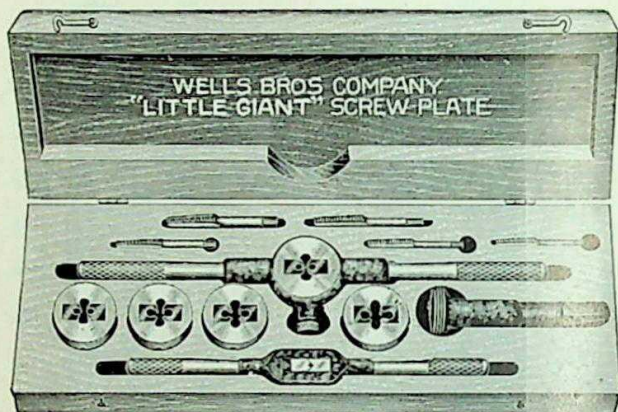
Each of the above screw plates contains 2 Stocks, 7 1/2" and 13 1/2" long; Adjustable Tap Wrench No. 4 (9" long); Plug Taps; *Little Giant* Dies.





Single Stocked Screw Plates

With Taper Hand Taps



- No. 1** 5 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$ \$12.00
 Taper Taps; *Little Giant* Dies; 2" dia. Collets; Stock 14½" long; Adjustable Tap Wrench No. 5 (11½" long) and Bit Brace Shank. Weight 9 lbs.



- No. 2** 5 Sizes $\frac{1}{4}^{20}$, $\frac{3}{8}^{16}$, $\frac{1}{2}^{13}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ \$13.50
 Taper Taps; *Little Giant* Dies; 2¾" dia. Collets; Stock 23" long, and Adjustable Tap Wrench No. 6 (15" long). Weight 17 lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 119; Dies, page 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Single Stocked Screw Plates

With Taper Hand Taps



- No. 3 4 Sizes $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸.....
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 26" long, and Adjustable Tap Wrench No.
7 (19 $\frac{1}{2}$ " long). Weight 18 lbs.

\$16.50



- No. 4 5 Sizes $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸.....
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 26" long, and Adjustable Tap Wrench No.
7 (19 $\frac{1}{2}$ " long). Weight 20 $\frac{1}{2}$ lbs.

\$17.50

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in half dozen lots, for economy and facility in shipping.

Single Stocked Screw Plates

With Taper Hand Taps



No. 5 7 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ \$16.00
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 23" long, and Adjustable Tap Wrench No.
6 (15" long). Weight 20 lbs.



No. 5 $\frac{1}{2}$ 8 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, $\frac{9}{16}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ \$18.50
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 23" long, and Adjustable Tap Wrench
No. 6 (15" long). Weight 22 lbs.

United States Standard Threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in half dozen lots, for economy and facility in shipping.

Single Stocked Screw Plates

With Taper Hand Taps



No. 6 7 Sizes $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1" \$22.00
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 26" long, and Adjustable Tap Wrench No.
7 (19 $\frac{1}{2}$ " long). Weight 23 lbs.



No. 7 9 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰,
 $\frac{7}{8}$ ⁹, 1" \$25.50
Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets;
Stock 26" long, and 2 Adjustable Tap Wrenches, No.
5 (11 $\frac{1}{2}$ " long) and No. 7 (19 $\frac{1}{2}$ " long). Wt. 27 lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in half dozen lots, for economy and facility in shipping.

Single Stocked Screw Plates

With Taper Hand Taps



No. 7 $\frac{1}{2}$ 10 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{9}{16}$ ¹², $\frac{5}{8}$ ¹¹
 $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1".....

\$28.00

Taper Taps; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets; Stock 26" long and 2 Adjustable Tap Wrenches, No. 5 ($11\frac{1}{2}$ " long) and No. 7 ($19\frac{1}{2}$ " long). Wt. 29 lbs.



No. 8 7 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰

\$18.00

Taper Taps; *Little Giant* Dies; 2" dia. Collets for sizes $\frac{7}{16}$ " and smaller and $2\frac{3}{4}$ " dia. for sizes $\frac{1}{2}$ " and larger; 2 Stocks $14\frac{1}{2}$ " and 26" long; Adjustable Tap Wrench No. 6 (15" long), and Bit Brace Shank fitting 2" dia. Collets. Weight $19\frac{1}{2}$ lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

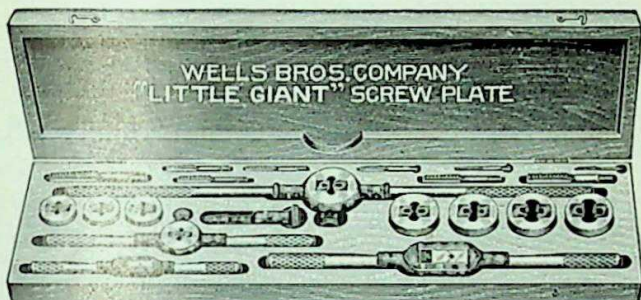
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in half dozen lots, for economy and facility in shipping.

Single Stocked Screw Plates

With Taper Hand Taps



No. 9 9 Sizes $\frac{1}{4}$ 20, $\frac{5}{16}$ 18, $\frac{3}{8}$ 16, $\frac{7}{16}$ 14, $\frac{1}{2}$ 13, $\frac{5}{8}$ 11, $\frac{3}{4}$ 10, $\frac{7}{8}$ 9, 18

\$27.50

Taper Taps: *Little Giant* Dies; 2" dia. Collets for sizes $\frac{7}{16}$ " and smaller and $2\frac{3}{4}$ " dia. for sizes $\frac{1}{2}$ " and larger. 2 Stocks $14\frac{1}{2}$ " and 29" long. 2 Adjustable Tap Wrenches No. 5 ($11\frac{1}{2}$ " long) and No. 7 ($19\frac{1}{2}$ " long), and Bit Brace Shank for 2" dia. Collets. Weight 26 lbs.

No. 9 1/2 10 Sizes $\frac{1}{4}$ 20, $\frac{5}{16}$ 18, $\frac{3}{8}$ 16, $\frac{7}{16}$ 14, $\frac{1}{2}$ 13, $\frac{9}{16}$ 12, $\frac{5}{8}$ 11, $\frac{3}{4}$ 10, $\frac{7}{8}$ 9, 18

\$30.00

Otherwise the same as No. 9.



No. 20 6 Sizes $\frac{5}{8}$ 11, $\frac{3}{4}$ 10, $\frac{7}{8}$ 9, 18, $1\frac{1}{8}$ 7, $1\frac{1}{4}$ 7

\$35.00

Taper Taps: *Little Giant* Dies; 4" dia. Collets; Stock No. 20 ($40\frac{1}{2}$ " long) and Adjustable Tap Wrench No. 7 ($31\frac{1}{2}$ " long). Wt. $49\frac{1}{2}$ lbs.

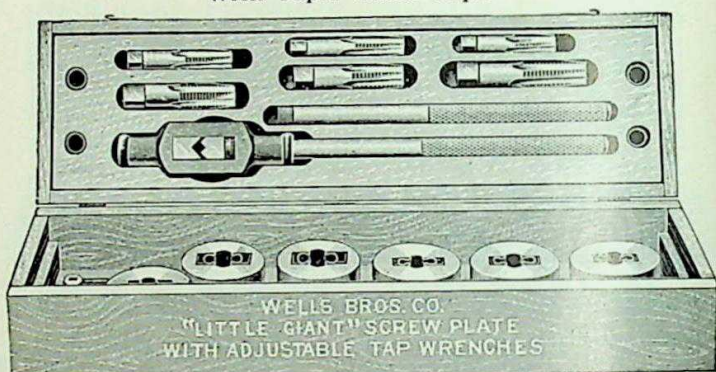
United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

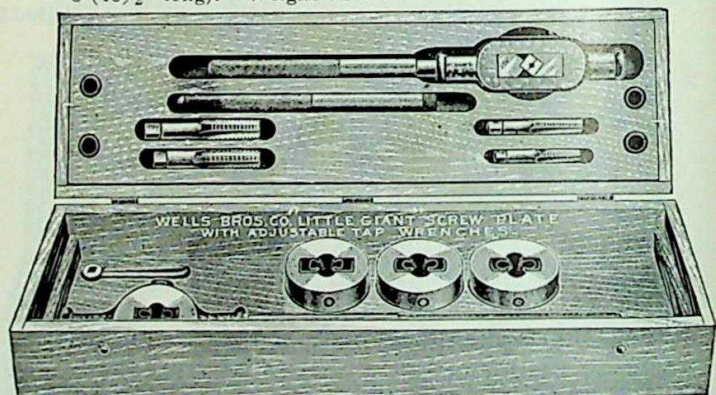
Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, pages 82-83; Collets, page 106; Tap Wrenches, page 157.

Single Stocked Screw Plates

With Taper Hand Taps



- No. 25 6 Sizes $\frac{7}{8}$ ", 1", $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ " \$45.00
 Taper Taps; *Little Giant* Dies; $4\frac{1}{2}$ " dia. Collets;
 Stock 52" long, and Adjustable Tap Wrench No.
 8 ($40\frac{1}{2}$ " long). Weight 71 lbs.



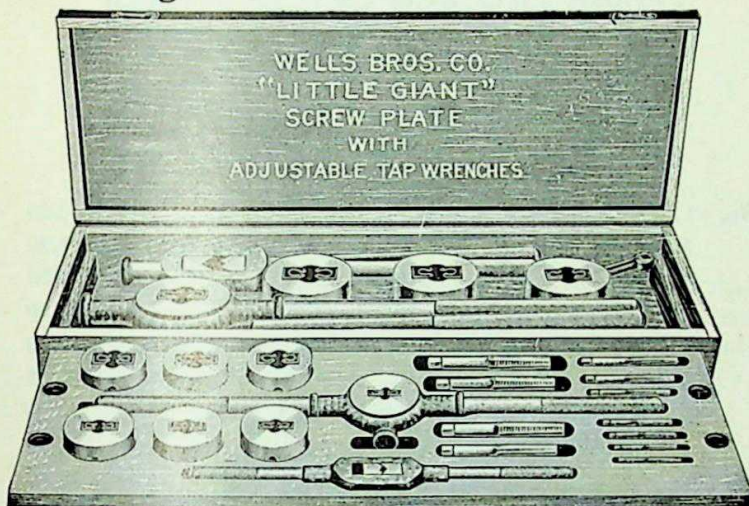
- No. 30 4 Sizes $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ " \$37.50
 Taper Taps; *Little Giant* Dies; $4\frac{1}{2}$ " dia. Collets;
 Stock 52" long, and Adjustable Tap Wrench No.
 8 ($40\frac{1}{2}$ " long). Weight 58 lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

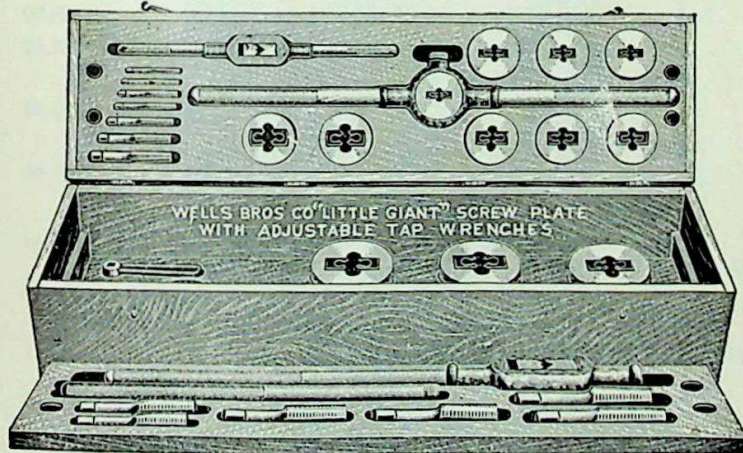
Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Single Stocked Screw Plates



No. 40 11 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰,
 $\frac{7}{8}$ ⁹, 1⁸, 1 $\frac{1}{8}$ ⁷, 1 $\frac{1}{4}$ ⁷..... \$40.00

Taper Taps, *Little Giant* Dies; 2 $\frac{3}{4}$ " dia. Collets for sizes $\frac{3}{4}$ " and smaller, and 4" dia. for sizes $\frac{7}{8}$ " and larger. 2 Stocks 23" and 40" long. 2 Adjustable Tap Wrenches No. 6 (15" long) and No. 7 $\frac{1}{2}$ (31" long). Weight 57 $\frac{1}{2}$ lbs.



No. 50 13 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰,
 $\frac{7}{8}$ ⁹, 1⁸, 1 $\frac{1}{8}$ ⁷, 1 $\frac{1}{4}$ ⁷, 1 $\frac{3}{8}$ ⁶, 1 $\frac{1}{2}$ ⁵..... \$60.00

Taper Taps, *Little Giant* Dies; 2 $\frac{3}{4}$ " dia. Collets for sizes 1" and smaller and 4 $\frac{1}{2}$ " dia. for sizes 1 $\frac{1}{2}$ " and larger. 2 Stocks 26" and 52" long. 2 Adjustable Tap Wrenches No. 6 (15" long) and No. 8 (40 $\frac{1}{2}$ " long). Weight 84 lbs.

Footnotes on opposite page apply.

Single Stocked Screw Plates

with Taper Taps

Condensed List

Detailed information of each on preceding pages

No. 1	5 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$	\$12.00
2	5 Sizes	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	13.50
3	4 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	16.50
4	5 Sizes	$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	17.50
5	7 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	16.00
5½	8 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$	18.50
6	7 Sizes	$\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	22.00
7	9 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	25.50
7½	10 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	28.00
8	7 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	18.00
9	9 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	27.50
9½	10 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	30.00
20	6 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	35.00
25	6 Sizes	$\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	45.00
30	4 Sizes	$1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	37.50
40	11 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	40.00
50	13 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	60.00



United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Assortments cutting larger sizes up to 2 inches on pages 58 and 59.

Single Stocked Screw Plates

With Taper, Plug and Bottoming Taps

(Nos. 101 to 150)

The *Little Giant* Screw Plates specified, described and illustrated on the following pages, utilize the Single Stock and Collers, described on page 106.

The only difference between these Screw Plates and those numbered 1 to 50 (incl.) described on preceding pages, is that these are regularly supplied with **three** taps for each cutting size (taper, plug and bottoming), instead of **one** (taper).



Taper



Plug



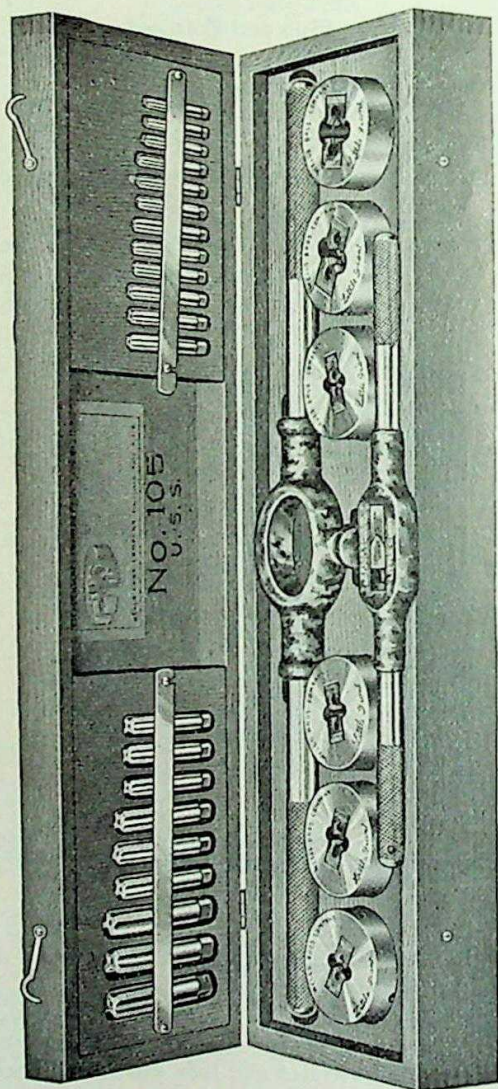
Bottoming



The specimen illustration on next page gives a general idea of the arrangement of these extra taps in the cabinets.

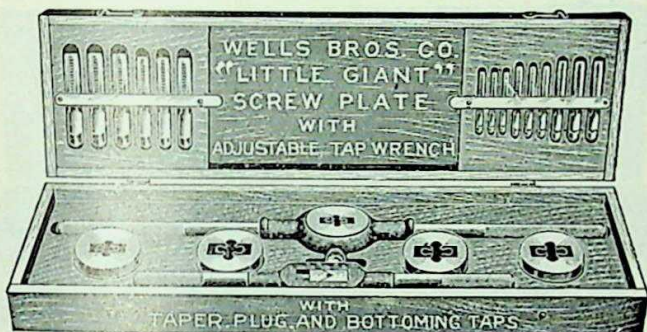
Wells
SERIAL

Wells Serial Taps Nos. 1, 2 and 3, right-hand threads, will be supplied instead of taper, plug and bottoming, if specified. Wells Serial Taps are illustrated and fully described on pages 123 to 125. They are a very great advantage in tapping blind holes by hand or where extra smooth, accurate work is desired in tough material.

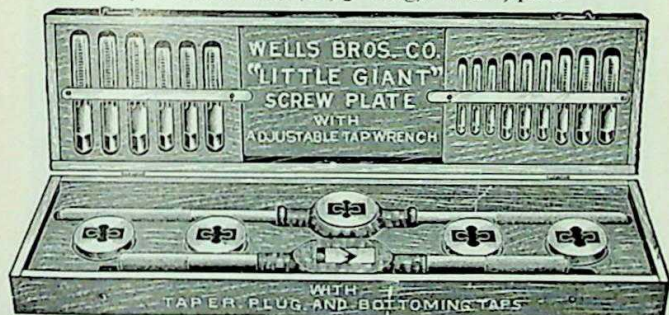


Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



- No. 101 5 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³ \$15.50
 Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; 2" dia. Collets; Stock 14 $\frac{1}{2}$ " long and Adjustable Tap Wrench No. 5 (11 $\frac{1}{2}$ " long). Wt. 9 $\frac{3}{4}$ lbs.



- No. 102 5 Sizes $\frac{1}{4}$ ²⁰, $\frac{3}{8}$ ¹⁶, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰ \$18.00
 Taper, Plug and Bottoming Taps*; *Little Giant* Dies; 2 $\frac{3}{4}$ " dia. Collets; Stock 23" long, and Adjustable Tap Wrench No. 6 (15" long). Weight 20 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted if desired, without affecting price.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

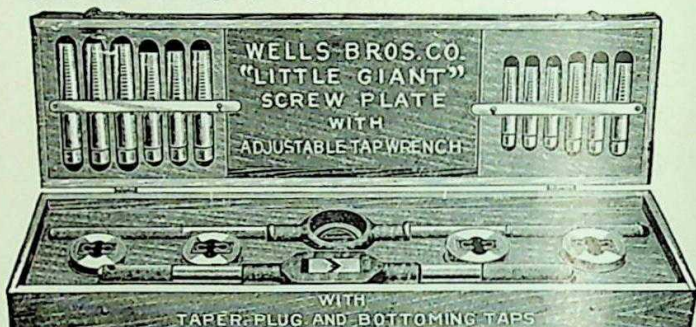
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 119; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order No. 101 assortments in lots of eight, and No. 102 assortments in lots of four, for facility and economy in shipping.

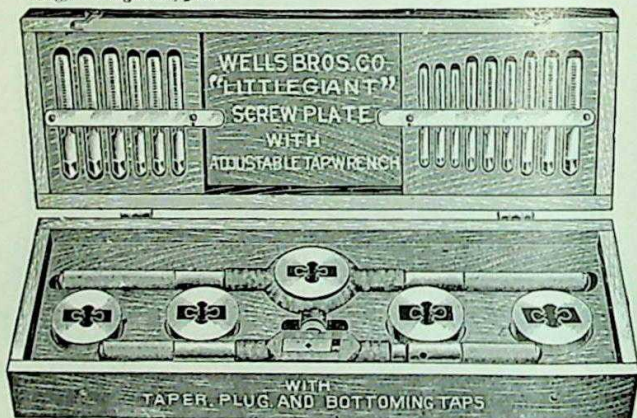
Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



No. 103 4 Sizes $\frac{5}{8}$ "¹¹, $\frac{3}{4}$ "¹⁰, $\frac{7}{8}$ "⁹, 1"..... \$23.00

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets; Stock 26" long, and Adjustable Tap Wrench No. 7 ($19\frac{1}{2}$ " long). Weight $23\frac{1}{2}$ lbs.



No. 104 5 Sizes $\frac{1}{2}$ "¹³, $\frac{5}{8}$ "¹¹, $\frac{3}{4}$ "¹⁰, $\frac{7}{8}$ "⁹, 1"..... \$25.00

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; $2\frac{3}{4}$ " dia. Collets; Stock 26" long, and Adjustable Tap Wrench No. 7 ($19\frac{1}{2}$ " long). Weight 26 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted if desired, without affecting price.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

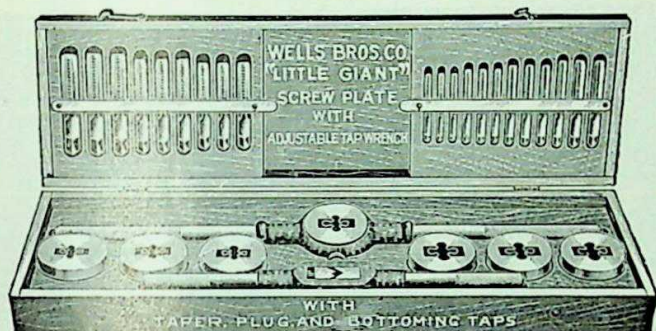
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

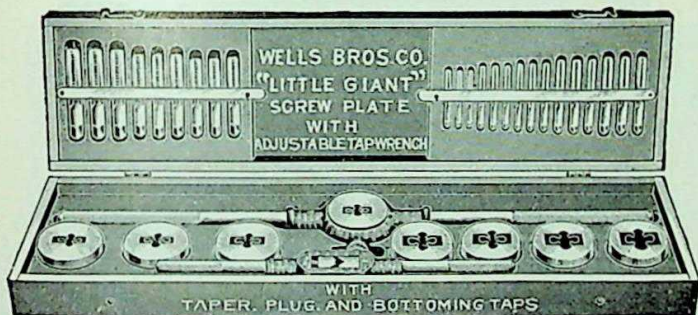
Dealers are advised to order these assortments in lots of four, for economy and facility in shipping.

Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



- No. 105 7 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ \$22.00
Taper, Plug and Bottoming Hand Taps*; *Little Giant*
Dies; $2\frac{3}{4}$ " dia. Collets; Stock 23" long, and Adjust-
able Tap Wrench No. 6 (15" long). Weight 23 lbs.



- No. 105 $\frac{1}{2}$ 8 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, $\frac{9}{16}^{12}$,
 $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ \$25.25
Taper, Plug and Bottoming Hand Taps*; *Little Giant*
Dies; $2\frac{3}{4}$ " dia. Collets; Stock 23" long, and Adjust-
able Tap Wrench No. 6 (15" long). Weight 25 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted if desired, without affecting price.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in lots of four, for economy and facility in shipping.

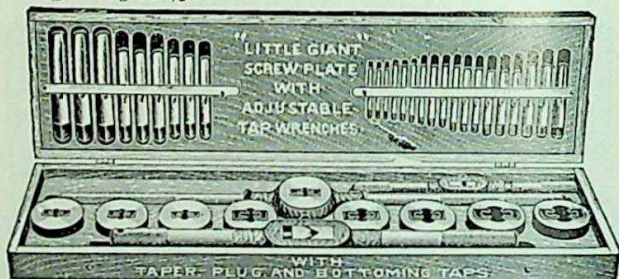
Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



No. 106 7 Sizes $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸... \$31.25

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; 2 $\frac{3}{4}$ " dia. Collets; Stock 26" long, and Adjustable Tap Wrench No. 7 (19 $\frac{1}{2}$ " long). Weight 29 $\frac{1}{2}$ lbs.



No. 107 9 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸... \$36.00

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; 2 $\frac{3}{4}$ " Dia. Collets; Stock 26" long, and Adjustable Tap Wrenches No. 5 (11 $\frac{1}{4}$ " long) and No. 7 (20" long). Weight 34 lbs.

No. 107 $\frac{1}{2}$ 10 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸... \$39.25

Otherwise same as No. 107.

*Sets of Serial Taps listed on pages 123-125 may be substituted if desired, without affecting price.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in lots of four, for economy and facility in shipping.

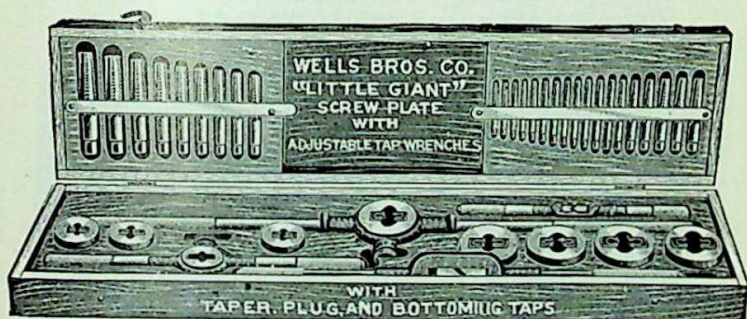
Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



No. 108 7 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰ \$24.00

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; 2" dia. Collets for sizes $\frac{7}{16}$ " and smaller and $2\frac{3}{4}$ " dia. for sizes $\frac{1}{2}$ " and larger; 2 Stocks, $14\frac{1}{2}$ " long and 26" long, and Adjustable Tap Wrench No. 6 (15" long). Weight 23 lbs.



No. 109 9 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1" \$38.00

Taper, Plug and Bottoming Hand Taps*; *Little Giant* Dies; 2" dia. Collets for sizes $\frac{7}{16}$ " and smaller and $2\frac{3}{4}$ " dia. for sizes $\frac{1}{2}$ " and larger; 2 Stocks, $14\frac{1}{2}$ " long and 29" long; 2 Adjustable Tap Wrenches, No. 5 ($11\frac{1}{2}$ " long) and No. 7 ($19\frac{1}{2}$ " long). Wt. 32 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted, if desired, without affecting price.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

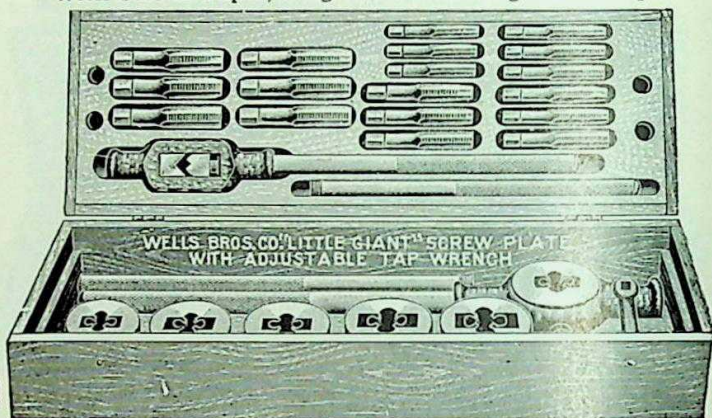
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.

Dealers are advised to order these assortments in lots of four, for economy and facility in shipping.

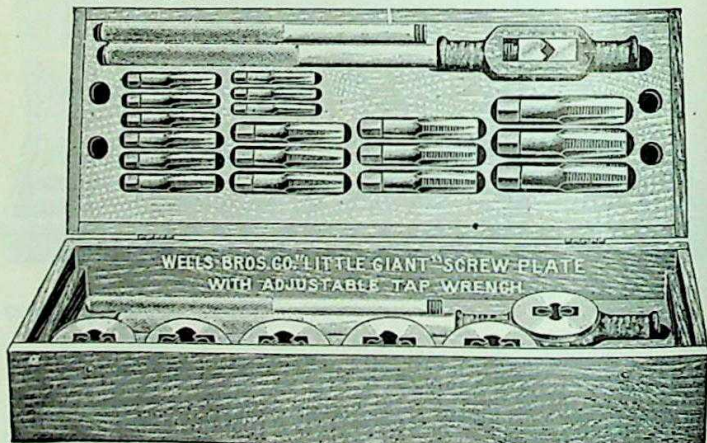
Single Stocked Screw Plates

With Sets of Taper, Plug and Bottoming Hand Taps



No. 120 6 Sizes $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸, $1\frac{1}{8}$ ⁷, $1\frac{1}{4}$ ⁷..... \$47.50

Taper, Plug and Bottoming Hand Taps*: *Little Giant* Dies; 4" dia. Collets; Stock 40" long, and Adjustable Tap Wrench No. 7 $\frac{1}{2}$ (31" long). Weight 55 $\frac{1}{4}$ lbs.



No. 125 6 Sizes $\frac{7}{8}$ ⁹, 1⁸, $1\frac{1}{8}$ ⁷, $1\frac{1}{4}$ ⁷, $1\frac{3}{8}$ ⁶, $1\frac{1}{2}$ ⁶..... \$63.00

Taper, Plug and Bottoming Hand Taps*: *Little Giant* Dies; 4 $\frac{1}{2}$ " dia. Collets; Stock 52" long, and Adjustable Tap Wrench No. 8 (40 $\frac{1}{2}$ " long). Weight 81 lbs.

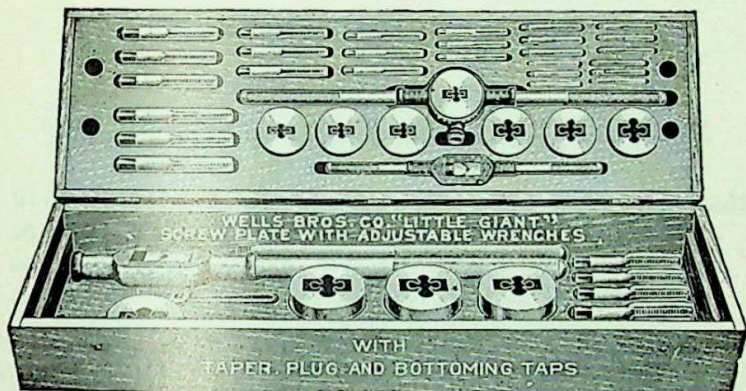
No. 130 4 Sizes $1\frac{1}{8}$ ⁷, $1\frac{1}{4}$ ⁷, $1\frac{3}{8}$ ⁶, $1\frac{1}{2}$ ⁶..... \$51.00

Otherwise same as No. 125. Weight 69 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted, if desired, without affecting price.

Footnotes on page 31 apply.

Single Stocked Screw Plates

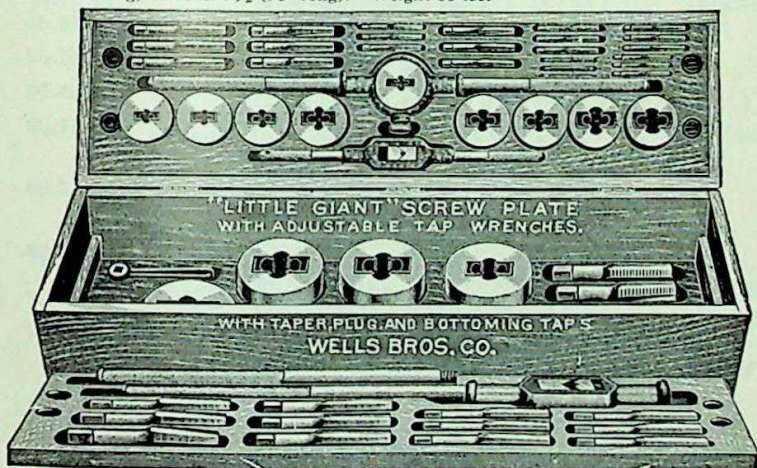


No. 140 11 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹,
 $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1", $1\frac{1}{8}$ ⁷, $1\frac{1}{4}$ ⁷.....

\$55.00



Taper, Plug and Bottoming Hand Taps*, *Little Giant* Dies, $2\frac{3}{4}$ " dia. Collets for sizes $\frac{3}{4}$ " and smaller, and 4" dia. for sizes $\frac{7}{8}$ " and larger. 2 Stocks 23" and 40" long. 2 Adjustable Tap Wrenches No. 6 (15" long) and No. 7 $\frac{1}{2}$ (31" long). Weight 68 lbs.



No. 150 13 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰,
 $\frac{7}{8}$ ⁹, 1", $1\frac{1}{8}$ ⁷, $1\frac{1}{4}$ ⁷, $1\frac{3}{8}$ ⁶, $1\frac{1}{2}$ ⁶.....

\$84.00

Taper, Plug and Bottoming Hand Taps*, *Little Giant* Dies, $2\frac{3}{4}$ " dia. Collets for sizes 1" and smaller, and $4\frac{1}{2}$ " dia. for $1\frac{1}{2}$ " and larger. 2 Stocks 26" long and 52" long. 2 Adjustable Tap Wrenches No. 6 (15" long) and No. 8 (40 $\frac{1}{2}$ " long). Weight 97 lbs.

*Sets of Serial Taps listed on pages 123-125 may be substituted, if desired, without affecting price.

Footnotes on page 31 apply.

Single Stocked Screw Plates

with Taper, Plug and Bottoming Taps

Condensed List

Detailed information on preceding pages



No. 101	5 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$	\$15.50
102	5 Sizes	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	18.00
103	4 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	23.00
104	5 Sizes	$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	25.00
105	7 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	22.00
105 $\frac{1}{2}$	8 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$	25.25
106	7 Sizes	$\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	31.25
107	9 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	36.00
107 $\frac{1}{2}$	10 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	39.25
108	7 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	24.00
109	9 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1.....	38.00
120	6 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	47.50
125	6 Sizes	$\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	63.00
130	4 Sizes	$1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	51.00
140	11 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	55.00
150	13 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	84.00

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, pages 82-83; Collets page 106; Stocks, page 106; Tap Wrenches, page 157.

Assortments cutting larger sizes up to 2 inches on pages 58 and 59.

Screw Plates for Automobiles

With S. A. E. (formerly A. L. A. M.) Standard Threads

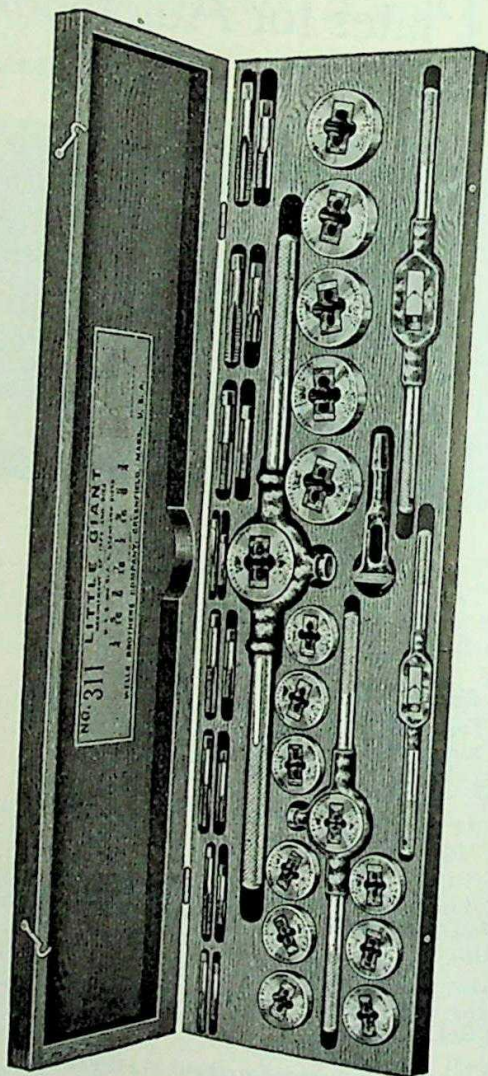


- No. 305** 5 Sizes $\frac{1}{4}^{28}$, $\frac{5}{16}^{24}$, $\frac{3}{8}^{24}$, $\frac{7}{16}^{20}$, $\frac{1}{2}^{20}$ **\$12.00**
 Plug Taps; *Little Giant* Dies; 2" dia. Collets; Stock
 14½" long, Bit Brace Shank and Adjustable Tap
 Wrench No. 5 (11½" long). Weight 8 lbs.
- No. 306** 6 Sizes $\frac{9}{16}^{18}$, $\frac{5}{8}^{18}$, $\frac{11}{16}^{16}$, $\frac{3}{4}^{16}$, $\frac{7}{8}^{14}$, 1¼..... **\$22.00**
 Plug Taps; *Little Giant* Dies; 2¾" dia. Collets; Stock
 26" long, and Adjustable Tap Wrench No. 7
 (19½" long). Weight 21½ lbs.
- No. 307** 11 Sizes $\frac{1}{4}^{28}$, $\frac{5}{16}^{24}$, $\frac{3}{8}^{24}$, $\frac{7}{16}^{20}$, $\frac{1}{2}^{20}$, $\frac{9}{16}^{18}$,
 $\frac{5}{8}^{18}$, $\frac{11}{16}^{16}$, $\frac{3}{4}^{16}$, $\frac{7}{8}^{14}$, 1¼..... **\$32.30**
 Plug Taps; *Little Giant* Dies; 2¾" dia. Collets; Stock
 26" long; 2 Adjustable Tap Wrenches, No. 5
 (11½" long) and No. 7 (19½" long). Weight
 30 lbs.

All Taps and Dies in above sets will have S.A.E. (formerly A.L.A.M.) Std. threads unless otherwise ordered.

Left-hand S.A.E. threads furnished at regular prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 127; Dies, pages 82-83; Collets, page 106; Stocks, page 106; Tap Wrenches, page 157.



Combination Screw Plates

With Both U.S. Standard and S.A.E. Standard Threads

These combination assortments avoid the expense of buying a separate outfit for each thread standard and the consequent duplication of Stocks and Tap Wrenches.

A Bit Brace Shank is also provided in these assortments for convenience where it is desired to merely run over a slightly battered thread without removing the bolt or screw from its place in the car.

No. 310 5 Sizes U. S. Std. Threads $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, and

5 Sizes S. A. E. Std. Threads $\frac{1}{4}^{28}$, $\frac{5}{16}^{24}$, $\frac{3}{8}^{24}$, $\frac{7}{16}^{20}$, $\frac{1}{2}^{20}$

\$18.00



U.S. Standard Taper Taps and S.A.E. Std. Plug Taps and *Little Giant* Dies for each size; 2" dia. Collets; Stock $14\frac{1}{2}$ " long; Adjustable Tap Wrench No. 5 ($11\frac{1}{2}$ " long), and Bit Brace Shank. Weight 14 lbs.

No. 311 8 Sizes U.S. Std. Threads $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$, $\frac{9}{16}^{12}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$ and

8 Sizes S. A. E. Std. Threads $\frac{1}{4}^{28}$, $\frac{5}{16}^{24}$, $\frac{3}{8}^{24}$, $\frac{7}{16}^{20}$, $\frac{1}{2}^{20}$, $\frac{9}{16}^{18}$, $\frac{5}{8}^{18}$, $\frac{3}{4}^{16}$

\$27.00

U.S. Standard Taper Taps and S.A.E. Std. Plug Taps and *Little Giant* Dies for each size; 2" dia. Collets for sizes $\frac{1}{2}$ " and smaller and $2\frac{3}{4}$ " dia. for sizes $\frac{9}{16}$ " and larger; 2 stocks $14\frac{1}{2}$ " long and $23\frac{1}{2}$ " long; 2 Adjustable Tap Wrenches No. 5 ($11\frac{1}{2}$ " long) and No. 6 (15" long) and Bit Brace Shank fitting 2" diameter Collets. Weight 31 lbs.

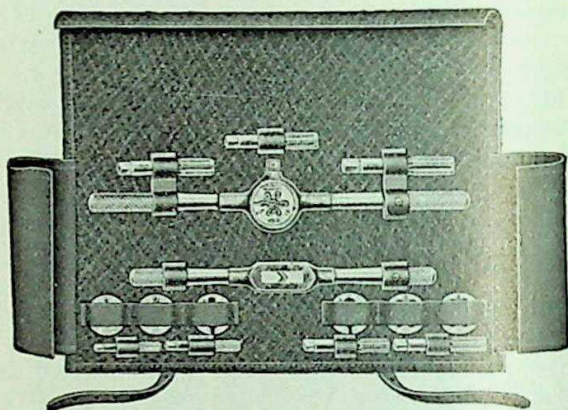
All Taps and Dies in above sets will have United States Standard and S.A.E. (formerly A.L.A.M.) Std. threads unless otherwise ordered.

Left-hand United States Standard and S.A.E. Standard threads furnished at regular prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: U.S.S. Taps, pages 119-120; S.A.E. Taps, page 127; Dies, 82-83; Collets and Stocks, page 106; Tap Wrenches, page 157.

Leather Roll Assortments

With S.A.E. Standard Threads



No. 308

Dimensions (closed) 16" x 5" x 1½". Weight 4½ pounds

An ideal case for minimizing the weight of a screw cutting outfit, and also convenient for carrying on the road in tool box or under seat cushion.

These assortments contain, in place of the regular *Little Giant* 2-piece adjustable dies, round split adjustable dies having an outside diameter of 1½ inches.

No. 308 7 Sizes $\frac{1}{4}^{28}$, $\frac{5}{16}^{24}$, $\frac{3}{8}^{24}$, $\frac{7}{16}^{20}$, $\frac{1}{2}^{20}$, $\frac{9}{16}^{18}$, $\frac{5}{8}^{18}$ **\$16.00**

Plug Taps; Round Adjustable Dies 1½" dia., M Stock (14" long), and Adjustable Tap Wrench No. 5 (11½" long).

No. 309 Same as No. 308 **without** Tap Wrench **\$13.50**

All Taps and Dies in above sets will have S.A.E. (formerly A.L.A.M.) Standard threads unless otherwise ordered.

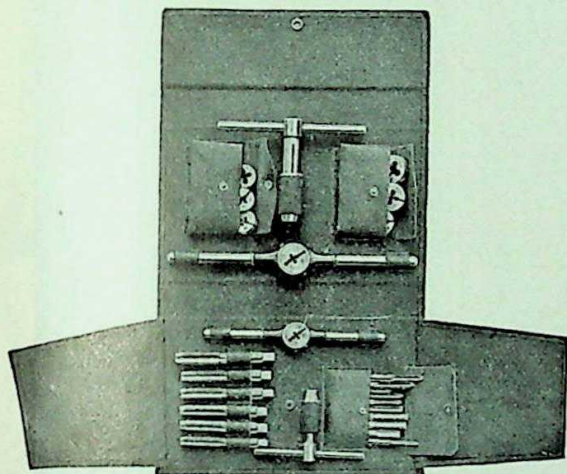
Left-hand S.A.E. Standard threads furnished at regular prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 127; Dies, page 90; Stocks, page 103; Tap Wrenches, page 157.

Ford Special Screw Plate

With S.A.E. Standard Threads

Sizes selected with special reference to Ford Car, Model T



Size (closed) $9\frac{3}{4}$ " x $6\frac{1}{4}$ " x $1\frac{1}{4}$ ". Weight $2\frac{1}{2}$ lbs.

No. 2500 16 Sizes $6\frac{3}{8}$, $10\frac{24}{32}$, $10\frac{32}{32}$, $12\frac{24}{32}$, $14\frac{24}{32}$, $7\frac{32}{32}$, $1\frac{1}{4}$, $20\frac{18}{16}$, $5\frac{16}{16}$, $3\frac{16}{16}$, $3\frac{24}{16}$, $13\frac{16}{32}$, $7\frac{14}{16}$, $7\frac{20}{16}$, $1\frac{20}{2}$, and $\frac{1}{8}$ pipe.....

\$18.50

Contained in leather roll as illustrated.

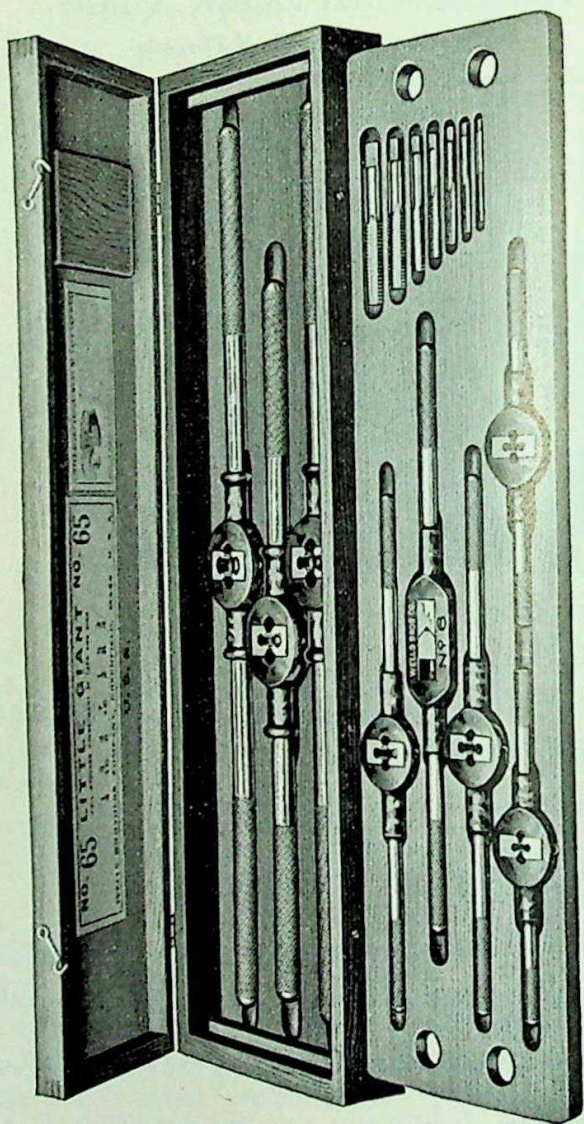
Plug Taps; Round Dies, $\frac{13}{16}$ " outside diameter for sizes $\frac{5}{16}$ " and smaller and 1" dia. for sizes $\frac{3}{8}$ " and larger; 2 Stocks, D ($6\frac{1}{4}$ " long) and F (9" long); 2 Adjustable Tap Wrenches, "T" Style, Nos. 329 and 333.

Also furnished in hardwood case at same price.

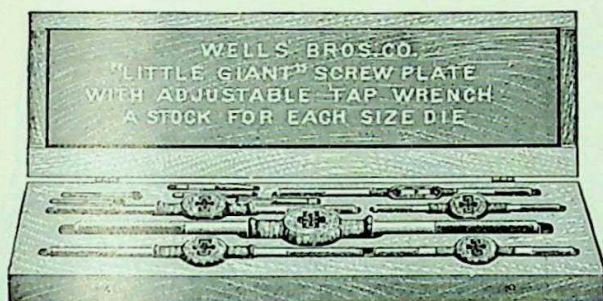
All Taps and Dies in above set will have S.A.E. (formerly A.L.A.M.) Standard Threads unless otherwise ordered.

Left-hand S.A.E. Standard Threads furnished at regular prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, page 127; Dies, page 90; Stocks, page 108; Tap Wrenches, page 158.



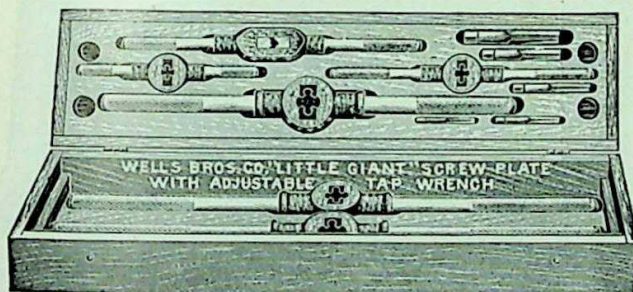
Full Mounted Screw Plates



No. 61 5 Sizes $\frac{1}{4}^{20}$, $\frac{5}{16}^{18}$, $\frac{3}{8}^{16}$, $\frac{7}{16}^{14}$, $\frac{1}{2}^{13}$

\$12.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 5 (11½" long). Weight 13½ lbs.



No. 62 5 Sizes $\frac{1}{4}^{20}$, $\frac{3}{8}^{16}$, $\frac{1}{2}^{13}$, $\frac{5}{8}^{11}$, $\frac{3}{4}^{10}$

\$15.50

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 6 (15" long). Weight 22 lbs.

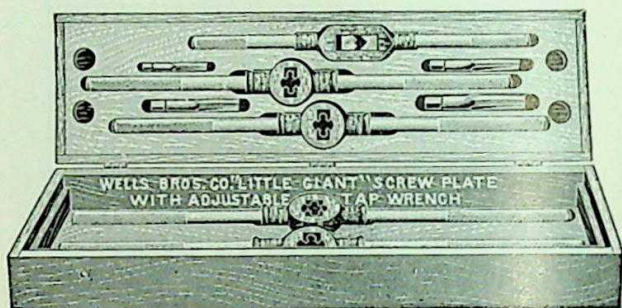
United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

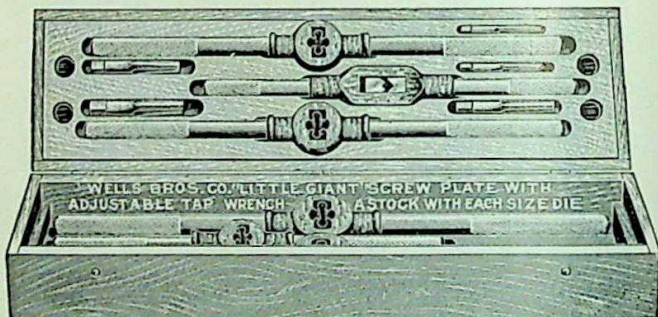
Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

Dealers are advised to order No. 61 assortments in lots of six, and No. 62 assortments in lots of three, for economy and facility in shipping.

Full Mounted Screw Plates



- No. 63** 4 Sizes $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸ \$18.00
 Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 7 (19 $\frac{1}{2}$ " long). Weight 28 lbs.



- No. 64** 5 Sizes $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸ \$19.50
 Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 7 (19 $\frac{1}{2}$ " long). Weight 30 lbs.

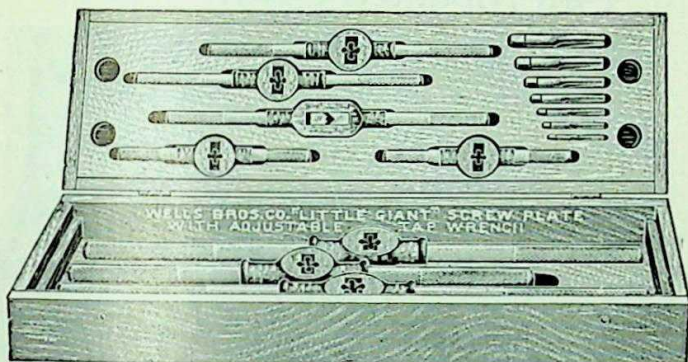
United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

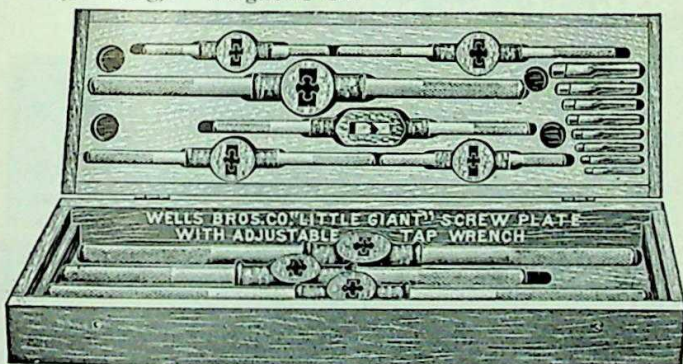
Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

Dealers are advised to order these assortments in lots of three, for economy and facility in shipping.

Full Mounted Screw Plates



- No. 65 7 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰ Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 6 (15" long). Weight 24 lbs. \$18.00



- No. 65 $\frac{1}{2}$ 8 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{9}{16}$ ¹², $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰ Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 6 (15" long). Weight 28 lbs. \$20.50

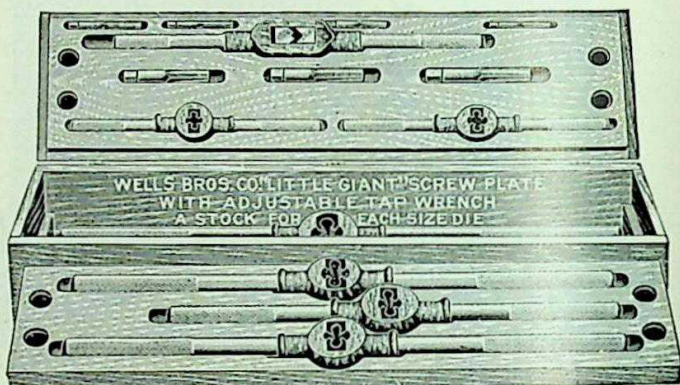
United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

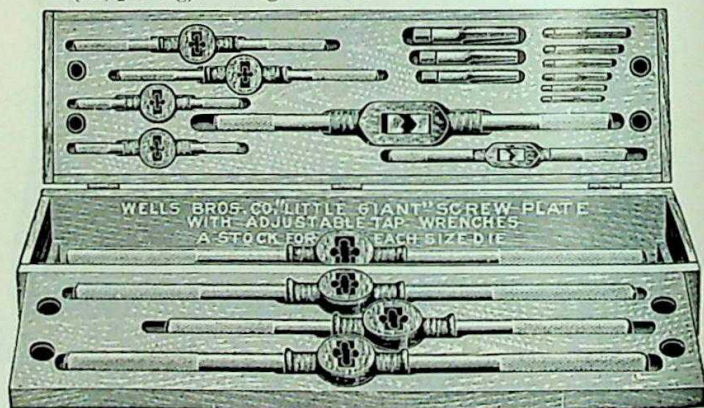
Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-120; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

Dealers are advised to order the No. 65 assortments in lots of three, and the No. 65 $\frac{1}{2}$ assortments in lots of two, for economy and facility in shipping.

Full Mounted Screw Plates



- No. 66 7 Sizes $\frac{3}{16}$, $\frac{1}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1" \$24.00
Taper Taps; *Little Giant* Dies; Separate Stock for each Die, and Adjustable Tap Wrench No. 7 (19½" long). Weight 37 lbs.



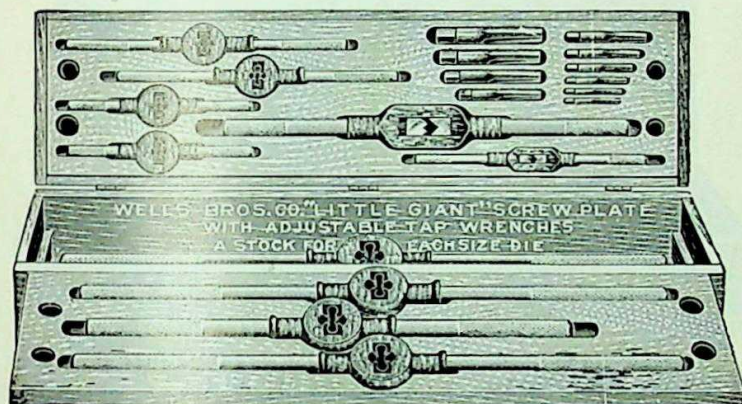
- No. 67 9 Sizes $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1" \$29.50
Taper Taps; *Little Giant* Dies; Separate Stock for each Die; 2 Adjustable Tap Wrenches, No. 5 (11½" long) and No. 7 (19½" long). Weight 37½ lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

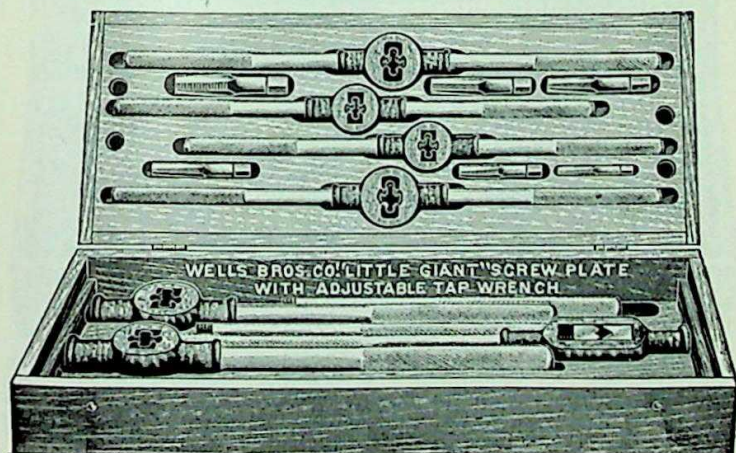
Full Mounted Screw Plates



No. 67 $\frac{1}{2}$ 10 Sizes $\frac{1}{4}$ $\frac{20}{18}$, $\frac{5}{16}$ $\frac{18}{16}$, $\frac{3}{8}$ $\frac{16}{14}$, $\frac{7}{16}$ $\frac{14}{13}$, $\frac{1}{2}$ $\frac{13}{12}$, $\frac{9}{16}$ $\frac{12}{11}$, $\frac{5}{8}$ $\frac{11}{10}$, $\frac{3}{4}$ $\frac{10}{9}$, $\frac{7}{8}$ $\frac{9}{8}$, 1".....

\$32.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, 2 Adjustable Tap Wrenches, No. 5 (11 $\frac{1}{2}$ " long) and No. 7 (19 $\frac{1}{2}$ " long). Weight 42 lbs.



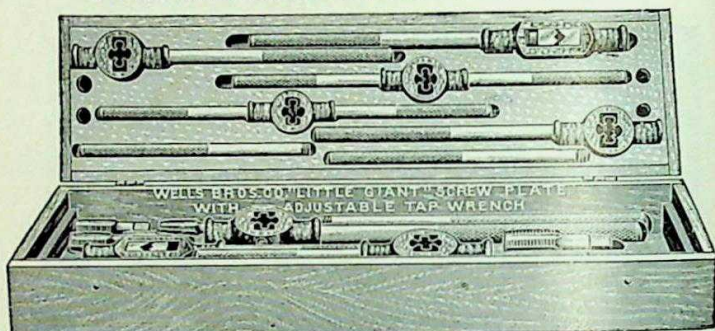
No. 620 8 Sizes $\frac{5}{8}$ $\frac{11}{10}$, $\frac{3}{4}$ $\frac{10}{9}$, $\frac{7}{8}$ $\frac{9}{8}$, 1", 1 $\frac{1}{8}$ $\frac{7}{7}$, 1 $\frac{1}{4}$ $\frac{7}{7}$

\$40.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, Adjustable Tap Wrench No. 7 $\frac{1}{2}$ (31" long). Weight 48 lbs.

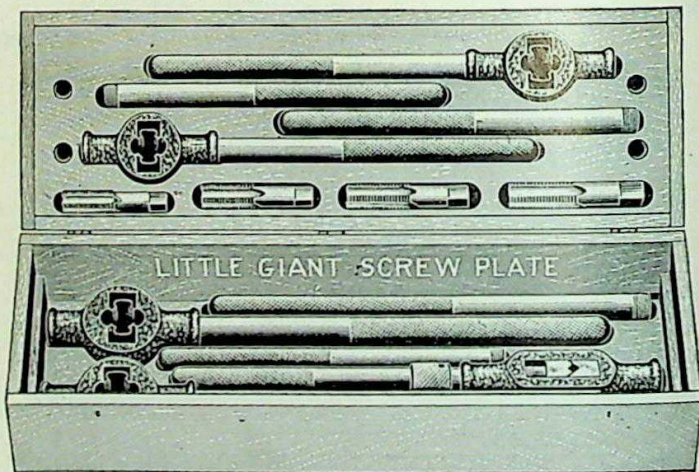
Footnotes on opposite page apply.

Full Mounted Screw Plates



No. 625 6 Sizes $\frac{7}{8}$, 18, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$ \$50.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, Adjustable Tap Wrench No. 8 ($40\frac{1}{2}$ " long). Weight $72\frac{1}{2}$ lbs.



