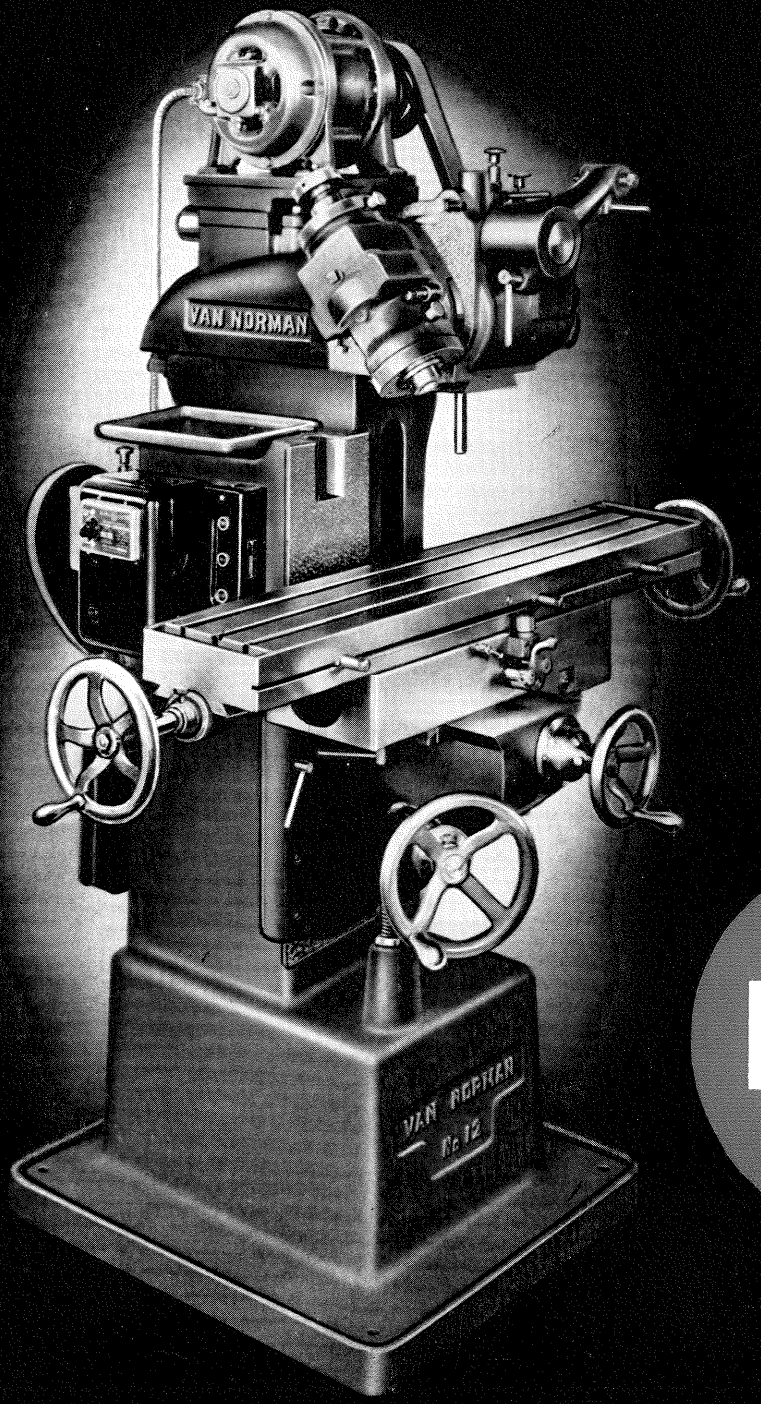
VAN NORMAN

Universal MILLER

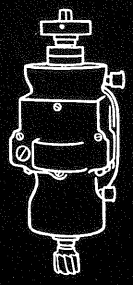


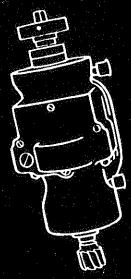
No. 12

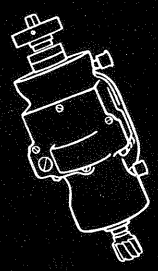
VAN NORMAN MACHINE TOOL CO., SPRINGFIELD, MASS., U. S. A.

