

NO. 4 CATALOGUE

— OF —

# ENGINEERS' TOOLS

ETC.

PRICE SIXPENCE.

## BRITANNIA COMPANY

WAREHOUSES:

100 & 101, HOUNDSDITCH, LONDON.

ALL CORRESPONDENCE TO

*BRITANNIA WORKS, COLCHESTER, ENGLAND.*

MAKERS OF ENGINEERS' TOOLS TO THE  
BRITISH GOVERNMENT.

PRICES ARE SUBJECT TO ALTERATION WITHOUT NOTICE.

# BRITANNIA COMPANY

WHILST inviting attention to the annexed Catalogue, containing a few of their manufactures, would also draw attention to the following notices :—

That they manufacture upwards of 250 varieties of Lathes and Shapers, Milling, Slotting, and Planing Machines, &c.

That they are open to design and make Tools to suit the requirements of Purchasers. Drawing, details and measurements must be carefully given.



**TERMS:—CASH OR CREDIT AS MAY BE ARRANGED,  
OR EASY TERMS OF HIRE PURCHASE.**



*Prices are subject to alteration without notice.*



**THE DESIGNS ARE SUBJECT TO MODIFICATION OR IMPROVEMENT.**



FOREIGN ORDERS to be accompanied by a remittance, or notification what Bank will pay cash on receipt of Bills of Lading.



Packing for export is charged 5 per cent. on the Nett amount of Invoice.

*PACKING CASES RETURNED ARE ALLOWED IN FULL.*



They are constantly making various Lathes and Engineers' Tools for the British Government, and it is their aim to supply reliable Tools at a **SMALL ADVANCE** upon prices charged for **COMMON** quality, which every Engineer knows are not reliable, and therefore not economical.

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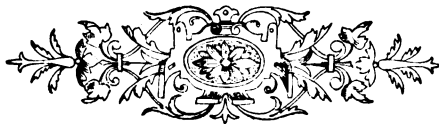
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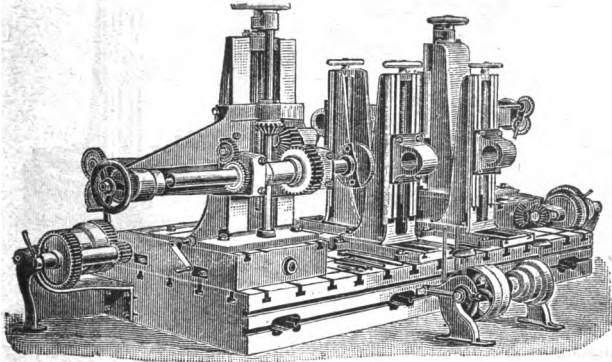
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# HORIZONTAL BORING, DRILLING, AND SURFACING MACHINE.

No. 42.  
FOR LARGE WORK.



THESE machines are constructed with powerfully geared boring heads, having **steel spindles**, driven by strong spur and mitre gearing, with variable feed, **self-acting in either direction**, or stationary for surfacing; the heads are mounted on upright, **heavy, rigidly constructed** slides, with vertical adjustment by screw and hand-wheel, and transverse adjustment by rack and pinion. The upright bar rests are made with socket heads to carry the boring bar and bushes, one bar rest at each side of the work, and are also **adjustable vertically** by screws and hand-wheels. The driving cone pulleys have four speeds, and double gearing is fitted, giving **eight changes** of speed. The whole is mounted on a machine-planed **heavy foundation** bed-plate with T slots for bolting work to. The machine above illustrated has **steel spindles**  $3\frac{1}{4}$  inches diameter, and is capable of boring holes up to **24 inches diameter** by 42 inches long, and has a **double set of boring heads** and bar rests, the foundation plate being 12 feet by 5 feet, but the machines are made of **all sizes to suit Purchasers' requirements; and estimates will be given on application.**

Price of above Machine on rails at Colchester with Top Driving

Apparatus, &c., complete . . . . . £200.

Weight about  $7\frac{1}{2}$  tons.

Smaller machines driven by single gear, boring up to 12 inches diameter, made on similar principle—price with bed 13 ft. by 5 ft., to bore up to 12 in. hole, £120. Other sizes to order.

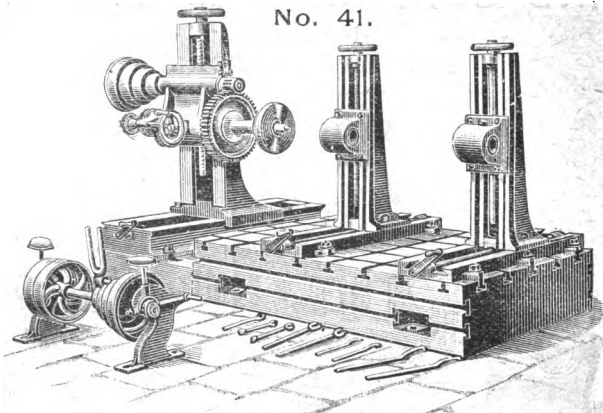
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**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# HORIZONTAL BORING, DRILLING, AND FACING MACHINE.

No. 41.



THESE machines are designed especially for boring heavy objects having several holes to bore parallel to each other, of which **any number can be bored at one setting**, as the boring head and rests for the boring bar are fitted with compound motion to adjust to the greatest accuracy, both vertically and horizontally, by screw and nut motion, with convenient handles.

The bed plate is a massive casting 9 feet long by 4 feet wide and 12 inches high, having **T** slots both longitudinally and transversely on its top face, and longitudinally on its side faces. The top sides and long slots are all accurately planed parallel, and at one end of the bed plate is fixed, at right angles to its length, a truly planed **V** edged slide, carrying the vertical slide on which is mounted the saddle of the boring head.

The boring head is constructed with single geared motion, 4-speed cone pulley with pinion and spur gearing, feed motion by hand or self-acting by differential wheels, the wheel for hand feed being conveniently placed at the front, always accessible to the operator, particularly useful when starting the cut or facing work. The main spindle **is of steel**, and fitted in a sleeve revolving with the spur wheel keyed to it.

The pinion is thrown in or out of gear by a **clutch and lever to start and stop instantly** irrespective of the countershaft motion. The machine, as illustrated, is constructed to bore up to 24 inches in length and 12 inches in diameter; and the general dimensions are as follows:—

Diameter of main steel spindle,  $3\frac{1}{2}$  inches.

Diameter of gearing,  $16\frac{1}{2}$  inches and  $3\frac{1}{2}$  inches by 1 inch pitch.

Diameter of speed cone, largest 13 inches, smallest 5 inches.

Width and number of speeds, 4 by  $3\frac{1}{2}$  inches.

Maximum length and diameter to bore, 24 inches by 12 inches.

Maximum and minimum height to bore from face of bed plate, 35 inches and  $6\frac{1}{2}$  inches.

Maximum horizontal range of boring head, 46 inches.

Approximate weight,  $3\frac{1}{2}$  tons.

**Price** complete, with Top Driving Apparatus, Spanners, Keys, &c. . . . **£135**

Prices subject to fluctuations without notice.

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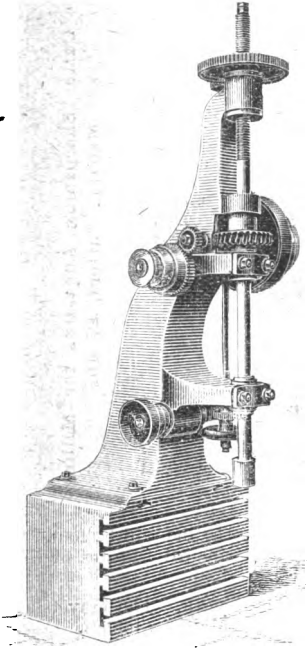
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# VERTICAL BORING MACHINE,

No. 43.



THIS machine is designed for boring **vertically** pump bodies, cylinders, or any similar work, the borings falling clear through the work. It is intended to be fixed on a bench, or may be mounted on a cast-iron box foundation base, with T slot (as illustrated), to which can be bolted the work, or an angle bracket can be attached, on which small work, as plummer blocks, &c., may be secured.

The dimensions are as follows:—

Steel spindle,  $2\frac{1}{2}$  inches diameter.

Driving cone, 4 speeds,  $3\frac{1}{4}$  inches wide.

Diameters of largest and smallest speeds,  $17\frac{1}{2}$  inches and 2 inches.

Feed cones, 3 speeds,  $1\frac{3}{4}$  inches wide.

Diameters of largest and smallest speeds, 7 inches and 4 inches

Worm gearing, 2 inches pitch, double threads.

Feed wheels, 35 and 105 teeth, 7 pitch.

Diameter of driving shaft,  $2\frac{1}{4}$  inches.

Height, without base, 7 feet 6 inches.

Takes in diameter, 2 feet 4 inches.

Approximate weight, without base, 15 cwts.

**Price**, with Top Driving Apparatus complete, **£50.**

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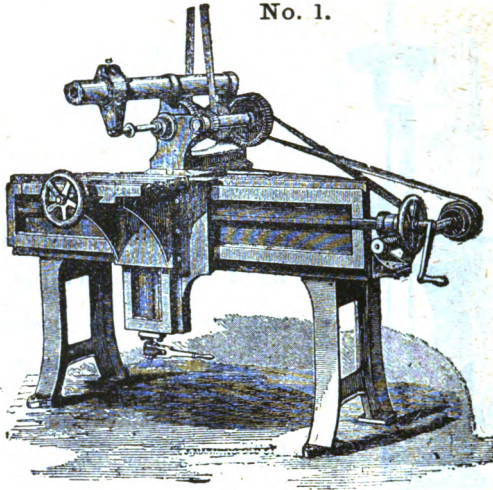
**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# THE BRITANNIA COMPANY'S MILLING MACHINE.

No. 1.

We make Milling Machines of smaller sizes  
for Brass Founders and Engineers.



Cutter Sharpening Apparatus for Milling  
Machine Cutters, £7 10s.

THIS is a very useful tool, capable of a large range of work, and will be found a great economiser of labour. From the illustration the principal features of the machine will be readily understood.

The bed is six feet long, self-acting through its whole length. The Traversing Table has also a vertical traverse of 12 inches, and horizontal of 9 inches.

The Headstock is back geared and with 4-speed cone pulley for  $2\frac{1}{4}$  in. strap. The gearing is  $1\frac{1}{2}$  in. by  $\frac{3}{8}$  in. pitch, and is put in and out by an eccentric. The Spindle is of cast steel, running through, and with coned bearings. The neck of the Spindle is  $2\frac{1}{4}$  in. diameter, and the nose bored conically 2 in. to 1 in. and tapped beyond to take mandrils for milling cutters. A strong adjustable arm B traversing in a rest is used to support outer end of mandril when necessary, and can be readily removed when not required.

Table 36 in. long by 12 in. wide, longitudinal motion 36 in., vertical motion, 14 in., cross motion, 9 in., 6 changes of speeds, floor space occupied 84 by 54 in.

By using the arm, very wide cutters or a series of cutters can be used, for wide surfaces or any irregular form which may be required.

It is fitted with rack and pinion to work the saddle back quickly.

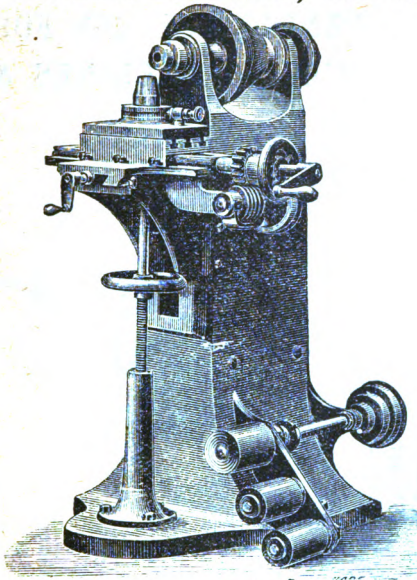
This tool has many advantages over planing machines in point of variety of uses to which it can be put, as well as its more rapid operation.

**Price, Including Overhead Motion, one Mandril and Spanner. £60.**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# MILLING MACHINE, No. 10, SINGLE GEARED.



Improved Apparatus  
for Sharpening Cutters,  
£8 10 0.

Cutters made  
to any shape to  
order.

This is a machine specially suited for Engineers, Brass Finishers, Gun Smiths, Sewing Machine, Bicycle, and other small Machine Makers. It has a steel spindle with conical neck, steel lock nuts to take up wear and receive thrust in face work, and the nose is screwed and coned for chucks. It is fitted with longitudinal, transverse, and vertical slides; is self-acting in longitudinal by the most improved worm and wheel feed, and the vertical actuated by a convenient wheel and screw movement in front. A tray for tools is fitted at the side. An overhead motion with fast and loose, and cone pulleys, countershaft, hangers, and strap shifting gear is included in the price. When required for milling squares, hexagons, octagons, &c., as nuts or brass cocks and fittings, a very convenient dividing appliance can be supplied as shown on the illustration. The hollow body is fitted with a door and shelves for cutters, &c.

## DIMENSIONS AND PRICES.

Extreme width, 2 ft. 8 in.; extreme measure back to front, 3 ft.; knee slide has a projection of 10 in.; longitudinal slide, 20 in. long; 4 changes of speed, 3 changes of speed; floor space occupied, 32 in. by 36 in.

The Slides traverse Longitudinally .. .. .	13½ inches.
.. .. . Transversely ( <i>i.e.</i> , on knee slide) .. .. .	4½ ..
.. .. . Vertically .. .. .	12 ..

Work table is 11½ in by 6 in., with T grooves. Cone Pulley has 4 speeds for 2 in. belt. Total height is 3 ft. 7 in. Height to centre, 3 ft. 2 in. Approximate weight, 5½ cwt.

Price complete .. .. .	£24 0 0
Dividing Appliance .. .. .	2 10 0
Parallel Vice to suit .. .. .	2 0 0

Patent Milling Machines to work on 5, 6, or 7 in. centre lathes.

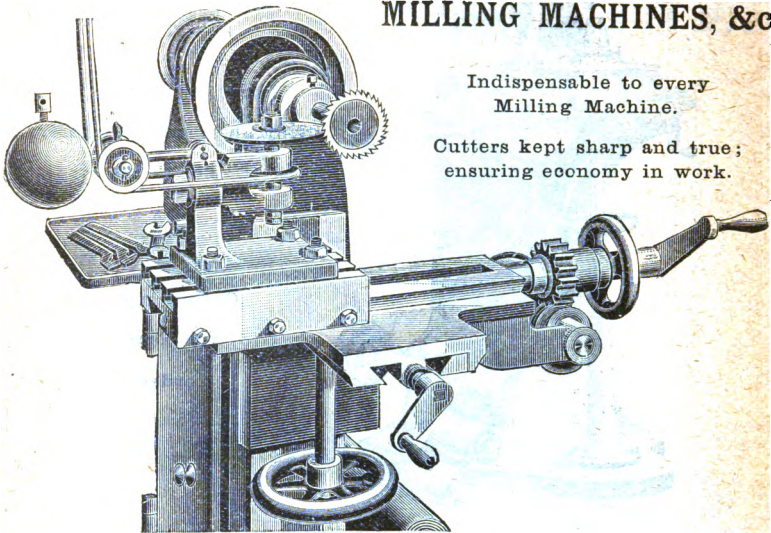
For prices and specifications see special circular.

## BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# APPLIANCE FOR SHARPENING CUTTERS FOR MILLING MACHINES, &c.



Indispensable to every  
Milling Machine.

Cutters kept sharp and true;  
ensuring economy in work.

THE above appliance, illustrated as in use on a Milling Machine, is designed as a handy device to fit on the table of an ordinary Milling Machine, to sharpen its cutters. It is intended to be driven from the countershaft of the machine, and adjusted to correct position for grinding by the slides of the machine, the cutter to be sharpened being meantime held in its usual position as for cutting in the mandril of the headstock, the driving belt of the latter being, of course, thrown off for the time.

The appliance is constructed with a firm base to bolt to machine table, and has a swivelling head carrying a steel spindle with driving pulley fitted, and arranged to hold an emery wheel at its end.

It has a pair of guide pulleys which swivel and slide upon a hinged lever, with a heavy weight at its end to keep the driving gut tight.

When in operation the emery wheel is brought into contact with the cutter, and the latter is turned by moving the cone pulley by hand, bringing each successive tooth in contact with the emery wheel.

The latter being fitted to swivel can be arranged to suit cutters having teeth cut square across or obliquely, and can also be used with a square-edged emery wheel, to run in a vertical direction, and sharpen the cutter by grinding the tops of the teeth, which is sometimes preferable.

It is useful also for backing off taps and reamers, flute drills, &c.

Price of the Appliance .. .. .	£4 0 0
Or with Overhead for driving it independently ..	6 10 0

**BRITANNIA CO., COLCHESTER, England.**

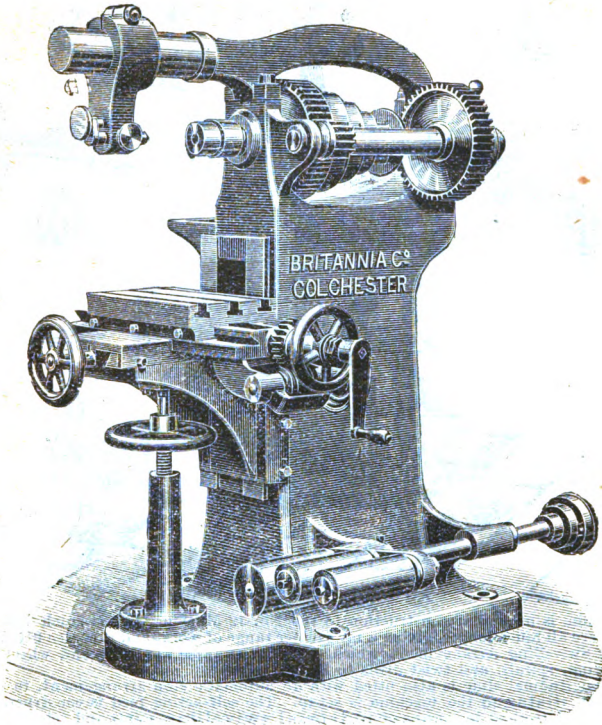
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# MILLING MACHINE, No. 12, DOUBLE GEARED.

£6 10s.

Improved Apparatus for Sharpening Cutters



Cutters made to any shape to order.

The knee slide is accurately fitted to the front of the body or column, and rises and falls 14 inches, giving 16½ inches from top of work table to centre of spindle when at its lowest, and is adjusted by a vertical screw, and conveniently placed handwheel. The longitudinal slide is 24 in. long and 7½ in. wide, and has a transverse traverse, i.e., parallel with axis of spindle of 7½ in., adjusted by handwheel and screw.

The work table is 14 in. long and 8½ in. wide, with T slots planed out for fixing the work, and has a longitudinal traverse of 18 in., self-acting by worm and wheel, and friction cone. The belt cone pulley for self-acting feed, has three steps, which give, with the back gearing, six changes of speed.

All the slides are accurately scraped and fitted, and have loose angle strips to adjust for wear. All traverse screws are steel and all material is of the best. The whole is fitted and finished in a superior manner, and is a thoroughly reliable tool.

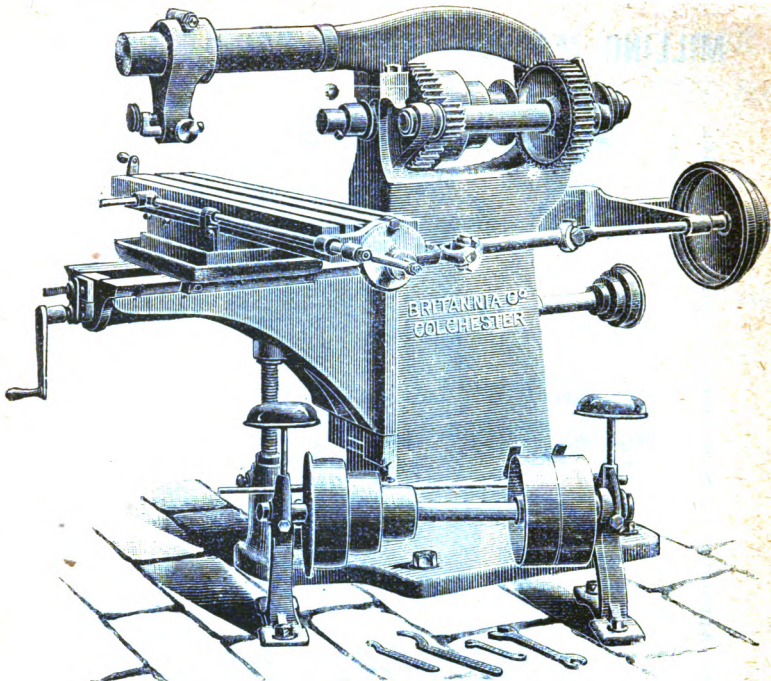
**DIMENSIONS**—Height over all, 4 ft. 4 in.; width, 3 ft.; depth, 4 ft.; diameter of main spindle, 1½ in.; cone pulley has 4 speeds, 2½ in. wide; diameter of largest speed, 8½ in., and of smallest, 3½ in.; gearing is ½ in. pitch, and 2 in. on face; diameters of gearing, 10 in. and 3½ in.; diameter of fast and loose pulleys, 10 in. and 3 in. wide; eight changes of speed, three changes of speed; floor space occupied, 48 in. by 36 in. Total weight about 12 cwt.

Price, including top driving apparatus, screw keys, &c., &c., complete ...	£	s.	d.
Parallel vice with swivelling jaw to suit	4	5	0
Dividing appliance with tangent worm and wheel for squares, hexagons, &c.	3	15	0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# UNIVERSAL DOUBLE GEARED MILLING MACHINES, No. 13.



THIS Machine is of similar construction to the No. 12 Machine, but is much heavier, and the slides are all much longer giving a far greater range of work, and it is also fitted with the Universal Swivelling Arrangement, which, with the suitable appliance and wheels, enables skew gearing, spirals, and twist drills to be cut.

The longitudinal slide is also fitted with an automatic stop arrangement, to stop at any given distance the machine is set to. The self-acting feed is constructed on the most improved method by means of universal swivelling joints and telescopic shafts. The machine is most accurately and carefully constructed, and is highly recommended for milling all kinds of fittings where great precision and accuracy are desired, and by its self-acting arrangements great economy of labour is effected, as one man can attend to two or more machines.

## THE GENERAL DIMENSIONS OF THE MACHINE ARE AS FOLLOWS:—

The Knee Slide has a projection of 28 inches and rises and falls by hand wheel and vertical screw through a range of 16 inches.

The Longitudinal Slide is 12½ inches long having a transverse traverse on the knee side of 16 inches.

The Work Table is 3 feet 10 inches long by 9 inches wide with planed T slots for securing the work, and has a longitudinal traverse either by hand or self-acting of 2 feet 7 inches.

The Cone Pulley has 3 speeds 3 inches wide, the largest being 9½ inches in diameter and the smallest 4½ inches.

Six changes of speed.

The Gearing is ¼ inch pitch 2½ inches on face, the diameter of the large gear 11 inches and small 3½ inches.

Diameters of Pulleys on countershaft 11½ inches by 8 inch face.

Longitudinal motion 34 inches. vertical motion 16½ inches; cross motion, 18 inches, floor space occupied 60 by 72 inches.

Total height of machine 4 feet 4 inches, width 5 feet, and depth 6 feet 9 inches.

Approximate weight 26 cwt.

Price with top Driving Apparatus, Screw Keys, Spanners, &c. Complete ... £77 10 0

Parallel Vice with swivelling jaw to suit ... 3 5 0

Ditto ditto with swivelling bottom and very strong make ... 5 10 0

Simple Dividing Appliance with tangent worm and wheel motion giving divisions

of 48 and its multiples ... 3 15 0

Improved Dividing Appliance ... 14 10 0

Appliance for Milling Twist Drills, &c., with change wheels for various pitches 22 0 0

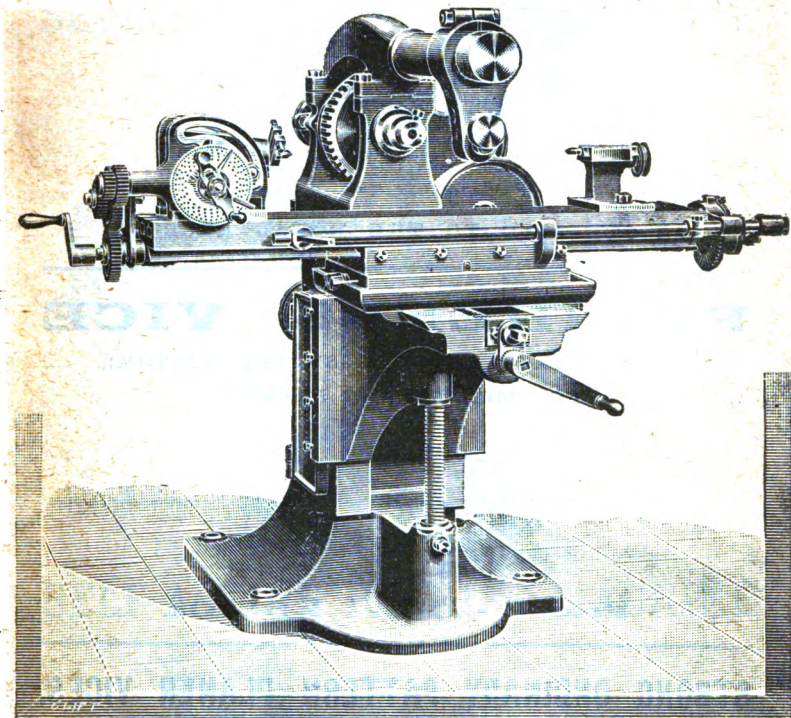
## BRITANNIA CO., COLCHESTER, England.

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# SPIRAL MILLING

BY

## No. 13 UNIVERSAL MACHINE.



The illustration shows our No. 13 Milling Machine, but fitted with the spiral attachment constructed for grooving twist drills, cutting spiral gearing, cutters, &c.

The appliance is arranged to fit on the longitudinal slide of the machine, the headstock having a steel mandril with carrier for driving the work, and to be used either in a horizontal position or vertical, or at any angle between, and geared up by mitre gears and change wheels to revolve at any required pitch of spiral, from 1 inch to 40 inches, and is further fitted with worm-wheel and worm, which, in conjunction with the division plate and index and sextant fitted to the worm shaft, will divide drills, gear wheels, &c., up to 360 divisions.

The spiral movement can be given to the mandril at any angle.

The price includes eight change wheels and necessary keys, spanners, &c.

	£	s.	d.
Price of Spiral Appliance for No. 13 Milling Machine ... ..	22	0	0
.. of No. 13 Milling Machine with Spiral Appliance, Top Driving Appliance, Screw Keys, Spanners, &c. (complete) ... ..	99	10	0
.. of Parallel Vice with Swivelling Bottom, and very strong pattern	5	10	0

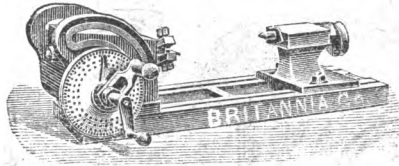
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# DIVIDING APPLIANCE

FOR MILLING AND SHAPING.

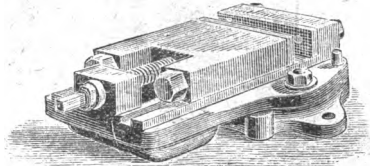


Price £14 10s.

AS SUPPLIED TO THE ROYAL ARSENAL.

## ENGINEERS' VICE

(STRONG PATTERN, WITH SWIVEL BOTTOM),  
FOR MILLING AND PLANING.



Price - - - £5 10s.

## STRONG ORDINARY PATTERN PLANER VICES.

With one Jaw to swivel to grip parallel or taper work.

Width of Jaw	3 in.	4½ in.	5 in.	6 in.	7 in.
To take in	4 in.	6 in.	7½ in.	9 in.	12 in.
Price	40/-	56/-	72/-	90/-	115/-

## DRILLING MACHINES

IN GREAT VARIETY AND ALL PRICES.

PLANING MACHINES, SHAPING MACHINES, SLOTTING MACHINES,  
MILLING MACHINES AND ENGINEERS' TOOLS

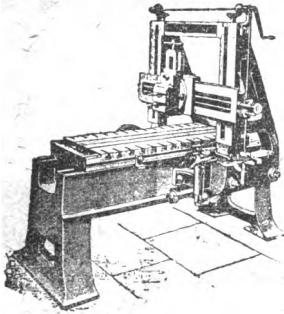
Of every description.

TOOLS DESIGNED, OR MADE TO DRAWING  
For Special Work.

BRITANNIA CO., COLCHESTER, England.

Showrooms—100, Houndsditch. All Letters to Colchester.

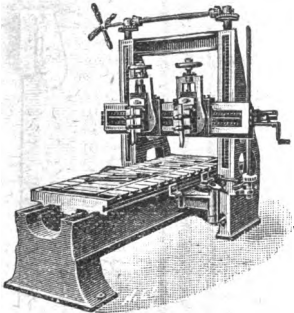
## IMPROVED SELF-ACTING PLANING MACHINE



THESE planers are constructed with the recent improvements. Self-acting in horizontal, vertical, and angular cuts, with quick return. The slides are fitted with oil cups. They are adapted for hard and accurate wear. Spanners are included,

Height	Width	Length	Price	Approximate Weight	Extra per foot long
2 ft. 0 in.	2 ft. 0 in.	4 ft.	£62	31 cwt.	£4
2 ft. 6 in.	2 ft. 6 in.	6 ft.	80	55 cwt	6

## POWERFULLY GEARED SELF-ACTING PLANING MACHINE



THIS is a newly designed planer, embracing the latest improvements. It is self-acting in vertical, horizontal, and angular cuts, self-oiling lubricators. The material and workmanship is guaranteed, and the gearing is strong and accurate. Spanners, &c., are included.

Height	Width	Length	Price	Approximate Weight	Extra per foot long	For Extra Tool Box
3 ft. 3 in.	3 ft. 3 in.	6 ft.	£100	70 cwt.	£7 10s.	£15

*Special Quotations for Planers up to 20-ft. Beds by 6-ft. by 6-ft.*

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



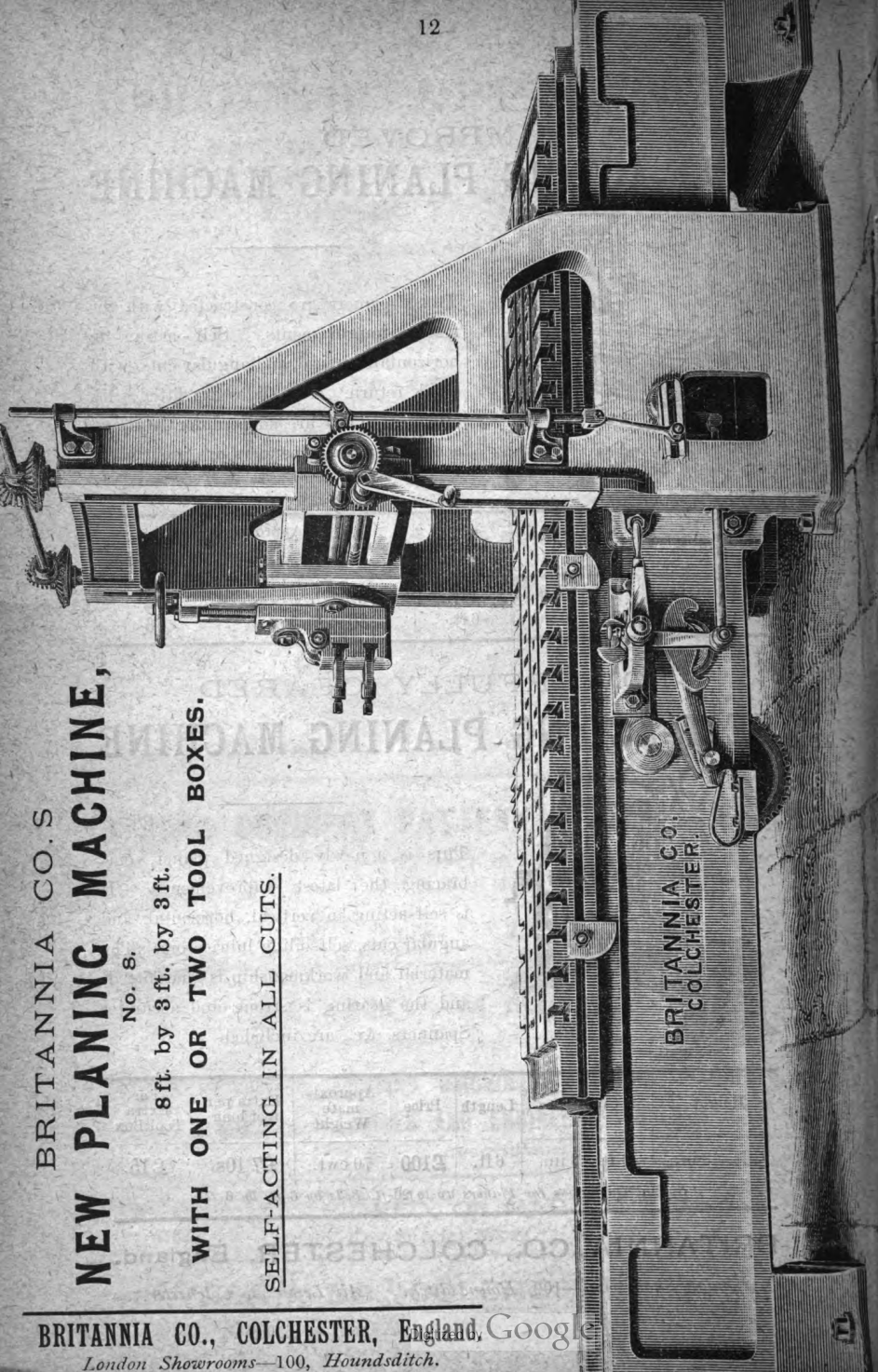
BRITANNIA CO. S  
**NEW PLANING MACHINE,**

No. 8.

8 ft. by 3 ft. by 3 ft.

**WITH ONE OR TWO TOOL BOXES.**

SELF-ACTING IN ALL CUTS.



BRITANNIA CO.  
COLCHESTER.

# IMPROVED PLANING MACHINE,

No. 8.

8 ft. by 3 ft. by 3 ft.

**WITH ONE OR TWO TOOL BOXES.**

(For Illustration see opposite page.)

NEW and improved type, massive and rigid construction. The bed well ribbed with box ribs, V Slides, oil channel and four lubricating wells and spring action rollers on each side, and waste oil wells at each end. The Table very massive, accurately scraped to bed, and driven by intermediate spur gearing, giving a larger pinion to gear into the rack, thus gaining power by the longer leverage, and less liability to break teeth, because more teeth are engaged with the rack in driving. It has quick return movement. The feed is arranged on a novel and ingenious method, absolutely certain in its action, and giving only the exact movement to the belt fork to shift the belt from the forward to the backward pulley, or to the loose for stopping, and under the perfect control of the operator. It is self-acting in all cuts.

The bevil pinions giving motion to the self-acting vertical and angular feeds in the machine fitted with two Tool Boxes, are carried on slides, and made to engage by an eccentric movement. The Tool Boxes are constructed with a lip at lower end to take the thrust of the cut, relieving the swivelling pin and giving increased durability to the machine. The tool is constructed throughout with the greatest care, of the best materials and workmanship, and is complete with spanners and keys.

The chief dimensions are as follows—

The machine admits and will plane 8 ft. by 3 ft. by 3 ft. The Bed is 12 ft. long by 25 in. wide by 15½ in. deep.

GEARING—1st Motion. Spur wheel 14¼ in., pinion 5¼ in., 3 in. face, and 1 in. pitch.

2nd Motion. Spur wheel 20½ in., pinion 6½ in., 3½ in. face, and 1¼ in. pitch.

Rack Gear. 5 in face and 1¼ in. pitch, intermediate wheel, 17 in. diam., pinion 6¼ in. diam.

Pulleys—20 in. diam. by 4 in. wide.

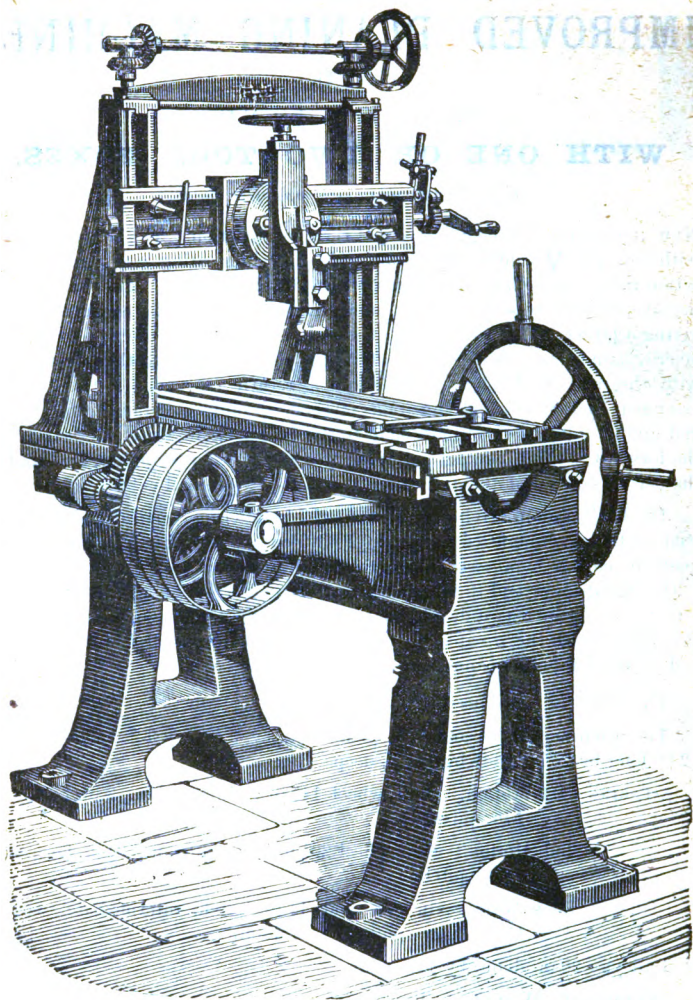
Approximate Weight—5 Tons.

	£	s.	d.
Price complete, with One Tool Box .. .. .	120	0	0
Extra for Two Tool Boxes .. .. .	11	10	0
Extra per foot for longer Table and Bed .. .. .	5	10	0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# SELF-ACTING PLANER, FOR HAND OR STEAM POWER.



This Machine is fitted with rack and pinion, 3 pulleys, and flywheel with 4 handles, quick return motion, self-feeding in the longitudinal motion.

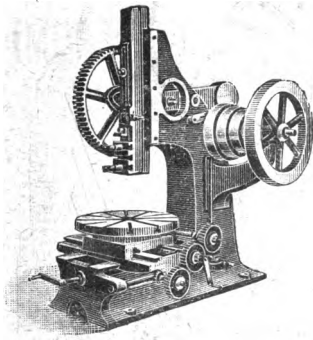
Number	1	2	3	Number	1	2	3
Take in length	16in.	24in.	32in.	Price	£21 5s.	£31 5s.	£41 5s.
Do. width	12in.	16in.	18in.	Weight	5½cwt.	10cwt.	14cwt.
Do. under tool box	8in.	12in.	16in.				

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



# IMPROVED SLOTTING MACHINE.



THE annexed engraving illustrates a machine with the following advantages:—

The table cants over for cutting taper key ways, &c., &c.

It has longitudinal traverse and circular motion, each can be disengaged independently, and are self-acting.

The ram is made with long bearings and compensation balance lever which acts in any position with the ram.

The end of the lever is slotted and carries a sliding block from crank pin, which gives an adjustable stroke and quick return.

The link is fixed at the extreme end of lever of ram, thus giving a direct thrust without side strain, and so avoiding considerable wear and friction.

The bearings of the ram are long, thus ensuring firmness and accuracy of stroke.

A long or short stroke can be given, either close to the table, or at the extreme end.

The adjusting screw for regulating height of ram is in front, but all movements of tables and slides are on the side where the man stands, thus saving much inconvenience, all being within reach of the workman. This is a contrast to other similar machines which require the man to mount the table and to move from one side of the machine to the other, to adjust the various movements.

The cone is *parallel* to the shafting and enables the machine to be fixed near the shafting and not at right angles. It is fitted with top driving apparatus, screw keys, &c.

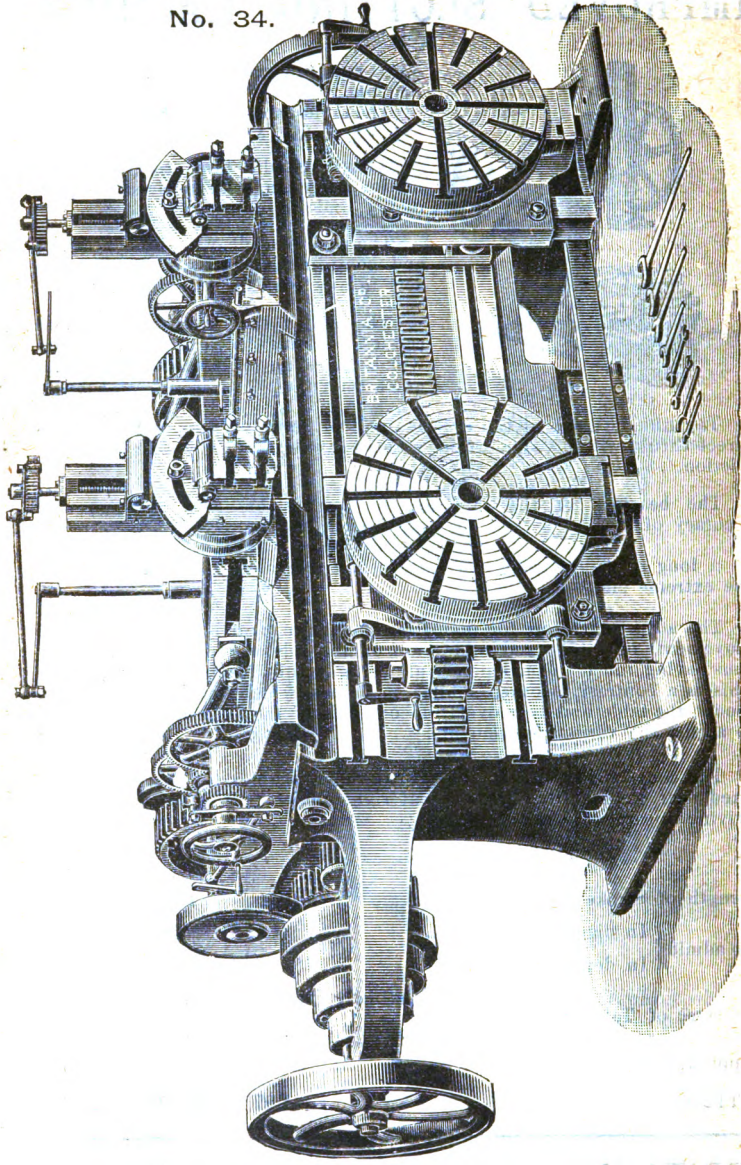
Length of Stroke	...	...	...	12in.	14in.	18 in.
To admit {	In diameter	...	...	4ft.	5ft.	6ft.
	In depth	...	...	1ft. 8in.	2ft. 4in.	3ft. 0in.
Traverse of Table Slides {	Longitudinally	...	...	2ft. 4in.	3ft. 0in.	3ft. 6in.
	Transverse	...	...	2ft. 2in.	2ft. 6in.	3ft. 0in.
Approximate Weight	...	...	...	55cwt.	70cwt.	140cwt.
Price	...	...	...	£97	£120	£200

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# Improved Patented Shaping Machine,

No. 34.



For description and Price see opposite page.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# BRITANNIA COMPANY'S IMPROVED PATENTED SHAPING MACHINE.

(Patented No. 7,697.)

*As made for DAVEY, PAXMAN & CO.*

(For illustration see opposite page).

This is a most handy Machine for general Engineers or Machinists' Shop, enabling a piece of work with several planed faces, as valve or bracket seatings, to be shaped on all sides at one setting, the immense advantage of which, by ensuring accuracy, and as an economiser of time and labour will at once commend itself to every practical engineer.

The machine is constructed with a strong circular work table, having its face vertical, and with radial T slots for securely bolting the work to, which is capable of being easily rotated on its centre, and readily adjusted by slides both vertically and horizontally, so that any part of a piece of work fixed to it, can be brought quickly under the operation of the tool on the ram-head.

The circular motion is by worm and wheel gearing (and at a small extra cost can be made self-acting if desired) by which means cylinder flanges, cross-heads, ends of connecting rods, and other circular work can be done. The vertical adjustment is by worm or mitre gearing and elevating screw.

The machine is fitted with the most recent improvements, the gearing is on the saddle, conveniently under the control of the operator without having to move from his job, and is self-acting in both horizontal, vertical, and angular cuts.

The machine illustrated is a double machine of large size, having a stroke of 24 inches, and is fitted with two heads and two tables, acting independently of each other, but the same patented arrangement can be fitted to any of our smaller machines.

These machines can also be supplied with a loose angle bracket or table, to attach to the vertical faced circular table, forming at once an ordinary shaping machine, when circular or multiple faced work is not required to be done.

Specification of dimensions, &c., of the machine illustrated.—

Length of stroke 24-in.	Pitch, width on face, and diameters of gearing:—
Length of bed 9-ft.	
Height of face of bed from floor 4-ft.	
Width of face of bed 2-ft. 4-in.	
Traverse of heads 3-ft. 6-in.	
Vertical adjustment of work table 16-in.	
Diameter of circular work table, 30-in.	
Extreme length of machine 15-ft., width	
5-ft. 4-in., height 7-ft.	
	Second ditto, 1½-in. by 4½-in., pinion 10½in., spur wheel 24-in.
	Pitch of feed gearing ½-in. by 1½-in. on face.
	Approximate weight 11½ tons.

Price on rails at Colchester .. .. £265.

*A similar machine, with 1 head, and with 1 or 2 tables—Price on application.*

The above Tool is patented in England and abroad. Information of infringements will be paid for.

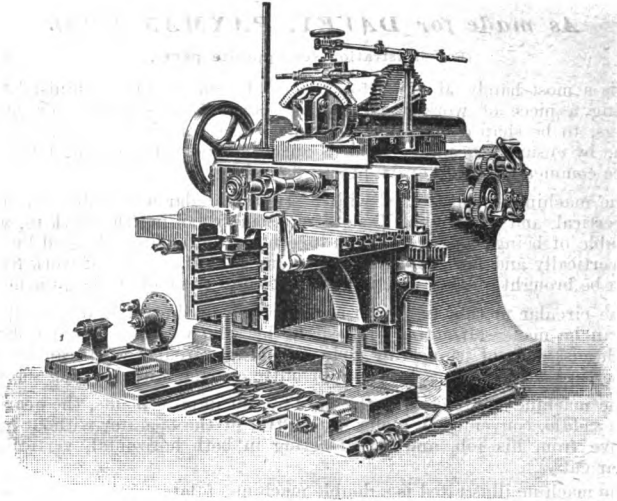
## BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# Extra Heavy Shaping Machine, No. 36

**TWELVE-INCH STROKE.**

(AS MADE FOR THE BRITISH GOVERNMENT FOR INDIAN STATES RAILWAYS).



This is a powerful machine, designed for heavy railway work, and by its great weight and strength will save its extra cost in the rapidity of its work by heavy cuts.

It is made self-acting in all cuts, and is arranged for horizontal, vertical, angular, circular and curvilinear motions, the latter being adjustable for internal curves from a radius of 10 inches to nothing.

The cutting motion is given by an improved arrangement of adjustable stroke plate, by which the return motion retains its relative quickness, whether the machine be cutting a long or short stroke.

The tool holder is cut out of a solid block of forged steel, all other parts equally strongly constructed; worms are forged steel, worm and feed gearing machine cut out of solid.

It is made with two tables, and the principal dimensions are as follows:—

Length, depth, and width of bed, 4 ft. 6 in.  
by 3 ft. 1 in., and 1 ft 10 in.

Traverse of head along the bed, 2 ft. 3 in.

Maximum stroke, 12 in.

Size of table, 17 in. by 17 in. by 9 in.

Driving cone, 4 speeds, 9½ in. wide, largest  
being 17½ in. and smallest 7 in. diameter.

Fly wheel, 24 in diameter.

Driving gear, 14 teeth to 55 teeth, 1 in. pitch  
3 in. face.

Approximate weight, 3 tons 18 cwt.

**Price,** complete with top driving apparatus, screw keys,

2 vices, &c., but without dividing appliances .. .. .

£160 0 0

Dividing appliance, extra .. .. .

7 10 0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

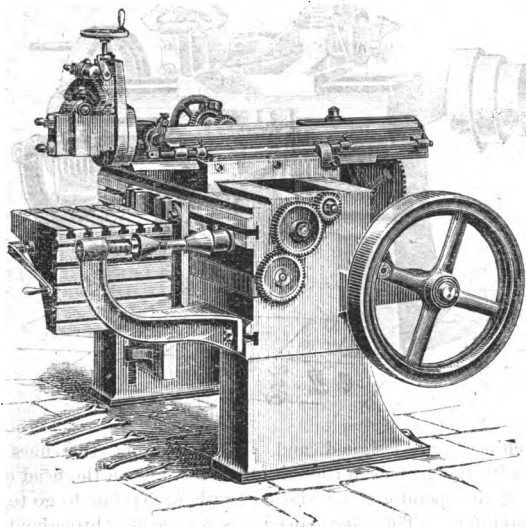
All Letters to Colchester.

# IMPROVED SELF-ACTING SHAPING MACHINE,

With Central Action, No. 33.

TWELVE-INCH STROKE. FOUR-FEET BED.

(AS MADE FOR THE BRITISH GOVERNMENT).



THESE machines are driven by direct motion of the link on the **centre** of the interior of the ram, obviating the usual connecting rod attached to the **side** of the ram, thus giving to the cutting tool a more direct and effective thrust,

All the feed motions are self-acting by cam and lever, and the vertical and angular feeds are very neatly and compactly contrived by tappets and rod at side of the ram, and the circular motion by worm and wheel gearing.

The tool holder swivels on the ram head, and is graduated to set to any angle, and the tool box is made with worm and quadrant for shaping internal curves. They have a quick return motion. Table adjusts in both directions. Traverse of head along the bed is 32 inches. Size of table, 16 in. by 14½ in.

Approximate weight, 26 cwt.

Price, complete with overhead motion, screw keys, &c., &c., £64.

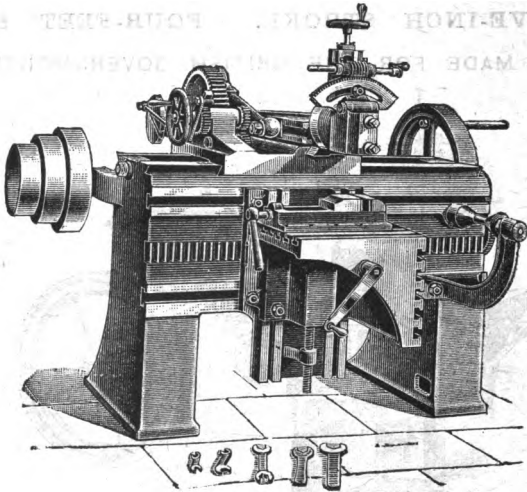
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**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# IMPROVED POWERFUL SHAPING MACHINE,

No. 32.



THESE machines are designed and constructed on the most approved principles, with the gearing for longitudinal traverse on the head or carriage, thus enabling the operator to set the cut without having to go to the end of bed, as heretofore. The above machines are made throughout with the greatest precision.

They are self-acting in horizontal and circular motion, the ram is indexed, and tool box provided with slides for vertical or angular cuts, and worm and quadrant for internal curves. The tables are adjustable on the bed, and are raised and lowered by handle in front. They are fitted with quick return motion by link arrangements. Overhead motion and screw keys complete.

Length of Bed.	Stroke.	Traverse of Head.	Size of Table.	No. of Tables	Approximate Weight.	Price.	Extra per Foot of Bed.	Additional Table.	Additional Head.
4 ft.	13 in.	2 ft. 11 in.	16in. by 14½in.	1	25	£60	£8 10	£8	£30

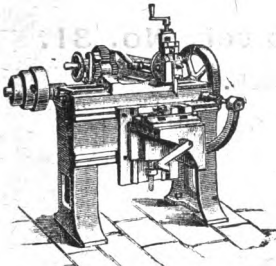
NOTE.—If made self-acting in vertical and angular cuts, extra, £

ABOVE AS SUPPLIED TO THE BRITISH GOVERNMENT.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# IMPROVED SHAPING MACHINE.



## No. 29.

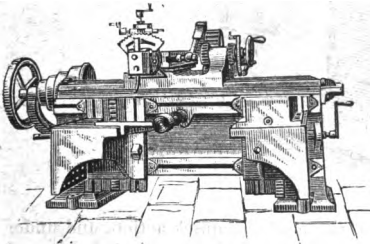
THESE are first-class tools, with longitudinal motion on the carriage, quick return by link motion. They are self-acting in circular and surfacing cuts. The tool box is fitted with slides for vertical or angular cuts.

Parallel vice, overhead motion, and screw keys are included.

Length of Bed .. ..	3ft.
Stroke .. ..	6in. to 9in.
Traverse of Head ..	2ft. 4in.
Approximate Weight	14½ cwt.

<b>Price</b> .. ..	<b>£37 10</b>
Extra per Foot of Bed ..	<b>35s.</b>
Additional Table .. ..	<b>£6</b>

# IMPROVED POWERFUL SHAPING MACHINE.



THESE machines are designed and constructed on the most approved principles, with the gearing for longitudinal traverse on the head or carriage, thus enabling the operator to set the cut without having to go to the end of bed, as heretofore. The above machines are made throughout with the greatest precision.

They are self-acting in horizontal and circular motion, the ram is indexed, and tool box provided with slides for vertical or angular cuts, and worm and quadrant for internal curves. The tables are adjustable on the bed, and are raised and lowered by handle in front. Overhead motion and screw keys complete.

They are fitted with quick return by link arrangements.

Length of Bed .. ..	6 ft.	8 ft.
Stroke .. ..	14 in.	18 in.
Traverse of Head .. ..	4 ft. 6 in.	5 ft. 10 in.
Size of Table .. ..	20½ by 14½	23½ by 16½
No. of Tables .. ..	2	2
Approximate Weight .. ..	36 cwt.	60 cwt.
<b>Price</b> .. ..	<b>£78 0</b>	<b>£105 0</b>
Extra per Foot of Bed .. ..	<b>4 0</b>	<b>4 0</b>
Additional Table .. ..	<b>8 0</b>	<b>12 0</b>
Additional Head .. ..	<b>30 0</b>	<b>35 0</b>

NOTE.—If made self-acting in vertical and angular cuts, extra, £

**AS MADE FOR THE BRITISH GOVERNMENT.**

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

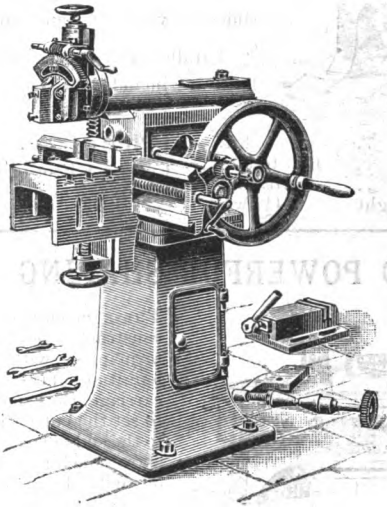
All Letters to Colchester.

# SELF-ACTING SHAPING MACHINE

For Hand or Steam Power, No. 31.

SIX-INCH STROKE.

(AS MADE FOR THE BRITISH GOVERNMENT).



This is a handy machine for small work, having a quick action, and under ready control. It is made to be used either on a bench, or mounted on a cast iron box column as illustrated, the latter made with a door, and fitted with shelves as a cupboard for tools, &c.

It has an adjustable stroke up to 6 in. long.

The table is 9 in. by 9 in. by 8 in., and rises and falls by screw and hand wheel a distance of  $7\frac{1}{2}$  in., and has a traverse along the bed of  $25\frac{1}{2}$  in., either by hand or by self-acting feed. It is made with or without a self-acting circular motion, and is fitted with a parallel vice.

The tool box is made to swivel on ram head to any angle. The driving shaft is fitted with hand fly wheel, and with 3-speed cone pulley, for power driving. Approximate weight with pedestal complete, 8 cwt. 3 qrs.

<b>Price,</b> with vice complete, as a bench tool .. ..	<b>£22 10 0</b>
,, if fitted with self-acting circular motion, extra ..	<b>2 10 0</b>
,, mounted on box pedestal, as illustrated, extra ..	<b>3 5 0</b>
,, of complete top driving apparatus for power, extra ..	<b>2 10 0</b>

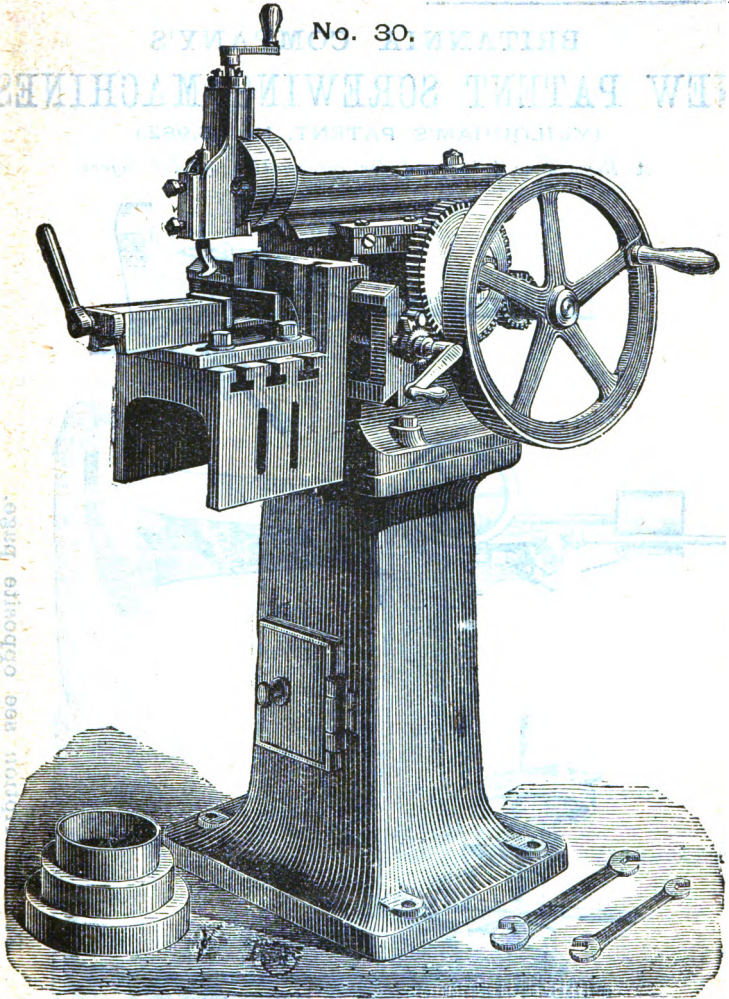
**BRITANNIA CO., COLCHESTER, England:**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



# SELF-ACTING SHAPER, FOR HAND OR STEAM POWER.

No. 30.



Has a traverse of 12 inches and a 5-in. stroke. Rising and falling table fitted with T slots, and it is fitted with a 5-inch steel-jawed parallel vice, with cone and fly-wheel, for hand and steam power. It has self-feeding motion, and substantial hollow pedestal stand.