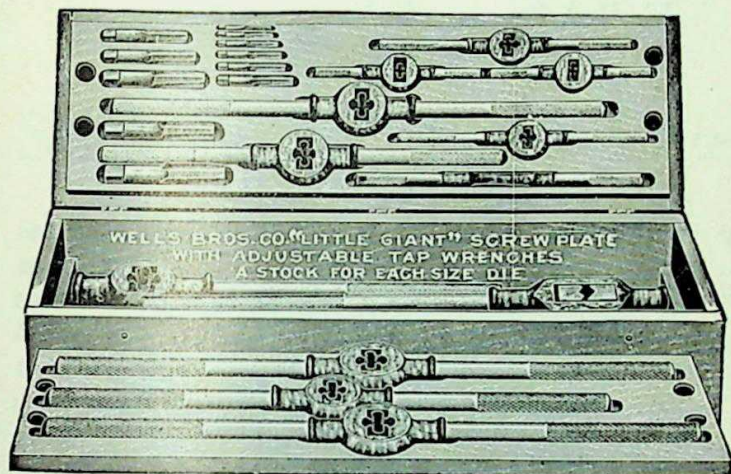
No. 630 4 Sizes $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$ \$43.50

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, Adjustable Tap Wrench No. 8 ($40\frac{1}{2}$ " long). Weight 60 lbs.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

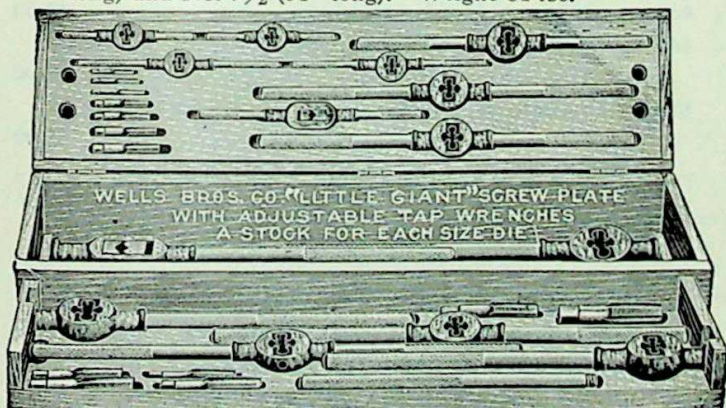
Full Mounted Screw Plates



No. 640 11 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹,
 $\frac{3}{4}$ ¹⁰, $\frac{7}{8}$ ⁹, 1⁸, 1 $\frac{1}{8}$ ⁷, 1 $\frac{1}{4}$ ⁷.....

\$47.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, 2 Adjustable Tap Wrenches, No. 6 (15" long) and No. 7 $\frac{1}{2}$ (31" long). Weight 61 lbs.



No. 650 13 Sizes $\frac{1}{4}$ ²⁰, $\frac{5}{16}$ ¹⁸, $\frac{3}{8}$ ¹⁶, $\frac{7}{16}$ ¹⁴, $\frac{1}{2}$ ¹³, $\frac{5}{8}$ ¹¹, $\frac{3}{4}$ ¹⁰,
 $\frac{7}{8}$ ⁹, 1⁸, 1 $\frac{1}{8}$ ⁷, 1 $\frac{1}{4}$ ⁷, 1 $\frac{3}{8}$ ⁶, 1 $\frac{1}{2}$ ⁶.....

\$67.00

Taper Taps; *Little Giant* Dies; Separate Stock for each Die, 2 Adjustable Tap Wrenches, No. 6 (15" long) and No. 8 (40 $\frac{1}{2}$ " long). Weight 92 lbs.

Footnotes on opposite page apply.

Full-Mounted Screw Plates

Condensed List

Detailed information on preceding pages

No. 61	5 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$	\$12.00
62	5 Sizes	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	15.50
63	4 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	18.00
64	5 Sizes	$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	19.50
65	7 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	18.00
65½	8 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$	20.50
66	7 Sizes	$\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	24.00
67	9 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	29.50
67½	10 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1	32.00
620	6 Sizes	$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	40.00
625	6 Sizes	$\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	50.00
630	4 Sizes	$1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	43.50
640	11 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$	47.00
650	13 Sizes	$\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$	67.00

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

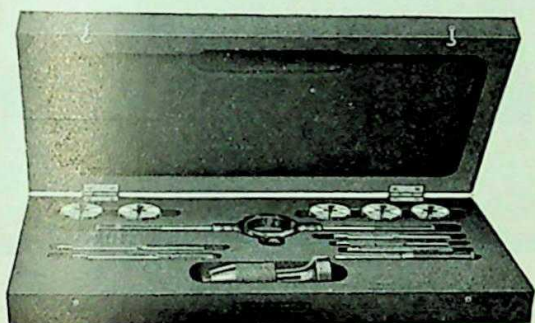
V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Prices of Parts for above Screw Plates are listed on the following pages: Taps, pages 119-121; Dies, page 107; Stocks, page 107; Tap Wrenches, page 157.

Assortments cutting larger sizes up to 2 inches on pages 58-59.

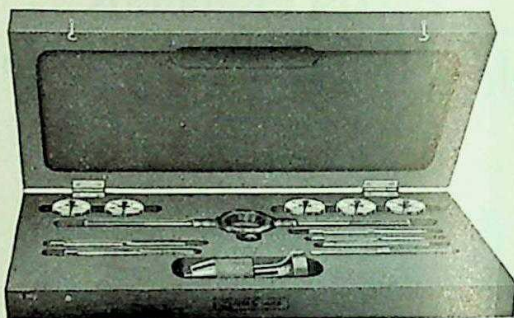


Miscellaneous Single Stocked Screw Plates



Single Stocked Screw Plates

With Round Adjustable Dies, 13/16" Outside Diameter



Contents

D Stock 6 1/4" long.
 "T" Tap Wrench made by inserting adjustable socket in stock.
 13/16" Round Adjustable Dies.
 Plug Taps.

No.	Machine Screw Sizes	Price
D 5	5 Sizes 4 ³⁶ , 6 ³² , 8 ³² , 10 ²⁴ , 12 ²⁴ (13 1/4 lbs.)	\$5.00
D 6	6 Sizes 4 ³⁶ , 6 ³² , 8 ³² , 10 ²⁴ , 12 ²⁴ , 14 ²⁰ (13 1/4 lbs.)	5.75
D 7	7 Sizes 4 ³⁶ , 6 ³² , 8 ³² , 10 ²⁴ , 12 ²⁴ , 14 ²⁰ , 16 ¹⁸ (13 1/4 lbs.)	6.50
D 10	10 Sizes 2 ⁵⁶ , 3 ⁴⁸ , 4 ³⁶ , 5 ³² , 6 ³² , 8 ³² , 10 ²⁴ , 12 ²⁴ , 14 ²⁰ , 16 ¹⁸ (2 lbs.)	8.75

Fractional Sizes

DD 5	5 Sizes 1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ (11 1/2 lbs.)	\$5.00
DD 6	6 Sizes 1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , 9/32 ²⁰ (13 1/4 lbs.)	5.75
DD 7	7 Sizes 7/64 ⁵⁰ , 1/8 ⁴⁰ , 9/64 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ (13 1/4 lbs.)	6.50
DD 8	8 Sizes 1/16 ⁶⁴ , 3/32 ⁵⁰ , 1/8 ⁴⁰ , 5/32 ³⁶ , 3/16 ³⁰ , 7/32 ²⁸ , 1/4 ²⁰ , 9/32 ²⁰ (13 1/4 lbs.)	7.25

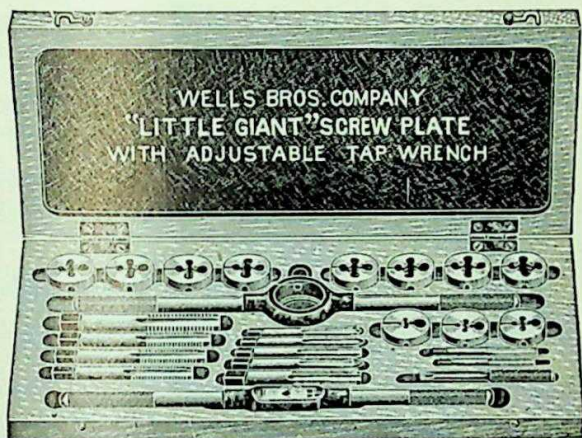
Prices of Parts for above Screw Plates are listed on the following pages: Taps, machine screw sizes, pages 114-115, fractional sizes, pages 116 and 119; Dies, machine screw sizes, page 86, fractional sizes, pages 88-89; Stocks, page 108.

Any pitch or form of thread listed on above pages may be substituted in these sets without affecting price. Sizes and threads not listed are special.

Single Stocked Screw Plates

With Round Adjustable Dies

1" Outside Diameter



Contents

1" dia. Round Adjustable Dies.
 Plug Taps.
 F Stock (9" long).
 Adjustable Tap Wrench No. 4 (9" long).

Machine Screw Sizes

No.			Price
FF5	5 Sizes	12 ²⁴ , 14 ²⁰ , 16 ¹⁸ , 18 ¹⁸ , 20 ¹⁶ . Wt. 2½ lbs.	\$7.50
FF6	6 Sizes	12 ²⁴ , 14 ²⁰ , 16 ¹⁸ , 18 ¹⁸ , 20 ¹⁶ , 24 ¹⁶ . Weight 2½ lbs.	8.00

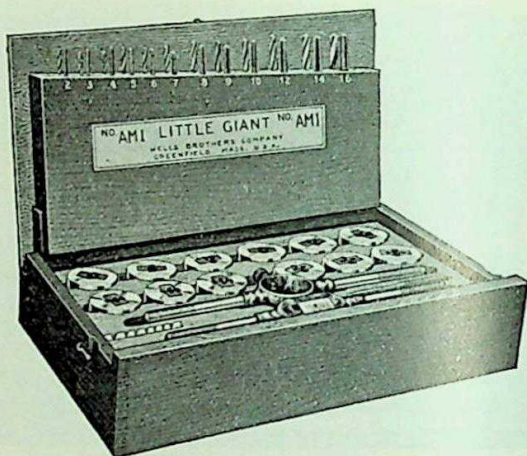
Fractional Sizes

F5	5 Sizes	3/16 ³⁰ , 1/4 ²⁰ , 5/16 ¹⁸ , 3/8 ¹⁶ , 7/16 ¹⁴ . Wt. 2½ lbs.	\$7.50
F6	6 Sizes	1/8 ⁴⁰ , 3/16 ³⁰ , 1/4 ²⁰ , 5/16 ¹⁸ , 3/8 ¹⁶ , 7/16 ¹⁴ . Weight 2¾ lbs.	8.00

Prices of Parts for above Screw Plates are listed on the following pages: Taps, machine screw sizes, pages 114-115, fractional sizes, pages 116 and 119; Dies, machine screw sizes, page 86, fractional sizes, pages 88-89; Stocks, page 108.

Any pitch or form of thread listed on above pages may be substituted in these sets without affecting price. Sizes and threads not listed are special.

Screw Plates with Twist Drills



These assortments have been specially arranged to insure, and make convenient, the use of the proper size drill before tapping.

Directly behind each tap is its corresponding drill, avoiding all confusion, loss of time and loss of loose parts and tools.

The cabinets are fitted with "invisible" hinges and hooks fasten the cover when closed. When open, the cover is supported in an upright position as shown in the illustration.

Dies for AM1 listed on page 79.

Dies for AM2 listed on page 80.

Dies for DM1 listed on page 86.

Dies for DM2 listed on pages 88-89.

Dies for FM1 listed on page 86.

Dies for FM2 listed on pages 88-89.

Taps for all above assortments listed on pages 114-119.

Stocks for AM1 and AM2 Screw Plates listed on page 106.

Stocks for DM and FM Screw Plates listed on page 108.

Screw Plates with Twist Drills

See table at bottom of page for threads per inch and drill sizes for each cutting size listed in the following assortments.

No. AM1 12 Sizes—2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, \$18.00

AM2 12 Sizes— $\frac{5}{64}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$, $\frac{3}{16}$,
 $\frac{13}{64}$, $\frac{7}{32}$, $\frac{15}{64}$, $\frac{1}{4}$ 18.00

Little Giant dies; collets $1\frac{1}{4}$ " in diameter; plug taps; stock $7\frac{1}{2}$ " long; adjustable tap wrench No. 0.

No. DM1 12 Sizes—2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, \$12.00

DM2 12 Sizes— $\frac{7}{64}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$, $\frac{3}{16}$, $\frac{13}{64}$, $\frac{7}{32}$,
 $\frac{15}{64}$, $\frac{1}{4}$, $\frac{17}{64}$, $\frac{9}{32}$ 12.00

Round Adjustable dies; $\frac{13}{16}$ " outside diameter; plug taps; stock $6\frac{1}{4}$ " long; adjustable tap wrench No. 0.

No. FM1 12 Sizes—6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24. \$15.00

FM2 12 Sizes— $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{9}{32}$, $\frac{5}{16}$, $\frac{11}{32}$,
 $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$ 15.00

Round Adjustable dies, 1" outside diameter; plug taps; stock 9" long; adjustable tap wrench No. 4.

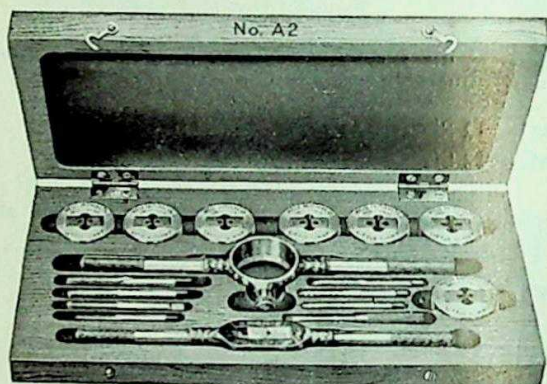


Threads per Inch and Drill Sizes

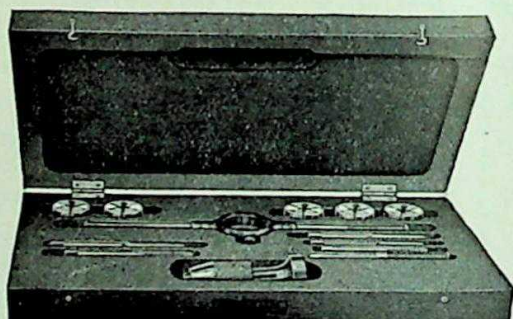
For each cutting size in above screw plates.

Size	Threads per inch	Drill	Size	Threads per inch	Drill
2	64	49	$\frac{5}{64}$	64	52
3	56	45	$\frac{3}{32}$	50	49
4	48	42	$\frac{7}{64}$	50	43
5	44	37	$\frac{1}{8}$	40	38
6	40	32	$\frac{9}{64}$	40	32
7	36	30	$\frac{5}{32}$	36	30
8	36	28	$\frac{11}{64}$	36	27
9	32	26	$\frac{3}{16}$	30	23
10	30	21	$\frac{13}{64}$	30	$\frac{11}{64}$
12	28	14	$\frac{7}{32}$	28	13
14	24	7	$\frac{15}{64}$	28	7
16	22	1	$\frac{1}{4}$	20	7
18	20	D	$\frac{17}{64}$	20	$\frac{7}{32}$
20	20	1	$\frac{9}{32}$	20	A
22	18	M	$\frac{5}{16}$	18	F
24	16	$\frac{5}{16}$	$\frac{11}{32}$	18	L
			$\frac{3}{8}$	16	$\frac{5}{16}$
			$\frac{13}{32}$	16	$\frac{11}{32}$
			$\frac{7}{16}$	14	U
			$\frac{15}{32}$	14	X

Metric Screw Plates



Style "A" Screw Plate, with *Little Giant* Dies



Style "D" Screw Plate with Round Adjustable Dies

Metric Screw Plates

French or International Standard

No.	Cutting Sizes with <i>Little Giant</i> Dies	Price
A-41	2, 3, 4, 5, 6 m/m.....	\$ 6.50
A-42	2, 2½, 3, 3½, 4, 5, 6 m/m.....	8.00
A-412	3, 4, 5, 6, 7, 8, 9, 10 m/m.....	12.75
41	6, 7, 8, 10, 12 m/m.....	12.00
45	6, 8, 10, 12, 14, 16, 18 m/m.....	16.00
47	6, 8, 10, 12, 14, 16, 18, 20, 24 m/m.....	25.50
401	6, 7, 8, 10, 12 m/m.....	15.50
405	6, 8, 10, 12, 14, 16, 18 m/m.....	22.00
407	6, 8, 10, 12, 14, 16, 18, 20, 24 m/m.....	36.00
461	6, 7, 8, 10, 12 m/m.....	12.00
465	6, 8, 10, 12, 14, 16, 18 m/m.....	18.00
467	6, 8, 10, 12, 14, 16, 18, 20, 24 m/m.....	29.50
with Round Dies		
D-47	2, 2½, 3, 3½, 4, 5, 6 m/m.....	6.50
D-48	2, 2½, 3, 3½, 4, 5, 6, 7 m/m.....	7.25
F-46	4, 5, 6, 8, 10, 12 m/m.....	8.00



Lowenherz Standard

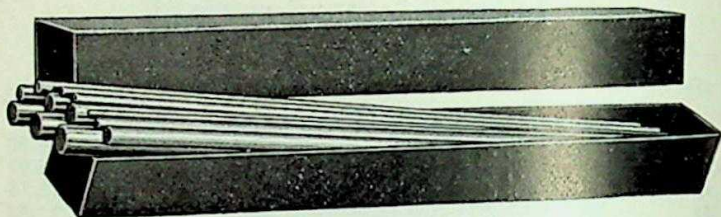
with <i>Little Giant</i> Dies		
A-91	1, 1.2, 1.4, 1.7, 2 m/m.....	\$ 6.50
A-92	2.3, 2.6, 3, 3.5, 4, 4.5, 5 m/m.....	8.00
A-910	5, 5.5, 6, 7, 8, 9, 10 m/m.....	11.50
with Round Dies		
D-95	1, 1.2, 1.4, 1.7, 2 m/m.....	5.00
D-97	2.3, 2.6, 3, 3.5, 4, 4.5, 5 m/m.....	6.50
F-96	5.5, 6, 7, 8, 9, 10 m/m.....	8.00

British Association

with <i>Little Giant</i> Dies		
A-04	0, 1, 2, 3, 4 m/m.....	\$ 6.50
A-06	0, 1, 2, 3, 4, 5, 6 m/m.....	8.00
A-09	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 m/m.....	10.50
A-510	5, 6, 7, 8, 9, 10 m/m.....	7.00
with Round Dies		
D-04	0, 1, 2, 3, 4, m/m.....	\$5.00
D-510	5, 6, 7, 8, 9, 10 m/m.....	5.75
D-06	0, 1, 2, 3, 4, 5, 6 m/m.....	6.50
D-09	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 m/m.....	8.75
D-010	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 m/m.....	9.50
D-610	6, 7, 8, 9, 10 m/m.....	5.00

Steel Rods

Assorted sizes for convenience in making screws



Cold rolled steel of the grade commonly known as "screw stock" is difficult to buy, in the smaller sizes, except in large quantities. The mechanic using a Screw Plate who wants merely a few inches, will find the following assortments a great convenience.



No.*	Sizes (in 12 inch lengths)	Price
1001	No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14.....	\$.25
1002	No. 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16.....	.25
1003	No. 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24.....	.40
1004	$\frac{5}{64}$, $\frac{3}{32}$, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$, $\frac{3}{16}$, $\frac{13}{64}$, $\frac{7}{32}$, $\frac{15}{64}$, $\frac{1}{4}$	.25
1005	$\frac{1}{8}$, $\frac{9}{64}$, $\frac{5}{32}$, $\frac{11}{64}$, $\frac{3}{16}$, $\frac{13}{64}$, $\frac{7}{32}$, $\frac{15}{64}$, $\frac{1}{4}$, $\frac{17}{64}$, $\frac{9}{32}$, $\frac{5}{16}$	.25
1006	$\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, $\frac{1}{4}$, $\frac{9}{32}$, $\frac{5}{16}$, $\frac{11}{32}$, $\frac{3}{8}$, $\frac{13}{32}$, $\frac{7}{16}$, $\frac{15}{32}$	.50

*Order by number.

Wire and Tap Drill Gages

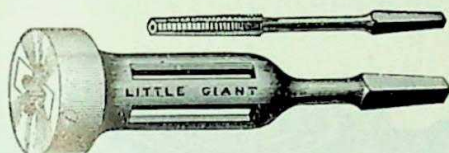


These gages are for measuring steel rods, such as are listed above, and also for determining the size of drill to use before tapping.

Price each 75 cents

No.	Range of Measurement	No.	Range of Measurement
1	No. 1 to 14	4	$\frac{5}{64}$ to $\frac{1}{4}$ inch
2	No. 2 to 16	5	$\frac{1}{8}$ to $\frac{5}{16}$ inch
3	No. 6 to 24	6	$\frac{1}{8}$ to $\frac{15}{32}$ inch

Bit Brace Dies and Collets



Bit Brace Dies and Collets are very convenient for redressing threads or working in close quarters where it would be impossible to use a screw plate.

United States Standard threads recommended and furnished unless otherwise ordered.

Sizes and pitches not listed are special.

Left-hand threads are special.



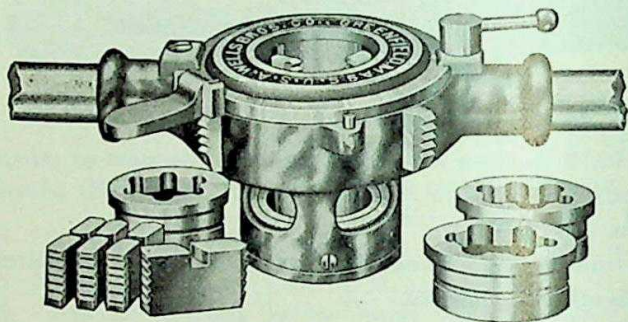
Size	Threads per Inch		Tap only	Die only	Collet only	Tap, Die and Collet
	U. S. Std.	V				
$\frac{3}{16}$	30	24	\$.50	\$1.00	\$.65	\$1.90
$\frac{1}{4}$	20	20	.50	1.00	.65	1.90
$\frac{5}{16}$	18	18	.55	1.00	.65	1.95
$\frac{3}{8}$	16	16	.60	1.25	.65	2.25
* $\frac{13}{32}$		14	.60	1.25	.65	2.25
$\frac{7}{16}$	14	14	.70	1.25	.65	2.35
* $\frac{15}{32}$		12	.70	1.25	.65	2.35

*These are present standard pump makers' sizes.

Holders for using regular hand taps in bit brace described and listed on page 142.

Opening Die Screw Plates

Sizes $1\frac{5}{8}$ "—2"



Advantages

Avoids danger of stripping threads.

Saves wear on cutting teeth otherwise caused by reversing.

No time wasted turning back over finished threads.

Quick Release

The die-lands are held to their work by cams and at the end of cut can be opened for drawing off by loosening the round clamp lever, shown at the right in above illustration and pulling forward the flat handle, shown at the left.

Dies

The die-lands are threaded on both ends. Each set of four lands will cut two sizes, thus reducing the number of pieces in a set.

Straight threads are assured by the use of guides, a separate one being provided for each cutting size.

Opening Die Screw Plates

Bolt Sizes $1\frac{5}{8}$ "—2"

United States Standard right hand threads furnished in United States and Whitworth in other countries unless otherwise specified.

No. 55	4 Sizes $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 2.....	\$45.00
	Contains 1 Stock, 2 sets Dies, 4 Guides and 4 Taper Taps.	
No. 57	2 Sizes $1\frac{5}{8}$, $1\frac{7}{8}$	\$32.00
	Contains 1 Stock, 1 set Dies, 2 Guides and 2 Taper Taps.	
No. 58	4 Sizes $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2.....	\$43.00
	Contains 1 Stock, 2 sets Dies, 4 Guides and 4 Taper Taps.	
No. 59	2 Sizes $1\frac{3}{4}$, 2	33.00
	Contains 1 Stock, 1 set Dies, 2 Guides and 2 Taper Taps.	



Prices of Parts

Dies, sizes $1\frac{3}{8}$ and $1\frac{1}{2}$	(per set of 4)	\$4.00
Dies, sizes $1\frac{5}{8}$ and $1\frac{7}{8}$	(per set of 4)	4.00
Dies, sizes $1\frac{3}{4}$ and 2.....	(per set of 4)	4.00
Guides, any size		1.00
Taper Taps, $1\frac{3}{8}$ "		3.00
Taper Taps, $1\frac{1}{2}$ "		3.50
Taper Taps, $1\frac{5}{8}$ "		4.20
Taper Taps, $1\frac{3}{4}$ "		5.00
Taper Taps, $1\frac{7}{8}$ "		5.80
Taper Taps, 2"		6.70

Adjustable Tap Wrench No. 22 (56" long) furnished for each of above assortments, if desired. For price see page 157.

Screw Plates containing sizes $1\frac{1}{2}$ " and smaller, listed on preceeding pages.

Pump Makers' Stocks and Dies



No. 250

These double stocks are fitted with *Little Giant* adjustable bolt dies which are held in place by wedges. The wedges have beveled sides which fit the bevel on the dies. Tightening the wedge holds the dies rigidly in place.



Nos. 251, 252, 253

These sets consist of a stock, die and guide, complete, for each size. The dies are wedged firmly into the stock by a guide which screws against the back of the die, thus forcing the bevels of the die into corresponding bevels in the stock.

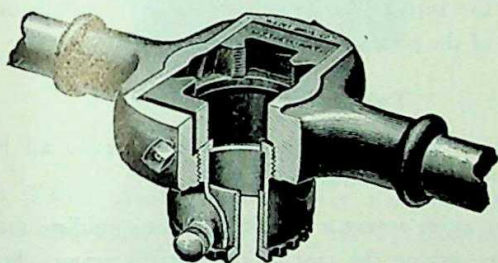
V oversize threads sent unless otherwise ordered.

No.	Cutting Sizes	Length of Stock	Net Weight	Price Each
250	$\frac{3}{8}^{14}$, $\frac{7}{16}^{12}$	13 $\frac{1}{2}$ "	1 $\frac{1}{2}$ lbs.	\$3.35
251	$\frac{3}{8}^{14}$	14"	1 $\frac{1}{4}$ lbs.	1.80
252	$\frac{7}{16}^{14}$	14"	1 $\frac{1}{4}$ lbs.	1.85
253	$\frac{1}{2}^{12}$	20 $\frac{1}{2}$ "	2 $\frac{1}{4}$ lbs.	2.20

Separate Parts

Stock (including wedge) No. 250 (Double)	\$.85
Stock No. 251 (for $\frac{3}{8}$ die)	.55
Stock No. 252 (for $\frac{7}{16}$ die)	.60
Stock No. 253 (for $\frac{1}{2}$ die)	.70
Dies, size $\frac{3}{8}^{14}$, each	1.25
Dies, size $\frac{7}{16}^{12}$, each	1.25
Dies, size $\frac{1}{2}^{12}$, each	1.50
Guides, each	.20
Wedge for double stock	.15

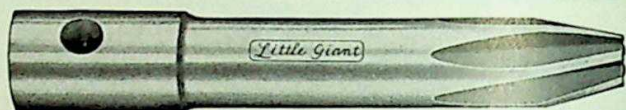
Pipe Plate Section



*Internal Guide with Reamer Point

For Pipe Threading Tools

Patented May 12, 1914



One of the greatest improvements ever invented in pipe threading tools is the internal guide. This guide is made in sizes to fit the inside of the pipe to be threaded.



Two Operations in One

The reamer point entering the pipe removes all burrs and compels the die to start straight.

Thus the guide serves a double purpose—guiding and burring at same time—saving the cost of the burring reamer, beside time and cost of one operation.

Even when the pipe is cut on an angle no difficulties are presented, as the guide will not permit the die to tip and make a crooked start.

As the reaming of the pipe is always desirable and in some states obligatory, the distinct advantage of pipe threading tools fitted with this form of guide will at once be apparent.

The reamer guide working inside the pipe permits threading on a much shorter projection than was possible with the old style of bushing guide.

*This tool is not complete in itself. Pipe threading tools fitted with the internal guide and pages on which they may be found are as follows:

Trio Pipe Stock page 63-64.

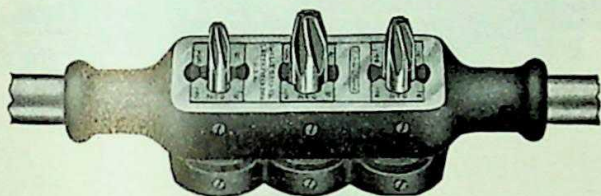
Duo Pipe Stock page 65.

Ceiling Set page 75.

Ratchet Stock page 75.

TRIO Pipe Die Stocks

With Internal Guides



Patented May 12, 1914



Each TRIO Stock contains three sizes of *Little Giant* Pipe Dies which are adjusted to correct cutting sizes and ready for instant use.

The *Little Giant* Pipe Dies are easy cutting because they are perfectly designed as to lead, chip room, clearance, width of land, etc. The bevelled surfaces match perfectly the corresponding carefully ground bevels in the stock and on the wedges that fit between the dies.

Time Saved

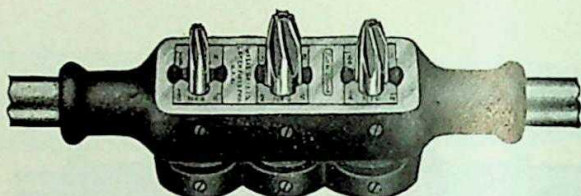
No time is lost looking for or sorting several different stocks, hunting misplaced dies or interchanging dies and guides.

Re-dressing of threads is unnecessary—clean, accurate threads are produced at first cut.

The internal guide with reamer point cleans all burrs from the inside of the pipe at the same time that it guides the die for straight threads.

TRIO Pipe Die Stocks

With Internal Guides



Patented May 12, 1914



Weight Reduced

The extra weight of several stocks is eliminated.
The knurled handles are made of light steel tubing and are detachable so that the stock can be packed with any kit.

Less Cost

The cost is much less than that of an equal number of full-mounted stocks covering the same range of sizes.

No lost dies. They are only removed for re-sharpening and are, therefore, long lived.

The stocks themselves are malleable castings and are practically indestructible.

The internal guides save the cost of burring reamers as well as time of the burring operation.

Prices of Assortments

No.	Cutting Sizes	Weight	Price
200	$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$	5 lbs.	\$6.25
201	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	5 lbs.	6.25
210	$\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$	11 $\frac{1}{4}$ lbs.	8.00
211	$\frac{1}{2}$, $\frac{3}{4}$, 1	11 $\frac{1}{4}$ lbs.	8.00

Prices of Parts

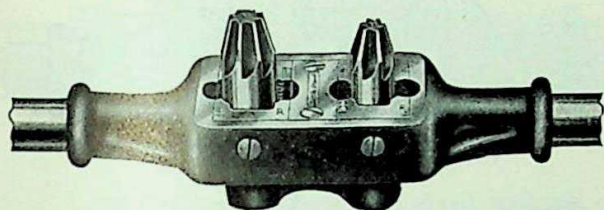
No.	Stocks	Dies	Guides	Wedges
200	\$1.00	\$1.00	\$.65	\$.15
201	1.00	1.00	.65	.15
210	2.00	1.25	.65	.20
211	2.00	1.25	.65	.20

Stocks ordered separately fitted with wedges.

Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

DUO Pipe Stock

With Internal Guides



Patented May 12, 1914

The design, construction and workmanship of these stocks is similar to that of the TRIO with internal guide described on pages 63-64. They hold the *Little Giant* style of die. Complete description of die given on page 6.



Prices of Assortments

Number	Cutting	Net Weight	Price
220	$\frac{1}{2}$, $\frac{3}{4}$	9 lbs.	\$6.50
221	$\frac{3}{4}$, 1	9 lbs.	6.50

Prices of Parts

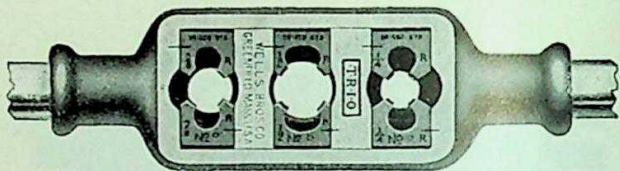
Number	Stocks	Dies	Guides	Wedges
220	\$2.00	\$1.25	\$.65	\$.20
221	2.00	1.25	.65	.20

Stocks ordered separately fitted with wedges.

Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

TRIO Pipe Die Stock

With Bushing Guide



The *Little Giant* dies in these stocks can't wear loose.

They are as rigid as a solid die because they are wedged firmly into the stock by a grip which is tightened as the strain is increased.

Complete description of this style of die is given on page 6.

A separate bushing to guide the piece to be threaded is placed opposite each size die.



Assortments with Bushing Guides

No.	Cutting Sizes	Net Weight	Price
200	$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$	4 lbs.	\$4.25
201	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	4 lbs.	4.25
210	$\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$	9 lbs.	6.00
211	$\frac{1}{2}$, $\frac{3}{4}$, 1	9 lbs.	6.00

Prices of Parts

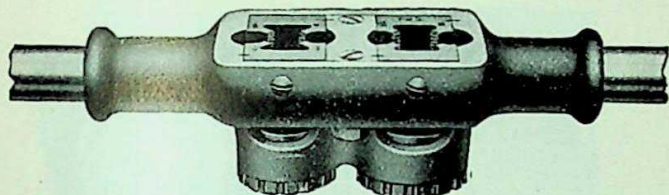
No.	Stock	Die	Guides	Wedges
200	\$1.00	\$1.00	\$0.25	\$0.15
201	1.00	1.00	.25	.15
210	2 00	1.25	.35	.20
211	2 00	1.25	.35	.20

Stocks ordered separately fitted also with wedges and guides.

Briggs Standard right hand threads furnished in the United States and Whitworth in other countries unless otherwise specified.

DUO Pipe Die Stock

With Bushing Guides



Range of cutting sizes, $\frac{1}{2}$ "-2" pipe

The design, construction and workmanship of these stocks is similar to that of the TRIO. They hold the *Little Giant* style of die. Complete description of die given on page 6.



Assortments with Bushing Guides

No.	Cutting Sizes	Net Weight	Price
220	$\frac{1}{2}$, $\frac{3}{4}$	7 $\frac{1}{2}$ lbs.	\$ 4.50
221	$\frac{3}{4}$, 1	7 $\frac{1}{2}$ lbs.	4.50
230	1, 1 $\frac{1}{4}$	17 lbs.	7.25
240	1 $\frac{1}{4}$, 1 $\frac{1}{2}$	18 lbs.	10.50
241	1 $\frac{1}{2}$, 2	20 lbs.	10.50

Prices of Parts

No.	Stock	Die	Guides	Wedges
220	\$2.00	\$1.25	\$0.35	\$0.20
221	2.00	1.25	.35	.20
230	3.50	2.00	.45	.25
240	5.00	3.00	.60	.45
241	5.00	3.00	.60	.45

Stocks ordered separately fitted also with wedges and guides.

Briggs Standard right hand threads furnished in United States and Whitworth in other countries unless otherwise specified.

Stocks and Dies for Pipe with Bushing Guides



Little Giant Pipe Threading Tools are packed either in finished cases or rough pine boxes, as desired. The tools in each are absolutely the same in design, material, workmanship and finish. The style of box is the only difference. One is carefully made and varnished; the other is merely a rough pine box. Both, however, are made with lock corners and are capable of enduring hard usage.

Sets packed in rough boxes, although listed at same prices as those in finished cases, are subject to greater discount. For shipment to dealers we bind them with steel tape in lots of 4 or 6, as desired. Dealers are strongly advised to order in these quantities or multiples.

Sets will be sent with right-hand dies, left-hand dies, or with both right and left-hand dies, as desired.

Right-hand dies, only, sent unless otherwise ordered.



Stocks and Dies for Pipe

With Bushing Guides



Each set contains one Stock, with dies and bushings for each pipe size.

Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sets with taps furnished when desired. Write for prices.

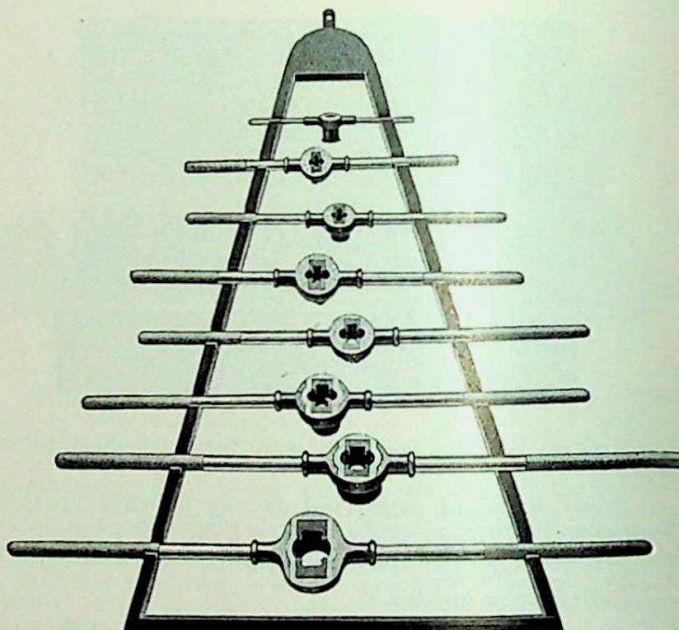
Order by new number.

Finished Boxes	*Unfinished Boxes	Old No.	Cutting Sizes	Weight	Length Stock	*Price Each
2660	C260	0	$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	5 $\frac{3}{4}$ lbs.	25	\$ 5.00
2661	C261	1	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	12 $\frac{1}{4}$ lbs.	36	8.00
2661 $\frac{1}{2}$	C261 $\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{1}{2}$, $\frac{3}{4}$, 1, 1 $\frac{1}{4}$	12 $\frac{1}{4}$ lbs.	41	10.50
2662	C262	2	1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2	26 $\frac{1}{4}$ lbs.	52	14.00
2665	C265	5	$\frac{1}{2}$, $\frac{3}{4}$, 1	10 $\frac{1}{2}$ lbs.	36	6.50

*The unfinished boxes contain exactly the same tools as the finished cases, and while they are listed on this page at the same prices, are subject to a greater discount.

Prices of Parts for above assortments are listed on the following pages: Dies, page 84; Taps, page 152; Stocks, Guides and Bushings, page 109.

Assortments of Full-Mounted Stocks and Dies for Pipe



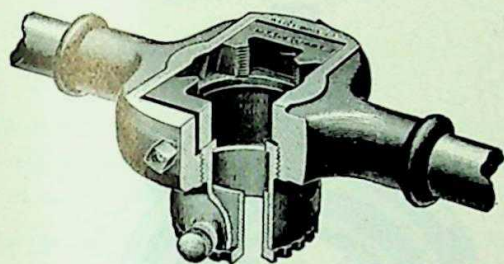
Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified. Left-hand threads at regular prices.

For convenience in shipping, the rack is knocked down and packed with the stocks in a plain durable case.

No.	Assortment	Weight	Price including Rack
271	4 Stocks, Dies and Guides, cutting $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	17½ lbs.	\$ 8.00
272	5 Stocks, Dies and Guides, cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	32 lbs.	11.00
273	6 Stocks, Dies and Guides, cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1¼	43½ lbs.	16.00
274	8 Stocks, Dies and Guides, cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1¼, 1½, 2	71 lbs.	28.00

Prices of Parts for above assortments are listed on the following pages: Taps, page 152; Dies, Stocks, Guides and Bushes, page 109.

Little Giant Full-Mounted Stocks and Dies for Pipe



Each die is mounted in its own stock—the length and weight of the stock are in proportion to the size of the die.

Thus large stocks giving greater leverage are provided for large dies and small, light stocks for small dies.

No.	For Pipe	*Size of Die Blank	Length of Stock	Price
280	$\frac{1}{8}$	$\frac{1}{4}$ Bolt	9	\$1.75
281	$\frac{1}{4}$	$\frac{3}{8}$ Bolt	13 $\frac{1}{2}$	1.75
282	$\frac{3}{8}$	$\frac{1}{2}$ Bolt	22 $\frac{1}{2}$	2.00
283	$\frac{1}{2}$	$\frac{1}{2}$ Bolt	25	2.00
284	$\frac{3}{4}$	No. 1 Pipe	31 $\frac{1}{2}$	3.00
285	1	No. 1 Pipe	36	3.00
286	1 $\frac{1}{4}$	No. 1 $\frac{1}{2}$ Pipe	40 $\frac{1}{2}$	4.50
287	1 $\frac{1}{2}$	No. 87 Pipe	50	5.50
288	2	No. 2 Pipe	51 $\frac{1}{2}$	7.25

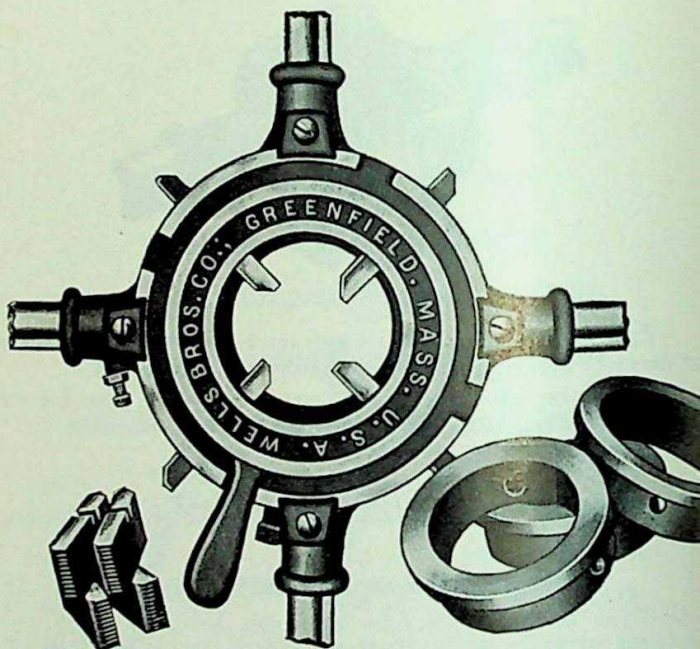
Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Prices of Parts for above listed on page 109.

*Dimensions of Die Blanks shown on pages 8-10.

Opening Die Pipe Stocks

Capacity $2\frac{1}{2}$ " to 4"



Advantages

- Avoids danger of stripping threads.
- Saves wear on cutting teeth otherwise caused by reversing.
- No time wasted turning back over finished threads.

Quick Release

The dies are held to their work by cams, and at end of cut be opened for drawing off by loosening the clamp lever on under of stock and pulling forward the short flat handle on left side of stock.

Opening Die Pipe Stocks

Capacity $2\frac{1}{2}$ " to 4"

Dies

The die-lands are all threaded on both ends. Each set of four lands will therefore cut two sizes of pipe, thus reducing the number of pieces in a set. The die-lands can be readily sharpened.

A separate bushing for each size pipe insures a straight start and clean, accurate work throughout.



Price List of Assortments

No.		Price
290	2 Sizes $2\frac{1}{2}$, 3..... Contains Stock, Dies and Guides.	\$51.50
291	2 Sizes $3\frac{1}{2}$, 4..... Contains Stock, Dies and Guides.	51.50
292	4 Sizes $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4..... Contains Stock, Dies and Guides.	55.00

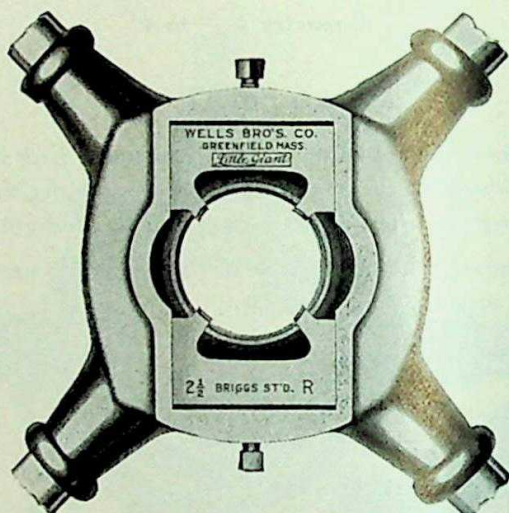
Prices of Parts

Dies, price per set (4 pieces).....	4.00
Guides.....	1.00

Briggs Standard right hand threads furnished in United States and Whitworth in other countries unless otherwise specified.

Pipe Set

Cutting 2½" and 3" Pipe



This Stock body is a malleable casting of same grade and finish as other *Little Giant* Pipe Stocks.

The dies are regular *Little Giant* pattern, finely tempered and have strong, well supported cutting edges.

They are removable for re-sharpening, and adjustable for wear. Will cut a full thread once over.

Handles are of steel tubing; polished and outer ends knurled; detachable.

Prices

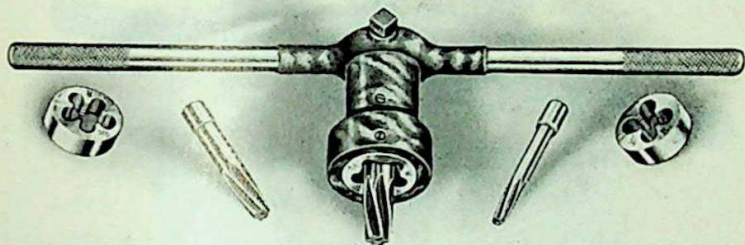
Stock, including four handles.....	\$20.00
Guides, each.....	2.00
Bushings, each.....	1.00
Dies, each (either 2½" or 3" size).....	4.00
No. 268 Complete equipment for cutting one size only...	27.00
No. 269 Complete equipment for cutting both sizes.....	32.00

Briggs Standard right hand threads furnished in United States and Whitworth in other countries unless otherwise specified.

Pipe Threading Sets

For Ceiling Work

Patented May 12, 1914



These sets are a great convenience on electrical conduit work or where laying pipe within or along walls and ceilings.

Assortments contain $1\frac{1}{16}$ " diameter round dies, guides, one stock No. H (16" long) and one extension.

Ratchet Die Stocks

A set consists of one round adjustable die, $1\frac{1}{16}$ " diameter, and one internal guide for each cutting size; and one reversible Ratchet Stock fitting all the dies in the set.

The internal form of guide is provided for all these sets. This guide is made with a reamer point which cleans out the burr on the inside of the pipe at the same time it guides the die to a straight start.

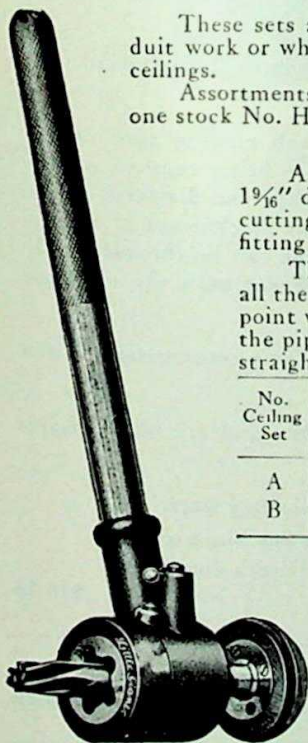
No. Ceiling Set	No. Ratchet Set	Cutting Pipe Sizes	Price
A	R1	$\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ "	\$8.00
B	R2	$\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ "	9.50

Prices of Parts

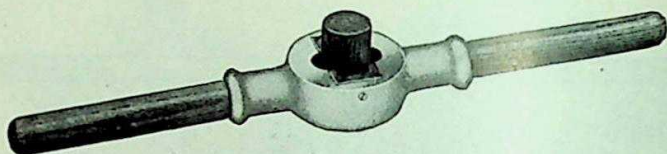
Dies, each	\$1.25
Guides, each	.50
Socket for Ratchet Stock	1.25
Ratchet Stock with Handle	1.50
Stock and Extension for Ceiling Set	3.25

Briggs Standard right-hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Patented May 12, 1914



Stocks and Dies for Threading Thin Metal Tubing



Ordinary pipe stocks are too heavy for cutting fine threads on thin metal tubing.

These stocks are made of an aluminum composition and fitted with wooden handles to secure lightness.

Internal guides are provided for each cutting size. These guides support the tubing, preventing its being crushed or distorted, also insuring a straight start. Different diameter guides can be supplied to accommodate different thicknesses of tubing. Nickel plated or other highly polished pipe can be threaded without marring the surface, as so often happens with the old style external guide.

Dies fitting these stocks are of the same construction as dies described on page 78.

These sets are very light and reliable, and are indispensable to metal workers.

No. A Consisting of any three of the following sizes:

1", 1 $\frac{1}{8}$ ", 1 $\frac{1}{4}$ ", 1 $\frac{3}{8}$ ", 1 $\frac{1}{2}$ ", with one Stock and a Guide for each size die; in case (Extra dies \$2.00 each)

\$10.75

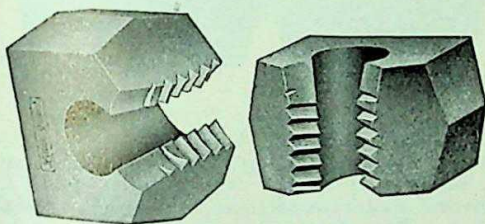
No. B Consisting of any two of the following sizes:

1 $\frac{3}{4}$ ", 2", 2 $\frac{1}{4}$ ", with one Stock, and a Guide for each size die; in case (Extra dies \$3.00 each)

\$13.00

All dies in above sets furnished with 27 threads per inch, unless otherwise specified.

Die Section



(Patented Feb. 23, 1915)

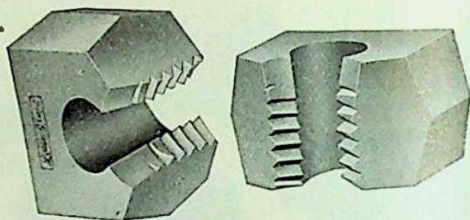
Little Giant

Double Bevel (Reversible) Die

Little Giant Adjustable Die

The "Adjustable Solid" Die

Reversible



If the working parts of a screw-cutting die are not held absolutely rigid, satisfactory results can never be secured, no matter how well the die may be made. In rigidity the *Little Giant* die has always excelled. When fastened in its collet or machine die-holder, the bevelled edges hold the die in a grip tighter than any vise. Increasing the working strain only tightens the grip. **Its design is unique and mechanically correct.**

The *Little Giant* die is made with a double bevel as shown in the illustration. Thus it can be reversed in the collet to permit cutting close to shoulder. The same dies can also be used interchangeably in plate or machine collets.

The steel of which *Little Giant* dies are made is the result of years of extensive experimental work. In both chemical content and heat treatment it is prepared especially for this one purpose.

The workmanship on *Little Giant* dies is produced by combining special machinery and highly skilled workmen, thoroughly checked by frequent inspection by fixed gages.

For further description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.

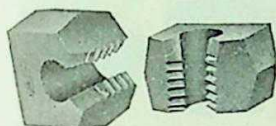
Other Types of Dies

Dies of other types, priced on the following pages, bearing the *Little Giant* trade-mark, are just as carefully machined, inspected and gaged and every effort made to keep them up to the highest possible grade.

Our facilities for doing this are strictly modern; more extensive and more scientifically balanced than any other similar plant in existence. Because of this fact we unqualifiedly and unhesitatingly guarantee our product free from defects in material or workmanship.

Little Giant Adjustable Dies

Reversible. Bolt Sizes
For 1¼" Diameter Collets



For description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.



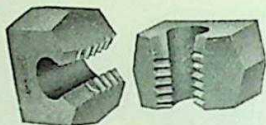
Price each 60 cents

Machine Screw Sizes

Size	Threads per Inch	
	A. S. M. E. Std.	Threads also Furnished
2	64	56
3	56	48
4	48	32, 36, 40
5	44	32, 36, 40
6	40	32, 36, 38, 48
7	36	32
8	36	30, 32
9	32	30
10	30	24, 28, 32
12	28	24, 32
14	24	20
• 16	22	18, 20

Little Giant Adjustable Dies

Reversible. Bolt Sizes
For 1 1/4" Diameter Collets



For further description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Price each 60 cents

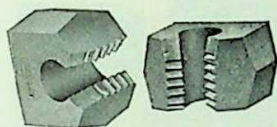
Fractional Sizes

Size	Threads per Inch				
	Regularly Furnished			Also Furnished	
	United States Form	Whitworth	V Form	U. S. Form	V-Form
1/16	64	60	72	60, 72	60, 64
5/64	64	60	72	60, 72	60, 64
3/32	50	48	56	48, 56	48, 50
7/64	50	48	56	48, 56	48, 50
1/8	40	40	40	32	32
9/64	40	40	40		
5/32	36	32	32	32	36
11/64	36	32	32	32	36
3/16	30	24	24	24, 32	30, 32
13/64	30	24	24	24	30
7/32	28	24	24	24, 32	28, 32
15/64	28	24	24	24	28
1/4	20	20	20	24, 27, 28, 32	24, 27, 32
17/64			20		
9/32			20		

Little Giant Adjustable Dies

Reversible. Bolt Sizes

For 1 5/8" Diameter Collets



For further description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

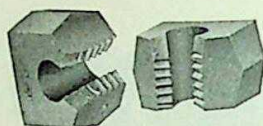


Size	Threads per Inch						
	A. S. M. E. Std.	United States Std.	Whit- worth Std.	V	Threads also Furnished		Price Each
					U. S. Form	V Form	
Machine Screw							
14	24				20		\$1.00
16	22				18, 20		1.00
18	20				18		1.00
20	20				16, 18		1.00
22	18						1.00
24	16						1.25
Fractional							
$\frac{1}{4}$		20	20	20	24, 27, 28, 32	24, 27, 32	1.00
$\frac{17}{64}$				20			1.00
$\frac{9}{32}$		18	18	20			1.00
$\frac{5}{16}$				18	20, 24, 27, 32	20, 24, 27, 32	1.00
$\frac{21}{64}$				18			1.00
$\frac{11}{32}$		16	16	18			1.00
$\frac{3}{8}$				16	20, 24, 27	20, 24, 27	1.25
$\frac{25}{64}$				16			1.25
$\frac{13}{32}$				16			1.25

Little Giant Adjustable Dies

For Screw Plates and Machines

Reversible. Bolt Sizes



These dies are reversible and may be used both in the *Little Giant* screw plates and threading machines.

For further description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.



United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

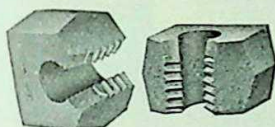
Size	Threads per Inch						
	United States Std.	S.A.E. Std.	Whitworth Std.	V	Threads also Furnished		Price
					U. S. Form	V Form	
$\frac{3}{16}$	30		24	24	24, 32	30, 32	\$1.00
$\frac{13}{64}$	30		24	24	24	30	1.00
$\frac{7}{32}$	28		24	24	24, 32	28, 32	1.00
$\frac{1}{4}$	20	28	20	20	24, 27, 32	24, 27, 32	1.00
$\frac{17}{64}$				20			1.00
$\frac{9}{32}$				20			1.00
$\frac{5}{16}$	18	24	18	18	20, 27, 32	20, 24, 27, 32	1.00
$\frac{21}{64}$				18			1.00
$\frac{11}{32}$				18			1.00
$\frac{3}{8}$	16	24	16	16	20, 27	20, 24, 27	1.25
$\frac{25}{64}$				16			1.25
$\frac{13}{32}$				16			1.25
$\frac{7}{16}$	14	20	14	14	27	20, 24, 27	1.25
$\frac{15}{32}$				14		12	1.25
$\frac{1}{2}$	13	20	12	12	12, 27	13, 16, 20, 27	1.50
$\frac{17}{32}$				12		13	1.50

Continued on page 83

Little Giant Adjustable Dies

For Screw Plates and Machines

Reversible. Bolt Sizes



Notes on previous page apply.

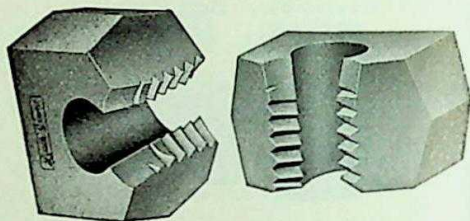
Continued
from page
82

Size	United States Std.	S.A.E. Std.	Whitworth Std.	V	Threads per Inch		Price Each
					U. S. Form	V Form	
$\frac{9}{16}$	12	18	12	12	14, 27	14, 27	\$1.50
$\frac{19}{32}$				12			1.50
$\frac{5}{8}$	11	18	11	11	10, 12, 20, 24, 27	10, 12, 20, 24, 27	1.75
$\frac{21}{32}$				11			1.75
$\frac{11}{16}$	11	16	11	11	12	12	1.75
$\frac{23}{32}$				11			1.75
$\frac{3}{4}$	10	16	10	10	12, 20, 27	12, 20, 27	2.00
$\frac{25}{32}$				10			2.00
$\frac{13}{16}$	10		10	10	12	12	2.00
$\frac{27}{32}$				10			2.00
$\frac{7}{8}$	9	14, 18	9	9	10, 12, 27	10, 12, 27	2.75
$\frac{29}{32}$				9			2.75
$\frac{15}{16}$	9		9	9	12	12	2.75
$\frac{31}{32}$				9			2.75
1	8	14	8	8	12, 27	12, 27	2.75
$\frac{11}{32}$				8			2.75
$\frac{11}{16}$	8			8	12	12	4.00
$\frac{11}{8}$	7	12	7	7		8, 12	4.00
$\frac{15}{32}$				7			4.00
$\frac{13}{16}$	7			7			4.00
$\frac{11}{4}$	7	12	7	7	12	12	4.00
$\frac{19}{32}$				7			4.00
$\frac{15}{16}$	7			7			5.00
$\frac{13}{8}$	6	12	6	6	12		5.00
$\frac{113}{32}$				6			5.00
$\frac{17}{16}$	6			6			5.00
$\frac{11}{2}$	6	12	6	6	12		5.00
$\frac{117}{32}$				6			5.00

Little Giant Adjustable Pipe Dies

For Pipe Plates and Machines

Reversible



These dies are reversible and may be used both in the *Little Giant* Pipe Plates and Pipe Threading Machines. Order by number.

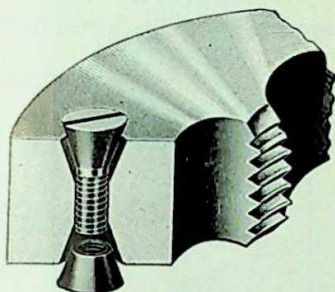
For further description of *Little Giant* dies and collets, cross sectional dimensions of die blanks and standard collet sizes, see pages 6-10.

Briggs Standard right-hand threads furnished in United States and Whitworth in other countries unless otherwise specified.



Used in Set Nos. See page 69	Size	Briggs Std.	Whitworth Std.	Price Each
260	$\frac{1}{8}$	27	28	\$1.00
	$\frac{1}{4}$	18	19	1.00
	$\frac{3}{8}$	18	19	1.00
	$\frac{1}{2}$	14	14	1.00
261 and 265	$\frac{1}{4}$	18	19	1.25
	$\frac{3}{8}$	18	19	1.25
	$\frac{1}{2}$	14	14	1.25
	$\frac{3}{4}$	14	14	1.25
	1	11 $\frac{1}{2}$	11	1.25
261 $\frac{1}{2}$	$\frac{1}{2}$	14	14	2.00
	$\frac{3}{4}$	14	14	2.00
	1	11 $\frac{1}{2}$	11	2.00
	1 $\frac{1}{4}$	11 $\frac{1}{2}$	11	2.00
287 and 274	1 $\frac{1}{2}$	11 $\frac{1}{2}$	11	3.00
262	1 $\frac{1}{4}$	11 $\frac{1}{2}$	11	3.00
	1 $\frac{1}{2}$	11 $\frac{1}{2}$	11	3.00
	2	11 $\frac{1}{2}$	11	3.00

Round Adjustable Die

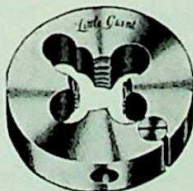


Detail Showing Adjustment of
Little Giant Round Adjustable Die



The distinctive feature of the *Little Giant* Round Adjustable Die is the simple adjustment, shown in the above illustration. The die without removal from holder, is adjusted on face side by a taper-head screw and cone-shaped nut. Adjustment is also equalized throughout its thickness, overcoming any tendency to cut tapering threads.

The clearance holes are exceptionally large, allowing abundant chip room.



Round Adjustable Dies

Machine Screw Sizes

Left-hand threads are special. Sizes and threads not listed are special.

Stocks for these dies listed on page 108.

Screw Plates containing these dies listed on pages 49-55.



Size	Threads per Inch	
	A. S. M. E.	Optional
0	80	
1	72	
1½		56
2	64	56
3	56	48
4	48	32, 36, 40, 42
5	44	32, 36, 40
6	40	32, 36
7	36	30, 32
8	36	30, 32
9	32	30
10	30	24, 28, 32
11		28, 30
12	28	24, 32
13		22, 24, 32
14	24	20
15		18, 24
16	22	18, 20
18	20	18
20	20	16, 18
22	18	
24	16	14

Prices

Dimensions of Die		Range of Sizes	Price Each
Outside Diameter	Thickness		
5/8"	1/4"	* 0-16	\$0.40
13/16"	9/32"	† 0-20	.40
1"	3/8"	‡ 4-24	.75

*For screw machine use we do not recommend dies in this size blank larger than No. 12 except with finer pitches.

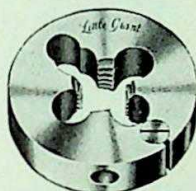
†For screw machine use we do not recommend dies in this size blank larger than No. 14 except with finer pitches.

‡For screw machine use we do not recommend dies in this size blank larger than No. 16 except with finer pitches.

Round Adjustable Dies

$1\frac{3}{16}$ " Outside Diameter. $\frac{9}{32}$ " Thick

British Association Sizes



Sizes and threads not listed are special.