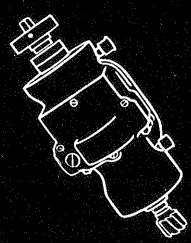
VAN NORMA

(RAM









The Advantages of Many

FLEXIBILITY has for years made the Van Norman Ram Type Universal Miller an essential machine in the tool room, pattern shop, experimental laboratory and machine shop.

Thoroughly modern design features — and the Van Norman adjustable cutter head and movable ram — make this new Miller outstanding in the range of its work and the speed and savings with which it handles a series of different operations on the same piece. The combined adjustments of the cutter head and ram provide all the advantages of a vertical and horizontal milling machine in a single compact machine — plus a vital additional advantage — the ability to mill any angle between vertical and horizontal with a standard milling cutter and no change in set-up.

Savings in set-up time alone are substantial enough to give Van Norman Ram Type Millers universal preference for tool room and similar work. Accepted studies indicate that set-up time is the largest single source of expense in the tool room. Operators with several different types of milling operations to perform on one piece, spend one-half or more of their time re-setting work and waiting for other types of milling machines.

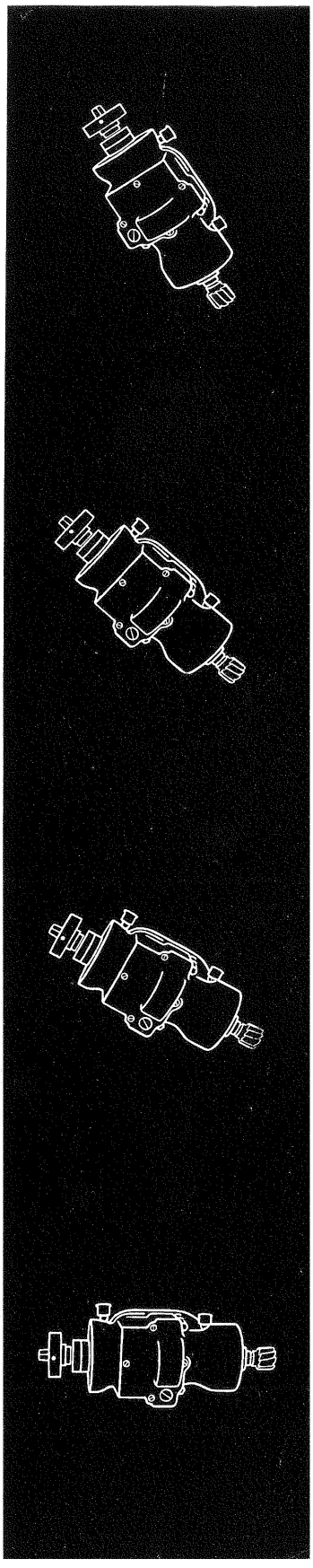
N MILLERS

TYPE)