Price, with Vice complete, as a bench machine .. ..	£19 0 0
„ mounted on pedestal as illustrated .. ..	22 5 0
„ if fitted with circular movement, extra .. ..	2 10 0
„ of overhead motion for power, extra .. ..	2 10 0

**BRITANNIA CO., COLCHESTER, England.**

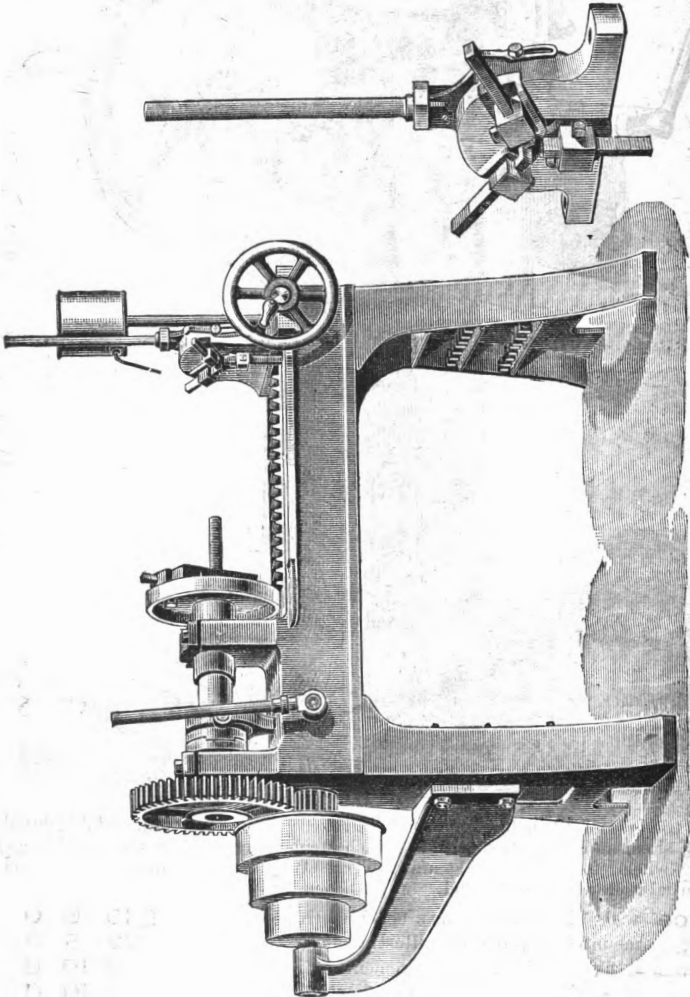
London Showrooms—100, *Houndsditch*. All Letters to Colchester.

**WORTH ATTENTION.**

**BRITANNIA COMPANY'S  
NEW PATENT SCREWING MACHINES**

(McILQUHAM'S PATENT, No. 15,982.)

*A Reward will be paid for information of Infringers.*



For description see opposite page.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# PATENT SCREWING MACHINE.

(For illustration see opposite page.)

THESE Machines are constructed on **improved and very simple principles**, greatly advantageous to users in point of economy, both in working and maintaining in repair.

The headstock is constructed with a **hollow spindle** to take rods or tubes of **any length** and with a **self-centring die chuck** for gripping rods, tubes, or bolt heads. A clutch and lever enables the machine to be started and stopped instantly and **independently of the counter-shaft**.

The Spindle is driven by a 3-speed cone pulley and powerful gearing.

The Bed is machine-planed, of trough section to catch the soap and water used in screwing, and is fitted with a tap to draw off.

Fitted to the bed is a Saddle to slide along, and moved by racks and pinions and hand-wheel, carries the Screwing Head. This is fitted with three tool boxes, carrying tools similar to ordinary chasers and so constructed as to be held firmly in position by one set screw to each. These are closed and opened by lever and eccentric cam, and the top face of the screwing head is **graduated and fitted with a stop to adjust** the depth of cut.

The **important feature** of this screwing head is the **simplicity of the dies**, which are **simply pieces of steel cut off the bar**, put into the tool holder and secured by set screws. In this machine they can then **be cut up by the master tap** and hardened and are finished ready for use; **no expensive fitting** for length or in any other respect is needed, but treated as an ordinary turning tool is put in the slide rest of a lathe.

The advantages of this machine may be thus summarised:

The thread is completed at a **single cut**.

The Screwing Dies are as easily sharpened **by grinding the face** as ordinary lathe chasers, and hence do ten to twelve times the work of the many complicated systems in the market.

The Screwing Dies, when at last fairly worn out, are cheaply replaced **by any ordinary mechanic**, by merely cutting off from a bar of steel, fixing in their places by set screws as an ordinary lathe tool, and cutting the thread by the master tap supplied, **in their own machine**.

The method of holding the Dies is so arranged that the **strain comes on the rest or holder**, instead of upon the Dies, which thus endure so much more work.

The arrangement of the Screwing Head and Dies enables the cutting edges to be **plainly seen**, and these are clear for work and cannot get choked by cuttings.

The **Clutch** arrangement enables the machine to be **stopped instantly**, in case of accident or necessity.

The whole is so simple that there is nothing to get out of order by ordinary fair use, and if breakage occurs by any mishap, **parts can be easily replaced**.

Each Machine is sent out complete with Master Taps and Dies for  $\frac{1}{4}$  in.,  $\frac{3}{8}$  in.,  $\frac{1}{2}$  in.,  $\frac{3}{4}$  in., and 1 in., Reversing Overhead Motion. Standards fitted with Shelves for Dies and Taps, Screw Keys, &c., &c.

**DIMENSIONS**—Bed 4 ft. long; 10 in. on face; 6 in. deep; Cone Pulley, 3 speeds, 3 in. wide, largest 12 in. diameter, Gearing  $\frac{3}{4}$  in. Pitch, 2 in. face; Spur Wheel 12 $\frac{1}{2}$  in. diameter and Pinion 4 $\frac{1}{2}$  in.; Spindle bored with 1 $\frac{1}{2}$  in. hole.

**Approximate weight, 8 cwt. Price complete, £35.**

**To screw up to  $\frac{1}{2}$  inch, Price complete, £45.**

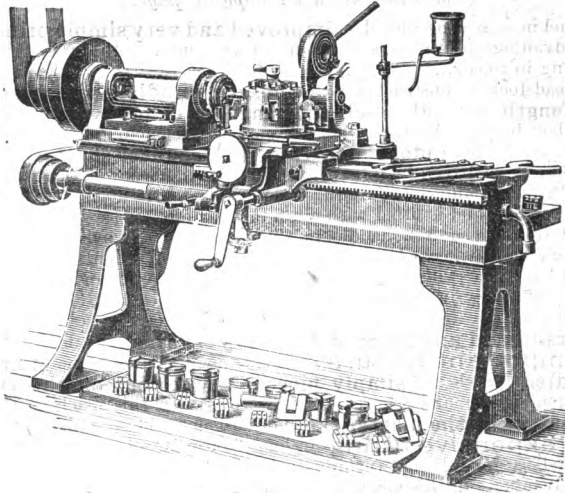
The Patented Screwing Head can be fixed to existing machines, or to the Saddles of ordinary Lathes.

**ESTIMATES ON APPLICATION: OTHER SIZES IN PREPARATION.**

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# No. 27 STUD CHASING LATHE.



THE above illustration represents our improved hollow and open-sided spindle Lathe with Capstan Rest, for **quickly** and **cheaply** producing screwed studs, joint pins, and small fittings of all kinds, usually done in a Lathe. By means of this tool these can be made **uniformly**, far **quicker**, and by **cheap labour**, so that the tool soon **repays its cost**. It will turn, 'point and chase studs at one operation by means of the Capstan Rest.

The Headstock is constructed of two parts, accurately fitted to slide one over the other to adjust for taking up wear of spindle, the latter being made of steel, with hardened conical neck, with hole through its length to take long rods, and its sides open to enable headed bolts to be inserted for screwing, and its nose fitted with a coned chuck, and gripping dies for 9 sizes of tools and rods— $\frac{1}{4}$  in. to 1 in. diam.

The saddle is arranged with traverse slide, carrying a **Capstan tool holder**, fitted with five tools, adapted for sliding, rounding points, surfacing, parting, &c.

On the saddle is mounted the screwing arrangement with die box and adjustable dies for screwing  $\frac{1}{4}$  in.,  $\frac{1}{8}$  in.,  $\frac{3}{8}$  in.,  $\frac{1}{2}$  in.,  $\frac{5}{8}$  in.,  $\frac{3}{4}$  in.,  $\frac{7}{8}$  in., and 1 in., and hinged to throw back out of the way when not screwing.

The saddle is also fitted with **quick traverse** by rack and pinion, also **self-acting traverse** by fine thread leading screw with convenient disengaging nut.

The bed is of trough section to catch the soap and water, and constructed to conveniently draw it off.

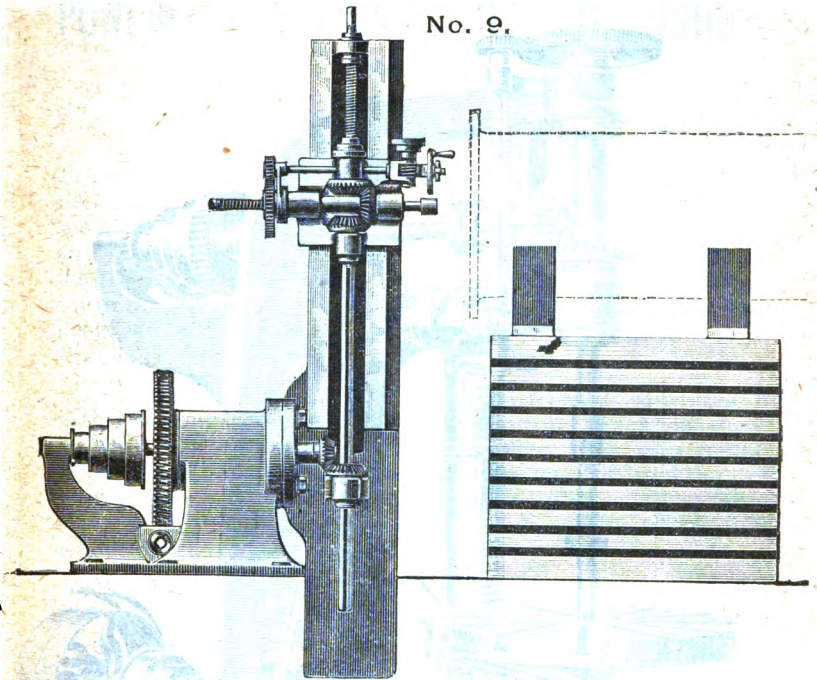
The whole is of best materials and workmanship, and of the following dimensions. Complete overhead motion with reversing motion, soap-sud can and stand, screw keys, spanners, &c., are included in the price.

Height of centre ... ..	7 inches	Feed cones ... ..	3 speeds $1\frac{1}{2}$ inches wide
Length & width of bed ...	5 ft. by $12\frac{1}{2}$ in.	Overhead Pulleys, $13\frac{1}{2}$ in. and 10 in. diam.	
Driving cone ... ..	4 speeds $2\frac{1}{2}$ inches wide	Approximate Weight ... ..	15 cwt.
Largest ... ..	18 in diam. ... Smallest, 7 in.	Price, complete ... ..	£62 10 0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

THE BRITANNIA COMPANY'S  
**HORIZONTAL RADIAL DRILL**



A VERY handy Tool for drilling flanges at ends of long pipes, or holes in any position in the vertical sides of machines or machine frames, as spindle holes, &c., which can all be done at once setting by rotating the arm and moving the saddle along it. The Radial Arm is counterbalanced, and is rotated by worm and wheel gearing to any position, and would revolve through an entire circle but for the floor. The feed is self-acting, with 3 changes of speed, and hand feed is also provided. The Table for holding the work is truly planed, and has T slots on top and one side, and carries a pair of V blocks for holding pipes up to 24 in. diameter.

### DIMENSIONS.

Radial Arm is 5 ft. long from centre. Traverse of Saddle on it is 3 ft. 8 in. Will Drill a hole  $1\frac{1}{2}$  in. in diameter by 9 in. deep and 4 ft. 6 in. from centre. Steel Spindle is  $1\frac{1}{2}$  in. diameter. Vertical Driving Shaft,  $1\frac{1}{2}$  in. diameter. Bevil and Mitre Gearing,  $\frac{3}{4}$  in. pitch. Worm Wheel, 22 in. diameter and  $\frac{3}{4}$  in. pitch. Cone Pulley has 4 Speeds  $2\frac{1}{2}$  in. wide; largest Speed, 10 in. diameter; smallest,  $4\frac{1}{2}$  in. Approximate total weight,  $2\frac{1}{2}$  tons. Table is 3 ft. high by 3 ft. wide by 4 ft. long.

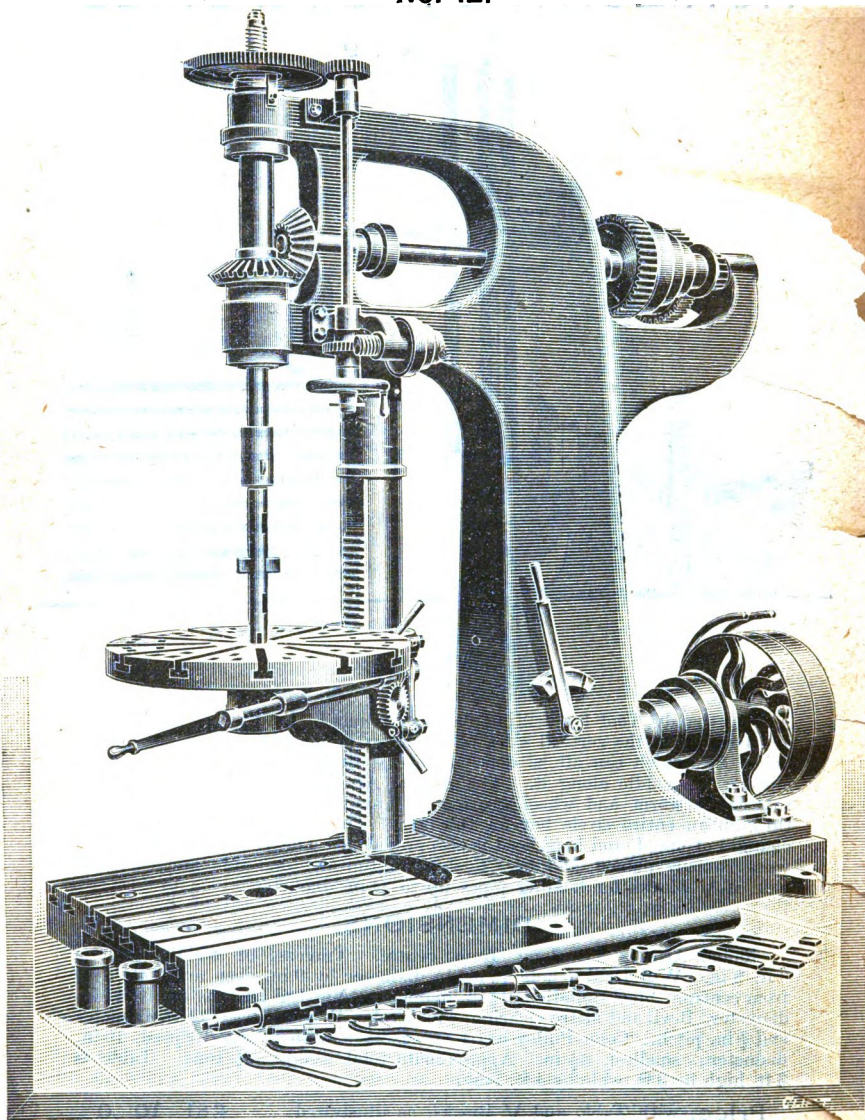
Price, with Table and V Blocks, as illustrated ... £81 10 0  
 ,, of Drill only, without Table and Blocks ... £65 10 0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Horse-ditch. All Letters to Colchester.



# POWERFUL VERTICAL DRILLING MACHINE, No. 12.



For description see opposite page.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# POWERFUL VERTICAL DRILLING MACHINE,

No. 12. -

(For Illustration see opposite page.)

THIS is a back-gearred machine of powerful build, having a heavy box section body, machine planed at bottom and securely bolted to a machine-planed heavy foundation plate, and with a turned pillar at one side to carry the strong arm which supports the table, which can thus be swung away for large work on the foundation plate, the latter being prepared with T slots for securing the work, and fork-shaped at front with filling piece fitted in.

The main spindle is of steel and fitted with conical gun metal bearings, made to adjust by lock nuts to take up wear. All bearings are truly bored and bushed with gun metal. It has a self-acting screw feed by worm gearing, and the nut of feed screw is made to adjust to take up wear. The table elevates on the pillar by rack and pinion with worm and wheel purchase gear.

The steel pinion is coned to receive a 2 in. taper shank twist drill. The counter-shaft is self-contained in the frame of the machine, and is provided with convenient striking gear. It will drill out of solid 2 in. diameter by 12 in. deep, with a feed of 90 per inch and bore up to 9 in. diameter. Admits 48 in. diameter, and has a maximum depth of 39 in. between nose of spindle and the circular table, and of 58 in. between spindle and foundation plate.

Diameter of spindle, 2½ in.  
 Diameter of table, 36 in.  
 Diameter of pillar, 8 in.  
 Cone pulley, four speeds, 3½ in. wide.  
 Largest and smallest diameters,  
 13 in. and 5 in.  
 Back gear, 13 T and 42 T, 1 in.  
 pitch, 3 in. face.

Feed gear, 1½ in. face, ½ in. pitch,  
 fast and loose, 24 in. by 4 in.  
 Total height, width, and length,  
 9 ft. 8 in. by 4 ft. 5 in. by  
 9 ft. 3 in.  
 Approximate weight, 4 tons 7 cwt.

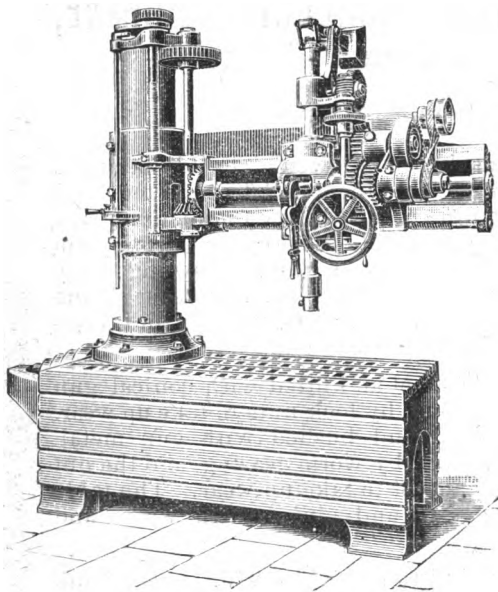
**Price, complete with spanners, nut keys, &c. . . . . £110.**

ABOVE WAS DESIGNED AND MADE FOR THE BRITISH GOVERNMENT,  
 FOR INDIAN STATES RAILWAYS.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 18 RADIAL DRILL.



THIS is an improved Drilling Machine, of special design, strongly constructed, embodying many new features. It has a heavy foundation table of box form truly planed, and with planed T slots on top face and each side for securing the work, mounted on which is a turned column, firmly fixed and carrying within it the vertical driving shaft, geared up with mitre gearing, and around which revolves a strong truly bored and turned external column, accurately fitting it. The latter carries a radial arm, made to rise and fall by self-acting arrangement by power fitted to the arm, and accurately scraped and gibbed to fit a planed parallel slide is a saddle carrying the drilling spindle, which is fitted to drive by single or double gear, and with reversing motion to drive right or

left, or remain stationary, without stopping the machine, which enables tapping and studding to be efficiently and rapidly done by the machine, and also permits the drill to be quickly withdrawn from the hole, and the spindle is also counter-balanced by weight and lever, and fitted with self-acting feed motion by rack and pinion, with engaging clutch. The horizontal driving shaft, fitted into the foundation bed, carries a driving cone having five speeds, giving, with the double gear, ten changes of speed.

The machine is strongly built in all parts, truly machined, accurately fitted, materials and workmanship of a high class.

The spur gearing is machine-cut out of the solid, the smaller gears cut out of mild steel, the mitre gearing is of crucible steel castings, the spindle and shafts and screws are all of steel.

The dimensions are as follows:—

Foundation bed, 6 ft. 4 in. long by  
3 ft. 2 in. wide by 2 ft. 6 in. high.

The external rotary column, 12 in.  
diameter.

Length of arm, 6 ft. 4 in.

Vertical traverse of arm, 2 ft. 4 in.

Drills through a maximum radius of 5 ft.

Drills out of solid up to 2 in. diameter.

Bores up to 9 in. diameter and 12 in. deep.

The steel spindle is 2½ in. diameter.

Driving shafts, 2½ in. diameter.

Bevel gearing, 1½ in. pitch.

Machine-cut spur gearing, 1 in. pitch.

Speed cone, 5 speeds, 3½ in. wide.

Largest speed, 17 in. diameter, smallest  
6 in. diameter.

Approximate weight, 4½ tons.

Price .. .. £137.

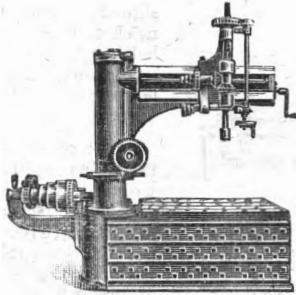
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.



# IMPROVED RADIAL DRILLING MACHINE.



THE above engraving represents our 4 ft. 6 in. Radial Machine from new and improved designs, dispensing with over-hanging top shaft, which allows of arm to be worked in a complete radius, and driven from any position. The base plate which is very strong, is 6 ft. 2 in. long, 3 ft. wide by 27½ in. deep, with through and T slots planed out of solid. The machine is supplied with over-head driving motion, handles, and screw-keys complete.

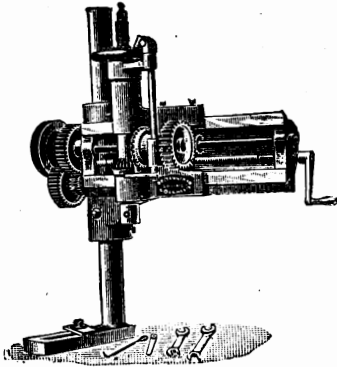
	No. 19.	No. 20.
Radius ... ..	4 ft. 6 in.	6 ft.
Arm to rise and lower ... ..	1 ft. 4 in.	2 ft. 6 in.
Longitudinal traverse of head on arm ...	3 ft.	4 ft. 6 in.
Will admit in depth to foundation plate ...	4 ft.	5 ft.
Size of Spindle ... ..	2½ in.	2¾ in.
Approximate weight ... ..	50 cwt.	90 cwt.
<b>Price</b> ... ..	<b>£90</b>	<b>£135</b>

No. 20 has a lower bed plate, for heavier work, and is a much larger machine than above illustrated.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

## NEW PORTABLE RADIAL DRILLING MACHINE, No. 6.

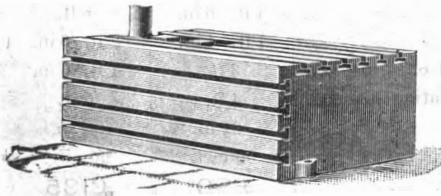


This machine has been specially designed to take the place of the old ratchet brace, and is adapted for bolting to locomotive frame plates or similar work for drilling and rimming holes up to 1½ in. diameter by 4 in. deep.

It consists of a **strong steel tubular** pillar forged on to a wrought iron slotted foot, and is capable of being turned to **any desired angle**, and when bolted in position is capable of drilling all holes within a radius of 18 in. from centre of pillar. The spindle is of **steel** 1½ in. in diameter, driven by strong gearing, and arranged to drive from either a swinging countershaft, as used in locomotive shops, or from a fixed countershaft if desired. The spindle has a **variable self-acting** and also hand feed. The drill will rise and fall on the pillar through a range of 18 in. The bevel and driving gear is 5 in. pitch. Approximate weight, 4 cwt.

Price complete, if for swinging countershaft .. .. .	£22 0 0
„ „ „ if for fixed countershaft .. .. .	27 0 0
Countershaft to suit, if required .. .. .	2 10 0

### A BOX FOUNDATION PLATE,



PREPARED to receive the wrought iron slotted foot of the drill, and accurately planed on top and one side, with planed T slots for bolting work to, can also be supplied, thus enabling the drill to be used (when desired) as a small but complete fixed radial drill.

Dimensions of base, 2 ft. 6 in. by 1 ft. 6 in., by 12 in. high.  
Approximate weight of base, 4 cwt.

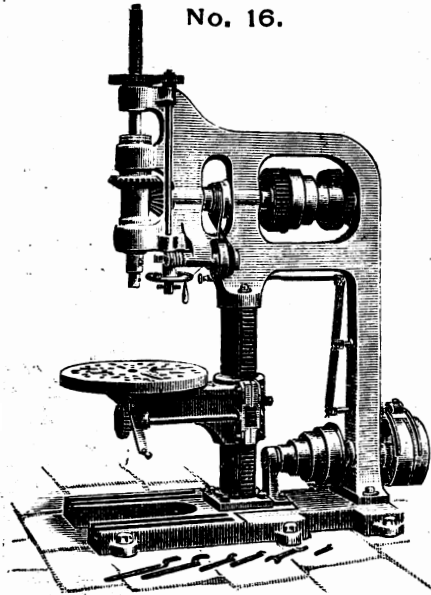
Price extra of base .. .. .	£6 10 0
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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# DOUBLE GEARED PILLAR DRILL.

No. 16.



THIS is a Drill of a superior construction, made specially to a specification of one of the Government departments, and can be highly recommended as a durable and efficient tool. The bearings for shafts and spindle are bushed with gun metal, and the steel drill spindle is made adjustable by being fitted in a long conical sleeve running in gun metal bearings, and arranged with steel lock nuts above to take up wear. The feed is arranged with screw and hard steel thrust collars, the nut being carried in a bracket at top, and is made self-acting by worm and wheel and spur gearing, with friction cone, or operated by hand with wheel and handle.

The principal dimensions are as follow:—

Diameter of steel spindle ..	2in.	Diameter of pillar ..	6in.
Drills up to .. ..	2in.	Pitch of bevil gear ..	1in.
Drills in depth .. ..	10in.	Pitch and face of double gear $\frac{1}{2} \times 2\frac{1}{2}$ in.	
Admits in diameter .. ..	30in.	Diameter of large and small gear .. ..	11 and $3\frac{1}{4}$ in.
Diameter of table .. ..	24in.	Diameter and face of driving pulleys .. ..	12 x 3in.
Table rises and falls .. ..	29in.	Approximate weight complete,	21 cwt.
Diameter of largest & smallest .. ..	10in. and $4\frac{1}{2}$ in.		

Cone pulley has 4 speeds  $2\frac{1}{2}$ in. wide. Total height 8ft.

**PRICE**—Complete with Spanners, Nut Keys, &c., £

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch, G. All Letters to Colchester.

## SINGLE SPEED PILLAR DRILL,

No. 15.

WORMS for feed motion and rising of the table are wrought iron and case hardened. The screw at top is wrought iron, steeled at both ends and hardened. Frame and pillar are bolted to a planed bed with T Slots.

Takes in 30 inch diam.

Drills 10 inch deep

Steel Spindle  $1\frac{1}{2}$  inch diam.

Bevel Gear  $\frac{3}{4}$  inch pitch

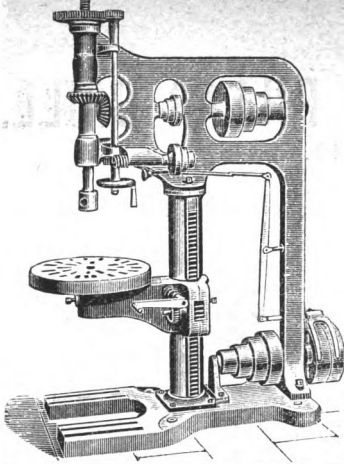
4 Speed Cones  $10\frac{1}{2}$  inch diam.,  $2\frac{1}{2}$  inch wide

Table 22 inch diam.

Pillar 6 inch d. am.

Weight about 14 cwt.

Price, £



## POWERFUL DOUBLE GEARED PILLAR DRILL,

No. 13.

WORMS for feed motion and rising of the table are wrought iron and case hardened. The screw at top is wrought iron, steeled at both ends and hardened. Frame and pillar are bolted to a planed bed with T Slots.

Takes in 30 inch diam.

Drills 10 inch deep

Steel Spindle 2 inch diam.

Bevel Gear  $\frac{3}{4}$  inch pitch

4 Speed Cones  $10\frac{1}{2}$  inch diam.,  $2\frac{1}{2}$  inch wide

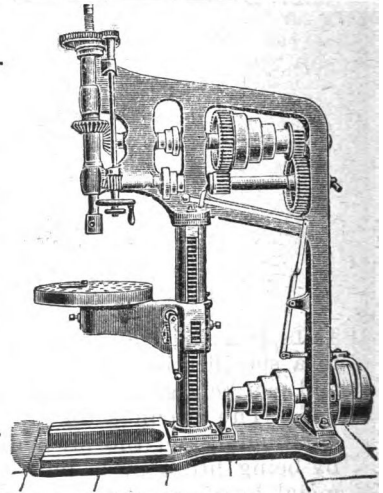
Gear Wheels  $11\frac{1}{2}$  inch d'am.,  $\frac{3}{4}$  inch pitch

Table 22 inch diam.

Pillar 6 inch diam.

Weight about 16 cwt.

Price, £



## POWERFUL DOUBLE GEARED PILLAR DRILL,

No. 11.

WORMS for feed motion and rising of the table are wrought iron and case hardened. The screw at top is wrought iron, steeled at both ends and hardened. Frame and pillar are bolted to a planed bed with T Slots.

Takes in 36 inch diam.

Drills 12 inch deep

Steel Spindle  $2\frac{1}{2}$  inch diam.

Takes in from Spindle to Bed 3 ft. 8 in.

Bevel Gear 1 in. pitch,  $2\frac{3}{8}$  across tooth

Spur Gear  $\frac{3}{4}$  pitch,  $2\frac{1}{2}$  across tooth

Largest Speed 12 in. diam., smallest 5 inch

diam., 3 inch wide

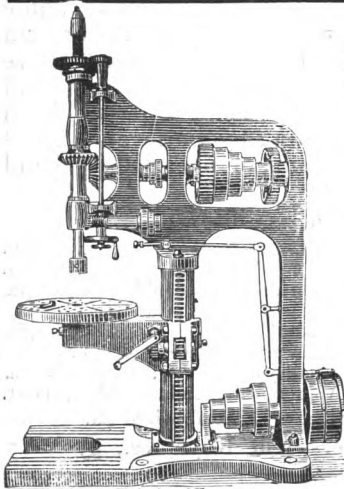
Table 26 inch diam.

Pillar  $7\frac{1}{2}$  inch diam.

Weight about 1 ton 4 cwt.

Pulleys 14 inch diam., 3 in. wide

Price, £



**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

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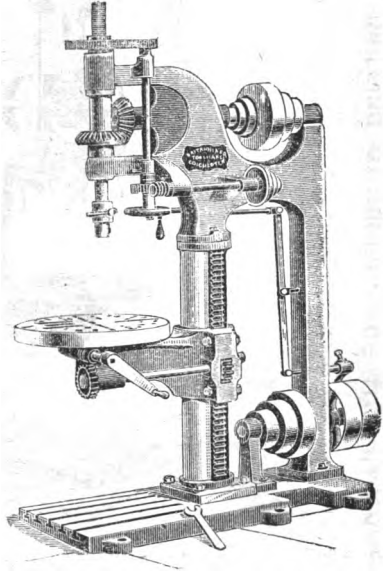
# No. 1, STRONG PILLAR DRILLING MACHINE.

This is a very useful machine, strongly built for its size. The main body is a box casting, faced and truly fitted on to a turned pillar, and securely bolted on to a planed foundation plate, having T slots for bolting large work to. The turned circular table is made to swivel on its centre, and to swing around the turned pillar, and is raised and lowered by rack and pinion with worm gearing.

The driving apparatus is self-contained, making the machine very compact.

The steel spindle is driven by strong bevel gear, and has both hand and self-acting feed by worm wheel and screw and friction cone.

All motions are arranged as to be conveniently accessible to the operator, and all material and workmanship are of the best.



## DIMENSIONS, &c.

Diameter of Steel Spindle .. 1½ in. Drills up to .. .. 2 in. Drills in depth .. .. 7 in. Admits in diameter .. 24 in. Diameter of Table .. 20 in. Table rises and falls .. 27 in.	Cone Pulley, 3 speeds, width 2½ in. Diameter of largest is .. 9 in. Diameter of Pillar .. 6 in. Pitch of Bevel Gear .. ¾ in. Pitch of Rack and Pinion .. ¾ in. Total height .. .. 6ft. 6in.
Approximate Weight .. ..	.. .. 12 cwt.

Price complete, £26 10s., or with Double Gearing, £31.

For larger sizes send for quotations..

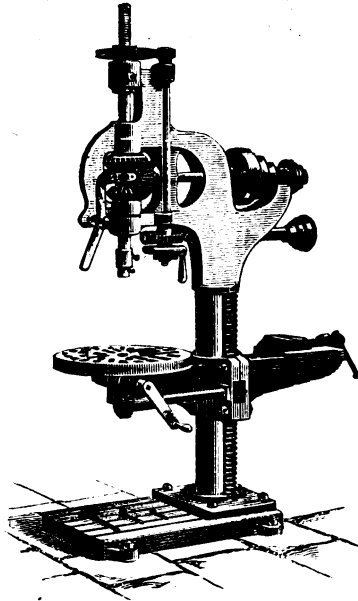
AS SUPPLIED TO THE BRITISH GOVERNMENT.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

No. 17

# SINGLE-GEARED DRILLING MACHINE.



A STRONG, durable, and handy machine, made with spindle to reverse by clutch and lever without stopping the machine. double arm, counter-balancing itself, having a revolving circular table at one end and a parallel vice at the other, and swinging entirely around the turned pillar, on which it is made to elevate by worm and wheel gearing with rack and pinion. The main body of the machine is a strong box casting, and the turned pillar, cast in one piece with the body, is securely bolted to the planed foundation plate, which has T slots for securing large work.

The steel spindle and shaft run in gun metal bearings. The bevel gearing is cast steel. Driving cone has three speeds. The machine has both hand and self-acting variable feed by three-speed cone pulley with worm and wheel gearing and friction cone.

The dimensions are as follows:—Steel spindle,  $1\frac{1}{4}$  in. diameter. To drill up to  $1\frac{1}{2}$  in. diameter. To drill to a depth of 7 in. Admitting in diameter, 20 in. Table rises and falls, 21 in. Total height, 6 ft. 6 in. Cone pulley, three speeds,  $2\frac{1}{4}$  in. wide. Diameter of largest, 9 in. Diameter of pillar, 6 in. Pitch of bevel gears,  $\frac{3}{4}$  in. Pitch of rack and pinion,  $\frac{3}{4}$  in. Approximate weight, 12 cwt.

Price, with complete Overhead Motion, &c. ... .. £32

ABOVE WAS DESIGNED AND MADE FOR THE BRITISH GOVERNMENT.

**BRITANNIA CO., COLCHESTER, England.**

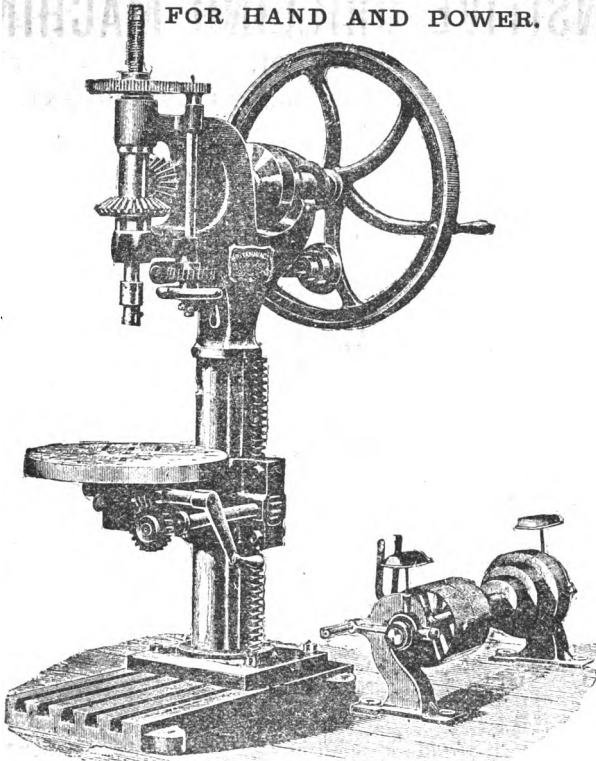
London Showrooms—100, Houndsditch.

All Letters to Colchester.

# Nos. 2 and 3 Strong Single Gear Pillar Drilling Machines

FOR HAND AND POWER.

AS SUPPLIED TO THE BRITISH GOVERNMENT.



MULTIPLE DRILLING MACHINES MADE TO SUIT ANY WORK.

THESE machines are of new design, and embody all the latest improvements in small Drills. They have strong box casting for the body pillar, and base in one piece, the pillar being turned bright, and the base firmly bolted on to a planed foundation plate with T slots for larger work. The spindle is of steel, driven by strong bevel gearing; hand and self-acting feed by worm wheel and screw, engaging by friction cone. The circular work table will swivel on its centre, and also swing entirely round the pillar, and is raised and lowered by worm and wheel, with rack and pinion gearing. The fly-wheel has truly turned bright rim, and fitted with wood handle for driving by hand when it is desired. A complete top driving apparatus for steam power, and necessary keys and wrenches are included in the price. They are of the best materials and workmanship.

## DIMENSIONS, &c.

	No. 2	No. 3		No. 2	No. 3
Steel Spindle, diameter	1½ in.	1½ in.	Cone Pulley, 3 speeds, width	2½ in.	2 in.
Drill up to	1½ in.	1½ in.	Diameter of largest speed	9 in.	7½ in.
Drill in depth	7 in.	6 in.	Diameter of Pillar	6 in.	5 in.
To admit in diameter	24 in.	24 in.	Pitch of Bevel Gearing	½ in.	½ in.
Diameter of Table	20 in.	20 in.	Pitch of Rack and Pinion	½ in.	½ in.
Table rises and falls	2½ in.	18 in.	Total Height	5ft. 6 in.	4ft. 11 in.
			Approximate Weight	11 cwt.	8½ cwt.

Price, complete with Countershaft, &c. ... No. 2, £25; No. 3, £22 10s.

**BRITANNIA CO., COLCHESTER, England.**

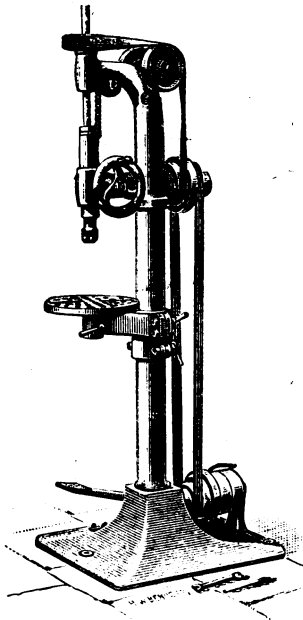
London Showrooms—100, Houndsditch.

All Letters to Colchester.

# QUICK-RUNNING SENSITIVE DRILLING MACHINE,

No. 21.

DESIGNED FOR THE BRITISH GOVERNMENT.



THIS machine is specially designed for fine work, and is strongly recommended for Electrical Engineers, Cyclists, and all kinds of light trades requiring large quantities of small holes accurately and quickly drilled.

The machine is made with counter-balanced steel spindle, working through the driving pulley and sleeve, and having its nose fitted with a patent scroll chuck, to take up  $\frac{1}{8}$  in. The feed is arranged by hand wheel and pinion, engaging with a rack on the sleeve, and is under perfect control, and only the necessary pressure need be applied. There are no gears—all revolving parts are turned to balance truly, and are driven by flat belt. The machine is started by treadle lever, and stops on removal of the foot. The workmanship throughout is of a high class, and material of the best.

## DIMENSIONS.

Diameter of spindle,  $1\frac{1}{8}$  in. Depth of feed, 6 in. Drills up to  $\frac{5}{8}$  in. Distance from centre to frame,  $7\frac{1}{2}$  in. Countershaft pulleys, 6 in.  $\times$   $2\frac{1}{4}$  in. Cone pulleys, four speeds.  $1\frac{1}{2}$  in. wide. Largest,  $7\frac{1}{2}$  in. diameter. Smallest, 3 in. Total height, 6 ft 6 in. Approximate weight,  $5\frac{1}{4}$  cwt. Speed, 400 revolutions per minute.

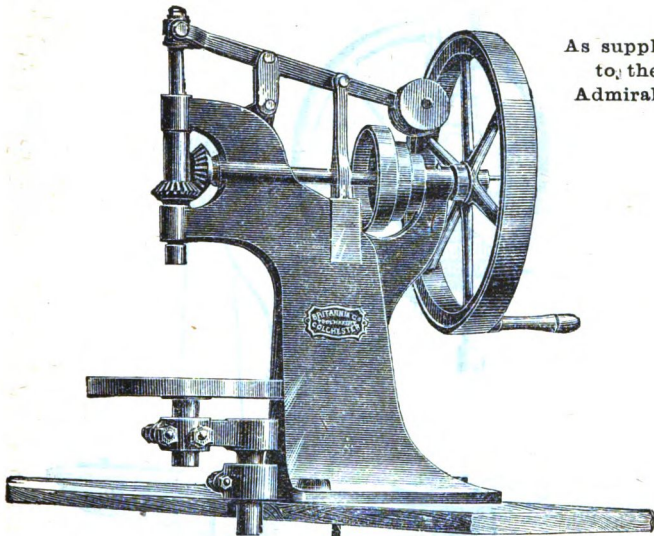
Price ... .. £17 10s.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



# BRITANNIA COMPANY'S No. 4 BENCH DRILL.

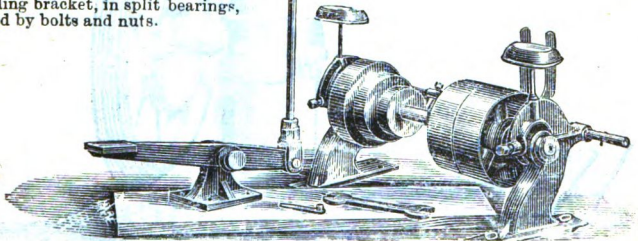


As supplied  
to the  
Admiralty

This is a very handy little drill for both hand and power. It is constructed with a strong box casting for the main body, with shaft holes truly bored, and with steel spindle fitted with mitre gearing. A turned circular table to rise and fall, and adjustable to any position by a swivelling bracket, in split bearings, pinched by bolts and nuts.

It has a turned 3-speed cone pulley, turned heavy flywheel, and wood handle.

The feed is by treadle motion and balance lever, leaving both hands of the operator at liberty for work. But if preferred, it can be made with screw feed, at same price.



## SPECIFICATION.

Steel Spindle ..... 1½ in. diameter  
Cone Pulley, 3 speeds ..... 1½ in. wide  
Diameters .. Largest 9 in., Smallest 5 in.  
Circular Table ..... 16½ in. diameter  
Distance between Spindle & Table . 12 in.  
Will take in a diameter of ..... 17½ in.  
Will Drill a hole ¾ in. dia. by 4½ in. deep

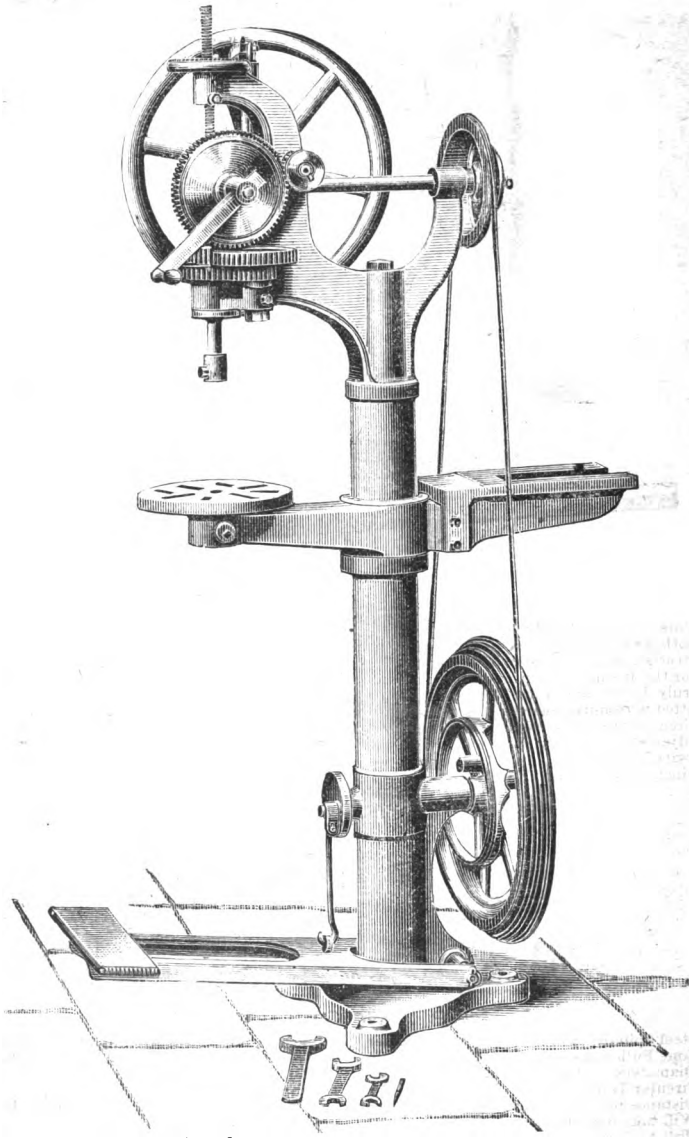
Base of Body measures ..... 18 in. by 14 in.  
Fly wheel ..... 26 in. diameter, 2½ in. face  
Total ht. from bench to top of Drill, 40 in.  
Approximate Weight ..... 4½ cwt.  
Price, complete, including countershaft  
for power ..... £12 Os.  
With hardened steel spindles, £16 10s.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms - 100, Houndsditch. All Letters to Colchester.

# No. 25 LIGHT PILLAR DRILL

For either Foot, Hand or Power.



*(For description see opposite page).*

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 25 LIGHT PILLAR DRILL

For either Foot, Hand or Power.

(For Illustration see opposite page.)

THE body is of strong web section, turned to fit on the top of the pillar, secured to it by strong bolt and nut, and can be swivelled around to any angle, very handy for drilling holes in large articles. The pillar and base are cast in one, pillar is truly turned and fitted with a bracket carrying a circular work table.

The spindle is fitted for both single and double gearing to suit small or large holes, and the feed self-acting or by hand.

It has two driving shafts, that for the treadle or power running to the back, and that for the hand motion to the right side, and these drive the spindle by bevil and spur gearing, which by an ingenious contrivance and combination with the Fly wheel give an immense impetus to the motion and greatly facilitate the work.

The treadle wheel has four speeds, and with the double gearing gives 8 variations of speed.

---

## DIMENSIONS AND PRICES.

Diameter of Spindle .. .. .	.. .. .	$\frac{7}{8}$ in.
Drilling holes up to .. .. .	.. .. .	$\frac{3}{4}$ in. diam. by 5 in. deep
Turned Pillar .. .. .	.. .. .	4 in. diam.
Distance from Drill to Pillar .. .. .	.. .. .	9 in.
Diameter of Fly Wheel .. .. .	.. .. .	18 in.
Diameter of Threadle Wheel .. .. .	.. .. .	20 in.
Diameter of Circular Table .. .. .	.. .. .	10 in.
Table will rise and fall on pillar .. .. .	.. .. .	20 $\frac{1}{2}$ in.
Approximate Weight .. .. .	.. .. .	3 $\frac{1}{2}$ cwt.
Price as Hand and Treadle Drill .. .. .	.. .. .	£9 10 0
Price extra for Countershaft for Power .. .. .	.. .. .	2 0 0
Price for Planed Square Table (as shown in illustration), in addition to the Circular one .. .. .	.. .. .	0 15 0
Price for Adjustable Vice to fit on last attachment .. .. .	.. .. .	1 0 0

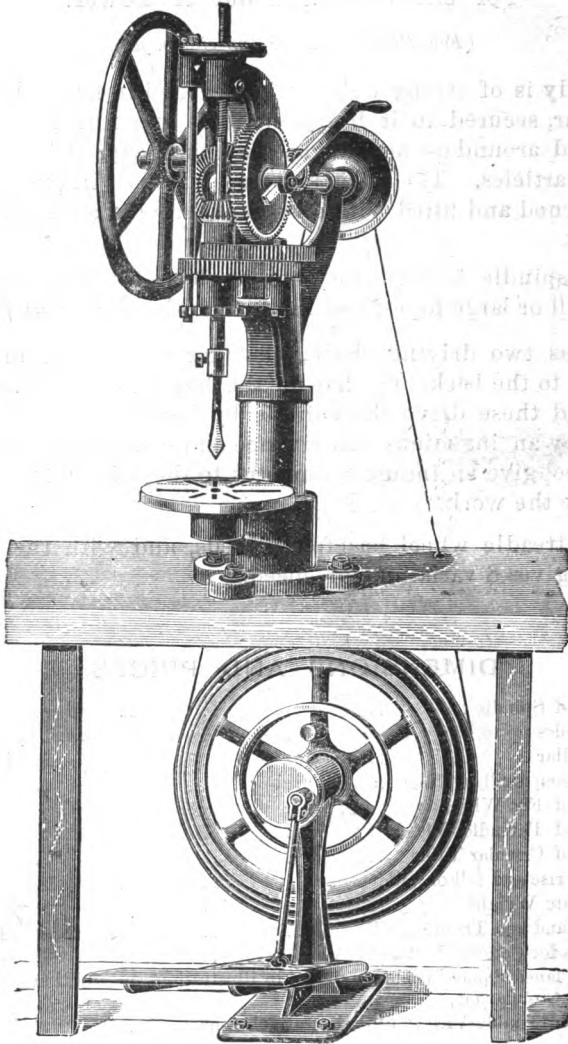
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**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# No. 5 BENCH DRILLING MACHINE.

*(For particulars see opposite page).*



**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 5 BENCH DRILLING MACHINE.

## IMPROVED STYLE.

(For particulars see opposite page.)

THIS is a handy drill for light work ; made to drive by hand or treadle, or by both, and can also be driven by power if desired. It is constructed with a web-section body, turned to fit on to and swivel around a stiff turned pillar, secured by a nut at any angle, and by loosening which the drill can be brought to any position in its radius, and is thus very handy for drilling holes in large objects.

The pillar is cast in one with a strong foot, to bolt on to the bench, and carries a bracket which swivels entirely round it, carrying a circular work-plate which also swivels on its own centre, giving every facility for adjusting the work bolted to it under the drill. It has two driving shafts, that for the treadle or power running to the back, and that for hand motion to the right side, and these drive the spindle by bevel and spur gearing. It is constructed with a specially ingenious contrivance of spur gearing in combination with a flywheel, which gives immense impetus to the motion, and greatly facilitates the work. It has also single and double gearing for small and large holes, and has both self-acting and hand feed.

The treadle driving gear is made independent of the machine, to fix under the bench, the wheel having four speeds to drive the speed cone fitted to the driving shaft, thus giving with the double gearing eight changes of speed.

*By the combination above named, this drill is more effective than much larger tools of the usual Pattern.*

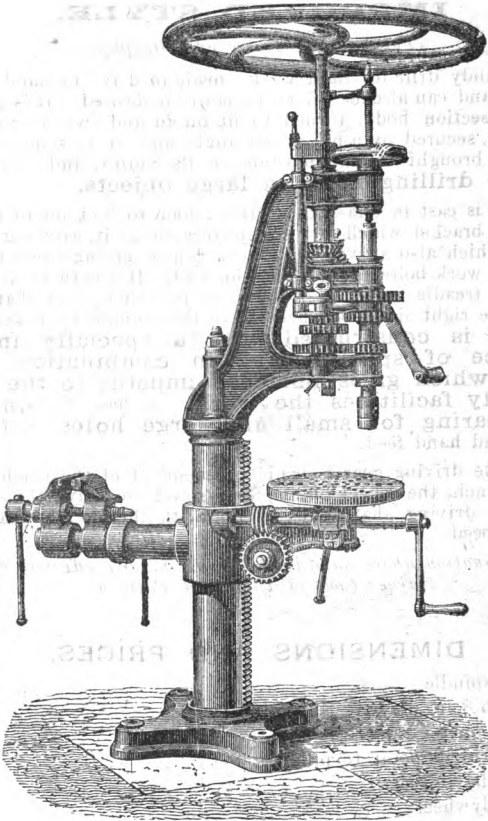
### DIMENSIONS AND PRICES.

Diameter of spindle	... ..	7/8 in.
Drilling up to 3/4 in. diameter, by 5 in. deep		
Pillar 4 in. diameter by 11 in. high		
Distance from drill point to pillar	... ..	9 in.
Diameter of driving shaft	... ..	7/8 in.
Diameter of flywheel	... ..	18 in.
Diameter of driving wheel of treadle motion	... ..	20 in.
Diameter of circular work table	... ..	10 in.
Table will rise and fall on pillar	... ..	6 1/2 in.
Extreme distance between nose of spindle when at its highest point, and the top of table when at its lowest point	... ..	9 1/2 in.
Approximate weight	... ..	2 1/2 cwt.
Price complete, as hand drill only	... ..	£6 10 0
„ complete, as hand and treadle drill	... ..	8 0 0
„ of top driving apparatus for power driving, if desired	... ..	2 0 0

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 140 PILLAR DRILLS.



This Drill is self-acting, treble geared, for hand and power, with parallel vice and table to swivel round.

Will drill up to 2 inches diameter. Fly wheel 43 inches. Admits about 28 inches diameter. Weight about 9 cwt. Height 6 feet 6 inches.

<b>Price</b> for Hand Power .. .. .	<b>£20</b>	<b>0s.</b>
„ for Hand and Steam Power .. .. .	<b>20</b>	<b>15s.</b>

Extra for Gun Metal Bushed Bearings, **£1 10s.**

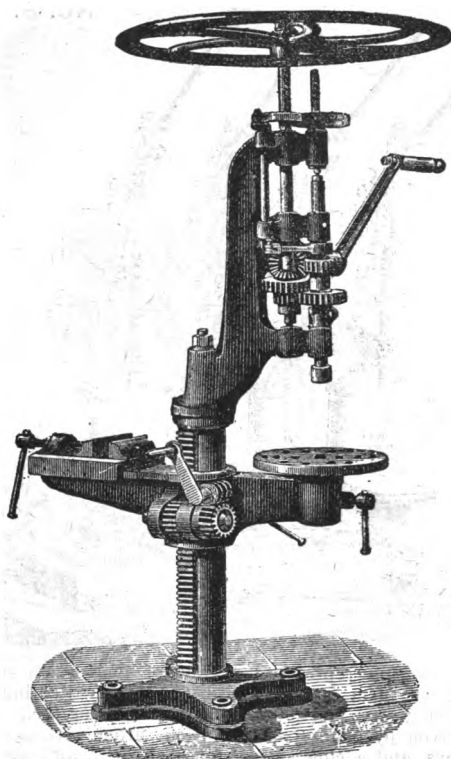
Price of Top Driving Apparatus .. **2 10s.**

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 340 PILLAR DRILLS.



No. 340.—For hand or power. Drills up to  $1\frac{3}{8}$  inches, has flywheel 38 inches. Admits 24 inches diameter. Weight  $6\frac{1}{2}$  cwt. Height 6 feet 6 inches.

**Price £15 10s.** For Steam, **15s.** extra.

No. 350.—Drills up to  $1\frac{3}{8}$  inches diameter. Flywheel 38 inches. Admits 28 inches. Weight 7 cwt. Height 6 feet 8 inches.

**Price £17.** For Steam, **15s.** extra.

No. 360.—Drills up to  $1\frac{3}{8}$  inches. Diameter of flywheel 40 inches. Admits 30 inches diameter. Weight 8 cwt. Height 7 feet.

**Price £18 10s.** For Steam, **15s.** extra.

Countershaft to suit either of above, **£2 10s.**

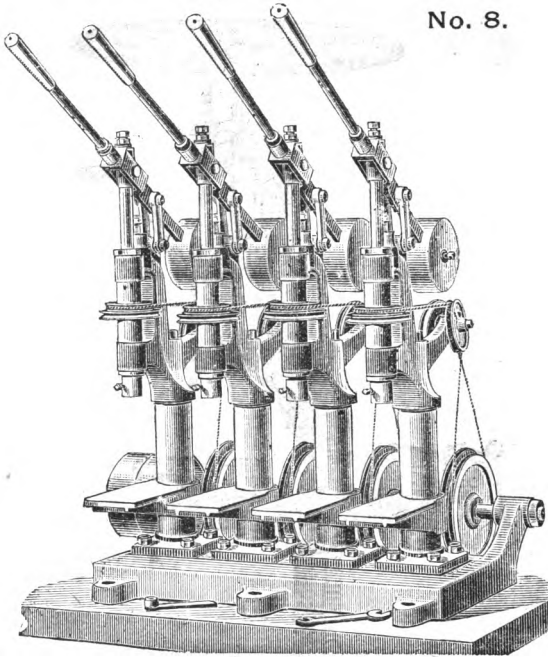
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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# BRITANNIA COMPANY'S ELECTRICAL ENGINEERS' DRILLS.

No. 8.



THE above illustration represents a gang of four quick speed drilling machines, mounted on a cast-iron base, for rapidly drilling small holes of equal or varying sizes, or countersinking, recessing, &c.

They are driven by countershaft at back, fitted with one pair of fast and loose pulleys, and a cone pulley for each drill, and are designed to be driven by power.

They are made with steel spindles, running in hard steel bearings, and are fed by hand lever and link motion, with balance weight to bring up the spindle, the latter having a steel swivel at top. They have turned pillars, with tables to rise and fall, or swivel around.

## DIMENSIONS, PRICE, &c.

To drill holes up to  $\frac{3}{8}$  in. diameter, and  $3\frac{1}{2}$  in. deep.

Diameter of steel spindle,  $\frac{7}{8}$  in.

Turned Pillar  $2\frac{1}{2}$  in. diameter by 9 in. high.

Table rises and falls  $6\frac{1}{2}$  in.

Distance between centres of drills 6 in.

Size of cast-iron base for four drills,  $26\frac{1}{2}$  in. by 10 in.

Total height from base to lever, 26 in.

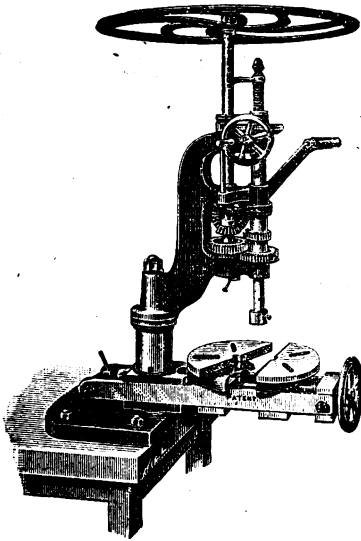
Price, for gang of four drills, as illustration	...	£37 10s.
Single Drills, made as above	... each	9 10s.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch

All Letters to Colchester.





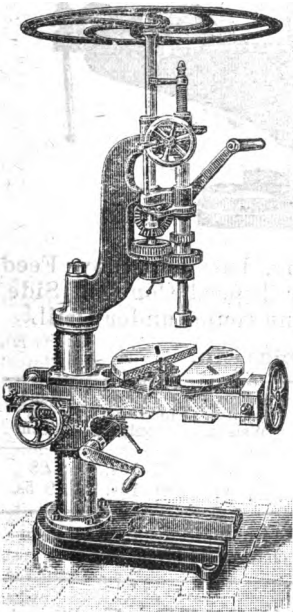
**IMPROVED BENCH PILLAR DRILLING MACHINES.**

For Hand or Steam Power.

Numbers of Machines	To drill holes up to diam.	Diameter of Flywheel	Diameter of Patent Chuck and Vice Plate	Distance from spindle to frame or pillar	Total Height	Weight in cwt. Approx.	Price for Hand and Steam	Price with Overhead Motion
48	1 in.	38 in.	14 in.	19 in.	54 in.	4 1/2	240/-	280/-
49	1 1/2 in.	38 in.	15 in.	19 1/2 in.	60 in.	5 1/2	280/-	335/-
50	1 3/4 in.	40 in.	15 in.	13 in.	66 in.	6 1/2	280/-	380/-

Set of Improved Tubular Dogs on Face-plate, 50/-  
 Set of 6 Drills, No. 48 49 50  
 15/- 18/- 20/- 7 in. long. Best Cast Steel.

The above are fitted with patent parallel vice and revolving chuck-plate.



**IMPROVED PILLAR DRILLING MACHINES.**

For Hand or Steam Power.