Size	Pitch*	Price Each
0	1.00	\$.40
1	.90	.40
2	.81	.40
3	.73	.40
4	.66	.40
5	.59	.40
6	.53	.40
7	.48	.40
8	.43	.40
9	.39	.40
10	.35	.40
11	.31	.40
12	.28	.40



Stocks for these dies listed on page 108.

Screw plates containing above dies listed on page 55.

*For metric sizes and pitches send for special circular giving complete list of metric tools.

Round Adjustable Dies

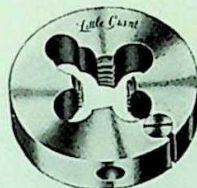
Fractional Sizes

Dimensions of dies and prices on opposite page.

Size	Threads per Inch				
	Reg. Furnished			Optional	
	U. S. Std.	Whit.	V	U. S. Form	V-Form
$1/16$	64	60	72	60, 72	60, 64
$5/64$	64	60	72	60, 72	60, 64
$3/32$	50	48	56	48, 56	48, 50
$7/64$	50	48	56	48, 56	48, 50
$1/8$	40	40	40	32	32
$9/64$	40	40	40		
$5/32$	36	32	32	32	36
$11/64$	36	32	32	32	36
$3/16$	30	24	24	24, 27, 32	30, 32
$13/64$	30	24	24	24	30
$7/32$	28	24	24	24, 32	28, 32
$15/64$	28	24	24	24	28
$1/4$	20	20	20	24, 27, 28, 32	24, 27, 32
$17/64$	20	20	20		
$9/32$	20	20	20		
$5/16$	18	18	18	20, 24, 27, 32	20, 24, 27, 32
$21/64$			18		
$11/32$			18		
$3/8$	16	16	16	20, 24, 27	20, 24, 27
$25/64$			16		
$13/32$			16	16	
$7/16$	14	14	14	20, 27	20, 24, 27
$15/32$			14		
$1/2$	13	12	12	12, 20, 27	13, 16, 20, 24, 27
$17/32$			12		13
$9/16$	12	12	12	18, 27	27
$19/32$			12		
$5/8$	11	11	11	12, 18, 27	12, 20, 27
$21/32$			11		
$11/16$	11	11	11	16	
$3/4$	10	10	10	12, 16, 27	12, 27
$25/32$			10		
$7/8$	9	9	9	12, 14, 18, 27	12, 27
$29/32$			9		
1	8	8	8	12, 14, 27	12, 27
$11/32$			8		
$11/8$	7	7	7	12	12
$15/8$			7		
$11/4$	7	7	7	12	
$19/8$			7		
$13/8$	6	6	6	12	
$113/32$			6		
$11/2$	6	6	6	12	
$117/32$			6		

Round Adjustable Dies

Fractional Sizes



United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

V exact, V oversize and S.A.E. threads furnished at same prices. Sizes and threads not listed are special.

Cutting sizes and pitches on opposite page.



Diam.	Thickness	Range of Sizes	Price Each	*Sizes Recommended
$\frac{5}{8}$ "	$\frac{1}{4}$ "	$\frac{1}{16}$ - $\frac{9}{32}$	\$.40	$\frac{1}{16}$ - $\frac{7}{32}$
$\frac{13}{16}$ "	$\frac{9}{32}$ "	$\frac{1}{16}$ - $\frac{11}{32}$	.40	$\frac{1}{16}$ - $\frac{1}{4}$
1"	$\frac{3}{8}$ "	$\frac{1}{8}$ - $\frac{1}{2}$	.75	$\frac{1}{8}$ - $\frac{9}{32}$
$1\frac{5}{16}$ "	$\frac{7}{16}$ "	$\frac{1}{4}$ - $\frac{17}{32}$	1.00	$\frac{1}{4}$ - $\frac{13}{32}$
$1\frac{7}{16}$ "	$\frac{1}{2}$ "	$\frac{1}{4}$ - $\frac{21}{32}$	1.00	$\frac{1}{4}$ - $\frac{1}{16}$
$1\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{4}$ - $\frac{21}{32}$	1.00	$\frac{1}{4}$ - $\frac{17}{32}$
$1\frac{9}{16}$ "	$\frac{9}{16}$ "	$\frac{1}{4}$ - $\frac{21}{32}$	1.25	$\frac{1}{4}$ - $\frac{17}{32}$
$1\frac{3}{4}$ "	$\frac{9}{16}$ "	$\frac{1}{4}$ - $\frac{17}{32}$	1.25	$\frac{1}{4}$ - $\frac{9}{16}$
		$\frac{9}{16}$ - $\frac{21}{32}$	1.50	
		$\frac{3}{4}$ - $\frac{25}{32}$	1.75	
		$\frac{1}{4}$ - $\frac{17}{32}$	1.25	
2"	$\frac{5}{8}$ "	$\frac{9}{16}$ - $\frac{21}{32}$	1.50	$\frac{1}{4}$ - $\frac{21}{32}$
		$\frac{3}{4}$ - $\frac{25}{32}$	1.75	
		$\frac{1}{4}$ - $\frac{17}{32}$	1.25	
		$\frac{9}{16}$ - $\frac{21}{32}$	1.50	
$2\frac{1}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ - $\frac{25}{32}$	1.75	$\frac{3}{8}$ - $\frac{3}{4}$
		$\frac{3}{4}$ - $\frac{25}{32}$	2.00	
		$\frac{7}{8}$ - $\frac{29}{32}$	2.25	
		$1 - \frac{11}{32}$	2.50	
$2\frac{1}{2}$ "	$\frac{3}{4}$ "	$\frac{3}{8}$ - $\frac{17}{32}$	1.50	$\frac{3}{8}$ - $1\frac{1}{32}$
		$\frac{9}{16}$ - $\frac{21}{32}$	1.75	
		$\frac{3}{4}$ - $\frac{25}{32}$	2.00	
		$\frac{7}{8}$ - $\frac{29}{32}$	2.25	
3"	$\frac{3}{4}$ "	$1 - \frac{11}{32}$	2.50	$1 - \frac{11}{32}$
		$1 - \frac{11}{32}$	5.00	
3"	$\frac{1}{2}$ "	$1 - \frac{11}{32}$	5.00	$1 - \frac{11}{32}$
		$1 - \frac{11}{32}$	5.00	

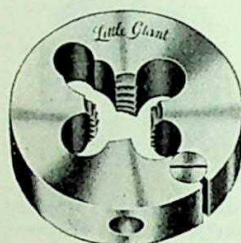
*We do not recommend dies in each size blank larger than those given in this column (except with finer pitches) for screw machine use.

Stocks for these dies listed on page 108.

Screw Plates containing round adjustable dies listed on pages 49 to 55.

Round Adjustable Dies

S. A. E. (formerly A. L. A. M.) Standard



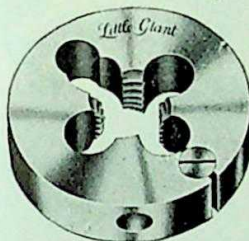
Size	Threads per inch	Outside Diameter and Price Each									
		1"	1 5/16"	1 7/16"	1 1/2"	1 9/16"	1 3/4"	2"	2 1/4"	2 1/2"	3"
1/4	28	\$.75	\$1.00	\$1.00	\$1.00	\$1.25	\$1.25	\$1.25			
5/16	24	.75	1.00	1.00	1.00	1.25	1.25	1.25			
3/8	24	.75	1.00	1.00	1.00	1.25	1.25	1.25	\$1.50	\$1.50	
7/16	20	.75	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	
1/2	20	.75	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	
9/16	18			1.00	1.00	1.25	1.50	1.50	1.75	1.75	
5/8	18			1.00	1.00	1.25	1.50	1.50	1.75	1.75	
3/4	16						1.75	1.75	2.00	2.00	
7/8	14-18								2.25	2.25	
1	14								2.50	2.50	\$5.00
1 1/8	12										5.00
1 1/4	12										5.00
1 3/8	12										5.00
1 1/2	12										5.00

Screw plates containing Round Adjustable Dies listed on pages 38-39.

Stocks for above dies listed on page 108.

Round Adjustable Dies

Pipe Sizes



Briggs Standard threads furnished in United States and Whitworth in other countries unless otherwise specified.

Size	Threads per Inch		Outside Diameters and Prices		
	Briggs Std.	Whit. Std.	1½"	2"	2½"
⅛	27	28	\$1.00	\$1.25	\$1.50
¼	18	19	1.00	1.50	1.75
⅜	18	19	1.00	1.75	2.00
½	14	14		1.75	2.25
¾	14	14		1.75	2.50
1	11½	11			2.50

Round die stocks listed on page 108.

Bushings for Round Dies

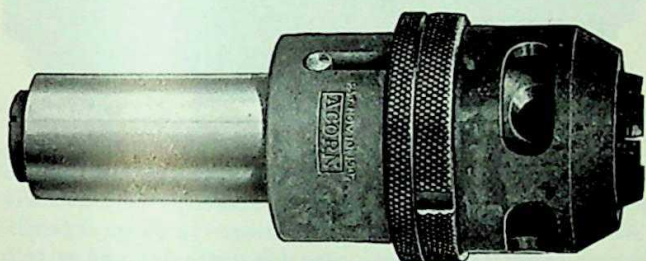


These bushings are for converting Round Adjustable Dies to a larger diameter.

Dies of a size and pitch, which, if bought in a larger diameter blank than listed, would be charged as special, may frequently be obtained at regular prices and adapted by means of these bushings to a larger holder.

Bushings Outside Diam.	For Dies Outside Diam.	Price Each
1	$\frac{5}{8}$	\$.50
1	$\frac{13}{16}$	.50
$1\frac{5}{16}$	$\frac{13}{16}$	.75
$1\frac{1}{2}$	1	.75
2	1	.75
$2\frac{1}{4}$	1	1.00
$2\frac{1}{2}$	1	1.00
$2\frac{3}{4}$	$1\frac{5}{16}$	1.00
$2\frac{1}{2}$	$1\frac{5}{16}$	1.00
3	2	1.00

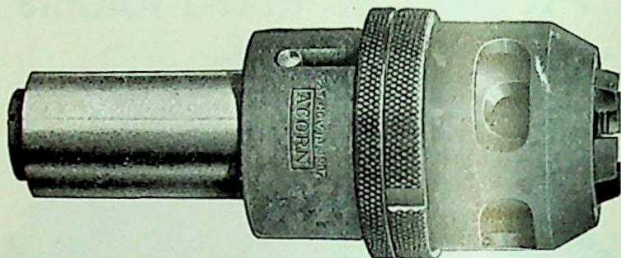
Acorn Die and Holders



Patented Nov. 19, 1907

The Acorn Die and Holders

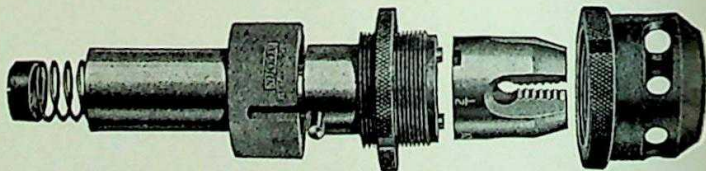
Patented Nov. 19, 1907



The invention and development of the Acorn Die and its holders has been one of the most noteworthy improvements in the whole field of machine screw cutting. It is so radically different that its originality and unusual features demand attention—yet there are so few parts that it is extremely free from complication as will be seen from the view of parts below.

The Acorn Die combines the clean-cutting and re-sharpening features of the *Spring Die with the rigidity of a solid die, and adds an accuracy of adjustment impossible in other types of dies.

The Acorn Die, by means of its various holders, is adapted to all kinds of machines; lathes, drill presses, hand or automatic screw machines, turret lathes, bolt cutters, etc.

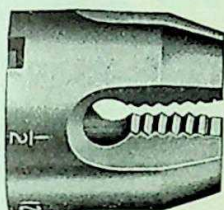


Prices of Dies and Holders on pages 97-98.

*On account of its superiority the Acorn Die and holder supersedes the Spring Die and the latter is therefore not listed in this catalog.

The Acorn Die and Holder

Patented Nov. 19, 1907



The Die

Adjustment

The adjustment is positive and equal.

The adjusting cap is bevelled on the inside to fit the corresponding bevel on the prongs of the die. By turning this threaded cap the correct adjustment is instantly obtained, all the prongs converging **equally** toward the center.

For convenience in adjusting, every Acorn Die is sent out with a test cutting (actually made with the die) which serves as a set plug.

When the adjustment is correct the cap is held in position by the lock nut immediately back of it.

Interchangeability

The die is held in perfect alignment with the shank. The dies are uniform in length. This means that once a machine is set, a die may be removed for sharpening, a new die set in its place and the machine is ready at once for threading to exactly the same length.

Grinding

The Acorn Die can be ground even more easily and quickly than a spring die. The grinding is done in the flutes, on the cutting faces.

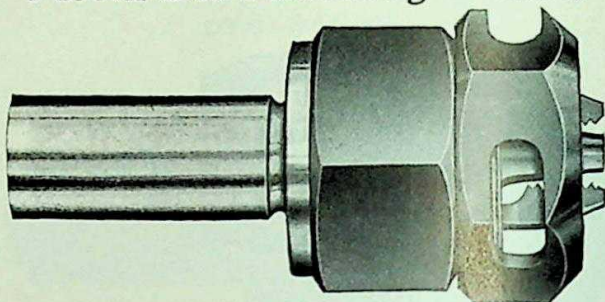
Holders

All parts of the holders are made of steel and hardened.

The regular Acorn Die holder shown on opposite page is of a smaller diameter than any other die holder of equal cutting size. It has a longitudinal float, permitting the die to follow its own lead independent of any lag in the travel of the machine.

Other styles of holders are shown on page 96.

Acorn Die Releasing Holder



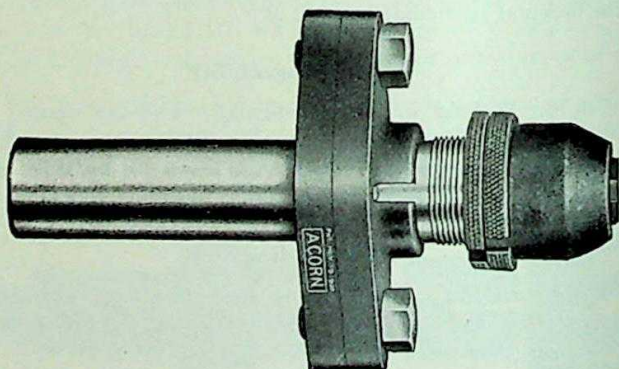
The releasing type of holder for the Acorn Die is of particular value where the die is required to cut threads of uniform length or close to shoulder.

The danger of accident to the die and set-up of the machine is minimized by the use of this holder.

On multiple spindle machines where the threading operation is shorter than some simultaneous operation the die—when it reaches the end of its cut—is released and revolves with the work until it is engaged by the reversing pins which back it off.



Acorn Die Adjustable Holder

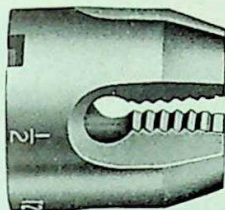


This type of holder is designed for the purpose of correcting misalignment in screw machines.

The loose flange of the holder body can be moved to any desired position—to bring the die into perfect alignment with the spindle—and locked into position.

The die holding part is so made as to allow the die to have a slight float of its own to insure freedom from cramping if the material should run slightly out of true.

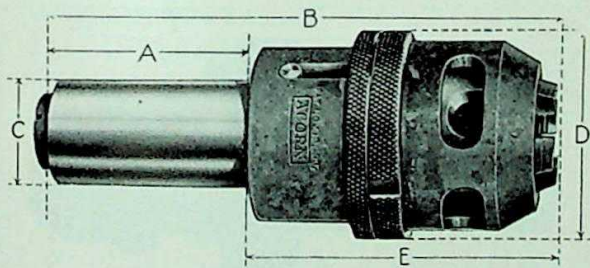
Acorn Die Holder



Acorn Die

In ordering dies specify both number and cutting size.

No. of Die	Range Inches	Dia. of Blank Inches	Length Inches	Price Each Die
00	.015 to .062	$\frac{5}{16}$	$\frac{5}{16}$	\$.75
0	.062 to .112	$\frac{3}{8}$	$\frac{3}{8}$	.75
1	.112 to .234	$\frac{5}{8}$	$\frac{1}{2}$	1.00
2	.234 to .4375	$\frac{7}{8}$	$\frac{7}{8}$	1.25
3	.4375 to .6875	$1\frac{1}{4}$	$1\frac{1}{4}$	1.75
4	.6875 to 1.000	$1\frac{3}{4}$	$1\frac{3}{4}$	2.50

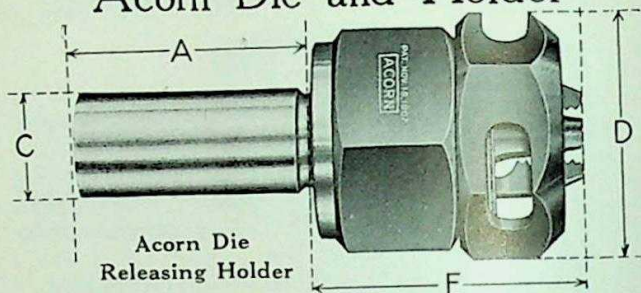


Regular Acorn Die Holder

No. Holder	*No. Die	Lengths		Diameters		Length Thread Will Cut Inches	Price Holder only
		Shank (A) Inches	Body Incl. Die (E) Inches	Shank (C) Inches	Body (D) Inches		
7000	00	$1\frac{1}{8}$, 2	$1\frac{3}{16}$	$\frac{5}{8}$, $\frac{3}{4}$	$1\frac{1}{16}$	$1\frac{1}{16}$	\$ 3.00
700	0	$1\frac{1}{8}$, 2	$1\frac{3}{8}$	$\frac{5}{8}$, $\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	3.00
701	1	$1\frac{1}{8}$, 2	$1\frac{1}{2}$	$\frac{5}{8}$, $\frac{3}{4}$	1	$1\frac{3}{16}$	4.00
702	2	2, 3	$2\frac{1}{16}$	$\frac{7}{8}$, 1	$1\frac{1}{2}$	$2\frac{1}{16}$	5.00
703	3	3	$3\frac{1}{16}$	$1\frac{1}{4}$	$1\frac{15}{16}$	$2\frac{1}{2}$	10.00
704	4	$3\frac{1}{4}$	$4\frac{1}{16}$	$1\frac{1}{4}$, $1\frac{1}{2}$	$2\frac{5}{8}$	$3\frac{3}{8}$	15.00

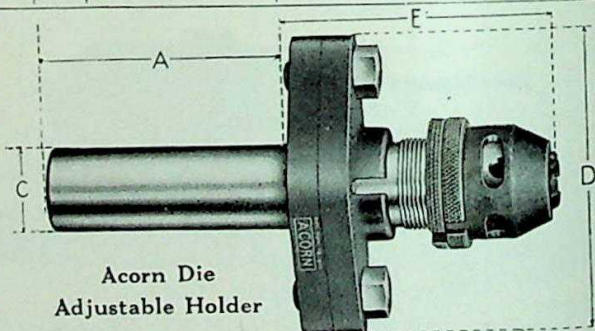
*For range of cutting sizes see table above.

Acorn Die and Holder



Acorn Die
Releasing Holder

No. Holder	*No. Die	Length		Diameters		Length Thread Will Cut Inches	Price Holder only
		Shank (A) Inches	Body Incl. Die (E) Inches	Shank (C) Inches	Body (D) Inches		
721	00	1 5/8	1	1/2	7/8	3/4	\$ 9.00
722	0	1 1/2	1 1/8	1/2	1	13/16	9.00
723	1	1 1/4	1 3/8	1/2, 5/8	1 1/16	1	11.00
724	2	1 1/4, 1 1/2	1 13/16	5/8, 3/4	1 3/4	1 3/8	14.00
725	3	1 1/2, 2 1/4	2 3/16	3/4, 1	2 7/16	1 7/8	18.00
726	4	1 3/4	3 1/16	1, 1 1/4	3 3/16	2 7/16	24.00

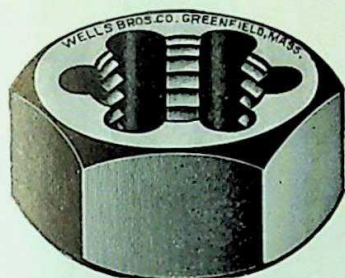


Acorn Die
Adjustable Holder

No. Holder	*No. Die	Lengths		Diameters		Length Thread Will Cut Inches	Price Holder only
		Shank (A) Inches	Body Incl. Die (E) Inches	Shank (C) Inches	Body (D) Inches		
741	00	1 1/4, 1 3/4	1 3/16	1/2, 5/8	1 1/2	any	\$ 5.00
742	0	1 1/4, 1 3/4	1 5/16	1/2, 5/8	1 5/8	any	5.00
743	1	1 1/4, 1 3/4	1 19/32	1/2, 5/8	2 1/4	any	7.00
744	2	1 1/4, 2	2 3/32	5/8, 3/4	3	1 7/8	9.00
745	3	1 1/2, 2 1/2	2 23/32	3/4, 1	3 3/8	2 3/8	12.00
746	4	2 1/2, 3 1/2	3 1/2	1, 1 1/4	4 1/4	3	17.50

*In ordering dies for these holders specify both number of die and cutting size wanted. For capacity of die see page 97.

Solid Hexagon Dies



These dies are used principally for repair work, and for dressing over bruised or rusty threads, and will go into any space that Hexagon Nuts will go into.

They can be used in bit-brace sockets, ratchet or monkey-wrenches, and will be found convenient in many ways.

They are accurate, durable and will give satisfactory service.

United States Standard threads recommended and furnished unless otherwise ordered.

V exact and V oversize threads furnished at regular prices.

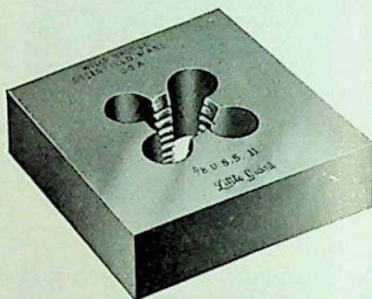


Size	Threads per Inch				Size of Die		Price Each
	U. S. Std.	S. A. E. Std.	Whit. Std.	V	Across Flats	Thickness	
$\frac{1}{4}$	20	28	20	20	$\frac{19}{32}$	$\frac{1}{4}$	\$.30
$\frac{5}{16}$	18	24	18	18	$\frac{11}{16}$	$\frac{5}{16}$	.40
$\frac{3}{8}$	16	24	16	16	$\frac{25}{32}$	$\frac{3}{8}$	.50
$\frac{7}{16}$	14	20	14	14	$\frac{7}{8}$	$\frac{7}{16}$	.60
$\frac{1}{2}$	13	20	12	12	$\frac{11}{16}$	$\frac{1}{2}$	.70
$\frac{9}{16}$	12	18	12	12	$\frac{11}{16}$	$\frac{1}{2}$	.80
$\frac{5}{8}$	11	18	11	11	$\frac{11}{16}$	$\frac{5}{8}$	.90
$\frac{11}{16}$	11	16	11	11	$\frac{17}{16}$	$\frac{5}{8}$	.95
$\frac{3}{4}$	10	16	10	10	$\frac{17}{16}$	$\frac{3}{4}$	1.00
$\frac{7}{8}$	9	14	9	9	$\frac{15}{8}$	$\frac{7}{8}$	1.10
1	8	14	8		$\frac{113}{16}$	1	1.20
$\frac{11}{8}$	7	12	7		2	1	1.40
$\frac{11}{4}$	7	12	7		$\frac{23}{16}$	1	1.60
$\frac{13}{8}$	6	12	6		$\frac{23}{8}$	1	1.80
$\frac{11}{2}$	6	12	6		$\frac{29}{16}$	1	2.00

Nut Wrenches for Bit-Brace listed on page 256.

Solid Square Dies

For Bolts



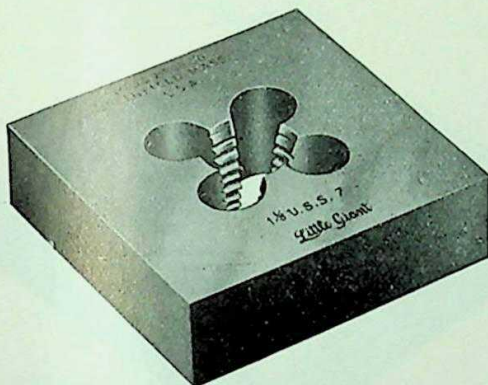
United States Standard threads recommended and furnished unless otherwise ordered. Left-hand threads are special. Sizes and threads not listed are special.

We list also a square collet for holding *Little Giant* Adjustable Dies, a practical substitute for the solid square die. See page 103.

Size	Threads per Inch			Dimensions		Price Each
	U. S. Std.	Whit. Std.	V	Size of Square	Thickness	
$\frac{1}{4}$	20	20	20	$2\frac{1}{2}$	$\frac{1}{2}$	\$1.80
$\frac{9}{32}$			20	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{5}{16}$			18	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{11}{32}$	18	18	18	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{3}{8}$			16	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{13}{32}$			16	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{7}{16}$	14	14	14	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{15}{32}$			14	$2\frac{1}{2}$	$\frac{1}{2}$	1.80
$\frac{1}{2}$			12	$2\frac{1}{2}$	$\frac{3}{4}$	1.80
$\frac{17}{32}$	13, 12	12	12	$2\frac{1}{2}$	$\frac{3}{4}$	1.80
$\frac{9}{16}$			12	$2\frac{1}{2}$	$\frac{3}{4}$	1.90
$\frac{19}{32}$			12	$2\frac{1}{2}$	$\frac{3}{4}$	1.90
$\frac{5}{8}$	11	11	11	$2\frac{1}{2}$	$\frac{3}{4}$	2.00
$\frac{21}{32}$			11	$2\frac{1}{2}$	$\frac{3}{4}$	2.00

Solid Square Dies

For Bolts

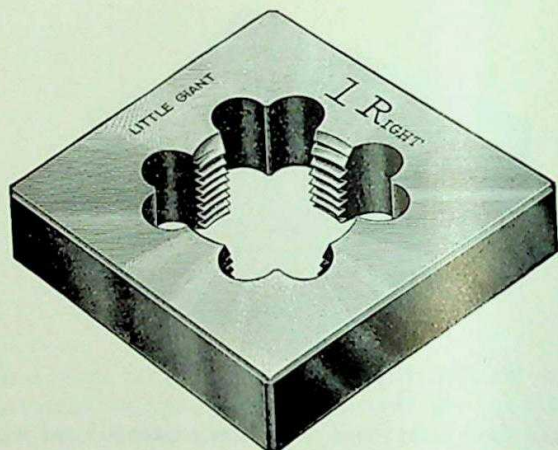


United States Standard threads recommended and furnished unless otherwise ordered. Left-hand threads are special. Sizes and threads not listed are special.

Size	Threads per Inch			Dimensions		Price Each
	U. S. Std.	Whit. Std.	V	Size of Square	Thickness	
$1\frac{1}{16}$	11	11	11	$2\frac{1}{2}$	$\frac{3}{4}$	\$2.10
$\frac{3}{4}$	10	10	10	$2\frac{1}{2}$	$\frac{3}{4}$	2.20
$2\frac{5}{32}$			10	$2\frac{1}{2}$	$\frac{3}{4}$	2.20
$\frac{13}{16}$	10	10	10	$2\frac{1}{2}$	$\frac{3}{4}$	2.30
$\frac{7}{8}$	9	9	9	$2\frac{1}{2}$	$\frac{3}{4}$	2.40
$2\frac{9}{32}$			9	$2\frac{1}{2}$	$\frac{3}{4}$	2.40
$1\frac{5}{16}$	9	9	9	$2\frac{1}{2}$	$\frac{3}{4}$	2.55
1	8	8		$2\frac{1}{2}$	1	2.70
$1\frac{1}{32}$			8	$2\frac{1}{2}$	1	2.70
$1\frac{1}{8}$	7	7		$2\frac{1}{2}$	1	3.00
$1\frac{5}{32}$			7	$2\frac{1}{2}$	1	3.00
$1\frac{1}{4}$	7	7		$2\frac{1}{2}$	1	3.30
$1\frac{9}{32}$			7	$2\frac{1}{2}$	1	3.30
$\frac{13}{8}$	6	6		$2\frac{1}{2}$	1	3.60
$1\frac{13}{32}$			6	$2\frac{1}{2}$	1	3.60
$1\frac{1}{2}$	6	6		3	1	3.90
$1\frac{17}{32}$			6	3	1	3.90

Solid Square Dies

For Pipe



Will fit any make of stock holding dies of dimensions given below.

We list also a square collet for holding *Little Giant* Adjustable Dies, a practical substitute for the solid square die. See page 104.

Right-hand Briggs Standard threads sent unless otherwise ordered. Whitworth threads also furnished.

Left-hand threads at same prices.

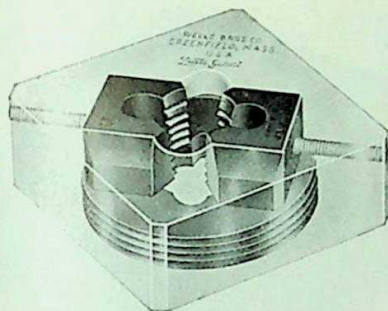
Sizes not listed are special.

Sizes	Size of Square (Inches)	Thickness (Inches)	Price Each
			Die
$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	2	$\frac{1}{2}$	\$1.50
$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	$2\frac{3}{8}$	$\frac{3}{4}$	2.00
$\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$	$2\frac{7}{8}$	$\frac{3}{4}$	2.50
1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2	$3\frac{7}{8}$	$\frac{7}{8}$	3.50

Solid Square Collets

For *Little Giant* Adjustable Dies

Bolt Sizes



A practical substitute for solid square dies.

Because of the tendency of solid dies to wear large through constant use, they are being rapidly superseded by adjustable dies.

Little Giant Dies are not only adjustable to compensate for wear, but are held in these collets by a wedge-grip which gives them the rigidity of solid dies.

United States Standard form of thread recommended and furnished unless otherwise ordered. Dies will be sent with any pitch or form of thread listed on pages 82-83 at prices given below. Sizes and threads not listed are special.

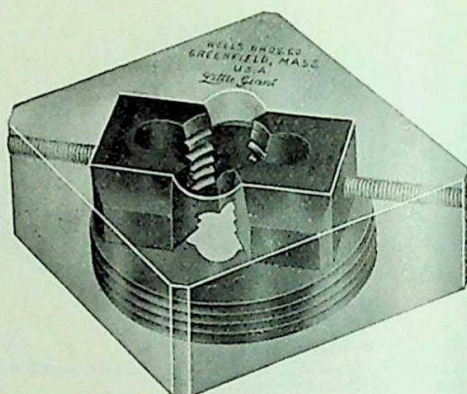
Cutting Sizes	Prices of Dies and Collets, complete		
	No. 1 2 1/2" x 2 1/2" x 1"	No. 2 3" x 3" x 1"	No. 3 4" x 4"
1/4	\$1.60	\$2.00	....
5/16	1.60	2.00	....
3/8	1.85	2.25	....
7/16	1.85	2.25	....
1/2	2.10	2.50	\$2.50
9/16	2.10	2.50	2.50
5/8	2.35	2.75	2.75
11/16	2.35	2.75	2.75
3/4	2.60	3.00	3.00
13/16	2.60	3.00	3.00
7/8	3.35	3.75	3.75
15/16	3.35	3.75	3.75
1	3.35	3.75	3.75
1 1/8	....	....	5.00
1 1/4	....	....	5.00
1 3/8	....	....	6.00
1 1/2	....	....	6.00
Collet* Only Price	\$.60	\$1.00	\$1.00

*A collet consists of a cap and guide, only.

Solid Square Collets

For *Little Giant* Adjustable Dies

Pipe Sizes



A practical substitute for solid square pipe dies.

Square collets holding *Little Giant* two-piece adjustable dies, as illustrated above, fit stocks and holders for square dies, $2\frac{1}{2} \times 2\frac{1}{2}$, 3×3 and 4×4 .

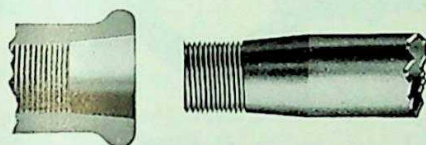
Sizes	Prices of Dies and Collets, complete		
	No. 1 $2\frac{1}{2} \times 2\frac{1}{2} \times 1$ " Holds No. 260 Pipe Dies	No. 2 $3 \times 3 \times 1$ " Holds No. 260 Pipe Dies	No. 3 $4 \times 4 \times 1$ " Holds Pipe Dies Specified
$\frac{1}{8}$	\$1.60	2.00	\$2.25
$\frac{1}{4}$	1.60	2.00	2.25
$\frac{3}{8}$	1.60	2.00	2.25
$\frac{1}{2}$	1.60	2.00	2.25
$\frac{3}{4}$	....	....	2.25
1	....	....	2.25
$1\frac{1}{4}$	....	....	3.00
			261 Die
			261 1/2 Die
Collet* only			
Price	\$.60	\$1.00	\$1.00

*A collet consists of cap and guide only.

Die Stocks, Collets and Holders

Stocks for Screw Plates

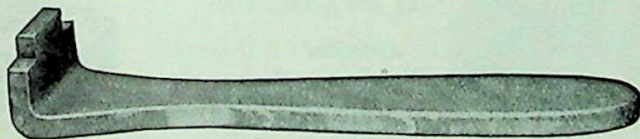
The bodies of these stocks are made of malleable iron, providing toughness, which is ideal for the use to which they are put. They are given a handsome mottled finish.



The handles (except smallest sizes, which are solid) are of electrically welded steel tubing; light but very strong; knurled at the outer ends; removable for convenience in packing or carrying. Unlike most die stocks, the strain between handles and body does not come upon the threads; but the sockets in the body are tapered to fit a like taper near the ends of the handles. The threads merely draw these tapered surfaces together. See cut.



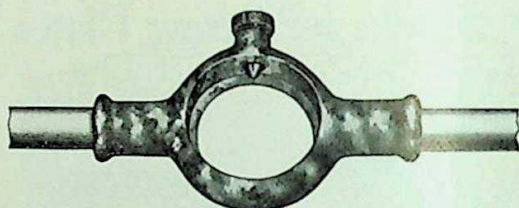
Guide Wrench



This illustrates the style of wrench which we make for tightening and loosening the guides in the stocks of *Little Giant* Screw Plates. They are made in three sizes to fit the various size collets as shown below.

For Collets	Diameter Collet	Price
A1 and A10	1¼" and 5⁄8"	\$0.30
No. 1	2"	.30
5	2¾"	.40
20 and 25	4" and 4½"	.50

Stocks and Collets for Bolt Screw Plates



These stocks are used in all *Little Giant* Single Stocked Screw Plates, illustrated on pages 12 to 37. In each of these assortments one stock accommodates all the collets regardless of the sizes of the dies, except in a very few cases where a wide range of cutting sizes necessitates the use of two stocks.

Stocks if so specified will be furnished with die and guide, making a complete equipment for cutting any one size.



Cap

A collet consists of a cap and guide only.

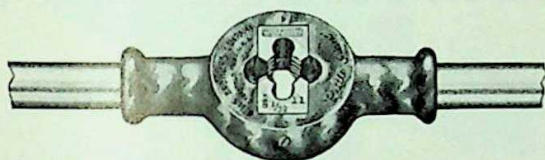
Little Giant Adjustable Dies fitting these collets listed on pages 79 to 83 inclusive.



Guide

No. of Collet or Stock	Diam. of Collet	Sizes of Dies	Price Each			Length of Stock	Price of Stock
			Cap	Guide	Collet Complete		
A1	1 1/4"	{ 2 -16 { 1/16 - 9/32 }	\$.25	\$.15	\$.40	7 1/2"	\$.70
A10	1 5/8"	{ 14 -24 { 1/4 - 3/8 }	.30	.20	.50	13 1/2"	1.25
1	2"	1/4 - 1/2	.30	.20	.50	14 1/2"	1.50
5	2 3/4"	1/4 - 1	.30	.20	.50	23"	2.00
7	2 3/4"	1/4 - 1	.30	.20	.50	26"	2.00
9	2 3/4"	1/2 - 1	.30	.20	.50	29"	2.00
20	4"	5/8 - 1 1/4	1.00	.50	1.50	40"	6.00
25	4 1/2"	7/8 - 1 1/2	1.00	.50	1.50	52"	8.00

Full-Mounted Stocks



The die slot in this stock is bevelled to fit *Little Giant* Dies, the same as slots in *Little Giant* Collets described on page 106.

When ordered complete, each die is adjusted with its guide in a separate stock and is ready for use.



Size	Prices of Stocks and Parts				Stock, Die and Guide complete
	Stock only	Length of Stock	Guide only	Die only	
$\frac{3}{16}$	\$.50	8 $\frac{3}{4}$ "	\$.20	\$1.00	\$1.70
$\frac{1}{4}$	.50	8 $\frac{3}{4}$ "	.20	1.00	1.70
$\frac{5}{16}$	.50	8 $\frac{3}{4}$ "	.20	1.00	1.70
$\frac{3}{8}$	.50	13 $\frac{1}{2}$ "	.20	1.25	1.95
$\frac{7}{16}$	.75	13 $\frac{1}{2}$ "	.20	1.25	2.20
$\frac{1}{2}$	.75	20 $\frac{1}{2}$ "	.20	1.50	2.45
$\frac{9}{16}$	.75	20 $\frac{1}{2}$ "	.20	1.50	2.45
$\frac{5}{8}$	.75	25 $\frac{1}{2}$ "	.20	1.75	2.70
$\frac{11}{16}$	.75	25 $\frac{1}{2}$ "	.20	1.75	2.70
$\frac{3}{4}$	.75	25 $\frac{1}{2}$ "	.20	2.00	2.95
$\frac{13}{16}$	1.00	29"	.20	2.00	3.20
$\frac{7}{8}$	1.00	29"	.20	2.75	3.95
$1\frac{1}{16}$	1.00	29"	.20	2.75	3.95
1	1.00	29"	.20	2.75	3.95
$1\frac{1}{8}$	1.75	39 $\frac{1}{2}$ "	.50	4.00	6.25
$1\frac{1}{4}$	1.75	39 $\frac{1}{2}$ "	.50	4.00	6.25
$1\frac{3}{8}$	2.25	50"	.50	5.00	7.75
$1\frac{1}{2}$	2.25	50"	.50	5.00	7.75

Screw Plates containing these Stocks listed on pages 40 to 48 inclusive.

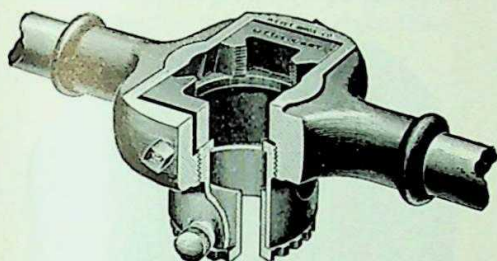
Stocks for Round Adjustable Dies



Dies for these Stocks listed on pages 85 to 92 inclusive.

No.	Dia. of Dies	Length	Weight	Price
B	$\frac{5}{8}$	5	1 oz.	\$.40
D	$1\frac{3}{16}$	$6\frac{1}{4}$	2 oz.	.50
F	1	9	5 oz.	.75
G	$1\frac{5}{16}$	14	1 lb.	1.25
I	$1\frac{7}{16}$	14	$1\frac{1}{4}$ lb.	1.25
M	$1\frac{1}{2}$	14	$1\frac{1}{4}$ lb.	1.25
H	$1\frac{9}{16}$	16	$1\frac{1}{4}$ lb.	1.50
L	$1\frac{3}{4}$	18	$1\frac{1}{2}$ lb.	1.50
P	2	18	$1\frac{7}{8}$ lb.	1.50
R	$2\frac{1}{4}$	26	2 lbs.	1.75

Stocks and Parts for Pipe Sets



The guide with each stock will hold various sizes of bushings corresponding to the different sizes of dies.

No.	Size of Die	Stock	Length	Guide	Bushing
260.	$\frac{1}{8}$ - $\frac{1}{2}$	\$1.00	25"	\$.50	\$.25
261	$\frac{1}{4}$ - 1	2.00	36"	.75	.35
261½	$\frac{1}{2}$ - 1¼	3.50	40½"	.85	.45
262	1¼ - 2	5.25	51½"	1.00	.60
265	$\frac{1}{2}$ - 1	2.00	36"	.75	.35



Complete assortments using these Stocks listed on pages 68 and 69.

Parts for Full-Mounted Pipe Sets

Each die is adjusted in a separate stock and ready for use.

No.	Size of Die	Length of Stock	Stock only	Guide	Die
280	$\frac{1}{8}$	9	\$.50	\$.25	\$1.00
281	$\frac{1}{4}$	13½	.50	.25	1.00
282	$\frac{3}{8}$	22½	1.00	.25	1.00
283	$\frac{1}{2}$	25	1.00	.25	1.00
284	$\frac{3}{4}$	31½	2.00	.50	1.25
285	1	36	2.00	.50	1.25
286	1¼	40½	3.50	.75	2.00
287	1½	50	4.50	.75	3.00
288	2	51½	5.25	.75	3.00

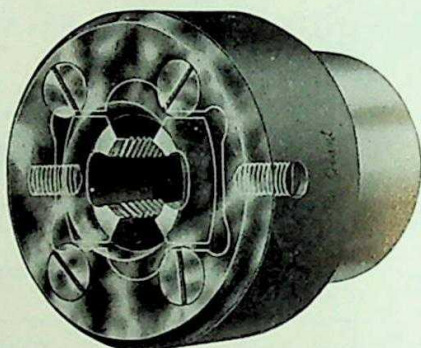
Complete assortments using these Stocks listed on pages 70 and 71.

Give numbers and sizes when ordering.

Briggs Standard right hand threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Machine Collets

For *Little Giant* Adjustable Bolt Dies



Little Giant Bolt Dies are adapted to machine use by means of collets illustrated above. The dies are adjustable and are put into the face side of the collet. A plate is screwed over the top, clamping the die halves firmly in place by wedging the bevels of the die into corresponding bevels in the holder, a grip which tightens as the working strain increases.

United States Standard form of thread recommended and furnished unless otherwise ordered.

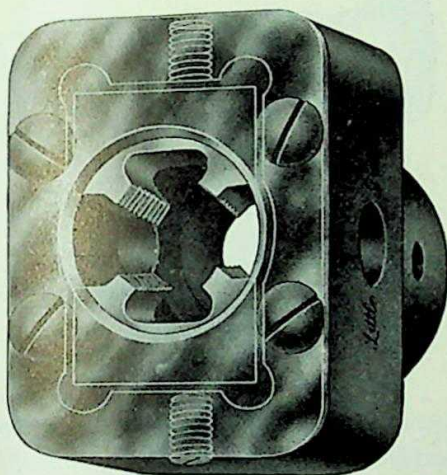
Dies may be obtained in any pitch or form of thread listed on pages 82-83 at prices listed below.

Sizes and threads not listed are special.

Size	Die and Collet complete	Collet only	Die only	Size	Die and Collet complete	Collet only	Die only
$\frac{1}{4}$	\$2.00	\$1.00	\$1.00	$1\frac{1}{16}$	\$3.50	\$1.50	\$2.00
$\frac{5}{16}$	2.00	1.00	1.00	$\frac{7}{8}$	4.25	1.50	2.75
$\frac{3}{8}$	2.25	1.00	1.25	$1\frac{5}{16}$	4.25	1.50	2.75
$\frac{7}{16}$	2.25	1.00	1.25	1	4.25	1.50	2.75
$\frac{1}{2}$	2.50	1.00	1.50	$1\frac{1}{8}$	5.50	1.50	4.00
$\frac{9}{16}$	2.50	1.00	1.50	$1\frac{1}{4}$	5.50	1.50	4.00
$\frac{5}{8}$	2.75	1.00	1.75	$1\frac{3}{8}$	6.50	1.50	5.00
$1\frac{1}{16}$	2.75	1.00	1.75	$1\frac{1}{2}$	6.50	1.50	5.00
$\frac{3}{4}$	3.00	1.00	2.00				

Machine Collets

For *Little Giant* Adjustable Pipe Dies



Little Giant Pipe Dies are adapted to machine use by means of collets illustrated above. The dies are adjustable and are put into the face side of the collet. A plate is screwed over the top, clamping the die halves firmly in place by wedging the bevels of the die into corresponding bevels in the holder, a grip which tightens as the working strain increases.

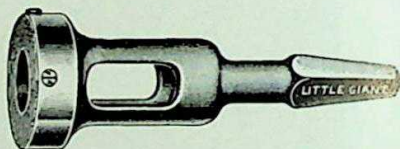
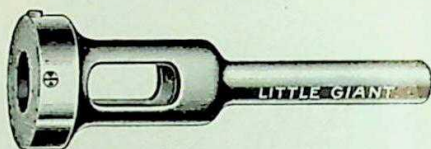
Right-hand Briggs Standard threads sent unless otherwise ordered. Whitworth threads also furnished.

Left-hand threads at regular prices.

SIZE	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Price of Dies . . .	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$3.00	\$3.00	\$3.00	\$4.00	4.00
Price of Collets..	2.00	2.00	2.00	2.00	2.00	2.00	3.50	3.50	3.50	5.00	5.00

Die Holders

For Round Adjustable Dies



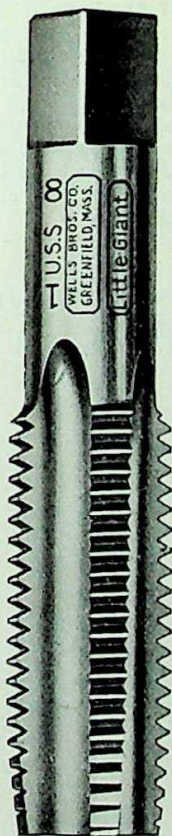
These holders are stocked with round shanks for use in lathes and screw machines, also with squared shanks for bit brace use.

Specify style of shank and diameter if round shank is desired.

Holder No.	Diameter of Dies	Diameter of Round Shanks	Price Each Holder only	
			Round Shank	Bit Brace Shank
1	$\frac{5}{8}$	$\frac{1}{2}$	\$.50	\$.75
2	$\frac{13}{16}$	$\frac{1}{2}$, $\frac{9}{16}$, $\frac{11}{16}$	.50	.75
3	1	$\frac{1}{2}$, $\frac{9}{16}$, $\frac{11}{16}$	.75	1.00
4	$1\frac{1}{16}$	$\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$	1.50	..
5	$1\frac{3}{16}$	$\frac{3}{4}$, $\frac{13}{16}$, 1	2.75	..
6	$2\frac{1}{4}$	$1\frac{1}{16}$, $1\frac{1}{8}$, $1\frac{1}{4}$	4.00	..

Dies fitting these holders listed on pages 86-91.

Tap Section



Machine Screw Taps

A. S. M. E. Standard



These Taps are made according to specifications recommended by the American Society of Mechanical Engineers at the Indianapolis meeting, May, 1907. They are universally replacing the makeshift sizes formerly used, and conduce to interchangeability of taps and screws produced by different manufacturers.*

Taps of this style furnished in sets of three, Taper, Plug, and Bottoming, when desired, at regular prices.

Less than six taps of one size and thread charged as single taps.

Plug Taps sent unless otherwise ordered.

Sizes and threads not listed are special.

Left-hand threads are special.



Size	Threads per Inch (Basic Pitch Diameter in small type)		Prices	
	A. S. M. E. Standard	Optional	Each	Per Doz.
0	80 .052		\$.35	\$4.00
1	72 .064		.35	4.00
1½		56 .068	.35	4.00
2	64 .076	56 .074	.35	4.00
3	56 .087	48 .086	.35	4.00
4	48 .099	32, 36, 40 .092 .094 .096	.35	4.00
5	44 .110	32, 36, 40 .105 .107 .109	.35	4.00
6	40 .122	32, 36 .118 .120	.35	4.00

(Continued on next page)

*See tables on pages 274-279.

On each of these taps larger than No. 8 the size of the drill to be used is stamped on the shank. On the smallest sizes this information is printed on the label of the box.

Machine Screw Taps

A. S. M. E. Standard*



(Concluded)

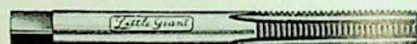
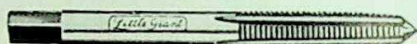
Size	Threads per Inch (Basic Pitch Diameter in small type)		Prices	
	A. S. M. E. Standard	Optional	Each	Per Doz.
7	36 .123	32 .131	\$.35	\$4.00
8	36 .146	30, 32 .142 .144	.35	4.00
9	32 .167	30 .165	.35	4.00
10	30 .168	24, 28, 32 .163 .167 .170	.35	4.00
11			.35	4.00
12	28 .193	24, 32 .189 .196	.35	4.00
13			.38	4.40
14	24 .215	20 .210	.38	4.40
15			.38	4.40
16	22 .239	18, 20 .232 .236	.38	4.40
18	20 .262	18 .268	.38	4.40
20	20 .288	16, 18 .279 .284	.45	5.30
22	18 .310		.45	5.30
24	16 .331		.45	5.30
26	16 .357		.53	6.30
28	14 .378		.53	6.30
30	14 .404		.53	6.30



*See tables given on pages 274-279.

Hand Taps

(Smaller than 1/4")



A set consists of three taps, one each Taper, Plug and Bottoming.

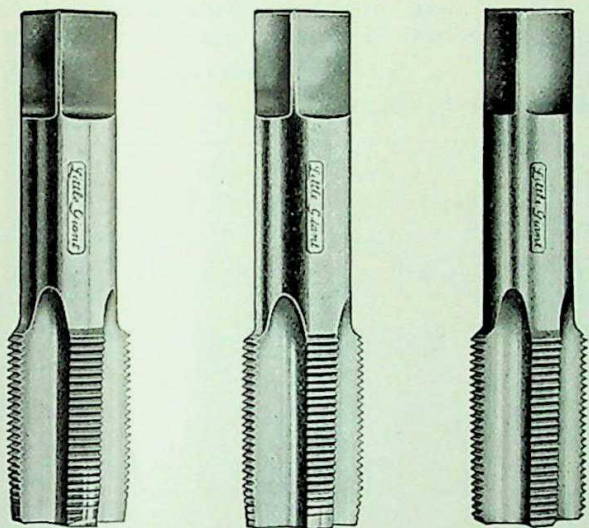
United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

Size	Threads per Inch (Basic Pitch Diameter in small type)					Prices	
	Regularly Furnished			Also Furnished			
	U. S. Std.	Whit.	V	U. S. Form	V Form	Each	Per Set
1/16	64 .052	60 .052	72 .052	60, 72 .052 .054	60, 64 .050 .051	\$.35	\$1.05
5/64	64 .068	60 .067	72 .068	60, 72 .067 .069	60, 64 .066 .066	.35	1.05
3/32	50 .081	48 .081	56 .080	48, 56 .080 .082	48, 50 .078 .079	.35	1.05
7/64	50 .096	48 .096	56 .096	48, 56 .096 .098	48, 50 .094 .094	.35	1.05
1/8	40 .109	40 .109	40 .106	32 .105	32 .102	.35	1.05
9/64	40 .124	40 .125	40 .122			.35	1.05
5/32	36 .138	32 .136	32 .133	32 .136	36 .135	.35	1.05
11/64	36 .154	32 .152	32 .149	32 .152	36 .151	.35	1.05
3/16	30 .166	24 .161	24 .156	24, 32 .160 .167	30, 32 .163 .164	.35	1.05
13/64	30 .181	24 .177	24 .172	24 .176	30 .178	.35	1.05
7/32	28 .196	24 .192	24 .188	24, 32 .192 .198	28, 32 .192 .195	.35	1.05
15/64	28 .211	24 .208	24 .203	24 .207	28 .208	.35	1.05

Sizes 1/4" and larger listed on pages 119-122.

Short-thread Taps



For particular work, especially in tough materials, taps with length of thread shorter than regular will stand the strain better than longer taps.

By shortening the threaded portion of the tap (the weaker section) the point of application of the power is brought nearer the point of resistance. The tap is thereby fortified against torsional strains and made more serviceable for work in tough metals.

By shortening the total length of tap, distortion in hardening is practically eliminated, resulting in closer accuracy and greater uniformity.

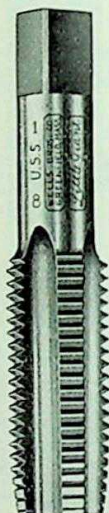
A large number of reserve threads is a valuable feature for a tap if it can stand all the strains required of it, because when the chamfered threads at the point which do the cutting are worn away, the remaining threads may be utilized, prolonging the life of the tap. However, owing to a variety of causes, the majority of regular length taps break before they are ever re-ground, and the unused threaded portion held in reserve is not only lost before it may be utilized, but is in itself a source of weakness.

Since it is possible to considerably shorten the threaded portion of fine thread taps and still maintain the same number of threads as on standard taps, we strongly recommend this style for the finer pitches. The taps are thereby enabled to endure greater strains and at the same time have sufficient number of threads held in reserve to permit grinding scores of times.

Hand Taps



Taper



Plug



Bottoming

Hand Taps $1\frac{1}{32}$ " and smaller are regularly furnished with shanks the full size of thread.

If requested, United States, S.A.E. and Whitworth Standard Hand Taps will be furnished with shanks full size of thread, at regular prices, up to and including $\frac{1}{2}$ ".



Hand Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

A "set" consists of one each Taper, Plug and Bottoming Tap.

Size	Threads per Inch (Basic Pitch Diameter in small type)						Prices	
	U. S. Std.	Whit. Std.*	V	Optional		Each	Per Set	
				U. S. Form	V Form			
1/4	20 .218	20 .218	20 .213	24, 27, 28, 32 .223 .226 .227 .230	24, 27, 32 .219 .222 .227	\$.45	\$1.35	
17/64			20 .218			.45	1.35	
9/32			20 .244			.45	1.35	
5/16	18 .276	18 .277	18 .271	20, 24, 27, 32 .280 .285 .289 .292	20, 24, 27, 32 .275 .281 .285 .289	.50	1.50	
21/64			18 .287			.50	1.50	
11/32			18 .302			.50	1.50	
3/8	16 .334	16 .335	16 .328	20, 24, 27 .343 .348 .351	20, 24, 27 .338 .344 .347	.55	1.65	
25/64			16 .344			.55	1.65	
13/32			16 .359			.55	1.65	
7/16	14 .391	14 .392	14 .384	20, 27 .405 .414	20, 24, 27 .400 .406 .410	.60	1.80	
29/64			14 .400			.60	1.80	
15/32			14 .415		12 .406	.60	1.80	
1/2	13 .430	12 .447	12 .438	12, 20, 27 .446 .468 .476	13, 16, 20, 24, 27 .442 .463 .463 .469 .472	.70	2.10	
33/64			12 .453			.70	2.10	
17/32			12 .469		13 .474	.70	2.10	
9/16	12 .508	12 .509	12 .500	18, 27 .526 .539	27 .535	.80	2.40	



*Whitworth Taps with British Standard Fine pitches also furnished at same prices when desired. For sizes and number of threads, see table on page 282.

Hand Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified. Sizes and threads not listed are special.

Size Continued from page 119	Threads per Inch (Basic Pitch Diameter in small type)					Prices	
	U. S. Std.	Whit. Std.*	V	Optional		Each	Per Set
				U. S. Form	V Form		
37/64			12 .516			\$.80	\$2.40
19/32			12 .531			.80	2.40
5/8	11 .566	11 .567	11 .557	12, 18, 27 .571 .589 .601	12, 20, 27 .563 .588 .597	.90	2.70
41/64			11 .572			.90	2.70
21/32			11 .588			.90	2.70
11/16	11 .629	11 .629	11 .619	16 .647		1.05	3.15
23/32			11 .651			1.05	3.15
3/4	10 .685	10 .686	10 .675	12, 16, 27 .696 .709 .726	12, 27 .688 .722	1.20	3.60
25/32			10 .706			1.20	3.60
13/16	10 .748	10 .749	10 .738	12 .758	12 .750	1.40	4.20
27/32			10 .769			1.40	4.20
7/8	9 .803	9 .804	9 .792	12, 14, 18, 27 .821 .829 .839 .851	12, 27 .813 .847	1.60	4.80
29/32			9 .823			1.60	4.80
15/16	9 .865	9 .866	9 .854	12 .883	12 .875	1.80	5.40
31/32			9 .885			1.80	5.40
1	8 .919	8 .920	8 .906	12, 14, 27 .946 .954 .976	12, 27 .938 .972	2.00	6.00
1 1/32			8 .958			2.00	6.00

(Continued on next page)

*Whitworth Taps with British Standard Fine pitches also furnished at same prices when desired. For sizes and number of threads, see table on page 282.



Hand Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

A "set" consists of one each Taper, Plug and Bottoming Tap.

Size Continued from page 120	Threads per Inch (Basic Pitch Diameter in small type)					Prices	
	U. S. Std.	Whit. Std.*	V	Optional		Each	Per Set
				U. S. Form	V Form		
1 1/16	8 .981		8 .969			\$2.15	\$ 6.45
1 1/8	7 1.032	7 1.034	7 1.018	12 1.071	12 1.063	2.25	6.75
1 5/32			7 1.049			2.25	6.75
1 3/16	7 1.095		7 1.080			2.45	7.35
1 1/4	7 1.157	7 1.159	7 1.143	12 1.196		2.60	7.80
1 9/32			7 1.174			2.60	7.80
1 5/16	7 1.220		7 1.205			2.80	8.40
1 3/8	6 1.267	6 1.268	6 1.250	12 1.321		3.00	9.00
1 13/32			6 1.281			3.00	9.00
1 1/2	6 1.392	6 1.393	6 1.375	12 1.446		3.50	10.50
1 17/32			6 1.406			3.50	10.50
1 5/8	5 1/2 1.507	5 1.497				4.20	12.60
1 3/4	5 1.620	5 1.622				5.00	15.00



(Continued on next page)

*Whitworth Taps with British Standard Fine pitches also furnished at same prices when desired. For sizes and number of threads, see table on page 282.

Hand Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

Size	Threads per Inch (Basic Pitch Diameter in small type)			Price	
	U. S. Std.	Whit. Std.*	V	Each	Per Set
Continued from page 121					
1 7/8	5 1.745	4 1/2 1.783	4 1/2 1.768	\$ 5.80	\$17.40
2	4 1/2 1.856	4 1/2 1.868	4 1/2 1.833	6.70	20.10
2 1/8	4 1/2 1.981	4 1/2 1.983	4 1/2 1.958	8.00	24.00
2 1/4	4 1/2 2.106	4 2.090	4 1/2 2.083	9.20	27.60
2 3/8	4 2.213	4 2.215	4 1/2 2.208	10.50	31.50
2 1/2	4 2.338	4 2.340	4 2.313	11.50	34.50
2 5/8	4 2.463	4 2.465	4 2.438	13.00	39.00
2 3/4	4 2.588	3 1/2 2.567	4 2.563	14.00	42.00
2 7/8	3 1/2 2.690	3 1/2 2.692	4 2.688	15.50	46.50
3	3 1/2 2.815	3 1/2 2.817	3 1/2 2.786	17.00	51.00
3 1/8	3 1/2 2.940	3 1/2 2.942	3 1/2 2.911	18.75	56.25
3 1/4	3 1/2 3.065	3 1/4 3.053	3 1/2 3.036	20.50	61.50
3 3/8	3 1/4 3.175	3 1/4 3.178	3 1/4 3.144	22.00	66.00
3 1/2	3 1/4 3.300	3 1/4 3.303	3 1/4 3.269	24.00	72.00
3 5/8	3 1/4 3.425	3 1/4 3.428	3 1/4 3.394	26.00	78.00
3 3/4	3 3.534	3 3.537	3 3.500	28.50	85.50
3 7/8	3 3.659	3 3.662	3 3.625	30.00	90.00
4	3 3.784	3 3.787	3 3.750	32.50	97.50

*Whitworth Taps with British Standard Fine pitches also furnished at same prices when desired. For sizes and number of threads, see table on page 282.

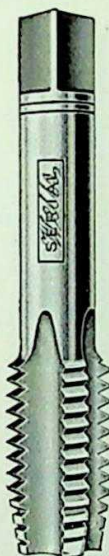


Wells Serial Taps

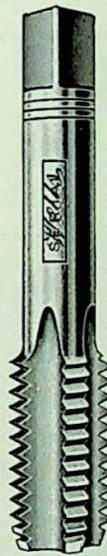
In Sets



No. 1



No. 2



No. 3



SERIAL

Wells Serial taps are furnished in United States Standard, S.A.E. Standard, and Whitworth Standard right-hand threads at regular prices.

Wells Serial Taps are a distinct advance over the old style taps for certain classes of work such as tapping hard, tough metal or blind holes.