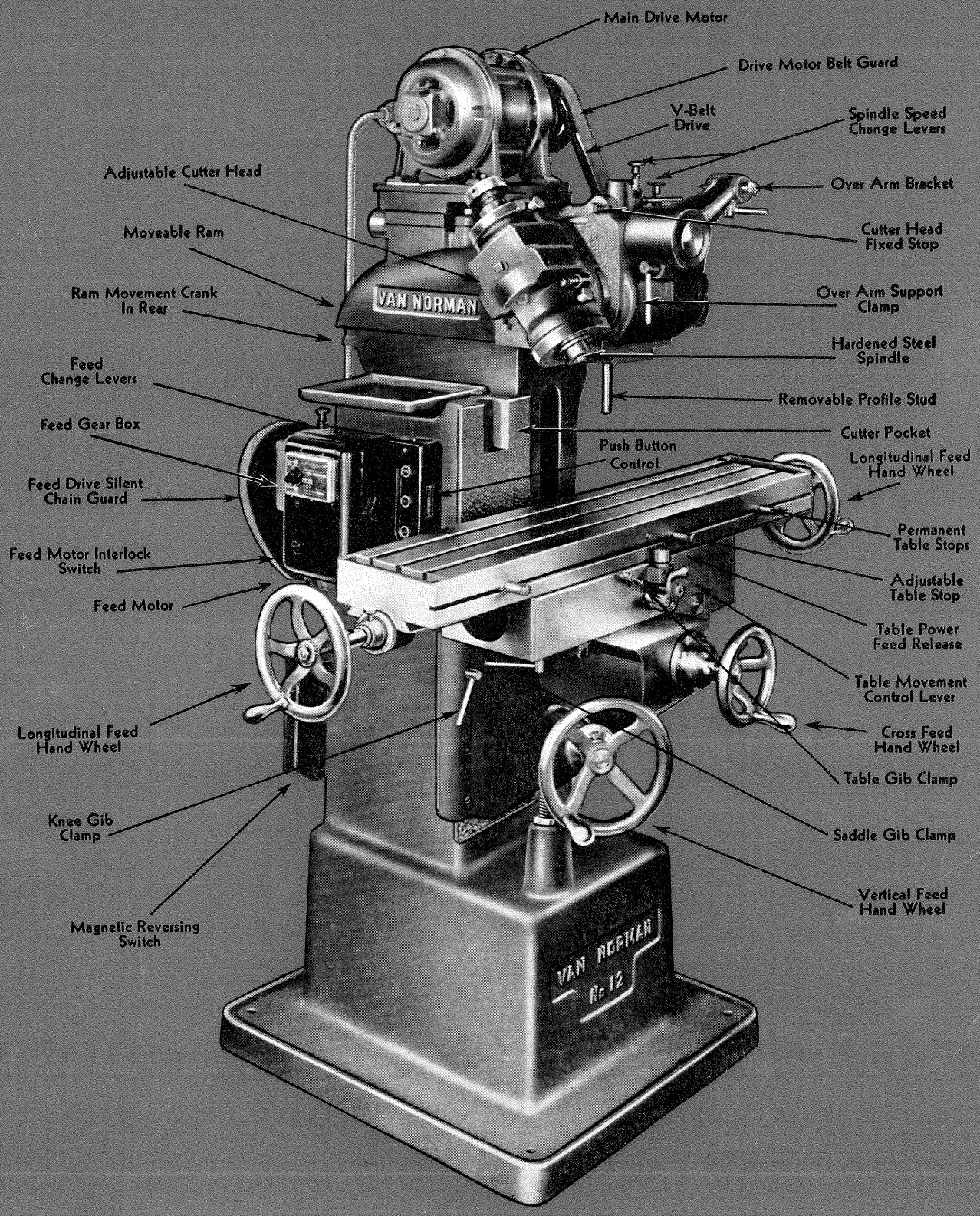
Combined in One

With a Van Norman in the tool room, most of this non-productive time is eliminated. The operator sets up the job on the table of the Van Norman, and, more often than not, completes all the machining operations on the piece without another set-up. He moves the cutter head — not the work. He loosens three bolts and sets the head easily and accurately to any angle from vertical to horizontal. He loosens two clamps and adjusts the ram which carries the head to its working position. With these two adjustments he can mill flat surfaces — vertical, horizontal, or any angle between — throughout the full range of the table. Simple attachments, which can be put on or taken off in a minute or two, extend the variety of possible operations to include virtually all machining required for the most elaborate piece.

The No. 12 Ram Type Universal Miller described on the following pages is the most accurate machine — and the fastest machine — we have ever built. It offers substantial economies, substantial advantages in precision, even beyond those which the industry has always expected and gotten from Van Norman Millers.



VAN NORMAN


Main Drive Motor
Drive Motor Belt Guard
V-Belt Drive
Spindle Speed Change Levers
Adjustable Cutter Head
Over Arm Bracket
Moveable Ram
Cutter Head Fixed Stop
Ram Movement Crank In Rear
Over Arm Support Clamp
Hardened Steel Spindle
Feed Change Levers
Removable Profile Stud
Feed Gear Box
Cutter Pocket
Push Button Control
Longitudinal Feed Hand Wheel
Feed Drive Silent Chain Guard
Permanent Table Stops
Feed Motor Interlock Switch
Adjustable Table Stop
Feed Motor
Table Power Feed Release
Table Movement Control Lever
Longitudinal Feed Hand Wheel
Cross Feed Hand Wheel
Table Gib Clamp
Knee Gib Clamp
Saddle Gib Clamp
Vertical Feed Hand Wheel
Magnetic Reversing Switch
VAN NORMAN
VAN NORMAN
No. 12

MILLER NO. 12

. . . *flexible* . . .

Flexibility, accuracy, high spindle speeds, ease of adjustment and ability to handle a wide variety of work are only a few of the advantages obtained through the advanced design of the No. 12 Van Norman Miller.