Numbers of Machines	To drill holes up to diam.	Diameter of Flywheel	Diameter of Patent Vice Plate	Distance from spindle to frame or pillar	Total Height	Weight in cwt. Approx.	Price for Hand and Steam	Price with Overhead Motion
51	1 in.	38 in.	14 in.	12 in.	72 in.	6	280/-	365/-
52	1 1/2 in.	38 in.	15 in.	12 1/2 in.	76 in.	7	340/-	415/-
53	1 3/4 in.	40 in.	15 in.	13 in.	86 in.	8 1/2	375/-	465/-

**LARGER SIZES IN PROGRESS.**

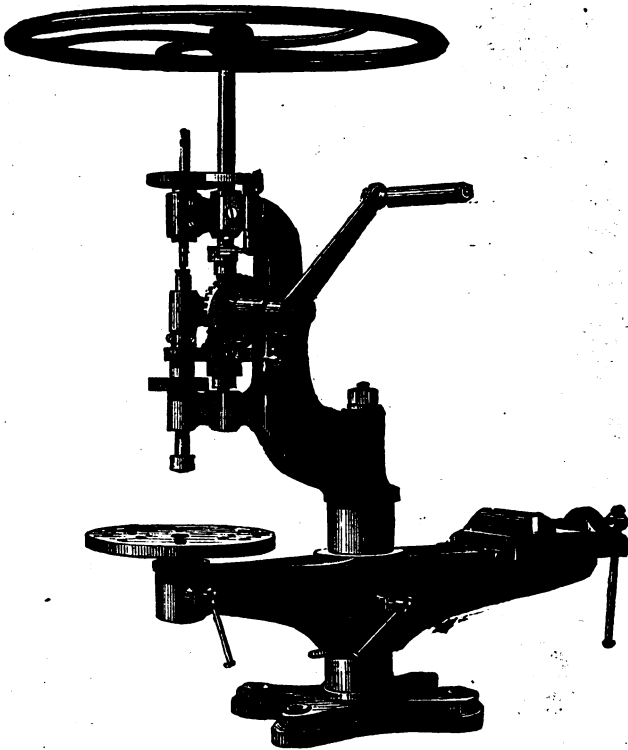
Set of Improved Tubular Dogs on Face-plate, 50/-  
 Set of 6 Drills, No. 51 52 53  
 18/- 18/- 20/- 7 in. long, Best Cast Steel.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# No. 410 AND 420 DRILL.



THESE Drills have Double Gearing, Fast and Slow Feed Motion, Fast and Loose Pulleys, or 3-speed Cone on Side, Circular Table, Parallel Vice to swing round under Drill.

No. 410 Drills Holes  $\frac{7}{8}$ in.

Nos. of Machines.	To Drill Holes diameter	Diameter of Flywheel	Will take in diameter	Height	Approximate Weight	Price for Hand only	Hand and Steam
410	$\frac{7}{8}$ in.	30in.	24in.	4ft. 4in.	3 cwt.	£7 10s.	£8
420	1in.	32in.	26in.	4ft. 6in.	3½cwt.	£8 15s.	£9 5s.

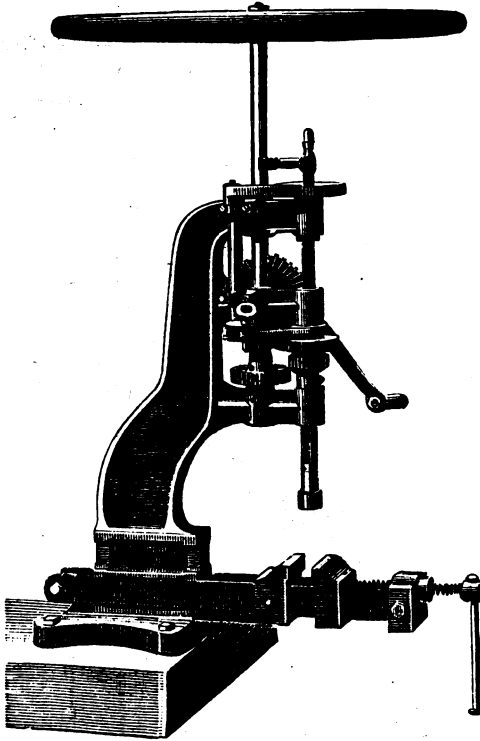
No. 420 can be raised on pillar so as to give 14in. more distance between spindle and vice at an extra charge of 15/-

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# BENCH DRILLING MACHINE

To be worked by Hand or Steam Power.



This pattern Machine is made in five sizes. has a solid cast-iron frame, powerful double gearing, strong self-feeding motion by pressure from the top, a large fly-wheel on top of inside spindle. an improved adjustable parallel vice sliding round the frame of machine, in grooves one above the other. The handle, and fast-and-loose pulleys or cone are on the right hand side. These machines are used largely amongst Coachbuilders and Wheelwrights.

Nos. of Machines.	Diameter of Fly-wheel.	To drill holes up to diam.	Distance from Spindle to frame.	Approximate weight.	Price for Hand Power.		Height.	
					£	s.	ft.	in.
290	20	$\frac{3}{4}$	8	1	4	0	3	1
370	32	1	10	2	5	15	3	3
380	36	$1\frac{1}{4}$	11	$2\frac{1}{2}$	7	0	3	6
390	38	$1\frac{1}{2}$	$12\frac{1}{2}$	3	8	0	4	4
400	40	$1\frac{3}{8}$	14	4	9	0	4	6

Arranged for Hand and Steam, 10s. and 12s. extra.

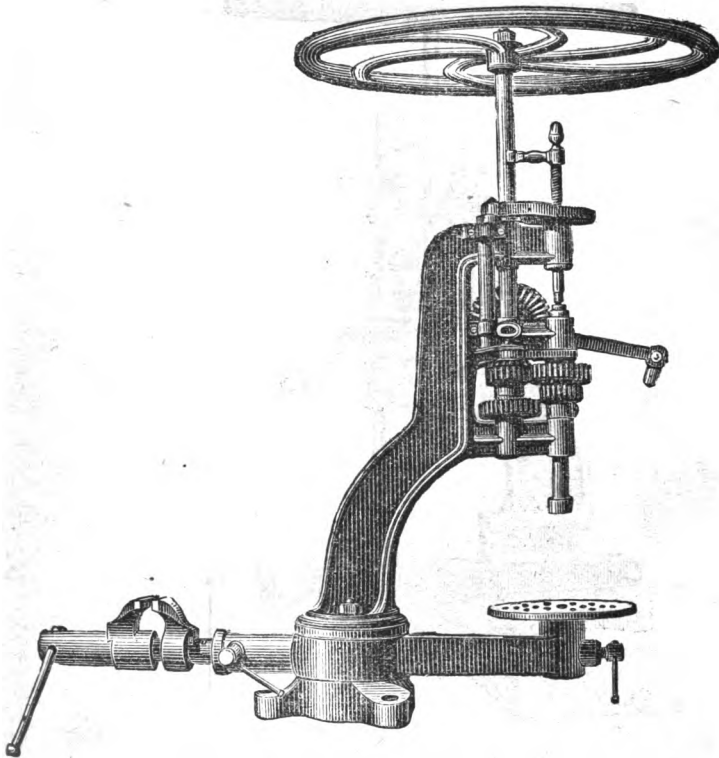
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# BENCH DRILLING MACHINE

To work by Hand or Steam Power.



Has strong solid cast-iron frame, strong double gearing, a slow and fast self-feeding motion, by pressure from the top by screw and ratchet, handle, fast and loose pulleys or 3-speed cone on the side; a circular adjustable plate, and patent wrought iron parallel sliding vice, 4 and 5 in. jaws, finished bright, to swing completely round. The Machines revolve on their base by loosening the nuts on the top thereon.

Nos. of Machines.	To drill holes up to diam	Diameter of Flywheel.	Will take in diam.	Height	Approx. Weight.	Price for Hand only.	Diam. of Plates.
190	$\frac{7}{8}$ in.	28 in.	19 in.	3 ft. 9 in.	2 cwt.	<b>£7 5s.</b>	10 in.
200	$1\frac{1}{4}$ in.	36 in.	26 in.	4 ft. 8 in.	$3\frac{1}{2}$ cwt.	<b>10 10s.</b>	12 in.

For Steam Power. 10s and 12s. extra.

**BRITANNIA CO., COLCHESTER, England.**

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# NEW PATENT DRILLING MACHINES,

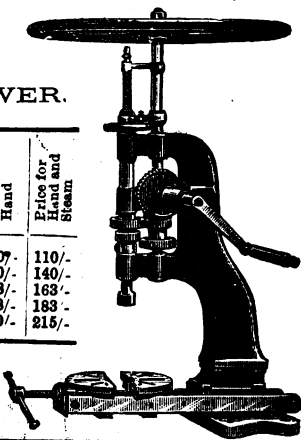
With Improved Chuck-plate, and  
Parallel Vice, Self-centring.

FOR HAND OR STEAM POWER.

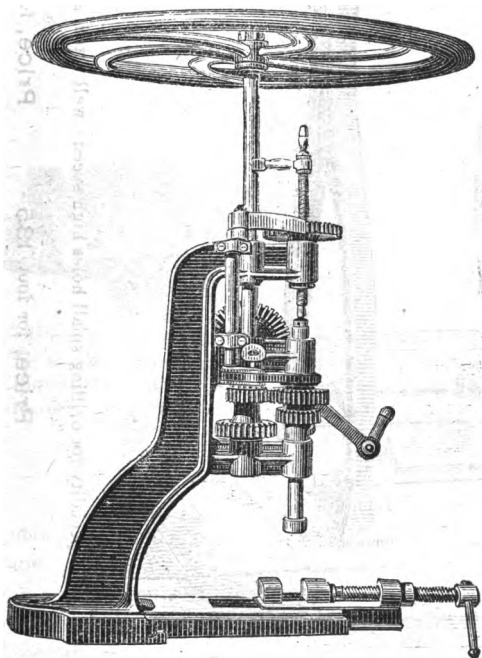
Numbers	To drill holes up to diameter	Diameter of Fly-wheel	Diameter admitted under spindle	Diameter of Patent Vice Plate	Height over all	Weight, approx.	Price for Hand	Price for Hand and Steam
29 BB	7 in.	20 in.	8 in.	10 in.	37 in.	11½ cwt.	100/-	110/-
37 BB	1 "	32 "	10 "	12 "	40 "	24 "	130/-	140/-
38 BB	1½ "	32 "	10 "	14 "	46 "	3 "	158/-	163/-
39 BB	1¾ "	38 "	12 "	14 "	52 "	13½ "	178/-	183/-
40 BB	1¾ "	40 "	14 "	15 "	54 "	4½ "	200/-	215/-

Set of 6 Drills, No. 29BB 37BB 38BB 39BB 40BB  
7/6 12/- 15/- 18/- 20/-

Hand Wheel and Gear for raising Drilling Spindles,  
10/- extra.



## No. 110 DRILL.



Will Drill Holes  
up to 1½ in.

Height, 3ft. 8in.

Diameter of  
Flywheel, 36in.

Distance of  
Spindle to Frame  
11in.

Weight 2½ cwt.

Price for Hand,  
£6 5s.

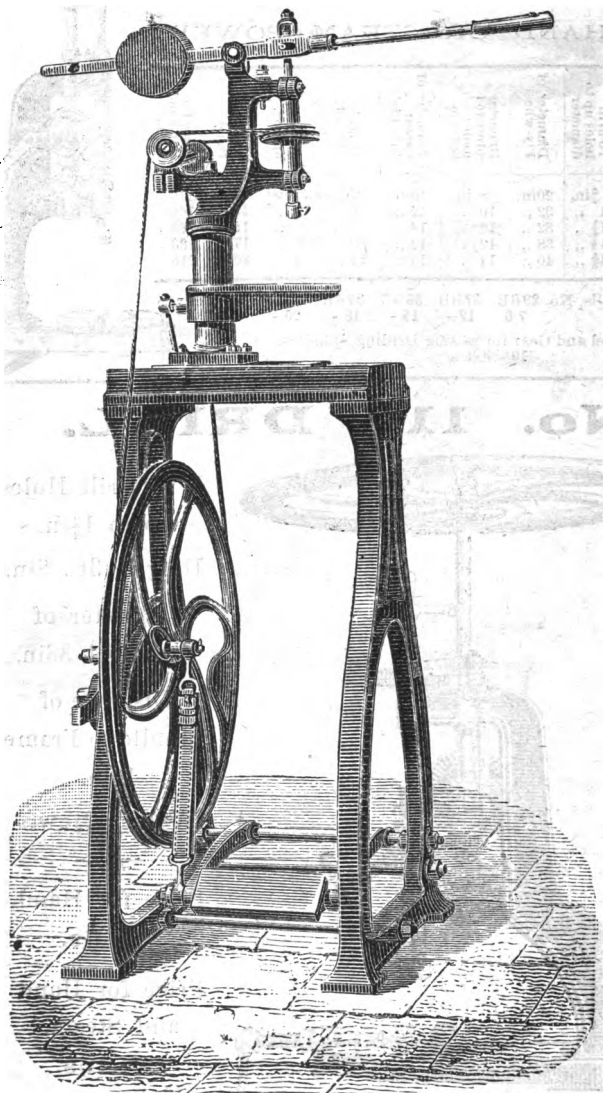
Price for Hand  
and Steam,  
£5 15s.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# No. 10 LEVER TREADLE DRILLING MACHINE

To Drill holes up to  $\frac{1}{4}$  in. diameter by foot or steam.



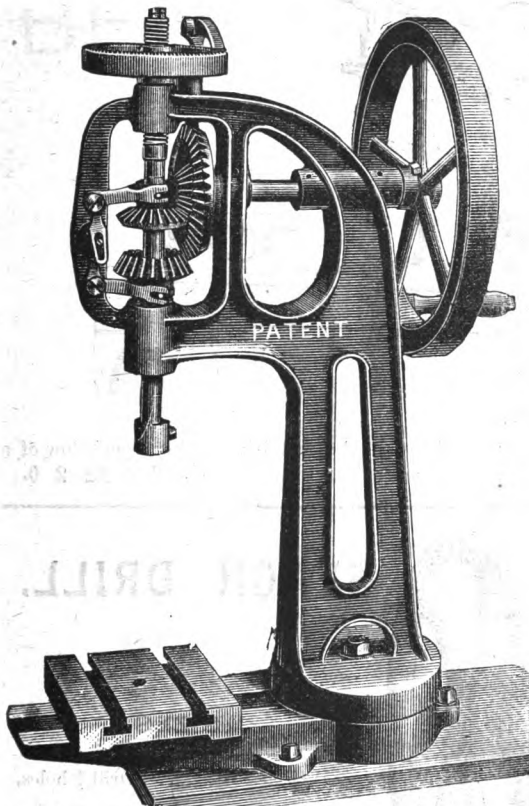
Speciality for drilling small holes high speed : well fitted, suitable for Bicycle makers and others.

Price, for foot, 135/-      Price, for foot and steam, 150/-

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# No. 2 'UNION' PATENT BENCH DRILL.



THIS Tool has two rates of speed obtained by means of two sets of bevel wheels, the pinions of which are caused to be in or out of gear alternately by turning the eccentric lever controlling them.

The table is carried on a slotted arm and can be revolved so that any part of the table can be brought under the point of the drill. The standard is made to move radially on the base. These movements give great scope and convenience, and will be found valuable in use.

It is self-acting in its feed

and the general formation is rigid, and the workmanship and material good.

It is also made single speed, with or without self-acting feed, and a drilling vice is supplied when desired. Will drill up to  $\frac{3}{4}$  in., take in  $19\frac{1}{2}$  in. diameter, and is 2 ft. 7 in. high. Weight about 1 cwt.

## PRICES.

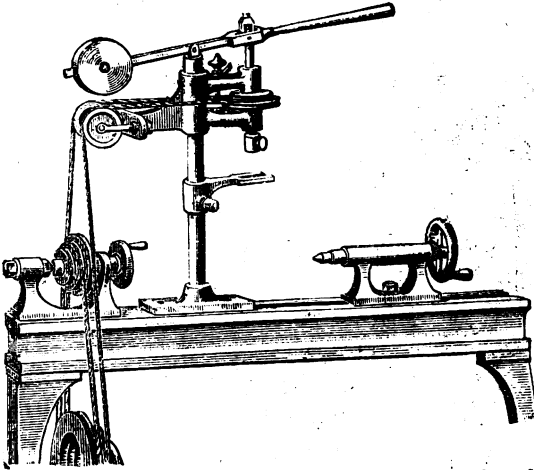
				£	s.	d.
Double Speed, Self-Acting Feed	..	..	..	4	5	0
Single	..	..	..	3	17	6
.. (not Self-Acting)	..	..	..	3	15	0
Vice (large)	..	..	..	1	0	0
.. (small)	..	..	..	..	12	6

**BRITANNIA CO., COLCHESTER, England.**

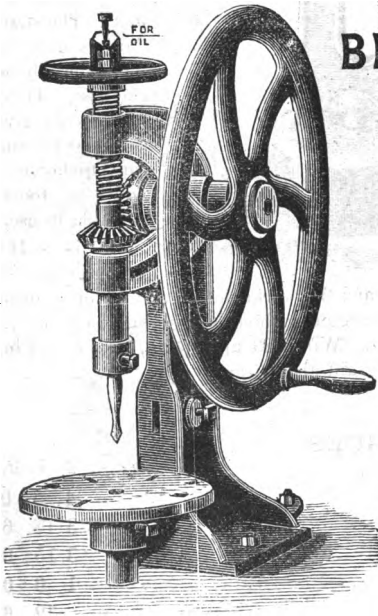
London Showrooms—100, Houndsditch. *Google* All Letters to Colchester.



# DRILLING MACHINE FOR LATHE.



This can be used on any ordinary Lathe, and driven either from below of a treadle lathe or from an overhead. This is a useful tool. Price £2 2 0.



## BENCH DRILL.

### SIZES.

Weight 25 lbs. .. Drill  $\frac{3}{8}$  holes,  
30/-

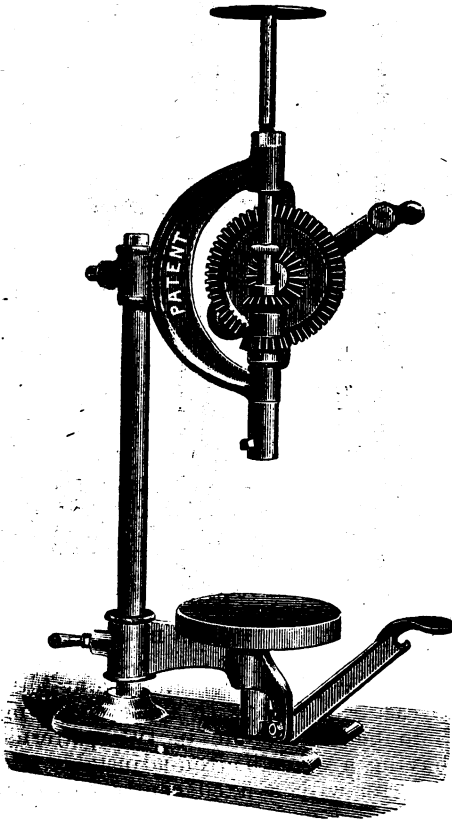
Weight 80 lbs.- .. Drill  $\frac{1}{2}$  holes,  
45/-

Weight 150 lbs. .. Drill  $1\frac{1}{2}$  holes,  
80/-

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# BENCH DRILL.



CAN also be used as a BRACE by taking it off the Pillar. By pressing the Lever at foot the Table is raised.

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Price 30s.

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"A very useful tool in any shop."

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BRITANNIA CO. manufacture a large number of Drilling Machines for Hand or Steam Power.

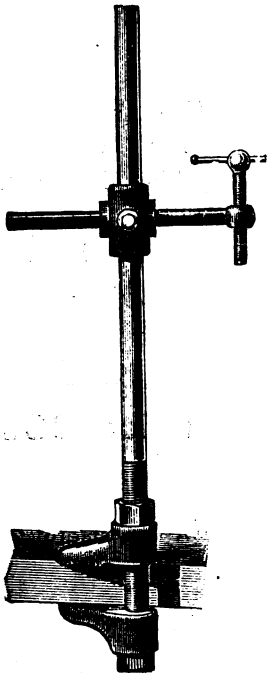
*Special attention is requested to the Quality of our Drills.*

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**BRITANNIA CO., COLCHESTER, England.**

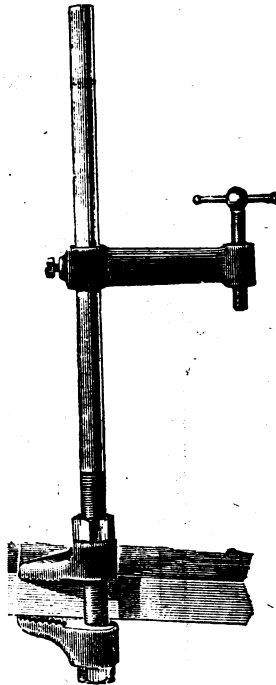
*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# HANDY DRILLING POSTS.



Pattern A.

For use with Ratchet or Swinging Braces, for  
Smiths and Engineers.



Pattern B.

MADE with bright turned pillars, 1½ in. diameter, about 36 in. high, strongly fitted to cast-iron foot, with loose clamping jaw and nut, to attach to bench. Made in two patterns, A and B, the former having a wrought iron adjustable and swivelling arm, and the latter with a fixed centre cast-iron swivelling arm.

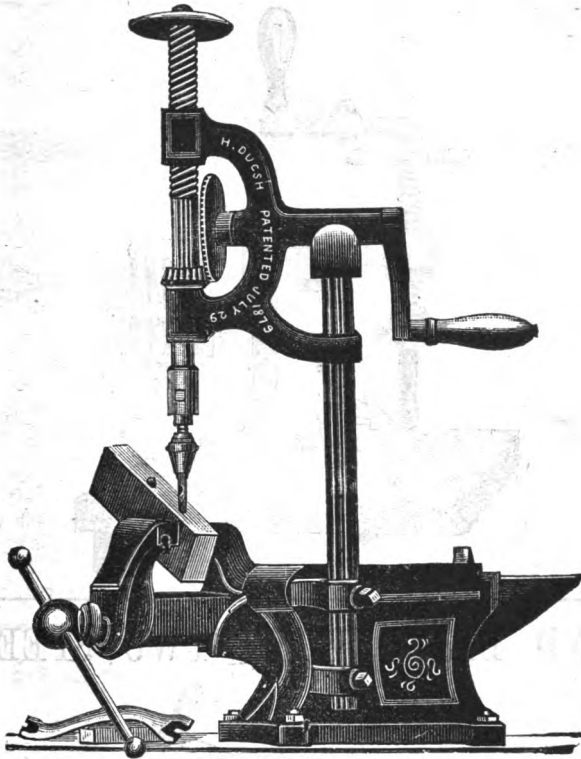
Feed Screws with hardened female centres.

Prices—Pattern A, £2 0 0: Pattern B, £1 15 0

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# ANVIL, VICE & DRILL



The anvil face is 4 in. by 8 in. and 6 in. high. Width of vice jaw  $3\frac{1}{4}$  in. Drilling Machine with adjustable chuck to hold up to  $\frac{1}{4}$  in. drills.

The article to be drilled can be held firmly in the vice, so as to be drilled at any angle, or if it is too large for the vice it can be drilled on the anvil.

The drill can be removed when not in use.

Anvil, Vice and drilling Machine complete, weight about 80 lbs.	..	81/-
Anvil and Vice only, weight about 60 lbs.	..	45/-

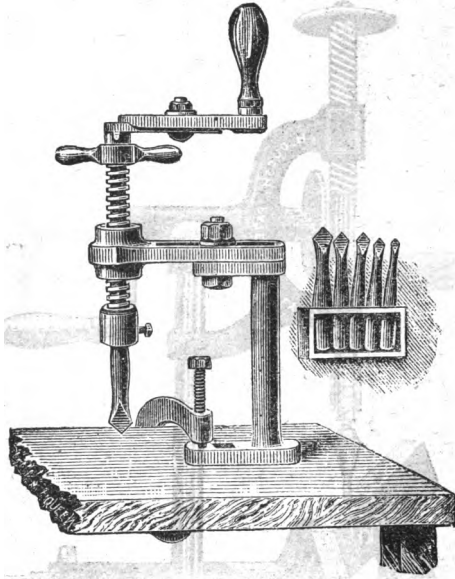
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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Hornsdrück. All Letters to Colchester.*

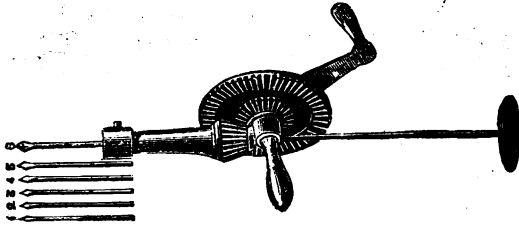
# DRILL FOR ANY POSITION.

An excellent Tool. Price £3.




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## HAND DRILL WITH TWO SPEEDS.



Represented in inner gear, drills  $\frac{1}{2}$  in. When adjusted in outer gear drills quickly up to  $\frac{3}{4}$  in.

Price 12s. either size.

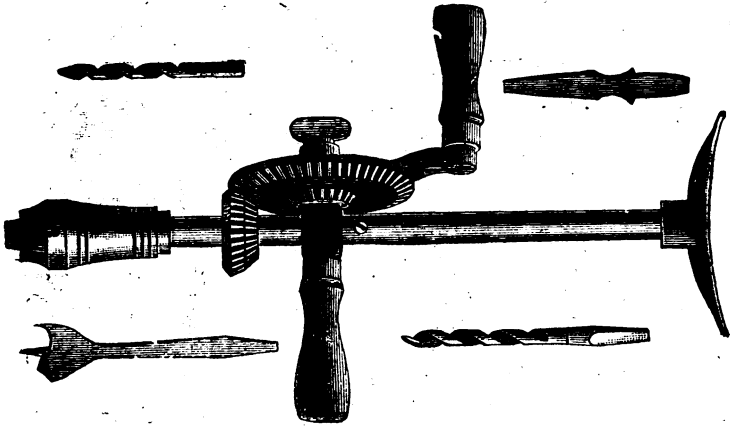
Each Machine has six drills of different sizes with it.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# BREAST DRILL, No. 10.



## SECONDARY GRIP.

ABOVE Drill is made of  $\frac{3}{8}$  round wrought iron, the handles are rosewood, head malleable iron and the chuck jaws of steel. It has a changeable gear, one even, and the other speeded three to one, the change from one to the other can be made in a second. It will hold any shape shank, round, square or flat, as shown in illustration. Above tools are not sold with drill stock, but are only put in to show shape of shank which the chuck holds.

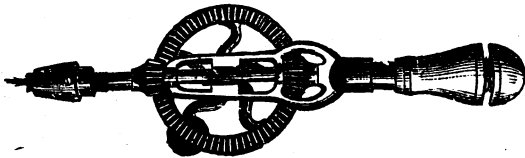
This drill stock is heavily nickel plated and has cut gears.

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Price ... .. 12s. 6d.

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# HAND DRILL, No. 1.



No. 1, Single Gear, hollow handle, nickel plated ... .. 5s. 3d.  
 1, B, Double Gear, same chuck ... .. 6s. 3d.

Six drill points with each of the above drill stocks.

These drill stocks are made of malleable iron, steel spindles and rosewood head and handle. The jaws are of forged steel, and will hold perfectly any sized drills named below.

They are the only drill chucks in use which will hold Morse Twist Drills from  $\frac{1}{8}$  to  $\frac{1}{2}$  in.

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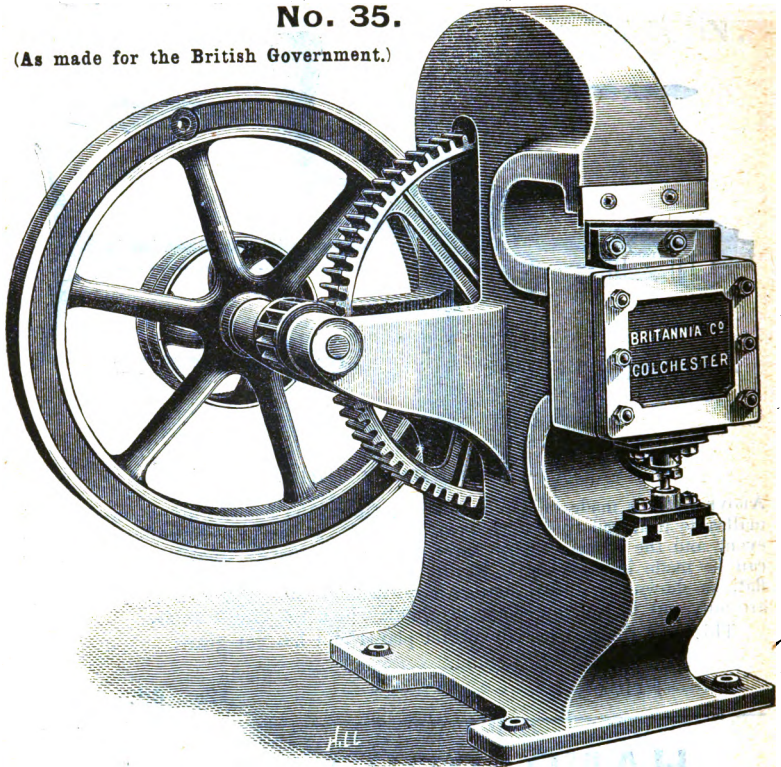
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# IMPROVED PUNCHING & SHEARING MACHINES.

## No. 35.

(As made for the British Government.)



THE illustration represents a very handy punching and shearing machine, of improved construction, powerfully geared, single ended, shearing above, and punching below. The body is a strong box casting, with thick beads round the gullets, and fitted with slide, accurately scraped in, carrying the shear blade and punch, the former being set at an angle for shearing long bars.


Steel main shaft, strong gearing, heavy turned flywheel, with handle for working by hand. The machine can be mounted on four strong wheels for moving about the yard, or made with fast and loose pulleys for power driving, and without transport wheels, if desired.

⌘Gearing  $3\frac{1}{2}$ -inch face by  $1\frac{1}{4}$ -inch pitch; large wheel 32 inches diameter; pinion 6 inches diameter; flywheel 48 inches diameter; fast and loose pulleys  $15\frac{1}{2}$  inches diameter, 3-inch face.

No.	To punch in diam.	Thick-ness of plate to punch	Thick-ness of plate to shear	Depth of gullets to punch.	to shear.	Approx. weight.	Price for hand power only.	Price for hand and steam power.	Extra if mounted on wheels.
PS 35	$\frac{3}{4}$ -in.	$\frac{1}{2}$ -in.	$\frac{1}{4}$ -in.	10-in.	11-in.	25 cwt.	£32	£33 10s.	£1
PS 2	$\frac{3}{4}$ -in.	$\frac{1}{2}$ -in.	$\frac{1}{4}$ -in.	12-in.	9-in.	36 cwt.		42 10s.	
PS 3	$\frac{3}{4}$ -in.	$\frac{1}{2}$ -in.	$\frac{1}{4}$ -in.	12-in.	11-in.	40 cwt.		47 10s.	

*For larger or smaller sizes send for quotations.*

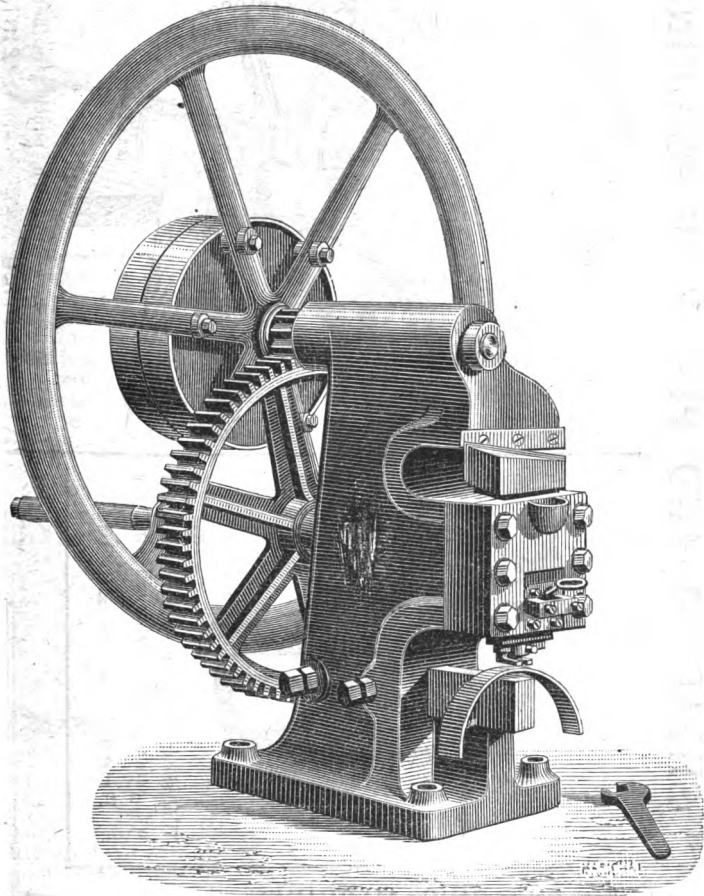
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100 Houndsditch.  Letters to Colchester.



# No. 18 Punching & Shearing Machine

*For Hand and Steam Power.*



WILL punch by hand  $\frac{5}{8}$ in. diameter holes through  $\frac{3}{4}$ in. plates, and shear bars  $\frac{3}{8}$ in., or strips of sheets 6in. from edge, and square or round bars  $\frac{3}{4}$ in. diameter.

Has top gear machined out of the solid: stop motion in front, adjustable sliding die holder to punch holes in keg ends, angle and H iron: fitted with fast and loose pulleys, large flywheel and handle. Weight of Machine, 9 $\frac{1}{2}$ cwt.

Price . . . . . £22 10 0

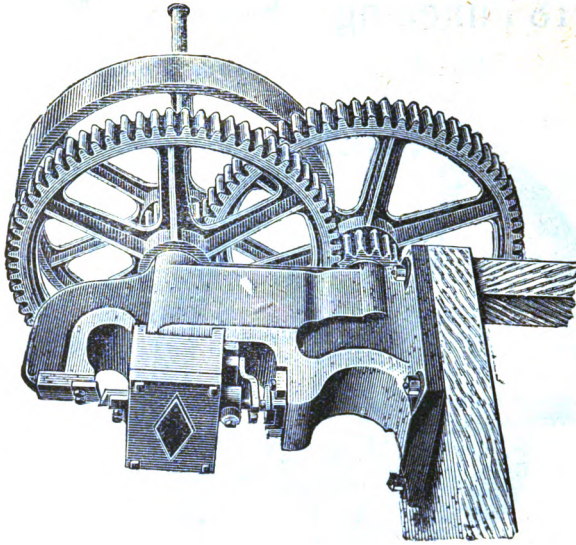
For larger sizes, send for quotations.

**BRITANNIA CO., COLCHESTER, England.**

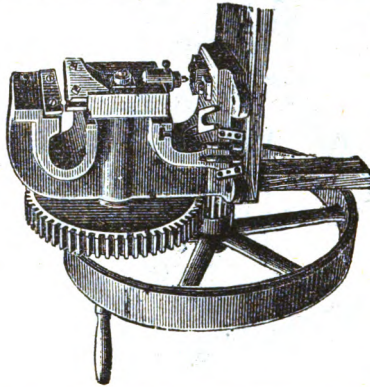
London Showrooms—100, Houndsditch.

All Letters to Colchester.

**SHEARING AND PUNCHING MACHINES**



Will shear  $\frac{3}{8}$ -in. iron, punch  $\frac{3}{8}$ -in. holes.  
Price - - - £18



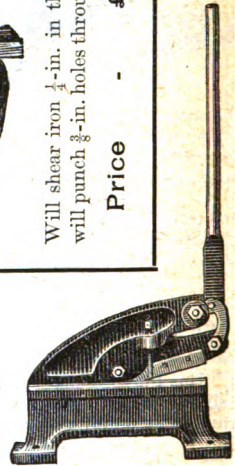
Will shear iron  $\frac{1}{4}$ -in. in thickness, and will punch  $\frac{3}{8}$ -in. holes through  $\frac{1}{4}$ -in. iron.  
Price - - - £6 10s.

**LEVER SHEARING MACHINE.**

No. 11.

To cut sheet iron up to  $\frac{1}{8}$ -in.  $\times$   $3\frac{1}{2}$ -in. wide, Round or square bars up to  $\frac{3}{16}$  in.

Has a solid casting, and guide; will cut through the middle of sheet iron.



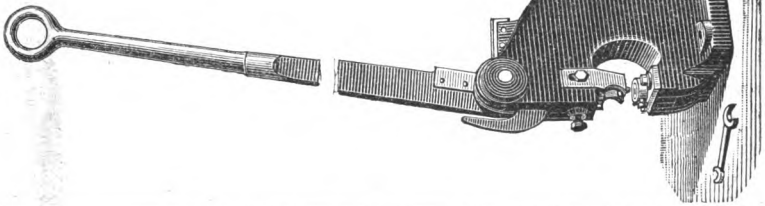
Weight	...	...	60 lbs.	Length of Blades	...	.6 in.
Price	...	...	<b>45s.</b>	Extra Shears	...	<b>7s.</b>

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, *Houndsditch.* All Letters to Colchester.

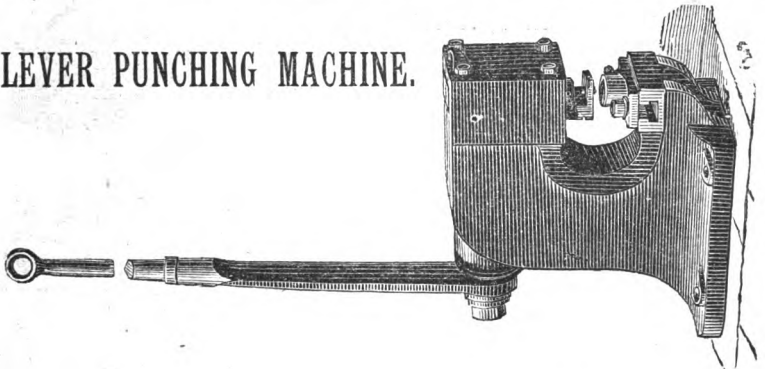
# PUNCHING AND SHEARING MACHINES,

Of new design with lever at back. Box casting for body. To punch at bottom and shear at top. In five sizes as under:—



Number ...	21	22	23	24	25
Largest diameter to punch ...	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Thickness ...	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{1}{2}$
Width and thickness to shear	$\frac{3}{4}$ by $\frac{3}{16}$	$\frac{3}{4}$ by $\frac{1}{4}$	1 by $\frac{5}{16}$	$1\frac{1}{16}$ by $\frac{5}{8}$	$1\frac{3}{8}$ by $\frac{1}{2}$
Distance from body to punch	$1\frac{1}{2}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$3\frac{1}{2}$
Approximate weight ...	28 lbs.	50 lbs.	90 lbs.	154 lbs.	190 lbs.
Price ...	35/-	40/-	60/-	75/-	100/-

## LEVER PUNCHING MACHINE.



THESE Machines have strong box castings, cast steel spindle, powerful eccentric lever on the side, punch and die set to punch angle and  $\pm$  iron. Work easily and efficiently.

Number of Machines ...	1	2	3	4
Will punch diameter ...	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	$\frac{1}{2}$ in.
Through plates ...	$\frac{1}{4}$ in.	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.
Depth of gap ...	$\frac{3}{16}$ in.	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.
Weight ...	1 cwt.	2 cwt.	3 cwt.	28 lbs.
Price ...	85/-	120/-	210/-	35/-

No. 4—A speciality for Hoop Iron.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

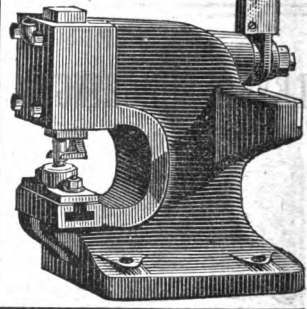
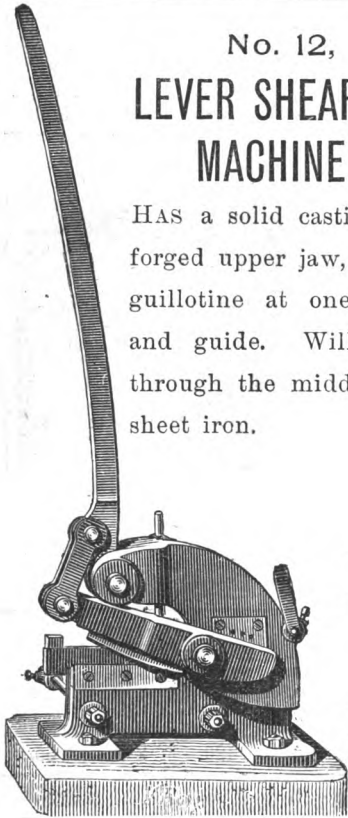
# Nos. O, OO and OOO, IMPROVED LEVER PUNCHING AND SHEARING MACHINE.

HAVE strong box castings, with lever on the side, with top blade fitted against same, cast steel spindle and eccentric, punch and die holder set to punch  $\perp$  and  $\equiv$  iron. Guide, punch and die, of largest diameter the Machine will punch.

Numbers of Machines.	O	OO	OOO
To punch holes diameter ... ..	$1\frac{5}{8}$ in.	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.
Through plates diameter ... ..	$1\frac{3}{8}$ in.	$\frac{1}{4}$ in.	$\frac{1}{8}$ in.
Shears bars thick ... ..	$1\frac{3}{8}$ in.	$\frac{1}{4}$ in.	$\frac{1}{8}$ in. hoops
Admitted at gap ... ..	$2\frac{3}{8}$ in.	$3\frac{1}{8}$ in.	$1\frac{5}{8}$ in.
Weight ... ..	$\frac{1}{2}$ cwt.	1 cwt.	30 lbs.
<b>Price</b> ... ..	55/-	95/-	40/-
Extra punches and dies, per pair	2/2	2/6	2 2
Extra pair of blades ... ..	5/-	7/-	4/-

## No. 12, LEVER SHEARING MACHINE.

HAS a solid casting, a forged upper jaw, with guillotine at one end and guide. Will cut through the middle of sheet iron.



Weight ... ..  $2\frac{1}{2}$  cwt.  
Length of Shears ... .. 8 in.

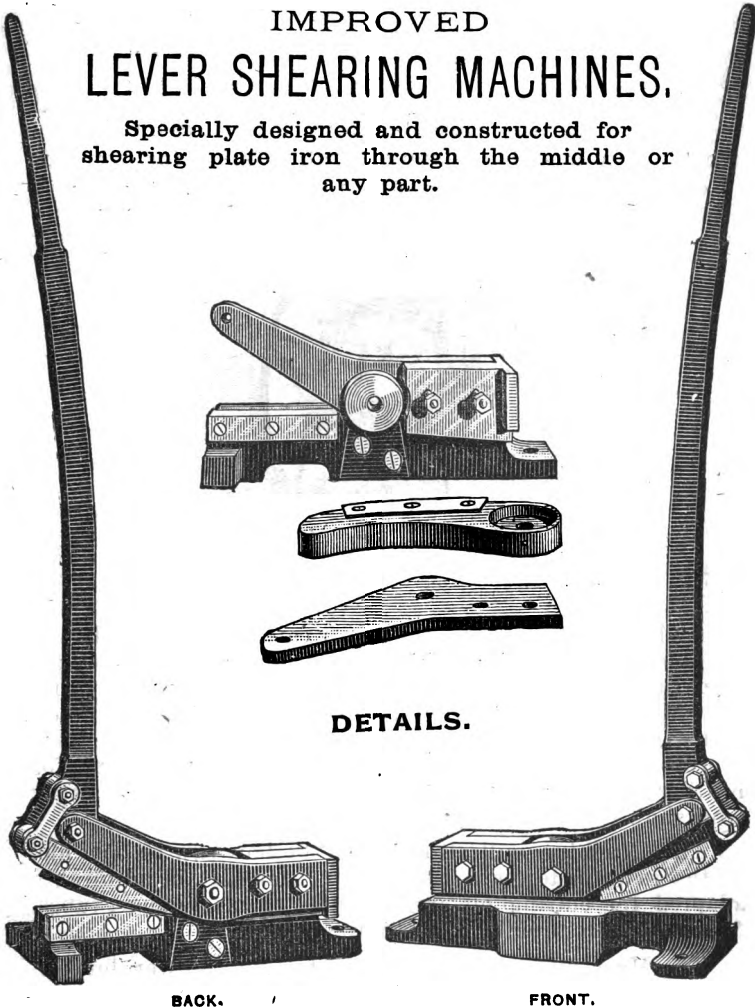
**Price** ... .. 150/-  
Extra Shears ... .. 12/-

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# IMPROVED LEVER SHEARING MACHINES.

Specially designed and constructed for shearing plate iron through the middle or any part.



## DETAILS.

Number.	26	27	28
Thickness to Shears .. .. .	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Length of Blades .. .. .	8 $\frac{1}{2}$	8 $\frac{1}{2}$	10
Approximate weight .. .. .	80 lbs.	150 lbs.	590 lbs.
Price .. .. .	£6	£7 10s.	£18

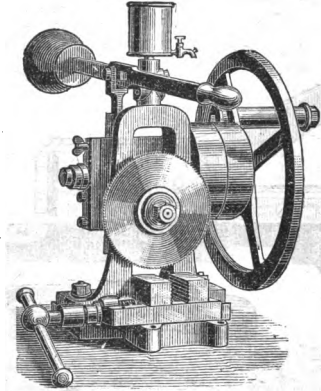
No. 28 has counterbalance weight.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# SMALL HAND COLD SAWING MACHINE,

With Gearing, Circular Saw, 8 inch diameter, working in a slide; strong Parallel Vice, for working easily any article corresponding to size of Machine.



THE Machine is so arranged that it can be fixed on a bench or table; it is used for making those cuts and filings which, as a rule, are done by hammer, chisel, and file, or by fire. The Machine will cut round iron or steel  $2\frac{1}{4}$  in. diameter, and will mill accurately surfaces of equal dimensions; it is therefore, a tool used not only for cutting off, but for milling off as well, such as occurs every hour in every workshop.

This Machine will also replace the bow saw or bow file, as the saw blades will last a long time. It is admirably adapted for cutting off iron or steel to exact gauge, tubes, &c., and for counter-sinking screws, &c.

The Machine is chiefly supplied for hand power, but can be fitted with pulleys also, as may be seen from sketch, but the belt can only be put horizontally on the pulleys, as the latter moves up and down with the slides.

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**Price,** Complete with Parallel Vice, and one Saw of 8 inches diameter (without Pulleys), **£9.**

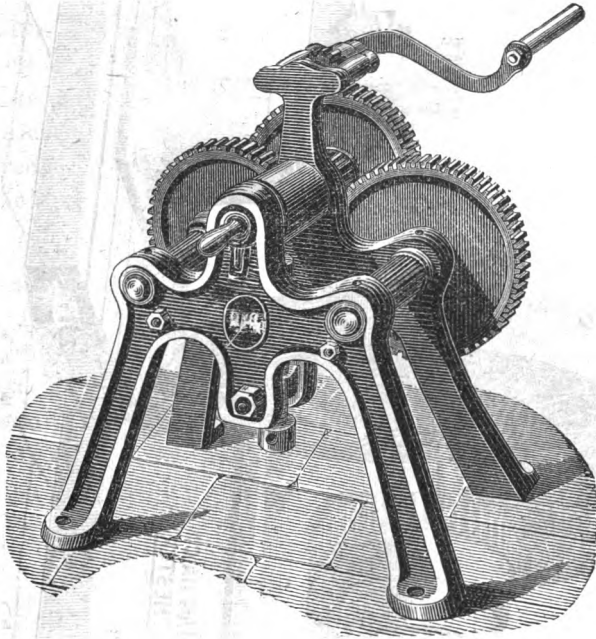
If with Fast and Loose Pulleys, **£10 5s. Od.**

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

Nos. 6, 6a, 7, and 8

**TYRE BENDING MACHINES****For hand and steam power**

HAVE solid cast-iron frames and extra powerful gearing. The cylinders are of wrought iron, case hardened, the outside ones are fluted; pressure by screw underneath. Warranted to bend a bar to any desired sweep, by once going through. A welded tyre can be replaced in the machine for finishing, by drawing out the top spindle and removing the cylinder.

These machines are used all over the world, and are recommended to be durable and more efficient than any other machine of this kind; very little power required to work them.

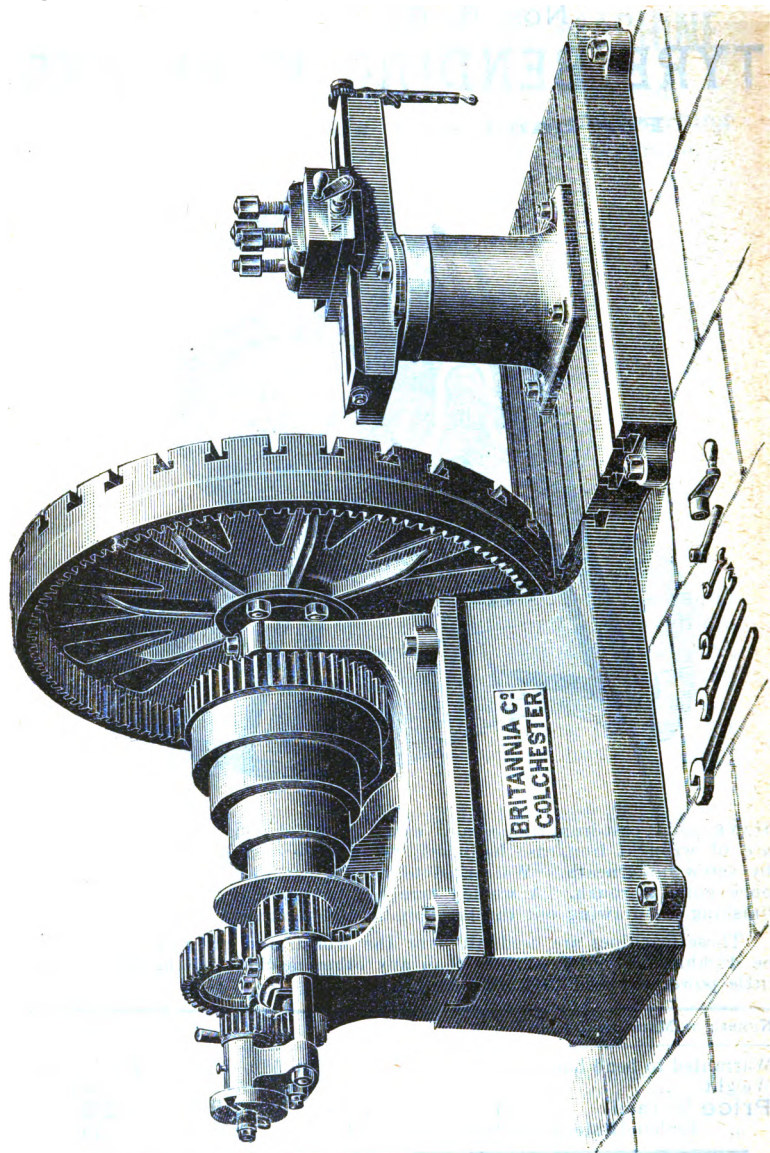
NUMBER OF MACHINES ...	6	6A	7	8
Warranted to bend bars	4½ in. by 1½ in.	6 in. by 1½ in.	5½ in. by 1½ in.	6½ in. by 1½ in.
Weight ...	3½ cwt.	3¾ cwt.	5 cwt.	6 cwt.
Price for hand ...	150/-	165 -	215/-	230/-
„ for hand & steam	165/-	180 -	230/-	245/-

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



**POWERFUL  
TREBLE-GEARED FACING AND BORING LATHE.**



*(For description see opposite page.)*

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms - 100, Houndsditch. All Letters to Colchester.*



# POWERFUL TREBLE - GEARED FACING AND BORING LATHE.

WITH 12½ in. Centre Headstock mounted on strong box section pedestal, cast in one piece with a strong foundation plate, latter truly planed and with T slots on its face, on which is securely bolted, but adjustable in position, a circular pillar, planed at bottom and turned at top, and fitted with a Compound Slide Rest, with extra long slide.

The Headstock is fitted with a Steel Mandril with parallel necks, running in hard gun metal bearings; the front end forged with a broad flange truly turned, and having bolted securely to it a strong well ribbed Face Plate, with radial T slots and internal gear; and the tail end of mandril fitted with a slotted disc, carrying an adjustable stud and eye for self-acting overhead feed, the Slide Rest being provided with lever, pawl, and ratchet for that purpose.

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## PRINCIPAL DIMENSIONS.

Headstock, Mandril bearings—Front, 6½ in. long by 3½ in. diameter;  
Back, 4½ in. long by 2½ in. diameter.

Speed Cone, 4 Steps, 3½ in. wide; Largest, 16 in. diameter;  
Smallest, 7 in.

Gearing—Double, 17 in. and 5½ in., 3¼ in. face, 1½ in. pitch; Treble  
Pinion 6½ in. diameter, Internal Wheel, 43 in. diameter, 3½ in.  
face, 1½ in. pitch.

Face Plate, 48 in. diameter. Slide Rest arranged to bore 24 in. deep.

Foundation Plate, over all 7 ft. long by 3 ft. 4 in. wide.

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Price complete, with Top Driving Apparatus,

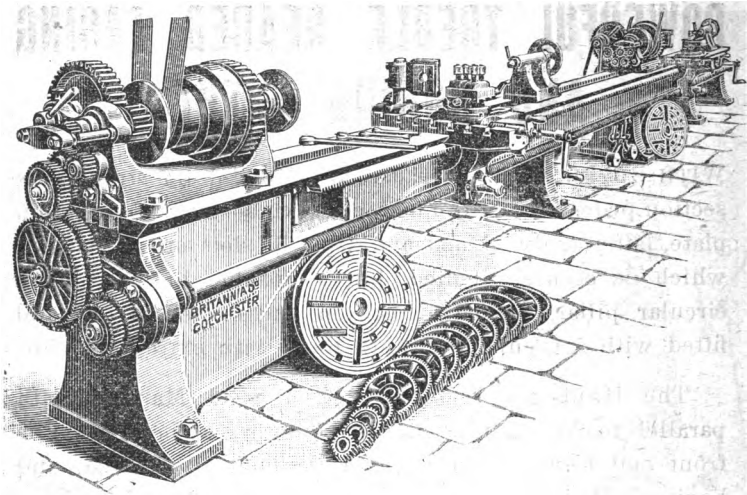
Keys and Spanners, &c. ... .. £85.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# DOUBLE HEADED LATHE



THE above represents our Double Headed Lathe made for long lengths of shafting, screws, &c., which is very handy in the General Engineer's Shop, where long work may only occasionally be wanted, when the Centre Head and one Poppet can be quickly removed, and the whole length of Lathe is then available, and both the Saddles and Rests can be used, one for roughing and the other for finishing; while for ordinary work of shorter lengths, both Heads and Rests are complete and ready for either two distinct jobs, or one can rough out or slide and other can finish or cut screws. The Lathe can thus be used economically and conveniently by one man, and a great deal of work turned out cheaply.

## DIMENSIONS AND PRICE.

Height Centres, 10 in.

Bed, width and depth, 16 in. by 11 in.

„ Length up to 40 feet.

Gap, 15½ in. wide; 10½ in. deep.

Leading Screw, 2½ in. diameter, ¼ in. pitch.

Back Shaft, 1½ in. diameter.

Cone Pulleys, 4 speeds, 3¼ in. wide; Largest 13 in. diameter, smallest 5 in.

Face and Pitch of Gearing, 3 in. by 1 in.

Diameters of ditto, 14 in. and 4½ in.

„ Body and Nose of Spindles, 2½ in. and 2¾ in.

Face and Pitch of Change Wheels, 1½ in. and ⅞ in.

Extreme length between Centres with 40 ft. bed 35 feet.

Approximate Weight, 5 Tons.

Price—as shown

„ with only 1 pair of heads

Sliding, Surfacing only

Sliding, Surfacing and Screwcutting

Sliding and Screwcutting only

Poppets to set over extra

Bed more or less per foot

..	..	..	..
..	..	..	..
..	..	..	..
..	..	..	..
..	..	..	..
..	..	..	..
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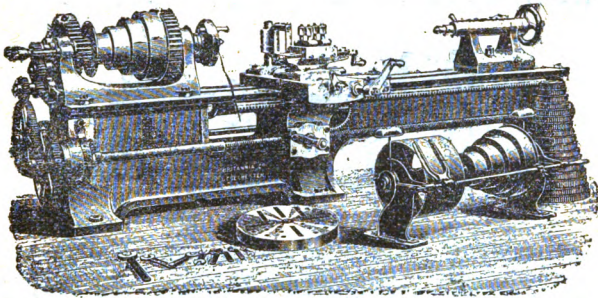
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

Specification of No. 21, 10 in., No. 22, 12 in., and  
No. 23, 14 in. Centres.

## SELF-ACTING, SLIDING, SURFACING, AND SCREW-CUTTING LATHES.



FITTED with double-gearred headstock, steel spindle, conical necks, gun-metal bearings, reversing motion for cutting right and left-hand screws; the loose headstock is fitted with cylinder mandrel, and left-hand square thread traverse screw, bright turned hand-wheel, and can be made to set over by transverse slide motion for taper turning if desired. The saddle has a flush top and T grooves for bolting work to for boring purposes, compound slide rest, made to swivel to any angle for surfacing, and graduated for turning conical. The bed is accurately planed and surfaced, and provided with movable bridge piece for gap, box end at left hand, and firmly bolted to strong standard with planed faces at right-hand end. The metal is carefully distributed, so that the Lathe is quite rigid under the heaviest cutting strain; the leading screw is of steel, accurately cut, and extends full length of bed. It has a double clam gun-metal nut, actuated by eccentric movement to engage and release the saddle, the latter having also a quick hand traverse by rack, pinion, and double purchase gearing. The self-acting sliding and surfacing motions are arranged with backshaft and worm gearing. Any length of bed made to order.

The Lathe is fitted complete with back traversing stay, 22 change wheels, index plate, face plate, catchplate, and top driving apparatus complete, screws, keys, &c.

DIMENSIONS, PRICES, &c.	No. 21.	No. 22.	No. 23.
Height of Centres - - -	10 inches.	12 inches.	14 inches.
Length, Width and Depth of Bed	12 ft. by 18 in. by 11 in.	12 ft. by 19 in. by 13 in.	20 ft. by 23 in. by 14½ in.
Width and Depth of Gap - -	15½ in. by 10½ in.	19½ in. by 12½ in.	21 in. by 14½ in.
Diameter and Pitch of Leading Screw	2½ in. by ½ in.	2½ in. by ½ in.	2½ in. by ½ in.
„ of Back Surfacing Shaft	1½ in.	1½ in.	1½ in.
Number of Speeds on Cone Pulley, and Width - - -	4-3½ in.	4-3½ in.	4-4½ in.
Diameters of Largest & Smallest Speeds	13 in. and 5 in.	16 in. and 6½ in.	18 in. and 8½ in.
Width on Face and Pitch of Gearing -	3 in. by 1 in.	3½ in. by 1½ in.	3½ in. by 1½ in.
Diameters of Large Wheel and Pinion	14 in. and 4½ in.	17½ in. and 6 in.	19½ in. and 6½ in.
„ of Body & Nose of Steel Spindle	2½ in. and 2½ in.	2½ in. and 2½ in.	3 in. and 3½ in.
Width on Face & Pitch of Change Wheels	1½ in. by 7/16 in.	1½ in. by ½ in.	2 in. by in.
Extreme Length between Centres - -	7 ft. 3 in.	6 ft. 8 in.	13 ft. 6 in.
Approximate Weight	2½ Tons	4 Tons	5 Tons
Price {	Sliding, Surfacing, & Screw Cutting		
	Sliding and Screw Cutting only (no back shaft)		
	If with Poppet to set over for Taper Turning - - -		
	Per Foot of Extra Length of Bed		

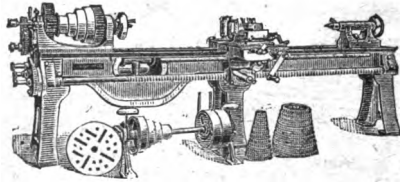
We make Lathes of similar design to the above, but of larger sizes, and with Beds to any length.

These Lathes are fitted for hard and accurate work, and are similar to those supplied to the British Government.

### BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# SELF-ACTING, SLIDING, SURFACING, AND SCREW-CUTTING LATHE, No 24, 9 & 10in.