Wells Serial Taps are so named because they are operated in a series, 1, 2 and 3. For convenience the different taps in the series are designated by rings cut in the shanks as shown in the illustration. These grooves also help to distinguish them from ordinary taps.

These taps are sold and should be used **only** in sets.

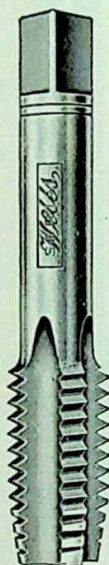
(Continued on next page)

Wells Serial Taps

(Continued)



No. 1



No. 2



No. 3

Unlike the old style taper, plug and bottoming hand taps each of which cuts the full size and form of thread — Wells Serial Taps are so made that the work and strain is divided proportionately among the three taps.

Thus No. 1 tap, the smallest of the three, both in outside and pitch diameter, makes the rougher cut. This is followed by No. 2 which cuts the thread a little fuller. Finally No. 3 tap smooths up the thread and brings it to exact size.

Wells Serial Taps have shorter threaded sections than ordinary sets of hand taps and this factor together with the division of working strain among the three taps results in a greatly lessened percentage of breakage.

Wells Serial Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

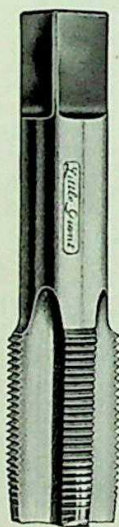
Size	Threads per Inch			Per Set
	U. S. Std.	S.A.E. Std.	Whit. Std.	No. 1, No. 2, No. 3
$\frac{1}{4}$	20	28	20	\$ 1.35
$\frac{5}{16}$	18	24	18	1.50
$\frac{3}{8}$	16	24	16	1.65
$\frac{7}{16}$	14	20	14	1.80
$\frac{1}{2}$	13	20	12	2.10
$\frac{9}{16}$	12	18	12	2.40
$\frac{5}{8}$	11	18	11	2.70
$\frac{11}{16}$	11	16	11	3.15
$\frac{3}{4}$	10	16	10	3.60
$\frac{13}{16}$	10		10	4.20
$\frac{7}{8}$	9	14, 18	9	4.80
$\frac{15}{16}$	9		9	5.40
1	8	14	8	6.00
$1\frac{1}{16}$	8		8	6.45
$1\frac{1}{8}$	7	12	7	6.75
$1\frac{3}{16}$	7		7	7.35
$1\frac{1}{4}$	7	12	7	7.80
$1\frac{5}{16}$	7		7	8.40
$1\frac{3}{8}$	6	12	6	9.00
$1\frac{7}{16}$	6		6	9.75
$1\frac{1}{2}$	6	12	6	10.50
$1\frac{5}{8}$	$5\frac{1}{2}$		5	12.60
$1\frac{3}{4}$	5		5	15.00
$1\frac{7}{8}$	5		$4\frac{1}{2}$	17.40
2	$4\frac{1}{2}$		$4\frac{1}{2}$	20.10



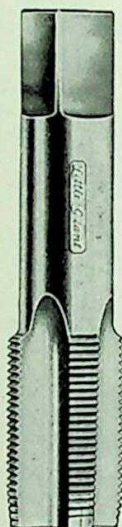
Hand Taps

S.A.E. Standard

(formerly A.L.A.M.)



Taper



Plug



Bottoming

A set consists of one each Taper, Plug and Bottoming Tap. Plug Taps always sent unless otherwise ordered.

The Society of Automobile Engineers, having taken under its jurisdiction technical matters pertaining to motor construction formerly handled by the Association of Licensed Automobile Manufacturers, this standard of screw threads is now referred to as the S.A.E. Standard. It has been extended to comprise sizes up to and including $1\frac{1}{2}$ inches.

These taps are made in the improved short thread design fully described on page 117.

Hand Taps

S.A.E. Standard

(Formerly A.L.A.M.)

(This standard preserves the United States form of thread but the pitches are finer.)

Left-hand threads are special.

Size	Threads per Inch (Basic Pitch Dia. in small type)	Length Thread	Total Length	Price	
				Each	Per Set
$\frac{1}{4}$	28 .227	$3\frac{1}{32}$	$2\frac{1}{2}$	\$.45	\$ 1.35
$\frac{5}{16}$	24 .285	$1\frac{1}{16}$	$2\frac{5}{8}$	.50	1.50
$\frac{3}{8}$	24 .348	$1\frac{1}{16}$	$2\frac{11}{16}$	.55	1.65
$\frac{7}{16}$	20 .405	$1\frac{1}{16}$	$2\frac{13}{16}$	.60	1.80
$\frac{1}{2}$	20 .468	$1\frac{1}{16}$	$2\frac{15}{16}$	.70	2.10
$\frac{9}{16}$	18 .526	$1\frac{1}{16}$	$3\frac{1}{16}$	.80	2.40
$\frac{5}{8}$	18 .589	$1\frac{1}{8}$	$3\frac{3}{16}$	.90	2.70
$1\frac{1}{16}$	16 .647	$1\frac{3}{16}$	$3\frac{5}{16}$	1.05	3.15
$\frac{3}{4}$	16 .709	$1\frac{1}{4}$	$3\frac{1}{2}$	1.20	3.60
$\frac{7}{8}$	14-18 .829 .839	$1\frac{3}{8}$	$3\frac{13}{16}$	1.60	4.80
1	14 .954	$1\frac{1}{2}$	$4\frac{3}{16}$	2.00	6.00
$1\frac{1}{8}$	12 1.071	$1\frac{5}{8}$	$4\frac{7}{16}$	2.25	6.75
$1\frac{1}{4}$	12 1.196	$1\frac{13}{16}$	$4\frac{3}{4}$	2.60	7.80
$1\frac{3}{8}$	12 1.321	2	$5\frac{1}{8}$	3.00	9.00
$1\frac{1}{2}$	12 1.446	$2\frac{1}{4}$	$5\frac{1}{2}$	3.50	10.50



Machine Nut Taps with S.A.E. pitches listed on pages 128-130.

Tapper Taps with S.A.E. pitches listed on page 133.

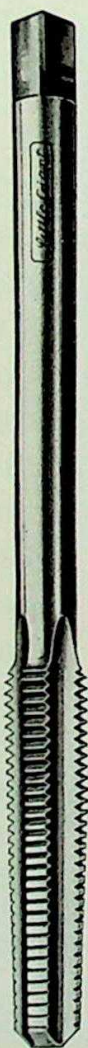
Tap Wrenches on pages 156-158.

Screw Plates containing these taps on pages 35-39.

Machine Nut Taps

The taper or chamfered portion of these taps extends back from the point two-thirds of the threaded length.

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.



Size	Threads per Inch (Basic Pitch Diameter in small type)						Price Each
	U. S. Std.	S. A. E. Std.	Whit. Std.	V	Optional		
					U.S. Form	V Form	
3/16	30 .166		24 .161	24 .166	32, 24 .167 .169		\$.60
7/32	28 .196			24 .188			.60
1/4	20 .218	28 .227	20 .218	20 .213	24 .223	24 .219	.60
17/64				20 .228			.60
9/32				20 .244			.60
5/16	18 .276	24 .285	18 .277	18 .271	20 .280		.70
21/64				18 .287			.70
11/32				18 .302			.70
3/8	16 .334	24 .348	16 .335	16 .328			.80
25/64				16 .344			.80
13/32				16 .359			.80
7/16	14 .391	20 .405	14 .392	14 .384			.90
15/32				14 .416			.90
1/2	13 .450	20 .468	12 .447	12 .438	12 .446	13 .442	1.00
17/32				12 .469			1.00
9/16	12 .508	18 .526	12 .509	12 .500			1.15
19/32				12 .531			1.15
5/8	11 .566	18 .589	11 .567	11 .567			1.30
21/32				11 .588			1.30

(Continued on next page)

Machine Nut Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

Size Continued from page 128	Threads per Inch (Basic Pitch Diameter in small type)				Price Each
	U. S. Std.	S.A.E. Std.	Whit. Std.	V Form	
1 1/16	11 .629	16 .647	11 .629	11 .619	\$1.45
2 3/32				11 .651	1.45
3/4	10 .686	16 .709	10 .686	10 .675	1.60
2 5/32				10 .706	1.60
1 3/16	10 .748		10 .749	10 .738	1.80
2 7/32				10 .769	1.80
7/8	9 .803	14, 18 .829 .839	9 .804	9 .792	2.10
2 9/32				9 .823	2.10
1 5/16	9 .865		9 .866	9 .854	2.40
3 1/32				9 .885	2.40
1	8 .919	14 .954	8 .920	8 .906	3.15
1 1/32				8 .938	3.15
1 1/8	7 1.032	12 1.071	7 1.034	7 1.018	3.60
1 5/32				7 1.049	3.60
1 1/4	7 1.157	12 1.196	7 1.159	7 1.143	4.25
1 9/32				7 1.174	4.25
1 3/8	6 1.267	12 1.321	6 1.268	6 1.250	4.80
1 13/32				6 1.281	4.80



(Continued on next page)

Machine Nut Taps

United States Standard threads furnished in United States and Whitworth in other countries, unless otherwise specified.

Sizes and threads not listed are special.

Size	Threads per Inch (Basic Pitch Diameter in small type)				Price Each
	U. S. Std.	S.A.E. Std.	Whit. Std.	V Form	
Continued from page 129					
1½	6 1.892	12 1.446	6 1.393	6 1.376	\$ 5.65
1⅞				6 1.406	5.65
1⅝	5½ 1.607		5 1.497		6.50
1¾	5 1.620		5 1.622		7.20
1⅞	5 1.745		4½ 1.733		8.25
2	4½ 1.856		4½ 1.858		9.25
2¼	4½ 2.106		4 2.090		12.25
2½	4 2.338		4 2.340		15.00
2¾	4 2.588		3½ 2.567		18.00
3	3½ 2.815		3½ 2.817		21.60
3¼	3½ 3.065		3¼ 3.053		26.88
3½	3¼ 3.300		3¼ 3.303		31.25
3¾	3 3.524		3 3.537		36.88
4	3 3.784		3 3.787		41.88



Pulley Taps

United States Standard threads furnished in the United States and Whitworth in other countries unless otherwise specified.

Left-hand threads are special.

Dia.	Threads per Inch (Basic Pitch Diameter in small type)		Lengths and Prices			
	U. S. Std.	Whit. Std.	6"	8"	10"	12"
$\frac{1}{4}$	20 .218	20 .218	\$.65	\$.70		
$\frac{5}{16}$	18 .276	18 .277	.75	.80		
$\frac{3}{8}$	16 .334	16 .335	.80	.90	\$1.10	\$1.30
$\frac{7}{16}$	14 .391	14 .392	.90	1.00	1.20	1.40
$\frac{1}{2}$	13 .450	12 .447	1.00	1.15	1.30	1.45
$\frac{5}{8}$	11 .566	11 .567		1.35	1.50	1.60
$\frac{3}{4}$	10 .685	10 .686			1.60	1.80

Customers desiring taps of proportions other than those listed, are invited to send specifications. Such orders will receive prompt and careful attention, as we are well equipped for this class of work.



Tapper Taps

The threads of these taps are tapered (or chamfered) back from the point two-thirds the length of the threaded portion.

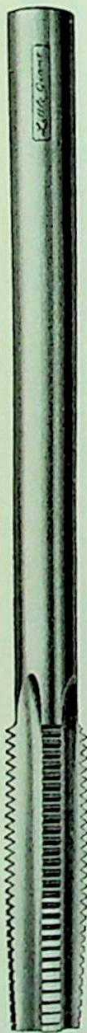
Tapper taps are furnished with four styles of shanks to fit the holders of machines in common use, as shown in the illustration of shank ends.

Specify size, length, form of thread and style of shank.

United States Standard threads furnished in United States and Whitworth in other countries unless otherwise specified.

Sizes and lengths not listed are special.

Left-hand threads are special.



Plain
Round



Plain
Square



Acme



National

Tapper Taps

Size	Threads per Inch (Basic Pitch Dia. in small type)			Lengths and Prices			
	U. S. Std.	U. S. Form	Whit. Std.	11"	12"	14"	15"
1/4	20 .218	28 .227	20 .218	\$.70	\$.75	\$.80	\$.90
5/16	18 .276	24 .285	18 .277	.80	.85	.90	1.00
3/8	16 .334	24 .349	16 .335	.90	.95	1.00	1.10
7/16	14 .391	20 .405	14 .392	1.00	1.05	1.15	1.25
1/2	13 .450	12, 20 .446 .468	12 .447	1.12	1.15	1.25	1.35
9/16	12 .508	18 .526	12 .509	1.30	1.35	1.45	1.55
5/8	11 .566	18 .589	11 .567	1.45	1.50	1.65	1.75
11/16	11 .629	16 .647	11 .629	1.62	1.70	1.80	1.95
3/4	10 .685	16 .709	10 .686	1.80	1.85	2.00	2.10
13/16	10 .748	....	10 .749	2.05	2.10	2.25	2.35
7/8	9 .803	14, 18 .829 .839	9 .804	2.35	2.45	2.60	2.75
15/16	9 .865	....	9 .866	2.70	2.75	3.00	3.15
1	8 .919	12, 14 .946 .954	8 .920	3.15	3.20	3.50	3.65
1 1/8	7 1.032	12 1.071	7 1.034	3.60	3.70	3.95	4.10
1 1/4	7 1.157	12 1.196	7 1.159	4.15	4.25	4.50	4.65
1 3/8	6 1.267	12 1.321	6 1.268	4.70	4.80	5.05	5.20
1 1/2	6 1.392	12 1.446	6 1.393	5.30	5.40	5.65	5.80
1 5/8	5 1/2 1.507	....	5 1.497	6.10	6.30	6.50	6.65
1 3/4	5 1.620	....	5 1.622	6.70	7.00	7.20	7.40
1 7/8	5 1.745	....	4 1/2 1.733	7.80	8.00	8.25	8.35
2	4 1/2 1.856	....	4 1/2 1.858	8.70	8.90	9.05	9.25



Stay Bolt Taps

Stay Bolt Taps of regular dimensions are proportioned as follows:— $\frac{1}{3}$ shank, $\frac{1}{3}$ thread ($\frac{1}{2}$ straight and $\frac{1}{2}$ taper) and $\frac{1}{3}$ reamer.

Stay Bolt Taps of other proportions furnished at special prices.

The diameter by which a Stay Bolt Tap is designated is that of the straight portion of the thread.

12 V threads per inch furnished on all Stay Bolt Taps unless otherwise ordered.

12 threads per inch United States Standard form and Whitworth Standard form at regular prices.

When ordering, give diameter, number of threads per inch, and length and dimensions of parts indicated on illustration by letters A, B, C, D and E, unless regular proportions are wanted.

Prices per linear inch are for Stay Bolt Taps 16 inches or more in length of regular proportions. Taps less than 16 inches in length charged as if 16 inches long.

Specification blanks furnished upon application.

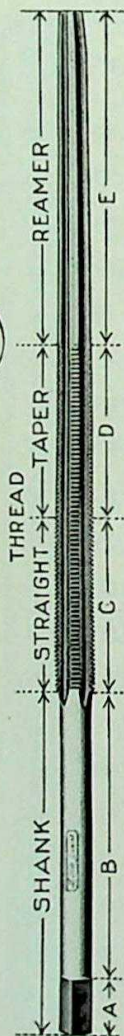
Prices and specifications of Stay Bolt Taps regularly stocked given on opposite page.

Notice—

Our facilities for satisfying customers are by no means limited to the scope of this catalog.

Customers requiring tools for special classes of work or desiring information on screw threading problems are requested to write us their specifications.

Wells Brothers Co. Div.



Stay Bolt Taps

Stay Bolt Taps listed below have regular proportions, viz: $\frac{1}{8}$ shank, $\frac{1}{8}$ thread, ($\frac{1}{2}$ taper and $\frac{1}{2}$ straight), and $\frac{1}{8}$ reamer. Taps of other proportions are special. When other proportions are desired, give detailed specifications. (See opposite page.)

12 V threads per inch furnished unless otherwise ordered.

Size (Outside diameter of straight thread)	Price each Lengths and Sizes carried in Stock					Other Lengths
	18"	21"	24"	30"	36"	Price per linear inch
$\frac{3}{4}$						\$.40
$\frac{7}{8}$	\$7.20	\$ 8.40	\$ 9.60	\$12.00	\$14.40	.40
$1\frac{5}{16}$	8.00	9.45	10.80	13.50	16.20	.45
1	8.00	9.45	10.80	13.50	16.20	.45
$1\frac{1}{16}$	9.00	10.50	12.00	15.00	18.00	.50
$1\frac{1}{8}$	9.00	10.50	12.00	15.00	18.00	.50
$1\frac{3}{16}$						.55
$1\frac{1}{4}$						.55
$1\frac{5}{16}$						.60
$1\frac{3}{8}$						.60
$1\frac{7}{16}$						.70
$1\frac{1}{2}$						.70



Spindle Stay Bolt Taps

Used for re-tapping Stay Bolt holes from the inside of fire boxes of locomotives.

12 V threads per inch furnished unless otherwise ordered.

12 threads per inch United States Standard Form and Whitworth Standard Form at regular prices.

Taps of sizes and lengths not listed made to specifications. Prices quoted on application.



Size	Lengths		Length over all	Dia. of Spindle	Length of Spindle	Price Each
	Fluted Thread	Unfluted Thread				
$\frac{3}{4}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	\$ 8.00
$\frac{13}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	8.50
$\frac{7}{8}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	9.00
$\frac{15}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	9.50
1	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	10.00
$1\frac{1}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	10.50
$1\frac{1}{8}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	11.00
$1\frac{3}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	11.50
$1\frac{1}{4}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	12.00
$1\frac{5}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	12.25
$1\frac{3}{8}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	12.50
$1\frac{7}{16}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	12.75
$1\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{3}{4}$	$7\frac{5}{8}$	$\frac{3}{8}$	11	13.00



Stove Bolt Taps



These taps correspond in sizes and threads to the American Screw Company's Stove Bolts.

Sizes and threads not given in this list will be charged at special prices.



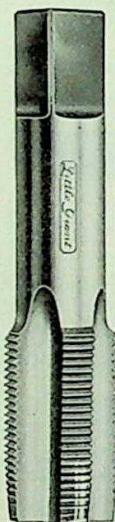
Taps with left-hand threads are special.

Less than six Taps of a size will be charged as single Taps.

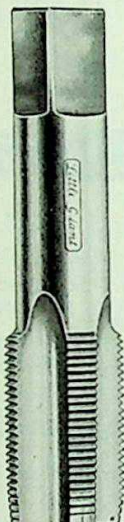
Size	No. of Threads per Inch	Prices	
		Each	Per Dozen
$\frac{5}{32}$	28	\$.35	\$4.00
$\frac{3}{16}$	24	.35	4.00
$\frac{7}{32}$	22	.35	4.00
$\frac{1}{4}$	18	.38	4.40
$\frac{5}{16}$	18	.38	4.40
$\frac{3}{8}$	16	.45	5.30

Hand Taps

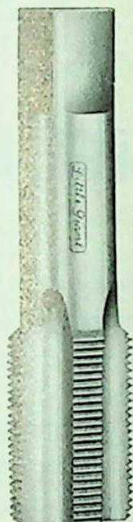
French and International Standards



Taper



Plug



Bottoming

The form of thread is the same as United States Standard but different pitches are used, designated in millimeters. Left-hand threads are special.

Diameter in Millimeters	Pitch in Millimeters		Prices	
	Int. Std.	French Std.	Each	Per Set
2	.45	.45	\$.35	\$1.05
3	.55	.50	.35	1.05
4	.70	.75	.35	1.05
5	.85	.75	.35	1.05
6	1.00	1.00	.35	1.05
7	1.00	1.00	.45	1.35
8	1.25	1.00	.50	1.50
9	1.25	1.00	.55	1.65
10	1.50	1.50	.55	1.65
11	1.50		.60	1.80
12	1.75	1.50	.70	2.10

Tap Wrenches listed on pages 156-158.

Screw Plates listed on pages 54-55.

Hand Taps

French and International Standard

The form of thread is the same as United States Standard.

Left-hand threads are special.

Diameter in Millimeters	Pitch in Millimeters		Prices	
	Int. Std.	French Std.	Each	Per Set
14	2.00	2.00	\$.80	\$ 2.40
16	2.00	2.00	.90	2.70
18	2.50	2.50	1.05	3.15
20	2.50	2.50	1.40	4.20
22	2.50	2.50	1.60	4.80
24	3.00	3.00	1.80	5.40
26	....	3.00	2.00	6.00
27	3.00	....	2.25	6.75
28	....	3.00	2.25	6.75
30	3.50	3.50	2.60	7.80
32	....	3.50	2.60	7.80
33	3.50	3.50	2.60	7.80
34	....	3.50	2.80	8.40
36	4.00	4.00	3.00	9.00
38	....	4.00	3.50	10.50
39	4.00	....	3.50	10.50
40	....	4.00	4.20	12.60



Tap Wrenches listed on pages 156-158.

Screw Plates listed on pages 54-55.

Hand Taps

British Association Sizes

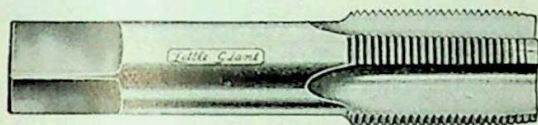


Size	Pitch in Millimeters	Length	Price Each
0	1.00	$2\frac{17}{32}$	\$.35
1	.90	$2\frac{1}{2}$	.35
2	.81	$2\frac{5}{16}$	.35
3	.73	$2\frac{7}{32}$	.35
4	.66	$2\frac{3}{32}$	.35
5	.59	$1\frac{31}{32}$	.35
6	.53	$1\frac{15}{16}$	.35
7	.48	$1\frac{27}{32}$	.35
8	.43	$1\frac{23}{32}$	.35
9	.39	$1\frac{5}{8}$	.35
10	.35	$1\frac{9}{16}$	.35
11	.31	$1\frac{9}{16}$	.35
12	.28	$1\frac{9}{16}$	.35

Tap Wrenches listed on pages 156-158.

Screw Plates containing these Taps listed on page 55.

Brass Tubing Taps



Size	Actual Outside Diameter		Threads per Inch (Basic Pitch Diameter in small type)		Price Each
	U.S.	Whit.	U. S. Form	Whitworth	
.148	.148		32 .128		\$.45
.196	.196		32 .176		.45
No. 4	.246		27 .222		.45
¼	.260	.250	27 .236	26 .225	.45
⅝	.342	.313	27 .318	26 .288	.50
⅜	.390	.375	27 .366	26 .350	.55
⅞	.459	.438	27 .435	26 .413	.60
½	.515	.500	27 .491	26 .475	.70
⅝	.578	.563	27 .654	26 .638	.80
⅝	.637	.625	27 .613	26 .600	.90
¾	.770	.750	27 .746	26 .725	1.20
⅞	.885	.875	27 .861	26 .850	1.60
1	1.006	1.000	27 .982	26 .975	2.00

Bit Brace Shanks



With these holders any size and pitch of hand taps from 0 to $\frac{1}{2}$ inch may be used in a Bit Brace.

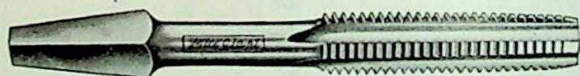
Their value is readily apparent when one considers that only a limited range of sizes and pitches may be bought in the ordinary Bit Brace style of tap at regular prices.

These shanks are made in two capacities.



No.	Range	Price Per Dozen
334	{ 0-18 Machine Screw Sizes } { 0- $\frac{9}{32}$ Fractional Sizes }	\$ 6.00
335	{ 14-30 Machine Screw Sizes } { $\frac{5}{16}$ - $\frac{1}{2}$ Fractional Sizes }	12.00

Bit Brace Taps



United States Standard threads recommended and furnished unless otherwise ordered.

Sizes and threads not listed are special.

Left-hand threads are special.

Diameter Inches	No. Threads per Inch		Total Length Inches	Price Each
	U. S. Std.	V		
$\frac{3}{16}$	30	24	$3\frac{1}{4}$	\$.50
$\frac{1}{4}$	20	20	$3\frac{3}{8}$	.50
$\frac{5}{16}$	18	18	$3\frac{1}{2}$	.55
$\frac{3}{8}$	16	16	$3\frac{5}{8}$	.60
$\frac{13}{32}$	..	14	$3\frac{5}{8}$	.60
$\frac{7}{16}$	14	14	$3\frac{3}{4}$	.70
$\frac{15}{32}$	..	12	$3\frac{3}{4}$	.70
$\frac{1}{2}$	13	12	$3\frac{7}{8}$	.80

Taps for Beaman & Smith Holders



We only list taps made to fit holders Nos. 1 and 2. Prices of taps fitting holders 2½ and 3 furnished when requested.

United States Standard threads recommended and furnished unless otherwise ordered.

Plug Taps always sent unless otherwise ordered.

Left-hand threads are special.

Sizes and threads not listed are special.

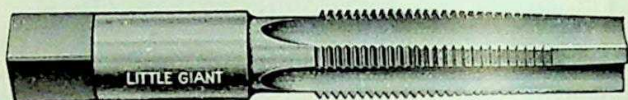
Prices of Pipe Taps with shanks fitting Beaman & Smith holders furnished when requested.



Size	Threads per Inch			Dia. Shank	Price Each	
	U. S. Std.	S. A. E. Std.	V		For Holder No. 1	For Holder No. 2
¼	20	28	20	⅜	\$.45	\$...
⅜	18	24	18	⅜	.50	...
½	16	24	16	⅜	.55	...
⅝	14	20	14	½	.60	...
¾	13	20	12	½	.70	...
7/8	12	18	12	½	.80	...
1	11	18	11	½	.90	...
1 1/8	11	18	11	¾	..	.90
1 1/4	11	16	11	¾	..	1.05
1 3/8	10	16	10	¾	..	1.20
1 1/2	10	..	10	¾	..	1.40
1 5/8	9	14-18	9	¾	..	1.60
1 3/4	9	..	9	¾	..	1.80
2	8	14	8	¾	..	2.00
2 1/8	7	12	7	¾	..	2.25
2 1/4	7	12	7	¾	..	2.60

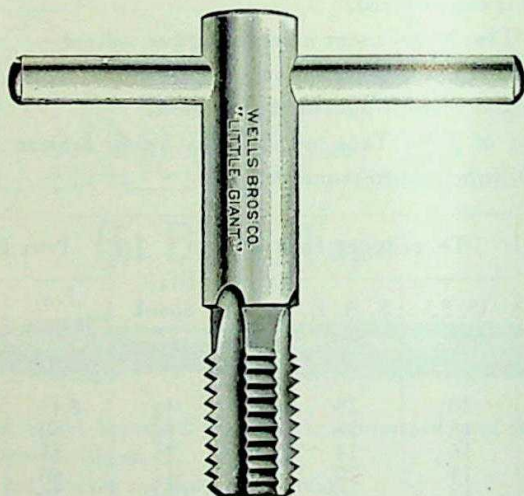
We recommend wherever possible the use of regular hand taps in our friction tap chuck shown on pages 160-162.

Horseshoe Calk Taps



Hand Horseshoe Tap

This style of tap is made with a squared shank. The guide point facilitates starting the tap straight and may also be used as a drill gage. The diameter of shank is same as full size of thread.



Stub Horseshoe Tap

The Stub Horseshoe or T Handle Calk Tap is a very convenient style for cleaning out previously tapped calk holes, particularly when necessary to change or renew calks.



Tapper Horseshoe Tap

This style of tap has shank $\frac{1}{2}$ " diameter for machine use.

Horseshoe Calk Taps

Our long experience in making these particular styles of taps, which is very difficult on account of the great accuracy required, enables us to offer taps which are precise and correct in all respects, and dealers will find it to their advantage to give our taps the preference on this account.

These taps are furnished in three styles as illustrated on opposite page at same prices.

Hand taps always sent unless otherwise ordered.

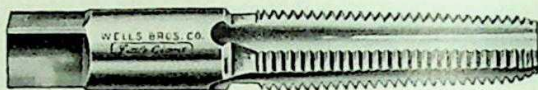
Sizes and pitches of these horseshoe taps are listed below.



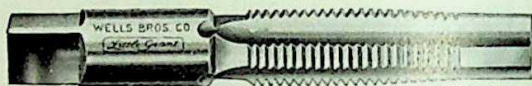
Size Inches	No. Threads per Inch	Price Each
$\frac{5}{16}$	18	\$.50
$\frac{3}{8}$	18	.55
$\frac{7}{16}$	16	.60
$\frac{1}{2}$	14	.70
$\frac{9}{16}$	12	.80
$\frac{5}{8}$	12	.90

Taper and Straight Boiler Taps

12 Threads per Inch



Taper



Straight

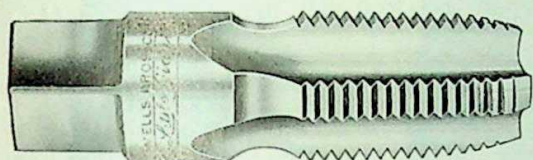
Taper Boiler Taps as shown in the top illustration, taper $\frac{3}{4}$ " per foot and will make a steam tight fit. The diameters listed are the sizes of the taps about $\frac{5}{8}$ " from the large end of the thread.

Straight Boiler Taps, as shown in bottom illustration, are furnished with a guide point, and are carried in stock in exact sizes.

Taper Taps will be sent on all orders unless otherwise specified.

Size	Price Each	Size	Price Each
$\frac{1}{2}$	\$1.00	$1\frac{1}{16}$	\$3.00
$\frac{9}{16}$	1.15	$1\frac{1}{8}$	3.20
$\frac{5}{8}$	1.30	$1\frac{3}{16}$	3.40
$1\frac{1}{16}$	1.45	$1\frac{1}{4}$	3.70
$\frac{3}{4}$	1.60	$1\frac{5}{16}$	4.00
$1\frac{1}{16}$	1.80	$1\frac{3}{8}$	4.30
$\frac{7}{8}$	2.10	$1\frac{7}{16}$	4.60
$1\frac{5}{16}$	2.40	$1\frac{1}{2}$	4.90
1	2.80		

Short Patch Bolt Taps



These taps are shorter than the regular Taper Boiler Taps, but have the same taper, $\frac{3}{4}$ inch per foot.

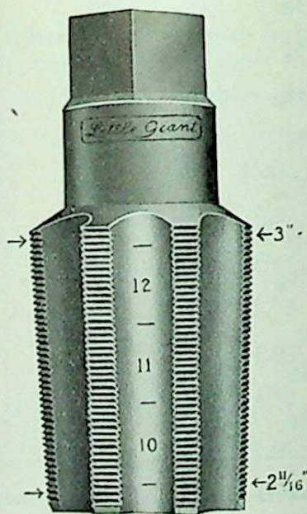
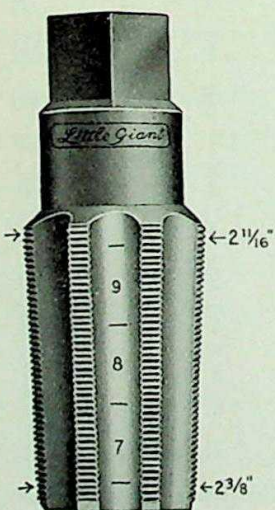
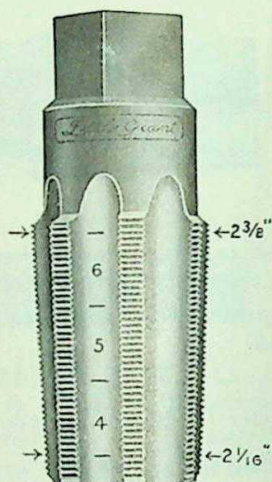
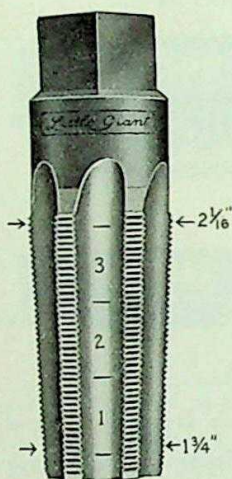
Diameters listed are taken about $\frac{5}{8}$ inch from large end of the thread.



Diameter Inches	No. of Threads per Inch	Length over all Inches	Price Each
$\frac{1}{2}$	12	3	\$.70
$\frac{9}{16}$	12	3	.80
$\frac{5}{8}$	12	3	.90
$1\frac{1}{16}$	12	3	1.05
$\frac{3}{4}$	12	3	1.20
$1\frac{3}{16}$	12	3	1.40
$\frac{7}{8}$	12	3	1.60
$1\frac{5}{16}$	12	3	1.80
1	12	3	2.00
$1\frac{1}{8}$	12	3	2.25
$1\frac{1}{4}$	12	3	2.60

Manufacturers using sizes not listed are invited to send us specifications for our quotations, as we are well equipped for this class of work.

Mud Plug or Washout Taps



Mud Plug or Washout Taps

Used for re-tapping washout holes in locomotive boilers.

The threads are tapered $1\frac{1}{4}"$ per foot to correspond to that of the twelve standard size Mud Plugs in most general use.

Tap No. 1 will thread a washout hole to fit Mud Plug No. 1, No. 2 or No. 3 as required—the figures and marks in the flute indicating where the tap should be stopped.

In this manner a set of four taps covers the entire range of the twelve standard mud plug sizes, tap No. 1 beginning with $1\frac{3}{4}"$ size and tap No. 4 ending with $3"$ size.

These taps are $6\frac{1}{8}"$ long and all four have the same size square.



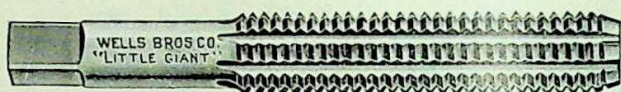
No.	Capacity	For Plugs	Price Each
1	$1\frac{3}{4}$ to $2\frac{1}{16}$	Nos. 1, 2, 3	\$ 6.00
2	$2\frac{1}{16}$ to $2\frac{3}{8}$	Nos. 4, 5, 6	7.50
3	$2\frac{3}{8}$ to $2\frac{11}{16}$	Nos. 7, 8, 9	9.00
4	$2\frac{11}{16}$ to 3	Nos. 10, 11, 12	10.00

Notice—

Customers requiring Mud Plug Taps having tapers and threads per inch differing from above, are requested to write for prices. We are prepared to quote on all classes of specifications.

Wells Brothers Co. Div.

Short Plug Hob Taps



United States Standard threads furnished unless otherwise ordered.

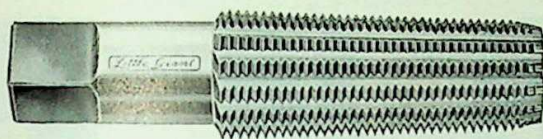
Left-hand threads are special.

Sizes, lengths and threads not listed are special.



Size	Threads per Inch		Length Thread	Total Length	Price Each
	U. S. Std.	Whit. Std.			
$\frac{1}{4}$	20	20	$3\frac{1}{32}$	$2\frac{1}{2}$	\$.60
$\frac{5}{16}$	18	18	$1\frac{1}{16}$	$2\frac{5}{8}$	.70
$\frac{3}{8}$	16	16	$1\frac{1}{4}$	$2\frac{7}{8}$	.80
$\frac{7}{16}$	14	14	$1\frac{3}{8}$	$3\frac{1}{8}$	.90
$\frac{1}{2}$	12, 13	12	$1\frac{1}{2}$	$3\frac{3}{8}$	1.00
$\frac{9}{16}$	12	12	$1\frac{5}{8}$	$3\frac{5}{8}$	1.15
$\frac{5}{8}$	11	11	$1\frac{3}{4}$	$3\frac{13}{16}$	1.30
$1\frac{1}{16}$	11	11	$1\frac{7}{8}$	4	1.45
$\frac{3}{4}$	10	10	2	$4\frac{1}{4}$	1.60
$1\frac{3}{16}$	10	10	$2\frac{1}{8}$	$4\frac{7}{16}$	1.80
$\frac{7}{8}$	9	9	$2\frac{1}{4}$	$4\frac{11}{16}$	2.10
$1\frac{5}{16}$	9	9	$2\frac{3}{8}$	$4\frac{7}{8}$	2.40
1	8	8	$2\frac{7}{16}$	$5\frac{1}{8}$	2.80
$1\frac{1}{8}$	7	7	$2\frac{5}{8}$	$5\frac{7}{16}$	3.20

Pipe Hobs



These hobs taper $\frac{3}{4}$ " per foot.

They have fine flutes and an extra long threaded portion.

Right-hand threads furnished unless otherwise ordered.

Left-hand threads at same prices.

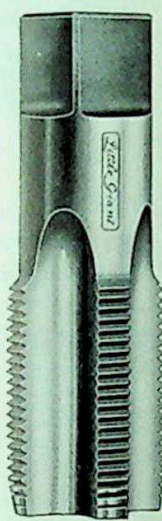
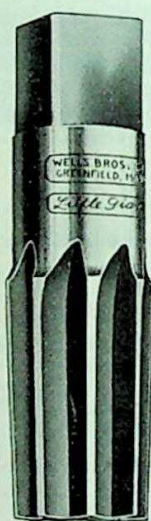
Sizes and threads not listed are special.



Size	Threads per Inch		Price Each
	Briggs Std.	Whitworth Std.	
$\frac{1}{8}$	27	28	\$ 1.12
$\frac{1}{4}$	18	19	1.25
$\frac{3}{8}$	19	19	1.50
$\frac{1}{2}$	14	14	1.87
$\frac{3}{4}$	14	14	2.50
1	$11\frac{1}{2}$	11	3.12
$1\frac{1}{4}$	$11\frac{1}{2}$	11	3.75
$1\frac{1}{2}$	$11\frac{1}{2}$	11	4.62
2	$11\frac{1}{2}$	11	6.25
$2\frac{1}{2}$	8	11	10.50
3	8	11	15.00
$3\frac{1}{2}$	8	11	22.00
4	8	11	33.00

Pipe Taps and Reamers

Taper pipe taps are machine relieved.



Taper Pipe Tap

Taper Pipe Reamer

Straight Pipe Tap

Both taper taps and reamers are tapered $\frac{3}{4}$ " per foot.

Right or left-hand threads at same prices.

Right-hand threads sent unless otherwise ordered.

Sizes and threads not listed are special.

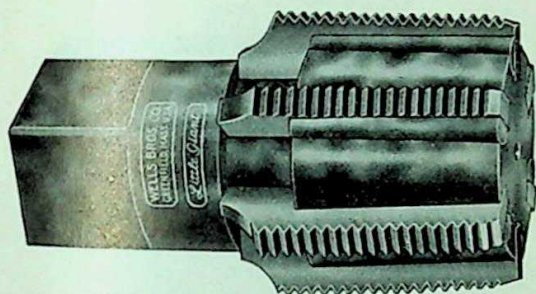
Prices of pipe taps with shanks fitting Beaman & Smith holders given on application.

Size	Threads per Inch		Price Each Tap or Reamer
	Briggs Std.	Whitworth Std.	
$\frac{1}{8}$	27	28	\$1.12
$\frac{1}{4}$	18	19	1.25
$\frac{3}{8}$	18	19	1.50
$\frac{1}{2}$	14	14	1.87
$\frac{3}{4}$	14	14	2.50
1	11 $\frac{1}{2}$	11	3.12
1 $\frac{1}{4}$	11 $\frac{1}{2}$	11	3.75
1 $\frac{1}{2}$	11 $\frac{1}{2}$	11	4.62
2	11 $\frac{1}{2}$	11	6.25

All pipe taps and reamers 2 $\frac{1}{2}$ " and larger are now made with inserted lands. See page 153.

Pipe Taps and Reamers with Inserted Lands

For Pipe Sizes larger than 2 Inches



Patented Jan. 25, 1910

This type of Pipe Tap and Reamer has proved much superior to the solid type for the large sizes. It consists of a center or body, lands and wedges for securing the lands in place. The center and wedges are neatly mottled. As the lands are small, they can be made of steel much superior in quality to that used in making solid tools of equal size. The cutting edges can be tempered much more uniformly. The lands are easily sharpened.

New lands may be obtained to replace old ones at a mere fraction of cost of new solid tap or reamer.

Sizes 7" and larger furnished with center hole for use with arbor.

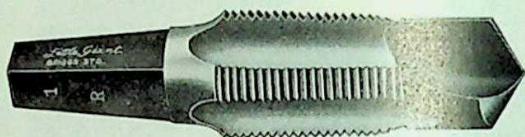
Briggs and Whitworth Standard Taper Pipe Taps with right or left-hand threads at same prices.

When ordering new lands, state cutting size desired.

Size Inches	Price Tap	Price Reamer	Price per Set Lands	Size Inches	Price Tap	Price Reamer	Price per Set Lands
2½	\$ 6.00	\$ 6.00	\$2.00	6	\$ 50.00	\$ 50.00	\$5.00
3	8.00	8.00	2.00	7	70.00	70.00	5.00
3½	10.00	10.00	2.50	8	85.00	85.00	7.00
4	14.00	14.00	2.50	9	100.00	100.00	7.00
4½	25.00	25.00	3.00	10	120.00	120.00	7.00
5	35.00	35.00	3.00				

Combined Pipe Tap and Drill

For Tapping Gas and Water Mains



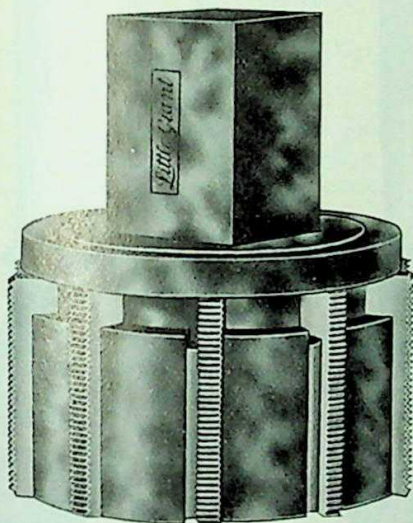
These taps are made from the very highest quality of steel. The drill points are carefully sharpened.

Right-hand threads only furnished at regular prices. Whitworth threads furnished at regular prices when so ordered.

Size	Length Inches	Size of Shanks Inches	Price Each
$\frac{1}{8}$	$3\frac{3}{4}$	$\frac{1}{2}$ " x $2\frac{3}{32}$ " x $1\frac{3}{4}$ " long	\$ 1.50
$\frac{1}{4}$	$3\frac{15}{16}$	" " "	1.50
$\frac{3}{8}$	$4\frac{1}{8}$	" " "	1.75
$\frac{1}{2}$	$4\frac{3}{8}$	" " "	2.20
$\frac{3}{4}$	$4\frac{11}{16}$	" " "	3.00
1	$5\frac{3}{8}$	" " "	3.80
$1\frac{1}{4}$	$5\frac{7}{8}$	" " "	4.80
$1\frac{1}{2}$	$6\frac{3}{16}$	" " "	5.80
2	$6\frac{3}{4}$	$\frac{3}{4}$ " x 1" x 2" long	7.60
$2\frac{1}{2}$	$7\frac{1}{2}$	" " "	10.00

Special Taps and Reamers with Inserted Lands

For sizes larger than $2\frac{1}{2}$ "



(Patented Jan. 25, 1910)

For thread sizes larger than $2\frac{1}{2}$ " either straight or taper, inserted land taps of style shown in illustration are much more practical and economical than solid taps.

Our patented design, variable to suit particular requirements, consists of a body or center, several cutters or lands, and wedges or keys for binding the lands securely in the center. The lands, when assembled in the center, are as rigid as those on a solid tap.

Being made of narrow strips of steel the lands are not only made of a higher grade of steel than would be practical for solid taps of the same size, but a more uniform temper can be secured, increasing their serviceability.

When old lands are worn out, a new set may be substituted, as the centers of these taps are always serviceable. Hence a new tap may be obtained at a very low cost.

Send specifications for prices.

Adjustable Tap Wrenches



Nos. 00-8



Nos. 20-24

Adjustable Tap Wrenches

Little Giant Adjustable Tap Wrenches will hold both Hand and Pipe Taps.

Adjustment is obtained by revolving one of the handles.

The jaws are made of fine tool steel, are rigidly held in place, and give a tight, strong grip.

Sizes No. 7 and smaller are made from drop forgings. The body parts of larger sizes are malleable castings, with handles of electrically welded steel tubing, light and very strong.

The bodies of all wrenches have a neat mottle finish.

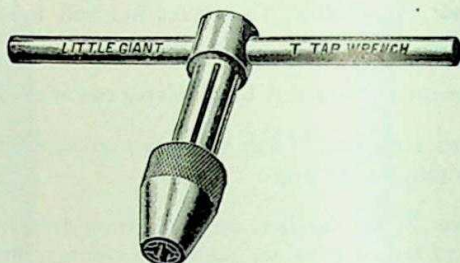
"T" style of Tap Wrench listed on page 158.



No.	Capacity (Tap Sizes)			Full Length Inches	Weight	Price
	Hand Inclusive Inches	Machine Screw Inclusive	Pipe Inclusive Inches			
00	.. to $\frac{3}{16}$	0 to 13	.....	5½	1½ oz.	\$1.25
0	$\frac{1}{16}$ to $\frac{1}{4}$	0 to 18	.....	7½	4 oz.	1.50
4	$\frac{1}{16}$ to $\frac{3}{8}$	0 to 24	$\frac{1}{8}$	9	7 oz.	1.75
5	$\frac{3}{16}$ to $\frac{1}{2}$	8 to 30	$\frac{1}{8}$ to $\frac{1}{4}$	11½	12 oz.	2.00
6	$\frac{1}{4}$ to $\frac{3}{4}$	8 to 30	$\frac{1}{8}$ to $\frac{3}{8}$	15	2 lbs.	2.50
7	$\frac{3}{8}$ to 1	15 to 30	$\frac{1}{8}$ to $\frac{3}{4}$	19½	3½ lbs.	3.50
7½	$\frac{3}{8}$ to 1¼	22 to 30	$\frac{1}{4}$ to $\frac{3}{4}$	31	4½ lbs.	6.50
8	$\frac{3}{4}$ to 1½	.....	$\frac{3}{8}$ to 1	40½	8 lbs.	8.00
20	$\frac{1}{2}$ to 1½	.....	$\frac{3}{8}$ to 1¼	40½	8 lbs.	7.00
22	1 and over	.....	1 to 2	55½	12 lbs.	15.00
24	1¾ and over	.....	2 to 4	74	25 lbs.	25.00

Adjustable Tap Wrenches

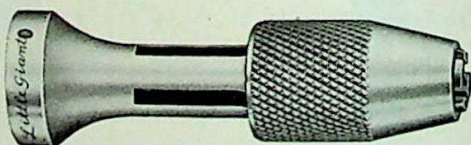
"T" Style



No.	Range	Price per Dozen
329	{ 0-18 Machine Screw Sizes { 0- $\frac{9}{32}$ Fractional Sizes	\$ 6.00
333	{ 14-30 Machine Screw Sizes { $\frac{5}{16}$ to $\frac{1}{2}$ Fractional Sizes	12.00

Adjustable Tap Wrenches

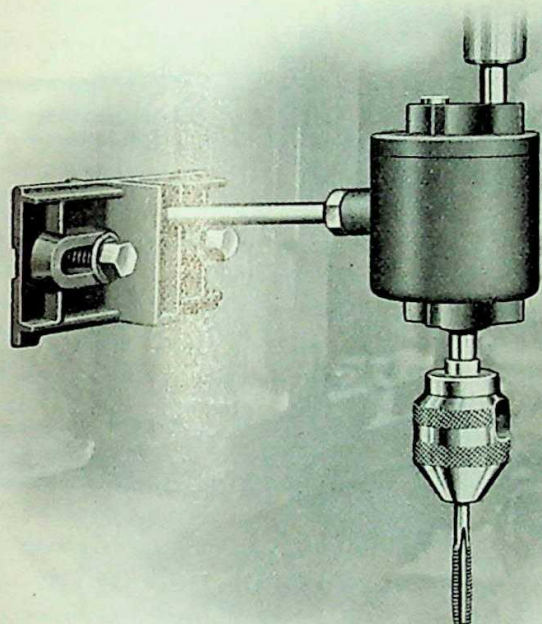
For Round Die Stock



This Tap Wrench is designed to fit $\frac{13}{16}$ " round die stock listed on page 108.

No.	Range	Price per Dozen
340	{ 0-18 Machine Screw Sizes { $\frac{1}{16}$ - $\frac{9}{32}$ Fractional Sizes	\$6.00

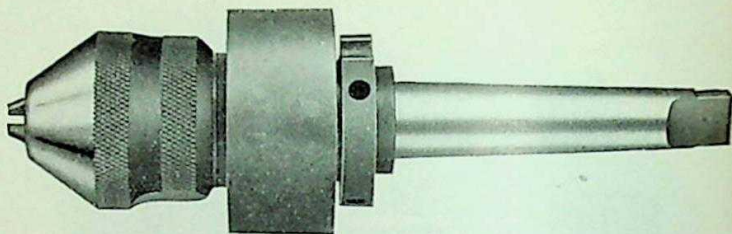
Tapping Attachment with Reverse



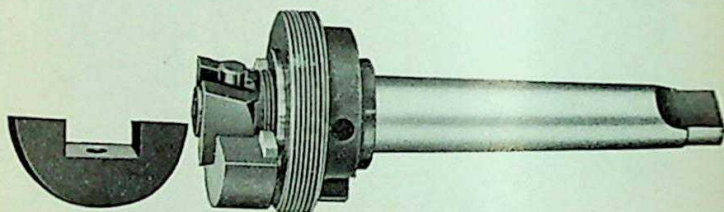
This reversing attachment overcomes the necessity for reversing the machine. When the tap has been fed as far as desired, it stops work automatically. Raising the spindle reverses the tap and enables a quick return to be made, the machine, meanwhile, going ahead at full forward speed. This attachment is particularly valuable on multiple-spindle drills or tapping machines where the tap is not driven through. One workman can easily attend to several spindles without running any risk of breaking taps or spoiling the work. The attachment, complete, consists of the reversing chamber attached to the spindle, the handle, the guide bracket which is adjustable to the standard, and the *Little Giant* two-jaw Tap Chuck which grips the round shank and squared end of the tap, minimizing the twisting strain.

- | | | |
|---------|--|---------|
| No. 950 | Capacity tap sizes $\frac{3}{16}$ " to $\frac{3}{8}$ " inclusive (fitted with plain chuck)
(will fit a No. 1 Morse Taper Shank) | \$15.00 |
| No. 951 | Same fitted with Friction Tap Chuck, shown on pages 160-162. | 20.00 |

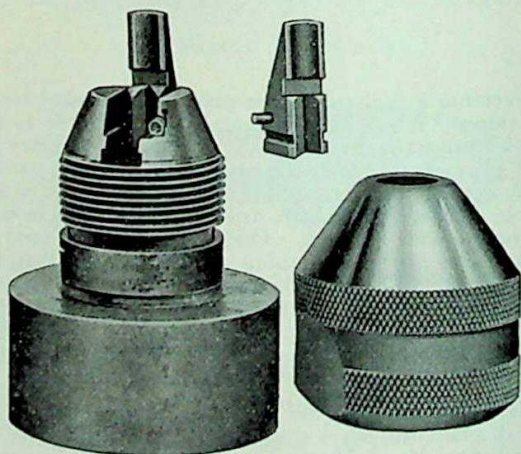
Friction Tap Chuck



Assembled View



Showing Split Friction Disc



Showing Double Grip of Chuck Jaws

Friction Tap Chuck

There are two things that cannot happen where the *Little Giant* Friction Chuck is used:

1. You cannot spoil the work.
2. You cannot break the tap.

In practice, taps are often subjected to strains which no metal can possibly withstand. For instance, a hard spot in the metal, when the tap is working almost to its breaking strain, will cause the tap to break before the machine operator can prevent it; or in tapping to the bottom of a blind hole, the operator can seldom gage the distance properly and might drive the tap in the bottom and break it unintentionally. With the *Little Giant* Tapping Chuck, there is no excuse for breaking taps.

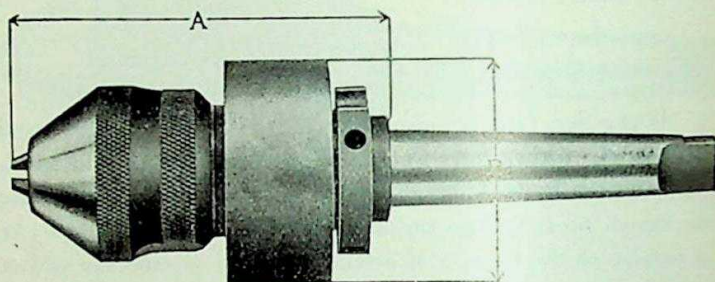


As indicated in the illustrations, the tap is held to its work by friction. A disk of friction fibre is split in two and fitted around a beveled center piece. A chamber just under the jaws of the Chuck goes over the split disk and the halves of the disk are forced against the inner surfaces of the chamber by drawing the beveled center piece down into the shank, forcing the halves apart. This friction grip may be tightened or loosened to suit any tapping job by turning the lock-nut. No special tool is required for this, as a file, nail-set, or any one of a dozen handy things about any workshop will answer the purpose.

The jaws of the Chuck not only grip the round shank, but at their base hold the squared end also, thus minimizing the twisting strain.

The *Little Giant* Tapping Chuck is by far the simplest tool of its kind on the market and works within the smallest compass. For this reason it is adaptable to a great many machines where others have proven to be too cumbersome. It can be placed on multiple-spindle drills or tapping machines, even where they are close together. The *Little Giant* Tapping Chuck prevents tap breakages and very often saves its original cost in a very short time. Prices on page 162.

Friction Tap Chuck

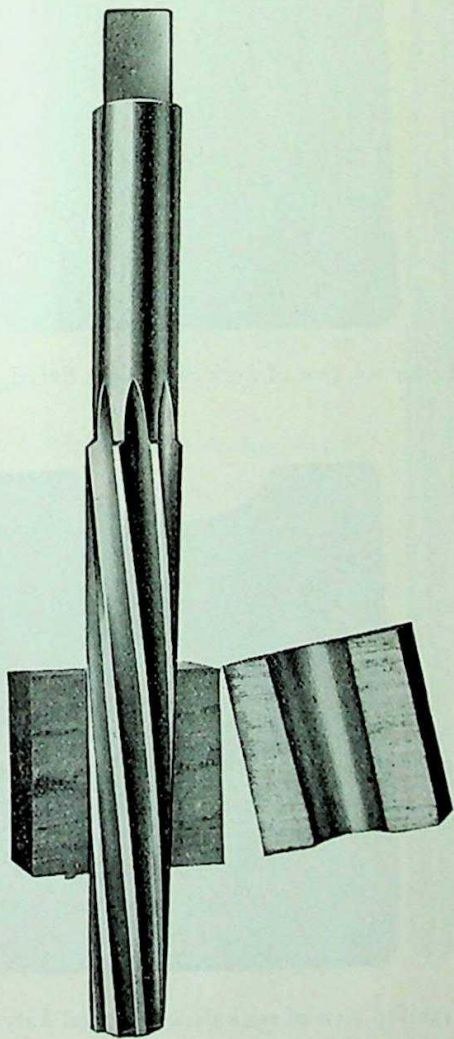


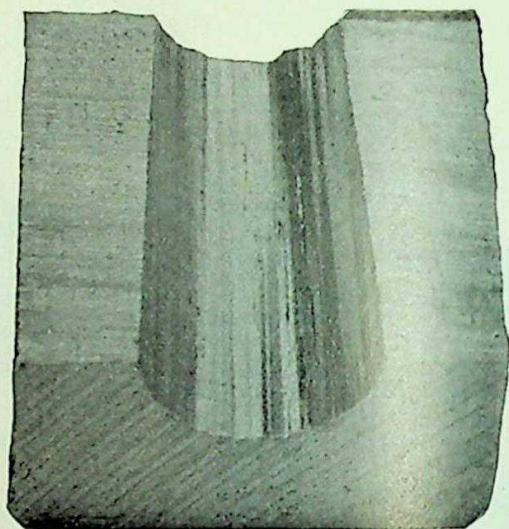
The *Little Giant* Tapping Chuck is by far the simplest tool of its kind on the market and works within the smallest compass. For this reason it is adaptable to a great many machines where others have proven to be too cumbersome. It can be placed on multiple-spindle drills or tapping machines, even where they are close together. The *Little Giant* Tapping Chuck prevents tap breakages and very often saves its original cost in a very short time.

Full description on pages 160 and 161.

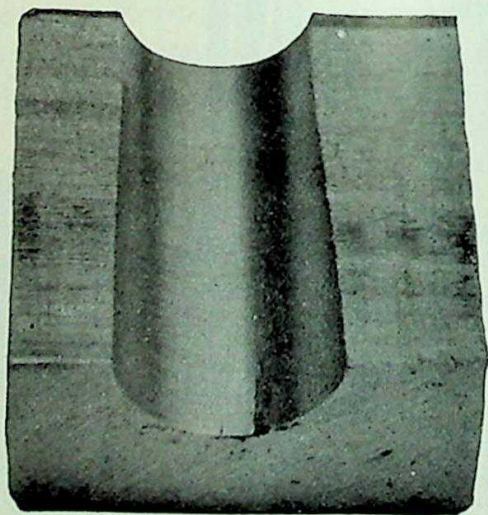
No.	Capacity	Morse Taper Shank	Straight Shank	Dimensions		Price
				A	B	
B1	$\frac{1}{8}$ to $\frac{1}{4}$	No. 1, 2	$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{3}{4}$	\$ 7.50
B2	$\frac{3}{16}$ to $\frac{3}{8}$	No. 1, 2, 3	$\frac{3}{4}$, $\frac{7}{8}$, 1	$3\frac{1}{4}$	$2\frac{1}{16}$	10.50
B3	$\frac{1}{4}$ to $\frac{1}{2}$	No. 2, 3	$\frac{3}{4}$, $\frac{7}{8}$, 1	$3\frac{13}{16}$	$2\frac{3}{8}$	14.00
B4	$\frac{5}{16}$ to $\frac{3}{4}$	No. 3, 4	1, $1\frac{1}{4}$	$4\frac{7}{16}$	$2\frac{7}{8}$	18.50
B5	$\frac{9}{16}$ to 1	No. 3, 4	1, $1\frac{1}{4}$, $1\frac{1}{2}$	$5\frac{1}{4}$	$3\frac{1}{4}$	22.50

Reamer Section





Magnified view of work of straight fluted taper pin reamer



Magnified view of work done by spiral fluted taper pin reamer

The Spiral Flute

We have discontinued the manufacture of straight fluted reamers because of the superiority of the spiral flute from every standpoint.

The lands of a straight fluted reamer give a full, face-on scrape. Every seam, crack or inequality in the metal gives an opportunity for it to "hog in," there being no balancing support. The tendency of a straight fluted reamer to "chatter" is well known, particularly a taper reamer.

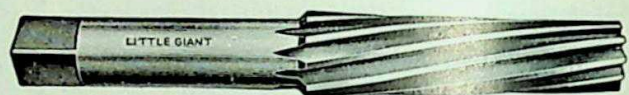
With the left hand spiral flute a shearing cut is secured, which reduces the strain on the cutting edge. The reamer has a double support in the hole which steadies it in action no matter what faults or defects there may be in the metal. That is, the tangent of the land from the axis is to the left as you look at the reamer, but the tangent of the land opposite is to the right, giving an opposed support which corrects any tendency to "chatter."

The microscope brings these differences forcibly to the attention. (See illustrations on opposite page.)



Spiral Fluted Taper Reamers

Bit Brace and Straight Shank



These reamers are useful for enlarging holes when punching or drilling is not quite perfect.

Each reamer is approximately $\frac{1}{32}$ " larger at the largest cutting diameter than the nominal size. The point of each reamer will enter the hole reamed by next smaller size. Consequently with a set of these reamers any size, $\frac{1}{8}$ " to $1\frac{1}{2}$ ", can be reamed.

These reamers are carefully made and will be found superior in both quality and finish. The finest steel is used and the tools are ground sharp and true after hardening. They will be found useful for work in hardwood as well as iron.

Specify style of shank.

For sets of Bit Brace Reamers, see page 168.