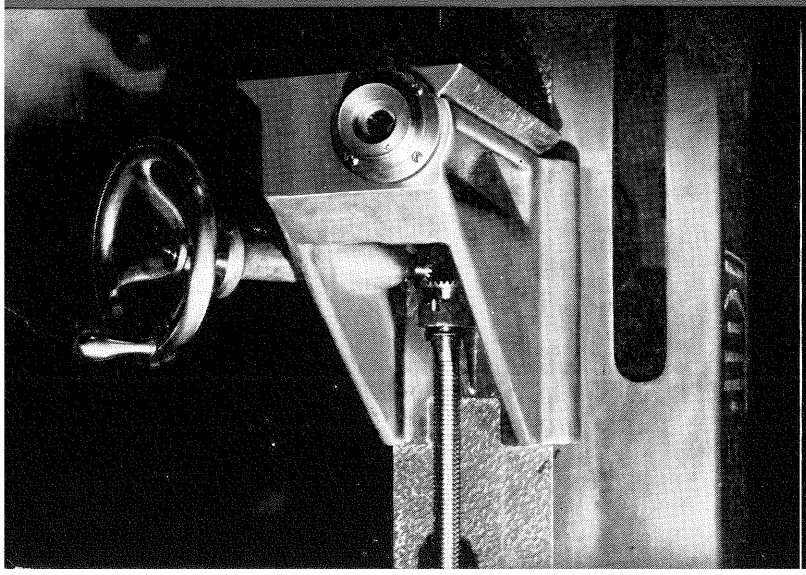
The column is larger and heavier than on previous machines. Added strength and rigidity is secured by ribbing placed at the proper sections on the inside of the column and base. The highest grade of close-grained semi-steel castings is used, not only to assure strength but also to permit a very fine finish on all machined and scraped surfaces.

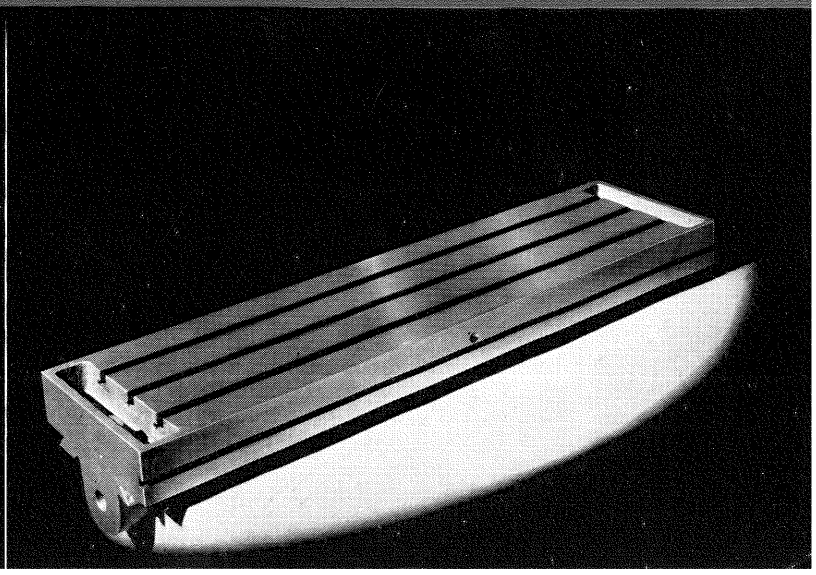
The box type construction of the knee is heavier and larger than on former models and permits heavier loads on the table.

The saddle, which is 21″ in length, has been completely redesigned to provide additional rigidness of support for heavier table loads. It contains a simple sturdy table feed operating mechanism driven by worm and gear. A positive sliding jaw clutch operated by a simple and exclusive reversing and stop