THIS Lathe is a stiff-built tool for heavy work, up to its capacity of size, and is strong enough to raise to 10 inch for lighter work. It is well proportioned in all parts and is constructed with gap bed, accurately planed and surfaced, and bridge piece fitted to gap; double-gear headstock, steel spindle, conical neck, gun metal bearings, reversing motion for cutting either right or left hand screws, loose head with cylinder barrel and left hand square thread traverse screw, and made to set over for taper turning if required; steel leading screw accurately cut, and extending full length of bed, with double clam gun metal nut clipping screw at top and bottom, saddle with long wings flush top, and grooved for bolting work to for boring, and with quick hand traverse by rack and pinion, compound slide rest to swivel to any angle, graduated for turning conical, &c., and steel draw screws; back surfacing shaft and worm gearing for sliding without the leading screw (saving wear of same) and for surfacing. The price includes back following stay, catch and face plates, 22 change wheels, index plate, overhead motion, screw keys, &c., complete. All materials and workmanship guaranteed.

## DIMENSIONS, PRICES, &c.

Height of Centres	...	...	9 inches
Length, breadth, and depth of bed	...	12 ft. by 14½ in. by 10 in.	
Length and diameter will swing in gap	...	15 in. by 8½ in.	
Diameter and pitch of Steel Leading Screw	...	2 in. by ½ in.	
Diameter of Back Surfacing Shaft	...	1½ in.	
Number and width of Speeds on Cone Pulley	...	4—3 in.	
Diameters of largest and smallest Speed	...	12 in. and 4½ in.	
Width on face and pitch of Gearing	...	2½ in. by ½ in.	
Diameters of large and small Gear	...	13 in. and 4½ in.	
Diameters of body and nose of Steel Spindle	...	2 in. and 2½ in.	
Pitch of the 22 Change Wheels	...	7 in.	
Extreme length between Centres	...	7 ft. 6 in.	
Approximate Weight	...	85 cwt.	
		9 in. Centre	10 in Centre
		£ s. d.	£ s. d.
Price with Leading Screw and Back Shaft	...		
only	...		
Poppet to Set over extra	...		
Extra length of Bed per foot	...		

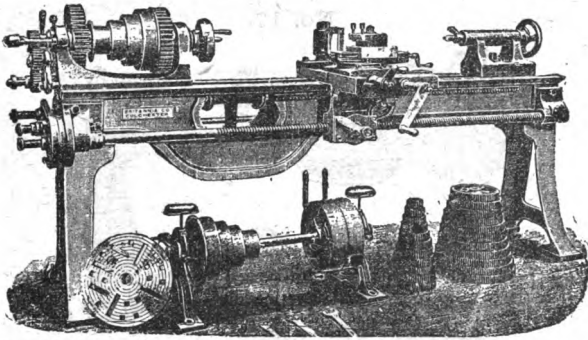
Britannia Company have supplied these Lathes to the British Government.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# SELF-ACTING, SLIDING, SURFACING, AND SCREW-CUTTING LATHE,

Nos. 25 and 20.



With gap bed, accurately planed and surfaced, and bridge piece fitted to gap; double-gear headstock, steel spindle, conical neck, gun metal bearings, reversing motion for cutting either right or left hand screws, loose head with cylinder barrel and left hand square thread traverse screw, and made to set over for taper turning if required; steel leading screw, accurately cut, and extending full length of bed, with double clam gun metal nut clipping screw at top and bottom, saddle with long wings, flush top and grooved for bolting work to, for boring, and with quick hand traverse by rack and pinion, compound slide rest to swivel to any angle, graduated for turning conical, &c, and steel draw screws, back following stay, catch and face plates, 22 change wheels, index plate, overhead motion, screw keys, &c., complete. All materials and workmanship guaranteed. These Lathes up to 10 feet have 2 standards, above 10 feet 3 standards.

DIMENSIONS.	No. 25 LATHE.	No. 20 LATHE.
Height of Centres	7½ in.	9 in.
Length, breadth, and depth of Bed	8 ft. by 10½ in. by 8 in.	10 ft. by 18 in. by 8½ in.
Length and diameter will swing in Gap	11 in. by 31 in.	12 in. by 36 in.
Diameter and pitch of Steel Leading Screw	1½ in. by ½ in.	1½ in. by ½ in.
"    of Back Surfacing Shaft	1½ in.	1½ in.
Number and width of Speeds on Cone Pulley	4 by 2½ in.	4 by 2½ in.
Diameters of largest and smallest Speed	8½ in. and 8½ in.	10 in. and 4½ in.
Width on face and pitch of Gearing	2½ in. by ½ in.	2½ in. by ½ in.
Diameters of large and small Gear	10 in. and 3½ in.	11 in. and 3½ in.
"    of body and nose of Steel Spindle	1½ in. and 2 in.	1½ in. and 2½ in.
Pitch of the 22 Change Wheels	½ in.	½ in.
Extreme length between Centres	4 ft. 6 in.	6 ft. 6 in.
Approximate Weight	16 cwt.	26 cwt.
Price with both Leading Screw and Back Shaft		
"    Leading Screw only		
Poppet to set over, extra		
Extra length of Bed per foot		
Beds to any length.		

**These Lathes are made for the British Government.**

*THE WEARING PARTS ARE STEEL.*

**BRITANNIA CO., COLCHESTER, England.**

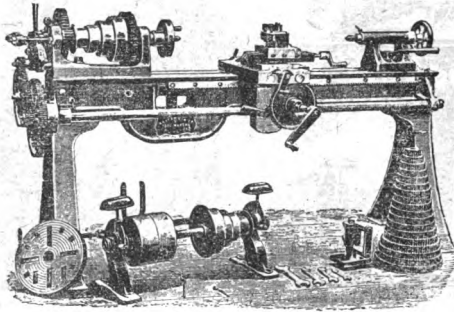
*London Showrooms—100, Houndsditch. All Letters to Colchester.*

6 inch 6 feet

# SELF-ACTING, SLIDING, SURFACING, AND SCREW-CUTTING LATHE.

No. 17.

Any Lathe can be made with  
Cut Gear Wheels at an  
extra charge.



Chucks of every description to  
order.

WITH gap bed accurately planed and surfaced, and bridge piece fitted to gap, double-gearred headstock, steel spindle with conical neck, gun-metal bearings, reversing motion for cutting right and left-hand screws. The loose head has cylinder barrel and left-hand traverse screw, and made to set over for taper turning, if required; steel leading screw accurately cut, and extending full length of bed, with double clam gun-metal nut gripping screw at top and bottom, saddle with long wings, flush top, and grooved for bolting work to when boring; quick hand traverse by rack and pinion, compound slide rest to swivel to any angle, graduated for turning conical, steel draw screws, back following stay, catch and face plates, twenty-two change wheels, index plate, overhead motion, screw keys, etc., etc.

All materials and workmanship guaranteed.

## SPECIFICATION.

Height of Centre, 6 in.; breadth of Bed,  $8\frac{1}{2}$  in.; depth of Bed, 6 in.; width of Gap, 10 in.; depth of gap, 6 in. diameter of Leading Screw,  $1\frac{1}{4}$  in.; pitch of Leading Screw,  $\frac{1}{4}$  in.; diameter of Back Shaft, 1 in.; Change Wheels (22),  $1\frac{1}{8}$  in. pitch; Cone Pulley (4 speeds), 2 in. broad; Large Cone,  $7\frac{1}{2}$  in. diameter; Large Gear,  $8\frac{1}{2}$  in. diameter,  $1\frac{1}{2}$  in. broad,  $\frac{1}{2}$  in. pitch; Body of Spindle,  $1\frac{1}{8}$  in. diameter; Nose,  $1\frac{1}{2}$  in. diameter. Approximate Weight, with 6 ft. bed,  $13\frac{1}{2}$  cwt. Swing in Gap, 12 in.; admits between centres of 6ft. Lathe, 3ft. 6in.

	6 in.
Price, Sliding and Screw-cutting .. .. .	£37 16 0
Price for Self-acting Sliding, Surfacing, and Screw- Cutting (by Back Shaft) .. .. .	44 2 0
Poppet to set over, extra .. .. .	1 0 0
Extra Length of Bed, per foot .. .. .	2 0 0

Many of the above Lathes have been made for the British Government.

This Lathe can be supplied with 7 in. centre Headstocks at £2 extra.

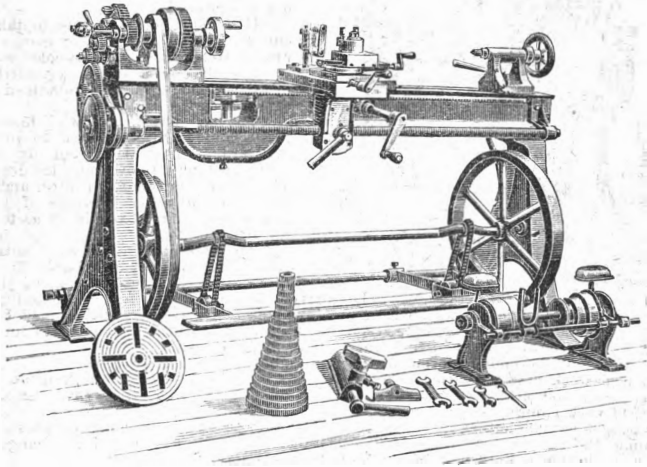
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**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# 5 & 6 IN. CENTRE Self-acting Sliding and Screw-cutting Lathe.

No. 16.



With gap bed accurately planed and surfaced, and bridge piece fitted to gap; double-gear headstock; steel spindle with conical neck; hard steel or gun-metal collars; reversing motion for cutting right and left-hand screws. The loose head has cylinder barrel and left-hand traverse screw, and made to set over for taper turning, if required; steel leading screw accurately cut, and extending full length of bed, with double clam gun-metal nut gripping screw at top and bottom; saddle with long wings, flush top, and grooved for bolting work to when boring; quick hand traverse by rack and pinion; compound slide-rest to swivel to any angle, graduated for turning conical and steel draw screws; back following stay; catch and face-plates; twenty-two change wheels; index plate; treadle motion; screw keys, etc. etc. All materials and workmanship guaranteed. The 5 ft. lathe measures 2 ft. 11 in. between centres; 6 ft. measures 3 ft. 10 in. between centres.

## SPECIFICATION.

Breadth of Bed ... ..	7 inches	5 in. Cone Pulley, 3 speeds	1½ in. broad
Depth of Bed ... ..	5½ "	Large Cone, 6¼ in. diam., smallest,	3¼ in.
Width of Gap ... ..	9 "	Width on face and 5 in. centre,	1½ & 8
Depth of Gap ... ..	5½ "	pitch of Gearing ½ 6 in.	1½ & 7/16
Diameter of Leading Screw ...	1½ "	Diam. of large and ½ 5 in.	6½ & 2½
Pitch of " " " "	¼ "	small gear wheels ½ 6 in.	7½ & 2½
Diameter of Back Shaft" ...	1 "	Diam. of nose of ½ 5 in.	1½
Change Wheels, 22 ... ..	... ¼ in. Pitch	Steel Mandril ... ½ 6 in.	1½
6 in. Cone Pulley, 3 speeds	1½ in. broad		

Approximate Weight, with 6 ft. Bed, 10½ cwt.; 5 ft., 9 cwt.

Price, Sliding and Screw-cutting, 5 in. Centre, 5 ft. Bed ..	£31 10 0
Ditto ditto 6 in. Centre, 6 ft. Bed ..	35 14 0
Extra Length of Bed, per foot .. .. .	2 0 0
If made without Treadle, but with Overhead for Steam Power, 5 in. Centre, 5 ft. Bed .. .. .	30 0 0
Ditto ditto 6 in. Centre, 6 ft. Bed .. .. .	34 0 0
If Self-acting Sliding, Surfacing, and Screw-cutting (by Back Shaft and Leading Screw), extra .. .. .	4 4 0
Poppet to set over, extra .. .. .	1 0 0

**BRITANNIA CO., COLCHESTER, England.**

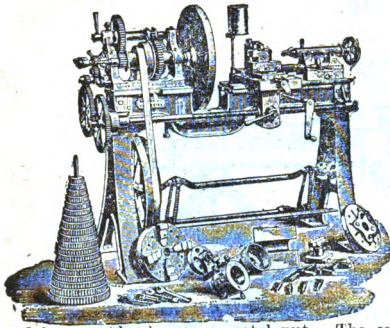
London Showrooms—100, Houndsditch.

All Letters to Colchester

# TREBLE GEARED SCREW-CUTTING FOOT LATHE.

No. 18, 5 in.

No. 19, 6 in.



DESIGNED specially for heavy work by foot power, where steam, gas, or water power is not available.

It is sufficiently strong to take a  $\frac{1}{2}$  in. cut off a 2 in. or 3 in. shaft, or turn a 20 in. or 24 in. plate or wheel without chattering.

Care has been taken to distribute the metal so that strength is obtained without overloading the foot power.

The bed has a gap with loose bridge fitted, and is firmly bolted to substantial standards. The driving or fly wheel is counterbalanced to overcome the dead centre. The crank shaft has two dips, and runs in anti-friction roller bearings of the most improved design, boxed in so as to exclude all dirt, &c., &c.

The treadle is fitted with anti-friction rollers, and chain connections. The leading screw is steel, accurately cut to  $\frac{1}{16}$  in. pitch,

and has double clam gun metal nut. The carriage has a flat face and T slots for bolting work to for boring; it is provided with a jaming nut to fix in any position, and has quick return by rack and pinion. The slide rest is made to swivel, and is graduated to turn to any angle, and provided with an adjusting nut to take up back lash.

It is fitted with reversing motion for cutting right and left hand screws.

The head stock is fitted with treble gearing, disengaging by eccentric movement, and can be changed at pleasure to EITHER SINGLE, DOUBLE, OR TREBLE GEAR INSTANTLY. Steel mandril with conical neck running in gun metal.

The poppet is made either in one casting or with loose bottom and planed sides to set over for turning taper. Steel barrel. Best cast steel centres. Full set of 22 change wheels. Travelling back stay. Face plate and set of steel spanners.

## DIMENSIONS AND PRICES.

	No 18, 5 in. centre.	No. 19, 6 in. centre
Bed, length, depth, and face ... ..	5ft. 0in.	6ft. 0in.
Bed, width, and depth of gap ... ..	5 $\frac{1}{2}$ in. by 7 $\frac{1}{2}$ in.	6in. by 8 $\frac{1}{2}$ in.
Diameter of Leading Screw ... ..	6in. by 5in.	7 $\frac{1}{2}$ in. by 6in.
Diameter of Crank Shaft ... ..	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.
Diameter of Body of Mandril ... ..	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.
Nose of Mandril, Whitworth ... ..	1in.	1 $\frac{1}{2}$ in.
Cone Pulley, 3 speeds ... ..	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.
Diameter of Gearing ... ..	3in., 4 $\frac{1}{2}$ in., and 6in. by 1 $\frac{1}{2}$ in.	4in., 6in., 8in. by 1 $\frac{1}{2}$ in.
Face and pitch of Gearing ... ..	6 $\frac{3}{4}$ in. by 2 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in. by 3in.
Face and pitch of Change Wheels ... ..	1 $\frac{1}{2}$ in. by $\frac{1}{16}$ in.	1 $\frac{1}{2}$ in. by $\frac{1}{16}$ in.
Approximate Weight ... ..	10 cwt.	14 cwt.
PRICE—Complete ... ..	£36 0 0	£46 10 0
“ if Sliding and Surfacing by Back Shaft also ... ..	42 0 0	53 0 0
“ if Sliding and Surfacing only (no Leading Screw) ... ..	40 0 0	51 0 0
“ Extra for Poppet to set over ... ..	1 5 0	1 10 0
“ Less if with Overhead for power instead of Treadle Motion ... ..	2 0 0	3 0 0
“ More or less of bed at per foot ... ..	2 0 0	2 0 0
The various Chucks and Fittings shown in the illustration can be supplied, if desired, at the following prices:—		
Extra large Face Plate, to Swing in the Gap ... ..	1 15 0	2 0 0
4-jaw Chuck ... ..	5 0 0	6 0 0
Fixed steady with 3 adjustable Jaws, top hinged ... ..	2 0 0	2 0 0
8-screw Bell Chuck ... ..	1 5 0	1 10 0
Angle Brackets to Bolt to Face Plate for boring, &c., 2 sizes ... ..	10/- to 15/-	12/6 to 17/6
Clement's Driver, as shown in illustration, instead of ordinary Catch Plate ... ..	£1 5 0	£1 5 0
Hand Rest and 4 Tees to fit on Saddle ... ..	0 15 0	1 0 0
Boring Collar ... ..	1 0 0	1 5 0
Soap Suds Can, with brass cock and stand with swivel to rise and fall ... ..	0 10 0	0 10 0

No. 18, with 5ft. Bed, is 3ft. 2in. between centres. No. 19, 6ft. Bed, 3ft. 6in. between centres.

THE ABOVE LATHES WERE DESIGNED FOR THE BRITISH NAVY.

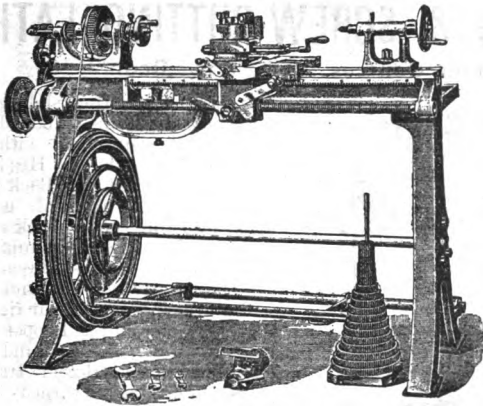
BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.



# No. 15 LATHE.

With 4 or 5 ft. Beds. \* ПИЧУВД.



Overhead Motions similar to that shown on Inkin Lathe can be fitted to any Lathe from £5 5s.

Ornamental Drill Spindle, £2 3s.

**SELF-ACTING** Sliding and Screw-cutting, with 4 ft. gap bed, back geared headstock, cast steel mandrel, conical necks running in hardened collars, steel lock nuts and back centre, cone pulley turned three speeds for gut band, fitted with reversing motion for cutting right or left-hand screws. Compound slide rest, with long bearings, accurately fitted to bed. The top slide is made to swivel, and is graduated to 50° each side of centre to turn cones to any angle. The tail stock has cylinder mandrel, square thread traverse screw, bright turned hand wheel.

The bed is accurately planed, and is 6½ in. wide and 4¼ in. deep. The gap is 4¼ in. deep, 6 in. wide. Steel leading screw, 1½ in. diameter and ¼ in. pitch, the gunmetal nut for ditto is in halves to detach. The lathe is fitted with rack and pinion for quick return. It has a full set of 22 change wheels, to cut from 1 to 60 threads per inch, is fitted with steel centres, face plate, catch plate, double spanner. Strong iron stand, with improved treadle motion, with adjustable outside crank and friction rollers, or with ordinary crank and pitman. The 4 ft. lathe measures between centres 2 ft. 6 in., swings 1 ft. 4 in., in gap. The flywheel is counterbalanced, and has 5 speeds. Weight of 4 in. lathe about 5 cwt.

These Lathes can be fitted with Overheads for Steam Power at 30s. less than as for Foot Power.

*We can fit out gear wheels to this or any other of our Lathes at an extra charge.*

**Price**, 4 in. centre, £25 4s.; 4½ in., £26 15s. 6d.; 5 in., £28 7s. If self-acting and surfacing by back shaft, extra, £4. If with Flat Speed Pulleys, 21/- extra. Set over Poppet, 30/- extra. If with 5 ft. bed, £2 extra.

Quick withdraw motion to slide rest, extra 30/- net.

The 5 in. flat speed belt pulleys have 3 speeds, 3¼ in., 4¾ in., 6¼ in. 1 in. gearing; ¾ in. face by 6¼ in. diameter; 10 in. pitch.

The 4 in. flat speed belt pulleys have 3 speeds, 2½ in., 3¼ in., and 5¾ in. 1 in gearing; ¾ in. face by 5¾ in. diameter; 12 in. pitch

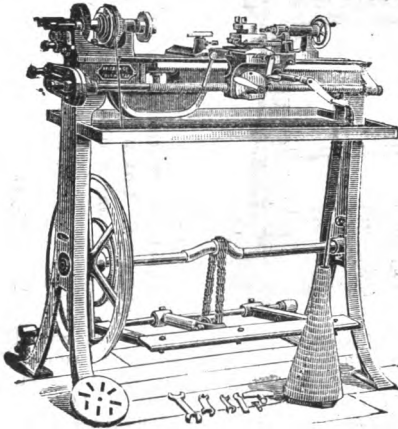
**NOTE.**—The Leading Screw and Wearing Parts are Steel

**BRITANNIA CO., COLCHESTER, England.**

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# No. 14 NEW AND IMPROVED SELF-ACTING & SCREW-CUTTING LATHE.

3½-inch Centres. 3 ft. 6 in Bed.



THIS is a self-acting sliding and screw-cutting Lathe of new design of 3½ inch centre and with 3 ft. 6 in. gap bed. The fast Headstock is well constructed with Back Gearing, hard steel mandril, conical neck, adjusting cone at back end to take up wear, and running in hardened steel collars, three-speed cone pulley, for gut band and fitted with reversing gear to cut right or left-hand screws. The Poppet Head has a steel cylindrical Mandril, a left-hand square thread traverse screw, and bright turned hand-wheel; best steel centres, cone-fitted.

The Saddle is strongly made, with flush top and T grooves for bolting work to, for boring; well scraped and fitted to bed, with adjustable strip to take up wear, and carries a compound slide rest of modern design, swivelling and graduated to turn at any angle; improved tool-holder.

The Bed is cast-iron, V edges, all machine planed, 3 ft. 6 in. long, 4½ inch on face, 3½ deep, with gap 5 inch wide and 3½ inch deep, with bridge piece properly fitted.

The leading screw is steel, accurately cut ¼ inch pitch and one inch diameter, with double gun metal nuts, disengaging by eccentric motion, and the saddle is fitted with rack and pinion for quick return motion.

The Bed is planed at bottom and firmly bolted on to strong cast-iron standards, planed at top faces.

The Crank shaft and Treadle shaft run in self-adjusting swivelling bearings. The Treadle is made with three cast-iron arms, and bright turned shaft, and connected with the bright turned crank shaft by anti-friction chain and roller. The driving wheel is 24 in. in diameter, bright turned, with three top speeds and a small speed for slow motion. A polished tool tray is neatly fitted between the standards, extending back and front to hold tools small work, &c. It has a full set of 22 Change Wheels, 14 pitch ⅝ inch face, Face and Catch Plates, Eccentric Hand Rest and 2 Tees, Spanners, Keys, &c., &c. It will admit 25 inch between Centres, 5¼ inch diameter over Saddle, 7 inch over Bed and 14¼ inch in the Gap.

Height from Centre to floor is 3 ft. 8 in. Approximate Weight, 430 lbs.

Price .. .. £18 18s.

As Bench Lathe only .. 16 5s.

Cut Gear Wheels for this or any other Lathe at extra charge.

Quick Withdraw Motion to Slide Rest extra, 30s.

If with Cone Speed and Driving Wheel for Flat Belt, 21s. extra.

Overhead Motion, £5 5s., similar to Lukin Lathe.

Drill Spindle for Ornamental Turning, 30s. extra.

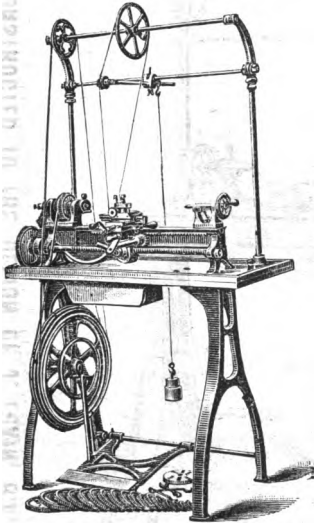
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# LATHE No. 13.

Improved Self-acting, Sliding, and Screw-cutting Gap Bed Lathe, of superior finish, best material and workmanship.



## SPECIFICATION.

THREE-INCH centre, 30 in. gap bed; the headstock is back-gear'd with cast steel spindle. conical necks, steel lock nuts and back centre, coned pulley, turned three speeds for gut band, fitted with reversing motion for cutting right and left-hand screws; compound slide rest on carriage with long bearings accurately fitted and scraped to bed, and well gibbed. The top slide is made to swivel, and is graduated to  $50^{\circ}$  each side of centre to turn cones to any desired angle; strong tool holder with steel screws made to swivel; tail stock of good design, cylinder mandrel, square thread traverse screw, bright turned hand-wheel. The bed (machine planed) is  $3\frac{1}{2}$  in. on face,  $2\frac{3}{8}$  in. deep with gap  $2\frac{1}{2}$  in. deep, and  $2\frac{1}{8}$  in. wide. The leading screw is  $\frac{7}{8}$  in. diameter,  $\frac{1}{2}$  in. pitch, accurately cut; the gunmetal nut is in halves to detach, and lathe is fitted with rack and pinion for quick return motion. It has a full set of 22 change wheels to cut screws from 1 to

60 threads per inch; it is fitted with face plate, catch plate, steel centres, double spanner, and mounted on an iron stand, with polished wood top and drawer; flywheel 20 in. diameter, with four turned speeds, treadle motion, &c., complete. Measures between centres, 19 in., swings,  $10\frac{1}{2}$  in. by  $2\frac{1}{8}$  in. in gap, 6 in. over the bed, and  $4\frac{1}{2}$  in. over the carriage. Total weight, about  $2\frac{1}{4}$  cwt.

Price—Without Ornamental Overhead	..	15 Guineas.
„ with 3 ft. Gap Bed	.. .. .	16 „
„ 3 ft. 6 in. „	.. .. .	17 „

Overhead Motion for Ornamental Turning, as illustration, £3 15s.

Drill Spindle, 30s.

Extra Hard Mandrel and Collars, 30s. extra.

Self-surfacing off Leading Screw, £2 10s. extra.

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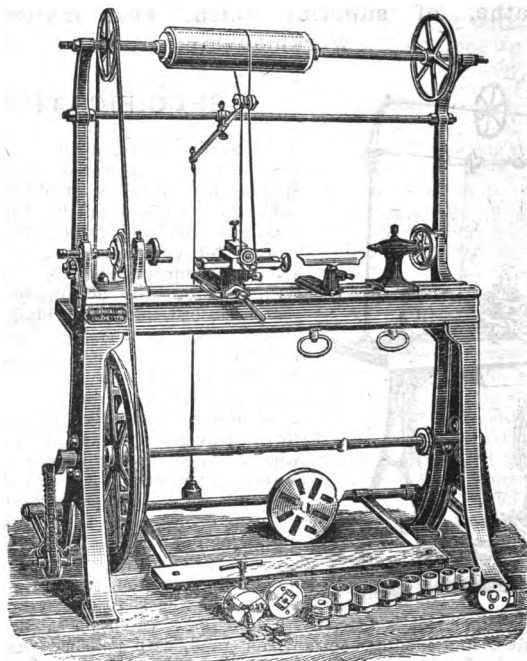
**BRITANNIA CO., COLCHESTER, England.**

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# THE LUKIN LATHE.

FOR ORNAMENTAL TURNING.

LATHES MADE TO ANY DESIGN.



CONSTRUCTED TO THE DESIGN OF J. LUKIN, B.A.

It is fitted with Traversing Mandrel and Six Guides for Chasing Screws, on Microscopes, Telescopes, and similar metal work, or on Box Lids and similar work in wood. A great variety of beautiful ornamental work may be done by suitable appliances.

Price of Lathe, 5 in. centre, 4 ft. 6 in. bed, with Traversing

Mandrel, Six formers .. .. .	£22 10 0
Ornamental Overhead .. .. .	7 10 0
Ornamental Slide Rest .. .. .	15 15 0
Division Plate .. .. .	2 10 0
Plain Slide Rest .. .. .	5 0 0
Ornamental Drill Spindle .. .. .	1 10 0

Price, extra, if bed be 4 ft. 6 in., 12/6; or 5 ft. long, 25/-. Price, extra, of bed with gap, 20/-.

Oval, Eccentric, Geometric, or any of the Chucks or Appliances in our list can be fitted at list price.

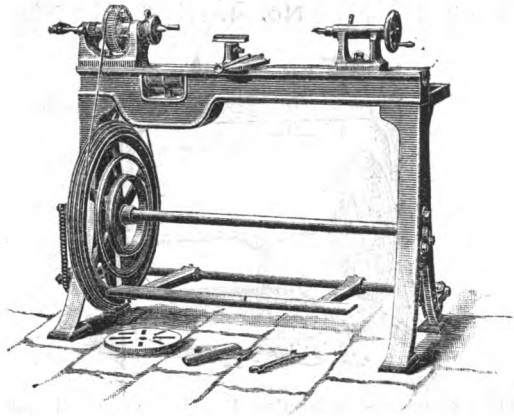
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**BRITANNIA CO., COLCHESTER, England.**

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# IMPROVED FOOT LATHE,

No. 5.



THIS is a Lathe with a heavy Bed, Standards and Flywheel. Bed is 4 ft. long and  $4\frac{1}{2}$  in. on face; total weight of Lathe, about  $4\frac{1}{2}$  cwt. It has an Improved Treadle Motion, combining great power with ease of motion; the bright turned shaft on which wheel is keyed runs in Friction Rollers at each end. The Head is fitted with steel mandrel and collars. The Crank (as illustration shows) is *outside* the left-hand standard, and is slotted, in order that the driving stud may be adjusted to give more or less leverage to increase or decrease power at will of the operator. The Flywheel is counterbalanced to avoid dead centre.

Each Lathe is accompanied by Hand Rest with two Tees, two Face Plates (large and small), two plain Centres, and Spanners.

4 in. Centre ( $\frac{3}{4}$ in. nose) ..	£11 0 0	Back Geared (1 in. nose)	£13 0 0
$4\frac{1}{2}$ " ( $\frac{1}{2}$ " ) ..	11 10 0	" ( $1\frac{1}{2}$ " )	13 15 0
5 " ( $\frac{1}{8}$ " ) ..	12 0 0	" ( $1\frac{1}{4}$ " )	14 10 0

Gap Bed, 20/- extra.

Slide Rests and Chucks, as per list.

Extra Large Face Plate to suit, 20/- extra. 5 ft. Bed, 20/- extra.

A similar Lathe, with 5 in centre, heavier bed,  $5\frac{1}{2}$  in. on face, 5 ft. long, weight about  $5\frac{1}{2}$  cwt.—

Single Geared .. .. £14. Back Geared .. .. £16.

If with 6 ft. bed, 20/- extra. Gap Bed, 20/- extra.

Overhead, similar to the Lukin Lathe, £5 5. Ornamental Drill Spindle, 30/-

Headstocks fitted with extra hard Mandrel and Collars, 30/- extra.

The above Lathes can be fitted with Hooks and Cranks instead of Chains.

The Lathes with 4 ft. Bed will admit about 2 ft. 4 in. between Centres.

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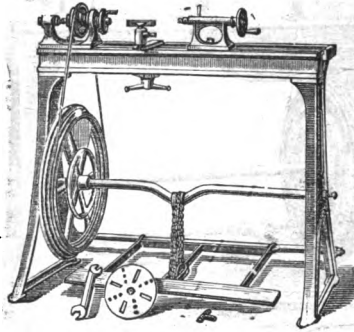
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# IMPROVED FOOT LATHE,

No. 4.



This illustration represents an excellent Foot Lathe especially suited for Gas Fitters, Jewellers, Dentists or Amateurs.

It has a machine-planed iron Bed, 3 ft. long, on strong iron standards, with 4-speed turned fly-wheel, and an easy, light-running treadle movement.

The single-gearred headstock has a steel mandrel, with hard-coned neck running in hard collar.

The back-gearred headstock has a steel mandrel, with reverse cones (adjustable to take up wear), and running in steel collars, steel-coned centre, 3-speed turned coned pulley.

The tailstock has cylinder mandrel, with square thread steel traversing screw and steel-coned centre. Each Lathe is accompanied by hand rest, with two tees, two face plates (large and small), two plain centres, spanner, and tool table. The 3 ft. Lathe takes 1 ft. 6 in. between centres.

Slide rests and chucks as per list.

Ordinary Tees, 4 in. and 9 in.; Extra long Tee, 12 in., extra, 3/6; Gut Band with Hook and Eye, 3/6.

Strength and durability are obtained, in a high degree, without clumsiness. Approximate Weight of 3 ft. 6 in. Lathe, 2 cwt. 3 qrs.

	£	s.		£	s.
3½ in. Centre, ¾ in. nose	8	0	Back Geared, ¾ in. nose	10	0
4 " " ¾ " "	8	10	" ¾ " "	10	15
4½ " " 7/8 " "	9	0	" 1¼ " "	11	10
5 " " 1 " "	9	10	" 1½ " "	12	0

3 ft. 6 in. Bed, 10s. extra.

4 ft. 20s. extra.

If with Gap Bed and Bridge, 20s. extra.

Extra Large Face Plate, to use with Gap Bed, 20s.

Extra hardened Mandrel and Collars, 30s. extra.

Fitted with overhead like the Lukin Lathe, £5 5.

Ornamental Drill Spindle, 30s. extra.

Division Plates to order.

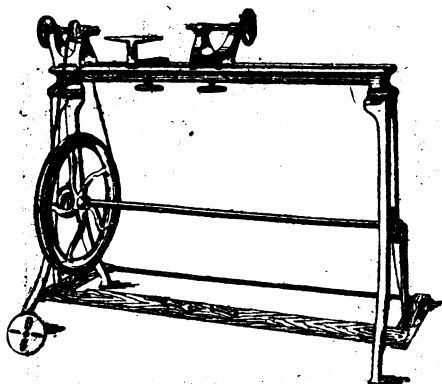
**BRITANNIA CO., COLCHESTER, England.**

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All Letters to Colchester.

# THE BRITANNIA COMPANY'S No. 10 CHEAP WOOD-TURNING LATHE.

A  
MULTUM  
IN  
PARVO  
LATHE.



The BEST  
THAT  
CAN BE  
MADE AT  
THE  
PRICE.

THE very great demand for a cheap but efficient Lathe for wood turning, with long bed and high centres suitable for pattern-makers, joiners and amateurs, has led us to introduce the above, and we fix the price so low as to bring it within the reach of the million.

It is entirely constructed of Iron and Steel except the treadle, which is of hard wood for quietness and lightness.

The planed cast iron bed is 4 ft. long 4 inches wide and 4 inches deep, iron standards, arranged with adjusting swivelling bearings for the steel wheel shaft. The driving wheel has two speeds, and is about 21 inches diameter. The parallel bearings of the Fast Head are split and fitted with screws to take up wear.

The steel mandril is made with a collar forged on, with a  $\frac{1}{4}$  in. nose screwed Whitworth standard, to which most of our ordinary chucks may be at any time fitted; the tail end of this mandril carries a balance wheel. The cone pulley has two speeds corresponding with driving wheel.

Turned steel centres with taper shanks to fit into spindles. Face plate 5 inches diameter, Fork driver Chuck, Hand Rest and 9 inch Tee, Spanner and Belt are sent with each Lathe.

Height from floor to top of Bed, 36 in.	Extreme distance between Centres, 36 in.
Height of Centres from Bed 5 in.	Total Weight .. .. 144 lbs.

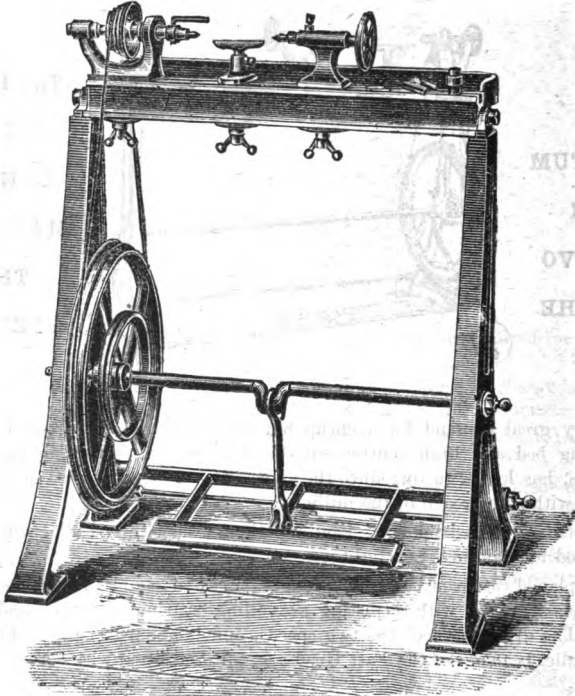
Price complete .. .. . £4 10s.

**BRITANNIA CO., COLCHESTER, England.**

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# NEW SINGLE GEARED LATHE.

No. 8.



3½ in. Centres. 2 ft. 6 in. Bed.

WILL TAKE 16½ INCHES BY 7 INCHES BETWEEN CENTRES.

The above is introduced to supply a demand for a Lathe coming between our No. 3 and No. 4 patterns. It is fitted with gun-metal mountings, and it can be recommended with confidence for general light turning, and for amateurs, clockmakers, etc.

It is thoroughly well made, and very light running. The fast head is fitted with best steel mandrel and best steel collar, both hardened, 4 speed turned cone pulley, nose ½ in. Whitworth; the loose head has steel cylindrical spindle, square thread traverse screw, best steel centres, hand rest and 2 tees, machine-planned cast-iron bed, 3½ in. face, 3 in. deep, securely bolted to cast-iron standards; wrought-iron crank shaft and treadle, working on steel centres, turned speed fly-wheel, tool board, leather driving cord, driver chuck, drill chuck, etc., complete. Weight, 180 lbs.

Price .. .. £6 10s., or with 3 ft. Bed, £7.

Slide rest, to suit, £3. Tools for both hand and slide rest kept in stock.

Any of the chucks in our general list can be fitted to any lathe.

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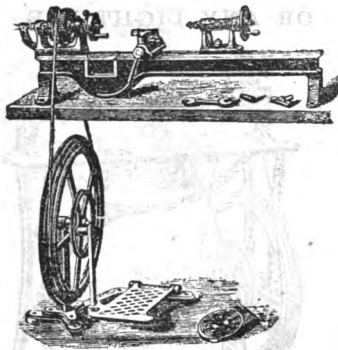
**BRITANNIA CO., COLCHESTER, England.**

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# LATHES BACK-GEARED

## No. 3.



A FIRST-CLASS, well-finished Lathe, with machine-planed iron bed, plain or with gap; back-geared headstock, cast-steel mandrel, conical necks, tail pin running through; adjusting screw, and lock nuts to take up wear; 3-speed bright turned cone pulley; steel centres, tail-stock with cylinder mandrel, square thread traverse screw; eccentric hand rest and 2 tees and catchplate as shown.

**Bed 30 in. long, and 3 in. centres, turning 18 in. by 6 in.**

	£	s.	d.
<b>Price</b> without stand, as Bench Lathe only, with back-geared headstock ... ..	4	0	0
Ditto, with back gear and gap bed ... ..	4	10	0
Ditto, with 3 ft. gap bed like No. 13 lathe, extra ... ..	1	0	0
Face Plate, to suit 5½ in. diameter ... ..	0	10	0
Slide Rest to suit ... ..	2	10	0
Foot Power Motion, to fix under Bench, with 4-speed turned fly-wheel, 20 in. diameter, treadle and frame complete as illustrated ... ..	1	10	0
Substantial Iron Stand complete, with polished wood top and tool drawer, 4-speed turned fly-wheel, 20 in. diameter, treadle, &c. ... ..	2	0	0
Ditto, of a heavier make, with very heavy fly-wheel, as shown in No. 13 Lathe ... ..	2	10	0
Lathes fitted with extra hardened mandrel and collars, extra ... ..	1	10	0
Ditto, division plate and steel index ... ..	1	10	0

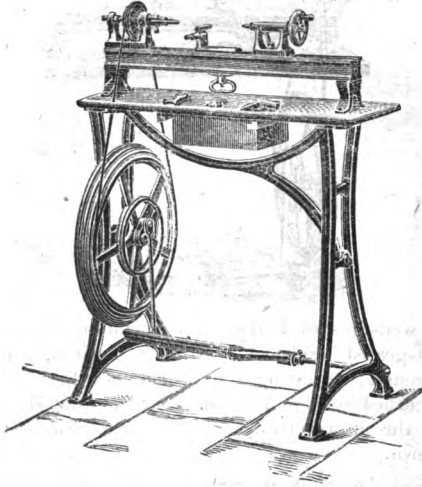
**Can also be fitted with Fret Sawing Appliance, Circular Saws, Emery and Buff Wheels, Chucks, &c.**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

## Nos. 2 and 3 LATHES.

Suitable for Amateurs, Jewellers, Dentists,  
OR ANY LIGHT USE.



### No. 2.

*24 in. bed, 2½ in. centres, turning 14 in. long by 5 in. in diameter.*

Price, without stand, as Bench Lathe only .. .. .	£1 15 0
Or with Stand, Fly-wheel, and Treadle complete .. .. .	3 10 0
Foot-power Motion, with Treadle and Frame, and 14 in. Fly-wheel, as illustration on next page .. .. .	1 0 0

### No. 3.

*30 in. bed, 3 in. centres, turning 18 in. long by 6 in. in diameter.*

Price, without stand, as Bench Lathe only .. .. .	2 5 0
Or with Stand, Fly-wheel, and Treadle complete .. .. .	4 5 0
If with Gap Bed, extra .. .. .	0 10 0
Foot-power Motion, with 20-in. Fly-wheel, Treadle and Frame, as illustrated on next page .. .. .	1 10 0

First-class, well-finished Lathes, with machine-planed iron bed; headstock has steel mandrel with conical neck and adjusting screw and lock nut to take up wear; 3-speed bright turned cone pulley; hardened centres, driver chuck, cylinder mandrel with square thread traverse screw to tail stock, hand rest and two tees. Substantial iron stand with polished wood top and tool drawer, turned speed fly-wheel, and easy treadle motion.

Circular Saws, emery and buff wheels, can be used in these Lathes.

Fret-sawing Appliance, to suit the No. 3 Lathe, which attaches very easily to bed, and is driven by the Lathe, price £1 10s.

If fitted with extra hard Mandrel and Collars, 30s. extra.

**NOTICE.**—This Lathe is now fitted with Stand as No. 6, but Stronger. Weight, complete, 128 lbs.

---

**BRITANNIA CO., COLCHESTER, England.**

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# LATHE No. 6.



THIS Lathe has been designed to meet the demand for a lower priced tool than Nos. 2 and 3 Lathes.

It has a planed iron bed, 20 in. long;  $2\frac{1}{2}$  in. centre heads, which can easily be blocked up to 4 in. for wood turning; will admit 11 in. between centres. It is fitted with a well-designed stand with a turned fly-wheel, 19 in. diameter. Each Lathe has a spanner, hand rest, and two tees, driver chuck and centres, drill chuck, and fork centre for wood.

The "catch-plate" shown in illustration, has been replaced by a more convenient "driver chuck."

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Price, complete - - - £2 15s.

Slide Rest to suit, £2.

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*Even this, our Cheapest Lathe, has a Conical Mandrel.*

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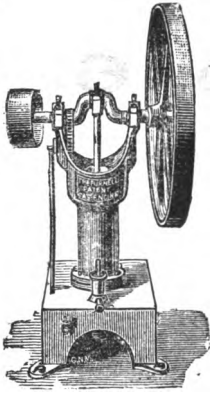
Beware of so-called Cheap Lathes, which have no provision for taking up wear.

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BRITANNIA CO., COLCHESTER.



**NEW PATENT GAS ENGINE.**

EASILY FIXED. EASILY STARTED.

EASILY REPAIRED BY ANY MECHANIC.

**Economical in Gas and Oil.**

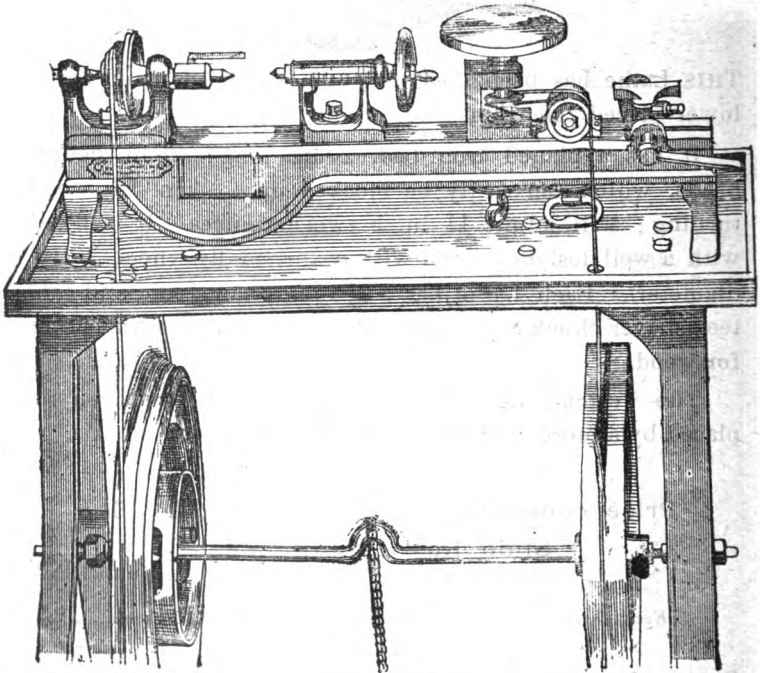
Price,  $\frac{1}{2}$  h.p., £35. 1 h.p., £55.

2 h.p., £75.

**ANY MAKES SUPPLIED.**

See Special Circular.

**LAPIDARY'S LATHE.**



Above illustration shows a very useful lapidary attachment, which can be fixed to any Lathe. By its use stones can be ground and polished upon the horizontal plate by emery or other cutting powders.

Price of the Apparatus without Lathe, from £6.

**BRITANNIA CO., COLCHESTER, England.**

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## APPLIANCES FOR LATHES.

Most of the foregoing LATHES can be made with Hollow Mandrils drilled about 5 inches up, if desired, at from 10/- extra; or hole quite through, from 20/- extra.

If with extra hardened finished Mandrils and collars, extra, 30/-

**SELF-ACTING SCREW-CUTTING LATHES**, can be fitted for Self-acting Surfacing also, either from the Leading Screw (in small sizes) or by Back Shaft (in larger sizes), at from £2 10s. extra.

### BORING COLLARS.

For 3 in. 4 in. 4½ in. 5 in. 6 in. 7½ in. 9 in. 10 in. 12 in. centre.  
 Price 15/- 17/6 20/- 25/- 30/- 37/6 45/- 50/- 55/-  
**BACK STAYS** } 10/- 12/6 12/6 12/6 15/- 20/- 25/- 30/- 35/-

**DIVISION PLATES** can be fitted to any of the foregoing Lathes, either to single or Double Geared Headstocks, and with one, two, three, four, or more circles of holes, including Spring Index Point, at from 10/- to 60/- extra, about 5/- per 100 holes.

**ORNAMENTAL SLIDE RESTS**, from £6 10/- each.

„ **TOOL CUTTER RECEPTACLE**, 15/- Cutters, 1/6 each.

**ECCENTRIC CUTTING INSTRUMENTS**, from £3 10/- each.

**ORNAMENTAL CUTTERS** for above, 18/- to 24/- per dozen.

**DRILLING INSTRUMENT**, for Ornamental Work, from £1 10/-

**ORNAMENTAL DRILLS**, for above, 1/6 and 2/- each.

**VERTICAL CUTTING INSTRUMENT**, for Wheel Cutting, Fluting Slotting, Nicking Heads of Screws £4 4/- Cutters for ditto, 10/- each.

**ECCENTRIC CHUCKS**, with Ratchet Wheel and Detent, Rectilinear Slide and Screw, Ratchet Nose, at £8, £12 and £15, according to size and construction.

**OVAL CHUCKS**, at £9, £12 10/-, and £16, according to size and construction.

**GEOMETRIC CHUCKS**, from £25 to £90.

**ORNAMENTAL OVERHEADS**, as No. 13, from £4 4/-

„ **DRILL SPINDLES**, from 30/-

Metal Spinning can be done on almost all our Lathes. See our Lathe Book, page 139.

**SURFACE PLATES**, cast from specially prepared close grained iron, carefully planed and scraped perfectly true; well ribbed, thick and heavy, turned handles, fitted with lock nuts, 15 in. by 9 in. £2 15/- 18 in. by 14 in. £4 15/-

## LATHE HEADSTOCKS.

Of superior quality, new designs, as shown on our Lathes. Complete with Face and Catch Plates, Hand Rest, and Two Tees.

Under 3½ in. have no Face Plate. Face Plates are charged extra for Lathes under 3½ in.

Price, 2½ in 3 in. 3½ in. 4 in. 4½ in. 5 in. 6 in. 7½ in. 9 in. 10 in. 12 in.  
 Singlegeared } 25/- 35/- 70/- 80/- 90/- 100/- 120/- 160/- 200/-  
 for gut or flat band }

Back geared for gut 70/- 110/- 125/- 140/- 150/- 190/-

Extra strong for flat band 260/- 290/- 330/- 450/- 600/-

Extra hard steel mandril and collars from 30/- extra.

Back geared Headstocks for flat band, 6 in. and under, 21/- extra.

**BRITANNIA CO., COLCHESTER, England.**

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# LATHE CASTINGS IN ROUGH OR PART FINISHED.

## STRAIGHT LATHE BEDS.

Cat. No.	Length.		Face.		Depth.		Price of Castings in rough			Price, Machine Planed			Gap Beds in the rough			Gaps fitted in and planed		
	ft.	in.	in.	in.	in.	in.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
6	0	20	×	2	×	2	0	3	6	0	5	6	—	—	—	—	—	—
2	2	0	"	2	"	2	0	6	0	0	9	0	—	—	—	—	—	—
3	2	6	"	2½	"	2½	0	7	6	0	11	6	0	10	6	1	1	0
4	3	0	"	4	"	3½	0	13	0	1	6	0	0	18	0	2	0	0
4	3	6	"	4	"	3½	0	15	0	1	10	0	1	0	0	2	5	0
4	4	0	"	4	"	4	1	0	0	1	17	0	1	7	6	2	15	0
5	5	0	"	5½	"	5½	1	10	0	2	15	0	2	0	0	3	15	0
5	6	0	"	5½	"	5½	1	15	0	3	2	6	2	5	0	4	5	0

## SCREW CUTTING LATHE BEDS, WITH GAPS.

Catalogue No.	Length.		Face.		Depth.		Price of Castings in the rough.			Price with Gaps fitted in & planed.		
	ft.	in.	in.	in.	in.	in.	£	s.	d.	£	s.	d.
13	2	6	×	3½	×	3	0	18	0	2	0	0
13	3	0	"	3½	"	3	1	0	0	2	5	0
15	4	0	"	6	"	4½	1	10	0	3	0	0
16	5	0	"	7	"	5½	2	5	0	4	10	0
16	6	0	"	7	"	5½	2	12	6	5	5	0
17	6	0	"	8	"	6	3	7	6	6	0	0
17	7	0	"	9	"	7	4	7	6	8	0	0

Larger Lathe Beds to any size to order.

## LATHE DRIVING WHEEL CASTINGS.

	For Gut.						For Flat Belt.			
Diameter, inches	14	18½	20	20	24	27	27×1¼	27×1¼	27×1¼	27×2
Weight, lbs.	17	28	36	59	82	124	113	130	125	183
No. of Speeds	3	2	4	4	4	5	3	4	3	4
Price in rough	3/-	4/9	6/-	10/-	14/6	21/-	19/-	22/-	21/-	30/6
Bored and turned	7/-	9/-	12/6	17/6	25/6	34/-	32/6	35/6	33/6	52/-

## LATHE CRANK SHAFTS.

	Single Throw.				Double Throw.			
For Lathes of Length Bed	2ft. 6in.	3ft.	3ft.	4ft.	4ft.	5ft.	6ft.	7ft.
Rough forgings	4/-	4/6	7/6	8/6	12/6	16/6	18/6	21/-
Shaft and Dips turned bright	8/-	9/-	14/-	17/-	22/-	28/-	32/-	36/-

Anti-Friction Roller Bearings for Crank Shafts, 17/6 per pair.

## CHANGE WHEELS FOR SCREW CUTTING LATHES.

No. . . . .	14	12	10	8	7	6
Pitch . . . . .	inch ⅜ full	½ full	⅝	¾	⅞ full	1 full
In Rough . . . . .	12/6	16/6	30/-	50/-	70/-	95/-
Bored & turned and key ways cut	30/-	37/-	51/-	67/-	85/-	108/-

Special quotations for Bevel and Mitre Wheels, Racks, etc.

## COMPOUND SLIDE REST CASTINGS.

For Lathes of Height Centre	2	2½	3	3½	4	4½	5	6	7	8	10 in.
Price, Rough . . . . .	2/3	2/3	2/9	4/-	5/6	6/9	11/-	13/-	—	22/-	40/-
„ Planed . . . . .	6/-	6/-	9/-	11/6	16/-	18/6	22/-	30/-	38/-	60/-	100/-

⚙️ Cut Gear Wheels of any size to order.

**BRITANNIA CO., COLCHESTER, England.**

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# Castings for Lathe Headstocks and Rests.

Catalogue No.	Height of Centres. Inches	Component Parts of Sets.	Price in the rough.			Do. Heads Bored and Planed.		
			£	s.	d.	£	s.	d.
		<b>SINGLE GEARED.</b>						
2	2½	Headstock, Cone Speed, Driver Chuck, Poppet, Hand Wheel, Cap, Barrel and Screw, Mandril, Cast Steel for Centres, Holding down Plates, Hand Rest and two Tees ... ..	0	10	0	0	14	0
3	3	Ditto and Locking Handle... ..	0	12	0	0	17	0
4	3½	Ditto and Face and Catch Plates ... ..	1	5	0	1	14	0
4 or 5	4	Ditto ditto ... ..	1	7	6	1	17	6
4 or 5	4½	Ditto ditto ... ..	1	10	0	2	1	0
4 or 5	5	Ditto ditto ... ..	1	15	0	2	7	0
5	6	Ditto ditto ... ..	2	5	0	2	19	0
		<b>BACK GEARED.</b>						
3	3	Headstock, Cone Speed and Pinion, two Gear Wheels and Pinion, Catch Plate, Poppet, Hand Wheel and Handle, Cap, Barrel and Screw, Back Cone, Locking Handle, Gear Knob and Bolt, Mandril, Tail Pin, Cast Steel for Centres and Back Shaft ... ..	0	15	0	1	1	6
4	3½	Ditto and Face Plates and Gun Metal Bushes	1	10	0	2	0	0
4 or 5	4	Ditto ditto ..	1	15	0	2	7	0
4 or 5	4½	Ditto ditto ... ..	2	0	0	2	13	0
4 or 5	5	Ditto ditto ... ..	2	5	0	2	19	0
16	5	Ditto Gut Speed	3	3	0	3	19	0
16	6	Ditto ditto ... ..	3	7	6	4	3	6
16	5	Ditto Flat Speeds with Eccentric Back Barrel and Shaft ... ..	3	7	6	4	4	0
16	6	Ditto with ditto ... ..	3	10	0	4	6	6
17	6	Ditto ditto ... ..	5	17	6	7	7	6
17	7	Ditto ditto ... ..	6	10	0	8	2	0

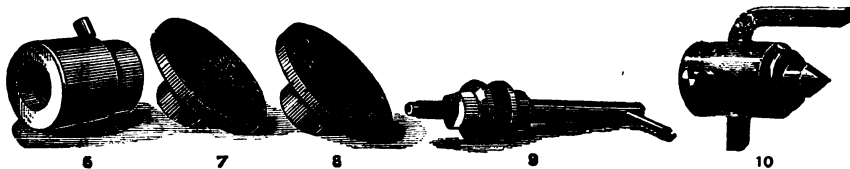
**BRITANNIA CO., COLCHESTER, England.**

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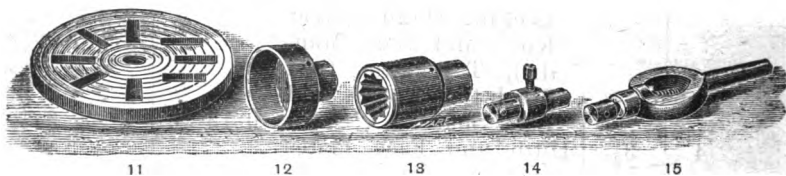
# USEFUL LATHE CHUCKS, &c.



No.		£	s.	d.
1	Pronged Chuck, for wood, $\frac{3}{8}$ in. shank ..	0	2	6
2	Cross or Four-blade Chuck, for hard wood, $\frac{3}{8}$ in. shank ..	0	3	0
3	Square tapered-hole Chuck, to suit ordinary brace bits, $\frac{3}{8}$ in. shank ..	0	3	0
4	Solid Gunmetal Chuck, $\frac{3}{8}$ in. shank, face left solid and plain to turn to requirements ..	0	1	6
5 & 6	Main Chuck, turned and tapped to fit nose of mandrel, and with $\frac{3}{8}$ in. hole at other end to receive the "Essex" or other small chucks ..	0	7	6



7	Flange Chuck, 2 in. diameter, with taper screw for wood ..	0	6	0
	Ditto 4 in. diameter ..	0	7	6
8	Flange Chuck for attaching flat wood to, bored and tapped to fit mandrel nose, and drilled, countersunk at back, 3 in. diameter ..	0	5	0
	Ditto, ditto, 6 in. diameter ..	0	7	6
9	Mandrel with screw collars for holding saws or emery wheels ..	6/-, 8/-, 10/6, 12/6		
		6, 8, 10, 12 ins.		
10	Driver Chucks ..	10/- and	0	12 6



11	Face Plates, 6 in. 10/-; 8 in. 15/-; 12 in. 20/-; 16 in. 30/-; 18 in. 35/-			
12	Gunmetal Cup Chucks, of various diameters $\frac{1}{2}$ in., 2/6; 1 in. 3/-; 1 $\frac{1}{2}$ in., 4/-; 1 $\frac{1}{2}$ in., 5/-; 2 in., 6/6; 2 $\frac{1}{2}$ in., 8/-; and 3 in., 10/- each ..	The set	1	19 0
13	Self-centring Chuck for wood, with conical hole, ribbed longitudinally ..	5/- and	0	7 6
14	Drill Chuck, $\frac{3}{8}$ in. hole, with set screw and extra plug for small drills, $\frac{3}{8}$ in. shank ..		0	4 6
15	Lathe Carriers, Steel Screws, Turned Shanks, $\frac{3}{8}$ in. 1/4; $\frac{1}{2}$ in. 1/8; $\frac{3}{4}$ in. 2/-; 1 in. 2/6; 1 $\frac{1}{2}$ in. 3/-; 1 $\frac{1}{2}$ in. 3/6; 1 $\frac{1}{2}$ in. 4/6; 2 in. 5/-.			
	Square, Half-Round and Female Centres from 1/6 to 2/6 each.			
	Grindstones, with troughs, for fixing on No. 9 Mandrels, 4 in. 3/6; 5 in. 4/-; 6 in. 5/-.			

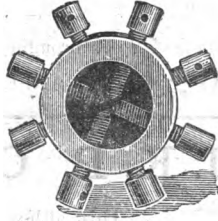
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# USEFUL LATHE APPLIANCES.

## BELL CHUCKS.



Outside diameter.	Inches—	2	3	4	5	6	7	7½	10
Four Screws .. ..		14/-	15/-	17/6	22/6	25/-	32/6	38/-	50/-
Eight Screws .. ..		14/-	18/-	22/-	25/-	30/-	38/-	45/-	60/-

Oval, Eccentric, and Ornamental Chucks made to order.

Ornamental Rests, Drill Spindles, Cutters, etc.

Turning Tools for Wood or Metal, for Hand, 1/-, 1/6, and 2/- each. Ditto, for Slide Rests,  $\frac{3}{8}$  in., 1/-;  $\frac{1}{2}$  in., 1/3;  $\frac{5}{8}$  in., 1/6;  $\frac{3}{4}$  in., 1/9.

Screw Chasing Tools, internal and external, price per pair, Handled, from 40 to 12 threads per inch, 3/-; from 11 to 6 threads per inch, 4/-

• Metal Spinning Tools, 2/- each.

Taps, Taper or Plug.

Size	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$ inch.
Price	2/-	2/-	2/-	2/6	2/6	3/-	4/-	5/-	7/-	8/-	9/- each.