Size	Length of Flute	Total Length	Price Each
$\frac{1}{8}$	$1\frac{5}{8}$	$3\frac{5}{8}$	\$.35
$\frac{3}{16}$	$1\frac{3}{4}$	$3\frac{3}{4}$	.35
$\frac{1}{4}$	$1\frac{7}{8}$	$4\frac{3}{16}$	.45
$\frac{5}{16}$	$2\frac{1}{32}$	$4\frac{7}{16}$	.50
$\frac{3}{8}$	$2\frac{3}{16}$	$4\frac{9}{16}$	.55
$\frac{7}{16}$	$2\frac{3}{8}$	$4\frac{15}{16}$	.60
$\frac{1}{2}$	$2\frac{1}{2}$	$5\frac{5}{16}$	.70
$\frac{9}{16}$	$2\frac{5}{8}$	$5\frac{5}{8}$	.80
$\frac{5}{8}$	$2\frac{3}{4}$	$5\frac{15}{16}$	.90
$1\frac{1}{16}$	$2\frac{13}{16}$	$6\frac{1}{4}$	1.05
$\frac{3}{4}$	$2\frac{7}{8}$	$6\frac{7}{16}$	1.20
$\frac{13}{16}$	3	$6\frac{5}{8}$	1.40
$\frac{7}{8}$	$3\frac{1}{8}$	$6\frac{3}{4}$	1.60
$1\frac{5}{16}$	$3\frac{1}{4}$	$6\frac{7}{8}$	1.80
1	$3\frac{3}{8}$	7	2.00
$1\frac{1}{8}$	$3\frac{5}{8}$	$7\frac{1}{4}$	2.40
$1\frac{1}{4}$	$3\frac{7}{8}$	$7\frac{1}{2}$	2.80

Adjustable Tap and Reamer Wrenches listed on pages 157-158.

Spiral Fluted Taper-Pin Reamers

Taper $\frac{1}{4}$ " per foot



Each Reamer overlaps about $\frac{1}{2}$ " the size smaller.

Larger and special sizes made to order.

Sets of these reamers in leather cases listed on page 168.

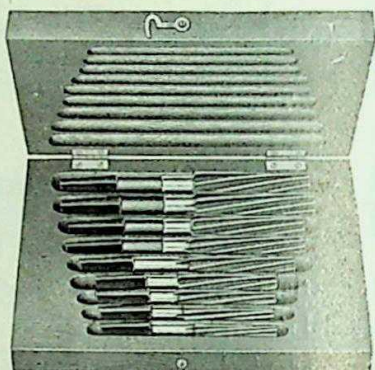


Size	Dia. $\frac{1}{4}$ " from end	Length of Flute	Total Length	Price Each
0	0.135	$1\frac{1}{2}$	$2\frac{3}{8}$	\$1.00
1	0.146	$1\frac{3}{4}$	$2\frac{5}{8}$	1.00
2	0.162	2	3	1.25
3	0.183	$2\frac{1}{4}$	$3\frac{1}{2}$	1.50
4	0.208	$2\frac{1}{2}$	4	1.75
5	0.240	3	$4\frac{1}{2}$	2.00
6	0.279	$3\frac{5}{8}$	5	2.25
7	0.331	$4\frac{1}{2}$	6	2.50
8	0.398	$5\frac{1}{4}$	$6\frac{3}{4}$	3.00
9	0.482	$6\frac{1}{8}$	8	3.50
10	0.581	7	9	4.00
11	0.706	$8\frac{1}{4}$	$11\frac{1}{4}$	4.75
12	0.842	10	$13\frac{3}{8}$	5.50
13	1.009	12	16	6.50
14	1.250	14	$18\frac{1}{4}$	7.75

Adjustable Tap and Reamer Wrenches listed on pages 157-158.

Spiral Fluted Taper Reamers

with Bit Brace or Straight Shanks in Sets



- No. 705 5 Sizes $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$
 No. 709 9 Sizes $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$
 Bit Brace Shanks furnished unless otherwise specified.
 Separate Reamers listed on page 166.

\$3.00
7.00

Spiral Fluted Taper Pin Reamers

in Sets for Automobile Kits

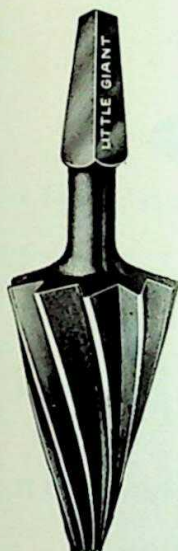


- No. 1423 6 Sizes Nos. 0, 1, 2, 3, 4 and 5
 In substantial leather case.
 Separate reamers listed on page 167.

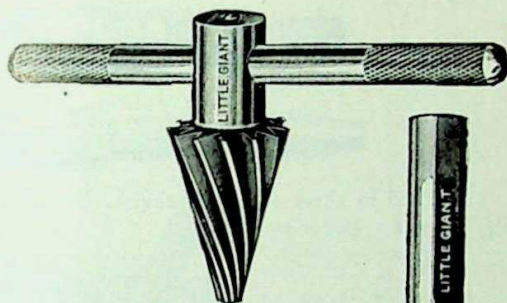
\$8.50

Spiral Fluted Burring Reamers

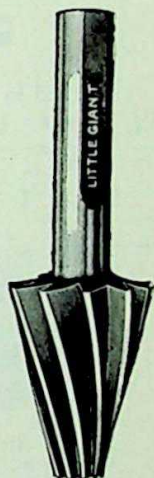
For Pipe. Also for Countersinking



Nos. 1, 2, 4



Nos. 5 and 6



No. 3



These Burring Reamers are made of finest steel and designed especially for removing burrs from pipe, caused by cutting. They are also extensively used for countersinking.

Great care is taken in grinding these tools to adapt them for use in a variety of materials.

Order by this Number	Total Length Inches	Length of Flute Inches	Size at Point Inches	Size at Large End Inches	Style of Shank	Capacity Pipe Inches	Price Each	Price per Dozen
1	3	1	$\frac{7}{32}$	$\frac{3}{4}$	Bit Brace	$\frac{1}{8}$ to $\frac{1}{2}$	\$1.00	\$12.00
2	$3\frac{13}{16}$	$1\frac{9}{16}$	$\frac{7}{16}$	$1\frac{9}{32}$	Bit Brace	$\frac{3}{8}$ to 1	1.25	14.00
$2\frac{1}{2}$	$4\frac{7}{16}$	$2\frac{3}{16}$	$\frac{5}{16}$	$1\frac{15}{32}$	Bit Brace	$\frac{1}{4}$ to $1\frac{1}{4}$	1.50	17.00
3	$3\frac{13}{16}$	$1\frac{9}{16}$	$\frac{7}{16}$	$1\frac{9}{32}$	$\frac{1}{2}$ Round	$\frac{3}{8}$ to 1	1.25	14.00
$3\frac{1}{2}$	$4\frac{7}{16}$	$2\frac{3}{16}$	$\frac{5}{16}$	$1\frac{15}{32}$	$\frac{1}{2}$ Round	$\frac{1}{4}$ to $1\frac{1}{4}$	1.50	17.00
4	$5\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{5}{16}$	$2\frac{9}{32}$	Bit Brace	1 to 2	3.00	36.00
5	$4\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{5}{16}$	$2\frac{9}{32}$	T Handle	1 to 2	3.50	42.00
6	$5\frac{3}{8}$	$3\frac{3}{16}$	$\frac{7}{16}$	$2\frac{9}{32}$	20 in. long T Handle	$\frac{1}{2}$ to 2	4.00	48.00
					20 in. long			

Please order by number.

Countersinks

For Bolts (54°) and Screws (82°)



Stocked in three styles of shank, Bit Brace, 1/2" Round and 4 1/4" Round. Order by number.



No.	Style Shank	Cut		Price	
		Dia. Inches	Angle Degree	Each	Per Dozen
501	Bit Brace	5/8	54°	\$.50	\$5.75
502	1/2" Round				
503	4 1/4" Round				
504	Bit Brace	5/8	82°	.50	5.75
505	1/2" Round				
506	4 1/4" Round				
507	Bit Brace	3/4	54°	.75	8.50
508	1/2" Round				
509	4 1/4" Round				
511	Bit Brace	3/4	82°	.75	8.50
512	1/2" Round				
513	4 1/4" Round				

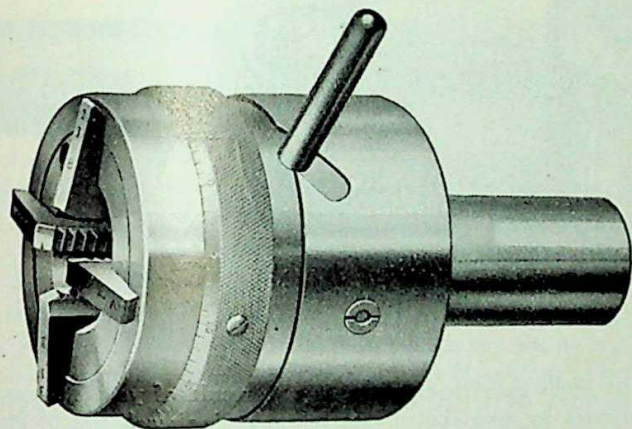
Center Reamers



Regularly furnished with 60° points. 80° points furnished when specified.

No.	Size Cut	Size Shank	Price Each	Price per Doz.
1	1/4	3/16	\$.22	\$2.50
2	3/8	1/4	.25	2.90
3	1/2	5/16	.35	3.75
4	5/8	3/8	.50	5.75
5	3/4	1/2	.60	7.00

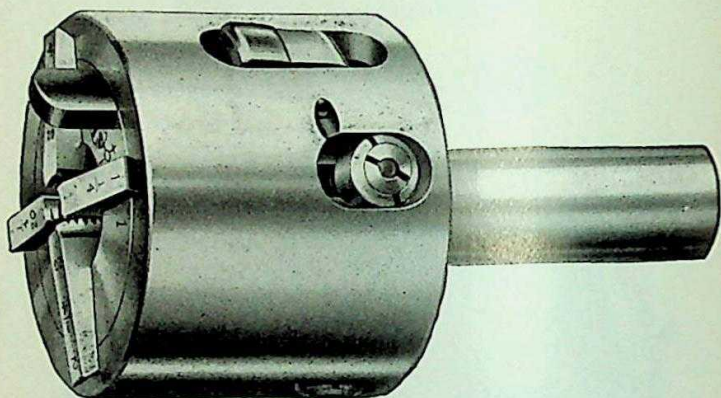
Wells Self-Opening Die Section



Patented

Wells Self-Opening Die

Patented



The Wells Self-Opening Die is the result of years of experimental work by men skilled in screw machine work and of broad experience in the manufacture of screw cutting tools.

In the Wells Self-Opening Die an entirely new type of design avoids the troubles that have hitherto characterized automatic opening dies and brings forward a self-opening die that has repeatedly "made good" where others have failed. And in "making good" it has also demonstrated a productive capacity at least twice that of ordinary dies.

Some of its distinguishing characteristics are as follows:

Every chaser has a solid support directly opposite the teeth which do the cutting. Chasers cannot squirm away from their work.

Every chaser is about 4 times as long as the threaded section, giving such an abundance of longitudinal support as to make tipping or tilting impossible.

Every chaser is adjusted after the hardening process, thus correcting any changes which may have occurred therein.

Wells Self-Opening Die

(Patented)

(Continued)

The wear, what little there is, falls on the back edge of the chaser; is uniform upon all in the set, and does not affect the accuracy of the die-head itself, making its life practically unlimited.

The heavy, hardened steel shell which holds the chasers to their work, gives exceptional strength.

It has a simple, positive and instantaneous adjustment, registering variations of $\frac{1}{4}$ thousandth of an inch.

Because of these points it is capable of a higher cutting speed than any other type or style of die, without affecting its accuracy.

It is adaptable to a wide range of machines and working conditions.



Special Features

Friction is reduced to a minimum by the construction of the Die, which, in addition to its unequalled smooth cutting qualities, permits the lubricant to enter through the shank and flood the track of the cutting teeth with an ample stream. Chips are thus washed out of the Die instead of being left to work into the movable parts.

Sharpening of the chasers is a simple matter on an ordinary grinder, because all sides and angles are get-at-able. This feature prolongs the life of the chasers many fold, bringing about an appreciable economy in operating costs.

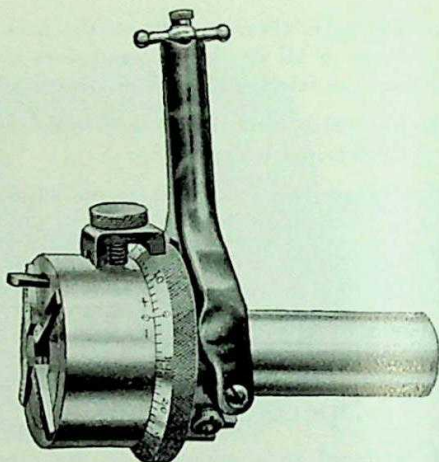
Re-hobbing of old chasers that have been worn and ground until the teeth are gone, is also practicable, by annealing and re-hobbing for a larger size.

By the insertion of a set of suitably ground chasers the Die is transformed into an excellent **Hollow Milling Tool**. The strong, solid support on the back of each chaser, directly opposite the cutting face, gives to the tool the strength and ruggedness of a solid hollow mill; yet provides means for instant adjustment to any degree of accuracy. Worn out threaded chasers can be utilized for hollow milling by re-grinding.

Send for Wells Self-Opening Die Catalog.

Wells Self-Opening Die

Patented



Model V

Model V is designed for general use. It can be adapted to all hand or automatic screw machines (either flat or upright turrets); bolt threaders; engine lathes; turret lathes; or any machine where the Die does not revolve. At the base of each chaser rests a spring screw set in a stud, enabling the operator to change easily from one set of chasers to another.

Model V is closed by rigging a "stop" to push the hand lever forward as the Die is drawn off the work.

See detailed specifications on pages 176 to 181.

Floating Shank

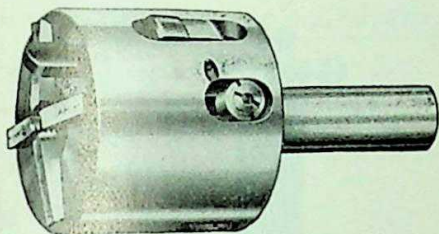
Model V is also equipped with floating shank permitting the die to advance along the work according to the "lead" of its chasers, entirely independent of the travel of the machine.

Specifications covering Model V so equipped are given on pages 180-181.

Send for copy of Wells Self-Opening Die Catalog.

Wells Self-Opening Die

Patented

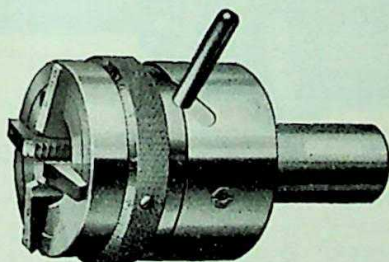


Model T

Model T is adaptable to all machines where the Die revolves; such as drill presses, multiple screw machines, bolt cutters, etc.

This model is closed either by having a "yoke" push the outer shell forward, as the Die backs off the work, or, it can be closed by a stop bearing upon one side only.

See detailed specifications on pages 182-185.



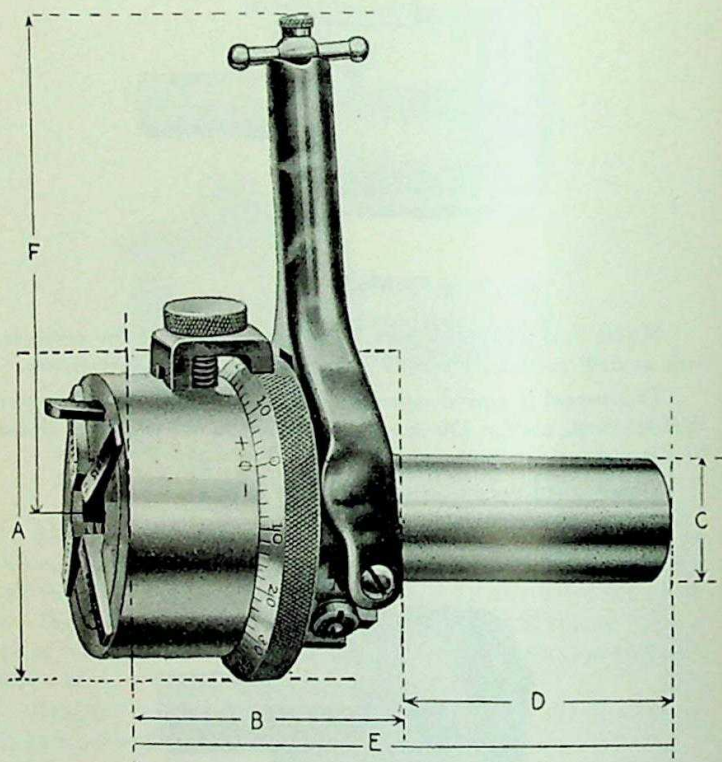
Model B

Model B is equipped with a Pull Trip to avoid the need for rigging stops on the machine. This pull trip, being adjustable, serves as a floating shank, permitting the die to "lead" independent of machine travel. The closing lever operates with a side or rotary motion, making it especially convenient on Brown & Sharpe automatic screw machines and others of similar construction.

Wells Self-Opening Die

Patented

Model V



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	800	801	802	803
Length of thread will cut with solid shank	1½"	1½"	2½"	2½"

Wells Self-Opening Die

Patented

Model V

Equipment: Hollow shank, Face trip, Hand lever trip.

Number of Die	800	801	802	803
Dimensions				
Head:				
Diameter (A)	2 1/4"	2 9/16"	3 1/8"	3 7/8"
Length (B)	1 5/8"	2"	2 7/8"	3"
Shank:				
Diameter (C)	5/8" 1 1/16"	3/4" 7/8" 1"	1" 1 1/4"	1 1/4" 1 1/2"
Length (D)	3/4" 2"	2 1/2"	3"	3 1/4"
Length over all (E)	3 5/8"	4 1/2"	5 7/8"	6 1/4"
From tip of lever to center of head (F)	3 1/8"	3 1/4"	4 5/8"	4 5/8"
*Capacity				
Bolt or Screw thds.	0 to 1/4"	1/8" to 1/2"	1/4" to 3/4"	3/8" to 1"
Pipe threads		1/8"	1/8" to 3/8"	1/4" to 3/4"
Price				
Die, with one set of chasers—any standard thread and pitch	\$20.00	\$25.00	\$35.00	\$45.00
Die, with assortment of extra chasers and bench block as illustrated on page 188	6 Sets Chasers \$27.50 12 Sets Chasers \$35.00	6 Sets Chasers \$33.50 12 Sets Chasers \$42.50	9 Sets Chasers \$50.00	9 Sets Chasers \$65.00
Extra chasers, per set, any thread standard	\$1.50	\$1.75	\$2.00	\$2.50

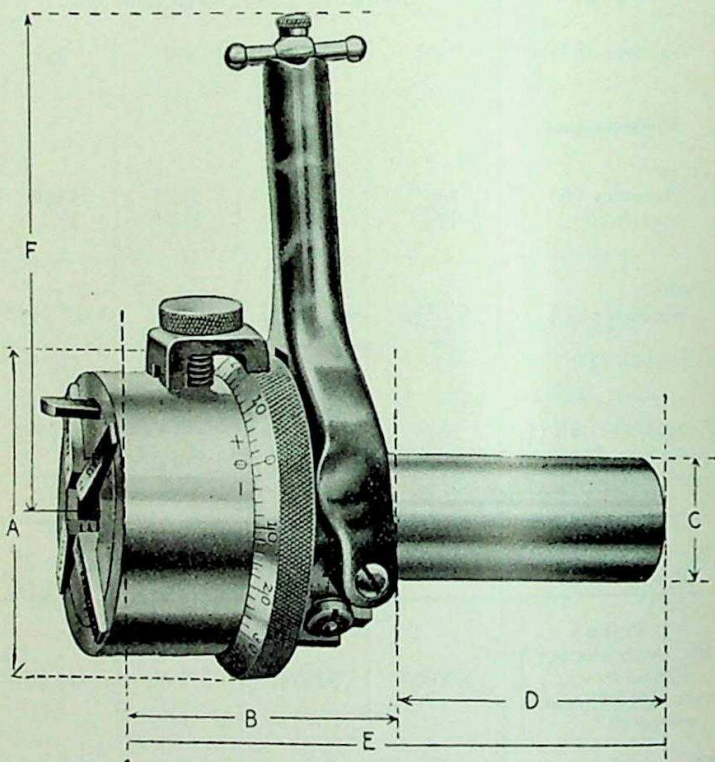


*These heads equipped with hollow shanks will cut any length of thread. For lengths cut with solid shank die heads see opposite page.

Wells Self-Opening Die

Patented

Model V



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	804	805	806	807
Length of thread will cut with solid shank	2 1/2"	2 1/2"		

Hollow Shank is recommended for these large sizes.

Wells Self-Opening Die

Patented

Model V

Equipment: Hollow shank, Face trip, Hand lever trip.

Number of Die	804	805	806	807
Dimensions				
Head:				
Diameter (A)	5 $\frac{5}{8}$ "	6 $\frac{5}{8}$ "		
Length (B)	3 $\frac{1}{2}$ "	4 $\frac{1}{4}$ "		
Shank:				
Diameter (C)	2" 2 $\frac{1}{2}$ "	3" 3 $\frac{1}{2}$ "		
Length (D)	4 $\frac{5}{8}$ "	5 $\frac{1}{4}$ "		
Length over all (E)	8 $\frac{1}{8}$ "	9 $\frac{1}{2}$ "		
From tip of lever to center of head (F)	6 $\frac{5}{16}$ "	7 $\frac{1}{4}$ "		
*Capacity				
Bolt or Screw thds.	$\frac{3}{4}$ " to 1 $\frac{1}{2}$ "	1" to 2"		
Pipe threads	$\frac{1}{2}$ " to 1"	$\frac{3}{4}$ " to 1 $\frac{1}{2}$ "		
Price				
Die, with one set of chasers—any standard thr'd. and pitch	\$75.00	\$90.00		
Extra chasers, per set, any thread standard	\$3.00	\$4.00		



Prices on Application

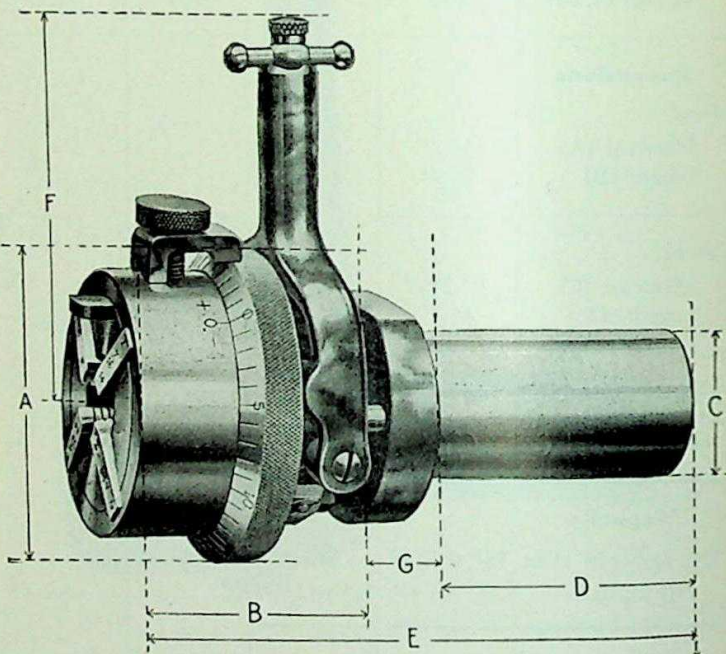
*These heads equipped with hollow shanks will cut any length of thread. For length cut with solid shank die heads see opposite page.

Wells Self-Opening Die

Patented

Model V

With Floating Shank



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	820	821	822	823
Length of thread will cut with solid shank	1½"	1½"	2½"	2½"

Wells Self-Opening Die

Patented

Model V

With Floating Shank Permitting Independent Lead

Equipment: Hollow shank, Face trip, Hand lever trip.

Number of Die	820	821	822	823
Dimensions				
Head:				
Diameter (A)	2 1/4"	2 9/16"	3 1/8"	3 7/8"
Length (B)	1 5/8"	2"	2 7/8"	3"
Shank:				
Diameter (C)	3/4" 7/8"	7/8" 1"	1 1/4" 1 1/2"	1 1/2" 1 3/4"
Length (D)	2"	2 1/2"	3"	3 1/4"
Thickness of Flange (G)	3/8"	7/16"	1/2"	1/2"
Length over all (E)	4"	4 15/16"	6 3/8"	6 1/2"
Hand Lever:				
Length from center of head to tip (F)	3 1/8"	3 1/4"	4 5/8"	4 5/8"
*Capacity				
Bolt or Screw thds.	0" to 1/4"	1/8" to 1/2"	1/4" to 3/4"	3/8" to 1"
Pipe threads		1/8"	1/8" to 3/8"	1/4" to 3/4"
Price				
Die, with one set of chasers—any standard thr'd and pitch	\$25.00	\$30.00	\$40.00	\$50.00
Die, with assortment of extra chasers and bench block as illustrated on page 188	6 Sets Chasers	6 Sets Chasers	9 Sets Chasers	9 Sets Chasers
	\$32.50	\$38.50	\$55.00	\$65.00
	12 Sets Chasers	12 Sets Chasers		
	\$42.00	\$47.50		
Extra chasers, per set, any thread standard	\$1.50	\$1.75	\$2.00	\$2.50

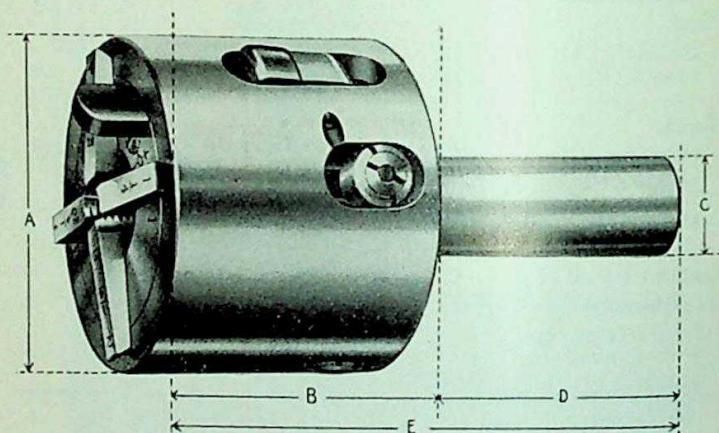


*These heads equipped with hollow shanks will cut any length of thread. For lengths cut with solid shank die heads see opposite page.

Wells Self-Opening Die

Patented

Model T



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	840	841	842	843
Length of thread will cut with solid shank	1½"	1½"	2½"	2½"

Wells Self-Opening Die

Patented

Model T

Equipment: Hollow shank, Face trip, Rim trip.

Number of Die	840	841	842	843
Dimensions				
Head:				
Diameter (A)	2"	2 1/4"	2 13/16"	3 1/2"
Length (B)	1 11/16"	2 1/16"	2 13/16"	2 5/16"
Shank:				
Diameter (C)	5/8" 1 1/16"	3/4" 7/8" 1"	1" 1 1/4"	1 1/4" 1 1/2"
Length (D)	2" 3/4"	2 1/2"	3"	3 1/4"
Length over all (E)	3 5/8"	4 1/2"	5 3/4"	6 3/16"
*Capacity				
Bolt or Screw thds.	0" to 1/4"	1/8" to 1/2"	1/4" to 3/4"	3/8" to 1"
Pipe threads		1/8"	1/8" to 3/8"	1/4" to 3/4"
Price				
Die, with one set of chasers—any standard thr'd and pitch	\$25.00	\$30.00	\$40.00	\$50.00
Die, with assortment of extra chasers and bench block as illustrated on page 188	6 Sets Chasers \$32.50 12 Sets Chasers \$42.00	6 Sets Chasers \$38.50 12 Sets Chasers \$47.50	9 Sets Chasers \$55.00	9 Sets Chasers \$70.00
Extra chasers, per set, any thread standard	\$1.50	\$1.75	\$2.00	\$2.50



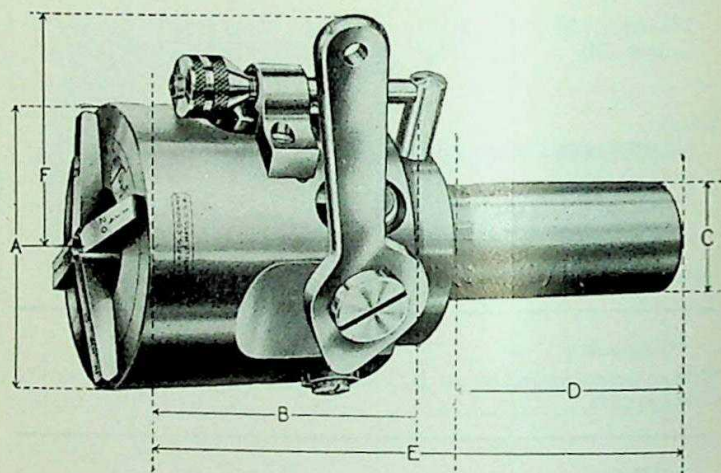
*These heads equipped with hollow shanks will cut any length of thread. For lengths cut with solid shank die heads see opposite page.

Wells Self-Opening Die

Patented

Model T

With Floating Shank and New Closing Lever



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	860	861	862	863
Length of thread will cut with solid shank	1½"	1½"	2½"	2½"

Wells Self-Opening Die

Patented

Model T

With Floating Shank and New Closing Lever

Equipment: Hollow shank, Pull trip, Closing lever

Number of Die	860	861	862	863
Dimensions				
Head:				
Diameter (A)	2"	2 $\frac{1}{4}$ "	2 $\frac{13}{16}$ "	3 $\frac{1}{2}$ "
Length (B)	1 $\frac{11}{16}$ "	2 $\frac{1}{16}$ "	2 $\frac{13}{16}$ "	2 $\frac{13}{16}$ "
Shank:				
Diameter (C)	$\frac{3}{4}$ " $\frac{7}{8}$ "	$\frac{7}{8}$ " 1"	1 $\frac{1}{4}$ " 1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ " 1 $\frac{3}{4}$ "
Length (D)	2"	2 $\frac{1}{2}$ "	3"	3 $\frac{1}{4}$ "
Thickness of Flange (G)	$\frac{7}{16}$ "	$\frac{9}{16}$ "	$\frac{9}{16}$ "	$\frac{9}{16}$ "
Length over all (E)	4 $\frac{1}{8}$ "	5 $\frac{1}{8}$ "	6 $\frac{3}{8}$ "	6 $\frac{3}{4}$ "
From center of head to tip of lever (F)	2 $\frac{1}{2}$ "	2 $\frac{9}{16}$ "	3 $\frac{5}{8}$ "	4 $\frac{5}{16}$ "
*Capacity				
Bolt or Screw thds. Pipe threads	0" to $\frac{1}{4}$ "	$\frac{1}{8}$ " to $\frac{1}{2}$ "	$\frac{1}{4}$ " to $\frac{3}{4}$ " $\frac{1}{8}$ " to $\frac{3}{8}$ "	$\frac{3}{8}$ " to 1" $\frac{1}{4}$ " to $\frac{3}{4}$ "
Price				
Die, with one set of chasers—any standard thr'd and pitch	\$30.00	\$35.00	\$45.00	\$55.00
Die, with assortment of extra chasers and bench block as illustrated on page 188	6 Sets Chasers \$37.50 12 Sets Chasers \$47.00	6 Sets Chasers \$43.50 12 Sets Chasers \$52.50	9 Sets Chasers \$60.00	9 Sets Chasers \$75.00
Extra chasers, per set, any thread standard	\$1.50	\$1.75	\$2.00	\$2.50

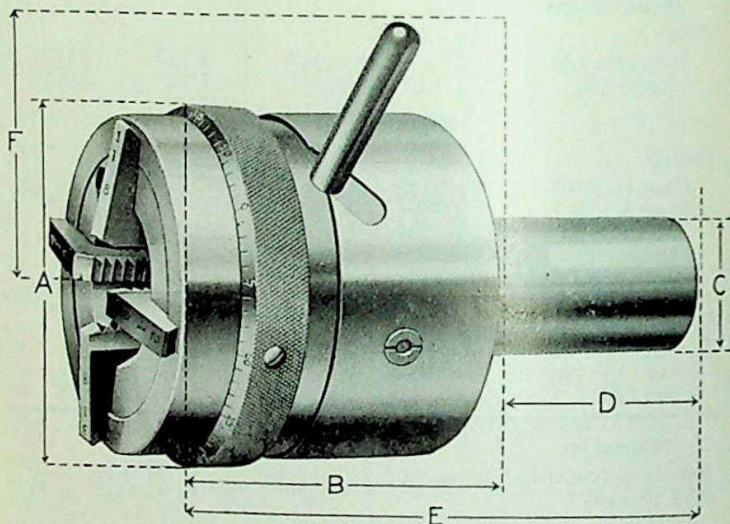


*These heads equipped with hollow shanks will cut any length of thread. For lengths cut with solid shank die heads see opposite page.

Wells Self-Opening Die

Patented

Model B



Special Note

If desired, Solid Shank will be furnished without extra charge to same diameters specified opposite.

Number of Die	880	881	882	883
Length of thread will cut with solid shank	1½"	1½"		

Wells Self-Opening Die

Patented
Model B

Equipment: Hollow Shank, Face Trip, Pull Trip

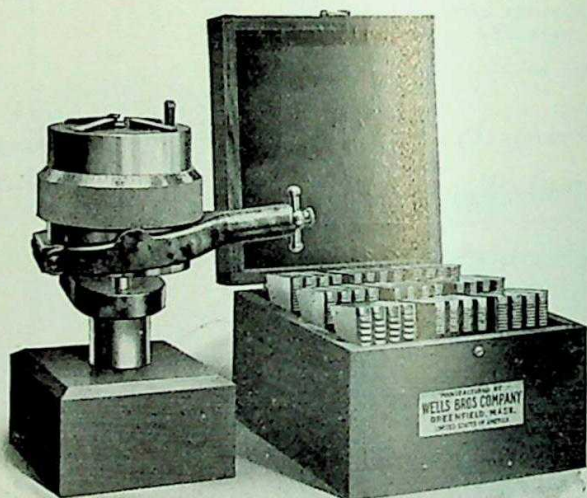
Number of Die	880	881	882	883
Dimensions				
Head:				
Diameter (A)	2"	2 ⁵ / ₁₆ "		
Length (B)	1 ¹⁵ / ₁₆ "	2 ⁵ / ₁₆ "		
Shank:				
Diameter (C)	⁵ / ₈ ", ¹¹ / ₁₆ ", ³ / ₄ ", 1"	1", ³ / ₄ ", ⁷ / ₈ ", 1"		
Length (D)	2", 1 ³ / ₈ "	1 ¹ / ₂ ", 2 ¹ / ₂ "		
Length over all (E)	3 ¹⁵ / ₁₆ "	4 ¹³ / ₁₆ "		
Closing Lever:				
Length from center of head to tip (F)	2 ³ / ₈ "	2 ⁵ / ₈ "		
*Capacity				
Bolt or Screw thds. Pipe threads	0" to ¹ / ₄ "	¹ / ₈ " to ¹ / ₂ " ¹ / ₈ "		
Price				
Die, with one set of chasers—any standard thr'd and pitch	\$30.00	\$35.00		
Die, with assort- ment of extra chasers and bench block as illustrated on page 188	6 Sets Chasers \$37.50 12 Sets Chasers \$47.00	6 Sets Chasers \$43.50 12 Sets Chasers \$52.50		
Extra chasers, per set, any thread standard	\$1.50	\$1.75		

Prices on
Application



*These heads equipped with hollow shanks will cut any length of thread. For lengths cut with solid shank die heads see opposite page.

Wells Self-Opening Die



Where chasers are ordered covering a range of sizes, they are furnished in neat hardwood boxes, as illustrated, together with a bench block for holding the die.

Special prices for these sets—each model and size—may be found in the tables on preceding pages.

Gage Section

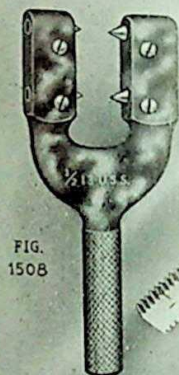


FIG.
1508

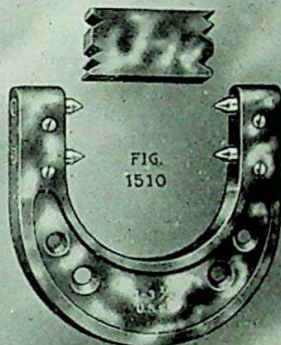


FIG.
1510

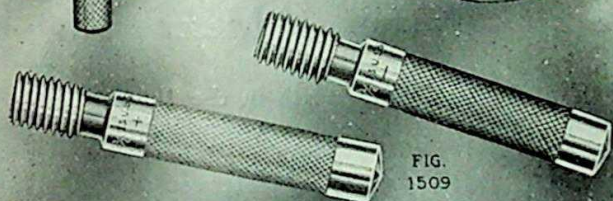


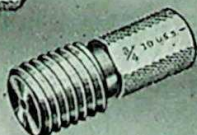
FIG.
1509



FIG.
1511



FIG.
1507



Fundamental Unit of Length

Attempts by individual manufacturers to establish and maintain their own standards of dimensions brought forth a chaos which seriously imperilled the very existence of some of our most important American industries.

A standard of dimension had been defined by law and no adequate or authoritative means were prescribed for maintaining it. To correct this inconsistency, the Bureau of Standards was established at Washington for the purpose of officially perpetuating the various legal standards of the country.



International Meter

The fundamental unit of length in the United States is the International Meter. It is a platinum-iridium bar having three very fine lines near each end. When the bar is at a temperature of 0 degrees Centigrade, the distance between the center lines at each end is **one meter** by definition.

Prototype Meters

A number of prototypes of this Primary Standard Meter (which is carefully preserved at the International Bureau of Weights and Measures near Paris, France) were made in 1889, under the direction of an International Committee representing the various countries which support the Bureau. Two of these prototypes are in the possession of the Bureau of Standards at Washington. No. 27, sealed in a metal case, is preserved in a fire-proof vault. No. 21 is occasionally used to verify their working standards.

The Bureau is equipped to certify to dimensions ranging from the finest gages to metal tapes of hundreds of feet in length.

How Long is an Inch?

According to an Executive Order dated April 5, 1893 the inch is $\frac{1}{39.37}$ of the International Meter. It is a legal dimension officially maintained by the Bureau of Standards through its possession of two prototype meters, and transferred to any suitable commercial gage by the Bureau's secondary standards which are periodically compared with and tested by the Meter Bar No. 21.

The Wells Brothers plant has a number of reference gages covering many decimals of the inch, which are certified by the Bureau of Standards. Every minute dimension used in our processes of manufacture is derived from these certified gages.

The gages illustrated and described on succeeding pages are accurate, authentic and the dimensions derived therefrom will interchange perfectly. They are all tested to an accuracy of $\frac{1}{10,000}$ part of an inch.



The Use of Standard Gages

For the facile testing of cylindrical surfaces and screw threads the micrometer is painfully slow. It is also astonishing to learn that hardly any two mechanics will secure the same reading upon the same article; due to various methods of holding, differing temperatures and the purely human elements such as "touch."

True economy is advanced by the use of accurate gages, particularly in the manufacture of tools and interchangeable machinery parts. A product which is thus standardized can be assembled at a minimum of expense;—a welcome relief to the vexatious "fitting" of parts which have (supposedly) been carefully measured by calipers, scales and micrometers.

In no other way can the manufacturer be protected against unavoidable errors in judgment, carelessness and the excessive cost of expert mechanics in inspection.

Standard Cylindrical Gages

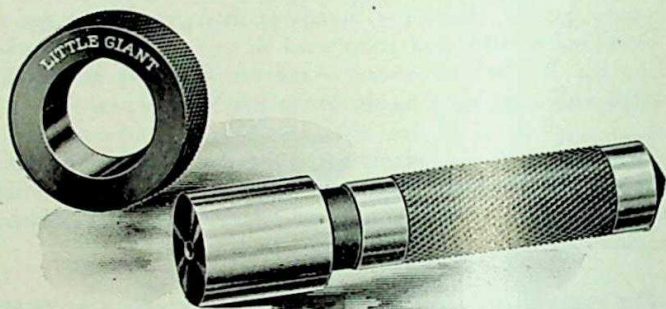


Fig. 1500

These gages are made of the finest quality of non-shrinkable steel. After being carefully hardened they are ground, seasoned and lapped to accurate multiples and sub-multiples of the United States legal inch as maintained by the Bureau of Standards at Washington.

The solid construction makes it possible for the gages to hold their original accuracy even after long and continued use. With the exercise of reasonable precaution to prevent rust and corrosion of the contact surfaces they will last for many years.

NOTE—A Certificate of the Bureau of Standards as to the accuracy of any of our gages of this type, will be furnished when requested, at the Bureau's scheduled charge.

Wells Brothers Company, Div.

Standard Cylindrical Gages

Fig. 1500

Size	Price per Set*	Separate Prices		Size	Price per Set*	Separate Prices	
		Plug (each)	Templet (each)			Plug (each)	Templet (each)
$\frac{1}{16}$	\$ 7.40	\$3.00	\$4.40	$1\frac{9}{16}$	\$13.40	\$5.40	\$ 8.00
$\frac{1}{8}$	7.40	3.00	4.40	$1\frac{5}{8}$	13.80	5.50	8.30
$\frac{3}{16}$	7.40	3.00	4.40	$1\frac{11}{16}$	14.20	5.70	8.50
$\frac{1}{4}$	7.40	3.00	4.40	$1\frac{3}{4}$	14.60	5.90	8.70
$\frac{5}{16}$	7.60	3.00	4.60	$1\frac{13}{16}$	15.00	6.00	9.00
$\frac{3}{8}$	7.80	3.20	4.60	$1\frac{7}{8}$	15.40	6.20	9.20
$\frac{7}{16}$	8.00	3.20	4.80	$1\frac{15}{16}$	15.80	6.30	9.50
$\frac{1}{2}$	8.20	3.30	4.90	2	16.20	6.50	9.70
$\frac{9}{16}$	8.40	3.40	5.00	$2\frac{1}{16}$	16.70	6.70	10.00
$\frac{5}{8}$	8.60	3.50	5.10	$2\frac{1}{8}$	17.20	6.90	10.30
$1\frac{1}{16}$	8.80	3.50	5.30	$2\frac{3}{16}$	17.70	7.10	10.60
$\frac{3}{4}$	9.00	3.60	5.40	$2\frac{1}{4}$	18.20	7.30	10.90
$1\frac{1}{16}$	9.20	3.70	5.50	$2\frac{5}{16}$	18.70	7.50	11.20
$\frac{7}{8}$	9.40	3.80	5.60	$2\frac{3}{8}$	19.20	7.70	11.50
$1\frac{3}{16}$	9.60	3.80	5.80	$2\frac{7}{16}$	19.70	7.90	11.80
1	9.80	3.90	5.90	$2\frac{1}{2}$	20.20	8.10	12.10
$1\frac{1}{16}$	10.20	4.10	6.10	$2\frac{9}{16}$	20.70	8.30	12.40
$1\frac{1}{8}$	10.60	4.20	6.40	$2\frac{5}{8}$	21.20	8.50	12.70
$1\frac{3}{16}$	11.00	4.40	6.60	$2\frac{11}{16}$	21.70	8.70	13.00
$1\frac{1}{4}$	11.30	4.50	6.80	$2\frac{3}{4}$	22.20	8.90	13.30
$1\frac{5}{16}$	11.80	4.70	7.10	$2\frac{13}{16}$	22.70	9.10	13.60
$1\frac{3}{8}$	12.20	4.90	7.30	$2\frac{7}{8}$	23.20	9.30	13.90
$1\frac{7}{16}$	12.60	5.10	7.50	$2\frac{15}{16}$	23.70	9.50	14.20
$1\frac{1}{2}$	13.00	5.20	7.80	3	24.20	9.70	14.50



*A set comprises one Standard or Master Plug and one Templet.

Plug and Templet Thread Gages

U. S. Standard

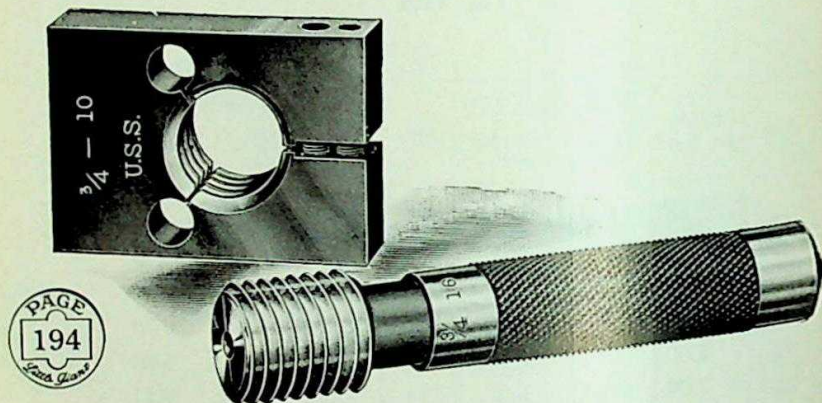


Fig. 1501

While the U. S. form of thread has a flat at both top and bottom equal to one-eighth of the pitch, these gages are made with a one-eighth **flat at top** of thread and a **sharp "V" bottom**. This enables the gage to clear fine chips, dust and dirt which may be lodged in the thread being tested, and insures a bearing upon the angular thread walls.

Hard fibre handles, which act as an insulator to prevent the heat of the hand from affecting the size of the plug, are fitted to all sizes $\frac{1}{4}$ " to 2" inclusive. Larger sizes have steel handles.

The templets, both ring and rectangular, are adjustable by means of interlocking set screws; which cause the three lands to converge toward the common center; thus providing a perpetual compensation for wear. When adjusted, recesses over the heads of set screws can be filled with wax and **sealed** to prevent tampering.

Plug and Templet Thread Gages

United States Standard

Fig. 1501

Size	Threads per Inch†	Price per Set*	Separate Prices	
			Plugs (each)	Templets (each)
				Rectangular
$\frac{1}{4}$	20	\$ 7.50	\$ 4.50	\$ 3.00
$\frac{5}{16}$	18	7.50	4.50	3.00
$\frac{3}{8}$	16	8.00	4.80	3.20
$\frac{7}{16}$	14	8.00	4.80	3.20
$\frac{1}{2}$	13	8.50	5.10	3.40
$\frac{9}{16}$	12	8.50	5.10	3.40
$\frac{5}{8}$	11	9.50	5.70	3.80
$\frac{11}{16}$	11	9.50	5.70	3.80
$\frac{3}{4}$	10	10.50	6.30	4.20
$\frac{13}{16}$	10	10.50	6.30	4.20
$\frac{7}{8}$	9	11.50	6.90	4.60
$\frac{15}{16}$	9	11.50	6.90	4.60
1	8	12.50	7.50	5.00
				Round
$\frac{11}{8}$	7	13.50	8.10	5.40
$\frac{11}{4}$	7	14.50	8.70	5.80
$\frac{13}{8}$	6	15.50	9.30	6.20
$\frac{11}{2}$	6	16.25	9.75	6.50
$\frac{15}{8}$	$5\frac{1}{2}$	17.25	10.35	6.90
$\frac{13}{4}$	5	18.25	10.95	7.30
$\frac{17}{8}$	5	19.50	11.70	7.80
2	$4\frac{1}{2}$	21.00	12.60	8.40
$\frac{21}{8}$	$4\frac{1}{2}$	23.00	13.80	9.20
$\frac{21}{4}$	$4\frac{1}{2}$	25.00	15.00	10.00
$\frac{23}{8}$	4	27.00	16.20	10.80
$\frac{21}{2}$	4	29.00	17.40	11.60
$\frac{25}{8}$	4	31.00	18.60	12.40
$\frac{23}{4}$	4	33.50	20.10	13.40
$\frac{27}{8}$	$3\frac{1}{2}$	36.00	21.60	14.40
3	$3\frac{1}{2}$	38.50	23.10	15.40



*A set comprises:

One Standard or Master Plug for testing nuts or tapped holes.

One Templet for testing screws or bolts.

†Finer pitches quoted on application. See page 199 for prices on S. A. E. Standard (A. L. A. M.)

See page 198 for illustration of round templets.

Left hand threads furnished at special prices.

Plug and Templet Thread Gages

A. S. M. E. Standard

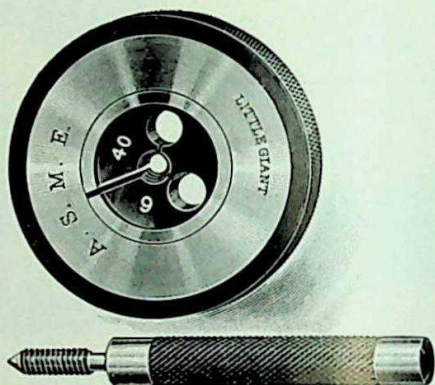


Fig. 1502

These gages are designed for testing machine screws made under the schedule of basic sizes adopted by the American Society of Mechanical Engineers in 1907 and which has since become practically a National standard. (See pages 274 to 277 for tables of sizes.)

Threads on these gages have a **flat top** ($\frac{1}{8}$ pitch) and a **sharp "V" bottom** to clear fine chips, dust and dirt, and also to insure a bearing upon the angular thread walls.

The gages are hardened, thoroughly seasoned, and the thread walls are perfectly finished to the 60 degree angle. If, by reason of long continued use, the templet should become slightly worn, it can be adjusted by means of interlocking set screws which cause the three lands to converge toward the common center, using a setting plug for reference.

Plugs are provided with hard fibre handles and templets with hard fibre rims, which prevent the heat of the hand from affecting either.

Plug and Templet Thread Gages

A. S. M. E. Standard

Fig. 1502

No.	Size	Threads per Inch	Price per Set*	Separate Prices	
				Plug (each)	Templet (each)
0	.060	80	\$10.00	\$6.00	\$4.00
1	.073	72, 64	10.00	6.00	4.00
2	.086	64, 56	10.00	6.00	4.00
3	.099	56, 48	10.00	6.00	4.00
4	.112	48, 40, 36	10.00	6.00	4.00
5	.125	44, 40, 36	10.00	6.00	4.00
6	.138	40, 36, 32	10.00	6.00	4.00
7	.151	36, 32, 30	10.00	6.00	4.00
8	.164	36, 32, 30	10.00	6.00	4.00
9	.177	32, 30, 24	10.00	6.00	4.00
10	.190	30, 32, 24	10.00	6.00	4.00
12	.216	28, 24	10.00	6.00	4.00
14	.242	24, 20	10.50	6.30	4.20
16	.268	22, 20	10.50	6.30	4.20
18	.294	20, 18	10.50	6.30	4.20
20	.320	20, 18	10.50	6.30	4.20
22	.346	18, 16	10.50	6.30	4.20
24	.372	16, 18	10.50	6.30	4.20
26	.393	16, 14	10.50	6.30	4.20
28	.424	14, 16	10.50	6.30	4.20
30	.450	14, 16	10.50	6.30	4.20



**A set comprises:
 One Standard or Master Plug for testing nuts or tapped holes.
 One Templet for testing screws or bolts.
 †Prices cover right hand threads only.
 ‡Left hand threads furnished at special prices.

Plug and Templet Thread Gages

S. A. E. Standard (A. L. A. M.)

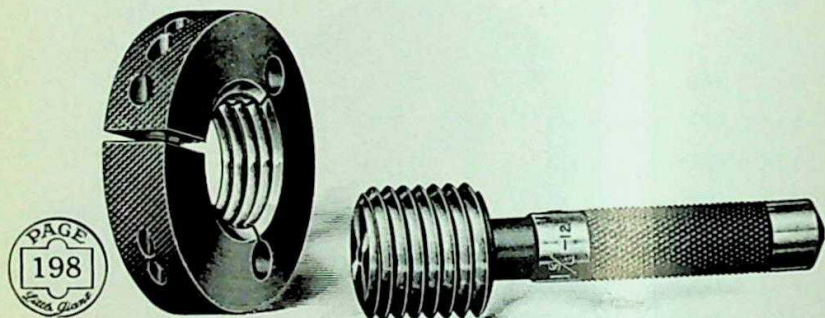


Fig. 1503

The gages illustrated above are of the same construction and dimensions as the U. S. Standard thread gages shown on page 194, but have the pitches of the standard recommended by the Society of Automobile Engineers (formerly called A. L. A. M. Standard.)

Threads on these gages have a **flat top** ($\frac{1}{8}$ pitch) and a **sharp "V" bottom** to clear fine chips, dust and dirt, and also to insure a bearing upon the angular thread walls.

On account of the finer threads and necessity for closer fits in motor and automobile construction, these gages are a necessity if the manufacturer is to keep the cost of screw thread inspection within a reasonable figure.

The templets have perpetual compensation for wear, can be **sealed** to prevent tampering and will practically last a life time.

Plug and Templet Thread Gages

S. A. E. Standard (A. L. A. M.)

Fig. 1503

Size	Threads per Inch	Price per set*	Separate Prices	
			Plugs (each)	Templets (each)
				Rectangular
$\frac{1}{4}$	28	\$10.50	\$ 6.30	\$ 4.20
$\frac{5}{16}$	24	10.50	6.30	4.20
$\frac{3}{8}$	24	11.00	6.60	4.40
$\frac{7}{16}$	20	11.00	6.60	4.40
$\frac{1}{2}$	20	12.00	7.20	4.80
$\frac{9}{16}$	18	12.00	7.20	4.80
$\frac{5}{8}$	18	13.25	7.95	5.30
$1\frac{1}{16}$	16	13.25	7.95	5.30
$\frac{3}{4}$	16	14.50	8.70	5.80
$\frac{7}{8}$	14, 18†	16.00	9.60	6.40
1	14	17.50	10.50	7.00
$1\frac{1}{8}$	12	20.00	12.00	8.00
$1\frac{1}{4}$	12	21.50	12.90	8.60
$1\frac{3}{8}$	12	23.50	14.10	9.40
$1\frac{1}{2}$	12	26.00	15.60	10.40

*A set comprises:

One Templet for testing screws or bolts.

One Standard or Master plug for testing nuts or tapped holes.

†Spark Plug Thread.

See page 194 for illustration of rectangular templets.





Little Giant Plug Limit Gage S.A.E. Standard



This gage is designed to meet the need for a handy, efficient and economical plug gage. The minimum or "Go" end is made slightly longer than the "Not go" or maximum end. This not only takes care of the greater amount of wear borne by this end, but also helps readily to distinguish it from the other. The limits as shown in the table are recommended as a standard. Odd threads or special limits are furnished if desired. The gage ends are inserted in the handle. Threaded ends, when worn, can be taken out and replaced. Both limits being on the same gage, there is no danger of their being separated and either plug misplaced.

Size	Threads per Inch	Outside Diameter	Tapped Hole		Tapped Hole Difference	Minimum Tap Over Basic	Pitch Diameter		Gage Diameter		Gage Tolerance
			Maximum	Minimum			Maximum	Minimum	Maximum	Minimum	
1/4	28	.250	.2285	.2275	.001	.0007	.22875	.22725	.22875	.22725	*+.0002 **-.0002
5/16	24	.3125	.2870	.2860	.001	.0006	.28725	.28575	.28725	.28575	"
3/8	24	.375	.3500	.3485	.0015	.0006	.35025	.34825	.35025	.34825	"
7/16	20	.4375	.4075	.4060	.0015	.001	.40775	.40575	.40775	.40575	"
1/2	20	.500	.4700	.4685	.0015	.001	.47025	.46825	.47025	.46825	"
9/16	18	.5625	.5295	.5275	.002	.0011	.52975	.52725	.52975	.52725	"
5/8	18	.625	.5920	.5900	.002	.0011	.59225	.58975	.59225	.58975	"
11/16	16	.6875	.650	.6480	.002	.0011	.65025	.64775	.65025	.64775	"
3/4	16	.750	.7125	.7105	.002	.0011	.71275	.71025	.71275	.71025	"
7/8	14	.875	.8320	.8295	.0025	.0009	.83225	.82925	.83225	.82925	"
1	14	1.000	.9570	.9545	.0025	.0009	.95725	.95425	.95725	.95425	"

*Tolerance allowed on Maximum Gage. **Tolerance allowed on Minimum Gage.

Little Giant Plug Limit Gage

United States Standard

Little Giant

Size	Threads Per Inch	Outside Diameter	Tapped Hole		Tapped Hole Difference	Minimum Tap over Basic	Gage Pitch Diameter		Gage Tolerance
			Maximum	Minimum			Maximum	Minimum	
1/4	20	.250	.2190	.2180	.001	.0005	.21925	.21775	*+.0002
5/16	18	.3125	.2780	.2770	.001	.0006	.27825	.27675	**-.0002
3/8	16	.375	.3365	.3350	.0015	.0006	.33675	.33475	"
7/16	14	.4375	.3935	.3920	.0015	.0009	.39375	.39175	"
1/2	13	.500	.4525	.4510	.0015	.0009	.45275	.45075	"
9/16	12	.5625	.5115	.5095	.002	.0011	.51175	.50925	"
5/8	11	.625	.5690	.5670	.002	.001	.56925	.56675	"
1 1/16	11	.6875	.6315	.6295	.002	.001	.63175	.62925	"
3/4	10	.750	.6880	.6860	.002	.0009	.68825	.68575	"
13/16	10	.8125	.7510	.7485	.0025	.0009	.75125	.74825	"
7/8	9	.875	.8065	.804	.0025	.0011	.80675	.80375	"
1 5/16	9	.9375	.8690	.8665	.0025	.0011	.86925	.86625	"
1	8	1.000	.9225	.920	.0025	.0012	.92275	.91975	"

*Tolerance allowed on Maximum Gage. **Tolerance allowed on Minimum Gage.
Prices furnished on request.



Pipe Thread Gages

Plug and Ring

Briggs Standard

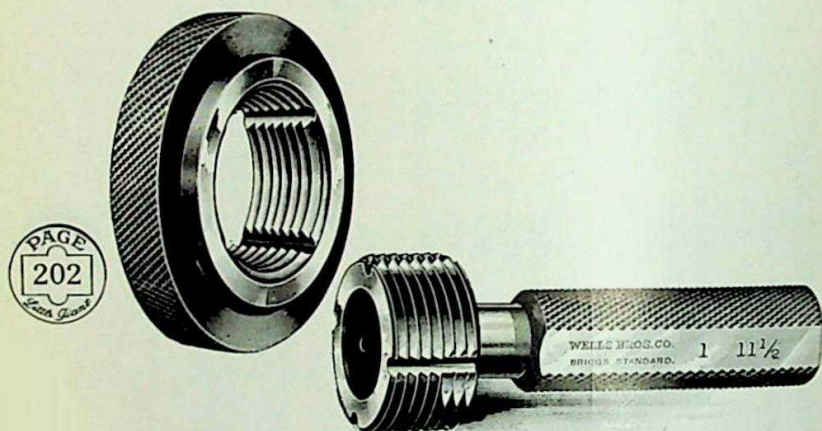


Fig. 1504

Both the plugs and rings have the same length of thread, so that when screwed together the plug stops when it is flush with the stamped side of the ring.

In testing the thread in a fitting, the plug should enter no farther than to the flattened surface; that being the distance which a pipe should enter a fitting by hand. The remainder of the distance should require a wrench or tongs.

(See table on page 288 for details of the Briggs Standard Pipe Thread.)

While the tops of threads on these gages have the Briggs Standard flat, the bottoms are made sharp V to clear fine chips, dust and dirt.

The gages are very carefully hardened, ground, seasoned and lapped to a fine accuracy and will withstand heavy wear and continuous use.

Pipe Thread Gages

Plug and Ring

Briggs Standard

Fig. 1504

Pipe Size	Threads per Inch	Length of Thread Point to Flatted side	Price per Set*	Separate Prices	
				Plugs (each)	Rings (each)
1/8	27	.1801	\$ 8.50	\$ 4.25	\$ 4.25
1/4	18	.200	10.50	5.25	5.25
3/8	18	.240	12.50	6.25	6.25
1/2	14	.320	14.50	7.25	7.25
3/4	14	.339	16.50	8.25	8.25
1	11 1/2	.400	18.50	9.25	9.25
1 1/4	11 1/2	.420	20.50	10.25	10.25
1 1/2	11 1/2	.420	22.50	11.25	11.25
2	11 1/2	.436	24.50	12.25	12.25
2 1/2	8	.682	27.00	13.50	13.50
3	8	.766	29.50	14.75	14.75
3 1/2	8	.821	32.00	16.00	16.00
4	8	.844	34.50	17.25	17.25
4 1/2	8	.875	38.00	19.00	19.00
5	8	.937	41.50	20.75	20.75
6	8	.958	46.00	23.00	23.00
7	8	1.000	82.00	41.00	41.00
8	8	1.063	94.00	47.00	47.00
9	8	1.130	108.00	54.00	54.00
10	8	1.210	126.00	63.00	63.00
11	8		145.00	72.50	72.50
12	8	1.360	165.00	82.50	82.50



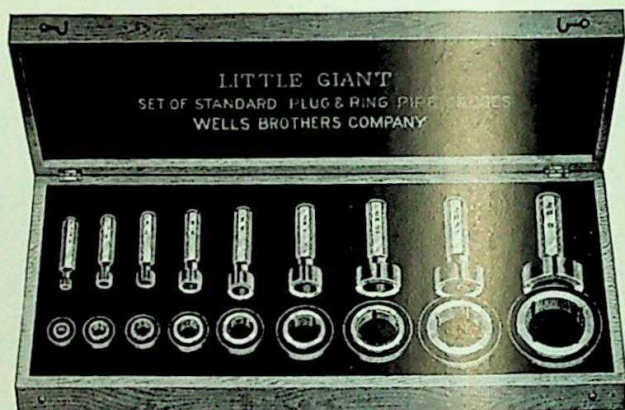
*A set comprises one Standard or Master Plug and one Taperlet.