Boring Bars .. 2/6 3/- 3/- 4/- 5/- each. Cutters, 6d. each.

Swivel Cutter Bars 4/6 5/6 5/6 7/- 8/6 „ „ „

Plain Drills, 2d., 3d., 4d., and 6d. each. Milling Wheels, with Handles, 2/- each.

Circular Saws : 4 in., 4/-; 5 in., 5/6; 6 in., 7/-; 7 in., 8/-; 8 in., 9/6 each.

Platforms for ditto, with adjustable tables, 6 in. by 8 in., 12/6;  
8 in. by 12 in., 15 -

Emery Wheels, 3 in., 3/-; 4 in., 4/-; 6 in., 4/6.

Buff Wheels, 3 in., 1/-; 4 in., 2/- Polishing Brushes, 1/- each.

Wire brushes, 2/6, 2/-, and 1/6 each. Polishing Bobs, 2/- each.

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# THE ESSEX CHUCK.



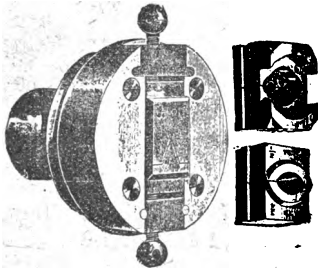
To take up to  $\frac{1}{4}$  in. Drills .. .. . 10/-

Size larger, to take  $\frac{1}{2}$  in. Drills .. .. . 25/-

Made of Steel throughout.

A CHEAP AND DURABLE CHUCK.

# THE J. K. P. CHUCK.



This, although not self-centering, is a very useful Chuck.

It holds tighter than many others, and takes irregular shaped objects.

It can also be set Eccentric.

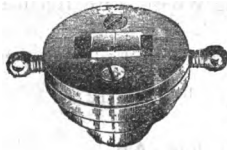
Price, with one set of Jaws .. .. . 50/-

Jaws, per pair, extra, 10/-, as under:

No. .. ..	1	2	3	4	5
Holds from	$\frac{1}{4}$ to $\frac{3}{8}$	$\frac{1}{2}$ to $\frac{3}{4}$	$\frac{3}{4}$ to 1 in.	$\frac{5}{8}$ to $\frac{3}{4}$	$1\frac{1}{8}$ to $1\frac{1}{4}$

# NEW CHEAP DIE CHUCK.

Is Simple, Durable, and Remarkably Cheap!



Unlike Scroll Chucks, they can be used either concentric with or eccentric to the Lathe centre. They have back plates with plain hole, ready for screwing to fit any Lathe. They have a wide range of work, and, from their simplicity of construction, are free from liability to get out of order.

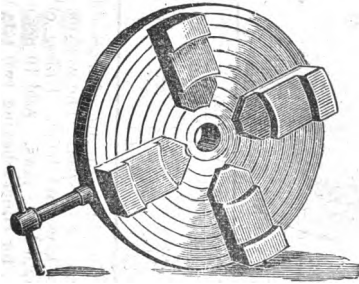
Diameter.	Size of Lathe, to suit.	Range.	Price.
$2\frac{1}{4}$ inch	$2\frac{1}{2}$ inch to $3\frac{1}{2}$ inch	$\frac{1}{8}$ inch to $\frac{1}{2}$ inch	10/-
$4\frac{1}{2}$ "	4 " to 6 "	$\frac{1}{2}$ " to 1 "	15/6

Fitting to Lathes, extra, 2/6.

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## INDEPENDENT 4-JAW CHUCKS.

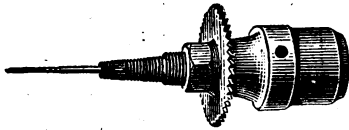


6 inch	..	..	60/-
8 "	..	..	80/-
9 "	..	..	90/-
10 "	..	..	100/-
12 "	..	..	120/-

Larger sizes up to 20 inches diameter, per inch, 10/-

*Above are extra strong, with wrought jaws, and more durable than those generally sold.*

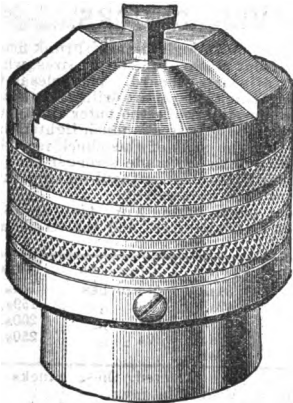
## THE JEWELLER'S CHUCK



Is a valuable appliance to the mechanic or amateur. It carries drills, circular saws, and polish-brushes and polishing bobs.

Price 7/6; Saws to suit 2 6; Polishing Brushes, 1/6;  
Emery Wheels, 2/- each.

## WHITON'S "1883" DRILL CHUCK



These Chucks are easily attached to any Lathe or Drill by a taper plug. All the parts are of steel, and thoroughly made.

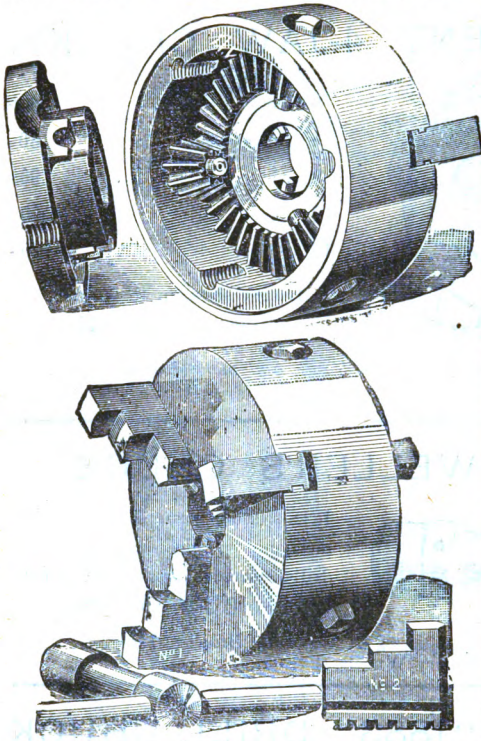
No. 1, 2 in. diameter, holds Drills from 0 in. to  $\frac{9}{16}$  in., 17/-

No. 2, 2½ in. diameter, holds Drills from  $\frac{1}{8}$  in. to  $\frac{3}{4}$  in., 21/-

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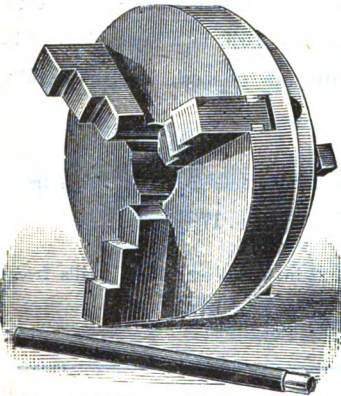
# WHITON'S PATENT GEARED SCROLL CHUCK.



DIAMETER	WEIGHT ABOUT	PRICE	DIAMETER	WEIGHT ABOUT	PRICE
2½ inches	2 pounds	30s.	6 inches	12½ pounds	71s.
3½ "	3 "	42s.	7½ "	20 "	80s.
4½ "	6 "	50s.	9 "	35 "	92s.
5 "	8½ "	59s.	12 "	60 "	125s.

The outer shells of all chucks up to and including 5 in. arc of malleable iron, and the jaws, scrolls, pinions, &c., of all sizes are of steel. The workmanship is first-class throughout. Price list includes keys and bolts. Unless otherwise ordered, these chucks are always supplied with lathe jaws. Add 10 per cent. for chucks having four jaws. Add 20 per cent. for chucks having two sets of jaws (lathe and drill).

## WHITON'S IMPROVED LEVER CHUCKS.



A heavy band of wrought iron is shrunk firmly around the front plates of the larger sizes, which are thus greatly strengthened. The holes in the scroll for receiving the lever are drilled into bosses cast for the purpose, while the outer rim of the scroll between these bosses is much lighter than formerly; thus the parts of this chuck receiving the heaviest strains are made stronger than in other chucks of this class, without making them inconvenient from over weight.

The front plates of the 3 in., 4 in., and 6 in. sizes are of malleable iron, and the scrolls and jaws of steel.

DIAMETER	PRICE	DIAMETER	PRICE
3 inches	34s.	15 inches	134s.
4 "	42s.	18 "	159s.
6 "	67s.	21 "	200s.
9 "	88s.	24 "	250s.
12 "	109s.		

Unless otherwise ordered, these chucks are always supplied with lathe jaws.

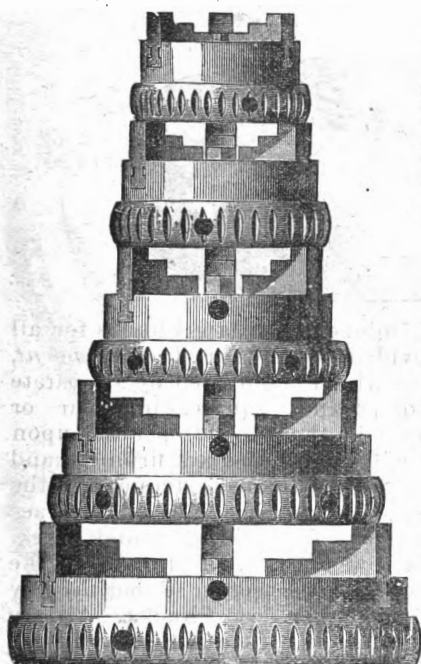
Add 10 per cent. to above list for chucks with four jaws. Add 20 per cent. to above list for chucks with two sets of jaws (lathe and drill).

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# WHITON'S IMPROVED AMATEUR CHUCKS



ARE very neat in design, and are intended for amateurs' use on foot and light power lathes, and for all classes of light work.

Although very light, they are strong and durable, the shell being made of malleable iron and the scroll and jaws of steel.

They are intended for attachment by means of a face plate.

They operate by hand or lever.

Diameter.	Weight about	With Lathe Jaws (as shewn in sketch)	With Lathe and Drill Jaws.
2 inches	$\frac{3}{4}$ pounds	19s.	24s.
2 $\frac{1}{4}$ "	1 " "	21s.	26s.
3 " "	1 $\frac{3}{4}$ " "	23s.	28s.
4 " "	3 $\frac{1}{2}$ " "	27s.	34s.
5 " "	5 " "	32s.	38s.

*Above Prices include Levers and Face Plate Screws.*

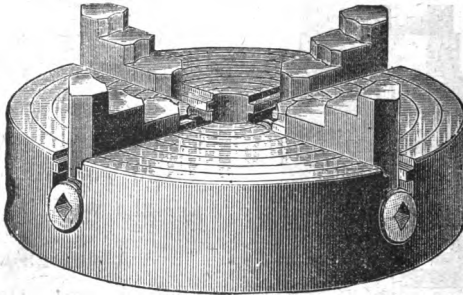
When ordering chucks, it is necessary to send a chuck which exactly fits your mandrel. When chucks require fitting, an extra charge is made, usually about 10s. for face plate, &c.

Other American Scroll Chucks to order at usual lists.

**BRITANNIA CO., COLCHESTER, England.**

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## WHITON'S NEW AMATEUR INDEPENDENT REVERSIBLE JAW CHUCKS.



AN entirely new line of Independent Jaw Chucks for all kinds of light work, provided with 3 or 4 *independent, reversible steel jaws*, each of which is operated by a separate screw. Every variety of round, square, irregular or eccentric work may be held in them to be operated upon by the tool. The Chucks will hold with great firmness, and will take pieces considerably larger than the diameter of the Chucks. All are provided with circular lines on the face by which to set the jaws true for holding round work. There are no projecting screw heads. The thread on the screws extends to the outside of the Chuck, so that the jaw has a longer traverse than in other Jaw Chucks. All are attached to the lathe by means of a face plate, screws for which accompany each Chuck. The Chuck may be very readily taken apart.

The sizes above 6in. are only made with 4 Jaws.

### PRICES.

Diameter.	Weight.	3 Jaws.	4 Jaws.
2 inch ...	$\frac{3}{4}$ pound ...	27/- each ...	34/- each
2 $\frac{1}{2}$ " ...	1 $\frac{1}{4}$ " ...	32/- " ...	38/- "
3 " ...	2 " ...	36/- " ...	42/- "
4 " ...	4 " ...	42/- " ...	50/- "
5 " ...	5 $\frac{1}{4}$ " ...	50/- " ...	59/- "
	Price.		Price.
6 inches diam. ...	75/- each	15 inches diam. ...	146/- each
7 $\frac{1}{2}$ " " ...	84/- "	18 " " ...	184/- "
9 " " ...	96/- "	21 " " ...	230/- "
12 " " ...	125/- "	24 " " ...	271/- "

BRITANNIA CO., COLCHESTER, England.

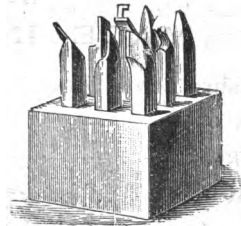
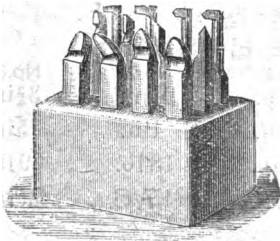
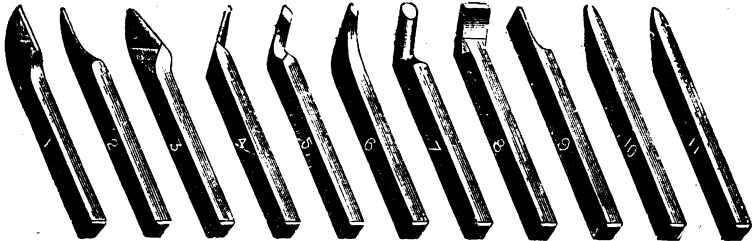
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# SLIDE REST TOOLS

IN GREAT VARIETY, MADE OF THE VERY BEST STEEL.  
 The Patterns most generally used are: No. 1 to No. 19.

SOLD SINGLY, OR IN SETS.

	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$ inch
	1/-	1/3	1/6	1/9 each.
No. 20	{	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$ inch.
		4/6	5/-	7/- each.
No. 21	{	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$ inch.
No. 22		2/6	3/-	5/- each.



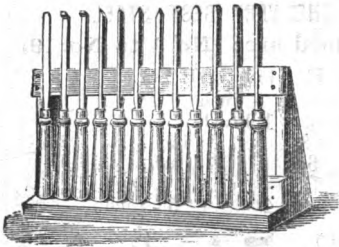
In sets of 12 with block.  
 $\frac{3}{8}$  in. 13/-,  $\frac{1}{2}$  in. 16/-,  $\frac{5}{8}$  in. 19/6,  $\frac{3}{4}$  in. 22/9  
 Made of special tool steel.

In sets of 9 with block.  
 Made of very best steel.  
 $\frac{3}{8}$  in. 10/-,  $\frac{1}{2}$  in. 12/6,  $\frac{5}{8}$  in. 15/-,  $\frac{3}{4}$  in. 17/6

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# LATHE TOOLS.

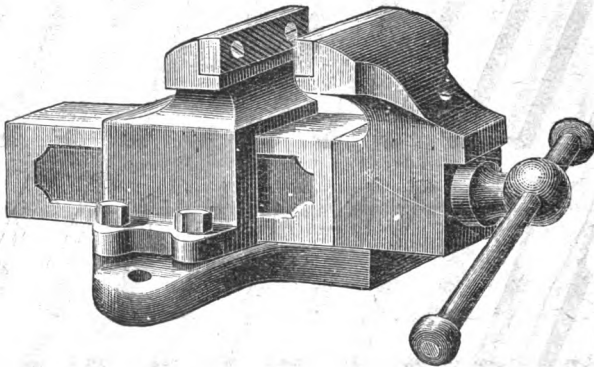


Hand Turning Tools in great variety, 1s. each, 10s. per dozen.

Larger sizes, 1s. 3d., 1s. 6d., and 2s. each.

Long Handles if specially ordered.

Stands to hold Tools, from 2/6 each.



## PARALLEL BENCH VICES,

With Steel Jaws,

MADE IN THREE SIZES.

	No.1.	No.2.	No.3.
Measure across jaw ...	2½ in.	3½ in.	3¾ in.
Will open ...	3½ in.	4 in.	5 in.
Weight ...	11 lb.	18 lb.	29 lb.
Price ...	10/6	17/6	25/-

Castings and forgings for above Vice in the rough 4/- 6/9 10/-  
If planed and the screw turned and cut ... 7/6 12/- 18/-

**BRITANNIA CO., COLCHESTER, England.**

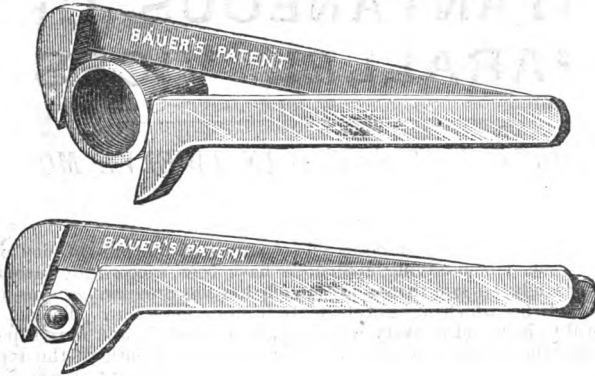
London Showrooms—100, Houndsditch. All Letters to Colchester.



SELF-ADJUSTING, SELF-GRIPPING AND SELF-ACTING  
**LINK SPANNER & PIPE WRENCH,**

*For Bolts, Nuts, Tubes, Gas Pipes, &c., &c.*

**The Best and Cheapest.**



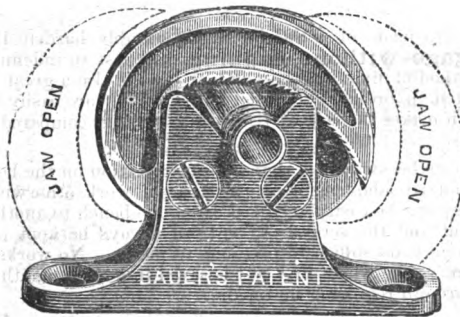
**Many Thousands in Use.**

5 in., 1/8; 8 in., 2/8; 12 in., 4/-; 15 in., 5/-; 18 in., 6/-; 24 in., 8/-

It is made entirely of steel and acknowledged to be the best shifting spanner ever seen; also the best pipe wrench, as it grips from the smallest to the largest size instantly.

INSTANTANEOUS SELF-ADJUSTING AND SELF-ACTING  
**TUBE AND BOLT VICE.**

No. 1 holds 1/4 in. to 1 1/4 in. Tubes,  
 &c., 7/6.



No. 2 holds 1/4 in. to 2 1/2 in. Tubes  
 &c., 15/-

This is the handiest and best, as it grips automatically and works in any position. It weighs only about one-fifth of the old-fashioned cast iron Tube Vices.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

Over 10,000 of these Vices in Use.

# INSTANTANEOUS GRIP. PARALLEL VICES.

*THE FIRST COST SAVED IN TWELVE MONTHS.*

ALTHOUGH one of the most noticeable features of the present day is the extent to which labour-saving appliances have been successfully introduced, yet it may safely be said that in no branch has less progress been made than in Vices, articles which are so commonly in use everywhere. The old screw vice is still to be found in every workshop, large or small, and were it possible to estimate the amount of time spent in a twelve month in the repeated screwing up and unscrewing, it would show a great amount of mis-directed energy and a startling amount of wasted time. Fig. 1 represents one of the Engineer's Vices with instantaneous grip. These Vices are invaluable in enabling a man to fasten **INSTANTLY** any size of work. By raising the handle to a vertical position, the Sliding or Loose Jaw is at liberty to be moved, and can be adjusted at once to any thickness of article within the scope of the Vice. The work is held in one hand, and the loose jaw is, with the other hand, pushed against the work, and **by half-a-turn of the handle instantly fastened, all screwing being entirely dispensed with. These Vices will stand any amount of hard usage. The Grip is certain** and cannot relax, and from the fewness of working parts, it is almost an impossibility for them to get out of order.

The Racks are made of a Special Steel, suitably hardened, and as they **merely engage without rubbing**, will last an indefinite length of time. The method of fixing the loose Steel Jaws is also a great improvement over that adopted in ordinary Parallel Vices. They are easily removable at any time, which makes the cost of re-cutting trifling, compared with that of Wrought Vices.

The Vices can be swivelled round to any position on the bench, and are therefore particularly adapted for many classes of work otherwise bad to get to a Vice. They can be easily removed from one bench to another by taking off the wing nut and the screws. They can always be kept clean without trouble, as five seconds suffice to take one to pieces. No workshop ought to be without them. The whole first cost is saved in twelve months in economy of time, and through requiring no repairs.

See illustrations and Prices next page.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

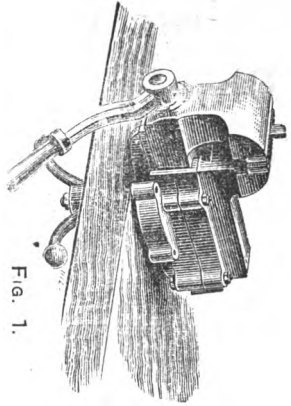


FIG. 1.

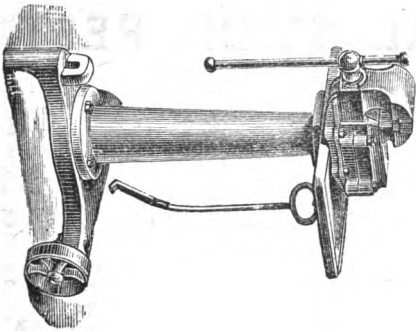


FIG. 2.

# INSTANTANEOUS GRIP ENGINEERS' VICES.

For description see page 102.

In various sizes and Styles for Engineers, Mechanists, Founders, Gun Makers, Blacksmiths, Sewing Machine Makers, Brass Finishers, Amateurs, Jewellers, Dentists, &c.

## BENCH VICES.

No. 0	E 3 inch Jaws, to open 3 inches	...	...	...	£1 7 6
01	E 3½	" 4	" "	" "	1 12 0
1	E 5	" 5	" "	" "	1 18 0
2	E 6	" 6½	" "	" "	2 5 0
3	E 7	" 8½	" "	" "	3 5 0

N.B.—These Vices, from 5 in. Jaws and upwards, are supplied with Fast Handle, as shown in Fig. 1, except specially ordered with long Loose Handle, as shown in Fig. 2. For ordinary work and particularly where there is much changing in and out of the Vice, the Fast Handles are certainly preferable, the Loose Handle only being recommended for very heavy Work.

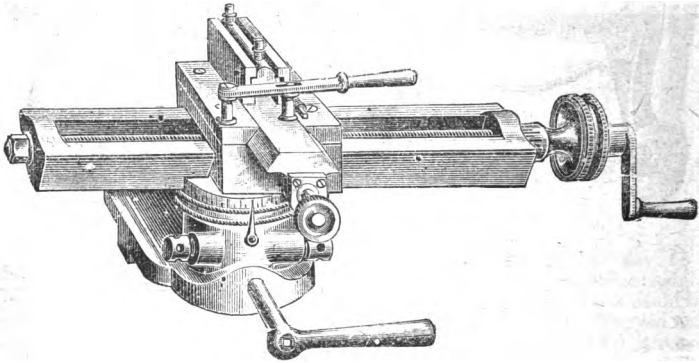
For General Work No. 2-E and No. 3-E Vices are particularly recommended.

## PORTABLE VICES.

No. 2	S 6 inch Jaws, to open 6½ inches	...	...	...	£4 15 0
3	S 7	" 8½	" "	" "	6 0 0

# THE BRITANNIA COMPANY'S ORNAMENTAL SLIDE REST,

As supplied with Lukin Lathe.



THE above illustration represents our Ornamental Slide Rest, constructed to suit a 5-in. Lathe, and embodying all the most material and useful improvements. It is arranged with a gun-metal cradle planed to fit the Lathe bed and slide along it to any part, and planed at top to receive an eccentric socket at right angles to the bed. The socket is 12 inches long, planed parallel at sides to slide along the gun-metal cradle, and adjust to any distance from axial line of centres. Within it is an eccentric shaft with eye and nut, a half turn of which rigidly secures it to the Lathe Bed. At its top rim it is turned and screwed, and fitted with a gun-metal ring with milled edge to turn by thumb and finger, to adjust the height of the cutter. The longitudinal slide is 12 inches long, made with a turned shank to fit into the socket of eccentric slide, and swivel to any angle, its circular bottom being graduated to 50° each side of centre. Along its upper face are graduations in 10ths of an inch, and it is fitted with a steel draw screw having 10 threads per inch, with cones at each end to take up wear, and with a split gun-metal nut to adjust to take up back lash. On the collar of the screw are 20 divisions to give an adjustment to 200ths of an inch, and it has a long milled edge knob for thumb and finger adjustment, and grooved for gut to enable it to be driven from overhead gear; it also has a square at its end fitted with crank and handle. The top slide is made of gun metal, fitted to longitudinal slide by loose adjusting strips, with a transverse slide carrying Tool Holder to suit  $\frac{1}{8}$  inch tools, and actuated by a milled head thumb screw and garter slide, screwed to 20 per inch, graduated by an ingenious contrivance to 25 divisions, giving an adjustment of the tool to the greatest nicety. The garter slide is instantly detachable, enabling the slide and tool holders to be operated freely by lever.

A stop screw is fitted to the tool holder, and the face of the slide is graduated in 20ths of an inch.

The whole instrument is well devised, very complete, and accurately and carefully made.

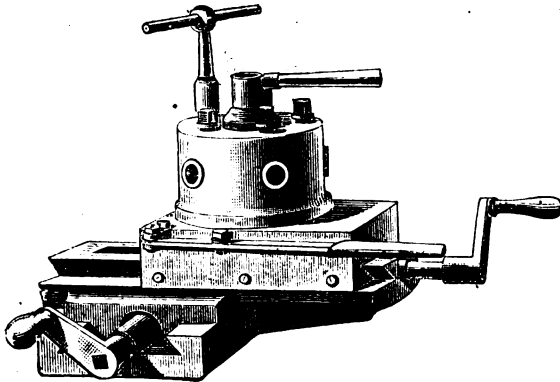
**Price - - - - 15 Guineas.**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# Capstan or Turret Compound Slide Rests, FOR BRASS FINISHERS AND ELECTRICIANS.

Send Template of Face and height  
of Centre.



Can be fitted to any Lathe.  
Great economisers of time.

These are designed for use on any ordinary plain Lathe, for brass finishers and others, where quantities of parts of uniform size and shape are to be produced, giving many of the advantages of the expensive turret lathes.

The Revolving Head is constructed to hold five tools of any desired form for sliding, surfacing, pointing, parting, etc., enabling all such operations to be done at one setting of the work, and if the rest be used in conjunction with a headstock having a hollow spindle through which rods of brass or iron may be passed, studs, joints, pins, etc., with cheese or cup heads, or without heads, may be quickly and cheaply produced and cut off finished from the rod.

The "Capstan" or "Turret" Tool Holder is rotated by hand, held in desired position by lever and link motion (as seen in illustration), actuating a steel piston dropping into accurately fitted notches in a ring at the bottom of capstan, and the latter is then firmly locked in position by the handle at the top.

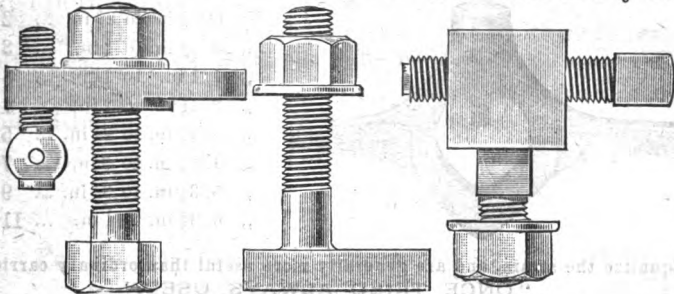
The Rests have compound slides having longitudinal and transverse traverse, and are prepared to bolt securely to any ordinary plain lathe, or can be made to fit the saddle of a screw-cutting Lathe.

Prices are as follows :

For Lathes having centres	3 in.	3½ in.	4 in.	4½ in.	5 in.	6 in.
Price ... ..	£6	£6 10	£7 10	£9	£10 10	£12 15

The illustration is that of the 6 in. size.

## LATHE CLAMPING DOGS, of various styles.



No. 1.

No. 2.

No. 3 pattern.

The above will be found very useful for securing the work to be bored or turned, to the face-plate on the Lathe.

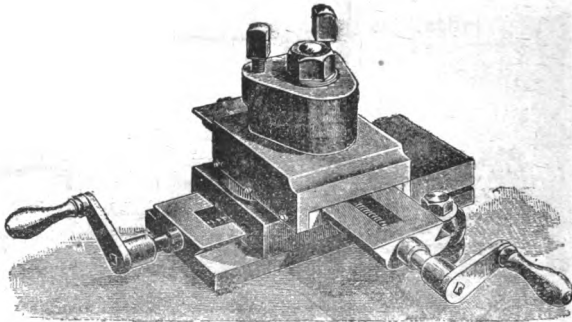
Price, to suit 4-in. to 6-in. Centre Lathes : Pattern No. 1, 3/6; No. 2, 1/6; No. 3, 4/-.

Other Sizes and Patterns made to order.

## BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# BRITANNIA CO.'S IMPROVED COMPOUND SLIDE REST.



To suit 2½ in. centre Lathe	-	£2 0 0	To suit 5 in. centre Lathe	-	£5 0 0
„ 3 in. „	-	2 10 0	„ 6 in. „	-	6 0 0
„ 3½ in. „	-	3 0 0	„ 7 in. „	-	7 0 0
„ 4 in. „	-	3 10 0	„ 8 in. „	-	8 0 0
„ 4½ in. „	-	4 0 0	Larger sizes to order at 20 - per in.		

These are made so that the Bottom Slide always remains at a right angle with the Lathe Bed, the Rest having a swivel arrangement, accurately graduated, for turning taper or conical work to any desired angle.

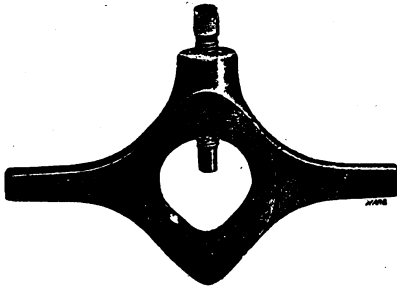
The bottom cover, extending full length, excludes turnings and dirt from the screw and slide.

The materials are of the best. Screws are cast steel, gunmetal nuts, horn handles improved tool box, with hardened steel screws.

The workmanship is excellent. The slides, &c., are surfaced up, and the parts, being machine made and uniform, are interchangeable.

Tool Holders with Plates or other Pattern to order.

## PATENT DOUBLE DRIVING CARRIERS.



### PRICES.

No.	Size	Price
No. 00,	¾ in. to 1 in. ...	2 6
„ 0,	1 in. to 1 ¼ in. ...	3 0
„ 1,	1 ¼ in. to 1 ½ in. ...	3 6
„ 2,	1 ½ in. to 2 in. ...	4 6
„ 3,	2 in. to 2 ¼ in. ...	5 6
„ 4,	2 ¼ in. to 3 in. ...	7 6
„ 5,	3 in. to 3 ½ in. ...	9 6
„ 6,	3 ½ in. to 4 in. ...	11 6

Equalize the strain, and are generally more useful than ordinary carriers.

**"ONCE TRIED ALWAYS USED."**

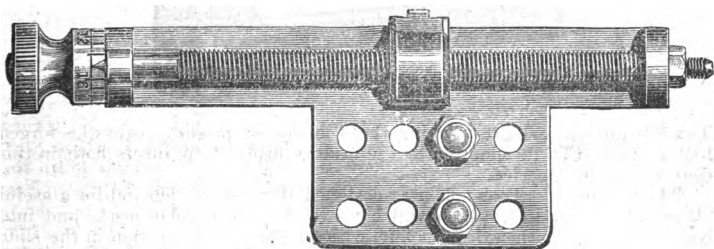
When the Lathe has not a Clement's driver, a stud in the face plate is required.

The smaller sizes can be sent per Parcel Post, at 3d. to 6d. extra.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# BRITANNIA COMPANY'S REGISTERED SCREW-CUTTING GUIDE



THE above appliance can be used on any Lathe. By its use the workman can regulate the depth of cut to the greatest nicety, and the use of the chalk mark, or any such expedient is unnecessary.

It can be used for inside or outside screw cutting, or other work requiring uniformity. It saves time from insufficiency of cut. It prevents the breaking of tools, or the work being torn out from the centres. It is a reliable stop for ornamental drilling and fluting.

While the Lathe is cutting this can be adjusted for the following cut. It only requires to be bolted upon the saddle of a Screw-cutting Lathe, and a projecting stud or screw fixed in the middle engages the stop.

It can also be used on ordinary Lathes with slide rest—in this case it must be fixed to the bed.

This is a tool which has long been wanted by engineers, and will also be appreciated by amateurs.

## PRICES.

For 3 in. to 4 in. Centre Lathes	...	18s.
5 in. and 6 in. „	...	20s.
8 in. to 10 in. „	...	22s.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# THE 'CLIMAX' TOOL-HOLDER

(PATENT),

FOR LATHES, SHAPING AND PLANING MACHINES, &c.



THE advantages and great saving the Tool-holder possesses over the forged tool are proved by its adoption by the leading firms of engineers both in this country and in America.

The "Climax" Tool-holder is designed to meet the demand for a useful all-round cutting-tool, which will cut straight or irregular work, and into corners, and face either right or left, without altering its position in the slide rest.

The important improvement in this Tool-holder over those already in use lies in the fact that **side rake** as well as top rake can be given to the cutter, which thus always presents the **correct cutting angle to the work**. The object of this side rake is not only to make the tool **more keen** without sacrificing its strength, but to **relieve the feed screw** or gearing of strain by giving the tool a tendency to feed **along and into its cut**.

The cutter is held perfectly rigid in any position by tightening a single nut.

This Holder is invaluable for screw-cutting, as the cutter can be canted to suit the angle of any thread either  $\nabla$  or square.

The "Climax" Tool-holder is made entirely of steel, the bolt, etc., being case hardened, and is of the best workmanship and finish.

The cutting tools are of uniform section, made from the finest cast steel obtainable.

Cutters of Mushet's special self-hardening steel can be supplied for the two larger sizes. This steel is strongly recommended, and machine tools should be worked at faster speeds, and with deeper cuts when using it.

Size of Shank	Section of Cutter	Suitable for use in Lathes to	Price of Tool-holder	Price of best Cast Steel Cutters Per dozen	Price of Mushet's Steel Cutters Per dozen
			£ s. d.	£ s. d.	£ s. d.
$\frac{9}{16}$ in. sq.	$\frac{5}{8}$ in. by $\frac{1}{8}$ in.	4 in. centres	0 13 6	0 4 6	—
$\frac{3}{4}$ in. "	$\frac{3}{8}$ in. " $\frac{3}{8}$ in.	4½ in. "	0 14 0	0 5 0	—
$\frac{7}{8}$ in. "	$\frac{1}{2}$ in. " $\frac{1}{4}$ in.	5 in. "	0 14 6	0 5 6	—
$\frac{1}{2}$ in. "	$\frac{3}{8}$ in. " $\frac{1}{8}$ in.	6 in. "	0 15 0	0 6 0	0 8 0
$\frac{3}{4}$ in. "	$\frac{1}{2}$ in. " $\frac{3}{8}$ in.	10 in. "	1 0 0	0 8 6	0 11 0
1 in. "	$\frac{3}{4}$ in. " $\frac{1}{2}$ in.	12 in. "	1 5 0	0 8 6	0 11 0
1½ in. "	1 in. " $\frac{3}{8}$ in.	14 in. "	1 10 0	0 10 0	0 14 0
1¾ in. "	1 in. " $\frac{1}{4}$ in.	16 in. "	1 15 0	0 10 0	0 14 0

Angle Gauges, 4/6 each.

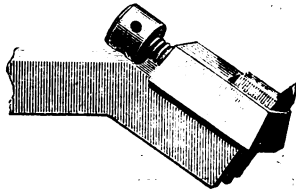
Special Quotations for Larger Sizes.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



# HAYDON TOOL HOLDER



## ADVANTAGES.

USERS of these Holders save the cost and inconvenience of forging their tools.

The Cutters are easily sharpened to the correct angle.

By due attention to the instructions superior finish can be given to the work.

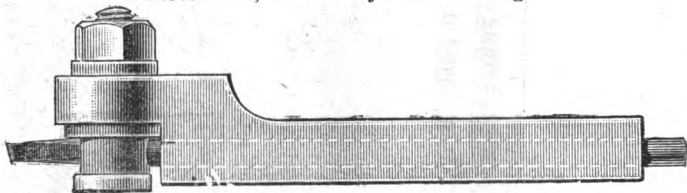
A stock of the small Cutters can be always kept sharpened, as they cost but little, and occupy a small space.

The steel of which the Cutters are made can be bought in 12 in. lengths at 6d. and cut off as required, or Cutters can be purchased at 6d. to 9d. each.

Plain directions for sharpening Cutters to the EXACT ANGLE required for various metals, and how to use the tools to the best advantage, will be sent with each Bar. A diagram showing the various angles will prevent the possibility of errors in judgment.

# PATENT TOOL HOLDER.

Invented by B. H. BENT, M.A., Demonstrator of Applied Mechanics, University of Cambridge.



THIS is one of the best tool holders for boring and cutting internal threads. The cutters or tools can be made of round rod which is easy to obtain. They are held firmly, and in boring it is so easy to adjust depth of cut. Various sizes of steel can be used in the same holder.

It is an economical tool, no skilled smith being required to forge them. It can be used for ordinary turning and surfacing.

*The Price of either of the above Tool Holders as under.*

			£	s.	d.
3 in. Bars, will suit Lathes	3 in. and 3½ in. centre	..	Price	9	6
1 in. "	4 in., 4½ in., and 5 in.	..	"	10	0
1½ in. "	5 in., or 6 in.	..	"	10	0
2 in. "	6 in. and 7 in. Lathes	..	"	12	6
2½ in. "	7 in. to 9 in.	..	"	15	0
3 in. "	10 in. to 12 in.	..	"	17	6
1½ in. "	14 in.	..	"	1	0
1 in. "	16 in.	..	"	1	2
1½ in. "		..	"	6	

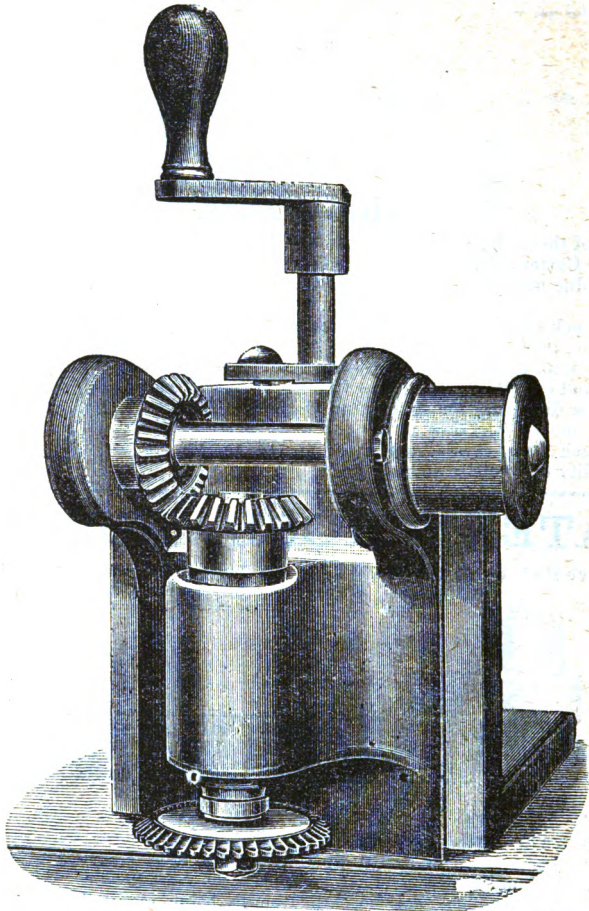
Cutters for the Bents Holder, 6d. to 1/6 each.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

**GEAR CUTTER FOR LATHE.**

By BRITANNIA COMPANY, COLCHESTER.



THE above illustration shows the new Gear Cutter; which can be fitted upon the slide rest of any lathe, and the cross and parallel slides are thus utilized to give the necessary traverse. Or, it can also be fixed upon a tool post.

It is driven from an overhead pulley. The milling cutters are held on the spindle by the nut and washer. A vertical slide gives the necessary vertical traverse.

This is a most useful adjunct to the lathe for fluting taps, milling key ways, spiral fluting, cutting bevel and worm wheels, &c. Wheels with any number of teeth can be accurately cut by means of a division plate. This has hitherto been an expensive appliance, but the Makers have brought them within the reach of the amateur, who will, by its assistance, be able to accomplish many jobs hitherto quite beyond his reach. The price is £4 4s. Od., adapted for lathes up to 6 in. centres.

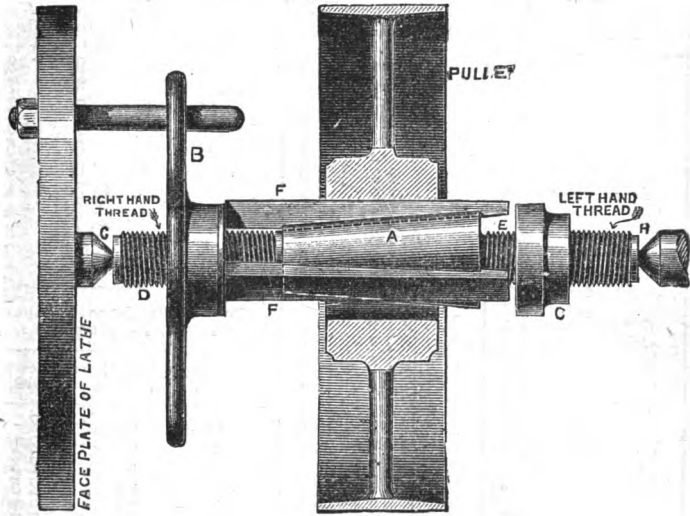
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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# PATENT EXPANDING LATHE MANDREL.

Supplied to the Royal Arsenal and all the  
principal Railway Works, &c.



## PRICES.

No.	£	s.	d.	Ex. Slides	No.	£	s.	d.	Ex. Slides								
1	to take	1 $\frac{1}{4}$	to	1 $\frac{5}{8}$	1	15	0	15/-	5	to take	3	to	3 $\frac{3}{8}$	3	15	0	15/-
2	„	1 $\frac{3}{8}$	to	1 $\frac{7}{8}$	1	15	0	12/-	6	to take	3 $\frac{1}{2}$	to	4	4	5	0	16/-
3	„	2	to	2 $\frac{1}{2}$	2	5	0	12/-	7	to take	4 $\frac{1}{8}$	to	4 $\frac{3}{8}$	5	0	0	17/-
4	„	2 $\frac{3}{8}$	to	2 $\frac{5}{8}$	2	15	0	15/-	8	to take	4 $\frac{1}{2}$	to	5 $\frac{1}{2}$	5	10	0	17/-

**These Mandrels are Protected and Legal Proceedings  
will be taken against any infringers.**

Gear Cutters, Stocks and Dies, Twist Drills, Portable Forges,  
Anvils, Vices (for Iron or Wood), Morticing Machines, Band Saws.

Above are supplied, of reliable quality, at Moderate Prices.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# TWIST DRILLS.



Straight Shanks.			Straight Shank Drills to Stub's Letter Gauge.			Stub's Steel Wire Gauge Straight Shanks.			
Diam. of Drills	Length of Drills	Price per Drill	Letter	Price per Drill	Price per Dozen	Nos. of Wire the Drills are made from	Entire Length of Drills	Price per Drill	Price per Dozen
1/8 in.	2 in.	4d.	A	1/1	12/3	1 to 5	4 in.	9d.	8/7
3/16	2 3/8	5d.	B	1/1	12 6	6 to 10	3 3/4	8d.	7 10
1/4	2 3/4	5d.	C	1/1	12 9	11 to 15	3 1/2	7d.	7/-
5/16	2 1/2	6d.	D	1/2	13/-	16 to 20	3 1/4	7d.	6 1/4
3/8	2 1/2	6d.	E	1/2	13 3	21 to 25	3	6d.	5 5
7/16	2 3/4	7d.	F	1 2	13 6	26 to 30	2 3/4	6d.	5 5
1/2	2 1/2	7d.	G	1 2	13 9	31 to 35	2 1/2	5d.	4 6
9/16	3 3/8	8d.	H	1 3	14/-	36 to 40	2 1/4	5d.	4 6
5/8	3 1/2	8d.	I	1 3	14 3	41 to 45	2 1/8	4d.	3 8
3/4	3 3/4	9d.	J	1 3	14 6	46 to 50	1 7/8	4d.	3 8
7/8	4	10d.	K	1 3	14 9	51 to 65	1 1/2	3d.	2 9
1 in.	4	1/-	L	1 4	15/-				
1 1/8	4	1 1/2	M	1 4	15 3				
1 1/4	4	1 3/4	N	1 4	15 6				
1 3/8	4 1/2	1 3/4	O	1 5	15 9				
1 1/2	4 1/2	1 3/4	P	1 6	16/-				
1 5/8	4 3/4	1 3/4	Q	1 7	17/-				
1 3/4	4 3/4	1 3/4	R	1 8	18 6				
1 7/8	4 3/4	1 7/8	S	1 9	20/-				
2 in.	5	1 9/8	T	1 10	21/-				
2 1/8	5	2/-	U	1 11	22/-				
2 1/4	5 1/2	2 1/8	V	2/-	22 9				
2 3/8	5 1/2	2 1/8	W	2 1	23 6				
2 1/2	5 3/4	2 2/8	X	2 2	24 3				
2 5/8	5 3/4	2 3/8	Y	2 3	25/-				
2 3/4	5 3/4	2 4/8	Z	2 4	25 6				
2 7/8	5 3/4	2 5/8							
3 in.	6	2 7/8							
3 1/8	6	2 8/8							
3 1/4	8	3 4							
3 3/8	8 1/2	3 9							
3 1/2	8 3/4	4 2							
3 5/8	8 3/4	4 8							
3 3/4	9	5 1							
3 7/8	9 1/2	5 6							
4 in.	9 1/2	5 11							
4 1/8	9 3/4	6 4							
4 1/4	10	7 1							
4 3/8	10	7 7							
4 1/2	10 1/2	8 1							
4 5/8	10 1/2	8 8							
4 3/4	10 3/4	9 3							
4 7/8	10 3/4	9 10							
5 in.	10 3/4	10 5							
5 1/8	11	11/-							

Turned Drills with Taper Shank, Tapping Sizes.		
Diameter of Taps	Length of Drills	Price per Drill.
1/4 in.	6 1/8 in.	2/-
3/8	6 1/4	2 1
1/2	6 3/4	2 3
5/8	6 3/2	2 5
3/4	7 1/4	2 10
7/8	7 3/4	3 4
1 in.	8 1/4	4 1
1 1/8	9	5 2
1 1/4	10	7 1
1 1/2	10 1/2	8 8
1 3/4	10 3/4	10 5
2	11 1/4	12 9
2 1/8	12	14 9
2 1/4	14 1/2	18 1
2 3/8	14 3/4	21 6
2 1/2	15 1/4	31 6
2 5/8	15 1/2	32 6
3 in.	16	35 6

Bit Stock Drills		
Size	Price p. Doz	Price p. Drill
1/16	5 9	7d.
3/32	6 4	8d.
1/8	7 8	9d.
5/32	9 -	10d.
3/16	10 6	1/-
7/32	12 6	1 2
1/4	17 -	1 6
9/32	19 3	1 8
5/16	21 6	1 10
11/32	23 9	2 -
3/8	26 -	2 3
13/32	28 6	2 6
7/16	31 6	2 9
15/32	35 -	3 -
1/2	39 -	3 4

Millimetre Drills, with Straight Shanks, of the same length and prices as the Taper Shanks, are kept in Stock from 6 to 25 m/m.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# TWIST DRILLS

Turned, with Taper Shanks.



Diam. of Drills	Length of Drills	Price per Drill	No. and Price of Sockets for Drill	Milli-metres	PRICE
1/4 in.	6 1/2 in	2/-	No. 1 Socket, 5/-	6	2/-
3/8	6 1/4	2/1		7	2/1
1/2	6 3/8	2/2		8	2/2
5/8	6 1/2	2/3		9	2/4
3/4	6 3/4	2/5		10	2/7
7/8	7	2/7		11	2/10
1	7 1/4	2/10		12	3/2
1 1/8	7 3/8	3/1		13	3/6
1 1/4	7 1/2	3/4		14	3/11
1 1/2	7 3/4	4/-		15	4/4
1 3/8	8	3/8	16	4/10	
1 1/2	8 1/4	4/4	17	5/4	
1 5/8	8 1/2	4/9	18	5/11	
1 3/4	8 3/4	5/2	19	6/6	
1 7/8	9	5/7	20	7/1	
1 1/2	9 1/4	6/1	21	7/9	
1 5/8	9 1/2	6/7	22	8/5	
1 3/4	10	7/1	23	9/2	
1 7/8	10	7/7	24	9/11	
1 1/2	10 1/4	8/1	25	10/8	
1 5/8	10 1/2	8/8	26	11/5	
1 3/4	10 3/4	9/3	27	12/2	
1 7/8	10 1/2	9/10	28	12/11	
1 1/2	11	10/5	29	13/9	
1 5/8	11	11/-	30	14/7	
1 3/4	11 1/4	11/7	31	15/5	
1 7/8	11 1/2	12/2	32	16/3	
1 1/2	11 3/4	12/9	33	18/-	
1 5/8	11 1/2	13/4	34	18/6	
1 3/4	11 3/4	14/-	35	19/-	
1 7/8	12	14/9	36	20/-	
1 1/2	12	15/6	37	21/9	
1 5/8	12 1/2	16/4	38	24/-	
1 3/4	14 1/4	18/-	39	31/-	
1 7/8	14 1/2	19/-	40	32/6	
1 1/2	14 3/4	21/6	41	33/6	
1 5/8	15	24/-	42	34/6	
1 3/4	15 1/4	31/6	43	35/8	
1 7/8	15 1/2	32/6	44	36/8	
1 1/2	15 3/4	33/8	45	37/9	
1 5/8	16	35/6	46	38/9	
1 3/4	16 1/4	38/-	47	40/-	
1 7/8	16 1/2	40/-	48	41/3	
1 1/2	16 3/4	41/8	49	42/3	
1 5/8	16 1/2	43/-	50	43/-	
1 3/4	16 3/4	47/-			
1 7/8	17 1/4	52/-			
1 1/2	17 1/2	58/-			
1 5/8	19	65/-			
1 3/4	19	73/-			
1 7/8	20 1/4	80/-			
1 1/2	20 1/2	85/-			
1 5/8	22	90/-			
			No. 2 Socket, 6/6		
			No. 2 Socket, 8/6		
			No. 3 Socket, 8/6		
			No. 3 Socket, 14/3		
			No. 4 Socket, 14/3		
			No. 4 Socket, 40/-		
			No. 5 Socket, 40/-		
			No. 1 Socket, 5/-		
			No. 2 Socket, 6/6		
			No. 3 Socket, 8/6		
			No. 4 Socket, 14/3		
			No. 5 Socket, 40/-		

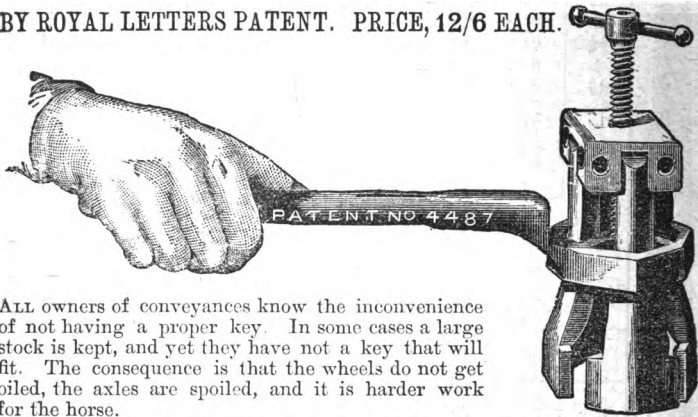
**SETS OF DRILLS, Nos. 1 to 5 MOUNTED ON STANDS.**  
 1—Sets of Straight Shank Drills, 1/8 to 1/2 advancing by 32nds £1 0 8  
 2—1 4 3  
 3—1 16 3  
 4—1 8 6  
 5—Half-Sets of Wire Drills, Nos. 1 to 60, alternate numbers 0 14 3  
 Jewellers' Sets, in case (36 Drills) Nos. 30 to 65 0 18 3  
 Sets of Drills for Bit Stocks, 1/8, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 2 3/4, 3, 3 1/4, 3 1/2, 3 3/4, 4, 4 1/4, 4 1/2, 4 3/4, 5, 5 1/4, 5 1/2, 5 3/4, 6, 6 1/4, 6 1/2, 6 3/4, 7, 7 1/4, 7 1/2, 7 3/4, 8, 8 1/4, 8 1/2, 8 3/4, 9, 9 1/4, 9 1/2, 10, 10 1/4, 10 1/2, 11, 11 1/4, 11 1/2, 11 3/4, 12, 12 1/4, 12 1/2, 12 3/4, 13, 13 1/4, 13 1/2, 13 3/4, 14, 14 1/4, 14 1/2, 14 3/4, 15, 15 1/4, 15 1/2, 15 3/4, 16, 16 1/4, 16 1/2, 16 3/4, 17, 17 1/4, 17 1/2, 17 3/4, 18, 18 1/4, 18 1/2, 18 3/4, 19, 19 1/4, 19 1/2, 19 3/4, 20, 20 1/4, 20 1/2, 20 3/4, 21, 21 1/4, 21 1/2, 21 3/4, 22, 22 1/4, 22 1/2, 22 3/4, 23, 23 1/4, 23 1/2, 23 3/4, 24, 24 1/4, 24 1/2, 24 3/4, 25, 25 1/4, 25 1/2, 25 3/4, 26, 26 1/4, 26 1/2, 26 3/4, 27, 27 1/4, 27 1/2, 27 3/4, 28, 28 1/4, 28 1/2, 28 3/4, 29, 29 1/4, 29 1/2, 29 3/4, 30, 30 1/4, 30 1/2, 30 3/4, 31, 31 1/4, 31 1/2, 31 3/4, 32, 32 1/4, 32 1/2, 32 3/4, 33, 33 1/4, 33 1/2, 33 3/4, 34, 34 1/4, 34 1/2, 34 3/4, 35, 35 1/4, 35 1/2, 35 3/4, 36, 36 1/4, 36 1/2, 36 3/4, 37, 37 1/4, 37 1/2, 37 3/4, 38, 38 1/4, 38 1/2, 38 3/4, 39, 39 1/4, 39 1/2, 39 3/4, 40, 40 1/4, 40 1/2, 40 3/4, 41, 41 1/4, 41 1/2, 41 3/4, 42, 42 1/4, 42 1/2, 42 3/4, 43, 43 1/4, 43 1/2, 43 3/4, 44, 44 1/4, 44 1/2, 44 3/4, 45, 45 1/4, 45 1/2, 45 3/4, 46, 46 1/4, 46 1/2, 46 3/4, 47, 47 1/4, 47 1/2, 47 3/4, 48, 48 1/4, 48 1/2, 48 3/4, 49, 49 1/4, 49 1/2, 49 3/4, 50

We would call attention to the Set of Sockets, Nos. 1, 2, 3, 4, and 5, in column 4 of Turned Drills. By use of these Sockets all further fitting of Drills to Machines is saved.  
 Bit-Stock Drills for use in Bit-Braces will be found especially useful to Carriage Builders and for general repairing, because holes may be drilled without removing the work. They can be used for either Wood or Metal.

# THE "ECLIPSE" ADJUSTABLE KEY,

For taking off Oil Cups from all kinds of Wheels.

BY ROYAL LETTERS PATENT. PRICE, 12/6 EACH.

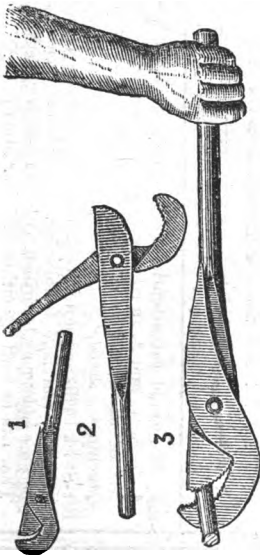


ALL owners of conveyances know the inconvenience of not having a proper key. In some cases a large stock is kept, and yet they have not a key that will fit. The consequence is that the wheels do not get oiled, the axles are spoiled, and it is harder work for the horse.

\* These keys will take any size of cap, from 1½ in. to 3½ in., and, being a perfect fit, cannot destroy the corners.

The working parts are made of cast steel, and will last a lifetime.

Any special size made to order. One will be sent to any address on receipt of P.O.O. for 12/6.



## PIPE TONGS,

Which for utility, usefulness, and firmness of grip are unsurpassed.

In three sizes: No. 1 is 8 in. long, and will take from ½-in. to ¾-in. pipe; No. 2 is 14 in. long, and takes from ¾-in. to 1-in. coupling; No. 3 is 23 in. long, and takes from 1-in. to 2-in. coupling.

Acts as Pipe Tongs or Screw Key.

For screwing in studs or nuts with corners off, they are invaluable.

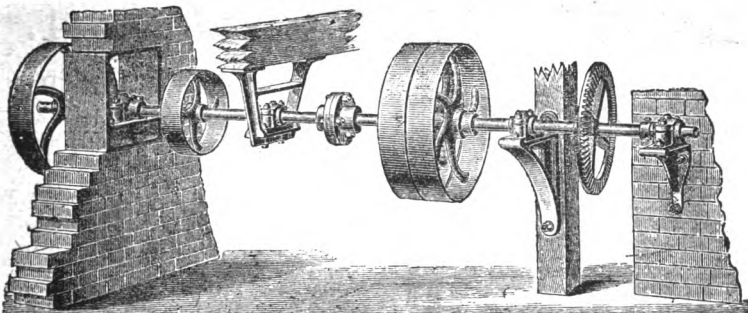
Price, £1 15s. the Set, net.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch All Letters to Colchester.

# STRONG NEW CAST-IRON PULLEYS

SUITABLE FOR GENERAL ENGINEERING PURPOSES.



Turned Flat or Rounding on Face Flat Faces always sent unless ordered otherwise.  
Keyways cut or set screw fitted.

Diam.	Max. Bore	WIDTH ON FACE.									
		4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.	12 in.	
ins.	ins.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
5	3	5 6	6 0								
6	3	6 0	6 6	7 0							
7	3	6 6	7 0	7 6	8 6						
8	3	7 0	7 6	8 6	9 6	11 0					
9	3	7 6	8 0	9 0	10 0	11 6	13 0				
10	3	8 0	9 0	10 0	11 0	12 0	14 0	15 6			
11	3	8 6	9 6	10 6	11 6	13 0	14 6	16 0	18 0		
12	3	9 0	10 0	11 0	12 6	14 0	15 6	17 0	19 0	21 0	23 0
13	3	9 6	10 6	11 6	13 0	14 6	16 0	18 0	20 0	22 6	25 0
14	3	10 0	11 0	12 0	13 6	15 0	17 0	19 0	21 6	23 6	26 0
15	3	10 6	11 6	12 6	14 0	15 6	17 6	19 6	22 0	24 6	27 6
16	3	11 0	12 0	13 0	14 6	16 0	18 0	20 0	22 6	25 0	27 6
17	3	12 0	13 0	14 0	15 6	17 0	19 0	21 0	23 6	26 0	29 0
18	3	13 0	14 0	15 0	16 6	18 0	20 0	22 6	25 0	27 6	30 0
19	3	14 0	15 0	16 0	17 6	19 6	21 6	24 0	26 6	29 0	31 0
20	3	15 0	16 0	17 0	18 6	20 6	22 6	25 0	27 6	30 0	33 0
21	3	16 0	17 0	18 0	19 6	21 6	23 6	26 0	28 6	31 0	33 0
22	3	17 0	18 0	19 6	21 6	23 6	25 6	28 0	30 6	33 0	36 0
23	3	18 0	19 0	20 6	22 6	24 6	27 0	29 6	32 0	34 6	39 0
24	3	19 0	20 0	21 6	23 6	25 0	28 6	31 0	33 6	36 0	41 0
25	3	20 0	21 6	23 6	25 6	28 0	30 6	33 0	36 0	39 0	42 6
26	3	21 0	22 6	24 6	26 6	29 0	32 0	34 6	37 6	41 0	44 6
27	3	22 0	23 6	25 6	27 6	30 0	33 0	36 0	39 0	42 6	46 0
28	3	23 0	24 6	26 6	28 6	31 0	34 0	37 0	40 0	44 0	48 0
29	3	24 0	25 6	27 6	29 6	32 0	35 0	38 0	42 0	46 0	50 0
30	3	25 0	26 6	28 6	30 6	33 0	36 0	40 0	44 0	48 0	52 6
32	3	27 0	29 0	31 0	33 0	35 0	38 0	42 0	46 0	50 0	55 0
33	3	28 0	30 0	32 0	34 6	37 0	40 0	44 0	48 0	52 6	57 6
34	3	29 0	31 0	33 0	35 6	38 0	41 0	45 6	50 0	55 0	60 0
36	3	31 0	33 0	35 0	37 6	40 0	43 0	47 6	52 6	57 6	62 6
38	3	33 0	35 0	37 6	40 0	43 0	46 0	50 0	55 0	60 0	65 0
40	4	34 0	36 0	38 6	41 0	44 0	48 0	52 6	57 6	62 6	67 6
42	4	35 0	37 0	39 6	42 0	45 0	50 0	55 0	60 0	65 0	72 6
44	4	37 0	39 0	41 6	44 0	47 6	52 6	57 6	62 6	67 6	75 0
44	4	39 0	41 6	44 0	46 6	50 0	55 0	60 0	65 0	72 6	77 6
45	4	40 0	42 6	45 0	47 6	51 6	56 6	62 0	67 6	75 0	81 0
46	4	41 0	43 6	46 0	48 6	52 6	57 6	65 0	70 0	77 6	82 6
48	4	44 0	46 6	49 0	52 0	56 0	61 0	67 6	75 0	82 6	88 0
50	4	47 0	49 6	52 0	55 0	60 0	65 0	70 0	77 6	85 0	91 0
52	4	50 0	52 6	55 0	57 6	62 6	67 6	72 6	80 0	87 6	94 0
54	4	55 0	57 6	60 0	62 6	67 6	72 6	77 6	85 0	92 6	100 0
56	4	60 0	62 6	65 0	70 0	75 0	80 0	85 0	92 6	100 0	110 0
58	4	65 0	67 6	70 0	75 0	80 0	85 0	90 0	97 6	110 0	120 0
60	4	70 0	72 6	75 0	80 0	85 0	90 0	95 0	102 6	120 0	

## SHAFTING—New.

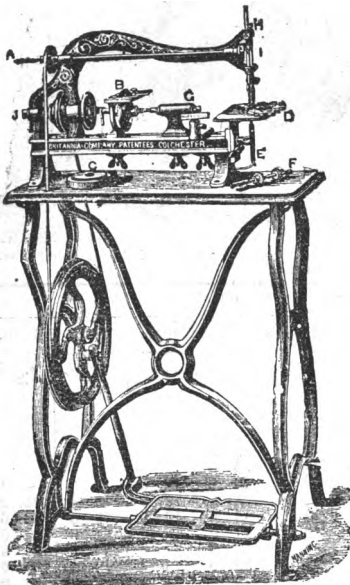
Diameter—Inches	...	1	1½	1¾	2	2½	2¾	3	3½	3¾	4		
Weight per foot—lbs	...	2 62	4 09	5 90	8 03	10 49	13 27	16 39	19 84	23 60	27 70	32 13	41 97
WROUGHT IRON	...	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
price per foot	...	1 0	1 2	1 4	1 8	2 0	2 4	2 8	3 4	3 10	4 6	5 2	6 10
STEEL	...												
price per foot	...					2 4	2 9	3 3	3 9	4 6	5 3	6 0	7 6

Pulleys, Shafting, Wall Boxes, Hangers, Couplings, &c. Send full particulars and we will quote.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—10, Houndsditch. All Letters to Colchester.

# LATHE & FRET SAW, No. 1.



## ADVANTAGES CLAIMED.

1. It is a Lathe, Drill, Fret Saw, Circular Saw, Emery Grinder, and Polisher, in one compact tool, with heavy Fly Wheel.

2. The Fret Saw works with a perpendicular stroke, and requires much less power than any other, while the quality of the work is superior. It will cut the most intricate designs in wood up to 1 inch thick.

3. The table is adjustable, and drops to enable the Saw to enter another hole, without loss of time, and **TILTS TO ANY ANGLE** for inlaid work.

4. It has an improved Clip, by which the Saw is instantly fixed, while the introduction of rollers behind the Saw prevents breakage. (The under tension is now fixed under the table instead of as shown).

5. The adjustable Presser foot is introduced, and prevents the wood being jerked upwards.

6. It has a horizontal Drill for drilling holes for Fret work, and, can be fitted with a vertical spindle with

mitre gear wheels and 3 Drills for drilling metal, &c., price **12s. 6d.** extra.

7. As a Lathe it is very durable, with planed bed, takes 8 in. by 4 in. between centres, conical Mandril, hardened centre, 3 in. Face Plate, Driver, 2 rests, square Thread in Barrel, same as a first-class Engineer's Lathe.

By means of an Emery and Buff Wheel fixed on Mandril of Lathe, steel, stones, shells, &c., may be polished, and tools and knives sharpened.

These Tools are coming into favour with Ladies as well as Gentlemen, and are a most useful and never-ending source of amusement and profit.

Total Height—3 ft. 10 in., and will take 15 in. under the arm.

Weight—3 qrs. 20 lbs.

Price with Horizontal Drill, 6 Saws, Oil Can, Spanner, and Turnscrew	£5 5 0
Machine, without Stand, Fly Wheel, or Treadle	3 15 0

Any of the following useful attachments can be had extra if desired, viz.:

	s.	d.
Circular Saw	4	0
Emery Wheel for Grinding Steel, Stones, Shells, &c.	4	0
Buff Wheels for polishing the same (fine or coarse) each	2	0
Mandril, with Screw Collars for holding Saw or Wheels	6	0
Platform, with Guide for Circular Saw	10	6
Vertical Drill Spindle, with Mitre Gear Wheels to fit in place of Fret Saw Spindle with 3 Drills for Metal, &c.	12	6
Fret Saws	4d.	per dozen, or 3s. per gross.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



## NOTICE TO FRETWORKERS.

**FRET SAW, No. 8.**

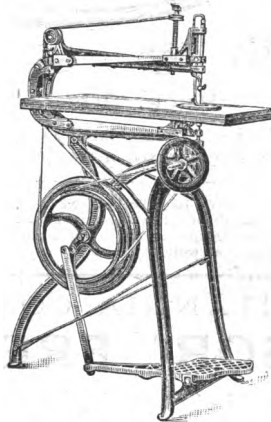
With Improved Tension.

Not a Toy, but  
a useful Tool.

The presser foot  
prevents jerking  
of the work.

Price, with  
horizontal and  
vertical Drill,

£3.



Weight 74 lbs.

Screw Collar for holding Emery Wheel, 2/6. Polishing Brushes, 1/- each.  
Emery Wheels, 2 - each. Drills, 1/- per dozen.

Cuts  $\frac{5}{8}$  in. easily.

Compare this  
before you purchase.

It is worth two  
of many others.

Will cut metals.

Has a durable  
Blower.

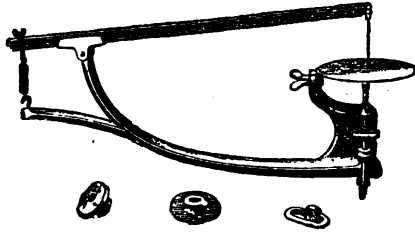
The Fret Saw as illustrated fills a want which has long been expressed. The advantages claimed for this over every other Saw are to the Practical Fret Cutter of considerable importance.

- 1.—True Vertical Stroke.
- 2.—Without any upper spring to offer resistance, the tension is **instantly put on or off by altering the thumb-nut** so that when fixing a new saw the tension is taken off by a turn of the nut. This gives *entire freedom of action*, however tight the tension.
- 3.—It will cut metal up to  $\frac{1}{2}$  in. thick. Will cut  $\frac{1}{2}$  wood easily, and thicker at proportionate speed.
- 4.—It has a heavy two-speed fly-wheel, 14 in. diameter, weight 17 lbs., which ensures *steadiness of working* in either metal or wood.
- 5.—It will take in work 20 in. long under the arm.
- 6.—The table extends the *whole distance under the arm*, and gives *ample space* for the work.
- 7.—It is made to *tilt* for doing inlaid work. 8.—It has an *efficient* blower.
- 9.—It is *more substantial* than most Fret Saws.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# FRET SAW, No. 3.



Price, 30s.

Can be made for any Lathe. It is secured by a bolt and nut under the Lathe Bed. Fixed in one minute.

**NOTE.**—In ordering, it is necessary to give the exact height from bed to centre, an accurate sketch or zinc template of size and form of Lathe bed, and to send the Lathe mandrel to fit the catch plate to nose-screw; or if a correctly-fitting chuck is sent, it will answer the latter purpose as well.

## THE BRITANNIA COMPANY'S "WINDSOR" FRET SAW



Is constructed entirely of iron and steel, except the arms, which are of tough wood for quietness and lightness. The work table is 32 in. from the floor, and is made to tilt for inlaying. The upper arm throws back to enable the end of the saw to be inserted for internal work.

The stand is nicely japanned. The driving wheel is 12 in. in diameter, with a 5 in. balance wheel. It will admit 18 in. under the arm. The saw clamps are hung on pivots, and will hold firmly the finest or coarsest saw. It is fitted with an automatic blower and a drill shaft. A drill, wrench, and six saws accompany each machine.

The most surprising thing of all, however, is its cheapness, for

The Price is only 17s. 6d.

If required to be sent by rail—box to pack, 2s.

### TESTIMONIALS.

"I received the WINDSOR quite safely a few days ago. I put it together the same night and find that it works very well indeed, and shall recommend it to my friends."

"I have to-day returned the case the WINDSOR came in. I have tried the Machine, and like it very much."

"I received the Machine yesterday in proper order, and find that it works in a very satisfactory manner."

BRITANNIA CO., COLCHESTER, England.

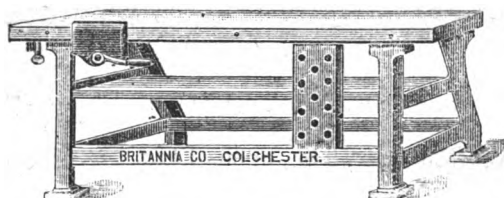
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# BENCHES

FOR

## CARPENTERS & CABINET MAKERS.

30 in. high from floor. Extra height if required 1/- per inch extra.



THE above represents a strong bench for wood workers. The supports are of iron, and firmly held together by bolts and screws, thus avoiding the nuisance of a rickety bench. It is fitted with a screw stop, shown on left, which is a great improvement on the old plan.

The tops are of sound well-seasoned wood firmly bolted together.

Shelf is provided for tools.

				£	s.	d.
No. 1	Price with Deal Top, 5 ft. by 18 inches	...	...	3	4	0
No. 2	„ Hard Wood Top	...	...	3	16	6
No. 3	„ Deal Top, 6 ft. by 22 inches	...	...	3	8	6
No. 4	„ Hard Wood Top	...	...	4	4	0
No. 5	„ Deal Top, 7 ft. by 22 inches	...	...	3	14	6

These Benches are fitted with Patent Instantaneous Grip Vices.

*Vices for these Benches are on Page 120.*

Improved Bench Knives or Back Stops for firmly securing work upon the bench extra 3/6 each.

Small Hardwood Amateur Work Benches, with tools; 2 ft. 10 in. long, 22/-;  
3 ft. 10 in., 36/-; 4 ft. 4 in., 52/-

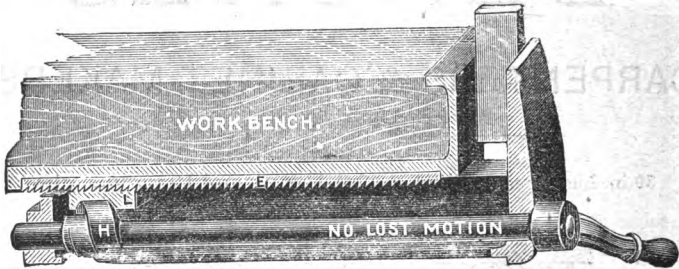
*See page 122.*

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

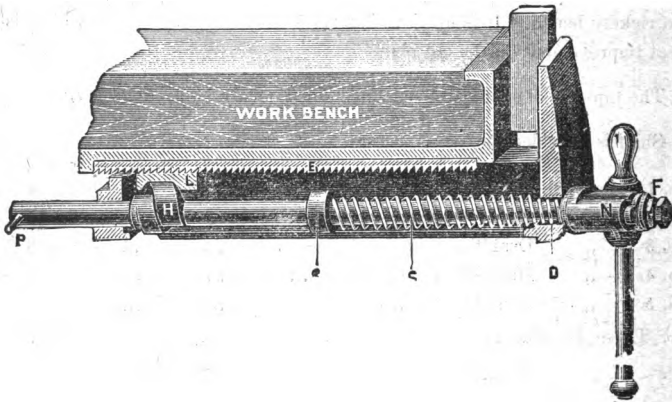
# INSTANTANEOUS GRIP BENCH VICES.



No. 0.—Width of jaw,  $7\frac{1}{2}$  in., opens 6 in. ... Price, 12/6

No. 1.—Width of jaw, 9 in., opens 12 in. ... „ 16/-

Fitted with Steel Racks.



No. 2.—Size across jaws, 9 in., opens 12 in. ... Price, 18/-

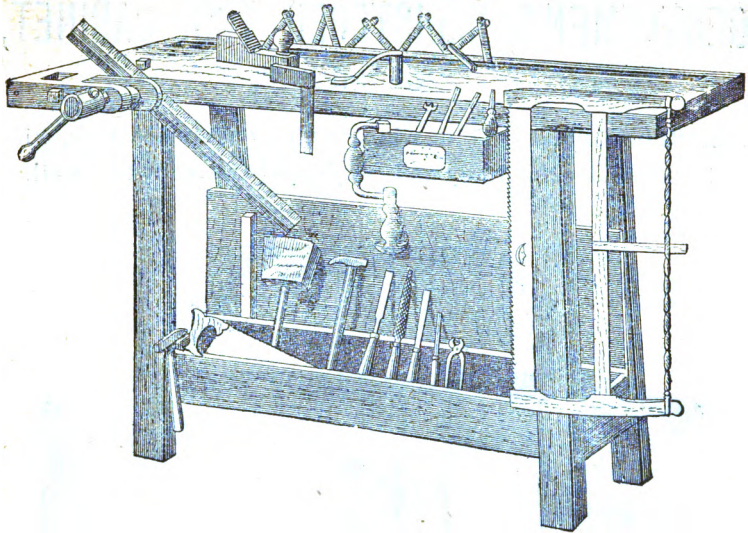
No. 3.—Size across jaws,  $10\frac{1}{2}$  in., opens 13 in. ... „ 21/-

Above have Steel Racks.

---

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



## No. 1—WORK BENCH FOR JUNIORS,

With Assortment of Warranted Tools.

WITH Well Drawer and Box under Bench to hold the tools, and with iron cramp, bench screw, stop, and tray at back. This Bench is strongly made with special wood, and is the best and cheapest in the market. It is an excellent present at any time. Comprising frame saw, brace and 8 bits, screwdriver, hammer, pincers, mallet, square, straight edge, plane, chisel, rule, pencil, rasp, and bench cramp.

34 in. long by 26 in. high by 13 in. wide ... 22s. each.

## No. 2.—WORK BENCH FOR AMATEURS,

With Complete Assortment of Warranted Tools.

THIS Bench is very strongly made of superior wood, with well drawer and box underneath to contain tools, with bench screw, stop, and cramp, tray at back, and its size renders it of great utility, and a necessity to all who occupy themselves with work at home. Comprising saw and frame, square, straight edge, compass saw, 2 hammers, mallet, brace, and 3 bits, screwdriver, pincers, cold metal chisel, plane, rule, file, rasp, chisel, pencil, and bench cramp.

46 in. long by 32 in. high by 16 in. deep ... 36s. each.

## No. 3.—INDISPENSABLE WORK BENCH,

With Complete Assortment of Warranted Tools.

THIS Bench is very strongly made of well-seasoned hard wood, with drawer and box for tools, bench vice, cramp, stop, and tray at back, and its size renders it available at all times for those who require a first-class article. Comprising saw and frame, mallet, 2 hammers, hand saw, plane, square, straight edge, brace and 3 bits, screwdriver, pincers, files and rasps, chisel, pencil, rule, cold chisel, bench cramp, cold metal chisel, edging knife, and 2 bench screws.

52 in. long by 32 in. high by 18 in. wide ... 52s. each.

ABOVE BENCHES ARE SUITABLE FOR AMATEURS.

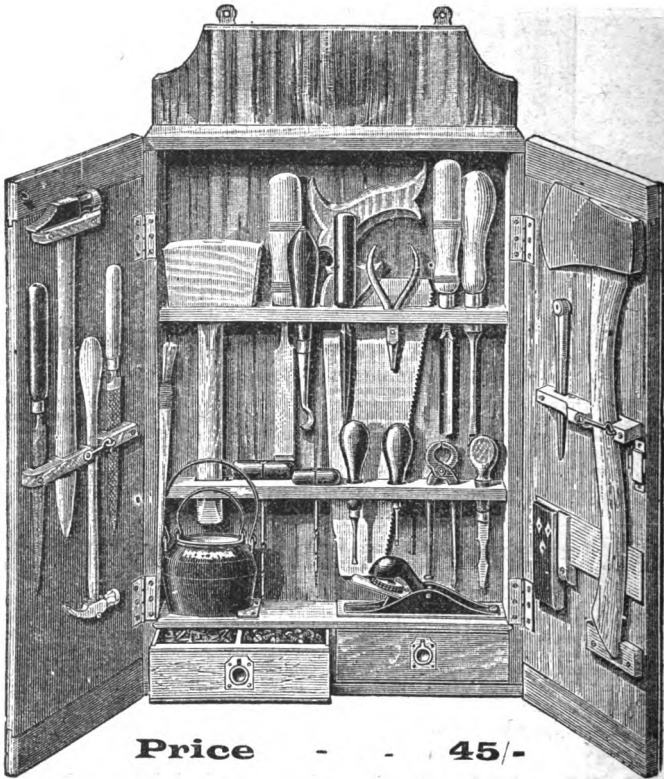
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# GENTLEMEN'S REGISTERED TOOL CABINET,

No. 918.

Size 21 in. high by 14 in. wide, made of Polished Oak, with 2 drawers, lock and key and two loops to fasten it to a wall.



**Price - - 45/-**

It contains as follows:—

Mallet	Two Hammers	Square	Two Brad Awls	Compasses
Chisel	Saw	Claw Wrench	Pincers	Nails and
Gouge	Three Files	Pliers	Glue Pot & Brush	Screws
Axe	Two Turnscrows	Two Gimlets	Plane	

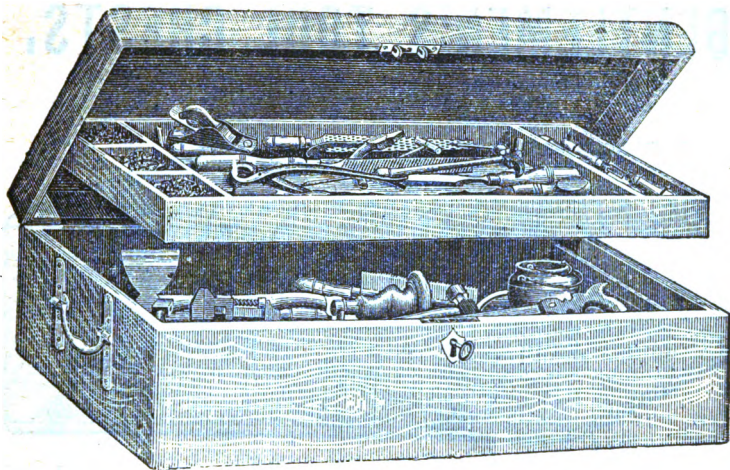
**TOOL CHESTS OF ANY SIZE TO ORDER.**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



**No. 927. OAK TOOL CHEST.** Price, complete, 48/-



Containing—C8 Hand Saw, Strong Rivetting Hammer, Light Tack Hammer, 2-foot Rule, Nail Pincers, small Axe, 3 Gimlets, 2 handled Chisels, 4 handled Brad Awls, handled 8-square File, ditto wood Rasp, 2 Screw Drivers, Pair of Pliers, ditto cutting Pliers, smooth Plane, Glue Pot and Brush, Oil Can, Brace and Bits, small Back saw, Screw Wrench, Oil Stone, Nails, Screws, &c

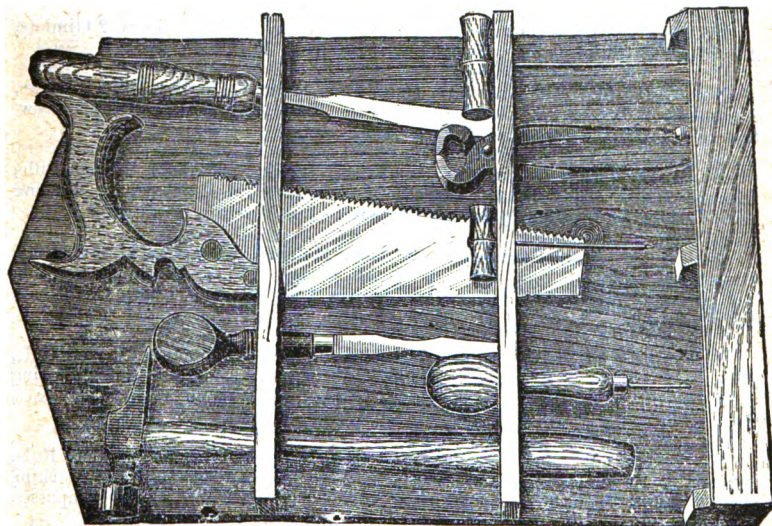
This is a decided improvement upon the ordinary Gent's Tool Chest, being made much neater, stronger, and more compact. It is fitted up with a loose tray instead of a drawer which can be lifted out instantly, by which means the tools are got at more readily, the light tools being kept in the Tray, and the heavier ones in the bottom of the Chest.

No. 927B Deal Chest (fitted as above) ... .. 35s.

No. Polished ditto ditto ... .. 36s.

Larger and Smaller sizes ... price, 10s. to £10

**RACK OF TOOLS.**



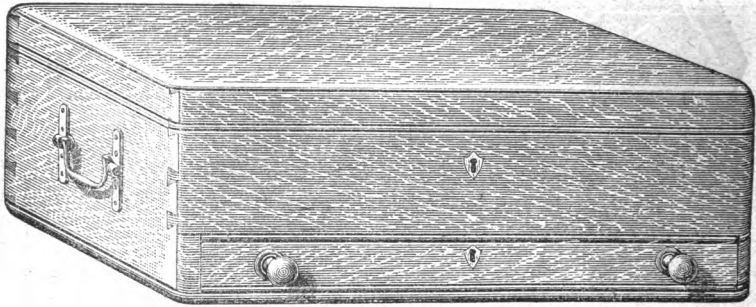
No. 928C Rack (for hanging up) of useful Household Tools. Price, 5/6 per Rack.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# GENTLEMEN'S TOOL CHESTS.

No. 4, Price, £2 5s. 6d.



A—7s. each—contains Hand Saw, Hammer, Mallet, Pincers, Brad Awl, Gimlet, Chisel, Gouge, Turnscrew, &c.

B—8s. 6d. each—contains Hand Saw, Hammer, Mallet, Pincers, Gimlet, Brad Awl, Chisel, Gouge, Turnscrew, Rule, &c.

C—10s. each—contains Hand Saw, Hammer, Mallet, Pincers, Chisel, Gouge, File, Square, Brad Awl, Gimlet, Marking Awl, Punch, Turnscrew, Rule, &c.

No. 000—10s. 9d. each—contains Hand Saw, Hammer, Mallet, Pincers, Brad Awl, Gimlet, Chisel, Gouge, Turnscrew, Furniture, &c.

No. 00—13s. each—contains Hand Saw, Hammer, Mallet, Pincers, 2 Gimlets, 2 Brad Awls, Chisel, Gouge, Turnscrew, File, Rule, Furniture, &c.

No. 0—17s. 6d. each—contains Hand Saw, Hammer, Mallet, Rule, Pincers, 2 Gimlets, 2 Brad Awls, Chisel, Gouge, File, Marking Awl, Punch, Turnscrew, Square, Compasses, Furniture, &c.

No. 1—22s. 6d. each—contains Hand Saw, Hatchet, Hammer, Mallet, Rule, Pincers, 2 Gimlets, 2 Brad Awls, Chisel, Gouge, 3 Files, Oil Stone, Marking Awl, Punch, Turnscrew, Spokeshave, Square, Claw Wrench, Furniture, &c.

No. 2—28s. each—contains Hand Saw, Hatchet, Hammer, Mallet, Rule, Pincers, 3 Gimlets, 3 Brad Awls, 2 Chisels, Gouge, 3 Files, Oil Stone, Marking Awl, Punch, 2 Turnscrews, Spokeshave, Square, Claw Wrench, Pliers, Compasses, Furniture, &c.

No. 3—35s. 6d. each—contains Hand Saw, Hatchet, Hammer, Mallet, Rule, Pincers, 3 Gimlets, 3 Brad Awls, 3 Chisels, 2 Gouges, 3 Files, Oil Stone, Marking Awl, Punch, 2 Turnscrews, Spokeshave, Square, Claw Wrench, Pliers, Compasses, Lock Saw, Plane, Furniture, &c.

No. 4—45s. 6d. each—contains Hand Saw, Hatchet, Hammer, Mallet, Rule, Pincers, 4 Gimlets, 4 Brad Awls, 4 Chisels, 2 Gouges, 3 Files, Oil Stone, Marking Awl, Punch, 2 Turnscrews, Spokeshave, Square, Claw Wrench, Pliers, Compasses, Lock Saw, Plane, Marking Gauge, Glue Pot and Brush, Furniture, &c.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100 Houndsditch. All Letters to Colchester.*



**GENTLEMEN'S TOOL CHESTS** (*continued*).

No. 5—57s. 6d. each—contains Hand Saw, Axe, Hammer, Mallet, Rule, Pincers, 5 Gimlets, 5 Brad Awls, 5 Chisels, 3 Gouges, 4 Files, Oil Stone, Marking Awl Punch, 2 Turnscraws, Spokeshave, Square Claw Wrench, Pliers, Compasses, Lock Saw, Plane, Marking Gauge, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Furniture, &c.

No. 6—68s. each—contains 2 Saws, Axe, 2 Hammers, Mallet, Rule, Pincers, 6 Gimlets, 6 Brad Awls, 6 Chisels, 4 Gouges, 4 Files, Oil Stone, Marking Awl, 2 Punches, 3 Turnscraws, 2 Spokeshaves, Square Claw Wrench, Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, Marking Gauge, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Furniture, &c.

No. 7—80s. each—contains 3 Saws, Axe, 2 Hammers, Mallet, Rule, Pincers, 6 Gimlets, 6 Brad Awls, 6 Chisels, 4 Gouges, 4 Files, Oil Stone, Marking Awl, 2 Punches, 3 Turnscraws, Hand Vice, 2 Spokeshaves, Square, Claw Wrench, Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, 2 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Furniture, &c.

No. 8—92s. 6d. each—contains 3 Saws, Axe, 2 Hammers, Mallet, Rule, Pincers, 6 Gimlets, 6 Brad Awls, 6 Chisels, 4 Gouges, 4 Files, Oil Stone, Marking Awl, 3 Punches, 3 Turnscraws, Bed Key, Hand Vice, 2 Spokeshaves, Square, Claw Wrench, 2 pairs Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, 3 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Chalk Line Reel, Furniture, &c.

No. 9—114s. 6d. each—contains 3 Saws, Axe, 2 Hammers, Mallet, Rule, Pincers, 6 Gimlets, 6 Brad Awls, 6 Chisels, 4 Gouges, 5 Files, Oil Stone, Marking Awl, 3 Punches, 3 Turnscraws, Bed Key, Hand Vice, 2 Spokeshaves, Square, Claw Wrench, 2 pairs Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, 3 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Chalk Line Reel, 2 Mortice Chisels, Coach Wrench, Furniture, &c.

No. 10—136s. each—contains 3 Saws, Axe, 3 Hammers, Mallet, Rule, Pincers, 6 Gimlets, 6 Brad Awls, 8 Chisels, 4 Gouges, 6 Files, Oil Stone, Marking Awl, 3 Punches, 3 Turnscraws, Bed Key, Hand Vice, 2 Spokeshaves, Square, Claw Wrench, 2 pairs Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, 3 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punch, Bevil, Scraper, Coach Wrench, Chalk Line Reel, Brace with 12 bits, Cutting Nippers, 2 Mortice Chisels, Furniture, &c.

No. 11—172s. each—contains 3 Saws, Axe, 3 Hammers, Mallet, Rule, Pincers, 9 Gimlets, 9 Brad Awls, 9 Chisels, 4 Gouges, 6 Files, Oil Stone, Marking Awl, 3 Punches, 3 Turnscraws, Bed Key, Hand Vice, 2 Spokeshaves, Square, Claw Wrench, 2 pairs Pliers, Compasses, Lock Saw, Smooth Plane, Jack Plane, 3 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punch, Scraper, Bevil, Coach Wrench, Chalk Line Reel, Brace with 18 bits, Cutting Nippers, 2 Mortice Chisels, Saw Set, Spring Dividers, Bench Vice, Furniture, &c.

No. 12—216s. each—contains 3 Saws, Axe, 4 Hammers, 2 Mallets, Rule, Pincers, 12 Gimlets, 12 Brad Awls, 12 Chisels, 6 Gouges, 9 Files, Oil Stone, Marking Awl, 3 Punches, 4 Turnscraws, Bed Key, Hand Vice, 2 Spokeshaves, 2 plated Squares, Claw Wrench, 2 pairs Pliers, 2 pairs Compasses, Lock Saw, Smooth Plane, Jack Plane, 3 Gauges, Glue Pot and Brush, Drawing Knife, Cutting Punches, Scraper, Bevil, Chalk Line Reel, Brace and 24 bits, Anvil and Beck Iron, Saw Set, Cutting Nippers, Nipper Pliers, Spring Dividers, Hand Shears for Cutting Metal, &c., Coach Wrench, Cast Steel Chipping Chisel, Spring Oil Can (Press Bottom), 3 Mortice Chisels, 3 Socket Chisels, Bench Vice, Turning Saw and Frame, Furniture, &c.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

## PATENT

## PLANE IRON, CHISEL &amp; TOOL SHARPENING MACHINE.

Price, 8s. 6d. each.



THIS useful Machine is fast taking the place of the Oil Stone, being so simple in use, and giving the work a much better finish. A boy can sharpen a Plane Iron and ensure having a straight and true edge in less time than the most experienced workman could with a stone.

NOTE.—When grinding on the grindstone, which, as a rule, is UNTRUE, we advise that you do not let the cutting edge touch the stone, but leave about  $\frac{1}{4}$ th of an inch; then finish the tool on the above Sharpening Machine. By this means your tools will always have a straight edge; and much time be saved.

Can be used on Bench, as shown, but it is more convenient if fixed on a post or wall.

SIR,

Waddesdon, April 5th, 1889.

The Plane Iron and Chisel Sharpening Machine you supplied me with some months ago, must supply a longfelt want.

I have no hesitation in saying it is most economical with regard to saving time, and puts the edge of tools to much greater truth than the ordinary way. The consequence is better work. It only wants to be known to command a ready sale.

Yours truly, H. SHERWIN.

DEAR SIR,

Bicester Road, Aylesbury, March 6th, 1889.

I have been using your Patent Sharpening Machine for Plane Irons and Chisels the last few weeks, and find it a great improvement on the oil stone, a good edge is easily obtained and in much less time, and I think when known will be extensively used.

Yours truly, W. ROADS.

DEAR SIR,

The Printing Works, Aylesbury,

May 10th, 1889.

In reply to your application, we beg to state that we have now had your Tool Sharpening Machine in use for a very long time, and cannot speak too highly of its merits; and on account of its truth, is much preferred to the ordinary oil stone.

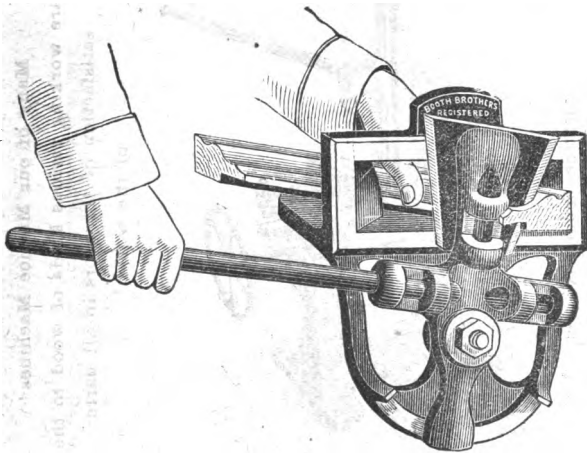
Yours faithfully,

For HAZELL, WATSON & VINEY, Lim.,  
H. JOWETT, Manager.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.


# IMPROVED MITRE CUTTERS.



**No. 1** .. .. . 15/-

Cuts 2-in. Mouldings.

Extra Cutter .. .. . 3/-

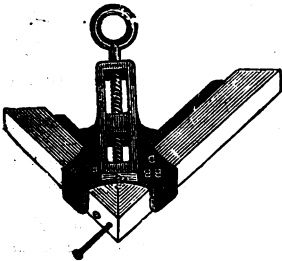
 Cuts Mitres for Picture Frames without injury to Gilt Surface.

**No. 2** .. .. . 30/-

To cut 4-in. Mouldings.

Will cut Architrave and Panel Mouldings up to 4 in. with great precision.

Extra Cutter .. .. . 6/-



## CORNER CRAMPS.

	Takes	Per Pair.
<b>No. 1</b> .. .. .	1½ in. ..	2/-
<b>No. 2</b> .. .. .	2¼ in. ..	3/-
<b>No. 3</b> .. .. .	4 in. ..	5/-

### WOOD-WORKING MACHINERY.

**MORTISING MACHINES, £8.**

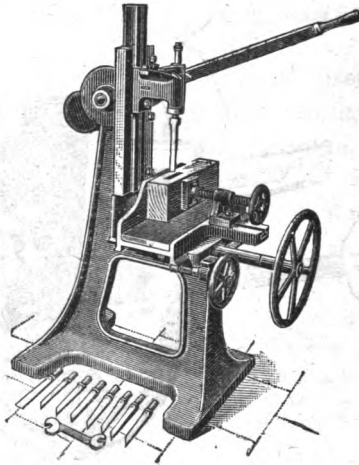
**CIRCULAR SAWS, for Foot or Steam Power.**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# THE 'BRITANNIA' MORTICE MACHINE.

We have put into this  
Machine all the additions & improvements  
that experience suggests.



Many of our Mortice Machines  
are working various kinds of wood to the  
satisfaction of the users in all parts  
of the world.

In designing and constructing the above Machine, our great aim has been to make a MORTICE MACHINE at a low price, and which for simplicity, efficiency, and accuracy in all its working parts, cannot be surpassed.

It is suitable for working either hard or soft wood, thus making it a most acceptable Machine for all classes of Joiners, Builders, Cabinet Makers, &c., &c.

The Frame itself is made in one casting. By this means a strength and solidity is given to the Machine, which is not only very desirable, but very necessary where good work is required to be done.

The Wrought Iron Lever which is used for bringing the chisel down to its work, is so placed that when the workman is using the Machine he stands in an easy and convenient position for operating on, and seeing the work he is doing.

The Chisels are made at the works under our own supervision, from a high class steel, specially manufactured for morticing purposes. A class of steel which a great many years' experience has taught us is the best for mortice chisels.

Each Chisel is fitted with a pin, which fits in a slot hole in a taper socket in chisel box, this keeps it immovable and perfectly true in reversing, thus by a half-turn of chisel box handle, the chisel is reversed truly.

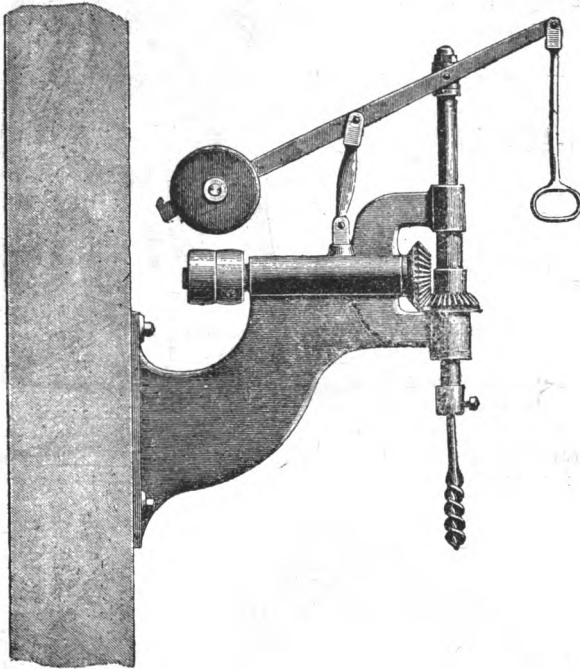
This Machine will mortice 6 in. deep, and take work on the moveable table 15 in. by 8 in. Weight of machine, 3 cwt. 3 qrs.; with Boring Apparatus, 4 cwt.

<b>Price of Machine, including 8 chisels, <math>\frac{1}{2}</math> in. to <math>\frac{3}{4}</math> in., one spanner, and one core driver (without Boring Apparatus)</b>	... ..	<b>£8</b>
<b>Price of Machine (with Boring Apparatus, including three bits for iron, and three for wood)</b>	... ..	<b>£9</b>
Self-coring chisels, extra	<b>10s.</b>	

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# WALL BORING MACHINE.



THE above machine has been specially designed to meet the demand for cheap Boring Machine, for the use of builders, cabinet makers, &c., &c.

It is capable of boring holes in all kinds of hard or soft wood with efficiency and despatch. Where room is an object this machine will be found to be very convenient on account of the very small space it requires.

The boring spindle revolves in a strong cast iron frame, firmly bolted to a wall, and is counter-balanced by weight and lever.

It is driven by bevel tooth gear and fast and loose pulleys, and the spindle is raised or lowered to suit various depths of work required by means of wrought handle attached to weight lever, as shown in front of machine.

Size	...	to bore holes up to 2 in. diameter and 8 in. deep.
Approximate Weight	... ..	2 cwts.
Average Power required	... ..	$\frac{1}{4}$ -horse.
Size of Driving Pulleys	... ..	5 in. by $2\frac{1}{2}$ in.
Speed of Driving Pulleys	... ..	500 revolutions.
Price	... ..	£6 10s.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# ROGERS' PATENT SAW SHARPENER.

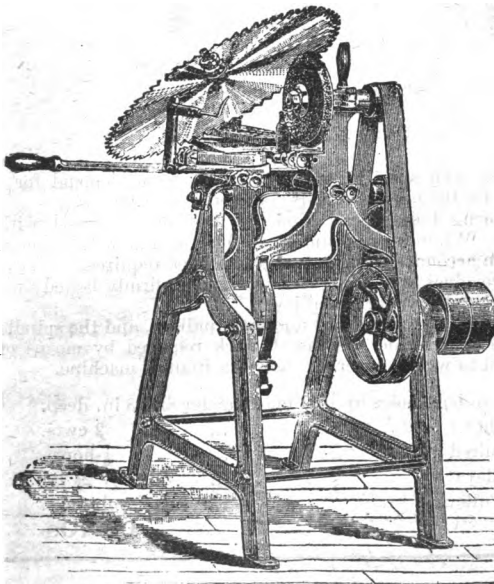
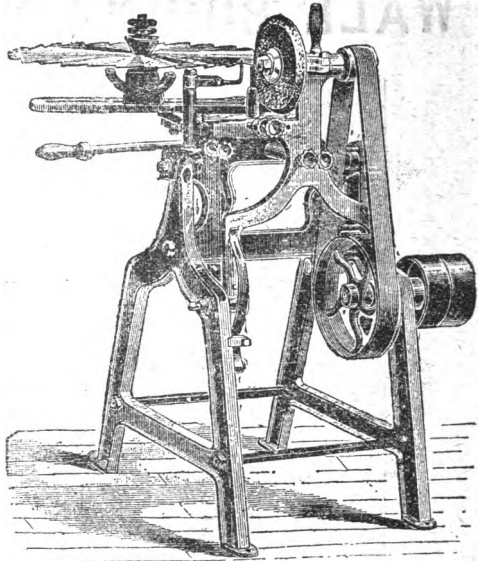
Each Machine includes  
Three Wheels, Hart's  
Patent.

**SEMI-AUTOMATIC.**

*Pitch, Angle, and  
Depth of Teeth can be  
regulated with ease.*

Any boy can work  
them!

Will save their cost in a  
few months.



Prices as follow :

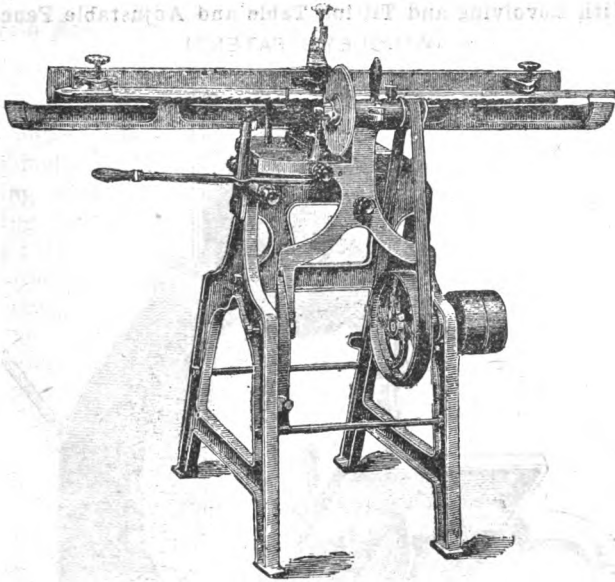
No. 1 size for Circular Saws up to 36 in. diam. . . . .	£8 0 0
No. 2 ditto, 48 in. diam. . . . .	9 10 0
No. 3 ditto, 60 in. diam. . . . .	10 10 0
If with attachment for sharpening Straight Saws, extra . . . . .	2 10 0
Ditto Wood Planing Machine Knives . . . extra	2 10 0
If with both attachments . . . . .	5 0 0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# ROGERS' PATENT SAW SHARPENER.

No. 2 Size.



Showing the arrangement for Sharpening Straight Saws.

**FOR CIRCULAR SAWS UP TO 48 in. DIAMETER.**

*Each Machine includes Three Wheels, Hart's Patent.*

**Semi-Automatic. Pitch. Angle, and Depth of Teeth can be regulated with ease. Any boy can work them.**

**Will save their cost in a few months.**

**Prices as follow :**

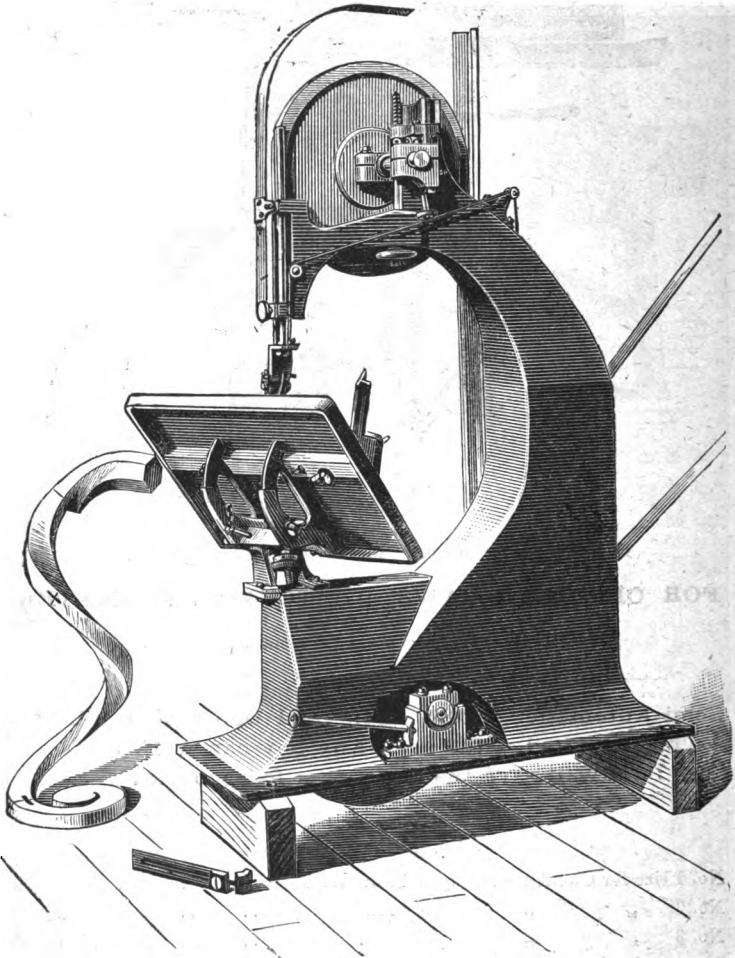
No. 1 size for Circular Saws up to 36 in. diameter .. .. .	£8 0 0
No. 2    "          "          " 48 in.    "          " .. .. .	9 10 0
No. 3    "          "          " 60 in.    "          " .. .. .	10 10 0
If with attachment for sharpening Straight Saws .. .. extra	2 10 0
Ditto Wood Planing Machine Knives .. .. .	2 10 0
If with both attachments .. .. .	5 0 0

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch, Google Letters to Colchester.*

# BRITANNIA COMPANY'S NEW BAND SAW

With Revolving and Tilting Table and Adjustable Fence.  
(WHIBLEY'S PATENT).



*(For description see opposite page.)*

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*



# BRITANNIA COMPANY'S NEW BAND SAW

**With Revolving and Tilting Table and Adjustable Fence.**

(WHIBLEY'S PATENT).

*(For illustration see opposite page.)*

THE most perfect machine of its kind yet introduced. The main body is a heavy hollow box casting, within which the driving pulleys and belt and striking gear are contained, leaving the outside of the machine clear for operator. The table tilts through an angle of 60 degrees, and can be freely revolved around the saw and secured in any position, and it is fitted with a most ingenious patented sliding fence. The saw pulleys are constructed of wood, numerous thin boards of mahogany glued and screwed together with grain in opposite direction, and with turned cast-iron hub and washer plate, avoiding arms. The saw guides are adjustable, and upper one counterbalanced.

The machine possesses many advantages over others, among which may be named the following:—

1. All ordinary work done on Band Saw Machines can be done by this machine, but with greater facility.
2. The table cants through a greater angle than any other.
3. The table can be revolved freely around the saw, and instantly secured in either one of four primary positions at right angles or at any intermediate angle.
4. The patent fence, combined with the revolving table, enables work to be done which cannot be done on any other machine, viz., all forms of oblique solids of equal or similar parallel sections; twist cuts in work of double curvature, as rails of circle upon circle curvature, twisted wreaths of staircase handrails. &c., can all be cut quickly, with ease and precision, which hitherto have all been done entirely by hand at the bench, involving much expenditure of time and highly skilled labour.
5. Square, angular, and oblique plane cuts of every description can be made accurately to gauge dimensions in every direction.

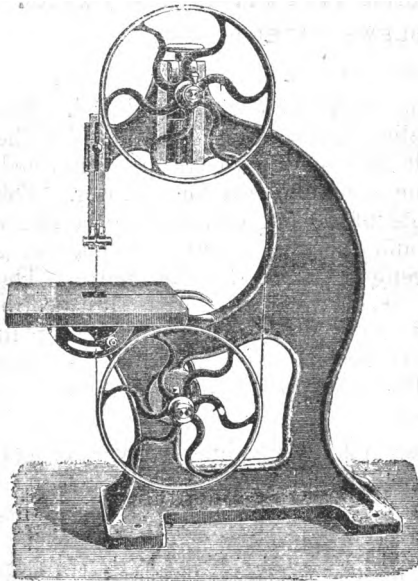
The saw pulleys are	...	...	30 in. diameter
Table	...	...	2 ft. 7 in. by 2 ft. 9 in.
Total height of machine	...	...	8 ft. 9 in.
Floor space	...	...	5 ft. 6 in. by 2 ft. 3 in.
Approximate weight	...	...	1 ton 2 cwt.
<b>Price, complete</b>	...	...	...

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

IMPROVED 24 IN.

**BAND SAW MACHINE.**

This illustration represents the smallest size of Endless Band Saw Machines we make for working by steam power. It will be a most useful addition to the works of a builder, cabinet maker, joiner, wheelwright, or pattern maker, &c. It occupies little space, and requires but a small amount of power to work it.

The main standard is a plain but very strong casting, of neat design, and made and shaped in such a manner as to give a great amount of space between the saw and the frame; this being a great desideratum in a machine of this class.

The table is planed on the surface, and is fitted with a canting arrangement, so that work may be sawn at any required angle.

The band-saw pulleys are bored and turned, and then carefully balanced, so as to ensure steadiness in working. The face of each pulley on which saw works is covered with tyres, made of the best rubber, this being found to be the best substance for the purpose.

The top pulley is made to cant, and fitted with hand-wheel and screw arrangement for raising or lowering it, to suit various lengths of saws; it is also fitted with a compensation spring, to meet any expansion or contraction of the saw whilst working.

The saw blade is sustained against the pressure of sawing by two steel wheels, one of which is placed above the table, and the other immediately below the table.

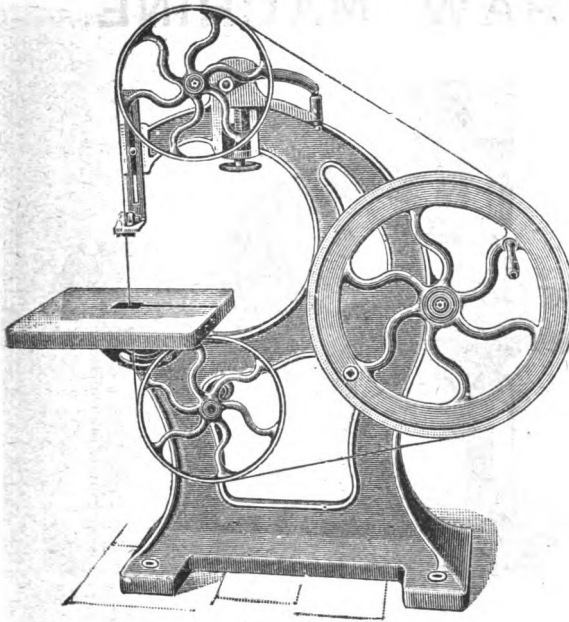
The machine is fitted with fast and loose driving pulleys, striking gear, and spanners complete.

Weight about .....	8 cwt.	Will cut in depth.....	12 in.
Average power required .....	$\frac{1}{2}$ -horse	Size of Driving Pulleys	10 in. by 3 in.
Diameter of Saw Pulleys.....	24 in.	Speed of ditto .....	300 revolutions
Size of Table.....	24 in. square	Price .....	£18.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# THE IMPROVED BAND SAW MACHINE.



The above  
represents a  
useful Band Saw  
for Hand  
or Steam Power.

It is strongly built, the pillar being one solid casting; it is compact and complete in itself, occupies little room, and works by hand with greater ease than any other hand machine of its class. We introduce it to the trade with full confidence in its working, feeling certain it will not fail to give satisfaction.

It is fitted with tension motion to allow for expansion or contraction of saw

whilst working. The table is made to cant for cutting work on the bevel. It will admit of work 11 in. deep.

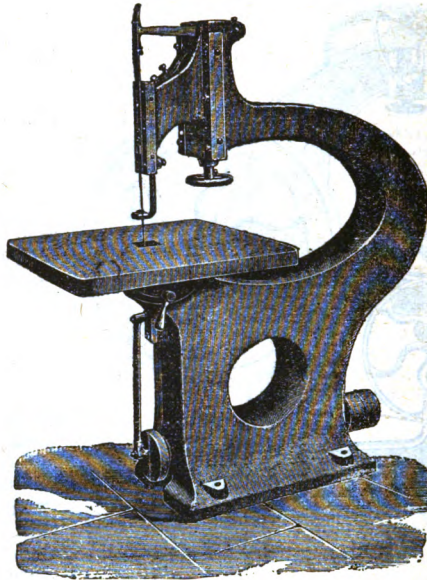
When worked by steam power, speed of driving pulleys should be about 100 revolutions per minute.

No. 1 Size, with band saw pulleys each 16 in. diameter, and fly-wheel 28 in. diameter, with angle bracket for tenoning, one screw-key, and one $\frac{3}{8}$ in. saw, sharpened and set ready for use. Weight, 5 cwt. 2 qrs. ... ..	Price	£10	10	0
No. 2 Size, with band saw pulleys each 20 in. diameter, and fly-wheel 32 in. diameter, with angle bracket for tenoning, one screw-key, and one $\frac{3}{8}$ in. saw sharpened and set ready for use. Weight, 7 cwt. ... ..	Price	13	10	0
A Boring Apparatus, with 1 in. auger, may be attached to either machine ... ..	Price extra	2	0	0
Either machine may be made so as to work by steam power, by placing a pair of pulleys behind fly-wheel, one pair 9 in. pulleys ... ..	Price extra	0	12	6
One pair 12 in. pulleys ... ..	"	0	15	0
Belt, fork, and striking gear for ditto ... ..	"	0	12	0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch, *Google* All Letters to Colchester.

# IMPROVED FRET SAW MACHINE.



THE engraving herewith represents our Fret Saw Machine, it is used for sawing carved and irregular work, and is especially useful for Cabinet Makers, Manufacturers of Pianofortes, or others who have fret work to do of any kind whatever, it will do the most delicate work, or it will saw timber up to 4 in. deep.

The Machine is self-contained, the frame being very strong, thus giving great rigidity to it.

It is fitted with very simple but effective straining Apparatus, consisting only of a lever, to one end of which the saw is attached in such a manner that it is readily fixed or released.

The tension motion is so arranged that it is equally the same at every part of the stroke.

The table has a planed surface, and is fitted with canting arrangement, so that work may be cut to any required bevel.

Weight about .....	10 cwts.	Driving Pulleys .....	6 in. by 3 in.
Table.....	30 in. square	Speed of Driving Pulleys .....	1000
Average Power .....	$\frac{1}{4}$ -horse	Price .....	£25.

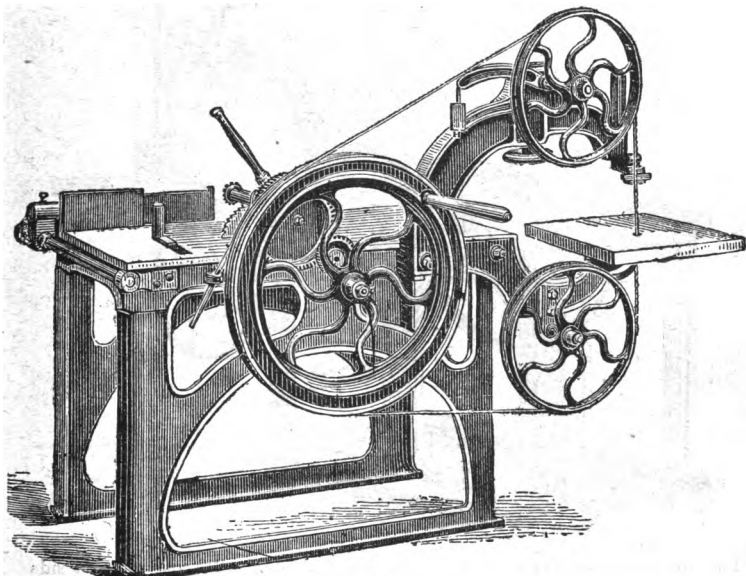
**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

HAND POWER COMBINED

# Circular and Band Sawing Machine.

For the use of Joiners, Builders, Cabinet Makers, Coach Builders, &c. It is also very useful for Contractors, as it is readily moved from place to place where required.



THE table for above Bench is 4 feet by 2 feet, substantially made of iron, planed true on top. It is fitted with Rising and Falling Spindle, Self-acting Feed Motion; Parallel Fence, made to cant so as to cut bevells, and also to turn over end of bench, to be out of the way of cross-cutting. It is also fitted with Weight and Roller for keeping timber to Fence.

With this Bench one man can cut three inches deep at the rate of ten feet in four minutes, or two inches deep at the rate of ten feet in two minutes, thus effecting a saving of 150 per cent. over what can be done with the Hand Saw.

Band Saw Apparatus is fitted with square table, made so as to cant over for cutting to any bevel. With this may be cut any irregular, curved, or ornamental design, with an ease not attained before by any Hand-power Machine. The Band Saw is fitted with a new arrangement for securing equal tension to saw at all times.

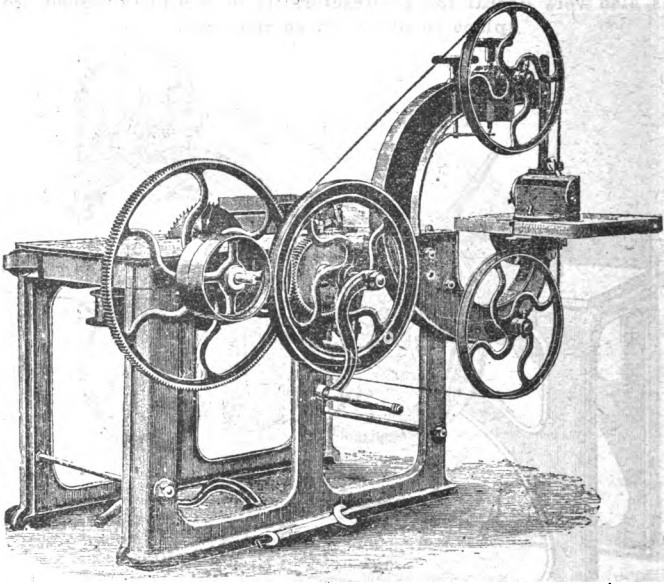
Approximate Weight, 8 cwt. 2 qrs. Band Saw Pulleys, 16 in. diameter.

Price of above Machine, with one each 9 in. and 14 in. Circular and one $\frac{1}{2}$ -inch Band Saw, for Hand and Steam Power ..	£24	0	0
Ditto if with Boring Apparatus and one Auger ... extra	2	0	0
Ditto if for Steam Power only and not for Hand ... ..	23	10	0
Ditto if for Hand Power only .. .. .	22	0	0

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

## THE COMBINATION HAND POWER Circular and Band Sawing Machine.



THE above hand-power machine is fitted with two handles, one on each side of machine; by this arrangement when requisite, two men may be turning at the same time without being in each other's way. It can also be fitted with fast and loose pulley to work by steam power.

It is specially adapted for joiners, builders, cabinet makers, and other workers in wood.

Saw spindle is made to rise and fall for rabbeting and grooving purposes. Parallel fence is arranged so as to cant to any angle, for cutting work on the bevel. Table is 4 ft. by 2 ft. planed true on the surface. A self-acting feed arrangement brings the work up to the circular saw. A boring apparatus can also be attached to the bench, as shown above.

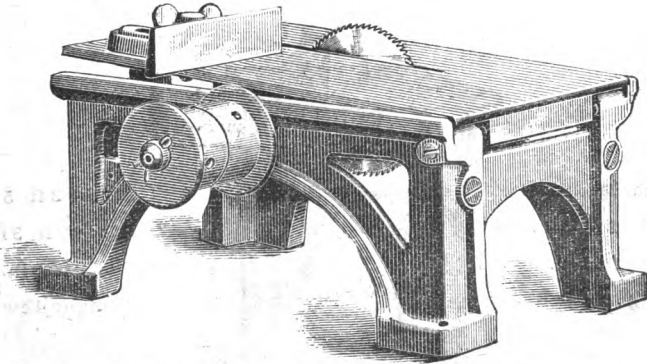
Size, to take a circular saw 15 in. diameter, to cut 5 in. deep, and with the band-saw 6 in. deep; approximate weight, 9 cwt.; size of driving pulleys, if fitted with steam power, 7 in. by 2½ in.; speed of driving pulleys if fitted up for steam power, 100 revolutions.