For sizes above 12" prices quoted on application.

Prices of Gages with left hand or Whitworth Standard threads on application.

NOTE:—See page 204 for prices of complete sets in cabinets.

Pipe Thread Gages in Sets



These gages are the same as those described and listed on pages 202 and 203. The hardwood, oil-finished, plush-lined cabinets, as illustrated, provide a clean and convenient place for keeping them free from dust, dirt or damage.

Assortment No. 1

Sizes $\frac{1}{8}$ " to 2"

Price

\$145.00

Right hand threads only.

Assortment No. 2

Sizes $\frac{1}{8}$ " to 3"

\$200.00

Right hand threads only.

The Use of Limit Gages

In the commercial world, "accuracy" is a variable term. What passes for accuracy in the assembling of 10-cent hardware would not answer on fine gun work. There are certain degrees of accuracy, in all grades of workmanship, beyond which it is altogether unnecessary to go. Recognition of this principle led to the introduction of "Limit Gages" which provide maximum and minimum sizes between which the work must pass.

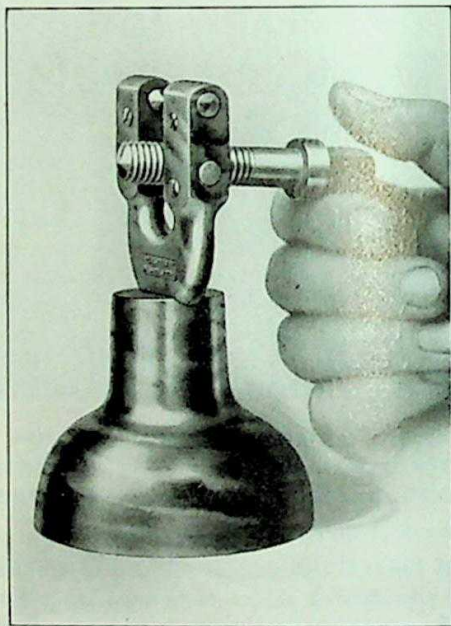
In practice, a schedule of allowable variations (in thousandths and ten-thousandths of an inch) is first agreed upon, which will insure absolute interchangeability. Gages are then provided, each having two contacts, one fixed at the maximum limit of size, the other at the minimum. The work must fall below the maximum but must not go below the minimum. If the size of the work lies between the two, closer accuracy is unnecessary, and the expense of attempting to secure it is eliminated.

The application of Limit Gages in inspection standardizes the product, positively insures the interchangeability of the parts, and eliminates the necessity for employing high-priced mechanics as inspectors.

The use of Limit Gages insures any desired excellence of workmanship, and any desired nicety of fit at a minimum of expense; bringing about uniformity in the cost of high grade work. Limit gages are used by the most progressive and exacting American and European manufacturers, to the great improvement of their product and at a decreased cost for inspection and manufacture.



How to Use Fork Thread Limit Gages



Gravity Contact

Let the weight of the screw govern the "touch."

The upper contact points are set to the maximum size—the lower, to the minimum. Lay the screw upon the gage and let it "find its own level." (See also illustrations opposite).

Previous experience is entirely unnecessary. It would be impossible to conceive of any **simpler** method, and its very simplicity insures perfect **uniformity**. The varying judgment of individual workmen is entirely eliminated.

How to Use Fork Thread Limit Gages



Too Large

The screw will not pass
the upper points.

Rejected



Too Small

The screw has passed
both sets of points.

Rejected



Just Right

The screw has passed the upper points but hangs on
the lower points.

Accepted

Fork Thread Limit Gages

U. S. Standard Form of Thread.

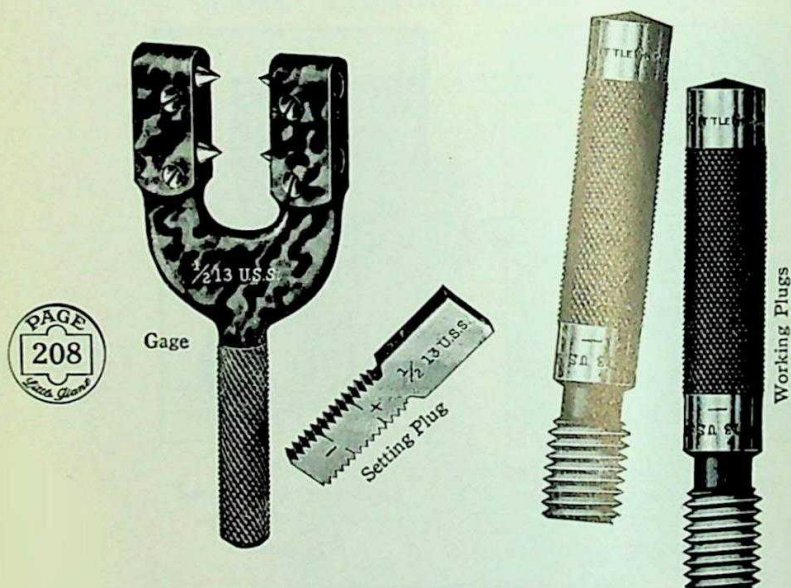


Fig. 1508

Fig. 1509

These gages are for testing the pitch diameter (sometimes called "angle diameter") of screw threads. The contacts are hardened cone points carefully ground to the angle of the thread wall. Errors due to changing angles of helix are thus automatically eliminated. The points are not placed directly opposite each other but are offset a distance equal to one-half the pitch of the thread being gaged. The diameter is, therefore, taken from a solid bearing upon the thread wall, the only bearing from which the pitch diameter can be reliably obtained.

The cone points are made adjustable by set and locking screws and may be **sealed** to prevent tampering.

One plug (covering both limits) for re-setting the points will be furnished with each gage if ordered. Orders should specify limits to which the setting plug is to be marked.

The working plugs for testing nuts or tapped holes have hard fibre handles; the maximum size being red, the minimum black.

Stands for above gages illustrated on page 222.

Fork Thread Limit Gages

For U. S. Standard Form of Thread†

Figs. 1508 and 1509

Size	Threads per Inch‡	Price per Set* (complete)	Separate Prices		
			Fork Gages (each)	Working Plugs (pair)	Setting Plugs (each)
1/4	20	\$12.15	\$3.00	\$ 7.15	\$2.00
5/16	18	12.60	3.10	7.40	2.10
3/8	16	13.05	3.20	7.65	2.20
7/16	14	13.50	3.30	7.90	2.30
1/2	13	13.95	3.40	8.15	2.40
9/16	12	14.45	3.50	8.45	2.50
5/8	11	14.90	3.60	8.70	2.60
11/16	11	15.40	3.70	9.00	2.70
3/4	10	15.85	3.80	9.25	2.80
13/16	10	16.30	3.90	9.50	2.90
7/8	9	16.75	4.00	9.75	3.00
15/16	9	17.20	4.10	10.00	3.10
1	8	17.30	4.20	10.30	3.20
1 1/8	7	19.40	4.30	11.80	3.30
1 1/4	7	20.20	4.40	12.40	3.40
1 3/8	6	20.95	4.50	12.95	3.50
1 1/2	6	21.70	4.60	13.50	3.60
1 5/8	5 1/2	22.45	4.70	14.05	3.70
1 3/4	5	23.20	4.80	14.60	3.80
1 7/8	5	23.95	4.90	15.15	3.90
2	4 1/2	24.75	5.00	15.75	4.00
2 1/8	4 1/2	25.50	5.10	16.40	4.00
2 1/4	4 1/2	26.30	5.20	17.10	4.00



*Complete set includes:

One Fork Gage, for testing screws or bolts.

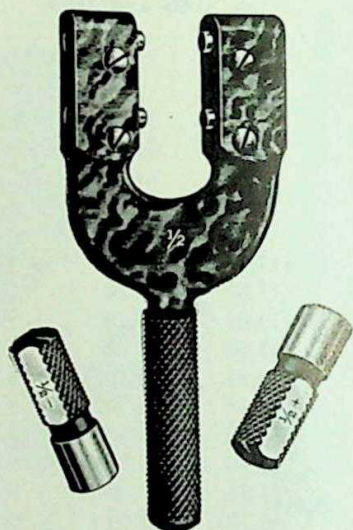
One Taper Setting Plug covering both maximum and minimum limits for adjusting points.

Two Working Plugs for testing nuts and tapped holes.

†Any pitch, not finer than S. A. E. (A. L. A. M.) Standard, in U. S. Form of thread, also furnished at regular prices.

‡Prices on Whitworth, "V" and other forms of thread quoted on application.

Fork Cylindrical Limit Gages



Gage and Setting Plugs

Fig. 1507

For testing the diameter of round or cylindrical surfaces, within specified limits, this gage is ideal. The first, or outer pair of contacts, is set to the maximum limit. The second, or inner pair of contacts, is set to the minimum limit. The article being measured should **pass** the first points but should **not pass** the second.

To provide against wear from long continued use the contacts are adjustable by means of set and locking screws. Recesses back of the set screws can be filled with wax and **sealed** to prevent tampering. The handles are knurled.

A pair of plugs for re-setting the contacts will be furnished with each gage, if ordered. Orders should specify the tolerance (over or under size) to which the setting plugs are to be made.

Stands for above gages illustrated on page 222.

Fork Cylindrical Limit Gages

Fig. 1507

Size	Price per Set* (Complete)	Separate Prices	
		Gages (each)	Setting Plugs (each)
$\frac{1}{4}$	\$ 7.00	\$3.00	\$2.00
$\frac{5}{16}$	7.30	3.10	2.10
$\frac{3}{8}$	7.60	3.20	2.20
$\frac{7}{16}$	7.90	3.30	2.30
$\frac{1}{2}$	8.20	3.40	2.40
$\frac{9}{16}$	8.50	3.50	2.50
$\frac{5}{8}$	8.80	3.60	2.60
$\frac{11}{16}$	9.10	3.70	2.70
$\frac{3}{4}$	9.40	3.80	2.80
$\frac{13}{16}$	9.70	3.90	2.90
$\frac{7}{8}$	10.00	4.00	3.00
$1\frac{5}{16}$	10.30	4.10	3.10
1	10.60	4.20	3.20
$1\frac{1}{8}$	10.90	4.30	3.30
$1\frac{1}{4}$	11.20	4.40	3.40
$1\frac{3}{8}$	11.50	4.50	3.50
$1\frac{1}{2}$	11.80	4.60	3.60
$1\frac{5}{8}$	12.10	4.70	3.70
$1\frac{3}{4}$	12.40	4.80	3.80
$1\frac{7}{8}$	12.70	4.90	3.90
2	13.00	5.00	4.00



*A set comprises:

One Fork Gage and two Setting Plugs for adjusting points.

Crescent Thread Limit Gages

For U. S. Standard Form of Thread

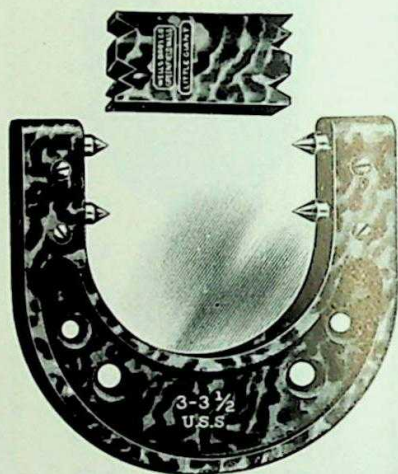


Fig. 1510

In the larger thread sizes, gages of the crescent type (illustrated above) are more convenient than those of the fork type, (shown on page 208.)

For this reason all thread sizes from $2\frac{3}{8}$ " upward are made in this style. Strength and reliability are in no wise impaired.

When mounted upon the bench stands (illustrated on page 222) they are highly efficient.

Crescent Thread Limit Gages

For U. S. Standard Form of Thread†

Fig. 1510

Size	Price per Set* (complete)	Separate Prices	
		Crescent Gage (each)	Setting Plugs (each)
2 $\frac{3}{8}$	\$ 9.30	\$ 5.30	\$4.00
2 $\frac{1}{2}$	9.40	5.40	4.00
2 $\frac{5}{8}$	9.75	5.50	4.25
2 $\frac{3}{4}$	9.85	5.60	4.25
2 $\frac{7}{8}$	9.95	5.70	4.25
3	10.05	5.80	4.25
3 $\frac{1}{8}$	10.40	5.90	4.50
3 $\frac{1}{4}$	10.50	6.00	4.50
3 $\frac{3}{8}$	10.60	6.10	4.50
3 $\frac{1}{2}$	10.70	6.20	4.50
3 $\frac{5}{8}$	11.05	6.30	4.75
3 $\frac{3}{4}$	11.15	6.40	4.75
3 $\frac{7}{8}$	11.25	6.50	4.75
4	11.35	6.60	4.75
4 $\frac{1}{4}$	11.80	6.80	5.00
4 $\frac{1}{2}$	12.00	7.00	5.00
4 $\frac{3}{4}$	12.20	7.20	5.00
5	12.40	7.40	5.00
5 $\frac{1}{4}$	12.60	7.60	5.00
5 $\frac{1}{2}$	12.80	7.80	5.00
5 $\frac{3}{4}$	13.00	8.00	5.00
6	13.20	8.20	5.00
6 $\frac{1}{4}$	13.90	8.40	5.50
6 $\frac{1}{2}$	14.10	8.60	5.50
6 $\frac{3}{4}$	14.30	8.80	5.50
7	14.50	9.00	5.50
7 $\frac{1}{2}$	15.20	9.20	6.00
8	15.40	9.40	6.00
8 $\frac{1}{2}$	15.60	9.60	6.00
9	15.80	9.80	6.00
9 $\frac{1}{2}$	16.00	10.00	6.00
10	16.10	10.10	6.00



*A set comprises:

One Crescent Gage for testing bolts, screws, etc.

One Setting Plug for adjusting points when worn.

Any pitch finer than five threads per inch furnished at regular prices.

†Whitworth or "V" threads furnished at regular prices.

Thread Limit Gages

Plug and Templet

For U. S. Standard Form of Thread

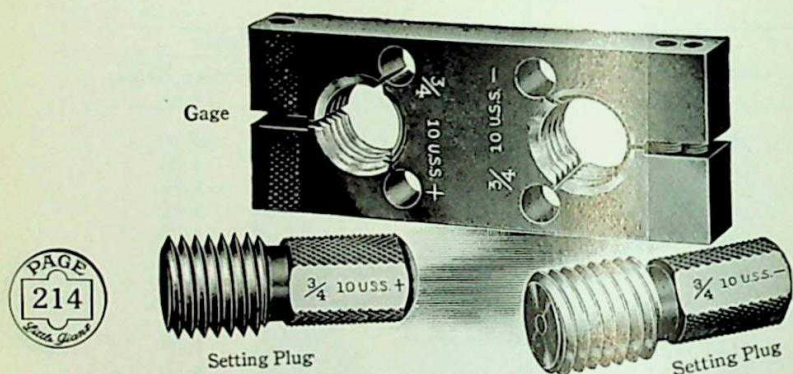


Fig. 1511

Up to and including 1" thread size the templet gage for testing screws or bolts carries both limits in one rectangular block. The maximum end is knurled, by which the inspector may know that he has the correct size or "go" end. The thread should not enter the minimum size or smooth end. These double-end gages are adjustable by means of interlocking set screws which cause the three lands to converge toward the common center. The gages can be sealed in a manner similar to all templet thread gages made by Wells Brothers Company, Division.

The working plugs for testing nuts or tapped holes have hard fibre handles; the maximum size being red, the minimum size black. This red denotes danger. Short handled plugs for re-setting are furnished with each templet gage, if ordered. They should never be used for any other purpose.

Threads on these gages have a **flat top** ($\frac{1}{8}$ pitch) and a **sharp "V" bottom** to clear fine chips, dust and dirt, and also to insure a bearing upon the angular thread walls.



Specimen of Working Plug

Fig. 1509

Thread Limit Gages

Plug and Templet

For U. S. Standard Form of Thread†
Figs. 1511 and 1509

Size	Threads per Inch	Price per Set* (complete)	Prices of Separate Gages		
			Working Plugs (pair)	Templets	Setting Plugs (pair)
				Double End (Each)	
$\frac{1}{4}$	20	\$19.00	\$ 7.15	\$ 7.15	\$ 4.70
$\frac{5}{16}$	18	19.70	7.40	7.40	4.90
$\frac{3}{8}$	16	20.40	7.65	7.65	5.10
$\frac{7}{16}$	14	21.10	7.90	7.90	5.30
$\frac{1}{2}$	13	21.80	8.15	8.15	5.50
$\frac{9}{16}$	12	22.50	8.45	8.45	5.60
$\frac{5}{8}$	11	23.20	8.70	8.70	5.80
$\frac{11}{16}$	11	23.90	9.00	9.00	5.90
$\frac{3}{4}$	10	24.60	9.25	9.25	6.10
$\frac{13}{16}$	10	25.30	9.50	9.50	6.30
$\frac{7}{8}$	9	26.00	9.75	9.75	6.50
$\frac{15}{16}$	9	26.70	10.00	10.00	6.70
1	8	27.50	10.30	10.30	6.90
				Round (pair)	
$1\frac{1}{8}$	7	31.50	11.80	11.80	7.90
$1\frac{1}{4}$	7	33.00	12.40	12.40	8.20
$1\frac{3}{8}$	6	34.50	12.95	12.95	8.60
$1\frac{1}{2}$	6	36.00	13.50	13.50	9.00
$1\frac{5}{8}$	$5\frac{1}{2}$	37.50	14.05	14.05	9.40
$1\frac{3}{4}$	5	39.00	14.60	14.60	9.80
$1\frac{7}{8}$	5	40.50	15.15	15.15	10.20
2	$4\frac{1}{2}$	42.00	15.75	15.75	10.50



*A set comprises:

Two Working Plugs for testing nuts or tapped holes.

One double-end rectangular (or two round) Templets for testing screws, bolts, etc.

Two Setting Plugs for adjusting the templets. (These should never be screwed into a nut or tapped hole.)

†Finer pitches quoted on application. See page 219 for prices on S. A. E. Standard (A. L. A. M.)

Prices on Whitworth, "V" or other forms of thread quoted on application.

Left hand threads furnished at special prices.

Thread Limit Gages

Plug and Templet

A. S. M. E. Standard

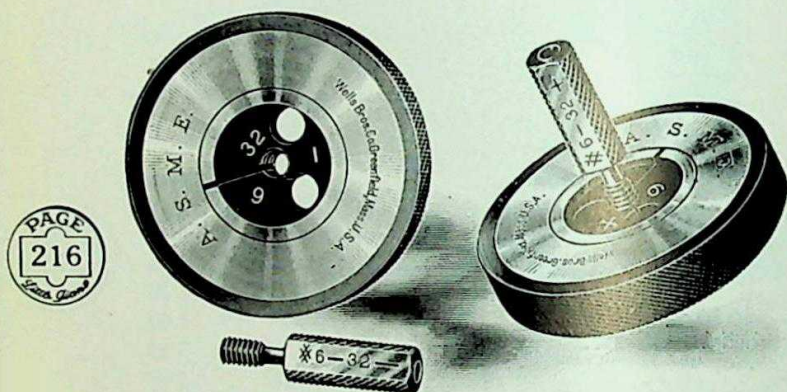


Fig. 1512

At its convention held in Indianapolis, Ind., May 1907, the American Society of Mechanical Engineers adopted a complete schedule of basic diameters for machine screws, fixing at the same time maximum and minimum limits (in 10-thousandths of an inch) between which the threads must pass to insure interchangeability.

These Limit Gages are specially designed to test machine screws within those limits. See tables on pages 274 to 277 inclusive.

The long handled plugs, in pairs, are for testing nuts or tapped holes. They have knurled handles of a hard insulating fibre, so that the heat of the hand will not affect the gage; the "go" size (minimum) being black, the "not go" (maximum) having a red handle.

The ring templets, in pairs, for testing screws have rims of the same insulating material. Templets are adjustable by interlocking set screws which cause the three lands to converge equally toward the common center. The "go" size (maximum) has a black rim, the "not go" (minimum) having a red rim. The colors are a constant check upon the inspector. The red colored gage should "**not go**." If it ever does, the thread being tested is outside the limit and must be rejected.

Threads on these gages have a **flat top** ($\frac{1}{8}$ pitch) and a **sharp "V" bottom** to clear fine chips, dust and dirt, and also to insure a bearing upon the angular thread walls.

Thread Limit Gages

Plug and Templet

A. S. M. E. Standard

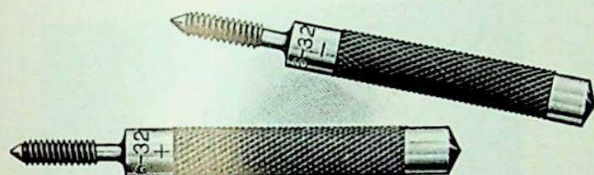


Fig. 1512



No.	Size	Threads per Inch	Price per Set* (Complete)	Prices of Separate Gages		
				Working Plugs (pair)	Templets (pair)	Setting Plugs (pair)
0	.060	80	\$23.00	\$8.50	\$8.50	\$6.00
1	.073	72, 64	23.00	8.50	8.50	6.00
2	.086	64, 56	23.00	8.50	8.50	6.00
3	.099	56, 48	23.00	8.50	8.50	6.00
4	.112	48, 40, 36	23.00	8.50	8.50	6.00
5	.125	44, 40, 36	23.00	8.50	8.50	6.00
6	.138	40, 36, 32	23.00	8.50	8.50	6.00
7	.151	36, 32, 30	23.00	8.50	8.50	6.00
8	.164	36, 32, 30	23.00	8.50	8.50	6.00
9	.177	32, 30, 24	23.00	8.50	8.50	6.00
10	.190	30, 32, 24	23.00	8.50	8.50	6.00
12	.216	28, 24	23.00	8.50	8.50	6.00
14	.242	24, 20	25.00	9.25	9.25	6.50
16	.268	22, 20	25.00	9.25	9.25	6.50
18	.294	20, 18	25.00	9.25	9.25	6.50
20	.320	20, 18	25.00	9.25	9.25	6.50
22	.346	18, 16	25.00	9.25	9.25	6.50
24	.372	16, 18	25.00	9.25	9.25	6.50
26	.398	16, 14	25.00	9.25	9.25	6.50
28	.424	14, 16	25.00	9.25	9.25	6.50
30	.450	14, 16	25.00	9.25	9.25	6.50

*A set comprises:

Two Working Plugs for testing nuts or tapped holes.

Two Templets for testing screws.

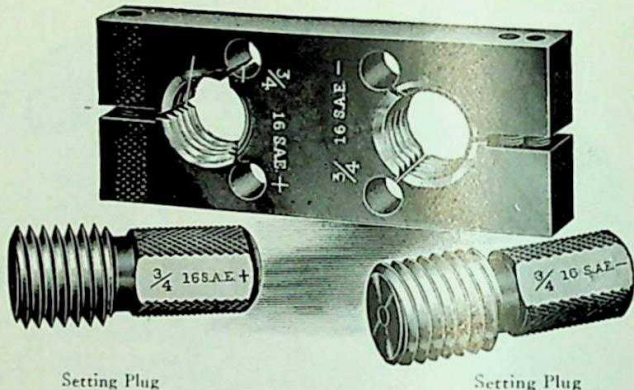
Two Setting Plugs for adjusting the templets. (These should never be screwed into a nut or tapped hole.)

Left hand threads furnished at special prices.

Thread Limit Gages

Plug and Templet

S. A. E. Standard (A. L. A. M.)



Setting Plug

Setting Plug

Fig. 1513

The gages illustrated above are of same construction and dimensions as those shown on page 214, but have the finer pitches of the standard recommended and adopted by the Society of Automobile Engineers (formerly called A. L. A. M. Standard).

On account of the finer threads and necessity for closer fits in motor and automobile construction, these gages are a necessity if the manufacturer is to keep the cost of screw thread inspection down to a reasonable figure.

Threads on these gages have a **flat top** ($1/8$ pitch) and a **sharp "V" bottom** to clear fine chips, dust and dirt, and also to insure a bearing upon the angular thread walls.

The templets have perpetual compensation for wear, can be sealed to prevent tampering and will practically last a life time.

The working plugs for testing nuts or tapped holes have hard fibre handles; the maximum size being red, the minimum size black.



Working Plug

Fig. 1515

Thread Limit Gages

Plug and Témplet

S. A. E. Standard (A. L. A. M.)

Figs. 1513 and 1515

Size	Threads per Inch	Price per Set*	Separate Prices		
			Working Plugs (pair)	Templets	Setting Plugs (pair)
				Double End (Each)	
$\frac{1}{4}$	28	\$23.20	\$ 8.70	\$ 8.70	\$ 5.80
$\frac{5}{16}$	24	23.20	8.70	8.70	5.80
$\frac{3}{8}$	24	24.80	9.30	9.30	6.20
$\frac{7}{16}$	20	24.80	9.30	9.30	6.20
$\frac{1}{2}$	20	27.20	10.20	10.20	6.80
$\frac{9}{16}$	18	27.20	10.20	10.20	6.80
$\frac{5}{8}$	18	29.60	11.10	11.10	7.40
$1\frac{1}{16}$	16	29.60	11.10	11.10	7.40
$\frac{3}{4}$	16	32.00	12.00	12.00	8.00
$1\frac{3}{16}$	14	36.00	13.50	13.50	9.00
$\frac{7}{8}$	14, 18†	36.00	13.50	13.50	9.00
1	14	40.00	15.00	15.00	10.00
				Round (pair)	
$1\frac{1}{8}$	12	48.00	18.00	18.00	12.00
$1\frac{1}{4}$	12	52.00	19.50	19.50	13.00
$1\frac{3}{8}$	12	57.60	21.60	21.60	14.40
$1\frac{1}{2}$	12	64.00	24.00	24.00	16.00



*A set comprises:

Two Working Plugs for testing nuts or tapped holes.

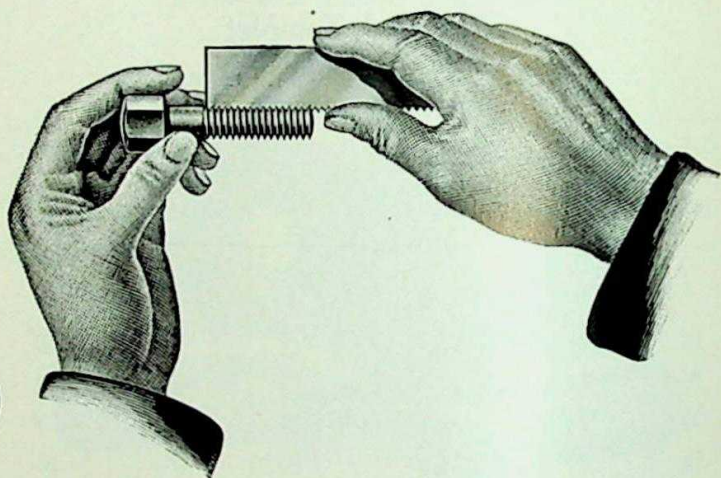
One double-end rectangular (or two round) Templets for testing screws or bolts.

Two Setting Plugs for adjusting the templets. (These should never be screwed into a nut or tapped hole.)

†Spark Plug Thread.

Left hand threads furnished at special prices.

Screw Pitch Gages



Screw Pitch Gages



Fig. 1505

Wherever screw threads are manufactured or used, there is nothing of greater convenience or utility than a set of these Screw Pitch Gages.



With very little experience any workman can quickly detect as minute a variance from normal "lead" as .001" either short or long in 1" length.

They are made in two lengths:

From 3 to 13 threads per inch, the gage is 4 inches long.

From 14 to 80 threads per inch, the gage is 2 inches long.

They are furnished singly or in sets, for the following threads: U. S., "V", Whitworth and S. A. E. Standards.

Prices

Single Gage (any pitch)	\$.30
Set of 8 Gages in case	2.50
Set of 12 Gages in case	3.75
Set of 24 Gages in case	7.50

Screw Pitch Gages for Acme, British Association or Metric threads are special. Prices quoted on application.

Stands for Limit Gages



Fig. 1514

These handsomely mottled stands are a great convenience where the operator tests each thread or cylindrical piece as it comes from the machine, on a fork or crescent type of gage; as they enable an inspector to utilize every movement, both hands being free to handle the threads under test.

Prices

Large size for Crescent Gages,

(size $2\frac{3}{8}$ " to 10") each

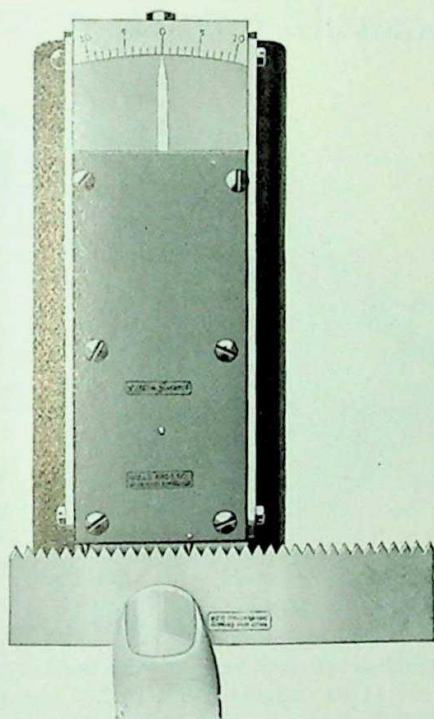
\$1.00

Small size for Fork Gages,

(sizes $\frac{1}{4}$ " to $2\frac{1}{4}$ ") each

.50

Lead Tester



This instrument meets the need for a simple but accurate method of testing the lead on screws and bolts.

The screws are tested as fast as they can be picked up by pressing the threads against the points — as shown in the illustration.

This tester is furnished with either of two adjustments — one with the points set one inch apart and the graduations registering .001" — the other having the points $\frac{1}{2}$ inch apart and the graduations registering .002".

In ordering specify which style is desired.

A series of steel blocks of varying thicknesses is provided with each tester to provide just the right height of rest for the screw while in the process of testing.

When not in use these blocks are contained in the hollow body of the tester.

Price \$15.00

Improved Screw Thread Micrometer

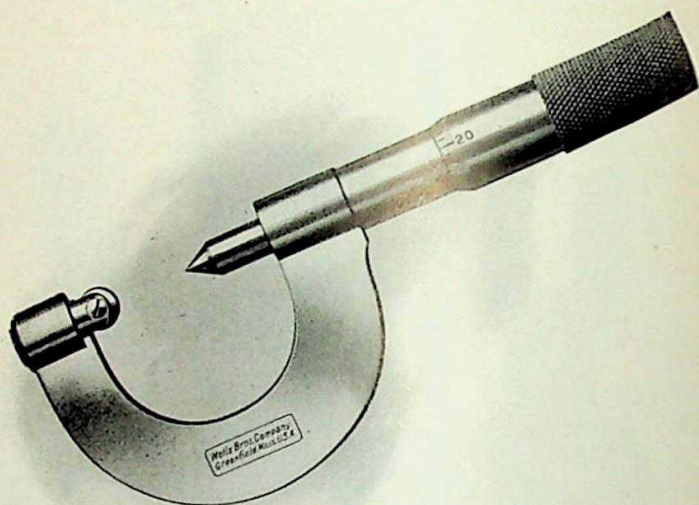
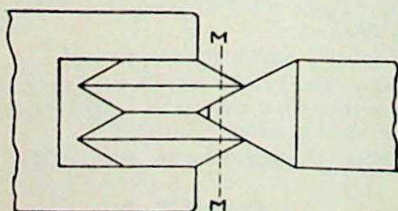


Fig. 2000

Pitch diameter is defined as "the measurement on the angle of the thread at an imaginary line (called the pitch line) located in the threads between the top and bottom at a point where the width of the tooth and space are the same and equal to one-half the pitch."

This theoretical dimension is practically secured from bearings on the angular thread walls at a point midway between top and root.

When the point and anvil of this improved micrometer meet, the reading is "0", which represents a measurement taken at the dotted line.



Improved Screw Thread Micrometer

(Continued)

To clear the flat top of the thread and insure a bearing upon the wall, the V-shaped anvil is cut to a very sharp bottom. Coarse and fine anvils are required to cover the whole range of pitches, as is indicated in the price list.

The spindle point, if found too sharp, can easily be flattened to clear the root of the thread being measured, without disturbing the accuracy of adjustment.

The anvil of this micrometer is given sufficient swing to accommodate the widest range of pitches, but no more. Hence it is impossible for the anvil to turn "crosswise" and delay the user in securing a contact.

The roll at anvil does not revolve; hence it gives a more positive bearing than the rolling anvil; but, by loosening the screw, the roll can be turned to a new bearing position and held firmly by tightening the screw.

Graduations are on the top of the spindle (not on the side) enabling the reading to be taken without turning the instrument. Any length of thread can thus be measured and the reading taken during the contact.

Price \$7.50

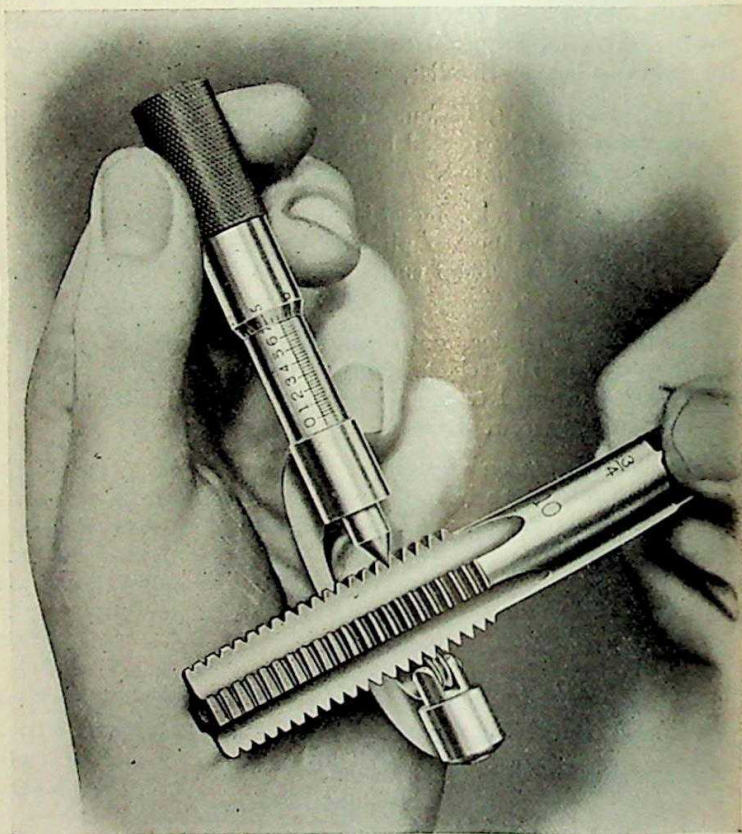
Total capacity 1" pitch diameter.

Specify range of thread pitches to be measured; as,

- No. 1 Range 8 pitch to 13 pitch
- No. 2 Range 14 pitch to 20 pitch
- No. 3 Range 22 pitch to 30 pitch
- No. 4 Range 32 pitch to 40 pitch
- No. 5 Range 48 pitch to 64 pitch



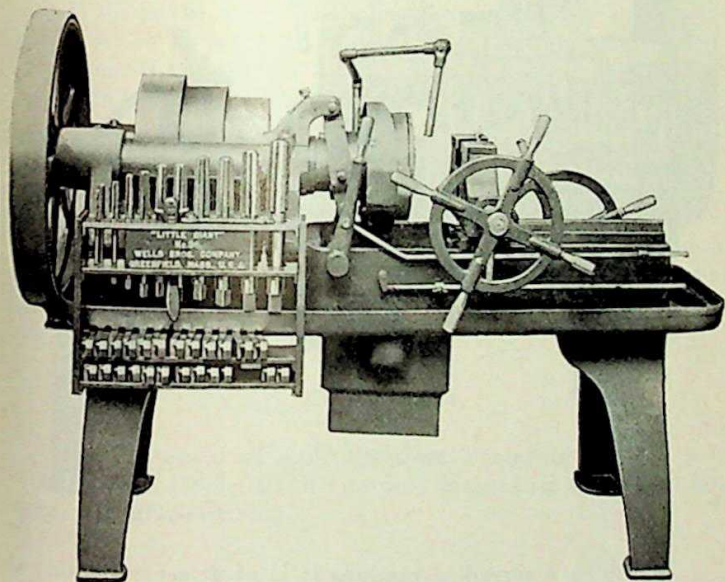
How to Hold a Screw Thread Micrometer



If a thread micrometer is held in this position, any length of thread can be calipered and the reading taken simultaneously. There is no possibility of error due to turning the micrometer after a contact in order to take its reading. Time is thus saved and accuracy insured.

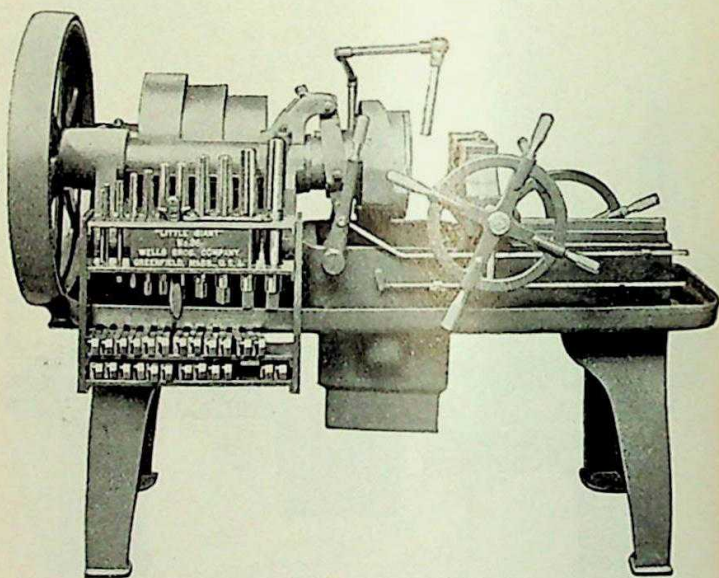
Threading Machine Section

Automatic Opening Die Machines
Solid Head Machines



Threading Machines for Bolts, Nuts and Pipe

with Automatic Opening Die Heads



In buying a threading machine it is of prime importance to consider the conditions under which it will be used, mere productive capacity is a secondary question.

Where short runs, frequent changes from one size to another and intermittent use are the rule, the time spent in "setting up" or in adjustments and changes is an equal or greater element of cost than straight-away production.

The *Little Giant* Threading Machines described on the following pages are free from time-consuming complications and quickly adaptable to any work within their capacity.

Threading Machines for Bolts, Nuts and Pipe

with Automatic Opening Die Heads

Strength and Simplicity

These threading machines are exceptionally strong, and of such simple construction that they have given universal satisfaction for years under the most exacting conditions. The parts are all of simple design and rugged construction. There are no intricacies to be mastered or delicate mechanism to protect. A few moments enables any shop or factory employe to master the operation—previous experience in mechanics is not necessary.



Cleanliness

Gears are covered with guards for protection. A Hood covers the revolving Die-Head to prevent splashing—one step toward a **clean** shop. This Hood is also a protection to the operator, preventing the revolving Die-Head from catching the clothing—one step toward a **safe** shop.

Convenience

The equipment of each *Little Giant* Threading Machine is on a rack by the Head, in full view and within easy reach—one step toward an **efficient** shop.

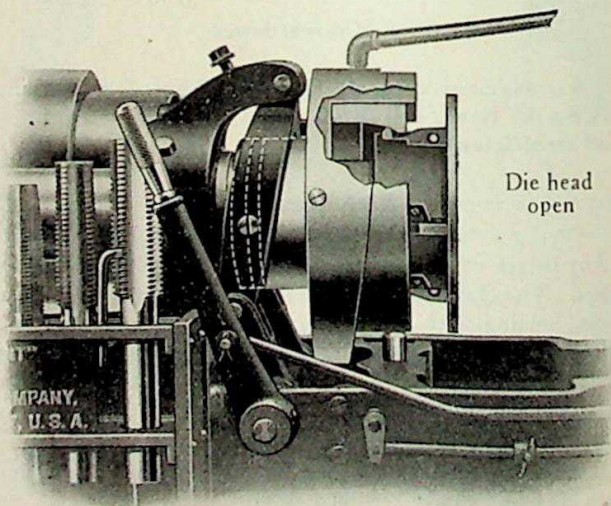
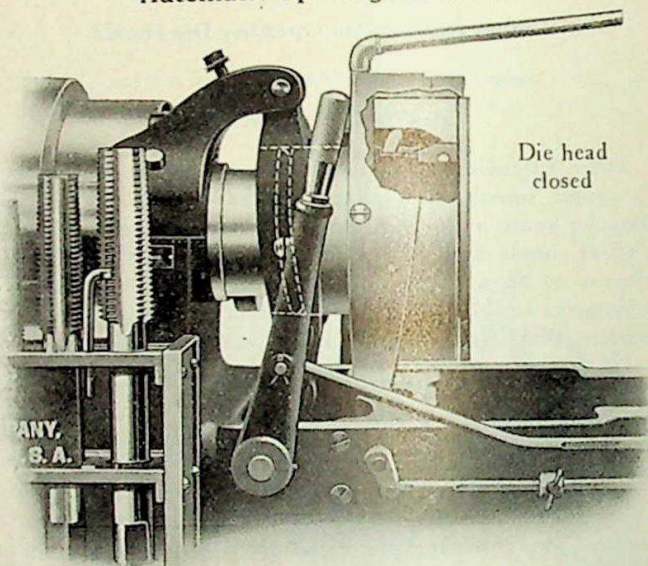
Accessories

Any length of thread can be cut, as the machines have hollow spindles. Vise Jaws on the carriage are interchangeable and reversible, holding with almost equal firmness round, square, hexagonal, elliptical or rectangular objects. The oil pump is geared direct to spindle. The oil tank is broad and deep, can be swung clear of the machine, and the oil bed has a high rim to prevent splashing.

Detailed specifications are given opposite the illustration of each model on the following pages.

Threading Machines for Bolts, Nuts and Pipe

Automatic Opening Die Head



Threading Machines for Bolts, Nuts and Taps

Automatic Opening Die Head

This feature of the *Little Giant* Threading Machine is vital; for it doubles the output of a solid head machine of, otherwise, equal capacity, eliminates the wear and tear of reversing and prevents spoiled work due to chips clogging and gouging the threads when "backing off."

Strength

The wearing and adjustable parts of the *Little Giant* Automatic Opening Die-Head are of high-grade tool steel, carefully hardened and ground. They are interchangeable.

The die-lands are supported directly opposite the cutting teeth, by a heavy steel shell, which holds them solidly in their work; the Die-Head is short, bringing the die-lands close to the spindle; making an exceedingly rigid combination conducive to long life and continuous accuracy.

Adjustment

There are two adjustments for diameter of cut. For all ordinary purposes the adjusting screw in face plate (marked 1) is sufficient. It has a range of approximately .010 inch over or under normal size. Each graduation around this screw represents .001 inch.

If occasion for a greater adjustment occurs the two bolts at back of Die-Head (4-4) are quickly loosened and the cam ring turned one graduation for each .005 inch; finer and final adjustment then being had by the screw in face plate.



Threading Machines for Bolts, Nuts and Pipe

With Automatic Opening Die Head

Automatic Action

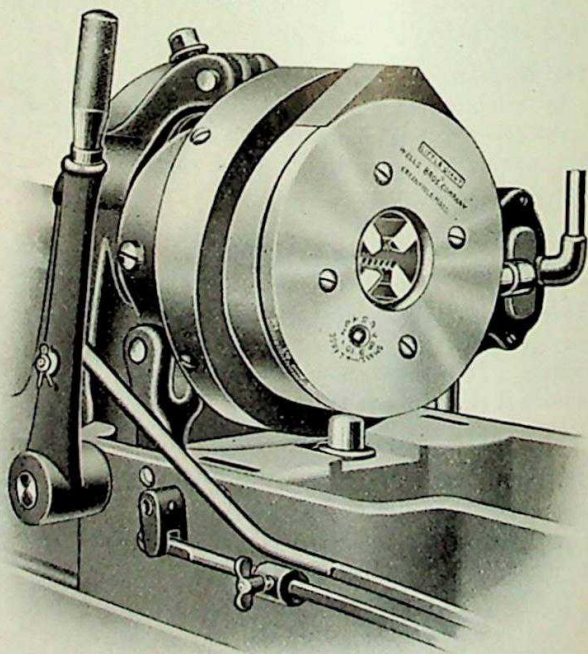
The automatic action is regulated by adjustable "stops" on the two rods along the front of machine bed. The advancing carriage striking the stop on lower rod opens the Die-Head and the carriage stops. Draw the carriage back till it strikes the stop on upper rod and the Die-Head is closed, ready for a new cut.

The Die-Head is also opened or closed by the hand-lever (shown in both positions on page 230) a time-saver in "setting up" and invaluable as a safeguard.

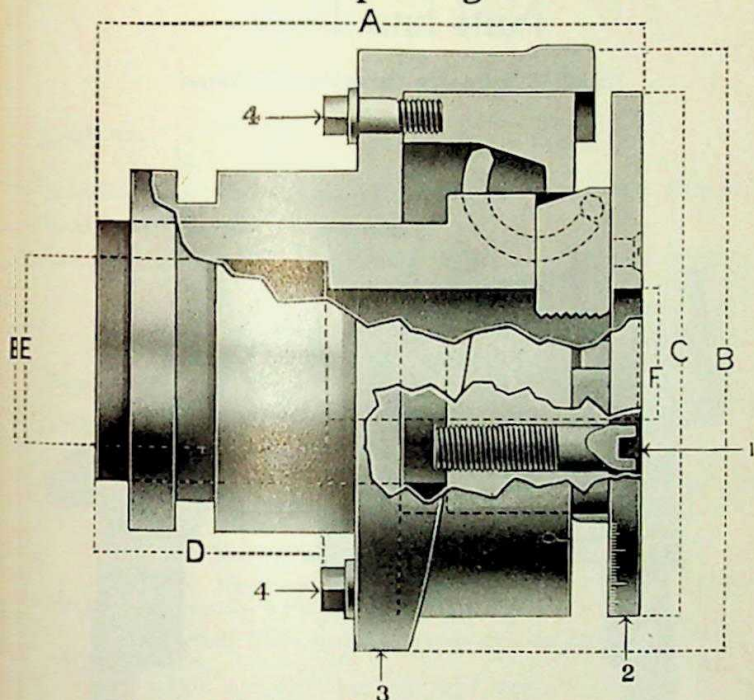
Operating Instructions

To avoid any possibility of misunderstanding, a complete book of instructions goes with each machine, giving the functions of each part in detail; points to observe in setting up; how to insert and remove die-lands; how to gage length of cut; etc., etc.

These books also illustrate and list all parts by number to facilitate identification and for convenience should it ever be necessary to order parts for repairs.



Automatic Opening Die-Head

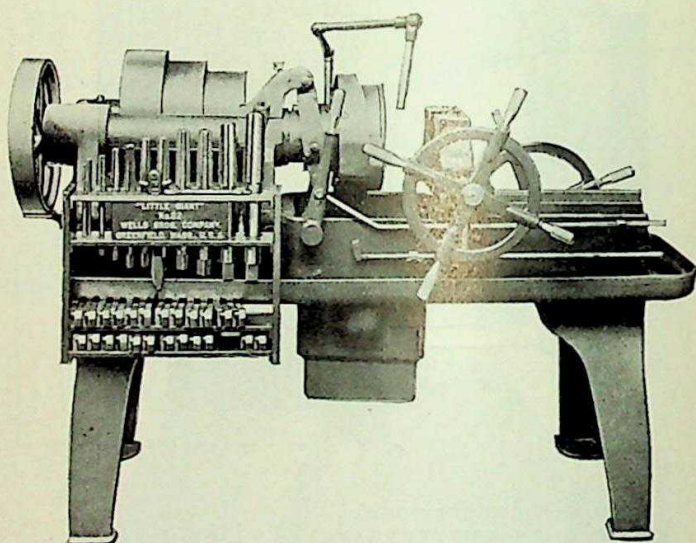


- No. 1—Adjusting screw.
 No. 2—Graduations on edge Face Plate.
 No. 3—Cam Ring.
 No. 4—Adjusting Bolts back of Cam Ring.

Size of Head Inches	A Length over All Inches	B Largest Diameter over Cam Ring Inches	C Diameter of Face Plate Inches	D Length of Hole in Shank for Spindle Inches	E Diameter of Hole in Shank for Spindle Inches	F Diameter of Smallest Hole through Shank Inches	Prices without Dies	Prices of Dies
1	7 $\frac{3}{16}$	8 $\frac{3}{4}$	7	3	2 $\frac{1}{2}$	1 $\frac{3}{4}$	\$60.00	\$2.50
1 $\frac{1}{2}$	8	10 $\frac{7}{8}$	9	4	3	2 $\frac{3}{4}$	85.00	3.00
2	8 $\frac{7}{8}$	12 $\frac{1}{2}$	10 $\frac{1}{4}$	4 $\frac{1}{2}$	4	3	125.00	4.00

No. 32 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head



Detailed specifications on opposite page

Same machine equipped for motor drive listed on page 241.

No. 32 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head

Capacity. $\frac{1}{4}$ "-1" Bolt } Cuts Right or Left-hand.
 $\frac{1}{4}$ "-1" Pipe* }

Spindle. $1\frac{1}{2}$ " dia. of hole full length to cut any length of thread.

Length of Thread. 14" at one setting.

Carriage. Moved forward and backward by hand wheel to facilitate starting of threads. Vise is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws, for holding a variety of sizes and shapes.

Drive. Cone Pulley; 3 step, 6", 8" and 10" for 3" Belt.

Countershaft Speed. 12"x4" pulley, 250 R.P.M.

Geared. 5 to 1.

Oil Pump. Geared direct to spindle. Works equally well with right or left hand drive.



Machine Equipped as Follows—

Automatic Opening Die Head, Tap Jaws, Oil Pump and Tank, Gear Guards, Splash Hood, Wrenches.

Machine Nut Taps and Die-lands cutting right-hand threads as follows:

$\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1"

With Friction Countershaft (illustrated on page 252).....\$190.00

With Plain Countershaft (illustrated on page 252)..... 180.00

Without Countershaft..... 165.00

U.S. Standard threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

*Extra Equipment

Right-hand Pipe Die-lands cutting $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ",
1".....(Extra) \$15.00

Briggs Standard furnished unless otherwise specified. Whitworth Standard furnished when requested.

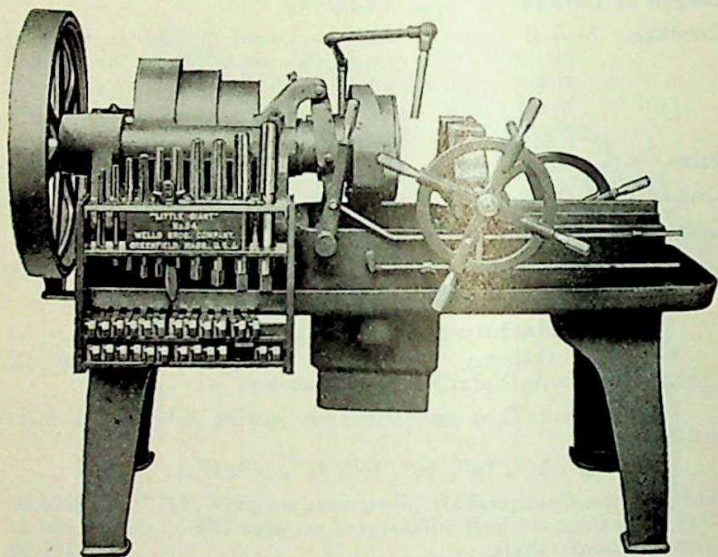
Floor Space. 32"x56".

Weights. (including friction countershaft)
Net 925 lbs., crated 1050 lbs., boxed for export 1250 lbs.

Dimensions. (with regular equipment and countershaft)
Boxed 57" long x 28" wide x 36" high. 33 cubic feet.

No. 34 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head



Detailed specifications on opposite page

Same machine equipped for motor drive listed on page 241.

No. 34 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head

Capacity. $\frac{1}{4}$ "-1 $\frac{1}{2}$ " Bolt Threads } Cuts right or left hand.
 $\frac{1}{4}$ "-2" Pipe Threads* }

Spindle. 1 $\frac{9}{16}$ " dia. of hole full length, to cut any length of thread.

Length of Thread. 14 $\frac{1}{2}$ " at one setting.

Carriage. Moved forward and backward by hand wheel to facilitate starting of threads. Vise is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws, for holding a variety of sizes and shapes.

Drive. Cone pulley; 3 step; 8", 10" and 12" for 3 $\frac{1}{2}$ " Belt.

Countershaft Speed. 12"x4" pulley, 300 R.P.M.

Geared. 8 to 1.

Oil Pump. Geared direct to spindle. Works equally well with right or left hand drive.



Machine Equipped as Follows:

Automatic Opening Die Head, Tap Jaws, Oil Pump and Tank, Gear Guards, Splash Hood and Wrenches.

Machine Nut Taps and Die-lands, cutting right hand threads as follows: $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1, 1 $\frac{1}{8}$ ", 1 $\frac{1}{4}$ ", 1 $\frac{3}{8}$ ", 1 $\frac{1}{2}$ ".

Including Friction Countershaft (see illustration on page

252).....\$250.00

Including Plain Countershaft (see illustration on page 252). 240.00

Without Countershaft..... 225.00

U.S. Standard threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

*Extra Equipment

Right-hand Pipe Die-lands, cutting $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ ", 2" (Extra)..... \$24.00

Floor Space Occupied. 32"x56".

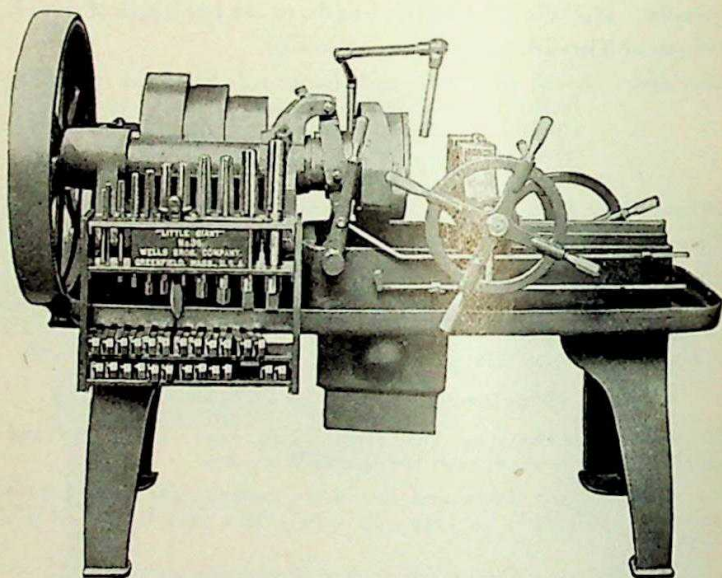
Weights. (including friction countershaft)

Net 1300 lbs., crated 1450 lbs., boxed for export 1750 lbs.

Dimensions. (K.D. and boxed for export) 64" long, 37" wide, 37" high. 51 cubic feet.

No. 36 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head



PAGE
238
Little Giant

Detailed specifications on opposite page

Same machine equipped for motor drive listed on page 241.

No. 36 Threading Machine for Bolts, Nuts and Pipe

with Automatic Opening Die Head

- Capacity.** $\frac{1}{2}$ "-2" Bolt threads } Cuts right or left hand.
 $\frac{1}{4}$ "-2" Pipe threads* }
- Spindle.** $2\frac{1}{16}$ " dia. of hole full length to cut any length of thread.
- Length of Thread.** 17" at one setting.
- Carriage.** Moved forward and backward by hand wheel to facilitate starting of threads. Vise is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws for holding a variety of sizes and shapes.
- Drive.** Cone pulley; 3 step; 10", 12" and 14" for $4\frac{1}{2}$ " Belt.
- Countershaft Speed.** 14"x4" pulley, 300 R.P.M.
- Geared.** 12 to 1.
- Oil Pump.** Geared direct to spindle. Works equally well with right or left hand drive.



Machine Equipped as Follows:

Automatic Opening Die Head, Tap Jaws, Oil Pump and Tank, Gear Guards, Splash Hood and Wrenches.

Machine Nut Taps and Die-lands cutting right hand threads as follows: $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", 2".

- Including Friction Countershaft (see illustration on page 252). \$335.00
- Including Plain Countershaft (see illustration on page 252). 325.00
- Without Countershaft. 300.00

U.S. Standard threads furnished unless otherwise specified.

Whitworth threads furnished when requested.

V form threads are not furnished with this size machine.

*Extra Equipment

Right hand Pipe Die-lands cutting $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2" (Extra). \$ 32.00

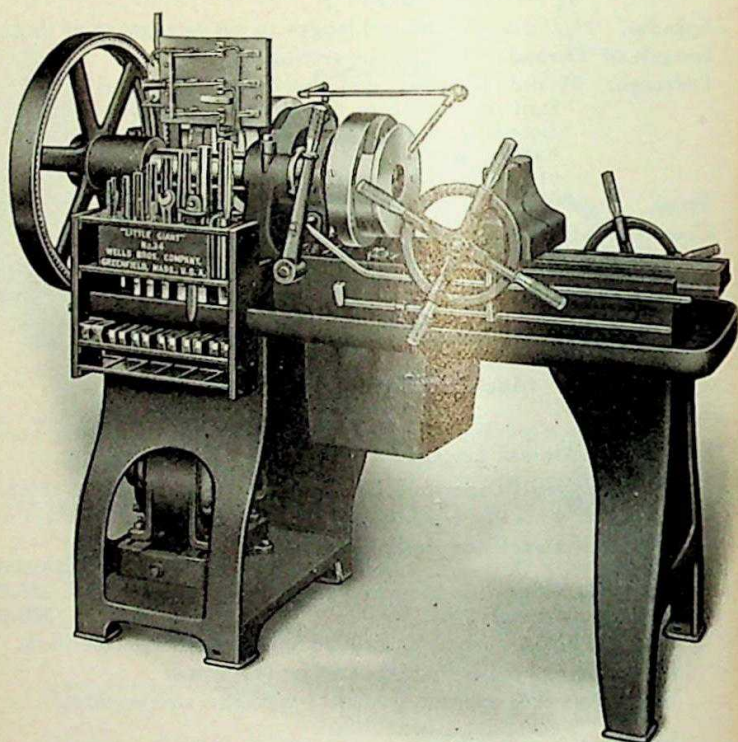
Floor Space Occupied. 41"x69".

Weights. (Including Friction Countershaft)
 Net 1625 lbs., crated 1950 lbs., boxed for export 2450 lbs.

Dimensions. (K.D. and boxed for export)
 72" long, 41" wide, 39" high. 67 cubic feet.

Motor Driven Threading Machines

with Automatic Opening Die Heads



No. 32, No. 34 and No. 36 Machines

Motor Driven Threading Machines

With Automatic Opening Die Head

Little Giant Threading Machines with automatic opening die heads are now furnished with motors attached as shown in illustration on opposite page.

The motor is conveniently placed on the shelf beneath the head of the machine. Here it is out of the way and unexposed to injury — at the same time easy to get at when in need of attention.

The silent chain drive is used.

These machines, thus equipped, can be moved about freely and are particularly valuable on construction or railroad jobs — wherever electric wires can reach.

These machines are also furnished with chain and sprocket but without motor, if so desired. In ordering give diameter of shaft on motor to be used.

In ordering machines with motor specify current, voltage, phase and cycle.

Prices of machines with motor attached upon application.

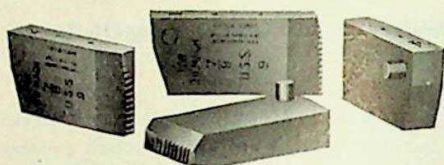


Machine No.	Price of Machine Fully Equipped and Ready for Attaching Motor
32	\$212.00
34	278.50
36	386.75

Above machines without motor drive listed on following pages: No. 32, pages 234-235; No. 34, pages 236-237; No. 36, pages 238-239.

Die Lands

For Opening Die Threading Machines



Dimensions of Die-lands

Die Head Number	Width Inches	Thickness Inch
32	1	$\frac{3}{8}$
34	$1\frac{1}{4}$	$\frac{1}{2}$
36	$1\frac{1}{2}$	$\frac{5}{8}$

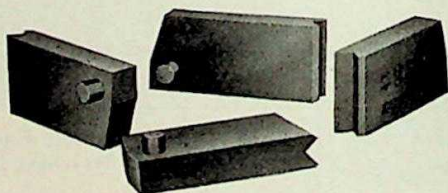


The four die-lands are numbered from 1 to 4, indicating the order in which they should be placed in Die Head.