With one each 9 in. and 15 in. circular saw, and one ¾ in. band saw...	<b>£24</b>
Bench, without band saw apparatus, with one 15 in. and one 9 in. circular saw	14
If with boring apparatus and one ½-in. auger, extra	2
If with fast and loose pulley, 7 in. by 2½ in., for steam power, extra	1

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# CIRCULAR SAW BENCH.



For Wood or Metals; with Rising Table; to be driven by any ordinary foot power.

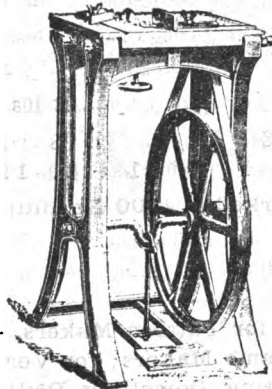
6 $\frac{1}{2}$  in. long by 10 in. wide at base; table, 9 $\frac{1}{2}$  in. by 6 in.; fast and loose pulleys, 1 $\frac{1}{8}$  in. diameter by 1 in. wide; height of bench, 4 $\frac{1}{8}$  in.; will take a 3 $\frac{1}{2}$  in. circular saw.

Price, £2 2s. Od.

## USEFUL SAW

FOR LIGHT WOOD OR METAL WORK.

Size of Table,  
19 in. by 19 in.



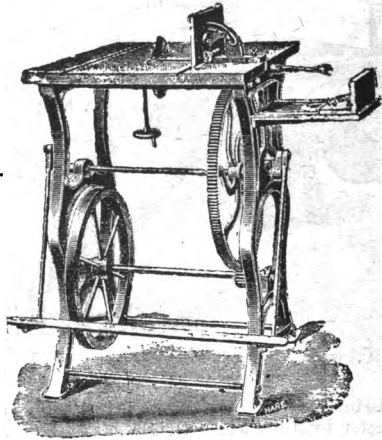
Size of Table,  
19 in. by 19 in.  
BEED

Price, £8. Cheaper Pattern, £6 15s.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# THE NEW PATENT SAW



Height 3 ft. 5 in.  
Table 2 ft. 3 in.  
by 2 ft. 9 in.  
Weight 4 cwt.

Height 3 ft. 5 in.  
Table 2 ft. 3 in.  
by 2 ft. 9 in.  
Weight 4 cwt.

Including one each 8 in. Rip and Cross-Cut Saws, and one 6 in. Saw, with one pair of Bevel Washers for Grooving, **£15.**

Fret Arm to suspend from ceiling, for Fret Cutting, **£2 10s.**

Two Mitre and Cross-Cut Gauges, **17/6.**

If 12 in. Cross-Cut Saw instead of 8 in., **5/- extra.**

Adjustable Table at side, including Chuck for holding Bits of various sizes, **22/6.**

Morticing Attachment, **£3 10s.**

Centre-Bits fitted— $\frac{1}{4}$  in., 8d.;  $\frac{3}{8}$  in., 8d.;  $\frac{1}{2}$  in., 8d.;  $\frac{3}{4}$  in., 8d.; 1 in., 10d.;  
 $1\frac{1}{8}$  in., 1/-;  $1\frac{1}{4}$  in., 1/-;  $1\frac{1}{2}$  in., 1/2.

**The Saw can be worked at 1500 Revolutions per Minute.**

A Handle at left can be used as auxiliary to, or in lieu of Treadle—Price **7/6.**

This Saw will cut 10 ft. of inch wood in a minute.

**Especially adapted for Pattern Makers, Cabinet Makers, Joiners, Picture Frame Makers; for Vertical or Circular Sawing, Groove Cutting, Dowelling, Drilling, Dovetailing, Morticing, and Moulding up to  $\frac{3}{4}$  in.**

**BRITANNIA CO., COLCHESTER, England.**

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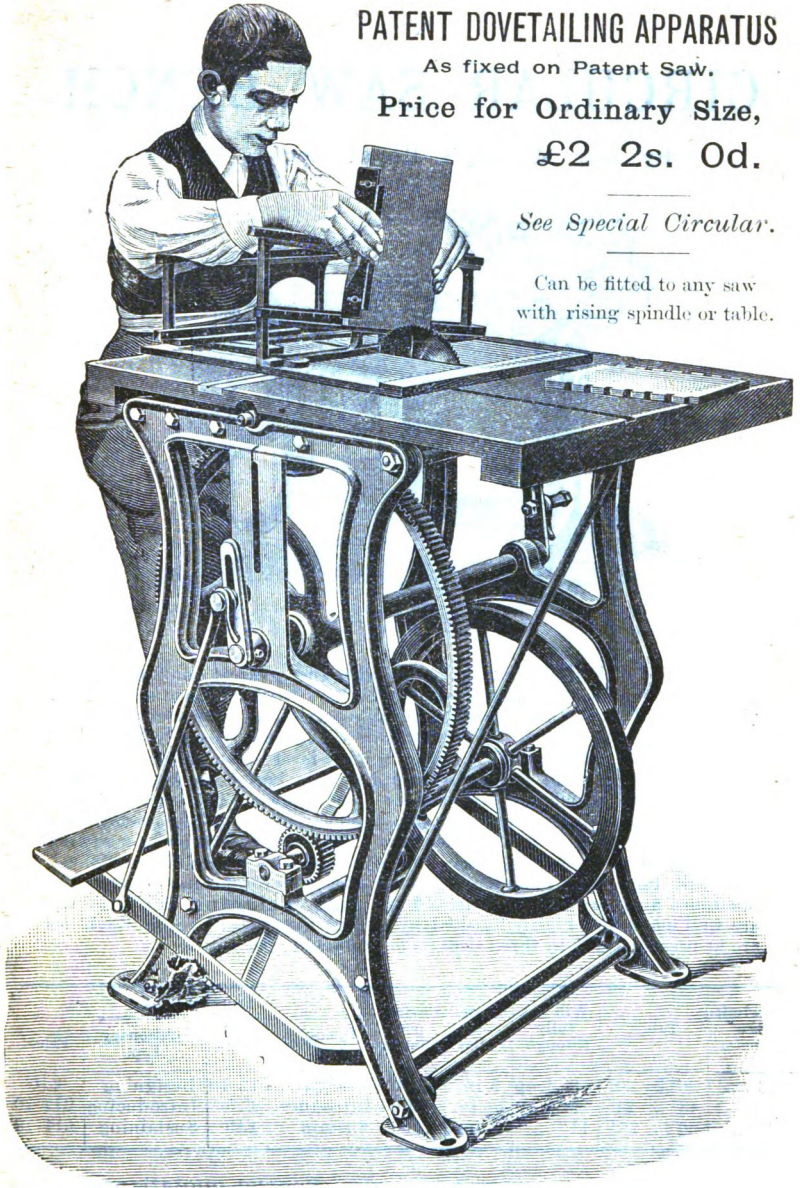
# PATENT DOVETAILING APPARATUS

As fixed on Patent Saw.

Price for Ordinary Size,  
£2 2s. 0d.

*See Special Circular.*

Can be fitted to any saw  
with rising spindle or table.



## CAUTION.

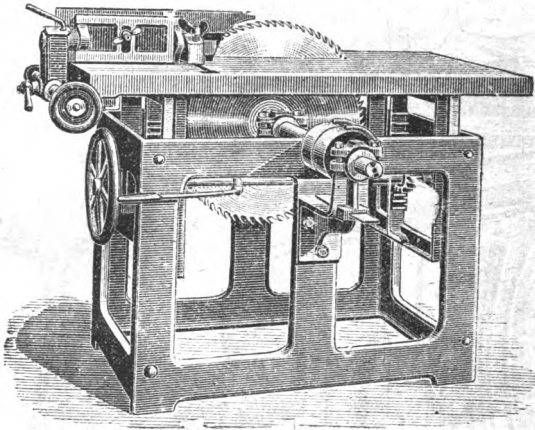
The above appliance is patented. Users or makers infringing will be proceeded against.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# CIRCULAR SAW BENCH.

By Her Majesty's Royal Letters Patent.



THIS Saw Bench is introduced by us with the greatest confidence, after a full practical trial. The patent gearing has been designed specially to give quick lifting with ease and certainty of action for very accurate work, and is sufficiently strong to lift much more than can possibly be needed, and is perfectly self-sustaining. The Spindle is of steel, and runs in long adjustable bearings of gunmetal, and has hole bored up at the end to receive augers, which are fastened by a set screw. The strap-fork is so constructed that it can be placed on either side of pulleys, being thus suitable for driving from any direction. The fence is arranged for sawing either square or at bevel, and has fine adjustment by screw and handwheel, and will turn over completely out of the way for cross-cutting. The Machines are very strong (the 24 in. size weighing 9 cwt.) and are well made and highly finished by skilful workmen. These Machines are at present made in three sizes as per following list :—

To admit Saw diameter.	Table.	Will cut fully through.	Diam. of Pulley.	Revtns. per minute	CODE WORDS.			
					Rising Top.	Price.	Stationary Top.	Price.
18 in.	36" by 20"	6½" deep	5 in.	2000	Design	£12 10	Designing	£10
24 "	48" " 24"	9" "	5½ in.	1500	Introduce	£15	Introducing	£12 10
30 "	56" " 28½"	11" "	7 in.	1200	Sustain	£19	Sustaining	£14 10

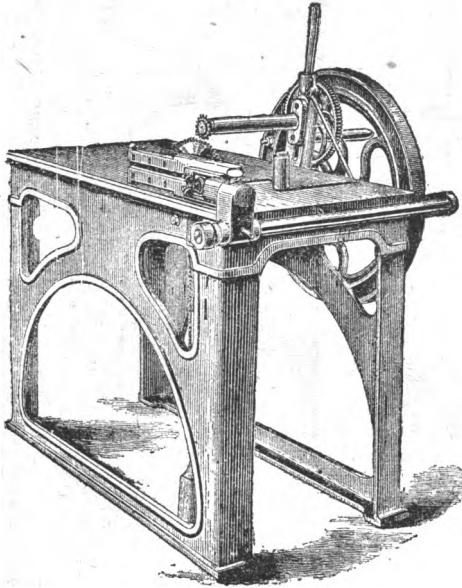
Above prices are approximate. Special quotations.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# IMPROVED HAND-POWER CIRCULAR SAW BENCH.

For the use of Joiners, Builders, Cabinet  
Makers, and Coach Builders.



It is also very useful for Contractors, as it is  
readily moved from place to place where  
required.

THE above Bench, 4 ft. by 2 ft., is substantially made of iron, planed true on the top. It is fitted with rising and falling spindle, self-acting feed motion; parallel fence, made to cant, so as to cut bevels, and also to turn over end of bench, to be out of the way of cross cutting. It is also fitted with weight and roller for keeping timber to fence.

With this Bench one man can cut 3 in. deep at the rate of 10 ft. in four minutes, or 2 in. deep at the rate of 10 ft. in two minutes, thus effecting a saving of 150 per cent. over what can be done with the hand-saw.

Size—Will cut with a 14 in. saw  $4\frac{1}{2}$  in. deep, and with the band-saw 6 in. deep. Approximate Weight with 6 rollers for extending the bench, 6 cwt. 2 qrs.

The above may be worked by steam power by replacing the fly-wheel with pulleys for belt driving. It can be fitted with boring apparatus if desired.

<b>Price</b> (including 2 circular saws, viz., 9 in. and 14 in., 6 rollers and carriers for extending the Bench, and 2 extra change wheels for feed motion) ... ..	<b>£12 10 0</b>
Ditto (if without feed motion, and without rollers and carriers for extending the Bench) ... ..	<b>10 10 0</b>

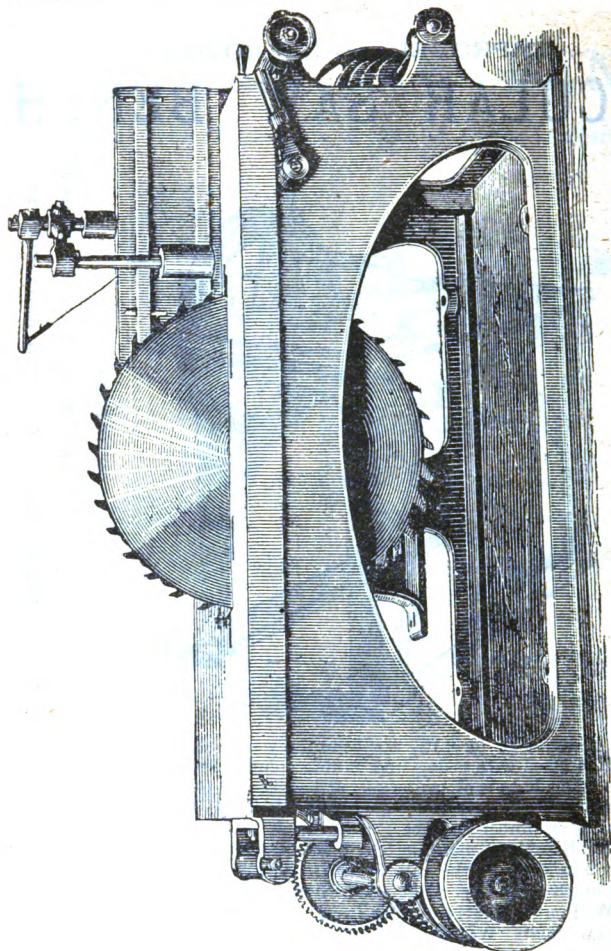
For an extra charge of 10s., this Bench can be prepared to work either by steam or hand, as occasion requires.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# SELF-ACTING SAW BENCHES.



These Benches are useful for cutting planks or battens into boards or scantlings. The tops are planed true on the surface, and are fitted with strong parallel fence, to which is attached pressure lever and roller for keeping timber to fence whilst being sawn into boards, &c.

The main framing is cast all in one piece, and the surface and all facings are truly planed. The self-acting motion is driven from saw spindle, and is arranged so that the rate of feed may be varied from 15 to 60 feet per minute. The saw spindle is of steel, working in massive gunmetal bearings, 3 in number, one of which is bolted to side of bench, to carry off end of saw spindle. The benches are constructed in such a manner that spindle is readily taken out when required for cleaning purposes.

They are made in the following Sizes

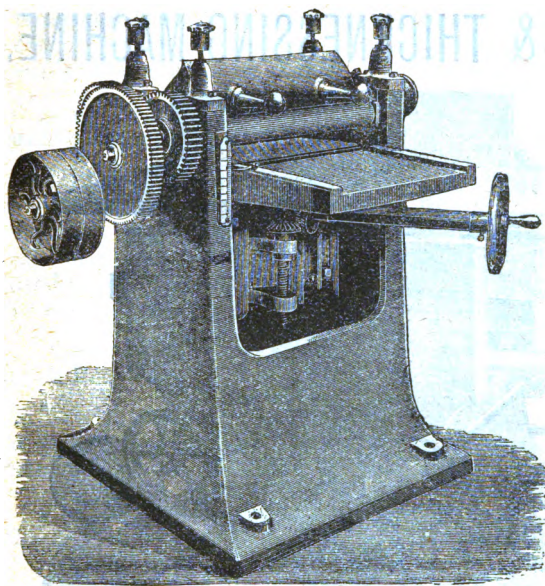
No. 1 Size, 8 ft. 9 in. long and 3 ft. 2 in. wide, to take in a Saw 48 in. diameter, to cut timber 21 in. deep; weight about 35 cwt.; power required, 4-horse; driving pulleys, 15 in. by 5 in.; speed, 850 .....	£55.
No. 2 Size, 8 ft. long and 3 ft. wide, to take in a Saw 42 in. diameter, to cut timber 18 in. deep; weight about 28 cwt.; power required, 3-horse; driving pulley, 12 in. by 4½ in.; speed, 950.....	£45.
No. 3 Size, 5 ft. 6 in. long and 2 ft. 9 in. wide, to take in a Saw 36 in. diameter, to cut 15 in. deep; weight about 23 cwt.; power required, 3-horse; driving pulleys, 10 in. by 4½ in.; speed, 1,100 .....	£36.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



# PANEL PLANING & THICKNESSING MACHINE.



THE above machine has been designed with a view to meet the several requirements of builders, cabinet makers, joiners, pattern makers, etc.

Lap board, cigar box and case makers will find it very useful, as it is specially adapted for their class of work. By a little alteration of pressure bar and chip guard, it can be made so as to work sash bars, window bars, and other kinds of moulded work. The framework is all one casting, made very strong to prevent any vibration or tremulous motion; the adze is made of steel, and planed out on two sides to form a back iron up to the knives, and revolves in long gun-metal bearings.

The feed rollers are made of wrought iron, and the pressure is readily adapted with strong springs, for either light or heavy work. The table is made strong and planed perfectly true on the top, and is fitted with two friction rollers working in gun-metal steps. These rollers are adjustable, and can be set to stand slightly above the top of the table.

The feed motion can be thrown out of gear instantly, and varied for three rates of feed. The table is made to rise and fall to suit various thicknesses of timber, by means of hand wheel and screw fixed on side of machine.

Size.	To work stuff.	Take in stuff up to	Weight Cwts.	Power required.	Driving Pulleys.	Speed of ditto	Price.
No. 4	15 in. wide	4 in. thick	13	1 h.p.	6 in. by 8 in.	800	£28 0 0
No. 3	18 " "	5 " "	16	1½ "	7 in. " 8 in.	800	32 10 0
No. 2	24 " "	5½ " "	20	1½ "	8 in. " 8 in.	800	40 0 0
No. 1	30 " "	6 " "	30	2 "	8 in. " 4 in.	750	60 0 0

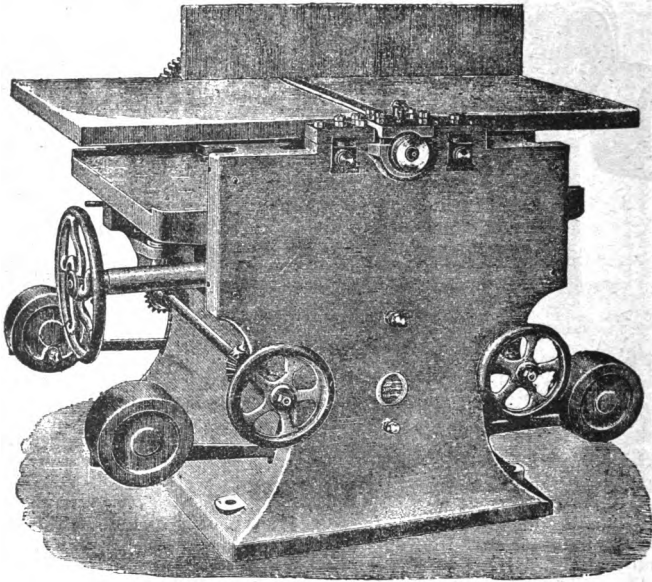
Any of the above-named Panel Planing Machines may be arranged so as to work moulds up to 5 in. wide at an extra cost of 15/-

Any one of the above machines may be fitted with an apparatus for cutting the table so as to plane work on the bevel, thus making an invaluable machine for the pattern room of an engineer's or machinist's works, at an extra cost of £3.

## BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

## The A1 Combined Hand & Power Feed PLANING & THICKNESSING MACHINE.



THE above Combination Planing Machine is simple in construction, occupies little space, and is specially adapted for the following work :—Taking out of twist any kind of stuff, making glue joints, surfacing straight or taper work, bevelling, chamfering, or squaring up. It will plane, with power feed, under the cutter, panels or boards any thickness, from one-eighth of an inch to the size the Machine is specified to take in.

The Machine is of very substantial construction. The table is fitted with special adjustable slides, having large wearing surfaces, and is raised or lowered by means of one screw, this screw being fixed under centre of table, only requires one pair of bevel wheels and one handwheel, whilst in other machines, to attain the same purpose, two screws and three pairs of bevel wheels are necessary.

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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

The Top Tables on which work is placed for passing over the cutter are made in halves, each half having a separate rising and falling motion, each regulated by hand-wheel and screw. These tables can be readily drawn apart when it is required to change or sharpen the irons.

A Fence is fitted on the top table, which is arranged to cant to any required bevel.

All the Feed Rollers are made of wrought iron, the front top roller being grooved so as to grip the work, and the necessary pressure is got by weights, made adjustable to suit light or heavy work. The two bottom friction rollers are fitted in the table. These rollers can be adjusted as required for the various kinds of wood to be worked.

A Flexible Pressure Bar placed on each side of the cutter block keeps the work level.

The Cutter Block is of an improved form, and the necks in which it revolves are of the best gunmetal extra long and fitted with self-oiling lubricators.

The various adjustments enable the workman to make changes quickly.

The Machine is provided with a gauge for indicating the thickness of stuff it will plane.

Size, No. 3, to take work 15 in. wide and 5 in. thick ; Driving Pulleys on Countershaft, 6 in. by 3 in. ; Speed of Countershaft, 800 revolutions ; Approximate Weight, 17 cwt. ; Power required, 1½-horse **Price £44 0 0**

Size, No. 2, to take work 18 in. wide and 6 in. thick ; Driving Pulleys on Countershaft, 7 in. by 3 in. ; Speed of Countershaft, 800 revolutions ; Approximate Weight, 17 cwt. ; Power required, 1½-horse **Price £52 10 0**

Size, No. 1, to take work 24 in. wide and 6 in. thick ; Driving Pulleys on Countershaft, 8 in. by 3 in. ; Speed of Countershaft, 800 revolutions ; Approximate Weight, 28 cwt. 2 qrs. ; Power required, 2-horse  
**Price £62 10 0**

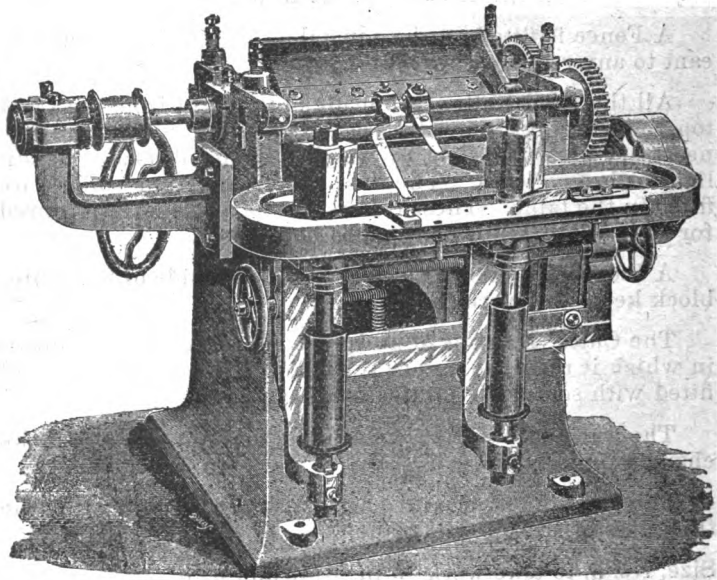
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**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

## COMBINED

## Planing, Thicknessing &amp; Moulding Machine



This machine is an improvement on the Panel Planing and Thicknessing Machine, and is designed with a view to meet the demand for a machine that will occupy but a small space, and yet be as efficient in its working as a large machine.

It will surface and thickness up stuff from  $\frac{1}{2}$  in. to 5 in. in thickness, and it will plane work on three sides at one operation up to 18 in. wide and 4 in. thick.

It will plane, joint, tongue, and groove, work skirtings, strike mouldings, work window and sash bars, and will be found a most valuable machine for joiners, carpenters, cabinet makers, pattern makers, &c.

The side adzes are of steel, and work in long gun-metal bearings. The cutter blocks are wrought iron, and fitted loose on spindles, so as to be removed when required.

The brackets for carrying the spindles are made very strong, and can be adjusted by means of hand wheel and screw on each side of machine, to suit the various widths of work to be done.

The feed rollers and gearing are of wrought iron, very powerful and effective. Three rates of feed to suit various thicknesses.

The machine is complete with countershaft, spanners, lubricators, &c.

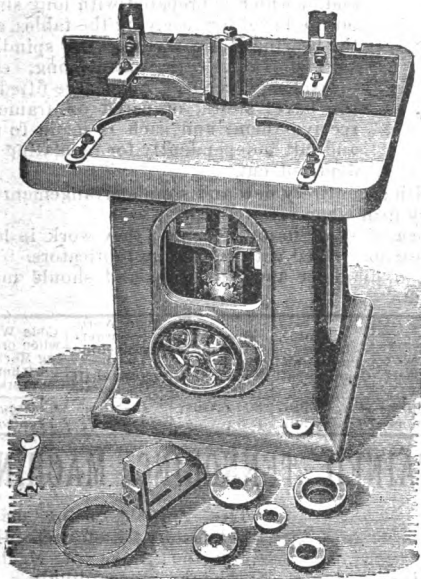
Sizes.	To work stuff on three sides at one operation.	Approx. Weight.	Average Power required.	Size of Driving Pulley.	Speed of Driving Pulleys.	Prices.
No. 1	30 in. by 5 in.	35 cwt	2½ horse	10in. by 4in.	750 revlts.	£90
No. 2	24 in. „ 5 in.	28 „	2½ „	8in. „ 4in.	800 „	60
No. 3	18 in. „ 5 in.	22 „	2 „	8in. „ 4in.	800 „	32
No. 4	15 in. „ 4 in.	18 „	1½ „	7in. „ 3in.	800 „	40

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



## SINGLE SPINDLE CIRCULAR MOULDING MACHINE.



THE above is a very useful machine for Joiners and Cabinet Makers. It is adapted for shaping, moulding, and planing all kinds of curved or irregular work to wood templates or patterns. It will also tongue, groove, edge boards, stick straight moulds, or work window and sash bars. To facilitate the working of straight moulds, &c., it is fitted with a parallel adjustable fence and pressure springs. The framework is all in one casting, thereby giving strength and firmness, which are very requisite in machines of this class. The spindle is made of steel, and works in gunmetal bearings, and is arranged so as to revolve in either direction to suit the grain of wood to be worked. The work may be done by cutter blocks, with irons bolted on in the usual manner; or the iron

may be fixed in a slot in the spindle, which is prepared to receive them, and where they are held in position by a set screw fixed in top end of spindle. The spindle is made to rise and fall by means of handwheel and screw; by this means the cutters may be readily adjusted to work at any desired height above the surface of the table. The machine has one cutter block, with cutter bolts and nuts, nut and washers for holding cutters in place and set screw in top end of spindle.

**Will plane  $4\frac{1}{2}$  in. wide at one operation.**

Weight, with countershaft, 10 cwt. Power required, 2-horse. Driving pulleys on countershaft, 8 in. by  $2\frac{1}{2}$  in. Speed of same, 800.

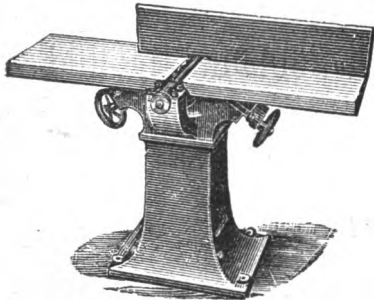
**Price**, with one square cutter block  $4\frac{1}{2}$  in. deep, one pair of slotted washers, and with straight fence and side pressure springs **£22 0 0**

If fitted also with straight and circular fences, as shown in the engraving at the foot of the machine . . . extra **1 5 0**

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# HAND PLANNER.



ON the most modern principles, for making true surfaces and edges, stop chamfering, squaring, bevelling, &c., &c.

The Frame is of cast iron, of strong section, and cast in one solid piece, top end of which is prepared with long slides on the bevel for receiving the tables, also the bearings for carrying cutter spindle.

The Tables are extra long, each measuring three feet. They are fitted on the bevel slides, prepared on frame to receive them, and each is made to rise and fall independently for regulating the depth of cut.

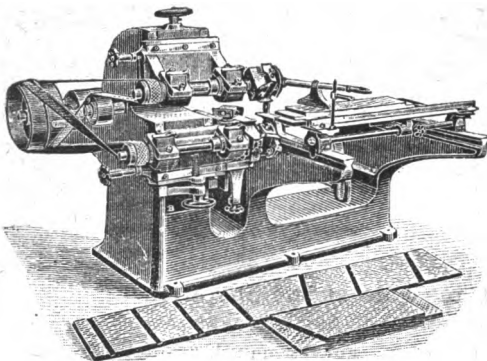
The Fence for above is made with an entirely new and simple arrangement for bevelling, is readily set, and is very firm when screwed up.

The Cutter Block and Spindle are of steel, in one forging; they work in long and substantial phosphor bronze bearings, fitted with self-oiling lubricators.

The Pulley on the Spindle is 3½ in. diameter and 3 in. wide, and should make 4,000 to 5,000 revolutions per minute.

SIZES.	Approximate Weight with Countershaft.	Average Power Required	Size of Driving Pulleys on Countershaft	Speed of Driving Pulleys on Countershaft	Code Word when ordering Machine with Countershaft by Cablegram	Code Word when ordering Machine without Countershaft
No. 1, to work stuff 12 in. wide	9 cwt.	½ horse	6 in. by 3 in.	800 revols.	<i>Idolater</i>	<i>Idlagyne</i>
No. 2, .. 9 in. ..	8 cwt.	½ horse	6 in. by 3 in.	800 revols.	<i>Idolized</i>	<i>Ignicole</i>

## IMPROVED SELF-CONTAINED TENNONING MACHINE.



THE Spindles being driven independently of each other, and the frame of Machine prepared accordingly, one spindle can be stopped whilst the other, with the necessary tools, will "trench shelving," "check gratings," cross cut will circular saw, &c. &c., either straight or angular to any length and of the widths as specified, with slight adjustment.

Cutter Blocks are of a special shape, and so arranged that only one half of each of the irons are in actual work

at one time, cutting the heaviest tenons steadily and with perfect ease.

The Machine as here shown and described is fitted with a vertical Spindle for scribing only. If required for working double tenons, we attach to the Machine a suitable Vertical Spindle with special Cutter Heads, or Drunken Saw for the purpose.

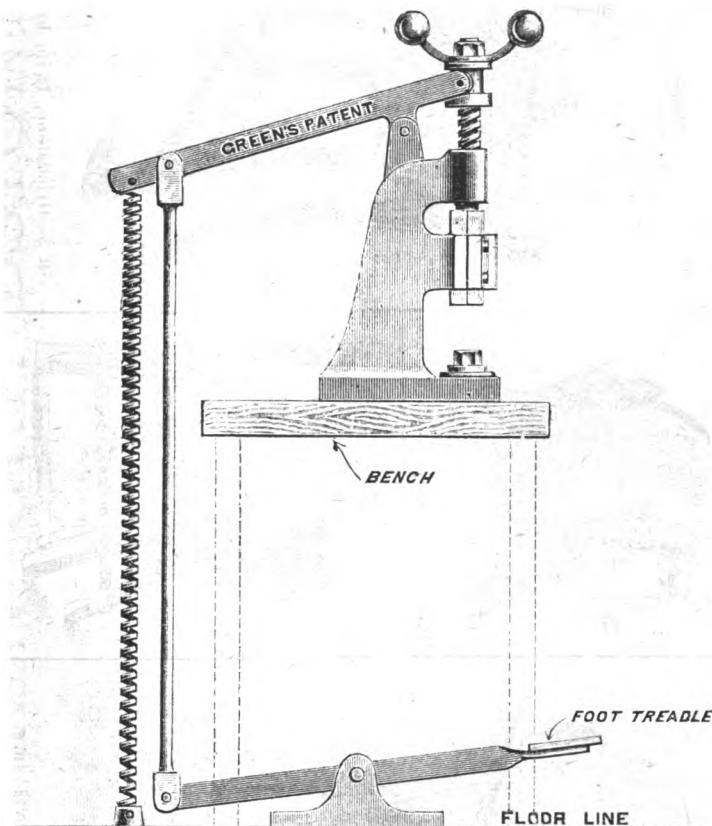
SIZES OF MACHINE.	Approximate Weight	Average Power Required.	Size of Driving Pulleys on Countershaft	Speed of Driving Pulleys on Countershaft	Code Word for Machine as shown.	Code Word for Machine made to cut double tenons.
No. 1 size, to work stuff 16 in wide by 6 in. thick, and cut tenons 6 in long	25 cwt.	1 horse	12 by 3½	850 revols.	<i>Catacomb</i>	<i>Catalonia</i>
No. 2 size, to work stuff 12 in wide by 5 in. thick, and cut tenons 5 in. long	23 cwt.	1 horse	10 by 3½	850 revols.	<i>Catapult</i>	<i>Catapava</i>

BRITANNIA CO., COLCHESTER, England.

London Showrooms - 100, Houndsditch. All Letters to Colchester.

# GREEN'S PATENT FOOT PRESSES

Great Speed, Economy, and Accuracy.  
Both Hands of the Operator at liberty. Great Saving of Labour.  
Special Designs to suit all Trades.



THE attention of manufacturers is called to the very great advantages these Presses have over the ordinary kind. They are arranged to be worked by the **Foot** instead of by **Hand**—thus enabling the operator to have **both** hands at liberty to manipulate the work; thereby saving a great amount of time and making it **easy** to perform **rapid** operations with these Presses that are not possible with any others.

The improved arrangement of the Levers in combination with the screw and weighted "Fly," very greatly increases the power and efficiency of the Press, making it quite easy to work.

They are made and finished in first-class style; the screw and all the working parts being case-hardened.

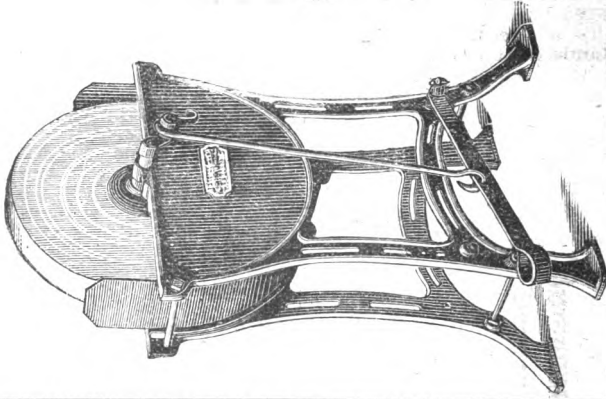
PRICE from £6 10s.

**BRITANNIA CO., COLCHESTER, England.**

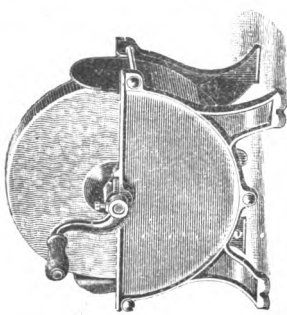
London Showrooms—100, Houndsditch. All Letters to Colchester.

# ARMENIAN GRINDSTONES.

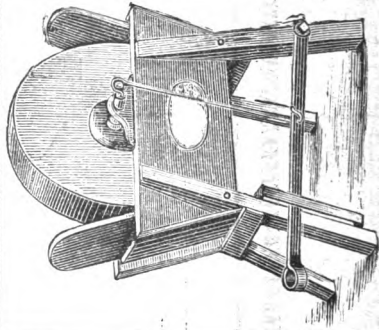
See page 153.



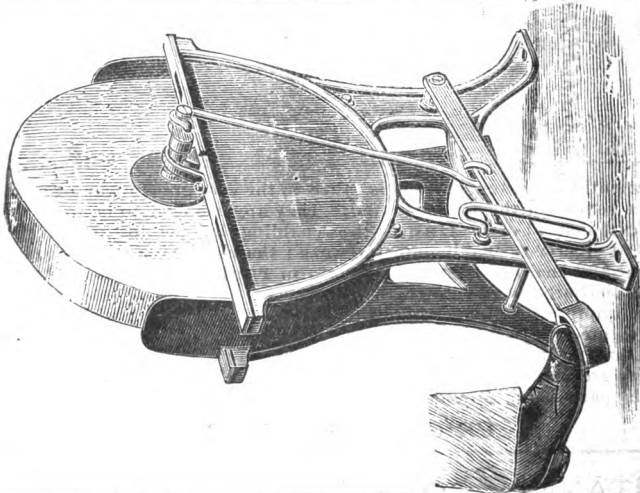
B 3—Grindstone, 18 in. by 2½ in.



No. 11—Grindstone 12 in. by 2 in.



C 12—Grindstone, 22 in. by 3 in.



F 9—Grindstone, 36 in. by 4½ in.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# ARMENIAN GRINDSTONES.

See page 152.

To work by hand, foot or power, mounted on strong Cast Iron or Wood frames, well painted and varnished. These Stones are of the **Best Fine Grit**, and well adapted for all kinds of Edge Tools. All Stones are fitted with Turned Wrought Spindles and Plates screwed on, to ensure their keeping true, having no wood wedges to get loose, and are sent out with Treadle and loose Handle, complete for immediate use.

## PRICES.

	£	s.	d.
No. 11—12 in. by 2 in. Hand Grindstone, for table, on Cast Frame, with Spindle, Plates and Handle	0	12	0
No. 22—18 in. by 2½ in. Hand Grindstone, for table, Cast Frame	0	18	0
B 2—18 in. by 3½ in. Stone, mounted on Cast Iron Frame	1	9	0
B 3—18 in. by 2½ in. Stone, mounted on Cast Iron Frame, with turned Spindle, Plates, Handle and Treadle	1	7	0
G 4—24 in. by 4 in. Stone, mounted on Cast Iron Frame, with turned Spindle, Plates, Handle and Treadle	2	4	0
G 6—24 in. by 4 in. Stone, mounted on Cast Iron Frame, with turned Spindle, Plates, Treadle and Handle, complete	2	4	0
Rollers	2	6	0
DS 5—24 in. by 5 in. Stone, mounted on extra strong Cast Iron Frame, Anti-Friction Rollers, Handle and Treadle complete	2	15	0
H 6—26 in. by 4½ in. Stone, on strong Cast Iron Frame, with Plummer Blocks, Plates, Handle and Treadle	3	0	0
K 7—28 in. by 4½ in. Stone, on strong Cast Iron Frame	3	5	0
E 8—30 in. by 4½ in. Stone, mounted on extra strong Cast Iron Frame, with Plummer Blocks	4	0	0
F 9—36 in. by 5 in. Stone, on extra strong Cast Iron Frame, with Plummer Blocks and Pulley for Power	5	10	0
X 10—4 ft. by 8 in. Stone, on extra strong Cast Iron Frame, with turned Spindle, Plates, Plummer Blocks, and Fast and Loose Pulley	9	10	0
A 11—18 in. by 2½ in. Stone, mounted on Wood Frame, with Spindle, Plates, Handle and Treadle	1	1	0
C 12—22 in. by 3½ in. Stone, mounted on Wood Frame, with Wrought Spindle, Plates, Handle and Treadle complete	1	10	0
D 13—24 in. by 4 in. Stone, mounted on Wood Frame, with Anti-Friction Rollers, Handle and Treadle complete	1	16	0
Small Stones similar to No. 11, 6 in. by 2 in., 6/-; 8 in. by 2 in., 8/-; 10 in. by 2 in., 10/-			

Frames without Grindstones, and Grindstones without Frames can be supplied.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch.

All Letters to Colchester.

# IMPROVED FAN FORGES.

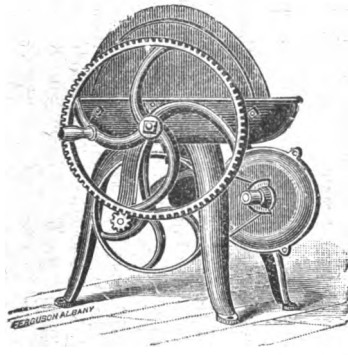
Even the smallest sizes will heat iron to a welding heat in 5 to 10 minutes. The smaller sizes are intended to stand on a bench, and are valuable tools for bronzing, soldering, tempering, and welding. The larger sizes are, in efficiency, superior to the ordinary Forge.

**Sole Agents for England:—BRITANNIA COMPANY.**

In Stock at 100, Houndsditch, London.

*All Letters to Colchester.*

**NOTICE.**—In order to introduce these the prices are fixed for **NET CASH** and 5 per cent. must be added if they are booked.



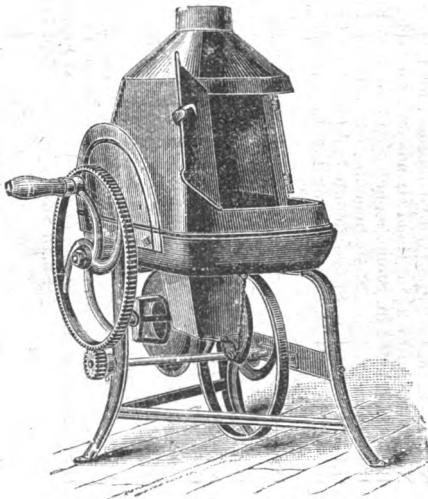
## BENCH FORGE.

No. 77—Without Hood.

Height, 15 in., Diameter, 15 in.,  
Weight, 50 lbs.

Will produce welding heat on 1 in.  
iron in five minutes.

£2 5s. 6d.



## BENCH FORGE.

No. 12—With Hood.

Size 12 in. by 17 in.  
by 15 in. high,  
Weight 50 lbs.

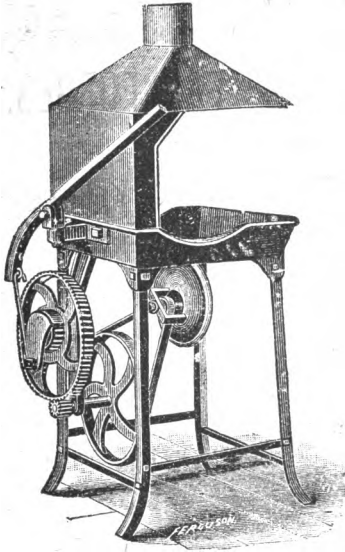
Will heat 1 in. to  
welding heat  
in ten minutes.

£3 7s. 6d.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

## IMPROVED FAN FORGES.



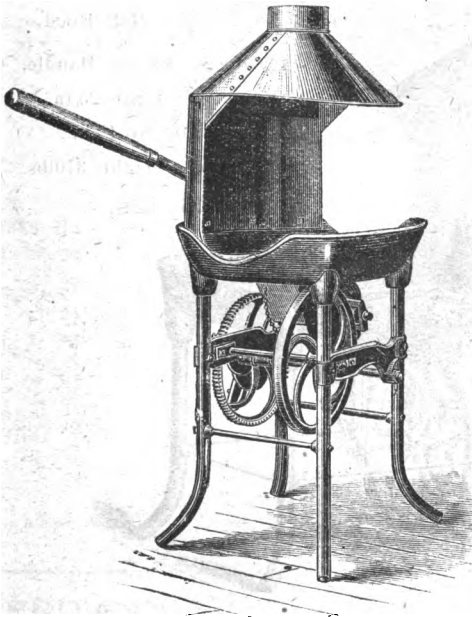
No. 21—With Hood.

Size 15 in. by 19 in., height 55 in.

Weight 115 lbs., fan 7 in.

Lever handle, deep fire, babbitt bearings.

£3 4s. Od.



No. 10—With Hood.

Firepan 17 in. by 19 in.

Height 29 in.,

Fan 8 in.,

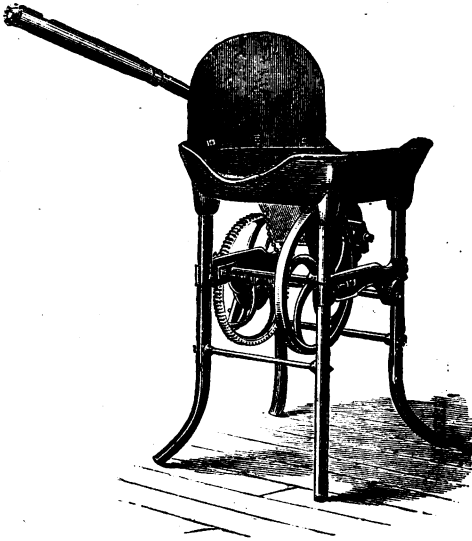
Weight 110 lbs.

£4 10s. Od.

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

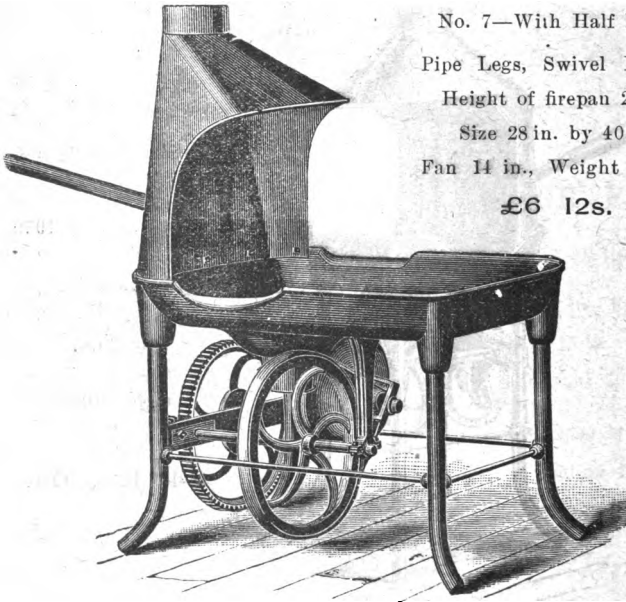
IMPROVED  
FAN FORGES.



No. 9—Forge without  
Hood.

Pipe Legs, Swivel  
Handle,  
29 in. high,  
10 in. fan,  
Weight 150lbs.

£5.



No. 7—With Half Hood.  
Pipe Legs, Swivel Handle,  
Height of firepan 25 in.,  
Size 28 in. by 40 in.,  
Fan 14 in., Weight 310lbs.  
£6 12s.

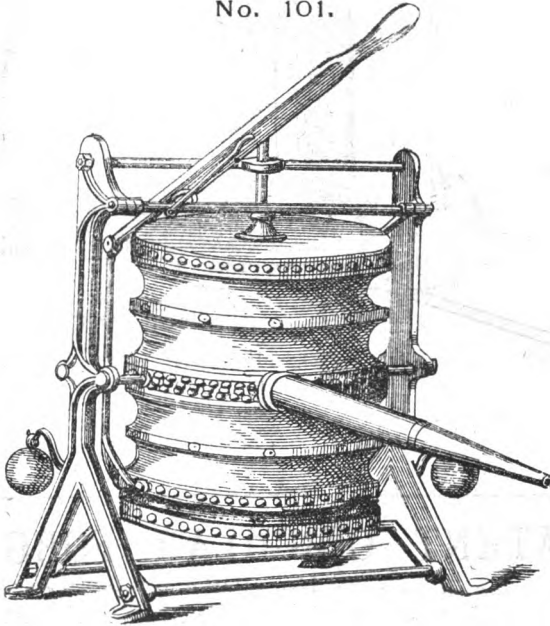
**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



**PATENT**  
**DOUBLE BLAST BELLOWS**

No. 101.



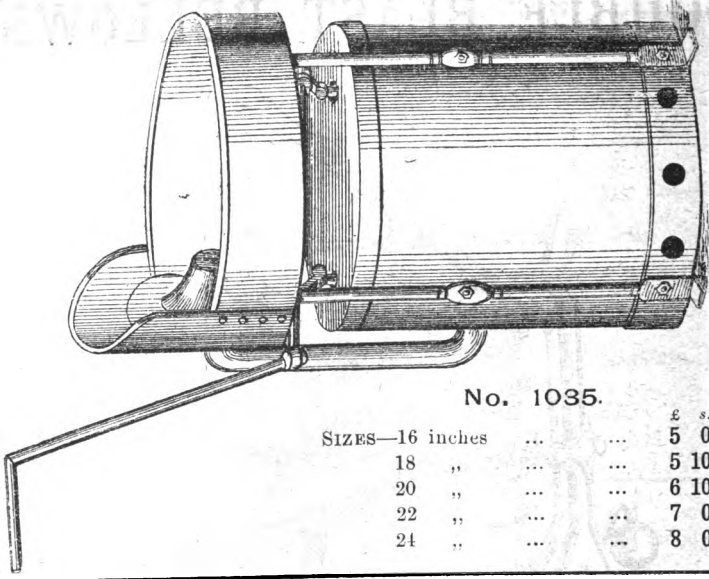
SIZES—	18 inches	...	...	...	...	£	s.	d.
	18	...	...	...	...	5	15	0
	20	...	...	...	...	6	12	0
	22	...	...	...	...	7	14	0
	24	...	...	...	...	8	16	6
	26	...	...	...	...	9	18	0
	28	...	...	...	...	11	10	0
	30	...	...	...	...	13	8	0
	32	...	...	...	...	15	0	0
	34	...	...	...	...	17	10	0
	36	...	...	...	...	20	0	0

On account of the expense of carriage, the weights are not included in Price. and are not sent with the Bellows.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# PATENT CIRCULAR IRON-ENCASED RIVET FORGE.



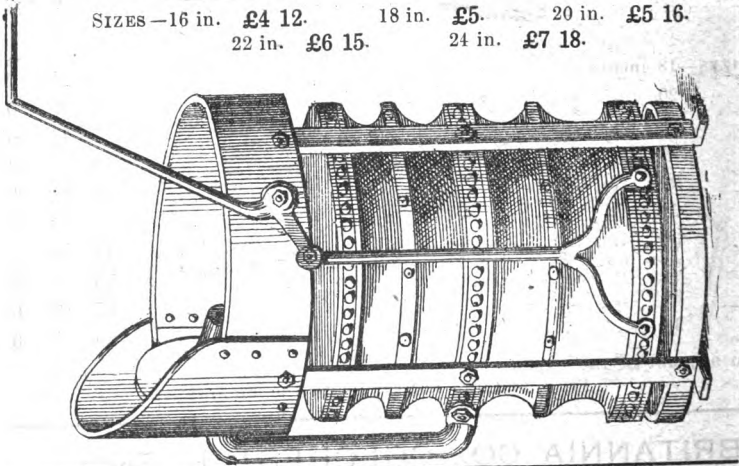
No. 1035.

SIZES—16 inches	...	...	£	s.	d.
16	...	...	5	0	0
18	..	...	5	10	0
20	..	...	6	10	0
22	..	...	7	0	0
24	..	...	8	0	0

## PATENT CIRCULAR FORGES,

No. 1037.

SIZES—16 in.	£4 12.	18 in.	£5.	20 in.	£5 16.
22 in.	£6 15.	24 in.	£7 18.		

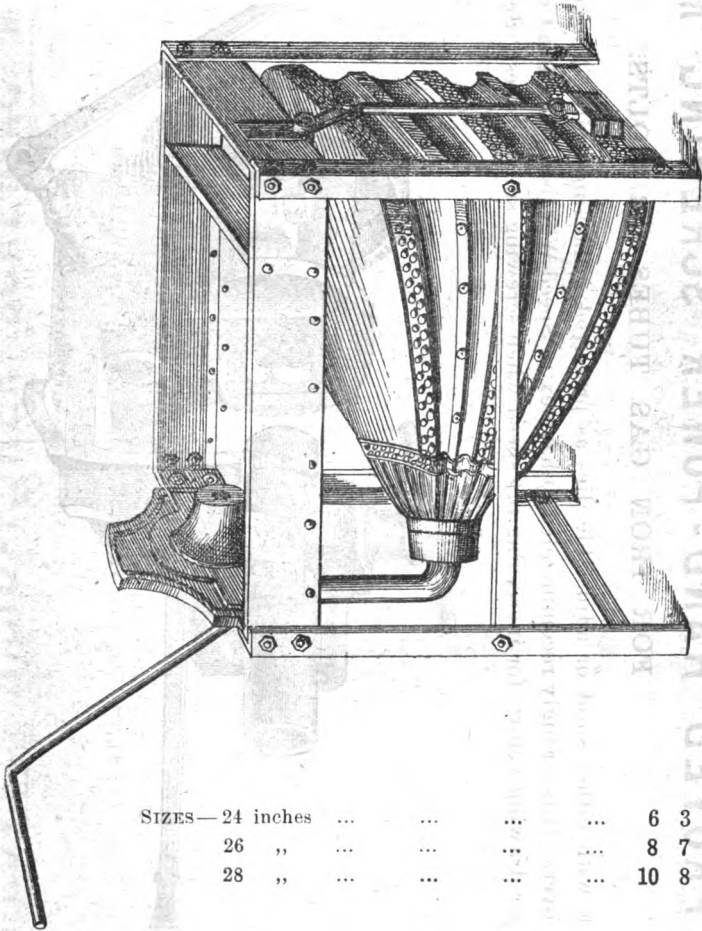


**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

IMPROVED NEW PATTERN  
**WROUGHT-IRON PORTABLE FORGES.**

No. 1036.



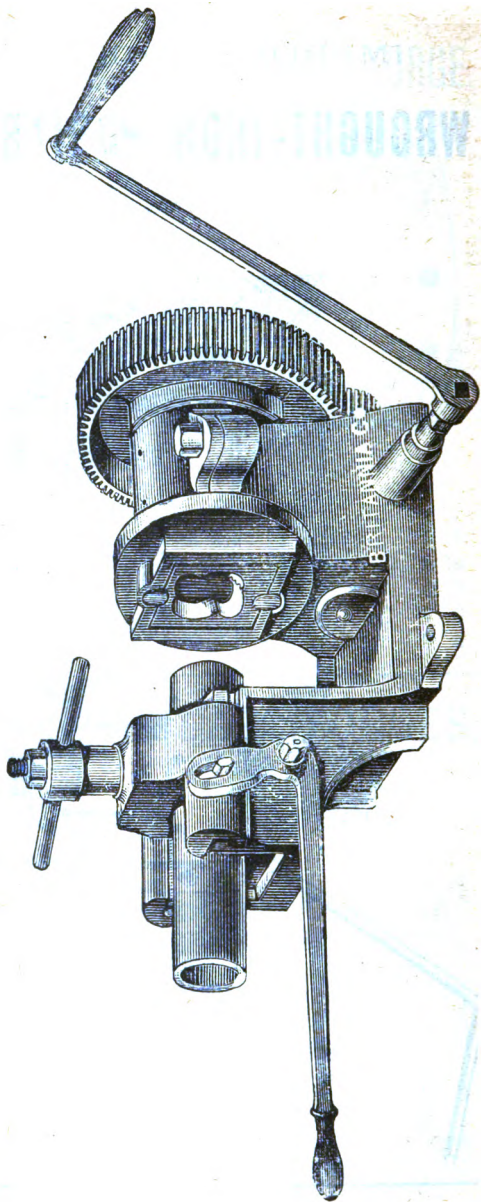
SIZES—	24 inches	...	...	...	...	6	3	0
	26 "	...	...	...	...	8	7	0
	28 "	...	...	...	...	10	8	0

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# IMPROVED HAND-POWER SCREWING MACHINES, FOR IRON GAS TUBES OR BOLTS.

MADE with either solid or adjustable dies as preferred. Machines with adjustable dies screwing at once over. It is strongly recommended to have extra Speed Wheels (as fitted to Cutting-off Machine as per drawing below) for increasing the speed when screwing smaller sizes. See prices page 161.



**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# IMPROVED HAND-POWER SCREWING MACHINES,

(For Illustration see page 160.)

No.	Size for Screwing	with 3 sets of adjustable dies	£	s.	d.	ditto solid dies	£	s.	d.
No. 1a	1 1/2 inch Iron Gas Tubes	"	10	8	0	"	8	0	0
"	1 3/4 inch Bolts	"	13	0	0	"	13	0	0
No. 2a	1 1/2 inch Iron Gas Tubes	"	15	0	0	"	14	11	0
"	1 1/4 inch Gas Tubes	"	15	0	0	"	12	10	0
"	1 1/2 inch Bolts	"	19	0	0	"	14	1	0
"	1 1/4 inch Bolts	"	20	10	0	"	20	10	0
No. 2c	2 1/2 inch Iron Gas Tubes	"	21	18	0	"	22	0	0
"	1 1/2 inch Gas Tubes	"	28	0	0	"	26	10	0
No. 3a	2 1/4 inch Iron Gas Tubes	"	28	0	0	"	26	10	0

## Extra Adjustable Dies,

Nos. 1a 2a 2c 3a size Machines,  
16/- 20/- 28/- 33/- per set.

## Extra if fitted with extra Speed Wheels,

Nos. 1a 2a 2c 3a size Machines,  
20/- 25/- 32/- 40/- per pair.

## Extra Solid Dies, Nos. 1a 2a 2c 3a size Machines.

1/2 3/4 1 1 1/2 1 3/4 2 2 1/2 3 3 1/2 4 in. Bolts, 1/4 3/8 1/2 5/8 3/4 1 1 1/4 1 3/4 2 2 1/2 3 3 1/2 4 in. Iron Gas Tubes  
7/- 7/- 10/- 10/- 20/- 20/- 20/- 7/- 7/- 10/- 10/- 20/- 20/- 20/- 20/- 30/- 30/- 45/- 45/- 45/- each.

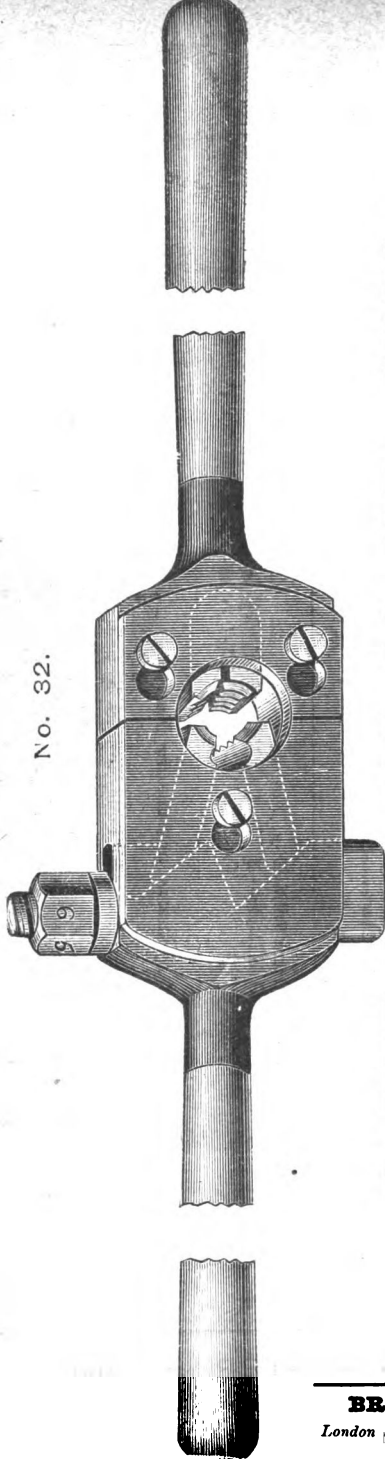
## Cutting-off Apparatus for Tubes for Nos. 1a 2a 2c 3a size Machines.

16/- 28/- 30/- 33/- each. Nos. 1a 2a 2c 3a  
Extra if fitted with 3-speed Cone or fast and loose Pulley to work by power  
Extra if mounted on cast-iron Stand  
Extra for Overhead Driving Gear ... .. 85/- 110/- 145/- 160/-

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

No. 32.



**IF FITTED IN OAK OR DEAL CASES.**

RANGE OF SIZES.

No.	Description	Cases	With Taper and Plug Tap to each size, and Tap Wrenches.		With Taper 2nd and Plug Tap to each size, and Tap Wrenches.		With Taper 2nd, Plug and Master Tap to each size, and Tap Wrenches.		Oak Case.	
			£	s. d.	£	s. d.	£	s. d.	£	s. d.
No. 1	set to screw	1	11	3 0	12	12 0	13	2 0	14	5 0
" 2	"	1	11	10 0	13	0 0	13	10 0	14	17 0
" 3	"	1	12	18 0	13	8 0	14	13 0	16	15 0
" 4	"	1	16	3 0	17	0 0	18	9 0	21	4 0
" 5	"	1	16	12 0	17	9 0	18	19 0	21	17 0
" 6	"	1	19	5 0	20	2 0	21	18 0	25	2 0
" 7	"	1	23	6 0	24	4 0	26	18 0	31	1 0
" 8	"	1	28	12 0	24	10 0	27	6 0	31	13 0
" 9	"	1	25	1 0	25	19 0	29	0 0	29	18 0
" 10	"	2 cases	36	2 0	37	15 0	41	15 0	48	12 0
" 11	"	2	44	7 0	46	0 0	51	17 0	60	14 0
" 12	"	2	45	15 0	47	8 0	53	11 0	62	13 0

OTHER RANGES OF SIZES MADE TO ORDER.

**BRITANNIA CO., Colchester, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

# WHITWORTH'S PATENT GUIDE STOCKS AND DIES.

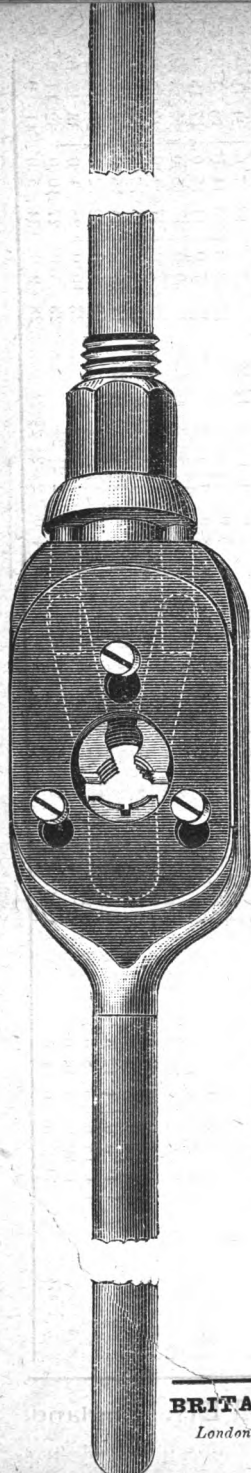
(WHITWORTH'S STANDARD THREAD.)

No. 32.

For illustration see page 162.

TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Master Tap to each size.	TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Master Tap to each size.	TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Master Tap to each size.	TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Master Tap to each size.
...	2 6 0	2 16 0	...	4 10 0	4 5 0	...	4 10 0	4 6 3 0	...	7 10 0	7 17 0
...	2 15 0	3 10 0	...	5 6 0	6 4 0	...	5 6 0	6 3 0	...	7 17 0	8 8 0
...	3 4 0	3 12 6	...	5 11 0	6 12 0	...	6 12 0	7 17 0	...	9 2 0	9 8 0
...	3 12 0	4 2 0	...	6 1 0	7 1 0	...	7 1 0	8 5 0	...	9 10 0	10 17 0
...	3 9 0	3 18 0	...	4 17 0	5 13 0	...	5 13 0	6 12 0	...	11 1 0	11 9 0
...	3 0 0	3 7 6	...	5 0 0	6 18 0	...	6 18 0	7 15 0	...	11 0 0	13 6 0
...	3 1 6	3 10 0	...	5 14 0	6 19 6	...	7 1 0	8 7 0	...	11 0 0	12 16 0
...	3 10 0	4 0 0	...	5 19 6	7 1 0	...	8 7 0	9 11 0	...	12 13 0	14 16 0
...	3 11 0	4 1 6	...	6 4 0	7 8 0	...	8 7 0	9 11 0	...	13 10 0	16 2 0
...	3 10 0	4 0 0	...	6 17 0	8 2 0	...	8 2 0	9 17 0	...	15 7 0	19 4 0
...	4 1 0	4 13 6	...	6 0 0	7 1 0	...	7 1 0	8 5 0	...	11 13 0	16 4 0
...	3 10 0	4 0 0	...	7 2 6	8 7 6	...	8 7 6	9 18 0	...	12 7 0	14 15 0
...	4 1 0	4 15 0	...	8 2 6	9 13 0	...	9 13 0	11 8 0	...	13 0 0	15 15 0
...	4 5 0	4 19 0	...	6 5 0	7 5 6	...	7 5 6	8 10 0	...	14 7 0	17 1 0
...	4 12 0	5 6 0	...	6 7 0	7 8 0	...	7 8 0	8 13 0	...	15 10 0	19 1 0
...	5 4 0	6 1 0	...	6 10 0	7 13 6	...	7 13 6	9 1 0	...	17 15 0	23 1 0
...	4 0 0	4 12 6	...	7 10 0	8 16 0	...	8 16 0	10 7 0	...	19 5 0	26 11 0
...	4 13 6	5 8 6	...	7 15 6	9 4 6	...	9 4 6	10 19 0	...	23 10 0	28 4 0
...	4 19 0	5 16 0	...	9 0 0	10 13 6	...	10 13 6	12 14 0	...	23 5 0	27 10 0
...	5 7 0	6 4 6	...	8 19 0	10 13 0	...	10 13 0	12 14 0	...	28 9 0	34 5 0
...	...	...	...	...	...	...	...	...	...	...	...

No. 71.



**IF FITTED IN OAK OR DEAL CASES.**

No.	set to screw	...	...	...	fitted into	1 case	With Taper and Plug Tap to each size, and Tap Wrenches.			With Taper 2nd and Plug Tap to each size, and Tap Wrenches.			With Taper 2nd, Plug and Master Tap to each size, and Tap Wrenches.					
							Deal Case.	£ s. d.	Oak Case.	£ s. d.	Deal Case.	£ s. d.	Oak Case.	£ s. d.	Deal Case.	£ s. d.	Oak Case.	
1	1	...	...	...	...	1	8	8	0	9	18	0	11	7	0	11	16	0
2	1	...	...	...	...	1	8	12	0	9	1	0	10	5	0	10	14	0
3	1	...	...	...	...	1	10	3	0	10	12	0	11	19	0	12	8	0
4	1	...	...	...	...	1	12	1	0	12	16	0	14	5	0	15	0	0
5	1	...	...	...	...	1	12	3	0	12	18	0	14	12	0	15	7	0
6	1	...	...	...	...	1	14	1	0	14	16	0	16	14	0	17	9	0
7	1	...	...	...	...	1	18	5	0	19	1	0	21	15	0	22	11	0
8	1	...	...	...	...	1	18	9	0	19	5	0	22	1	0	22	17	0
9	1	...	...	...	...	1	20	0	0	20	16	0	23	17	0	24	13	0
10	1	...	...	...	...	2 cases	28	16	0	30	5	0	34	14	0	36	3	0
11	1	...	...	...	...	2	35	8	0	36	17	0	42	18	0	44	7	0
12	1	...	...	...	...	2	37	0	0	38	9	0	44	14	0	46	3	0

RANGE OF SIZES.

OTHER RANGES OF SIZES MADE TO ORDER.

**BRITANNIA CO. COLCHESTER, ENGLAND.**

London Showrooms—10, Finsbury Street. All Letters to Colchester.



# DIRECT ACTION GUIDE STOCKS AND DIES.

No. 71.

(WHITWORTH'S STANDARD THREAD.)

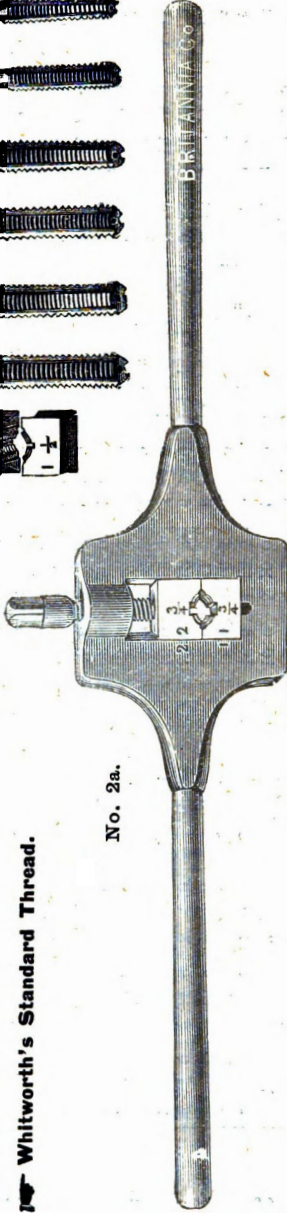
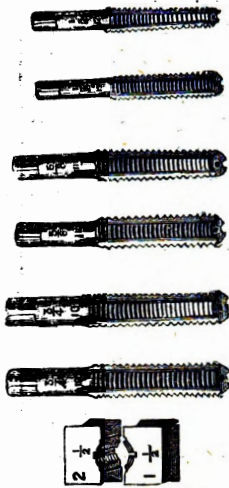
(For Illustration see page 164.)

TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	TO SCREW.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.	With Taper and Plug Tap to each size.		
£	d.	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.
...	1 9 0	1 14 0	1 19 0	...	3 17 0	3 18 0	4 13 0	...	5 17 0	...	6 4 0	6 17 0	...	7 5 6	8 13 0	...	8 13 0	...	8 13 0	...	8 13 0
...	1 17 0	2 4 6	2 11 0	...	3 17 0	4 16 0	5 14 0	...	6 4 0	...	7 6 0	7 12 6	...	7 12 6	9 4 0	...	9 4 0	...	9 4 0	...	9 4 0
...	2 5 0	2 14 0	3 2 0	...	4 2 0	5 2 6	6 4 0	...	7 6 0	...	8 0 0	8 12 0	...	8 12 0	10 18 0	...	10 18 0	...	10 18 0	...	10 18 0
...	2 13 0	3 3 0	3 14 0	...	4 10 0	5 10 0	6 11 0	...	7 12 0	...	8 18 0	8 18 0	...	9 8 0	11 8 0	...	11 8 0	...	11 8 0	...	11 8 0
...	2 8 0	2 18 0	3 7 0	...	3 16 6	4 13 6	5 9 0	...	8 18 0	...	8 18 0	8 18 0	...	11 1 0	13 8 0	...	13 8 0	...	13 8 0	...	13 8 0
...	1 18 6	2 7 6	2 15 0	...	3 18 6	4 16 6	5 14 0	...	8 10 0	...	8 10 0	8 10 0	...	10 7 0	12 4 0	...	12 4 0	...	12 4 0	...	12 4 0
...	2 0 0	2 10 0	2 18 0	...	4 12 0	5 11 0	6 10 0	...	9 18 0	...	9 18 0	9 18 0	...	10 17 0	12 19 0	...	12 19 0	...	12 19 0	...	12 19 0
...	2 7 0	2 17 0	3 7 0	...	4 10 6	5 12 6	6 15 0	...	9 18 0	...	9 18 0	9 18 0	...	11 19 0	14 2 0	...	14 2 0	...	14 2 0	...	14 2 0
...	2 8 0	2 19 0	3 10 0	...	4 16 0	5 19 0	7 4 0	...	10 13 0	...	10 13 0	10 13 0	...	13 3 0	15 16 0	...	15 16 0	...	15 16 0	...	15 16 0
...	3 4 0	3 16 0	4 9 0	...	5 4 0	6 9 6	7 15 0	...	11 17 0	...	11 17 0	11 17 0	...	14 17 0	17 19 0	...	17 19 0	...	17 19 0	...	17 19 0
...	3 4 0	3 14 6	3 4 0	...	4 5 0	5 5 0	6 5 0	...	10 18 0	...	10 18 0	10 18 0	...	12 1 0	14 3 0	...	14 3 0	...	14 3 0	...	14 3 0
...	2 14 6	3 7 0	3 19 0	...	5 2 0	6 10 0	7 16 0	...	9 18 0	...	9 18 0	9 18 0	...	12 1 0	15 9 0	...	15 9 0	...	15 9 0	...	15 9 0
...	2 16 0	3 9 0	4 2 0	...	6 0 0	7 9 0	8 19 0	...	11 2 0	...	11 2 0	11 2 0	...	13 18 0	16 14 0	...	16 14 0	...	16 14 0	...	16 14 0
...	2 19 0	3 13 0	4 12 0	...	4 10 0	5 11 0	6 12 0	...	12 0 0	...	12 0 0	12 0 0	...	15 0 0	17 18 0	...	17 18 0	...	17 18 0	...	17 18 0
...	3 4 0	3 18 0	4 12 0	...	4 13 0	5 14 0	6 16 0	...	12 10 0	...	12 10 0	12 10 0	...	16 0 0	19 10 0	...	19 10 0	...	19 10 0	...	19 10 0
...	3 14 0	4 11 0	5 8 0	...	4 16 0	6 0 0	7 4 0	...	14 10 0	...	14 10 0	14 10 0	...	18 10 0	22 13 0	...	22 13 0	...	22 13 0	...	22 13 0
...	2 14 0	3 7 0	3 19 0	...	5 5 0	6 7 0	7 14 0	...	14 10 0	...	14 10 0	14 10 0	...	19 5 0	23 12 0	...	23 12 0	...	23 12 0	...	23 12 0
...	3 7 6	4 2 6	4 17 0	...	5 10 0	6 17 0	8 7 0	...	18 8 0	...	18 8 0	18 8 0	...	24 8 0	29 3 0	...	29 3 0	...	29 3 0	...	29 3 0
...	3 12 0	4 9 0	5 7 0	...	6 8 0	8 3 0	9 18 0	...	16 10 0	...	16 10 0	16 10 0	...	21 10 0	25 16 0	...	25 16 0	...	25 16 0	...	25 16 0
...	3 19 0	4 16 0	5 14 0	...	7 3 0	8 18 0	10 12 0	...	21 8 0	...	21 8 0	21 8 0	...	28 2 0	34 5 0	...	34 5 0	...	34 5 0	...	34 5 0

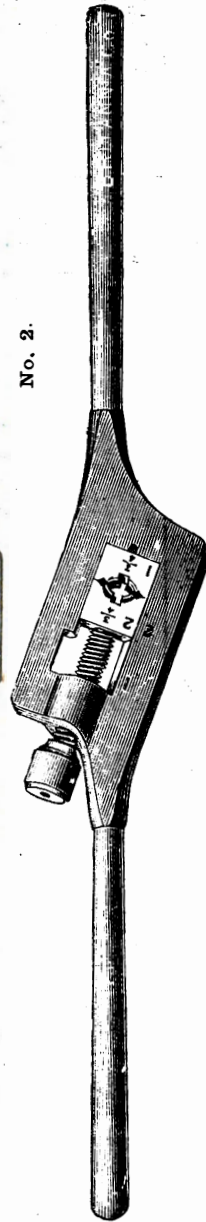
# BEST STOCKS & DIES,

FOR ENGINEERS' USE.

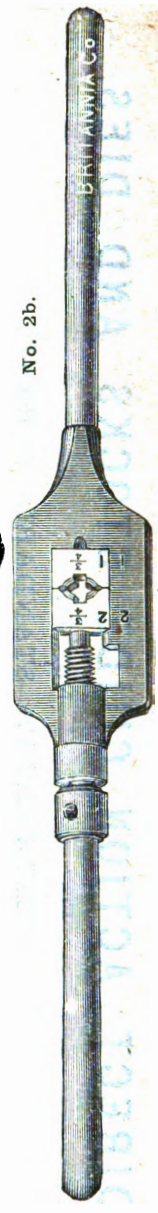
Whitworth's Standard Thread.



No. 2a.



No. 2.



No. 2b.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# BEST STOCKS & DIES FOR ENGINEERS' USE.

(WHITWORTH'S STANDARD THREAD.)

TO SCREW.	With Taper 2nd. and Plug Tap to each size.		With Taper 2nd. and Plug Tap to each size.		With Taper 2nd. and Plug Tap to each size.		With Taper 2nd. and Plug Tap to each size.		With Taper 2nd. and Plug Tap to each size.		With Taper 2nd. and Plug Tap to each size.	
	£	d.	£	d.	£	d.	£	d.	£	d.	£	d.
...	1 0 0	1 4 0	1 0 0	1 9 0	...	...	...	...	...	...	...	...
...	1 5 0	1 10 0	1 17 0	1 17 0	...	...	...	...	...	...	...	...
...	1 15 0	2 3 0	2 14 0	2 14 0	...	...	...	...	...	...	...	...
...	1 17 0	2 5 0	2 15 0	2 15 0	...	...	...	...	...	...	...	...
...	1 9 0	1 15 0	2 3 0	2 3 0	...	...	...	...	...	...	...	...
...	1 10 0	1 17 0	2 5 0	2 5 0	...	...	...	...	...	...	...	...
...	1 17 0	2 5 0	2 15 0	2 15 0	...	...	...	...	...	...	...	...
...	1 18 0	2 7 0	2 18 0	2 18 0	...	...	...	...	...	...	...	...
...	2 6 0	2 16 0	3 9 0	3 9 0	...	...	...	...	...	...	...	...
...	1 12 6	2 1 0	2 11 0	2 11 0	...	...	...	...	...	...	...	...
...	1 19 0	2 9 0	3 1 0	3 1 0	...	...	...	...	...	...	...	...
...	2 0 0	2 10 0	3 3 0	3 3 0	...	...	...	...	...	...	...	...
...	2 3 0	2 14 0	3 9 0	3 9 0	...	...	...	...	...	...	...	...
...	2 8 0	2 19 0	3 14 0	3 14 0	...	...	...	...	...	...	...	...
...	2 16 0	3 10 0	4 7 0	4 7 0	...	...	...	...	...	...	...	...
...	2 0 0	2 10 0	3 3 0	3 3 0	...	...	...	...	...	...	...	...
...	2 8 0	3 0 0	3 16 0	3 16 0	...	...	...	...	...	...	...	...
...	2 13 0	3 8 0	4 6 0	4 6 0	...	...	...	...	...	...	...	...
...	2 16 0	3 11 0	4 9 0	4 9 0	...	...	...	...	...	...	...	...

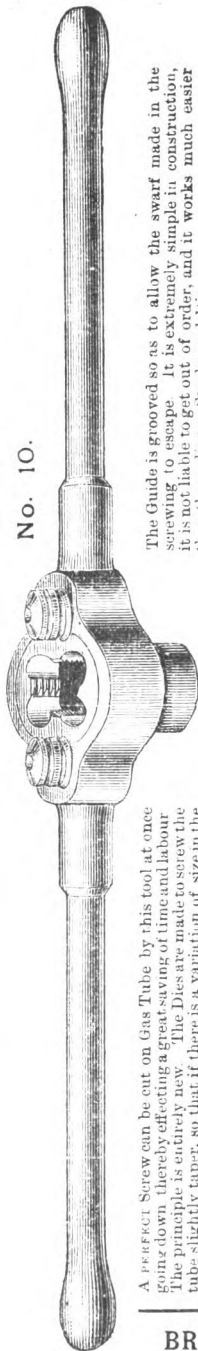
STOCKS AND DIES FITTED IN OAK OR DEAL CASE TO ORDER.

BRITANNIA CO., COLCHESTER, England.  
 London Showrooms—100, Houndsditch. All Letters to Colchester.

# SOLID DIE STOCK.

MADE TO SCREW UP TO 3in. AT ONCE GOING OVER.

No. 10.



A PERFECT Screw can be cut on Gas Tube by this tool at once going down thereby effecting a great saving of time and labour. The principle is entirely new. The Dies are made to size the tube, slightly taper, so that if there is a variation of size in the gas fittings, tubes screwed by this tool will fit equally well.

The Guide is grooved so as to allow the swarf made in the screwing to escape. It is extremely simple in construction, it is not liable to get out of order, and it works much easier than the ordinary Stocks and Dies.

TO SCREW.	With Taper and Plug Tap to each size.		Without Tap		TO SCREW.	With Taper and Plug Tap to each size.		Without Tap		TO SCREW.	With Taper and Plug Tap to each size.		Without Tap	
	Size of Stock	£ s. d.	£ s. d.	£ s. d.		Size of Stock	£ s. d.	£ s. d.	£ s. d.		Size of Stock	£ s. d.	£ s. d.	£ s. d.
A	1 1/2 inch only	1 2 0	1 10 0	1 1 0	1 1/2 inch only	2 16 0	3 10 0	2 10 6	2 4 6	2 1/2 inch only	2 2 1/2	3 5 0	2 10 6	4 5 0
B	1 1/4 inch only	1 4 0	1 11 0	1 3 0	1 1/4 inch only	4 10 0	5 8 0	3 18 0	3 4 6	1 3/4 inch only	1 3 2 1/2	2 2 1/2	3 18 0	7 3 0
C	1 1/2 inch only	1 18 0	1 7 0	1 7 0	1 1/2 inch only	6 7 0	6 5 0	4 11 6	4 11 6	1 1/2 inch only	1 3 1 1/2	2 2 1/2	4 11 6	8 12 0
D	1 1/2 inch only	1 14 0	1 8 0	1 8 0	1 1/2 inch only	3 12 0	3 12 0	2 18 0	2 18 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	3 12 0	5 14 0
E	1 1/2 inch only	3 12 0	1 18 0	1 18 0	1 1/2 inch only	6 4 0	6 0 0	4 7 0	4 7 0	1 3/4 inch only	1 3 2 1/2	2 2 1/2	6 0 0	7 6 0
F	1 1/2 inch only	3 4 0	2 7 0	2 7 0	1 1/2 inch only	8 7 0	8 7 0	5 3 0	5 3 0	1 3/4 inch only	1 3 2 1/2	2 2 1/2	5 3 0	8 19 0
G	1 1/2 inch only	3 19 0	2 16 0	2 16 0	1 1/2 inch only	4 14 0	4 14 0	3 12 0	3 12 0	1 3/4 inch only	1 3 2 1/2	2 2 1/2	3 12 0	10 11 0
H	1 1/2 inch only	2 1 0	1 12 6	1 12 6	1 1/2 inch only	6 4 0	6 4 0	4 9 0	4 9 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	4 9 0	9 3 0
I	1 1/2 inch only	3 3 0	2 4 6	2 4 6	1 1/2 inch only	7 14 0	7 14 0	5 8 0	5 8 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	5 8 0	11 3 0
J	1 1/2 inch only	3 17 0	2 14 6	2 14 6	1 1/2 inch only	9 4 0	9 4 0	6 10 0	6 10 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	6 10 0	13 3 0
K	1 1/2 inch only	3 18 6	2 14 6	2 14 6	1 1/2 inch only	5 0 0	5 0 0	3 12 0	3 12 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	3 12 0	13 3 0
L	1 1/2 inch only	4 10 6	3 5 0	3 5 0	1 1/2 inch only	6 10 0	6 10 0	4 9 0	4 9 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	4 9 0	15 3 0
M	1 1/2 inch only	5 6 0	3 15 6	3 15 6	1 1/2 inch only	8 0 0	8 0 0	5 13 0	5 13 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	5 13 0	15 3 0
N	1 1/2 inch only	5 6 0	3 15 6	3 15 6	1 1/2 inch only	8 17 0	8 17 0	6 12 0	6 12 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	6 12 0	15 3 0
O	1 1/2 inch only	5 6 0	3 15 6	3 15 6	1 1/2 inch only	9 10 0	9 10 0	7 15 0	7 15 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	7 15 0	15 12 0
P	1 1/2 inch only	5 6 0	3 15 6	3 15 6	1 1/2 inch only	10 5 0	10 5 0	7 15 0	7 15 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	7 15 0	15 12 0
Q	1 1/2 inch only	5 6 0	3 15 6	3 15 6	1 1/2 inch only	11 16 0	11 16 0	7 15 0	7 15 0	2 1/2 inch only	2 3 1 1/2	2 2 1/2	7 15 0	15 12 0

PRICE OF EXTRA DIES AND GUIDES FOR ABOVE STOCKS.

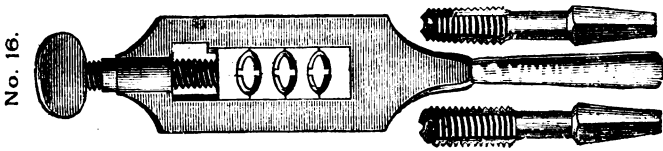
Size of Stocks	A	B	C	D	E	F	G	H	J	K
Extra Dies	3/6	4/9	6/6	7/6	10/-	13/6	17/-	21/-	24/-	30/-
Extra Guides	1/8	1/9	2/6	3/-	3/6	4/6	6/-	7/6	8/6	10/-

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# STOCKS & DIES FOR BRASS & COPPER TUBE.

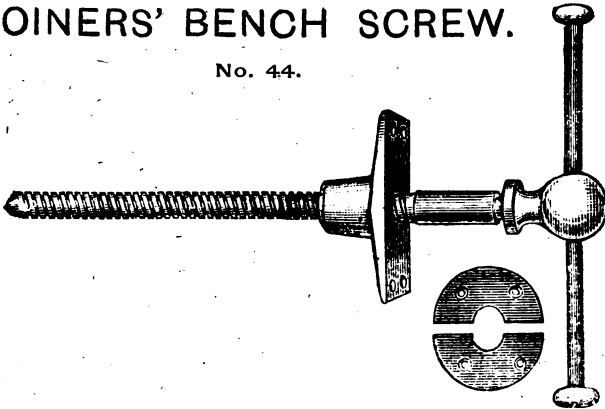
With Taper and Plug Tap to each size.



To SCREW.	PER SMT.	To SCREW.	PER SMT.	To SCREW.	PER SMT.
$\frac{1}{4}$ iron and $\frac{3}{8}, \frac{1}{2}$ brass	25/6	$\frac{1}{4}, \frac{3}{8}, \frac{1}{2}, \frac{5}{8}$ brass tube	29/-	$\frac{3}{8}, \frac{1}{2}, \frac{5}{8}$ brass tube..	44/-
$\frac{1}{4}, \frac{3}{8}, \frac{1}{2}$ brass	25/6	$\frac{3}{8}, \frac{1}{2}, \frac{5}{8}, \frac{3}{4}$ ..	33/-	$\frac{3}{4}, \frac{7}{8}, 1$ ..	50/-
$\frac{3}{8}, \frac{1}{2}, \frac{5}{8}$ ..	25/6	$\frac{1}{4}, \frac{3}{8}, \frac{1}{2}, \frac{5}{8}, \frac{3}{4}$ ..	37/-	$\frac{5}{8}, \frac{3}{4}, \frac{7}{8}, 1$ ..	60/-

# JOINERS' BENCH SCREW.

No. 44.



### SIZES.

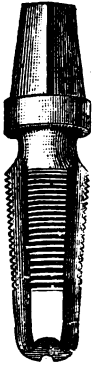
1 in. Diameter by 14 in. long ..	8/-	1 1/2 in. Diameter by 20 in. long	10/9
1 " " 16 " "	8 6	1 3/4 " " 19 " "	12/3
1 1/8 " " 16 " "	9/-	1 7/8 " " 21 " "	13/-
1 1/4 " " 18 " "	9/6	1 1/2 " " 20 " "	14/3
1 1/2 " " 18 " "	10/-	1 1/2 " " 22 " "	15/9

**Joiners' Cramps.**  
**Lifting Jacks.**

**Floor Cramps.**  
**Hydraulic Jacks.**

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.



No. 5.  
IMPROVED  
Rimer Tap,  
FOR GAS MAINS.

Sizes	$\frac{1}{2}$ "	$\frac{3}{8}$ "	$\frac{3}{4}$ "	1"
Each	4/3	5/-	5/9	7/6
Sizes	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"
Each	10/6	13/6	20/-	24/-

No. 5a.  
FLUTED

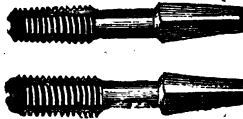
Rimer Tap,  
FOR GAS MAINS.

Sizes	$\frac{1}{2}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "
Each	1/5	1/9	2/3	2/6	2/9
Sizes	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	$1\frac{3}{4}$ "	2"
Each	4/-	5/3	6/9	10/-	12/9



No. 33.

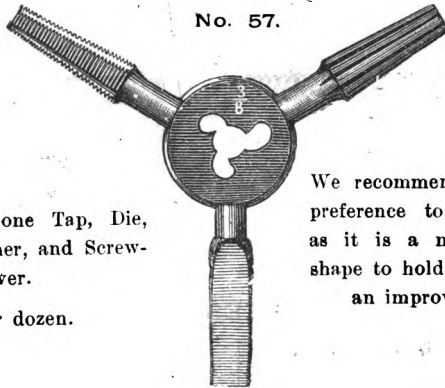
Brass  
Gas Taps,  
TAPER OR PLUG.



PRICE PER DOZ.

$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "
8/6	10/-	11/6	12/6
$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	
17/-	25/-	34/-	

### Three-way Combination Burner Tool.



No. 57.

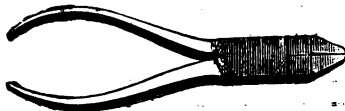
Consisting of one Tap, Die,  
fine-fluted Rimer, and Screw-  
driver.

55/6 per dozen.

We recommend this Tool in  
preference to the four-way,  
as it is a more convenient  
shape to hold in the hand and  
an improved pattern.

### Bellhangers' Cutting Pliers.

No. 54.



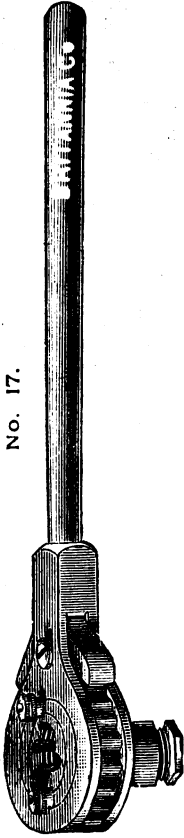
5 in., 20/-; 6 in., 25/-; 7 in., 29/-; 8 in., 34/- per doz.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch. All Letters to Colchester.

# Patent Double-Action Ratchet Gas Stock,

WITH "SOLID" DIES SCREWING AT ONCE GOING OVER.

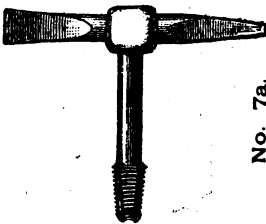


No. 17.

THIS Stock is specially adapted for screwing pipes fixed in confined spaces, being Single-ended and having a right and left hand feed motion it can be used where the ordinary Double-ended Stock would be of no use, a few inches only of space at the back of the pipe being all that is necessary for it to work in.

Sizes, to Screw Iron Gas Tubes ...  $\frac{3}{8}$ "  $\frac{1}{2}$ "  $\frac{3}{4}$ "  $1$ "  $1\frac{1}{4}$ "  $1\frac{1}{2}$ "  $1\frac{3}{4}$ "  $1\frac{1}{2}$ "  $1\frac{1}{2}$ "  $2$ "  
 Price of Stock with Dies and Guides only, no Taps ... 60/- 80/- 100/- 120/-

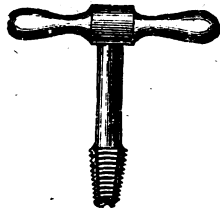
## Burner Taps.



No. 7a.  
 With Rimer & Turncrew  
 combined, 25/- per doz.



No. 56. 8/6 doz.



No. 7. With Handle,  
 17/- doz.

## Gas Pliers.

No. 18.



Sizes ... 8 9 10 inch.  
 41/- 45/- 48/- per doz.

If without Wire Cutter, 29/- 32/- 36/-

## Gas Pliers, 2-Hole.

No. 9.



PRICE PER DOZEN.

7" 8" 9" 10" 11" 12" 14" 15"  
 14/- 17/- 20/- 23/- 26/6 30/- 37/- 43/-

BRITANNIA CO., COLCHESTER, England.

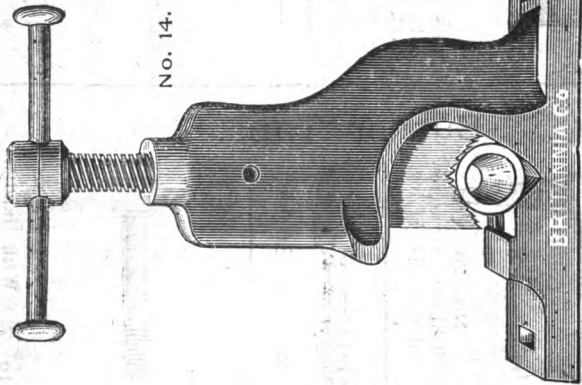
London Showrooms—100, Houndsditch.

All Letters to Colchester.

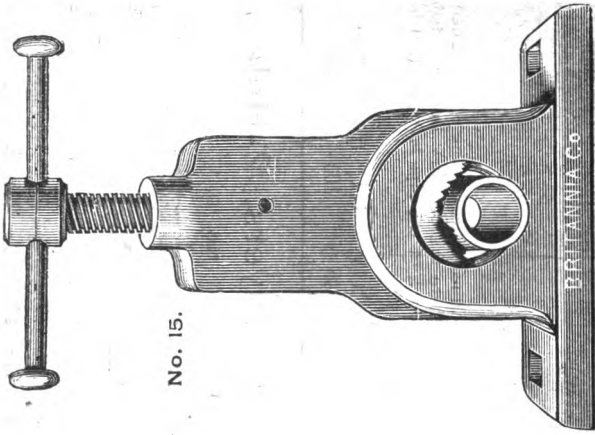
## IMPROVED TUBE VICES.

FOR holding Tube while being screwed or cut off. It is portable and can be fastened to a post or handcart by two bolts.

No. 14.



No. 15.



No. 1, to take  $1\frac{1}{4}$  to  $\frac{1}{2}$  in. ... 21/6  
 " 2, " 2' to  $\frac{1}{4}$  in. ... 28/6  
 " 3, " 3 to  $1\frac{1}{4}$  in. ... 41/-

BRITANNIA WORKS, COLCHESTER, ENGLAND.  
 ALL LETTERS TO BRITANNIA WORKS, COLCHESTER.

BRITANNIA CO., COLCHESTER, England.

London Showrooms—100, Houndsditch.

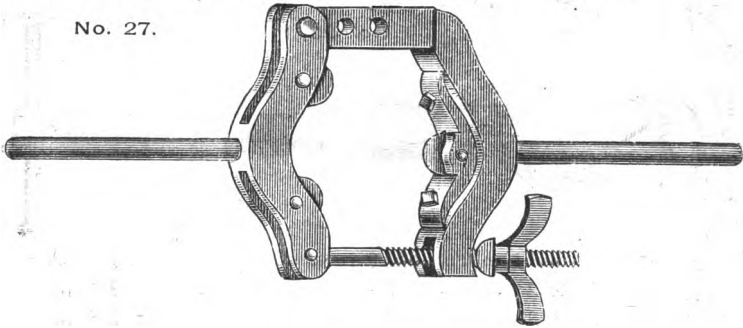
All Letters to Colchester.



# TUBE CUTTER.

FOR CUTTING CAST IRON MAIN PIPES.

No. 27.

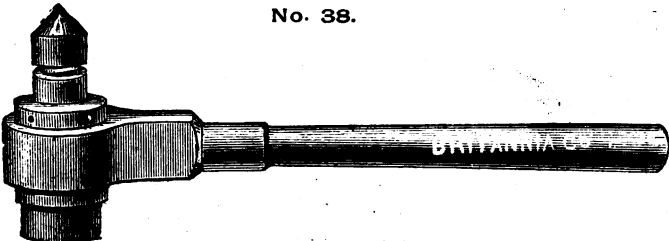


To cut 2 to 4 in. Tube	28/- each	Extra Cutters	1/6 each
„ 4 to 6 in. „	34/- „	„	1/6 „
„ 5 to 8 in. „	40/- „	„	1/6 „

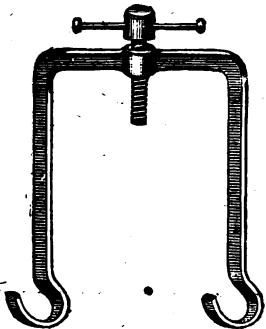
## Patent Enclosed Ratchet Brace.

No. 38.

Drills at per dozen.



Sizes	10	12	14	16	18	20	22	24 inch
	22/-	24/-	28/-	32/-	36/-	40/-	44/-	48/- each



## Cramp for Drilling Main Pipes.

No. 45.

Sizes ...	2 to 4	4 to 6	5 to 8 inch
	21/-	28/6	36/- each

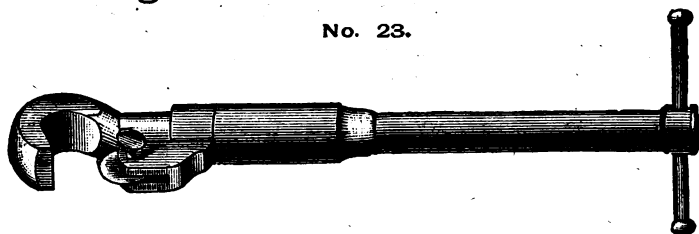
With			
Crank Brace	30/-	37/6	45/- each

**BRITANNIA CO., COLCHESTER, England.**

London Showrooms—100, Houndsditch. All Letters to Colchester.

## Single Wheel Tube Cutter.

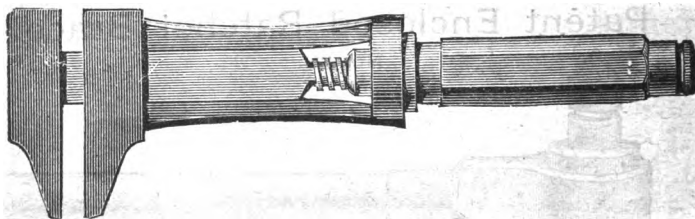
No. 23.



To Cut	$\frac{1}{4}$ to 1 inch Tube,	12/9 each.	Extra Cutters, 1/- each.
„	$1\frac{1}{4}$ to 2 „	18/- „	„ 1/6 „
„	$2\frac{1}{4}$ to $3\frac{1}{2}$ „	29/- „	„ 1/6 „

## Best Double Coach Wrench.

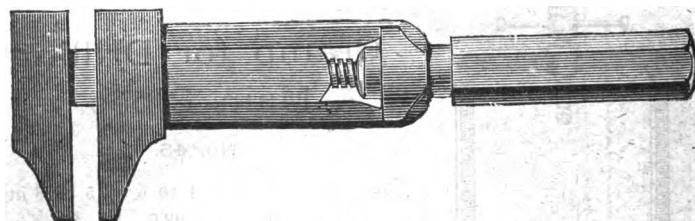
No. 46.



Sizes	6	8	10	12	14	16	18 inch.
	6/6	7/3	9/-	10/6	12/6	15/3	18/6 each.

## Double Coach Wrench.

No. 50



Sizes	6	8	10	12	14	16	18 inch.
	5/3	5/9	6/6	7/6	10/-	13/3	16/6 each.

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# HYDRAULIC LIFTING JACKS.



THE  
WEIGHT GIVEN  
CAN BE  
RAISED FROM  
THE  
HEAD OR FOOT.

Tested to Tons.	Height when down.	Run out.	Weight, lbs.	PRICE.					
				Lifting.			Lifting and Traversing.		
	Inches.			£	s	d.	£	s	d.
3	19	6	34	3	0	0	5	5	0
4	23	10	57	3	15	0	5	15	0
6	24	10	68	4	0	0	6	5	0
8	26	11	76	4	10	0	7	0	0
10	27	12	86	5	0	0	7	10	0.
12	27	12	96	5	10	0	8	0	0
15	28	12	104	6	0	0	9	0	0
20	28	12	132	6	10	0	10	0	0
30	29	12	174	7	10	0	13	10	0
40	29	11	206	9	0	0	15	10	0
50	29	11	264	10	10	0	20	0	0
60	29	10	364	12	10	0	22	10	0

**BRITANNIA CO., COLCHESTER, England.**

*London Showrooms—100, Houndsditch. All Letters to Colchester.*

# VERTICAL MULTITUBULAR BOILERS.

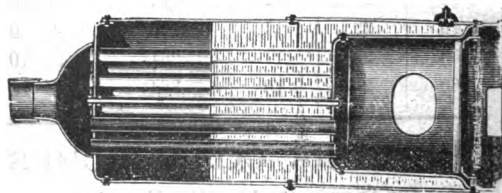
HYDRAULIC TEST 140 lbs. PER SQUARE INCH.

PRICES include Fire door with air regulator, Firebars, Bearers, Firebar ring, Chimney, Manhole with its cover and bridges, Mudholes around bottom with their covers and bridges.

Mountings consist of Safety Valve with lever and weight, Steam Gauge, Stop Valve, Feed Valve, Water Gauge, Test Taps, Blow-off Cock.

Construction :—Plates may be of Yorkshire or Staffordshire Iron or of "Siemens Martin" Steel, vertical Seams of Shell are double riveted of 6 h.p. and upwards, unless otherwise ordered. Ashpits are formed in the Boilers and included in "height" given above.

Sizes kept in Stock are 1, 2, 3, 4, 5, 6, 8 h.p.



Nominal Horsepower	1	1½	2	2½	3	4	5	6	7	8	9	10	12	14	15	16	18	20
Height of Boiler in ft. and ins.	...	4 0	4 6	5 0	5 6	6 0	6 6	7 0	7 6	8 0	8 6	9 0	11 0	12 0	12 3	12 6	13 0	14 0
Diameter of Boiler	...	20	20	26	26	26	29	30	33	33	36	40	40	40	43	46	49	50
Height of Firebox	...	20	23	26	26	26	29	30	33	33	36	40	40	40	43	46	49	50
Diameter of Firebox	...	18	18	22	22	22	25	27	2 10	2 10	3 1	3 6	3 6	3 6	4 0	4 3	4 6	4 6
Number of Vertical Tubes	...	7	9	12	18	14	16	18	20	23	26	30	30	35	40	45	50	50
Diameter "in ins."	...	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Shell "Best" Plates	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Firebox "Best, Best, Best"	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Crown "Best, Best"	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Approximate Weight in Cwts.	...	13½	15	19	20½	22	27	31	36	40	45	53	63	67	74	82	90	98
Price	...	4	4	4	4	4½	5	5½	6	6	6½	7	7½	8	8½	9	9½	10
Extra for Mountings	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

# NEW VERTICAL CROSS-TUBE BOILERS.

## HYDRAULIC TEST 140 lbs. PER SQUARE INCH.

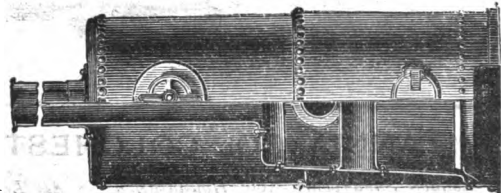
Prices include Fire door with air regulator, Firebars, Bearers, Firebar ring, Chimney, Manhole with its cover and bridges, Mudholes around bottom of Boiler, and one opposite each tube, with their covers and bridges.

Mountings consist of Safety Valve with lever and weight, Steam Gauge, Stop Valve, Feed Valve, Water Gauge, Test Taps, Blow-off Cock.

Construction.—Plates may be of Yorkshire or Staffordshire Iron or of "Siemens Martin" Steel, vertical Seams of Shell are double riveted of 6 h.p. and upwards, the sizes above 9 h.p. have faced settings riveted to Crowns for fixing Safety and Stop Valves upon, unless otherwise ordered. Aspipes are formed in the Rollers and included in "height" given above.

All sizes up to 14 h.p. are kept in Stock ready for Immediate Delivery. These are generally of Steel.

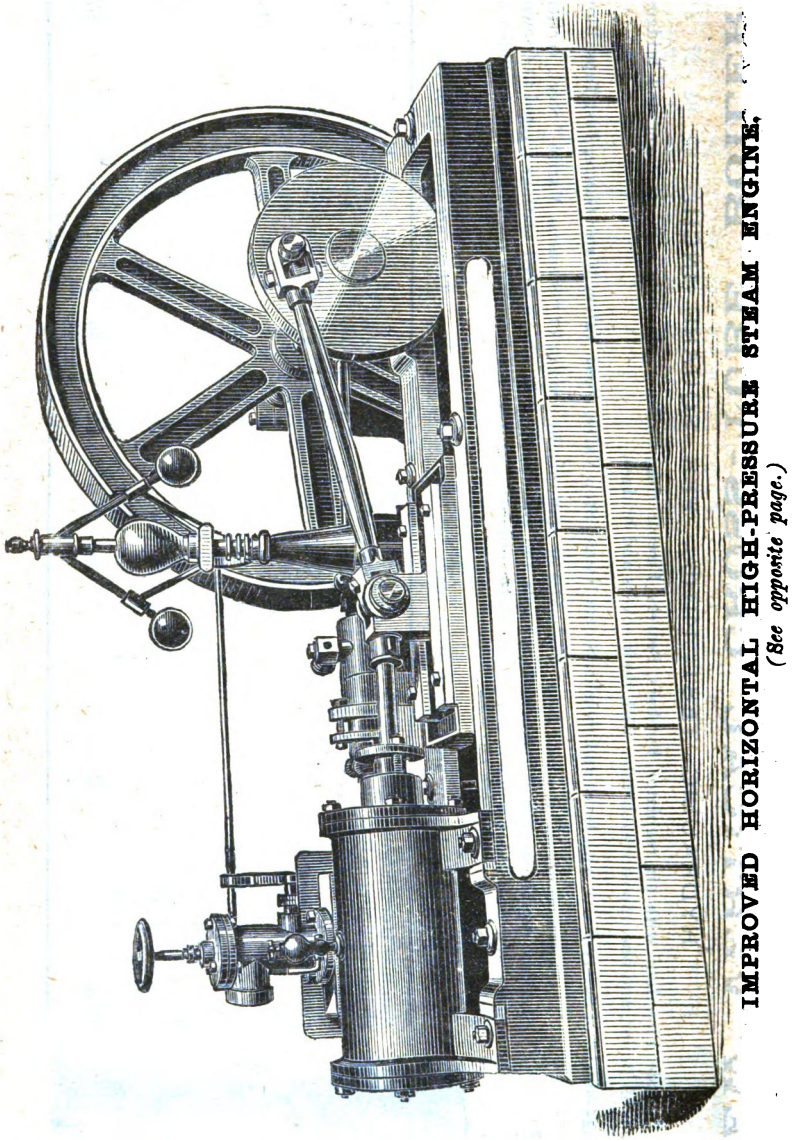
Nominal Horsepower	1	1½	2	2½	3	4	5	6	7	8	9	10	12	14	15	16	18	20	25	
Height of Boiler in ft. & ins.	4 0	4 6	5 0	5 6	6 0	6 6	7 0	7 6	8 0	8 6	9 0	10	11 0	12	13	12 6	13 0	14 0	15 0	
Diameter of Boiler	2 0	2 6	2 6	2 6	2 6	2 9	3 0	3 3	3 3	3 6	3 6	4 0	4 0	4 3	4 6	4 9	5 0	5 0	5 6	
Height of Firebox	2 1	2 3	2 6	2 9	3 2	3 6	4 0	4 3	4 9	5 0	5 3	5 6	6 6	7 0	7 3	7 6	7 9	8 4	9	
Diameter of Firebox	1 8	1 8	2 2	2 2	2 2	2 4	2 7	2 10	2 10	3 1	3 1	3 7	3 7	3 10	4 0	4 3	4 6	4 6	5 0	
Number of Cross Tubes	1	1	1	1	2	2	2	3	3	3	4	4	4	4	4	4	4	5	6	7
Diameter of Uptake	5	5	5	6	6	7	8	8	9	9	9	10	11	12	13	14	15	16	18	18
Shell "Best" Plates	1	1	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Firebox "Best, Best, Best"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tubes "Best, Best, Best"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Uptake, "Best, Best"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Crowns "Best, Best"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Approximate Weight in Cwts	7	8½	11	12	13	19	23	29	32	35	37	40	52	60	65	70	80	94	110	130
Price	£ 14	£ 16	£ 20	£ 21½	£ 23	£ 28	£ 32	£ 39	£ 43	£ 46	£ 49	£ 57	£ 65	£ 76	£ 82	£ 88	£ 97	£ 110	£ 130	£ 150
Extra for Mountings	4	4	4	4	4½	5	5½	6	6	6½	6½	7	7½	8	8½	9	9½	10	10	12



BRITANNIA CO., COLCHESTER, England.

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**IMPROVED HORIZONTAL HIGH-PRESSURE STEAM ENGINE.**  
*(See opposite page.)*

**BRITANNIA CO., COLCHESTER, England.**

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# IMPROVED HORIZONTAL HIGH-PRESSURE STEAM ENGINE.

THE principle of the Horizontal Steam Engine here illustrated, is that of direct action, specially designed to meet the increasing demand for an Engine of moderate power and cost. They are particularly adapted for driving the machinery used for sawing, hoisting, pumping, printing presses, grinding mills, soda water and all kinds of machinery where motive power is required; and, with a view to combine lightness with strength, and every facility for examination and repairs, the design and proportions have been carefully considered. The cylinders are lagged at a small cost; the covers and flanges are brightly polished; the joints planed and securely fitted; and the bearing parts are accurately planed and fitted to a strong metal bed-plate. The governor is of an improved construction and very sensitive, with stop-valve combined.

The working parts of this Engine, comprising the piston, piston rings, are accurately turned and fitted to a steel rod turned bright and fitted to crosshead with cottar. The crosshead is truly planed and turned to fit into slide, which is also planed and fitted with wrought iron slide bars. The connecting rod is of turned forged scrap-iron, fitted with improved adjustable wedge, and gun-metal bearings at each end. Steel crank pin turned and fitted to a cast-iron disc turned bright, keyed to a wrought scrap-iron shaft; and flywheel of adequate proportions turned on face and keyed to same. All the wearing parts are made adjustable, and ALL GLANDS ARE BRASS.

*These Engines are carefully designed in every part, and are of full size, as will be seen by the dimensions given below. Accurate Fitting and Efficient Work may be relied upon.*

Horse Power.	Diameter of Cylinder.	Stroke.	Diameter of Flywheel.	Revolutions per Minute.	PRICE.
3	5½ in.	10 in.	3 ft. 0 in.	180	£25
5	7	12	4 0	160	32
6	8	15	4 6	140	40
8	9	15	5 0	130	50
10	10	18	6 0	120	64
12	11	18	6 0	120	75
14	12	20	6 0	110	88
18	14	28	7 0	90	120
25	16	36	9 0	80	160
30	18	36	10 0	80	190

These Sizes always in Stock and In Progress.

## VERTICAL ENGINES, GAS ENGINES, & HOT-AIR MOTORS

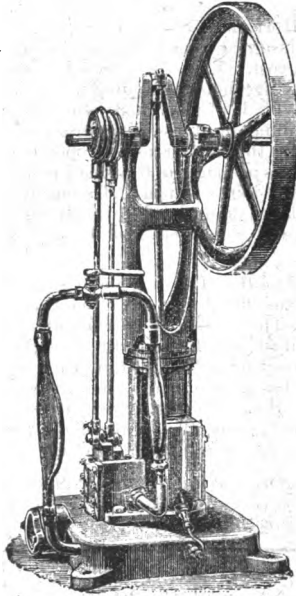
BY VARIOUS MAKERS.

### BRITANNIA CO., COLCHESTER, England.

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**BRITANNIA COMPANY'S**  
**CHEAP GAS ENGINE**  
**ONE MAN POWER.**

Simple!  
 Efficient!  
 Making Little  
 Noise!  
 Economical!  
 About 3d. per day  
 for Gas.



Suitable for Lathes  
 Printing Machines  
 Sausage Machines,  
 and all  
 Light Machinery.

Price, as shown, £18.

The above Engine has been constructed to meet the demand for a really reliable, simple, durable Gas Engine, at a price which brings it within the reach of all.

It is recommended with confidence.

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**Gas Engines by various makers supplied; also  
 Steam Engines, Bollers, and Hot-air Engines;  
 Turbines, &c., &c.**

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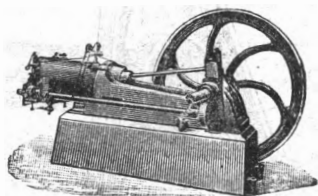
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# NEW SILENT GAS ENGINES

ON THE "OTTO" PRINCIPLE.



TUBE ignition, no slides, interchangeable cylinder liners, forged steel cranks, main bearings of Phosphor Bronze, easy to start, requires little attention, great economy in gas consumption, well proportioned and heavily and substantially built.

The three-quarter Horse is Vertical.

Ten Horse-power Engine and upwards and those for Electric installation, fitted with two flywheels, charged extra.

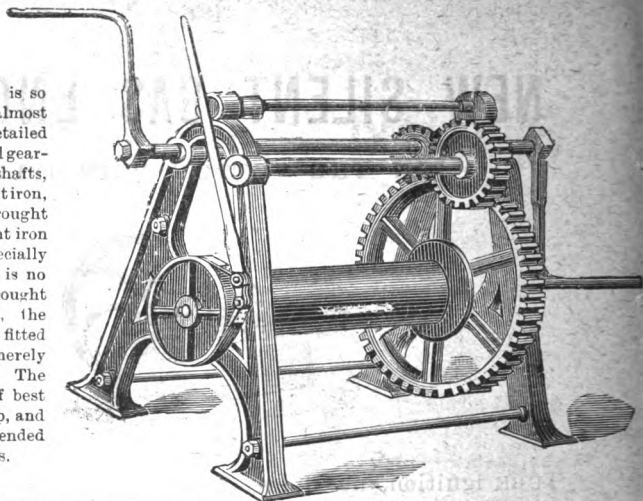
Nominal HP.	Indicated HP.	PRICE of Engine.	Extra for Tanks.	Overall Dimensions of Engine.	Standard size of Pulley.	Revolutions per minute.
1/3	2	£40 0 0	£1 10 0	2ft. by 2ft.	10in. by 4in.	180
1	3	45 0 0	1 15 0	5ft. ,, 3ft.	12in. ,, 5in.	180
2	5	60 0 0	1 15 0	6ft. ,, 3ft. 4in.	14in. ,, 6in.	160
3	6 1/2	75 12 0	2 0 0	6ft. ,, 3ft. 4in.	14in. ,, 6in.	160
4	8 1/2	97 15 0	3 0 0	7ft. ,, 4ft. 6in.	18in. ,, 7in.	160
6	12 1/2	113 10 0	3 5 0	9ft. ,, 4ft. 6in.	24in. ,, 8in.	160
9	20	145 0 0	Special Quotations for all larger sizes.	9ft. 6 ,, 5ft. 4in.	28in. ,, 10in.	160
12	25	174 0 0				
14	30	183 0 0				
16	40	223 0 0				
20	50	239 0 0				

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# IMPROVED HOISTING CRABS.

THE general construction is so well known that it is almost unnecessary to give any detailed description. The barrel and gearing are of cast iron; all shafts, also handles, are of wrought iron, and the sides, of cast or wrought iron, as required. Wrought iron sides are preferable, especially for export orders, as there is no risk of breakage. When wrought iron sides are supplied, the bearings for the shafts are fitted into the plates, and not merely riveted on to the plates. The Crabs are strongly made, of best materials and workmanship, and can be confidently recommended as really serviceable articles.



POWER.		DIMENSIONS.		PRICE.							
Will Lift.		Barrel.		Cast-Iron Sides			Extras				
With 2 & 3 Sheave Blocks	Direct from Barrel	Diam.	Length Between Flanges.	"B. B." Tested Chain.	With Brake.	Improved Screw Brake	Without Brake.	Wrought- Iron Sides.	Brass Bushing.	"B. B." Tested Chain.	2 and 3 Sheave Blocks.
					Price Each.		Price Each.				
Tons.	Cwts.	Inches.									

## SINGLE PURCHASE.

2	8	4	12	1 1/8	£4 3	£4 10	£3 8	£1 13	17/-	-/7	£2 10
3	12	4	14	1 1/8	4 10	4 18	3 14	1 13	17/-	-/9	3 10
4	16	4 1/2	16	1 1/8	5 5	5 14	4 7	1 16	19/-	-/11	5 5
5	20	5	18	1 1/8	6 0	6 15	5 3	1 17	19/-		8 0
6 1/2	25	5 1/2	20	1 1/8	7 15	8 10	6 12	2 0	21/-	1/2	8 0
7 1/2	30	5 3/4	20	1 1/8	9 5	10 5	8 0	2 4	21/-	1/5	13 15
9	36	6	22	1 1/8	11 5	12 6	9 0	2 10	24/-	1/8	16 10

## DOUBLE PURCHASE.

4	16	4 1/2	16	1 1/8	£6 0	£6 12	£5 4	£2 4	23/-	-/11	£5 5
5	20	5	18	1 1/8	6 18	7 13	6 0	2 4	23/-	1/2	8 0
6 1/4	25	5 1/2	20	1 1/8	8 16	9 10	7 10	2 7	26/-	1/2	8 0
8	32	5 3/4	20	1 1/8	9 17	10 15	8 11	2 10	27/-	1/5	13 15
9	36	6	22	1 1/8	10 6	11 5	9 0	2 12	27/-	1/8	16 10
10	40	6	22	1 1/8	11 0	12 0	9 15	2 15	30/-	1/8	16 10
11 1/2	45	6	22	1 1/8	12 0	13 0	10 15	2 17	32/-	2/-	19 10
12 1/2	50	6 1/2	24	1 1/8	12 15	13 15	11 8	3 0	35/-	2/-	19 10
13 1/2	55	7	25	1 1/8	14 5	15 8	12 18	3 5	40/-	2/5	23 10
15	60	7 1/2	27	1 1/8	15 15	16 18	14 2	3 11	45/-	2/11	28 0
17 1/2	70	7 3/4	27	1 1/8	19 16	21 0	17 15	4 0	50/-	2/11	30 0
20	80	8	28	1 1/8	27 0	28 10	24 0	4 10	51/-	3/3	38 0

## EXTRAS.

WARPING DRUMS; FAST and LOOSE PULLEYS for working by power; ANGLE IRON FRAMING to Wrought-iron Sides. BARRELS can be had Concave, with Ribs for "Fleeting" the Rope, or Octagon; or length can be made to suit special requirements. CRAB MOUNTED ON TROLLEY, for Contractors' purposes. WESTON'S SAFETY BRAKE.

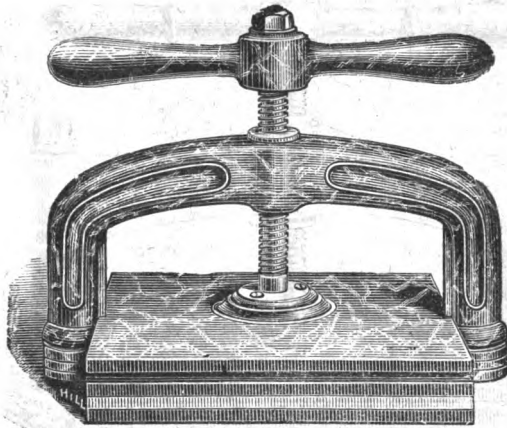
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No. 2.



## FOOLSCAP, 15in. by 10in.

			£	s.	d.
Extra Strong, Machine Planed, Gun-metal Washer and Nuts, Japanned Fillet	...	...	2	12	6
Extra Ornamented and Finished	...	...	3	0	0
Gun-metal Handles	...	...	0	8	0

## STANDS FOR THESE PRESSES.

Birch, Polished, with 1 Drawer	...	...	1	3	0
Do. 2 Drawers	...	...	1	5	0
2 Flaps, extra	...	...	0	10	0
Mahogany, Polished, 1 Drawer	...	...	1	9	0
Do. 2 Drawers	...	...	1	13	6
2 Flaps, extra	...	...	0	12	6

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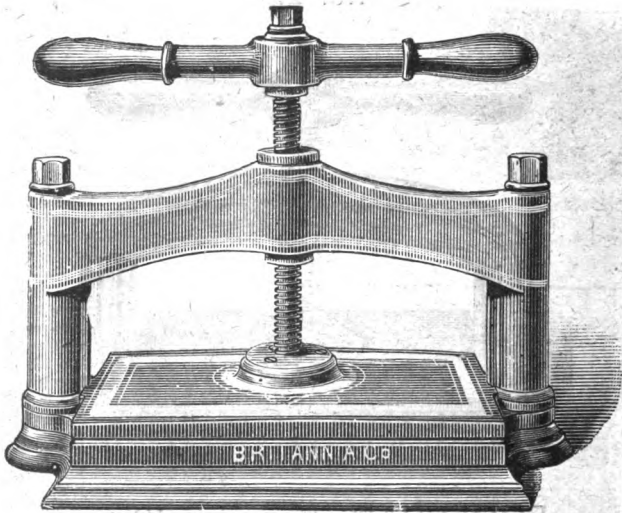
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# THE "BRITANNIA" LETTER COPYING PRESSES.

No. 1.



## LARGE QUARTO 12in. by 10in.

	£	s.	d.
Japanned Black Marble with Iron Washer	1	1	0
Japanned Black Marble with Brass Washer and Nut and surfaces Machine Planed	1	5	0
Japanned Ornamentally and of very superior finish	1	10	0
Brass Ball Handles, extra	0	6	0

## STANDS FOR THESE PRESSES.

Birch, Polished, with 1 Drawer	0	19	0
Do. do. with 2 Drawers	1	1	0
Do. do. with 2 Drawers and 2 Flaps	1	8	6
Mahogany, Polished, with 1 Drawer	1	4	6
Do. do. with 2 Drawers	1	9	0
Do. do. with 2 Drawers and 2 Flaps	1	17	6

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**Factories and Workshops fitted with Engines,  
Shafting & Tools of every description.**

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## **SPECIAL DEPARTMENTS.**

**HEAVY ENGINEERS' TOOLS** up to 14 tons weight.

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DESIGNERS AND MAKERS OF

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DEALERS IN ENGLISH & FOREIGN TOOLS,  
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