Prices

Die-lands fitting No. 32 Die Head, per set of 4.....\$2.50
 Die-lands fitting No. 34 Die Head, per set of 4.....\$3.00
 Die-lands fitting No. 36 Die Head, per set of 4.....\$4.00
 U.S. Standard threads furnished unless otherwise specified.
 V form and Whitworth threads furnished when requested.

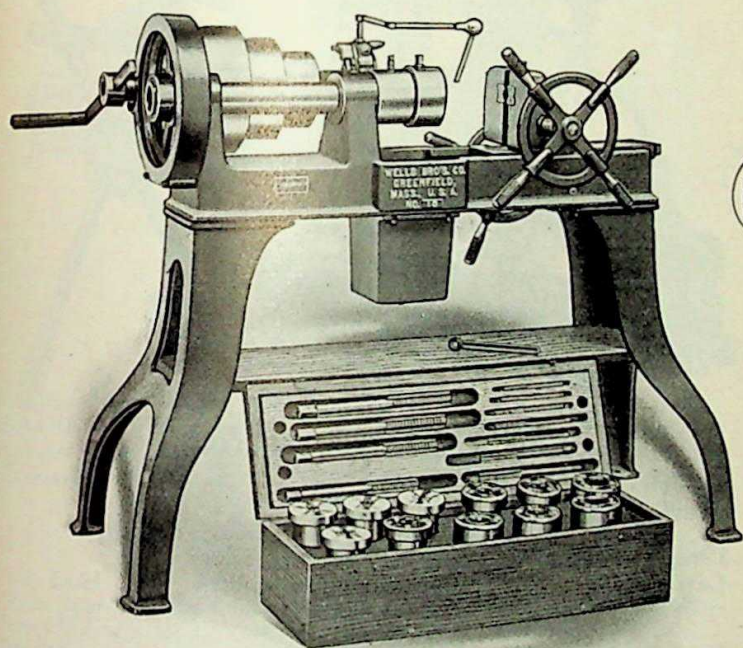
Tap Jaws



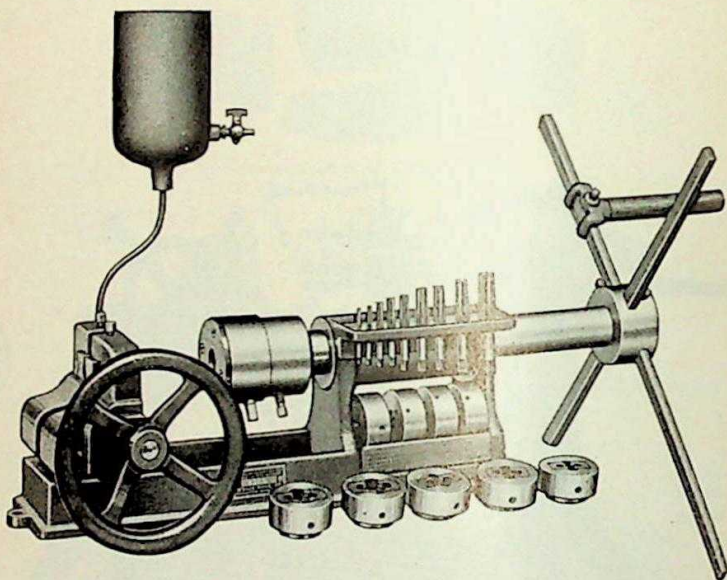
Prices

Number in Set	Capacity for Taps Inches	Price per Set No. 32 Bolt Cutter	Price per Set No. 34 Bolt Cutter	Price per Set No. 36 Bolt Cutter
2	$\frac{1}{4}$ to $\frac{5}{16}$	\$1.25	\$1.50	
2	$\frac{3}{8}$ to $\frac{5}{8}$	1.25	1.50	2.00
4	$\frac{3}{4}$ to 1	2.50	3.00	4.00
4	$1\frac{1}{8}$ to $1\frac{1}{2}$		3.00	4.00
4	$1\frac{5}{8}$ to 2			4.00

Threading Machines with Solid Heads



No. 1 Threading Machine for Bolts and Nuts



Bench Machine for Hand Use

Capacity. $\frac{1}{4}$ " to 1" bolt threads.

Spindle. $1\frac{1}{8}$ " dia. hole full length.

Spindle travels longitudinally through bearing.

Length of Thread. $7\frac{1}{4}$ " at one setting of jaws.

Carriage. Stationary. Jaw supports opened and closed by hand wheel and fitted with hardened tool steel grip-jaws for holding a variety of sizes and shapes.

No. 1 A $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ " \$30.00

No. 1 B $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1" \$40.00

Above assortments include machine complete with Tap Chuck, Hand Taps, *Little Giant* Dies and Collets (same as used in *Little Giant* Screw Plates) Wrenches and Handles.

U.S. Standard threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

Bench Space. 24"x9".

Weight. Net 126 lbs., boxed 165 lbs.

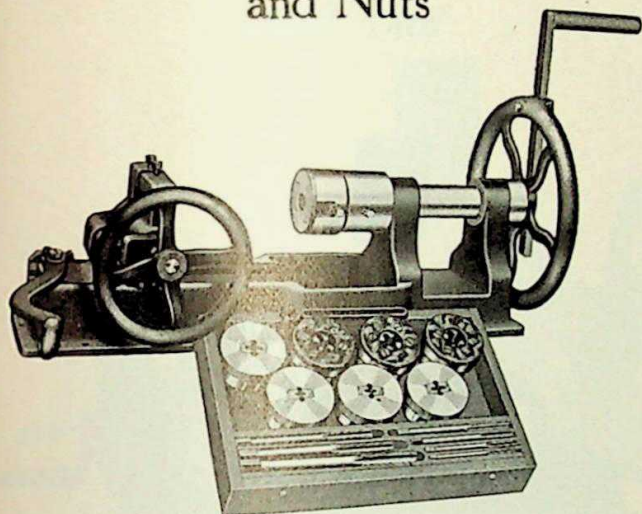
Dimensions. Boxed 26"x14"x12". 2 $\frac{1}{2}$ cubic feet.

Machine Nut Taps listed on pages 128 to 130 inclusive.

Little Giant Dies listed on pages 81 to 84 inclusive.

Little Giant Machine Collets listed on pages 110 and 111.

No. 6 Threading Machine for Bolts and Nuts



Bench or Floor Machine for Hand Use

- Capacity.** $\frac{1}{4}$ " to $\frac{3}{4}$ " bolt threads.
- Spindle.** $1\frac{3}{16}$ " dia. hole full length to cut any length of thread.
- Length of Thread.** $15\frac{1}{2}$ " at one setting.
- Carriage.** Moved forward and backward by lever to facilitate starting of thread. Jaw supports opened and closed by hand wheel and fitted with hardened tool steel grip-jaws for holding a variety of sizes and shapes.

Standard Equipment

- Tap Chuck, Oil Tank, Wrench, Machine Nut Taps, *Little Giant*
- Dies and Machine Collets for cutting $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ".

Prices with Standard Equipment

- Bench Machine complete. \$50.00
- Mounted on Legs. \$57.00

U.S. Standard threads furnished unless otherwise specified.
V form and Whitworth threads furnished when requested.

Space Occupied, Bench or Floor. 34"x20".

Weights. Net 200 lbs., boxed 255 lbs.

With Legs, net 300 lbs., boxed 375 lbs.

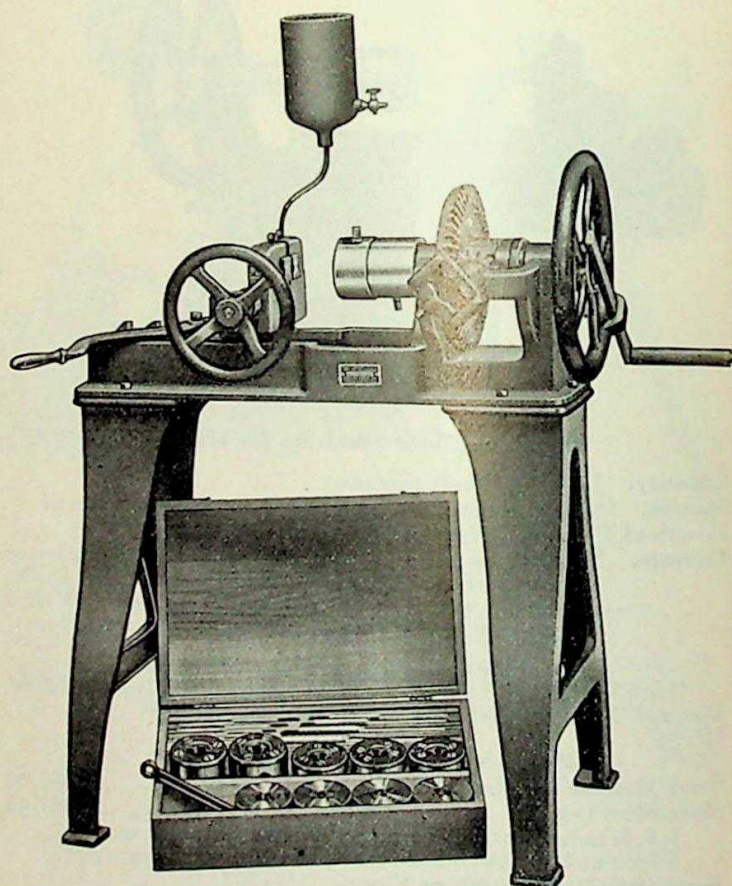
Dimensions. Boxed, 37"x20"x18". $7\frac{3}{4}$ cubic feet.

Machine Nut Taps listed on pages 128 to 130 inclusive.

Little Giant Dies listed on pages 81 to 84 inclusive.

Little Giant Machine Collets listed on pages 110 and 111.

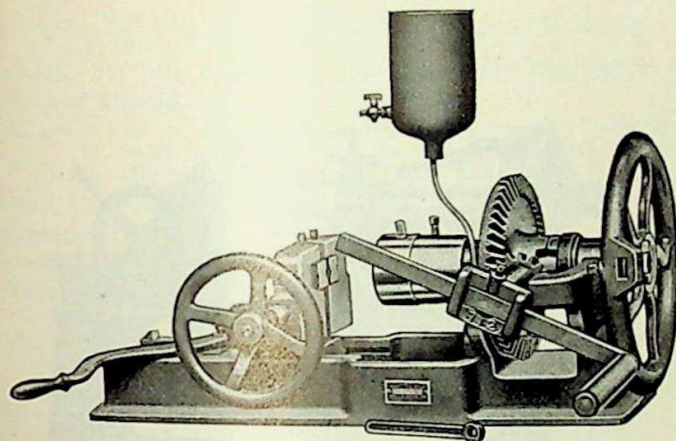
No. 7 Threading Machine for Bolts and Nuts



Bench or Floor Machine for Hand Use

Detailed specifications on opposite page

No. 7 Threading Machine for Bolts and Nuts



Bench or Floor Machine for Hand Use

- Capacity.** $\frac{1}{4}$ " to 1" bolt threads.
Spindle. $1\frac{3}{16}$ " dia. hole full length to cut any length of thread.
Length of Thread. $15\frac{1}{2}$ " at one setting.
Carriage. Moved forward and backward by lever to facilitate starting of thread. Jaw supports opened and closed by hand wheel and fitted with hardened tool steel grip-jaws for holding a variety of sizes and shapes.
Geared. $3\frac{1}{2}$ to 1. Sliding clutch permits quick backing off after threading.

Standard Equipment

Tap Chuck, Oil Tank, Wrench, Machine Nut Taps and *Little Giant* Dies and Machine Collets for cutting $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1".

Prices with Standard Equipment

Bench Machine, complete.....\$70.00
 Mounted on Legs.....77.00

U.S. Std. threads furnished unless otherwise ordered.

V form and Whitworth threads furnished when requested.

Space Occupied, Bench or Floor. 34"x18".

Weights. Bench Machine, net 245 lbs., boxed 335 lbs.

With Legs, net 345 lbs., crated 400 lbs., boxed 450 lbs.

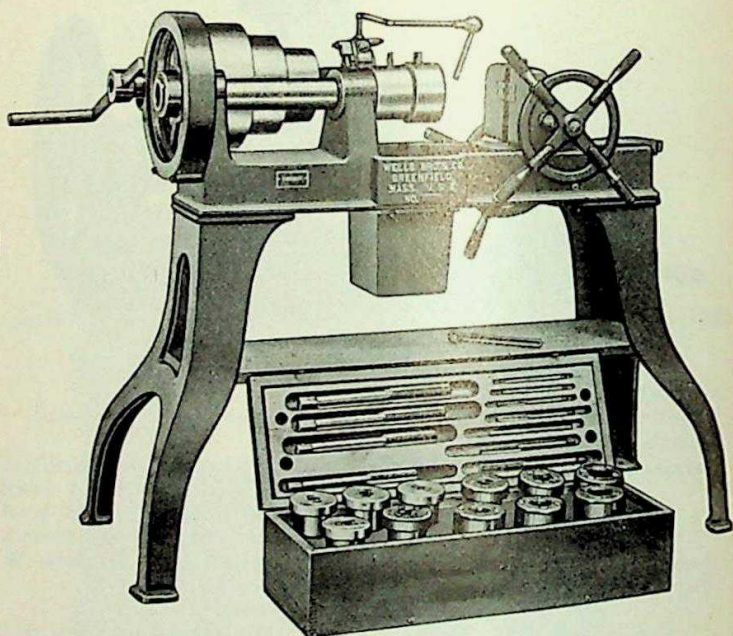
Dimensions. Boxed (bench machine) 37"x22"x18".

Machine Nut Taps listed on pages 128 to 130 inclusive.

Little Giant Dies listed on pages 81 to 84 inclusive.

Little Giant Machine Collets listed on pages 110 and 111.

No. 10 Threading Machine for Bolts and Nuts



Detailed specifications on opposite page.

Nos. 10 and 10 1-2 Threading Machines for Bolts, Nuts and Pipe

- Capacity.** $\frac{1}{4}$ " to $1\frac{1}{4}$ " Bolt Threads } Right or left hand.
 $\frac{1}{4}$ " to 2" Pipe Threads* }
- Spindle.** $1\frac{3}{4}$ " dia. of hole full length to cut any length of thread.
- Length of Thread.** $14\frac{1}{4}$ " at one setting.
- Carriage.** Vise is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws for holding a variety of sizes and shapes.
- Drive.** Cone pulley; 3 step; 6", 8" and 10" for 3" belt.
- Countershaft Speed.** 10"x3 $\frac{1}{2}$ " pulley, 250 R.P.M.
- Geared.** 5 to 1.
- Oil Pump.** Geared direct to spindle. Works equally well with right or left hand drive.

Standard Equipment

Machine Nut Taps, *Little Giant* Dies and Machine Collets, Tap Chuck, Oil Pump and Tank, Gear Guards.

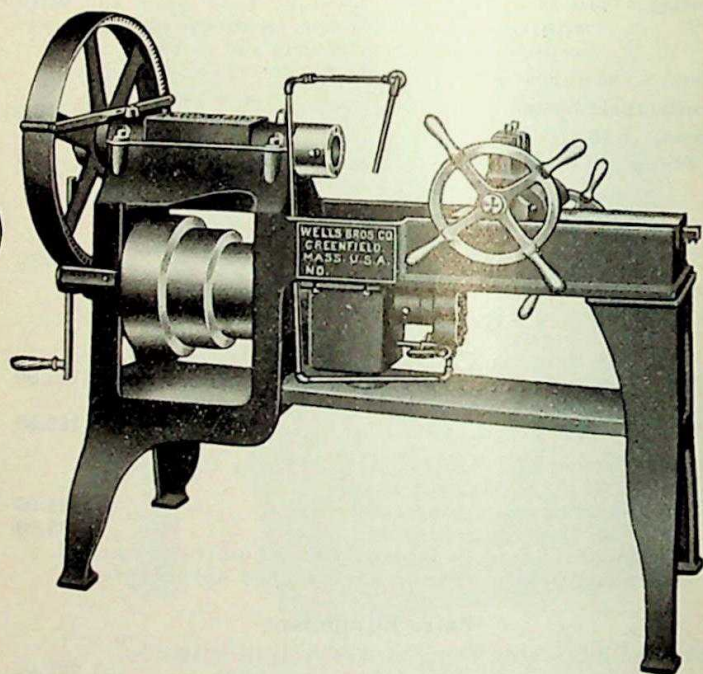
- No. 10** Cutting $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1" (right hand)
 With Friction Countershaft (see illustration on page 252)..... **\$125.00**
 With Plain Countershaft (see illustration on page 252)..... **115.00**
- No. 10 $\frac{1}{2}$** Cutting $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{8}$ ", $1\frac{1}{4}$ " (right hand)
 With Friction Countershaft..... **143.90**
 With Plain Countershaft..... **133.90**
- U.S. Standard threads furnished unless otherwise specified.
 V form and Whitworth threads furnished when requested.

*Extra Equipment

- Right hand Adjustable Pipe Dies and Collets cutting $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2" (Extra)..... **\$31.00**
- Floor Space.** 53"x27".
- Weights.** (Including Plain Countershaft)
 No. 10, net 630 lbs., crated 750 lbs., boxed for export 875 lbs.
 No. 10 $\frac{1}{2}$, net 655 lbs., crated 800 lbs., boxed for export 925 lbs.
- Dimensions.** (Boxed for export) No. 10, 55"x29"x35". 32 $\frac{1}{2}$ cubic feet.
 No. 10 $\frac{1}{2}$, 55"x29"x37". 34 $\frac{1}{2}$ cubic feet.
- Machine Nut Taps listed on page 128 to 130 inclusive.
Little Giant Dies listed on pages 81 to 84 inclusive.
Little Giant Machine Collets listed on pages 110 and 111.



No. 12 Threading Machine for Bolts and Nuts



Detailed specifications on opposite page.

No. 12 Threading Machine for Bolts and Nuts

Capacity. $\frac{3}{8}$ " to $1\frac{1}{2}$ " Bolt Threads } Right or left hand.
 $\frac{1}{4}$ " to $2\frac{1}{2}$ " Pipe Threads* }

Spindle. $1\frac{7}{8}$ " dia. hole full length to cut any length of thread.

Length of Thread. $17\frac{1}{2}$ " at one setting.

Carriage. Vise is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws for holding a variety of sizes and shapes.

Drive. Cone pulley; 3 step; 8", 10" and 12" for $3\frac{1}{2}$ " belt.

Countershaft Speed. 12"x $3\frac{1}{2}$ " pulley, 300 R.P.M.

Geared. 8 to 1.

Oil Pump. Geared direct to spindle. Works equally well with right or left hand drive.



Standard Equipment

Machine Nut Taps, *Little Giant* Dies and Machine Collets, Tap Chuck, Oil Pump and Tank, Gear Guards, cutting $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", $1\frac{3}{8}$ ", $1\frac{1}{2}$ " (Right hand)

Prices with Standard Equipment

With Friction Countershaft (see illustration on page 252). \$175.00

With Plain Countershaft (see illustration on page 252)... \$165.00

U.S. Standard threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

*Extra Equipment

Right hand Adjustable Pipe Dies and Collets cutting $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ " (Extra) ... \$39.00

Floor Space. 55"x29".

Weights. (Including Friction Countershaft)

Net 925 lbs., crated 1065 lbs., boxed for export 1200 lbs.

Dimensions. (Boxed for export) 55"x48"x32". 49 cubic feet.

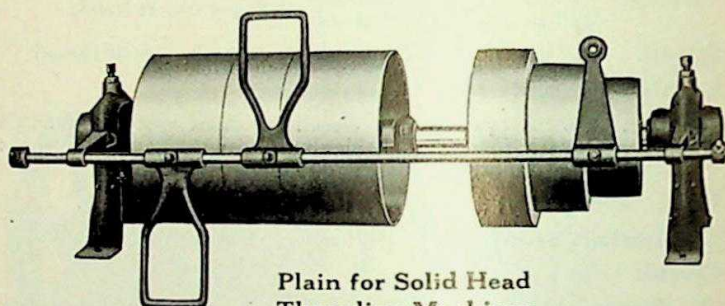
Machine Nut Taps listed on pages 128 to 130 inclusive.

Little Giant Dies listed on pages 81 to 84 inclusive.

Little Giant Machine Collets listed on pages 110 and 111.

Countershafts

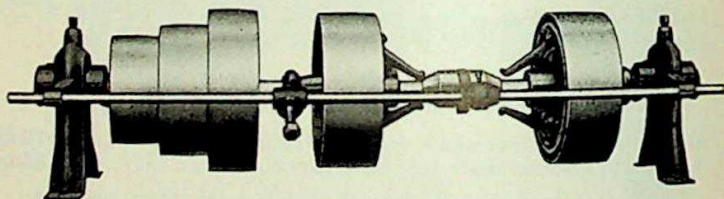
These Countershafts have self-oiling boxes. In ordering specify diameter and face of pulley.



Plain for Solid Head Threading Machines



Plain Countershaft for Opening Die Machines has but one tight pulley instead of two (because the machine does not have to be reversed) otherwise it is the same as shown above.



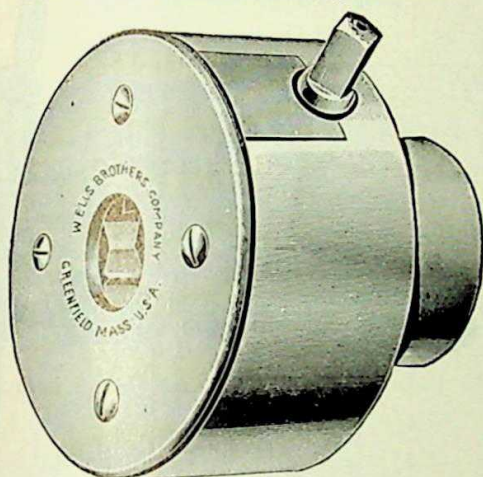
Friction for Both Solid Head and Opening Die Machines

Mach. No.	Dia. of Pulleys Inches	Length of Plain Inches	Length Friction Inches	Width of Face Inches	Price each Plain	Price each Friction
10	10	39½		3½	\$15.00	
10	12		50	3		\$25.00
12	12	44		3½	15.00	
12	12		50	4		25.00
32	12	39½	50	4	15.00	25.00
34	12	39½	50	4	15.00	25.00
36	14	39½	50	4	25.00	35.00

Countershaft hangers for Nos. 10, 12, 32 and 34 Machines have a drop of 7¾". Countershafts for No. 36 Machine have a drop of 9⅝". See table of speeds on opposite page.

Tap Chuck

For Solid Head Threading Machines



These Tap Chucks are for use only on *Little Giant* threading machines with solid heads. The Jaws are of specially hardened tool steel, quickly opened and closed by combination of right and left hand threads. Shanks are $2\frac{3}{4}$ " diameter.

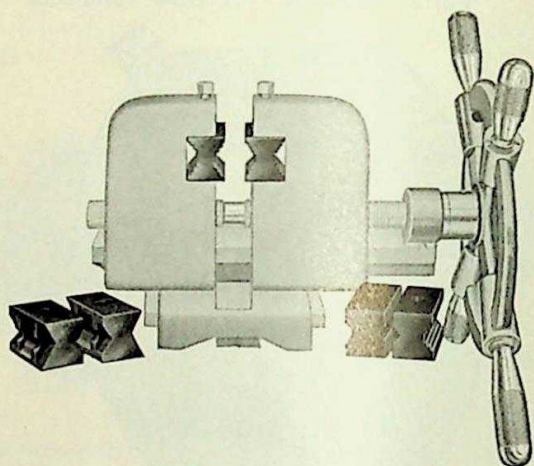
Fitting Machine No.	Tap Capacity	Price Each
1, 6, 7, 10, 10½, 12	$\frac{1}{4}$ " to 1" $\frac{3}{8}$ " to 1½"	\$8.00 \$10.00

Table of Speeds

This table gives diameter of Pulley required on main line shafts of various speeds, to obtain proper speed for *Little Giant* threading machines.

Machine Number	Proper Speed for Counter-shafts Revolutions per Minute	Diameter of Pulleys on Counter-shaft Inches	Speed on Main Line Shafting Revolutions per Minute							
			125	150	175	200	225	250	275	300
			Diameter of Pulleys for Main Line — Inches							
10 and 10½	250	10	20	16	14	12	11	10	9	8
12, 32 and 34	300	12	30	24	20	18	16	15	14	12
36	300	14	34	28	23	21	19	17	16	14

Vise Jaws



Every vise as illustrated above has two or more pairs of carefully hardened tool steel jaws, according to the capacity of the machine. These jaws are interchangeable. Jaws for nuts will hold either square or hexagon.

For Threading Machines with Automatic Opening Die Heads

Machine No.	Jaws for Bolts	Jaws for Pipe	Jaws for Nuts	Price per Pair
32	No. 1 and 2	No. 3	No. 7	\$2.50
34	No. 1 and 2	No. 3	No. 7	2.50
36	No. 4 and 5	No. 6	No. 8	5.00

For Threading Machines with Solid Heads

Machine No.	Jaws for Bolts	Jaws for Pipe	Jaws for Nuts	Price per Pair
1 (A or B)	No. 1	No. 3	No. 7	\$2.50
6	No. 1	No. 3	No. 7	2.50
7	No. 1	No. 3	No. 7	2.50
10	No. 1	No. 3	No. 7	2.50
10½	Nos. 1 and 2	No. 3	No. 7	2.50
12	Nos. 1 and 2	No. 3	No. 7	2.50

Adjustable Dies and Collets

For Threading Machines

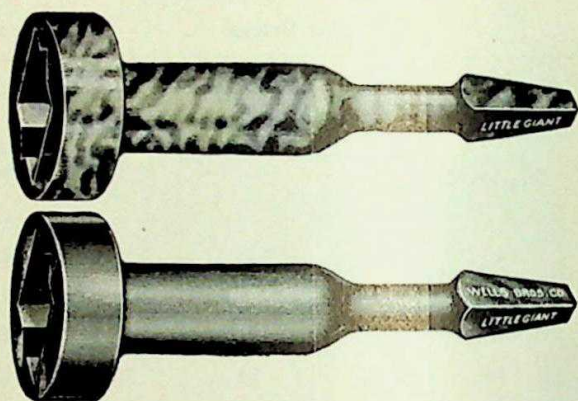
List Prices

Size Inches	No. Threads per Inch			Prices	
	United States Standard	V-Form	Whitworth Standard	Adjustable Dies without Collets	Collets Complete
$\frac{1}{4}$	20	20	20	\$1.00	\$1.00
$\frac{5}{16}$	18	18	18	1.00	1.00
$\frac{3}{8}$	16	16	16	1.25	1.00
$\frac{7}{16}$	14	14	14	1.25	1.00
$\frac{1}{2}$	13	12	12	1.50	1.00
$\frac{9}{16}$	12	12	12	1.50	1.00
$\frac{5}{8}$	11	11	11	1.75	1.00
$1\frac{1}{16}$	11	11	11	1.75	1.00
$\frac{3}{4}$	10	10	10	2.00	1.00
$1\frac{3}{16}$	10	10	10	2.00	1.50
$\frac{7}{8}$	9	9	9	2.75	1.50
$1\frac{5}{16}$	9	9	9	2.75	1.50
1	8	8	8	2.75	1.50
$1\frac{1}{16}$	8	8		4.00	1.50
$1\frac{1}{8}$	7	7	7	4.00	1.50
$1\frac{3}{16}$	7	7		4.00	1.50
$1\frac{1}{4}$	7	7	7	4.00	1.50
$1\frac{5}{16}$	7	7		5.00	1.50
$1\frac{3}{8}$	6	6	6	5.00	1.50
$1\frac{7}{16}$	6	6		5.00	1.50
$1\frac{1}{2}$	6	6	6	5.00	1.50



For other threads and sizes which we furnish as regular, see pages 80-84.

Bit Brace Nut Wrenches



These wrenches will take both square and hexagon nuts. They are very useful for screwing on and removing nuts in carriage work, automobile repairing, etc.

These wrenches are stocked in two finishes, a neat black and a mottled color. Mottled finish sent unless otherwise specified.

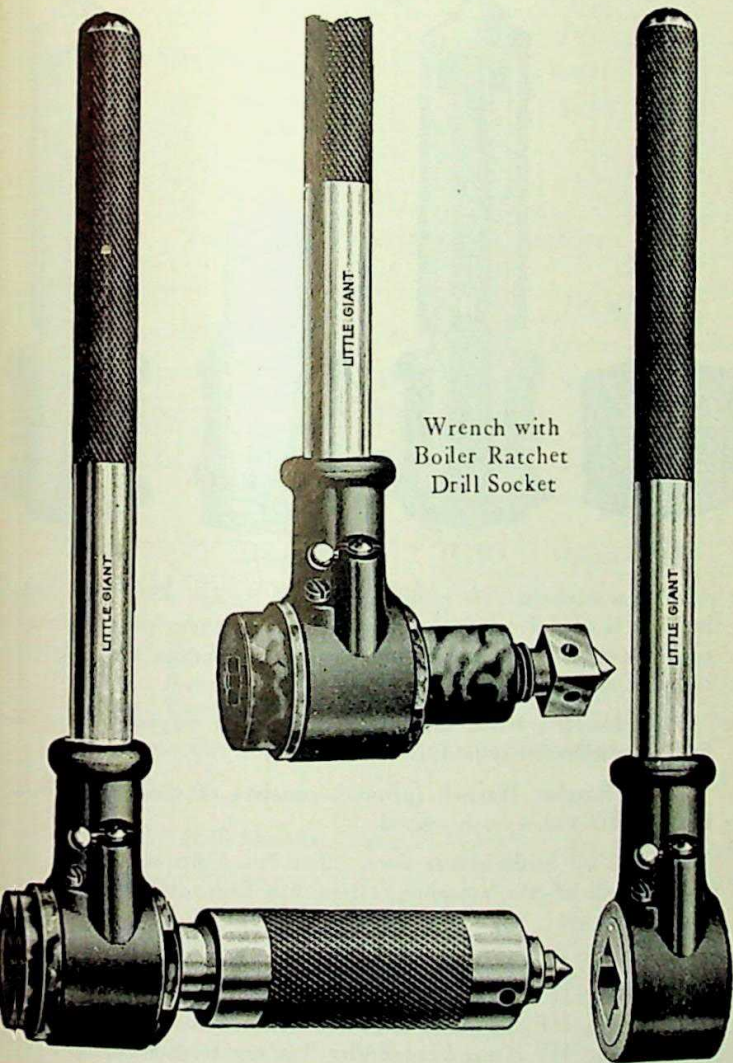
Specify wrenches by number, not by the size of nuts for which wrenches are wanted, as different makes of nuts vary considerably in diameter across flats.

No. of Wrench	1	2	3	4	5	6	7	8	9
Dia. across Flats	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$1\frac{1}{16}$

	Mottled	Blacked
Set of nine wrenches	\$1.80	\$1.35
Set of five wrenches (2, 3, 6, 7, 9)	1.00	.75
Any size, each	.20	.15

Bit Brace Nut Wrenches are packed in sets of 5 and 9, as listed above, and in lots of one dozen of each size for dealer.

Ratchet Wrenches



Wrench with
Boiler Ratchet
Drill Socket

Wrench with Taper Shank
Drill Ratchet Socket

Wrench with Nut
Ratchet Socket

Ratchet Wrenches



Fig. I

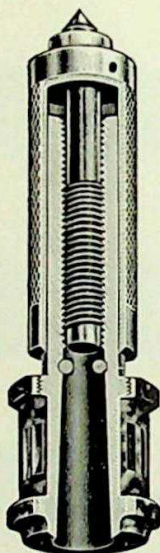


Fig. II

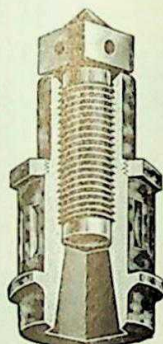


Fig. III

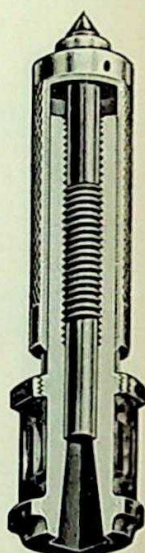


Fig. IV

These wrenches are indispensable on bridge work, ship building and iron and railroad construction, as they can be used in corners and where space is limited for tightening nuts, drilling, reaming, etc.

Blacksmiths, boiler makers, carriage and wagon makers also find them exceedingly useful.

The Ratchet Wrench (proper) consists of the handle, fitted with ratchet and reversing pawl.

These are made in five sizes. Size No. 1 fits sockets for nuts only. Each of the remaining sizes fits four different styles of sockets, viz.:—

- Fig. I Sockets for Square or Hexagon Nuts.
- Fig. II Boiler Ratchet Drill Sockets.
- Fig. III Taper Shank Drill Ratchet Sockets.
- Fig. IV Long Feed Boiler Ratchet Drill Sockets.

Reducing and converting sockets also are provided as shown on opposite page.

Ratchet Wrenches for Nuts and Drills

Ratchet Nut Wrenches

Fig. I

No.	Size Nuts	Length	Prices		
			Wrench or Handle	Socket	Complete
1	$1\frac{7}{32}-\frac{5}{8}$	$8\frac{3}{4}$	\$.50	\$.50	\$1.00
2	$2\frac{3}{32}-1\frac{1}{16}$	$10\frac{3}{4}$	.75	.50	1.25
3	$2\frac{9}{32}-1$	$14\frac{1}{4}$	1.00	.75	1.75
4	$1\frac{3}{32}-1\frac{1}{32}$	$17\frac{1}{2}$	1.75	1.00	2.75
5	$1\frac{11}{32}-1\frac{21}{32}$	$22\frac{1}{4}$	2.50	1.25	3.75

Taper Shank Ratchet Drill Sockets

Fig. II

No.	Size of Drill Shanks	Length	Prices		
			Wrench or Handle	Socket	Complete
32	No. 1 Taper Shank	$10\frac{3}{4}$	\$.75	\$1.75	\$2.50
33	No. 2 Taper Shank	$14\frac{1}{4}$	1.00	2.00	3.00
34	No. 3 Taper Shank	$17\frac{1}{2}$	1.75	2.25	4.00
35	No. 4 Taper Shank	$22\frac{1}{4}$	2.50	2.50	5.00



Boiler Ratchet Drill Wrenches

Fig. III

No.	Size of Drill Shanks	Length	Prices		
			Wrench or Handle	Socket	Complete
22	No. 1 Ratchet Shank	$10\frac{3}{4}$	\$.75	\$1.50	\$2.25
23	No. 1 Ratchet Shank	$14\frac{1}{4}$	1.00	1.75	2.75
24	No. 2 Ratchet Shank	$17\frac{1}{2}$	1.75	2.00	3.75
25	No. 2 Ratchet Shank	$22\frac{1}{4}$	2.50	2.25	4.75

Long Feed Boiler Ratchet Drill Wrenches

Fig. IV

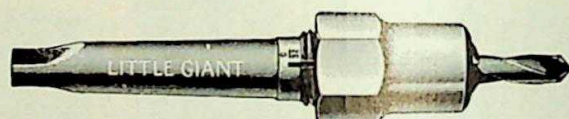
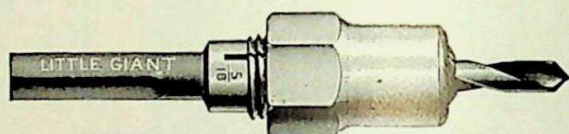
No.	Size of Drill Shanks	Length	Prices		
			Wrench or Handle	Socket	Complete
42	No. 1 Ratchet Shank	$10\frac{3}{4}$	\$.75	\$1.75	\$2.50
43	No. 1 Ratchet Shank	$14\frac{1}{4}$	1.00	2.00	3.00
44	No. 2 Ratchet Shank	$17\frac{1}{2}$	1.75	2.25	4.00
45	No. 2 Ratchet Shank	$22\frac{1}{4}$	2.50	2.50	5.00

Dimensions No. 1 Ratchet Shank, $\frac{3}{8}$ "x $\frac{5}{8}$ "x $1\frac{1}{2}$ ".

Dimensions No. 2 Ratchet Shank, $\frac{1}{2}$ "x $\frac{3}{4}$ "x $1\frac{3}{4}$ ".

Socket for converting No. 1 Ratchet Shank to Bit Brace Shank \$.50
 Socket for converting No. 2 Ratchet Shank to Bit Brace Shank .50
 Socket for reducing No. 2 Ratchet Shank to No. 1.50
 Socket for converting No. 2 Ratchet Shank to $\frac{1}{2}$ inch Shank. . .50

Drill Holders for Straight Shank Drills



These extremely useful and economical tools are for holding straight shank drills. So long as a broken drill is worth regrinding, these tools will securely grip the stubs and obviate the necessity of buying new ones. The prices are much less than those of new drills.

Furnished in three styles: with $\frac{1}{2}$ " or $1\frac{1}{4}$ " dia. shanks and with No. 2 Morse Taper shanks.

$\frac{1}{2}$ " shanks sent unless otherwise ordered.

A Separate Holder is Required for Each Size Drill

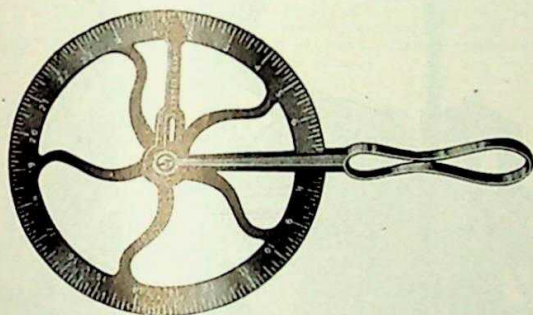
For holding any one of the following sizes of drills: $\frac{1}{8}$ ", $\frac{5}{32}$ ", $\frac{3}{16}$ ", $\frac{7}{32}$ ", $\frac{1}{4}$ ", $\frac{9}{32}$ ", $\frac{5}{16}$ ", $\frac{11}{32}$ ", $\frac{3}{8}$ ", $\frac{13}{32}$ ", $\frac{7}{16}$ ", $\frac{15}{32}$ ".

$\frac{1}{2}$ " or $1\frac{1}{4}$ " dia. shanks, price each.....\$.70

No. 2 Morse Taper shank, price each......85

Tire Wheels

Plain and Graduated



These wheels are very handy for accurately measuring the lengths of tires. The wheel is graduated to eighths of an inch and the circumference is exactly two feet.

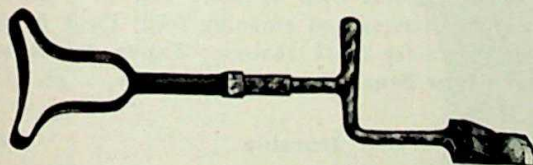
The wheels are well made, light and strong. The pointers may be instantly set and being held in place by friction, will not get loose.

Graduated wheel sent unless otherwise ordered.

Graduated, price each \$1.50

Plain, price each 1.25

Horseshoers' Butteris

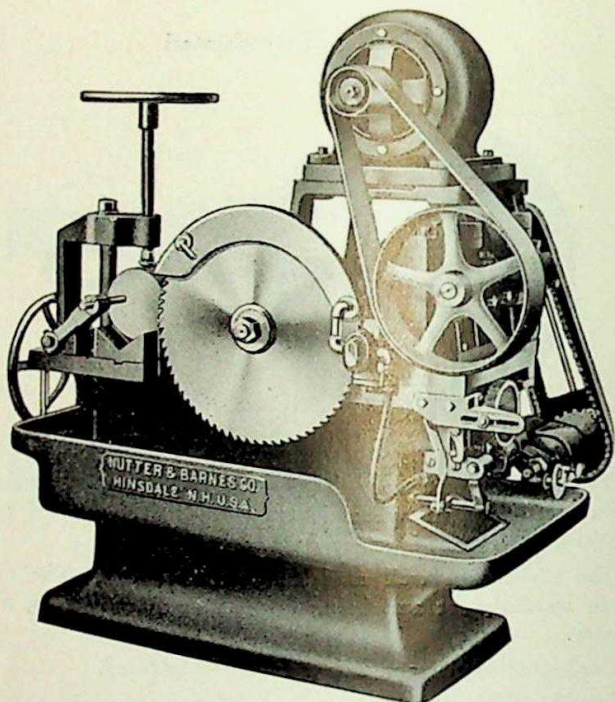


Strong, durable, inexpensive tools, appreciated by all horse-shoers.

Price, each \$1.50

Knives, only, price each25

Nutter and Barnes Cutting-Off Machines for Metal



SPECIAL FEATURES

Forced Lubrication, permits of high speed cutting; **Direct Spur Gear Drive**, gives unusual power and is very compact; a 16 inch saw will cut through stock 6½ inches in diameter; **Saw Hood** protects both operator and saw; **Single Lever Control** for starting and stopping feed; **Four Feed Speeds** with provision for quick changes; **Taper Adjustments** for bearings; **New Stock Feed Attachment**, a great time and labor saver.

Rigid

Durable

Compact

We recommend these powerful automatic machines wherever there is metal to be cut. They are the most accurate and economical Cold Metal Sawing Machines made.

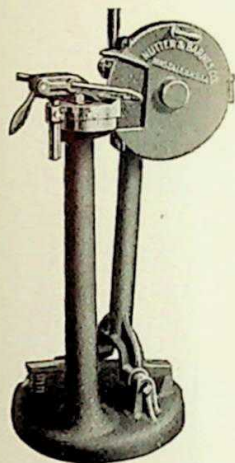
Sizes: 0-4", 0-6", 0-8", 0-10".

Complete catalogue on application.

Abrasive Wheel Cutting-Off Machine and Saw and Cutter Sharpeners

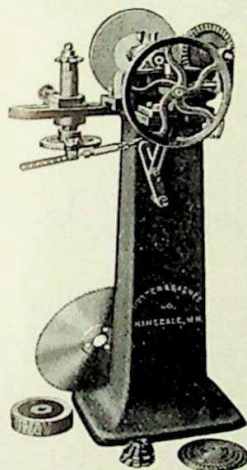
Abrasive Wheel Metal Cutting-Off Machine

An indispensable machine for any metal-working shop, and especially well suited for tool room use. Cuts off pieces of metal as fast as a man can handle it. Recommended for cutting high speed tool steel up to $\frac{3}{4}$ " square or round. Handy, quick and clean cutting. A great time saver.



**Automatic Saw,
Gear and Milling
Cutter Sharpener**

For sharpening Cold Metal Saws, Milling Saws and Gear and Milling Cutters.

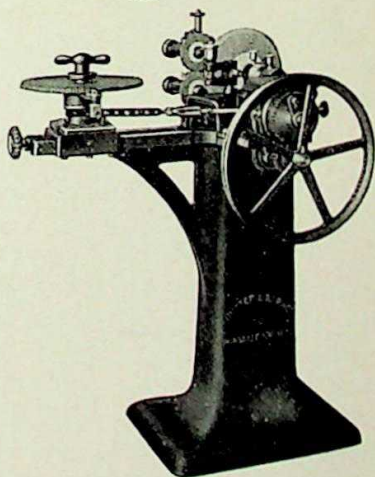


Will soon pay for itself in renewing old saws and cutters that have been consigned to the scrap heap. Takes saws $2\frac{1}{2}$ " to 12" diameter and Gear Cutters from $2\frac{1}{2}$ " diameter up.



Double Automatic Saw Sharpener with "B & S" Relief Attachment

For sharpening and backing-off all the teeth of a metal saw and double relieving the alternate teeth, all at one setting. Saws sharpened with alternate relieved teeth give the same results as roughing and finishing tools. Best for soft, tough or stringy metal. Can be used as a plain sharpener when relief is not wanted. Takes saws up to 24 or 30" diameter.



Full details of these machines in complete Cutting-Off Machinery Catalogue, sent on request

Miscellaneous Section

Tables of Information



Glossary of Terms

Used in Connection with the Cutting and Measuring of Screw Threads

A tendency toward carelessness in expression has resulted in restricting many terms and unduly broadening others. The interchangeability of many terms is not thoroughly understood. To describe an operation machinists use different expressions than terms used by superintendents and mechanical engineers.

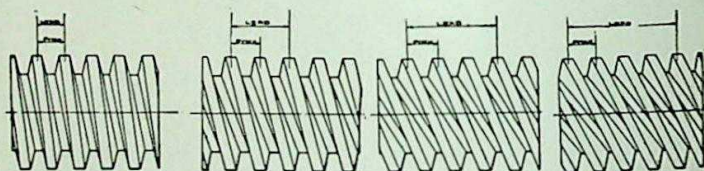
After an extended inquiry, we believe the following definitions can be said correctly to cover the scope of each expression. Much ambiguity will be removed if proper regard is had for the finer points involved in these suggestive expressions.

SINGLE THREAD—A thread in which the lead is equal to the pitch.

DOUBLE THREAD—A thread in which the lead is equal to two times the pitch.

TRIPLE THREAD—A thread in which the lead is equal to three times the pitch.

QUADRUPLE THREAD—A thread in which the lead is equal to four times the pitch.



Single

Double

Triple

Quadruple

In ordering double, triple or quadruple threads, be sure to specify both pitch and lead; as, $\frac{1}{2}$ pitch, $\frac{1}{2}$ lead double (or triple) thread. In no other way can an understanding be assured.

ALLOWANCE. British term for variation in dimensions to allow for different qualities of fit.

ANGLE (Helical). Or lead. The angle of the thread to the axis at the pitch line or at pitch diameter.

ANGLE DIAMETER. Same as "pitch diameter."

ANGLE OF THREAD. The total or included angle between the sides or walls of a thread, measured on the axial line.

Glossary of Terms

(Continued)

BACKING OFF. See "RELIEF."

BASIC. The standard or nominal size from which all variations are made.

CHAMFER. The taper toward point of tap made by cutting away the tops of the threads. It is customary also to relieve slightly the chamfered threads. (See "RELIEF.")

CLEARANCE—Angular. Allowance on the angles of the thread for screw threads to fit together.

CLEARANCE—Bottom. Allowance or space at bottom of threads to prevent a bearing except on angle of threads.

CLEARANCE—Outside. See "CLEARANCE—Top."

CLEARANCE—Top. Allowance at the apex of a screw thread in order to clear bottom of mating thread.



CORE DIAMETER. British term for root or bottom diameter.

CREST. British term for top of thread.

CUTTING ANGLE. See "RAKE."

EFFECTIVE DIAMETER. British term for pitch diameter.

EXTERNAL DIAMETER. The outside measurement over the top of the thread of a tap or screw.

FIT—Finger. Where the screw fits the tapped hole so it can be screwed into the tapped hole with the fingers.

FIT—Wrench. Where it requires a wrench to drive the screw into place.

FLUTE. The groove cut in taps and reamers to make the cutting edge and allow room for chips.

FULL DIAMETER. British term for external diameter.

GAGE—Limit. A gage having two sizes, the difference between them representing the tolerance or allowable variation. One size must "go" into or over the work while the other must "not go." Should be called "tolerance gage" unless the dimensions or "limits" are marked on the gage.

GAGE—Master. The standard gage which is kept solely for comparing reference gages.

GAGE—Plug. (Screw or thread.) A gage having a threaded end or plug of specified diameter and pitch, for testing threaded holes. Sometimes called male gage.

Glossary of Terms

(Continued)

GAGE—Reference. The gage by which the workman's gage is tested. The reference gage is compared with the master gage.

GAGE—Ring. (Screw or thread.) A gage having a threaded hole of specified diameter and pitch for measuring work threaded on the outside. Sometimes called female gage.

GAGE—Workman's. The gage used by the workman in inspecting the product. Tested periodically by the reference gage.

HELICAL (or Lead) ANGLE. See "ANGLE—Helical."

LAND. The threaded portions of a tap after the flutes have been formed.

LEAD (or Helical) ANGLE. See "ANGLE—Helical."

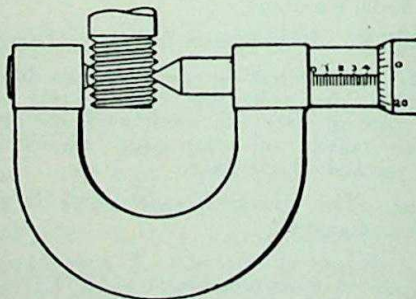
LEAD. The longitudinal distance which a screw thread advances when turned one complete revolution. See further description and explanation on page 4.

LIMIT. A maximum or minimum dimension slightly above or below a standard size; not the distance between limits. (See "TOLERANCE.")

OUTSIDE DIAMETER. See "EXTERNAL DIAMETER."

PITCH. The distance between two adjacent threads (from center to center). Correctly expressed in fractions, as " $\frac{1}{12}$ inch"; but commonly as "12 threads per inch."

PITCH DIAMETER. The measurement on the angle of the thread at any imaginary line (called the pitch line) located in the threads between the top and bottom at a point where the width of the land and space are the same and equal to one-half the pitch. In practice this is measured by a thread caliper or micrometer having points as indicated in the attached sketch.



Glossary of Terms

(Continued)

PLUG GAGE. See "GAGE—Plug."

RAKE. The angle of the cutting edge of the teeth of a tap or die.

RELIEF. Any clearance allowed back of the cutting edge to reduce friction; whether on the top, bottom or wall of thread.

RING GAGE. See "GAGE—Ring."

ROOT. Bottom of thread.

ROOT DIAMETER. Diameter at the bottom or root of thread. The smallest diameter of a screw or tap.

STANDARD GAGE. British term for master gage.

THREADS—Per Inch. The number of threads per inch of linear measurement, as measured with a pitch gage. The reciprocal of the pitch.



THREAD—Buttress. A thread having the lead or thrust side straight and the other side angular, but leaving a flat top, usually about half the base.

THREAD—Drunken. A thread in which the advance of the helix is irregular.

THREAD—Leaning. A thread in which the included angle may be correct but where the thread leans or is not square with the helix.

THREAD—Modified V. A form of thread having a 60-degree angle and the nominal external diameter measured from the sharp V, but having the top or bottom or both flattened to suit individual ideas or conditions. A compromise between U.S. Standard and theoretical V.

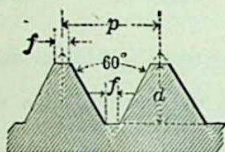
THREAD—Ratchet. A thread having the lead or thrust side about at right angles to the axis and the other side at an angle to form nearly a sharp top.

THREAD—V. A form of thread having 60-degree angle and sharp top and bottom. Impossible in practice and always more or less modified to suit individual conditions.

TOLERANCE. The total variation allowed or tolerated between minimum or maximum (limits.)

WRENCH FIT. See "FIT—Wrench."

United States Standard Thread



Formula

$$p = \text{pitch} = \frac{1}{\text{No. of threads per inch}}$$

$$d = \text{depth} = \text{pitch} \times .6495 \text{ or } \frac{.6495}{n}$$

$$f = \text{flat} = \frac{\text{pitch}}{8}$$

$$n = \text{threads per inch}$$



Fractional Size	Decimal Equivalent Outside Diam.	Threads per Inch	Basic Pitch Diameter	Root Diameter	(d) Depth of Thread $\frac{.6495}{n}$
$\frac{1}{4}$	.2500	20	.2175	.1850	.0325
$\frac{5}{16}$	.3125	18	.2764	.2403	.0361
$\frac{3}{8}$	.3750	16	.3344	.2938	.0406
$\frac{7}{16}$	.4375	14	.3911	.3447	.0464
$\frac{1}{2}$	.5000	13	.4501	.4001	.0499
$\frac{9}{16}$	.5625	12	.5084	.4542	.0541
$\frac{5}{8}$	.6250	11	.5660	.5069	.0591
$\frac{11}{16}$	.6875	11	.6290	.5694	.0591
$\frac{3}{4}$	.7500	10	.6851	.6201	.0649
$\frac{13}{16}$	.8125	10	.7480	.6826	.0649
$\frac{7}{8}$	.8750	9	.8029	.7307	.0721
$\frac{15}{16}$	.9375	9	.8650	.7932	.0721
1	1.0000	8	.9188	.8376	.0812
$1\frac{1}{8}$	1.1250	7	1.0322	.9394	.0928
$1\frac{1}{4}$	1.2500	7	1.1572	1.0644	.0928
$1\frac{3}{8}$	1.3750	6	1.2668	1.1585	.1082
$1\frac{1}{2}$	1.5000	6	1.3918	1.2835	.1082
$1\frac{5}{8}$	1.6250	$5\frac{1}{2}$	1.5070	1.3888	.1181
$1\frac{3}{4}$	1.7500	5	1.6201	1.4902	.1299
$1\frac{7}{8}$	1.8750	5	1.7451	1.6152	.1299
2	2.0000	$4\frac{1}{2}$	1.8557	1.7113	.1444

Tap Drill Sizes

United States Standard

Size of Tap	Threads per Inch	Root Diameter	Nearest Commercial Drill Size to produce 75% depth of thread	
			Inch Decimals	Commercial Designation
$\frac{1}{4}$	20	.1850	.201	No. 7
$\frac{5}{16}$	18	.2403	.257	F
$\frac{3}{8}$	16	.2936	.316	O
$\frac{7}{16}$	14	.3447	.368	U
$\frac{1}{2}$	13		.422	$\frac{27}{64}$ in.
$\frac{1}{2}$	12	.4001	.422	$\frac{27}{64}$ in.
$\frac{9}{16}$	12	.4542	.484	$\frac{31}{64}$ in.
$\frac{5}{8}$	11	.5069	.5313	$\frac{17}{32}$ in.
$\frac{11}{16}$	11	.5694	.594	$\frac{19}{32}$ in.
$\frac{3}{4}$	10	.6201	.656	$\frac{21}{32}$ in.
$\frac{13}{16}$	10	.6826	.7188	$\frac{23}{32}$ in.
$\frac{7}{8}$	9	.7307	.7656	$\frac{49}{64}$ in.
$\frac{15}{16}$	9	.7932	.828	$\frac{53}{64}$ in.
1	8	.8376	.875	$\frac{7}{8}$ in.
$1\frac{1}{16}$	8		.9375	$\frac{15}{16}$ in.
$1\frac{1}{8}$	7	.9394	.984	$\frac{63}{64}$ in.
$1\frac{3}{16}$	7		1.0625	$\frac{1}{16}$ in.
$1\frac{1}{4}$	7	1.0644	1.109	$\frac{17}{64}$ in.
$1\frac{5}{16}$	7		1.1875	$\frac{13}{16}$ in.
$1\frac{3}{8}$	6	1.1585	1.218	$\frac{17}{32}$ in.
$1\frac{1}{2}$	6	1.2835	1.3438	$\frac{11}{16}$ in.
$1\frac{5}{8}$	$5\frac{1}{2}$	1.3888	1.453	$\frac{129}{64}$ in.
$1\frac{3}{4}$	5	1.4902	1.5625	$\frac{19}{16}$ in.
$1\frac{7}{8}$	5	1.6152	1.6875	$\frac{11}{16}$ in.
2	$4\frac{1}{2}$	1.7113	1.781	$\frac{125}{64}$ in.



NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.

S. A. E. Standard Thread

(Formerly A. L. A. M.)

(U. S. Form)

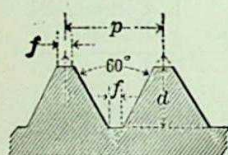
Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = \text{pitch} \times .6495 \text{ or } \frac{.6495}{n}$$

$$f = \text{flat} = \frac{\text{pitch}}{8}$$

$$n = \text{threads per inch}$$



Fractional Size	Decimal Equivalent Outside Diam.	Threads per Inch	Basic Pitch Diameter	Root Diameter	(d) Depth of Thread $\frac{.6495}{n}$
$\frac{1}{4}$	.250	28	.227	.204	.0231
$\frac{5}{16}$	.3125	24	.285	.258	.0270
$\frac{3}{8}$	.375	24	.348	.321	.0270
$\frac{7}{16}$	.4375	20	.405	.373	.0325
$\frac{1}{2}$	.500	20	.468	.435	.0325
$\frac{9}{16}$	.5625	18	.526	.490	.0361
$\frac{5}{8}$	.625	18	.589	.553	.0361
$\frac{11}{16}$	.6875	16	.647	.606	.0406
$\frac{3}{4}$	.750	16	.709	.669	.0406
$\frac{7}{8}$	.8750	14	.829	.782	.0464
* $\frac{7}{8}$	.875	18	.839	.803	.0361
1	1.000	14	.954	.907	.0464
$1\frac{1}{8}$	1.125	12	1.071	1.017	.0541
$1\frac{1}{4}$	1.125	12	1.196	1.142	.0541
$1\frac{3}{8}$	1.375	12	1.321	1.267	.0541
$1\frac{1}{2}$	1.500	12	1.446	1.392	.0541

*Spark Plug

Tap Drill Sizes

S.A.E. Standard

Size of Tap	Threads per Inch	Root Diameter	Nearest Commercial Drill Size to produce 75% depth of thread	
			Inch Decimals	Commercial Designation
$\frac{1}{4}$	28	.2036	.219	No. 2
$\frac{5}{16}$	24	.2584	.272	I
$\frac{3}{8}$	24	.3209	.332	Q
$\frac{7}{16}$	20	.3726	.390	$2\frac{5}{64}$ in.
$\frac{1}{2}$	20	.4351	.453	$2\frac{9}{64}$ in.
$\frac{9}{16}$	18	.4903	.515	$3\frac{3}{64}$ in.
$\frac{5}{8}$	18	.5528	.578	$3\frac{7}{64}$ in.
$1\frac{1}{16}$	16	.6063	.625	$\frac{5}{8}$ in.
$\frac{3}{4}$	16	.6688	.6875	$1\frac{1}{16}$ in.
$\frac{7}{8}$	14	.7822	.8125	$1\frac{3}{16}$ in.
$\frac{7}{8}$	18	.8028	.828	$5\frac{3}{64}$ in.
1	14	.9072	.9375	$1\frac{5}{16}$ in.
$1\frac{1}{8}$	12	1.0168	1.0469	$1\frac{3}{64}$ in.
$1\frac{1}{4}$	12	1.142	1.1719	$1\frac{11}{64}$ in.
$1\frac{3}{8}$	12	1.2668	1.2969	$1\frac{19}{64}$ in.
$1\frac{1}{2}$	12	1.3918	1.4219	$1\frac{27}{64}$ in.



NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.



A. S. M. E. Standard Machine Screws

No.	SIZE		OUTSIDE DIAMETERS			PITCH DIAMETERS			ROOT DIAMETERS		
	Outside Diam.	Thds. P. I.	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference
0	.060	80	.0572	.060	.0028	.0505	.0519	.0014	.0410	.0438	.0028
1	.073	72	.0700	.073	.0030	.0625	.0640	.0015	.0520	.0550	.0030
2	.086	64	.0828	.086	.0032	.0743	.0759	.0016	.0624	.0657	.0033
3	.099	56	.0955	.099	.0035	.0857	.0874	.0017	.0721	.0758	.0037
4	.112	48	.1082	.112	.0038	.0966	.0985	.0019	.0807	.0849	.0042
5	.125	44	.1210	.125	.0040	.1082	.1102	.0020	.0910	.0955	.0045
6	.138	40	.1338	.138	.0042	.1197	.1218	.0021	.1007	.1055	.0048
7	.151	36	.1466	.151	.0044	.1308	.1330	.0022	.1097	.1149	.0052
8	.164	36	.1596	.164	.0044	.1438	.1460	.0022	.1227	.1279	.0052
9	.177	32	.1723	.177	.0047	.1544	.1567	.0023	.1307	.1364	.0057
10	.190	30	.1852	.190	.0048	.1660	.1684	.0024	.1407	.1467	.0060
12	.216	28	.2111	.216	.0049	.1904	.1928	.0024	.1633	.1696	.0063
14	.242	24	.2368	.242	.0052	.2135	.2149	.0026	.1808	.1879	.0071
16	.268	22	.2626	.268	.0054	.2358	.2385	.0027	.2014	.2090	.0076
18	.294	20	.2884	.294	.0056	.2587	.2615	.0028	.2208	.2290	.0082
20	.320	20	.3144	.320	.0056	.2847	.2875	.0028	.2468	.2550	.0082
22	.346	18	.3402	.346	.0058	.3070	.3099	.0029	.2649	.2738	.0089
24	.372	16	.3660	.372	.0060	.3284	.3314	.0030	.2810	.2908	.0098
26	.398	16	.3920	.398	.0060	.3544	.3574	.0030	.3070	.3168	.0098
28	.424	14	.4178	.424	.0062	.3745	.3776	.0031	.3204	.3312	.0108
30	.450	14	.4438	.450	.0062	.4005	.4036	.0031	.3464	.3572	.0108

A. S. M. E. Special Machine Screws

Little Giant

No.	SIZE		OUTSIDE DIAMETERS				PITCH DIAMETERS				ROOT DIAMETERS			
	Outside Diam.	Thds. P. I.	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference
1	.073	64	.0698	.0730	.0032	.0613	.0629	.0016	.0494	.0527	.0033			
2	.086	56	.0825	.0860	.0035	.0727	.0744	.0017	.0591	.0628	.0037			
3	.099	48	.0952	.0990	.0038	.0836	.0855	.0019	.0677	.0719	.0042			
4	.112	40	.1078	.1120	.0042	.0937	.0958	.0021	.0747	.0795	.0048			
5	.125	36	.1076	.1120	.0044	.0918	.0940	.0022	.0707	.0759	.0052			
6	.138	36	.1208	.1250	.0042	.1067	.1088	.0021	.0877	.0925	.0048			
7	.151	32	.1206	.1250	.0044	.1048	.1070	.0022	.0837	.0889	.0052			
8	.164	32	.1336	.1380	.0044	.1178	.1200	.0022	.0967	.1019	.0052			
9	.177	30	.1333	.1380	.0047	.1154	.1177	.0023	.0917	.0974	.0057			
10	.190	30	.1463	.1510	.0047	.1284	.1307	.0023	.1047	.1104	.0057			
12	.216	24	.1462	.1510	.0048	.1270	.1294	.0024	.1017	.1077	.0060			
14	.242	24	.1592	.1640	.0048	.1414	.1437	.0023	.1177	.1234	.0057			
16	.268	20	.1722	.1770	.0048	.1400	.1424	.0024	.1147	.1207	.0060			
18	.294	18	.1718	.1770	.0052	.1529	.1553	.0024	.1277	.1377	.0060			
20	.320	18	.1853	.1900	.0047	.1473	.1499	.0026	.1158	.1229	.0071			
22	.346	16	.1848	.1900	.0052	.1674	.1697	.0023	.1437	.1494	.0057			
24	.372	16	.2108	.2160	.0052	.1603	.1629	.0026	.1288	.1359	.0071			
26	.398	14	.2364	.2420	.0056	.1863	.1889	.0026	.1548	.1619	.0071			
28	.424	16	.2624	.2680	.0056	.2067	.2095	.0028	.1688	.1770	.0082			
30	.450	16	.2882	.2940	.0058	.2327	.2355	.0028	.1948	.2030	.0082			
			.3142	.3200	.0058	.2550	.2579	.0029	.2129	.2218	.0089			
			.3400	.3460	.0060	.2810	.2839	.0029	.2389	.2478	.0089			
			.3662	.3720	.0058	.3024	.3054	.0030	.2550	.2648	.0098			
			.3918	.3980	.0062	.3330	.3359	.0029	.2909	.2998	.0089			
			.4180	.4240	.0060	.3485	.3516	.0031	.2944	.3052	.0108			
			.4440	.4500	.0060	.3804	.3834	.0030	.3330	.3428	.0098			
					.0060	.4064	.4094	.0030	.3590	.3688	.0098			

Taps for A.S.M.E. Standard Machine Screws

SIZE			OUTSIDE DIAMETERS			PITCH DIAMETERS			ROOT DIAMETERS		
No.	Outside Diam.	Thds P.I.	Mini- mum	Maxi- mum	Differ- ence	Mini- mum	Maxi- mum	Differ- ence	Mini- mum	Maxi- mum	Differ- ence
0	.060	80	.0609	.0632	.0023	.0528	.0538	.0010	.0447	.0466	.0019
1	.073	72	.0740	.0765	.0025	.0650	.0660	.0010	.0560	.0580	.0020
2	.086	64	.0871	.0898	.0027	.0770	.0781	.0011	.0668	.0689	.0021
3	.099	56	.1002	.1033	.0031	.0886	.0897	.0011	.0770	.0793	.0023
4	.112	48	.1133	.1168	.0035	.0998	.1010	.0012	.0862	.0887	.0025
5	.125	44	.1263	.1301	.0038	.1116	.1129	.0013	.0968	.0995	.0027
6	.138	40	.1394	.1435	.0041	.1232	.1246	.0014	.1069	.1097	.0028
7	.151	36	.1525	.1569	.0044	.1345	.1359	.0014	.1164	.1193	.0029
8	.164	36	.1655	.1699	.0044	.1475	.1489	.0014	.1294	.1323	.0029
9	.177	32	.1786	.1835	.0049	.1583	.1598	.0015	.1380	.1411	.0031
10	.190	30	.1916	.1968	.0052	.1700	.1716	.0016	.1483	.1515	.0032
12	.216	28	.2176	.2232	.0056	.1944	.1961	.0017	.1712	.1745	.0033
14	.242	24	.2438	.2500	.0062	.2167	.2184	.0017	.1897	.1932	.0035
16	.268	22	.2698	.2765	.0067	.2403	.2421	.0018	.2108	.2144	.0036
18	.294	20	.2959	.3031	.0072	.2634	.2652	.0018	.2309	.2346	.0037
20	.320	20	.3219	.3291	.0072	.2894	.2912	.0018	.2569	.2606	.0037
22	.346	18	.3479	.3559	.0080	.3118	.3138	.0020	.2757	.2796	.0039
24	.372	16	.3740	.3828	.0088	.3354	.3354	.0020	.2928	.2968	.0040
26	.398	16	.4000	.4088	.0088	.3594	.3614	.0020	.3188	.3228	.0040
28	.424	14	.4261	.4359	.0098	.3797	.3818	.0021	.3333	.3374	.0041
30	.450	14	.4521	.4619	.0098	.4057	.4078	.0021	.3593	.3634	.0041

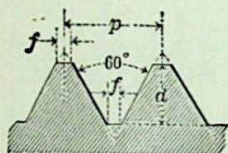
Taps for A. S. M. E. Special Machine Screws

Little Giant

SIZE			OUTSIDE DIAMETERS				PITCH DIAMETERS				ROOT DIAMETERS			
No.	Outside Diam.	Thds. P. I.	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference	Minimum	Maximum	Difference
1	.073	64	.0741	.0768	.0027	.0640	.0651	.0011	.0538	.0559	.0021	.0538	.0559	.0021
2	.086	56	.0872	.0903	.0031	.0756	.0767	.0011	.0640	.0663	.0023	.0640	.0663	.0023
3	.099	48	.1003	.1038	.0035	.0868	.0880	.0012	.0732	.0757	.0025	.0732	.0757	.0025
4	.112	40	.1134	.1175	.0041	.0972	.0986	.0014	.0809	.0837	.0028	.0809	.0837	.0028
5	.125	36	.1135	.1179	.0044	.0955	.0969	.0014	.0774	.0803	.0029	.0774	.0803	.0029
6	.138	40	.1264	.1305	.0041	.1102	.1116	.0014	.0939	.0967	.0028	.0939	.0967	.0028
7	.151	36	.1265	.1309	.0044	.1085	.1099	.0014	.0904	.0933	.0029	.0904	.0933	.0029
8	.164	32	.1396	.1445	.0049	.1215	.1229	.0014	.1034	.1063	.0029	.1034	.1063	.0029
9	.177	32	.1526	.1575	.0049	.1323	.1338	.0015	.0990	.1021	.0031	.0990	.1021	.0031
10	.190	30	.1526	.1578	.0052	.1310	.1326	.0016	.1120	.1151	.0031	.1120	.1151	.0031
11	.203	32	.1656	.1705	.0049	.1453	.1468	.0015	.1250	.1281	.0032	.1250	.1281	.0032
12	.216	30	.1656	.1708	.0052	.1440	.1456	.0016	.1223	.1255	.0032	.1223	.1255	.0032
13	.229	24	.1786	.1838	.0052	.1569	.1585	.0016	.1353	.1385	.0032	.1353	.1385	.0032
14	.242	24	.1788	.1850	.0062	.1517	.1534	.0017	.1247	.1282	.0035	.1247	.1282	.0035
15	.255	32	.1916	.1965	.0049	.1713	.1728	.0015	.1510	.1541	.0031	.1510	.1541	.0031
16	.268	24	.1918	.1980	.0062	.1647	.1664	.0017	.1377	.1412	.0035	.1377	.1412	.0035
17	.281	24	.2178	.2240	.0062	.1907	.1924	.0017	.1637	.1672	.0035	.1637	.1672	.0035
18	.294	20	.2439	.2511	.0072	.2114	.2132	.0018	.1789	.1826	.0037	.1789	.1826	.0037
19	.307	20	.2699	.2771	.0072	.2374	.2392	.0018	.2049	.2086	.0037	.2049	.2086	.0037
20	.320	18	.2959	.3039	.0080	.2598	.2618	.0020	.2237	.2276	.0039	.2237	.2276	.0039
21	.333	18	.3219	.3299	.0080	.2858	.2878	.0020	.2497	.2536	.0039	.2497	.2536	.0039
22	.346	16	.3480	.3568	.0088	.3074	.3094	.0020	.2668	.2708	.0040	.2668	.2708	.0040
23	.359	16	.3739	.3819	.0080	.3378	.3398	.0020	.3017	.3056	.0039	.3017	.3056	.0039
24	.372	14	.4001	.4099	.0098	.3537	.3558	.0021	.3073	.3114	.0041	.3073	.3114	.0041
25	.385	16	.4260	.4348	.0088	.3854	.3874	.0020	.3448	.3488	.0040	.3448	.3488	.0040
26	.398	14	.4520	.4608	.0088	.4114	.4134	.0020	.3708	.3748	.0040	.3708	.3748	.0040

A. S. M. E. Screw Thread

U. S. Form



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = p \times .64952$$

$$f = \text{flat} = \frac{p}{8}$$

Adopted by the American Society of Mechanical Engineers May, 1907. Complete dimensions and limits for screws and taps are given on pages 274-277.

Tap Drill Sizes A. S. M. E. Standard



Size of Tap	Outside Diam.	Threads per Inch	Nearest Commercial Size Drill producing 75% depth of thread	
			Inch Decimals	Commercial Designation
0	.060	80	.0512	No. 55
1	.073	72	.0595	52
1	.073	64	.0591	53
2	.086	64	.0709	49
2	.086	56	.0700	50
3	.099	56	.0820	45
3	.099	48	.0787	47
4	.112	48	.0935	42
4	.112	40	.0890	43
4	.122	36	.0860	44
5	.125	44	.1040	37
5	.125	40	.1015	38
5	.125	36	.0980	40
6	.138	40	.1142	32
6	.138	36	.1110	34
6	.138	32	.1093	36
7	.151	36	.1250	30
7	.151	32	.1220	31
7	.151	30	.1200	31
8	.164	36	.1378	28

A. S. M. E. Screw Thread

U. S. Form

(Continued from page 278)

Size of Tap	Outside Diam.	Threads per Inch	Nearest Commercial Size Drill producing 75% depth of thread	
			Inch Decimals	Commercial Designation
8	.164	32	.1339	29
8	.164	30	.1339	30
9	.177	32	.1470	26
9	.177	30	.1457	27
9	.177	24	.1378	29
10	.190	32	.1610	21
10	.190	30	.1575	21
10	.190	24	.1496	25
12	.216	28	.1820	14
12	.216	24	.1770	16
14	.242	24	.2031	16
14	.242	20	.1935	10
16	.268	22	.2244	1
16	.268	20	.2205	$\frac{1}{32}$ in.
18	.294	20	.2460	D
18	.294	18	.2401	C
20	.320	20	.2716	I
20	.320	18	.2660	H
22	.346	18	.2950	M
22	.346	16	.2874	K
24	.372	18	.3189	O
24	.372	16	.3125	$\frac{5}{16}$ in.
26	.398	16	.3386	R
26	.398	14	.3307	$\frac{21}{64}$ in.
28	.424	16	.3661	U
28	.424	14	.3580	T
30	.450	16	.3898	$\frac{25}{64}$ in.
30	.450	14	.3819	W

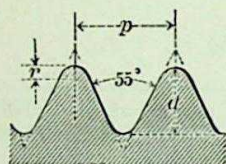


NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.

Whitworth Standard Thread



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = \text{pitch} \times .64033$$

$$r = \text{radius} = \text{pitch} \times .1373$$

Full Diameter	Decimal Equivalent Outside Diam.	No. of Thds. per Inch	Pitch	Standard Depth of Thread	Effective Diameter	Core Diameter	Cross Sectional Area at Bottom of Thread
1/4	.25	20	.0500	.0320	.2180	.1860	.0272
5/16	.3125	18	.0556	.0356	.2769	.2414	.0458
3/8	.375	16	.0625	.0400	.3350	.2950	.0683
7/16	.4375	14	.0714	.0457	.3918	.3460	.0940
1/2	.5	12	.0833	.0534	.4466	.3933	.1215
9/16	.5625	12	.0833	.0534	.5091	.4558	.1632
5/8	.625	11	.0909	.0582	.5668	.5086	.2032
11/16	.6875	11	.0909	.0582	.6293	.5711	.2562
3/4	.75	10	.1000	.0640	.6860	.6219	.3038
13/16	.8125	10	.1000	.0640	.7485	.6844	.3679
7/8	.875	9	.1111	.0711	.8039	.7327	.4216
1	1.000	8	.1250	.0800	.9200	.8399	.5540
1 1/8	1.125	7	.1429	.0915	1.0335	.9420	.6969
1 1/4	1.25	7	.1429	.0915	1.1585	1.0670	.8942
1 3/8	1.375	6	.1667	.1067	1.2683	1.1616	1.0597
1 1/2	1.5	6	.1667	.1067	1.3933	1.2866	1.3001
1 5/8	1.625	5	.2000	.1281	1.4969	1.3689	1.4718
1 3/4	1.75	5	.2000	.1281	1.6219	1.4939	1.7528
2	2.000	4 1/2	.2222	.1423	1.8577	1.7154	2.3111
2 1/4	2.25	4	.2500	.1601	2.0899	1.9298	2.9249
2 1/2	2.5	4	.2500	.1601	2.3399	2.1798	3.7318
2 3/4	2.75	3 1/2	.2857	.1830	2.5670	2.3841	4.4641
3	3.000	3 1/2	.2857	.1830	2.8170	2.6341	5.4496
3 1/4	3.25	3 1/4	.3077	.1970	3.0530	2.8560	6.4063
3 1/2	3.5	3 1/4	.3077	.1970	3.3030	3.1060	7.5769
3 3/4	3.75	3	.3333	.2134	3.5366	3.3231	8.6732
4	4.000	3	.3333	.2134	3.7866	3.5731	10.0272

Tap Drill Sizes

Whitworth Standard

Size of Tap	Threads per Inch	Root Diam.	Nearest Commercial Drill Size to Produce 75% depth of thread	
			Inch Decimals	Commercial Designation
$\frac{1}{4}$	20	.1860	.2031	$1\frac{3}{64}$ in.
$\frac{5}{16}$	18	.2414	.257	F
$\frac{3}{8}$	16	.2950	.316	O
$\frac{7}{16}$	14	.3460	.368	U
$\frac{1}{2}$	12	.3933	.4219	$2\frac{7}{64}$ in.
$\frac{9}{16}$	12	.4558	.4843	$3\frac{1}{64}$ in.
$\frac{5}{8}$	11	.5086	.5469	$3\frac{5}{64}$ in.
$\frac{11}{16}$	11	.5711	.6094	$3\frac{9}{64}$ in.
$\frac{3}{4}$	10	.6219	.6562	$2\frac{1}{32}$ in.
$\frac{13}{16}$	10	.6844	.7187	$2\frac{3}{32}$ in.
$\frac{7}{8}$	9	.7327	.7812	$2\frac{5}{32}$ in.
1	8	.8399	.875	$\frac{7}{8}$ in.
$1\frac{1}{8}$	7	.9420	1.0000	1 in.
$1\frac{1}{4}$	7	1.0670	1.1220	$1\frac{1}{8}$ in.
$1\frac{3}{8}$	6	1.1616	1.2187	$1\frac{1}{4}$ in.
$1\frac{1}{2}$	6	1.2866	1.3437	$1\frac{11}{32}$ in.
$1\frac{5}{8}$	5	1.3689	1.4375	$1\frac{3}{4}$ in.
$1\frac{3}{4}$	5	1.4939	1.5625	$1\frac{9}{16}$ in.
2	$4\frac{1}{2}$	1.7154	1.7812	$1\frac{25}{32}$ in.

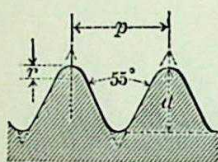


NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.

British Standard Fine Screw Thread



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = \text{pitch} \times .64033$$

$$r = \text{radius} = \text{pitch} \times .1373$$

Full Diameter	Decimal Equivalent Outside Diameter	No. of Threads to the Inch	Pitch Inches	Standard Depth of Thread	Effective Diameter	Core Diameter
$\frac{1}{4}$	.2500	26	.0385	.0246	.2254	.2001
$\frac{9}{32}$	.2813	26	.0385	.0246	.2566	.2321
$\frac{5}{16}$	.3125	22	.0455	.0291	.2834	.2543
$\frac{3}{8}$	.3750	20	.0500	.0320	.3430	.3110
$\frac{7}{16}$	.4375	18	.0556	.0355	.4019	.3665
$\frac{1}{2}$	.5000	16	.0625	.0400	.4600	.4200
$\frac{9}{16}$	.5625	16	.0625	.0400	.5225	.4825
$\frac{5}{8}$	.6250	14	.0714	.0457	.5793	.5336
$1\frac{1}{16}$	.6875	14	.0714	.0457	.6418	.5961
$\frac{3}{4}$	.7500	12	.0833	.0533	.6966	.6434
$1\frac{3}{16}$	.8125	12	.0833	.0533	.7591	.7059
$\frac{7}{8}$	.8750	11	.0909	.0582	.8168	.7586
1	1.0000	10	.1000	.0640	.9360	.8720
$1\frac{1}{8}$	1.1250	9	.1111	.0711	1.0539	.9828
$1\frac{1}{4}$	1.2500	9	.1111	.0711	1.1789	1.1078
$1\frac{3}{8}$	1.3750	8	.1250	.0800	1.2950	1.2150
$1\frac{1}{2}$	1.5000	8	.1250	.0800	1.4200	1.3400

Tap Drill Sizes

British Standard Fine Screw Thread

Size of Tap	Threads per Inch	Root Diameter	Nearest Commercial Drill Size to produce 75% depth of thread	
			Inch Decimals	Commercial Designation
$\frac{1}{4}$	26	.2001	.213	No. 3
$\frac{9}{32}$	26	.2321	.246	D
$\frac{5}{16}$	22	.2543	.295	M
$\frac{3}{8}$	20	.3110	.328	$2\frac{1}{64}$ in.
$\frac{7}{16}$	18	.3665	.386	W
$\frac{1}{2}$	16	.4200	.4375	$\frac{7}{16}$ in.
$\frac{9}{16}$	16	.4825	.500	$\frac{1}{2}$ in.
$\frac{5}{8}$	14	.5336	.5625	$\frac{9}{16}$ in.
$1\frac{1}{16}$	14	.5961	.625	$\frac{5}{8}$ in.
$\frac{3}{4}$	12	.6434	.671	$4\frac{3}{64}$ in.
$1\frac{1}{8}$	12	.7059	.7344	$4\frac{7}{64}$ in.
$\frac{7}{8}$	11	.7586	.781	$2\frac{5}{32}$ in.
1	10	.8720	.9063	$2\frac{9}{32}$ in.
$1\frac{1}{8}$	9	.9828	1.0156	$1\frac{11}{64}$ in.
$1\frac{1}{4}$	9	1.1078	1.1406	$1\frac{13}{64}$ in.
$1\frac{3}{8}$	8	1.2150	1.265	$1\frac{17}{64}$ in.
$1\frac{1}{2}$	8	1.3400	1.390	$1\frac{25}{64}$ in.

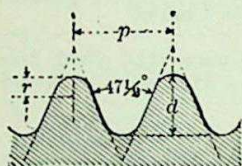


NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.

British Association Screw Thread



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = \text{pitch} \times .6$$

$$r = \text{radius} = \frac{2 \times \text{pitch}}{11}$$

Schedule of Sizes

No.	Diameter mm.	Approximate Diameter Inches	Pitch mm.	Approximate Pitch Inches	Depth of Thread mm.	Effective Diameter mm.	Core Diameter mm.	Approximate Cross Sectional Area at Bottom of Thread mm.
0	6.0	.236	1.00	.0394	.600	5.400	4.80	18.10
1	5.3	.209	.90	.0354	.540	4.760	4.22	13.99
2	4.7	.185	.81	.0319	.485	4.215	3.73	10.93
3	4.1	.161	.73	.0287	.440	3.660	3.22	8.14
4	3.6	.142	.66	.0260	.395	3.205	2.81	6.20
5	3.2	.126	.59	.0232	.355	2.845	2.49	4.87
6	2.8	.110	.53	.0209	.320	2.480	2.16	3.66
7	2.5	.098	.48	.0189	.290	2.210	1.92	2.89
8	2.2	.087	.43	.0169	.260	1.940	1.68	2.22
9	1.9	.075	.39	.0154	.235	1.665	1.43	1.61
10	1.7	.067	.35	.0138	.210	1.490	1.28	1.29
11	1.5	.059	.31	.0122	.185	1.315	1.13	1.00
12	1.3	.051	.28	.0110	.170	1.130	.96	.72

The figures in columns 3, 5 and 9 are given for convenience only, and should in no case be worked to, where satisfactory interchangeability is required.

Tap Drill Sizes

British Association Screw Threads

Size of Tap	Outside Diam. mm.	Core Diam. mm.	Nearest Commercial Drill Size to produce 75% depth of thread	
			Inch Decimals	Commercial Designation
0	6.0	4.80	.201	No. 7
1	5.3	4.22	.177	16
2	4.7	3.73	.156	22
3	4.1	3.22	.135	29
4	3.6	2.81	.118	31
5	3.2	2.49	.105	37
6	2.8	2.16	.091	43
7	2.5	1.92	.081	46
8	2.2	1.68	.075	48
9	1.9	1.43	.061	1/16 in.
10	1.7	1.28	.055	54
11	1.5	1.13	.048	56
12	1.3	.96	.041	59

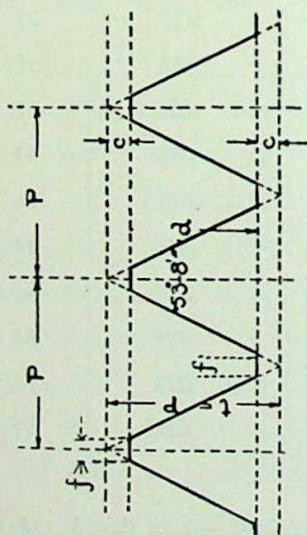


NOTE: A common nut, drilled out so that it only contains 50% of a full depth thread will break the bolt before it will strip.

A 75% depth of thread yields an ample margin of safety (2 to 1) and is economical in tapping.

A full depth of thread in a common nut is only about 5% stronger than a 75% depth of thread; yet it requires three times the power to tap.

Table of German Lowenherz Thread



Formula

$$p = \text{pitch} = t$$

$$d = \text{depth} = \frac{3}{4}p$$

$$c = \frac{1}{8}p$$

$$f = \frac{1}{8} \text{ pitch} = \text{flat}$$

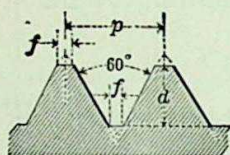
The Lowenherz form of thread is used extensively in Germany by opticians, watch and instrument makers. Originally sizes 1 to 10 m/m were called the Lowenherz System. Recently sizes 6 to 40 m/m, established by the Verein Deutscher Ingenieure in 1888, have been included under same system.

Diameter		Pitch		App. No. Thds Per Inch	Root Dia.		Pitch Dia.		Width of Flat (f) Inches
Mm.	Inches	Mm.	Inches		Mm.	Inches	Mm.	Inches	
1.0	0.03937	0.25	0.0098	101.6	0.625	0.0246	0.812	0.0320	0.0012
1.2	0.04724	0.25	0.0098	101.6	0.825	0.0325	1.012	0.0398	0.0012
1.4	0.05512	0.30	0.0118	84.7	0.950	0.0374	1.175	0.0463	0.0015
1.7	0.06693	0.35	0.0138	72.6	1.175	0.0463	1.437	0.0566	0.0017
2.0	0.07874	0.40	0.0157	63.5	1.400	0.0551	1.700	0.0669	0.0020

Diameter		Pitch		App. No. Thds. Per Inch	Root Dia.		Pitch Dia.		Width of Flat (f) Inches
Mm.	Inches	Mm.	Inches		Mm.	Inches	Mm.	Inches	
2.3	0.09055	0.40	0.0157	63.5	1.700	0.0669	2.000	0.0787	0.0020
2.6	0.10236	0.45	0.0177	56.4	1.925	0.0758	2.260	0.0890	0.0022
3.0	0.11811	0.50	0.0197	50.8	2.250	0.0886	2.625	0.1033	0.0025
3.5	0.13780	0.60	0.0236	42.3	2.600	0.1024	3.050	0.1201	0.0029
4.0	0.15748	0.70	0.0276	36.3	2.950	0.1161	3.475	0.1367	0.0034
4.5	0.17717	0.75	0.0295	33.9	3.375	0.1329	3.938	0.1550	0.0037
5.0	0.19685	0.80	0.0315	31.7	3.800	0.1496	4.400	0.1732	0.0039
5.5	0.21654	0.90	0.0354	28.2	4.150	0.1634	4.825	0.1900	0.0044
6.0	0.23622	1.00	0.0394	25.4	4.500	0.1772	5.250	0.2067	0.0049
7.0	0.27560	1.10	0.0433	23.1	5.350	0.2106	6.175	0.2431	0.0054
8.0	0.31496	1.20	0.0472	21.1	6.200	0.2441	7.100	0.2795	0.0059
9.0	0.35433	1.30	0.0512	19.5	7.050	0.2776	8.025	0.3159	0.0064
10	0.39370	1.40	0.0551	18.1	7.900	0.3110	8.950	0.3524	0.0069
12	0.47244	1.60	0.0630	15.9	9.600	0.3780	10.800	0.4252	0.0079
14	0.55118	1.80	0.0709	14.1	11.300	0.4449	12.650	0.4984	0.0089
16	0.62992	2.00	0.0787	12.7	13.000	0.5118	14.500	0.5709	0.0098
18	0.70866	2.20	0.0866	11.5	14.700	0.5787	16.350	0.6437	0.0108
20	0.78740	2.40	0.0945	10.6	16.400	0.6457	18.200	0.7165	0.0118
22	0.86614	2.80	0.1102	9.1	17.800	0.7008	19.900	0.7835	0.0138
24	0.94498	2.80	0.1102	9.1	19.800	0.7795	21.900	0.8622	0.0138
26	1.02362	3.20	0.1260	7.9	21.200	0.8346	23.600	0.9291	0.0157
28	1.10236	3.20	0.1260	7.9	23.200	0.9134	25.600	1.0079	0.0157
30	1.18110	3.60	0.1417	7.1	24.600	0.9685	27.300	1.0748	0.0177

Metric Screw Thread

(U. S. Form)



Formula

$$p = \text{pitch} = \frac{1}{\text{No. of threads per inch}}$$

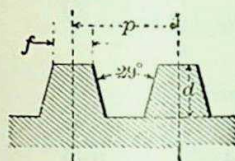
$$d = \text{depth} = \text{pitch} \times .6495$$

$$f = \text{flat} = \frac{\text{pitch}}{8}$$

Table of most commonly used sizes

Size m/m	Pitch		Size m/m	Pitch	
	Intl. Std.	French Std		Intl. Std.	French Std
2	.45	.50	22	2.50	2.50
3	.55	.50	24	3.00	3.00
4	.70	.75	26	...	3.00
5	.85	.75	26	...	3.00
6	1.00	1.00	27	3.00	...
7	1.00	1.00	28	...	3.00
8	1.25	1.00	30	3.50	3.50
9	1.25	1.00	32	...	3.50
10	1.50	1.50	33	3.50	3.50
11	1.50	...	34	...	3.50
12	1.75	1.50	36	4.00	4.00
14	2.00	2.00	38	...	4.00
16	2.00	2.00	39	4.00	...
18	2.50	2.50	40	...	4.00
20	2.50	2.50			

Acme Standard Screw Thread



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = \frac{1}{2} \text{ pitch} + .010$$

$$f = \text{flat on top} = \text{pitch} \times .3707$$

The Acme Standard Thread is an adaptation of the most commonly used style of Worm Thread and is intended to take the place of the square thread.

It is a little more shallow than the Worm Thread, but the same depth as the square thread and much stronger than the latter.

The various parts of the Acme Standard Thread are obtained as follows:

$$\text{Width of Point of Tool for } \left. \begin{array}{l} \text{Screw or Tap Thread} \end{array} \right\} = \frac{.3707}{\text{No. of Threads to the inch}} - .0052$$

$$\text{Width of screw or nut} = \frac{.3707}{\text{No. of Threads to the inch}}$$

$$\text{Diameter of Tap} = \text{Diameter of Screw} + .020$$

$$\text{Diameter of Tap } \left\{ \begin{array}{l} \text{or Screw at root} \end{array} \right\} = \text{Diameter of Screw} - \left(\frac{1}{\text{No. of Threads to inch}} + .020 \right)$$

$$\text{Depth of Thread} = \frac{1}{2 \times \text{No. of Threads to the inch}} + .010$$

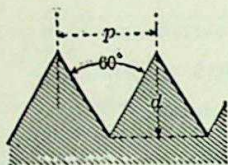


Table of Proportions

Number Threads to the Linear Inch	Depth of Thread	Width of Top of Thread	Width of Bottom of Thread	Space at Top of Thread	Space at Bottom of Thread
1	.5100	.3707	.3655	.6293	.6345
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0381	.0319	.0629	.0681

Sharp V Thread

A Warning



Formula

$$p = \text{pitch} = \frac{1}{\text{No. threads per inch}}$$

$$d = \text{depth} = p \times .750$$

Caution

The V thread is not a standard; never was; and never will be. It is an impossible thread to produce.

This is evident when it is considered that the razor-like apex of a theoretical V thread (supposing it to be possible to make it at all) would break off at the first use and the screw lose its size immediately.

Because of this, various manufacturers have from time to time adopted certain modifications of the theoretical V form (allowing a flat at both top and bottom of thread) which seemed to meet their own requirements.

We Do Not Recommend

any of the various modifications of the theoretical V thread because interchangeability is restricted, if not made altogether impossible.

The V Thread is Weak

because it cuts a deeper groove in the metal than the United States Standard thread, weakening both tensile and torsional strength of the bolt or screw. It is also weak because it leaves a sharper apex to the thread, making it easier to "start" under tensile strain.

The V thread has no points or features of advantage that the U.S. Standard thread does not possess in added measure.

The United States Standard thread, used by the Army and Navy Departments, as well as by the vast majority of manufacturers and on the great railway systems of the country, is a standard—having uniform diameter, pitch, angle of thread wall and flat at top and bottom. We recommend it for standard work.

It is only a question of a few years until the V thread with its "oversize" and "exact", its various modifications and the interminable threading difficulties which follow its use, will be obsolete. Because of this we furnish the V thread only when specifically requested.

Elements of Whitworth or British Standard Pipe Thread

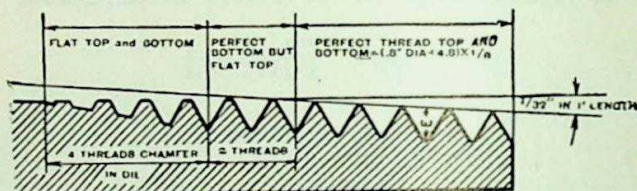
Taper $\frac{3}{4}$ inch per foot

Nominal Size	Approximate Outside Diameter	*Gage Diameter	Depth of Thread	No. of Threads Per Inch	Length of Thread		Distance of Gage Diameter from Pipe end—on taper screws Standard
					On Pipe End	In Coupler	
					Min.	Min.	
$\frac{1}{8}$	$\frac{13}{32}$	.383	.0230	28	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{5}{32}$
$\frac{1}{4}$	$\frac{17}{32}$	.518	.0335	19	$\frac{7}{16}$	$\frac{7}{8}$	$\frac{3}{16}$
$\frac{3}{8}$	$\frac{11}{16}$	.656	.0335	19	$\frac{1}{2}$	1	$\frac{1}{4}$
$\frac{1}{2}$	$\frac{27}{32}$	.825	.0455	14	$\frac{5}{8}$	$1\frac{1}{4}$	$\frac{1}{4}$
$\frac{5}{8}$	$\frac{15}{16}$	.902	.0455	14	$\frac{5}{8}$	$1\frac{1}{4}$	$\frac{1}{4}$
$\frac{3}{4}$	$1\frac{1}{16}$	1.041	.0455	14	$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{3}{8}$
$\frac{7}{8}$	$1\frac{1}{8}$	1.189	.0455	14	$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{3}{8}$
1	$1\frac{11}{32}$	1.309	.0580	11	$\frac{7}{8}$	$1\frac{3}{4}$	$\frac{3}{8}$
$1\frac{1}{4}$	$1\frac{11}{16}$	1.650	.0580	11	1	2	$1\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{1}{2}$	1.882	.0580	11	1	2	$1\frac{1}{2}$
$1\frac{3}{4}$	$2\frac{5}{32}$	2.116	.0580	11	$1\frac{1}{8}$	$2\frac{1}{4}$	$\frac{5}{8}$
2	$2\frac{3}{8}$	2.347	.0580	11	$1\frac{1}{8}$	$2\frac{1}{4}$	$\frac{5}{8}$
$2\frac{1}{4}$	$2\frac{5}{8}$	2.587	.0580	11	$1\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{1}{16}$
$2\frac{1}{2}$	3	2.960	.0580	11	$1\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{1}{16}$
$2\frac{3}{4}$	$3\frac{1}{4}$	3.210	.0580	11	$1\frac{3}{8}$	$2\frac{3}{4}$	$1\frac{5}{16}$
3	$3\frac{1}{2}$	3.460	.0580	11	$1\frac{3}{8}$	$2\frac{3}{4}$	$1\frac{5}{16}$
$3\frac{1}{4}$	$3\frac{3}{4}$	3.700	.0580	11	$1\frac{1}{2}$	3	$\frac{7}{8}$
$3\frac{1}{2}$	4	3.950	.0580	11	$1\frac{1}{2}$	3	$\frac{7}{8}$
$3\frac{3}{4}$	$4\frac{1}{4}$	4.200	.0580	11	$1\frac{1}{2}$	3	$\frac{7}{8}$
4	$4\frac{1}{2}$	4.450	.0580	11	$1\frac{5}{8}$	$3\frac{1}{4}$	1
$4\frac{1}{2}$	5	4.950	.0580	11	$1\frac{5}{8}$	$3\frac{1}{4}$	1
5	$5\frac{1}{2}$	5.450	.0580	11	$1\frac{3}{4}$	$3\frac{1}{2}$	$1\frac{1}{8}$
$5\frac{1}{2}$	6	5.950	.0580	11	$1\frac{7}{8}$	$3\frac{3}{4}$	$1\frac{1}{4}$
6	$6\frac{1}{2}$	6.450	.0580	11	2	4	$1\frac{3}{8}$



*Gage Diameter is the full diameter of the Standard Male Parallel Screw Gage which the Parallel Coupler, to be used with a pipe of that size, is required to fit.

Elements of Briggs Standard Pipe Thread



TAPER OF THREAD END = $\frac{3}{4}$ PER FOOT = $\frac{1}{16}$ PER IN.

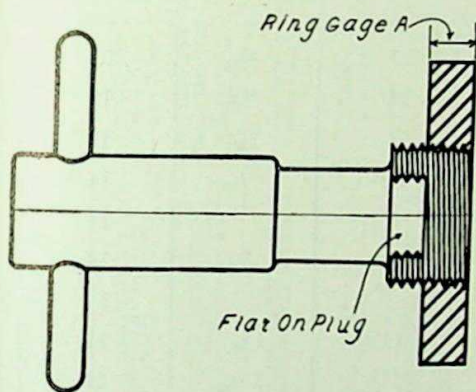
DEPTH OF THREAD AT (E) = $\frac{8}{TND}$ PER IN.

N=NUMBER OF THREADS PER IN

Pipe Diameters			Depth of Thread	No. of Threads per Inch	Length of Thread Inches	No. turns pipe screws into fitting by hand	No. of turns to be made with wrench
Size Nominal	Actual Inside	Actual Outside					
1/8	0.270	0.405	.029	27	.412	4	1.13
1/4	0.364	0.540	.044	18	.624	4	1.22
3/8	0.494	0.675	.044	18	.634	4	1.40
1/2	0.623	0.840	.057	14	.818	4	1.46
3/4	0.824	1.050	.057	14	.828	4	1.60
1	1.048	1.315	.069	11 1/2	1.03	4 1/2	1.37
1 1/4	1.380	1.660	.069	11 1/2	1.06	5	1.21
1 1/2	1.610	1.900	.069	11 1/2	1.07	5	1.33
2	2.067	2.375	.069	11 1/2	1.10	5	1.67
2 1/2	2.468	2.875	.100	8	1.64	5	2.12
3	3.067	3.500	.100	8	1.70	5	2.60
3 1/2	3.548	4.000	.100	8	1.75	5	3.00
4	4.026	4.500	.100	8	1.80	5 1/2	2.90
5	5.045	5.563	.100	8	1.91	5 1/2	3.78
6	6.065	6.625	.100	8	2.01	6	4.08

* A. S. M. E. Standardization of Pipe Thread Gages

Adopted Sept. 17, 1913



The plug is to have a flat or notch indicating the distance the plug shall enter the ring by hand.

Thickness of the ring is given in the following table. It shall be flush with the small end of the plug. This will locate the flat notch on the plug flush with the large side of the ring.

Pipe Size	Adopted Thickness of Ring Gage A	Pipe Size	Adopted Thickness of Ring Gage A
$\frac{1}{8}$	0.1801	5.....	0.937
$\frac{1}{4}$	0.200	6.....	0.958
$\frac{3}{8}$	0.240	7.....	1.000
$\frac{1}{2}$	0.320	8.....	1.063
$\frac{3}{4}$	0.339	9.....	1.130
1.....	0.400	10.....	1.210
$1\frac{1}{4}$	0.420	12.....	1.360
$1\frac{1}{2}$	0.420	14.....	1.562
2.....	0.436	15.....	1.687
$2\frac{1}{2}$	0.682	16.....	1.812
3.....	0.766	18.....	2.000
$3\frac{1}{2}$	0.821	20.....	2.125
4.....	0.844	22.....	2.250
$4\frac{1}{2}$	0.875	24.....	2.375

Drill Sizes for Pipe Taps

Size Tap Inches	BRIGGS STANDARD		WHITWORTH STANDARD	
	Thread	Drill	Thread	Drill
$\frac{1}{8}$	27	$2\frac{1}{64}$	28	$\frac{5}{16}$
$\frac{1}{4}$	18	$2\frac{7}{64}$	19	$2\frac{1}{64}$
$\frac{3}{8}$	18	$\frac{9}{16}$	19	$\frac{9}{16}$
$\frac{1}{2}$	14	$1\frac{1}{16}$	14	$1\frac{1}{16}$
$\frac{5}{8}$			14	$2\frac{5}{32}$
$\frac{3}{4}$	14	$2\frac{9}{32}$	14	$2\frac{9}{32}$
$\frac{7}{8}$			14	$1\frac{1}{16}$
1	$11\frac{1}{2}$	$1\frac{1}{8}$	11	$1\frac{1}{8}$
$1\frac{1}{4}$	$11\frac{1}{2}$	$1\frac{15}{32}$	11	$1\frac{15}{32}$
$1\frac{1}{2}$	$11\frac{1}{2}$	$1\frac{23}{32}$	11	$1\frac{23}{32}$
$1\frac{3}{4}$			11	$1\frac{15}{16}$
2	$11\frac{1}{2}$	$2\frac{3}{16}$	11	$2\frac{5}{32}$
$2\frac{1}{4}$			11	$2\frac{13}{32}$
$2\frac{1}{2}$	8	$2\frac{9}{16}$	11	$2\frac{25}{32}$
$2\frac{3}{4}$			11	$3\frac{1}{32}$
3	8	$3\frac{3}{16}$	11	$3\frac{9}{32}$
$3\frac{1}{4}$			11	$3\frac{1}{2}$
$3\frac{1}{2}$	8	$3\frac{11}{16}$	11	$3\frac{3}{4}$
$3\frac{3}{4}$			11	4
4	8	$4\frac{3}{16}$	11	$4\frac{1}{4}$
$4\frac{1}{2}$	8	$4\frac{11}{16}$	11	$4\frac{3}{4}$
5	8	$5\frac{1}{4}$	11	$5\frac{1}{4}$
$5\frac{1}{2}$			11	$5\frac{3}{4}$
6	8	$6\frac{5}{16}$	11	$6\frac{1}{4}$

Wire Gage Standards

Different Standards in Use in the United States

Dimensions of Sizes in Decimal Parts of an Inch

Number of Wire Gage	American or Brown & Sharpe	Birmingham or Stubbs' Iron Wire	Washburn and Moen Mfg. Co. Worcester, Mass.	Imperial Wire Gage	Stubbs' Steel Wire	U.S. Standard for Plate	Number of Wire Gage
000000				.464	.46875		000000
00000				.432	.4375		00000
0000	.46	.454	.3938	.400	.40625		0000
000	.40964	.425	.3625	.372	.375		000
00	.3648	.38	.3310	.348	.34375		00
0	.32486	.34	.3065	.324	.3125		0
1	.2893	.3	.2830	.300	.28125		1
2	.25763	.284	.2625	.276	.265625		2
3	.22942	.259	.2437	.252	.25		3
4	.20431	.238	.2253	.232	.234375		4
5	.18194	.22	.2070	.212	.21875		5
6	.16202	.203	.1920	.192	.203125		6
7	.14428	.18	.1770	.176	.1875		7
8	.12849	.165	.1620	.160	.171875		8
9	.11443	.148	.1483	.144	.15625		9
10	.10189	.134	.1350	.128	.140625		10
11	.090742	.12	.1205	.116	.125		11
12	.080808	.109	.1055	.104	.109375		12
13	.071961	.095	.0915	.092	.09375		13
14	.064084	.083	.0800	.080	.078125		14
15	.057068	.072	.0720	.072	.0703125		15
16	.05082	.065	.0625	.064	.0625		16
17	.045257	.058	.0540	.056	.05625		17
18	.040303	.049	.0475	.048	.05		18
19	.03589	.042	.0410	.040	.04375		19
20	.031961	.035	.0348	.036	.0375		20
21	.028462	.032	.03175	.032	.034375		21
22	.025347	.028	.0286	.028	.03125		22
23	.022571	.025	.0258	.024	.028125		23
24	.0201	.022	.0230	.022	.025		24
25	.0179	.02	.0204	.020	.021875		25
26	.01594	.018	.0181	.018	.01875		26
27	.014195	.016	.0173	.0164	.0171875		27
28	.012641	.014	.0162	.0149	.015625		28
29	.011257	.013	.0150	.0136	.0140625		29
30	.010025	.012	.0140	.0124	.0125		30
31	.008928	.01	.0132	.0116	.0109375		31
32	.00795	.009	.0128	.0108	.01015625		32
33	.00708	.008	.0118	.0100	.009375		33
34	.006304	.007	.0104	.0092	.00859375		34
35	.005614	.005	.0095	.0084	.0078125		35
36	.005	.004	.0090	.0076	.00703125		36
37	.004453			.0068	.006640625		37
38	.003965			.0060	.00625		38
39	.003531			.0052	.0099		39
40	.003144			.0048	.0097		40



The Metric System

The Metric System is based on the Meter which was designed to be one ten-millionth (1-10,000,000) part of the earth's meridian, passing through Dunkirk and Formenteral. Later investigations, however, have shown that the Meter exceeds one ten-millionth part by almost one part in 6400. The value of the Meter as authorized by the United States Government, is 39.37 inches. The Metric system was legalized by the United States Government in 1866.

The three principal units are the Meter, the unit of length, the liter, the unit of capacity, and the Gram, the unit of weight. Multiples of these are obtained by prefixing the Greek words: deka (10), hekto (100), and kilo (1000). Divisions are obtained by prefixing the Latin words: deci (1-10), centi (1-100), and milli (1-1000). Abbreviations of the multiples begin with a capital letter, and of the divisions with a small letter, as in the following tables:

MEASURES OF LENGTH

10 millimeters (mm.)	= 1 centimeter	cm
10 centimeters	= 1 decimeter	dm
10 decimeters	= 1 meter	m
10 meters	= 1 dekameter	Dm
10 dekameters	= 1 hektometer	Hm
10 hektometers	= 1 kilometer	Km

MEASURES OF SURFACE (NOT LAND)

100 square millimeters (mm. ²)	= 1 square centimeter	cm. ²
100 square centimeters	= 1 square decimeter	dm. ²
100 square decimeters	= 1 square meter	m. ²

MEASURES OF VOLUME

1000 cubic millimeters (mm. ³)	= 1 cubic centimeter	cm. ³
1000 cubic centimeters	= 1 cubic decimeter	dm. ³
1000 cubic decimeters	= 1 cubic meter	m. ³

MEASURES OF CAPACITY

10 milliliters (ml.)	= 1 centiliter	cl.
10 centiliters	= 1 deciliter	dl.
10 deciliters	= 1 liter	l.
10 liters	= 1 dekaliter	Dl.
10 dekaliters	= 1 hektoliter	Hl.
10 hektoliters	= 1 kiloliter	Kl.

NOTE.—The liter is equal to the volume occupied by 1 cubic decimeter.

MEASURES OF WEIGHT

10 milligrams (mg.)	= 1 centigram	cg.
10 centigrams	= 1 decigram	dg.
10 decigrams	= 1 gram	g.
10 grams	= 1 dekagram	Dg.
10 dekagrams	= 1 hektogram	Hg.
10 hektograms	= 1 kilogram	Kg.
1000 kilograms	= 1 ton	T.

NOTE.—The gram is the weight of one cubic centimeter of pure distilled water at a temperature of 39.2° F.; the kilogram is the weight of 1 liter of water; the ton is the weight of 1 cubic meter of water.

Metric and English or American (U. S.) Equivalent Measures

MEASURES OF LENGTH

1 meter = {	39.37 inches	1 foot =	.3048 meter
	3.28083 feet		
1 centimeter =	1.0936 yards	1 inch = {	2.54 centimeters
	.3937 inch		25.4 millimeters
1 millimeter = {	.03937 inch, or		
	1.25 inch nearly		
1 kilometer =	0.62137 mile		

MEASURES OF SURFACE

1 square meter = {	10.764 square feet	1 square yard =	.836 square meter
	1.196 square yards	1 square foot =	.0929 square meter
1 square centimeter =	.155 square inch	1 square inch = {	6.452 square centimeters
1 square millimeter =	.00155 square inch		645.2 square millimeters

MEASURES OF VOLUME AND CAPACITY

1 cubic meter = {	35.314 cubic feet	1 cubic yard =	.7645 cubic meter
	1.308 cubic yards		
	264.2 gallons (231	1 cubic foot = {	.02832 cubic meter
	cubic inch.)		28.317 cubic decimeters
1 cubic decimeter = {	61.023 cubic inch		28.317 liters
	.0353 cubic feet	1 cubic inch =	16387 cubic centimeters
1 cubic centimeter =	.061 cubic inch	1 gallon (British) =	4.543 liters
		1 gallon (U.S.) =	3.785 liters
1 liter = {	1 cubic decimeter		
	61.023 cubic inches		
	.0353 cubic foot		
	1.0567 quarts (U.S.)		
	.2642 gallon (U.S.)		
	2.202 lbs. of water at 62° F.		

MEASURES OF WEIGHT

1 gram =	15.432 grains	1 grain =	.0648 gram
1 kilogram =	2.2046 pounds	1 ounce avoirdupois =	28.35 grams
	.9842 ton of 2240 lbs.	1 pound =	4536 kilogram
1 metric ton = {	19.68 cwt.	1 ton of 2240 lbs. = {	1.016 metric tons
	2204.6 lbs.		1016 kilograms

MISCELLANEOUS

1 kilogram per meter =	.6720 pounds per foot.
1 gram per square millimeter =	1.422 pounds per square inch
1 kilogram per square meter =	0.2084 per square foot.
1 kilogram per cubic meter =	.0624 per cubic foot
1 degree centigrade =	1.8 degrees Fahrenheit.
1 pound per foot =	1.488 kilograms per meter.
1 pound per square foot =	4.882 kilograms per square meter.
1 pound per cubic foot =	16.02 kilograms per cubic meter.
1 degree Fahrenheit =	.5556 degrees centigrade.
1 Calorie (French Thermal Unit) =	3.968 B.T.U. (British Thermal Unit.)
1 Horse Power = {	33,000 foot pounds per minute
	746 Watts.
1 Watt (Unit of Electrical Power) = {	.00134 Horse Power.
	4424 foot pounds per minute.
	1000 Watts
1 Kilowatt = {	1.34 Horse Power
	4420 foot pounds per minute

Decimals of Millimeters and Equivalent Decimals of Inches

(Advancing by .01mm.)

mm.	Inches	mm.	Inches	mm.	Inches	mm.	Inches
.01	.00039	.26	.01024	.51	.02008	.76	.02992
.02	.00079	.27	.01063	.52	.02047	.77	.03032
.03	.00118	.28	.01102	.53	.02087	.78	.03071
.04	.00157	.29	.01142	.54	.02126	.79	.03110
.05	.00197	.30	.01181	.55	.02165	.80	.03150
.06	.00236	.31	.01220	.56	.02205	.81	.03189
.07	.00276	.32	.01260	.57	.02244	.82	.03228
.08	.00315	.33	.01299	.58	.02283	.83	.03268
.09	.00354	.34	.01339	.59	.02323	.84	.03307
.10	.00394	.35	.01378	.60	.02362	.85	.03346
.11	.00433	.36	.01417	.61	.02402	.86	.03386
.12	.00472	.37	.01457	.62	.02441	.87	.03425
.13	.00512	.38	.01496	.63	.02480	.88	.03465
.14	.00551	.39	.01535	.64	.02520	.89	.03504
.15	.00591	.40	.01575	.65	.02559	.90	.03543
.16	.00630	.41	.01614	.66	.02598	.91	.03583
.17	.00669	.42	.01654	.67	.02638	.92	.03622
.18	.00709	.43	.01693	.68	.02677	.93	.03661
.19	.00748	.44	.01732	.69	.02717	.94	.03701
.20	.00787	.45	.01772	.70	.02756	.95	.03740
.21	.00827	.46	.01811	.71	.02795	.96	.03780
.22	.00866	.47	.01850	.72	.02835	.97	.03819
.23	.00906	.48	.01890	.73	.02874	.98	.03858
.24	.00945	.49	.01929	.74	.02913	.99	.03898
.25	.00984	.50	.01969	.75	.02953	1.00	.03937

Millimeters and Equivalent Decimals of Inches

(Advancing by 1mm.)

mm.	Inches	mm.	Inches	mm.	Inches	mm.	Inches
1	.03937	26	1.02362	51	2.00787	76	2.99212
2	.07874	27	1.06299	52	2.04724	77	3.03149
3	.11811	28	1.10236	53	2.08661	78	3.07086
4	.15748	29	1.14173	54	2.12598	79	3.11023
5	.19685	30	1.18110	55	2.16535	80	3.14960
6	.23622	31	1.22047	56	2.20472	81	3.18897
7	.27559	32	1.25984	57	2.24409	82	3.22834
8	.31496	33	1.29921	58	2.28346	83	3.26771
9	.35433	34	1.33858	59	2.32283	84	3.30708
10	.39370	35	1.37795	60	2.36220	85	3.34645
11	.43307	36	1.41732	61	2.40157	86	3.38582
12	.47244	37	1.45669	62	2.44094	87	3.42519
13	.51181	38	1.49606	63	2.48031	88	3.46456
14	.55118	39	1.53543	64	2.51968	89	3.50393
15	.59055	40	1.57480	65	2.55905	90	3.54330
16	.62992	41	1.61417	66	2.59842	91	3.58267
17	.66929	42	1.65354	67	2.63779	92	3.62204
18	.70866	43	1.69291	68	2.67716	93	3.66141
19	.74803	44	1.73228	69	2.71653	94	3.70078
20	.78740	45	1.77165	70	2.75590	95	3.74015
21	.82677	46	1.81102	71	2.79527	96	3.77952
22	.86614	47	1.85039	72	2.83464	97	3.81889
23	.90551	48	1.88976	73	2.87401	98	3.85826
24	.94488	49	1.92913	74	2.91338	99	3.89763
25	.98425	50	1.96850	75	2.95275	100	3.93700



Table of Decimal Equivalents

Decimal Equivalent	Millimeter	Fractional Inch	Machine Screw Tap Standard	British Ass'n. Tap Standard
.0039	.1			
.0079	.2			
.0118	.3			
.0156		$\frac{1}{64}$		
.0158	.4			
.0197	.5			
.0236	.6			
.0276	.7			
.0313		$\frac{1}{32}$		
.0315	.8			
.0354	.9			
.0394	1.			
.0469		$\frac{3}{64}$		
.051				12
.059				11
.060			0	
.0625		$\frac{1}{16}$		
.067				10
.073			1	
.075				9
.0781		$\frac{5}{64}$		
.0787	2.			
.086			2	
.087				8
.0938		$\frac{3}{32}$		
.098				7
.099			3	
.1094		$\frac{7}{64}$		
.110				6
.112			4	
.1181	3.			
.1250		$\frac{1}{8}$	5	

Table of Decimal Equivalents

Decimal Equivalent	Millimeter	Fractional Inch	A. S. M. E. Standard	British Ass'n. Tap Standard
.126				.5
.138			.6	
.1406		$\frac{9}{64}$		
.142				.4
.151			.7	
.1563		$\frac{5}{32}$		
.1575	.4			
.161				.3
.164			.8	
.1719		$\frac{11}{64}$		
.177			.9	
.185				.2
.1875		$\frac{3}{16}$		
.190			.10	
.1969	.5			
.2031		$\frac{13}{64}$		
.209				.1
.216			.12	
.2188		$\frac{7}{32}$		
.2344		$\frac{15}{64}$		
.236				.0
.2362	.6			
.242			.14	
.2500		$\frac{1}{4}$		
.2656		$\frac{17}{64}$		
.268			.15	
.2756	.7			
.2813		$\frac{9}{32}$		
.294			.18	
.2969		$\frac{19}{64}$		
.3125		$\frac{5}{16}$		
.3150	.8			

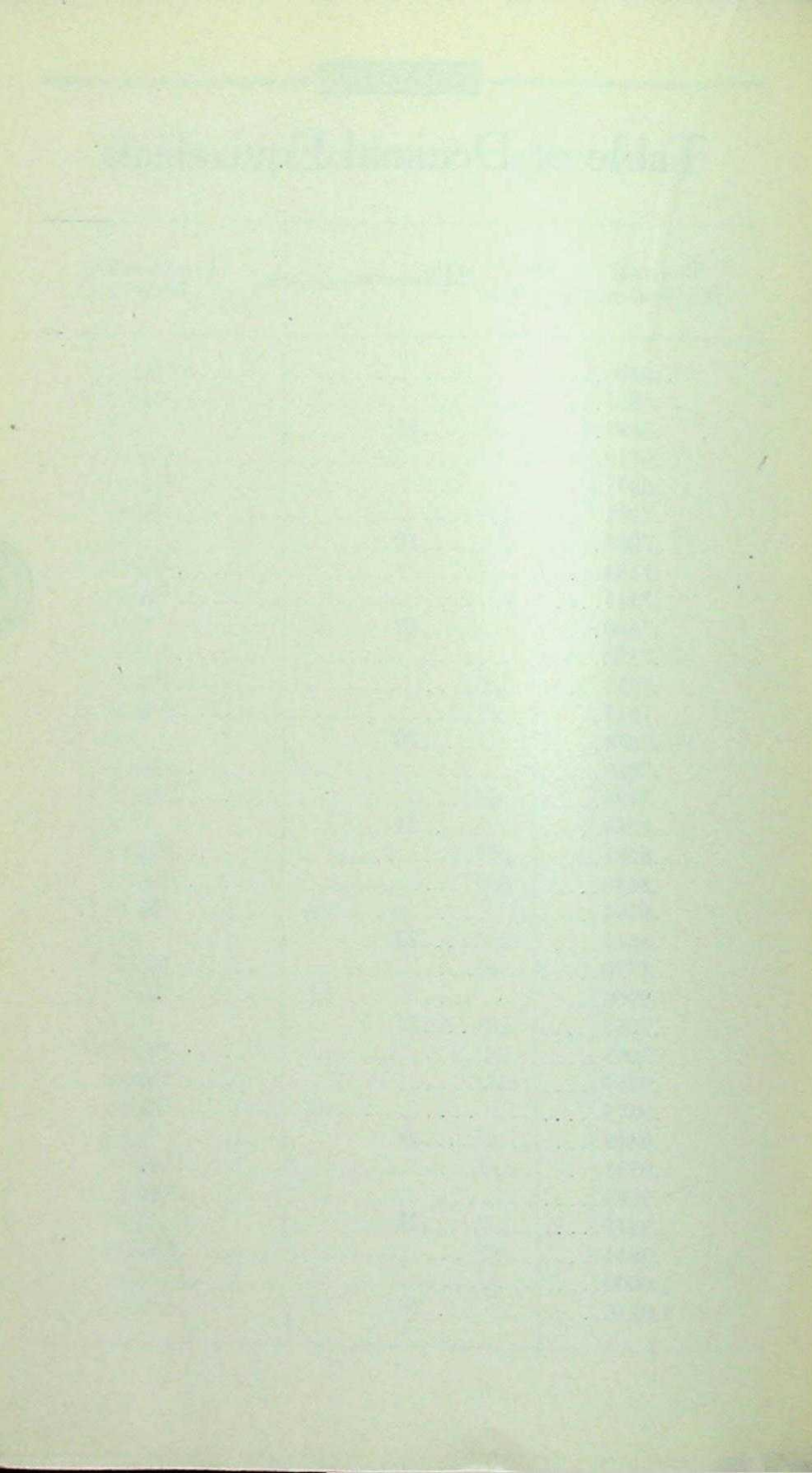


Table of Decimal Equivalents

Decimal Equivalent	Millimeter	Fractional Inch	A. S. M. E. Standard
.320.....			20
.3281.....		$2\frac{1}{64}$	
.3438.....		$11\frac{1}{32}$	
.346.....			22
.3543.....	9		
.3594.....		$23\frac{1}{64}$	
.372.....			24
.3750.....		$\frac{3}{8}$	
.3906.....		$2\frac{5}{64}$	
.3937.....	10		
.398.....			26
.4063.....		$13\frac{1}{32}$	
.4219.....		$27\frac{1}{64}$	
.424.....			28
.4331.....	11		
.4375.....		$\frac{7}{16}$	
.450.....			30
.4531.....		$29\frac{1}{64}$	
.4688.....		$15\frac{1}{32}$	
.4724.....	12		
.4844.....		$31\frac{1}{64}$	
.5000.....		$\frac{1}{2}$	
.5118.....	13		
.5156.....		$33\frac{1}{64}$	
.5313.....		$17\frac{1}{32}$	
.5469.....		$3\frac{5}{64}$	
.5512.....	14		
.5625.....		$\frac{9}{16}$	
.5781.....		$37\frac{1}{64}$	
.5906.....	15		
.5938.....		$19\frac{1}{32}$	
.6094.....		$39\frac{1}{64}$	
.6250.....		$\frac{5}{8}$	
.6299.....	16		

Table of Decimal Equivalents

Decimal Equivalent	Millimeter	Fractional Inch
.6406.....		$\frac{41}{64}$
.6563.....		$\frac{21}{32}$
.6693.....	17	
.6719.....		$\frac{43}{64}$
.6875.....		$\frac{11}{16}$
.7031.....		$\frac{45}{64}$
.7087.....	18	
.7188.....		$\frac{23}{32}$
.7344.....		$\frac{47}{64}$
.7480.....	19	
.7500.....		$\frac{3}{4}$
.7656.....		$\frac{49}{64}$
.7813.....		$\frac{25}{32}$
.7874.....	20	
.7969.....		$\frac{51}{64}$
.8125.....		$\frac{13}{16}$
.8268.....	21	
.8281.....		$\frac{53}{64}$
.8438.....		$\frac{27}{32}$
.8594.....		$\frac{55}{64}$
.8661.....	22	
.8750.....		$\frac{7}{8}$
.8906.....		$\frac{57}{64}$
.9055.....	23	
.9063.....		$\frac{29}{32}$
.9219.....		$\frac{59}{64}$
.9375.....		$\frac{15}{16}$
.9449.....	24	
.9531.....		$\frac{61}{64}$
.9688.....		$\frac{31}{32}$
.9843.....	25	
.9844.....		$\frac{63}{64}$
1.0000.....		1
1.0236.....	26	



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