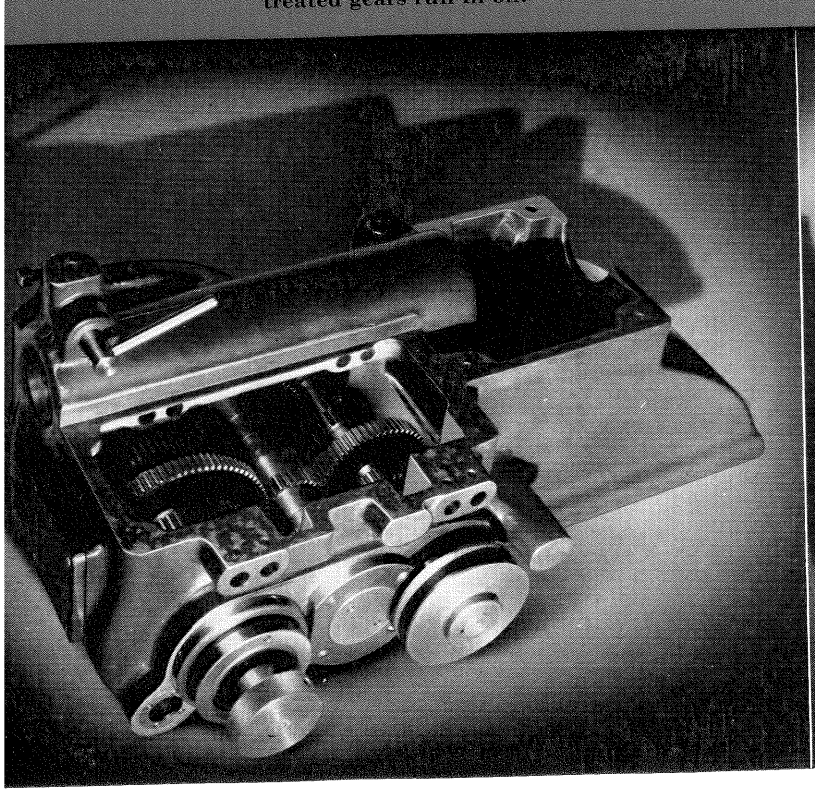
Above—Column ribbed for strength and rigidity.
Below—Table is larger and heavier for wider range of work.

Knee assembly . . . larger, heavier.

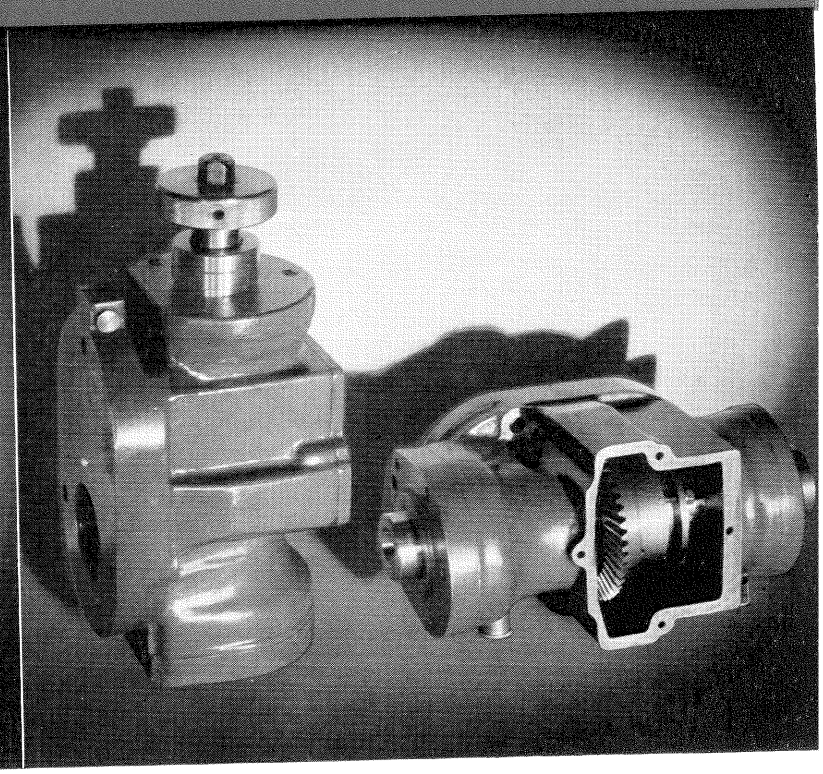




Rigid ram construction. Anti-friction bearings. Heat treated gears run in oil.



Cutter head is rugged and rigid.



. . . . rugged . . . .

mechanism, controls the feed of the table, either by hand or automatically.

A larger table 37″ long by 8⅛″ wide, more rigid than ever, is supported on generously built ways. A taper gib is provided with screw adjustment at each end and a clamp located conveniently at the front of the saddle.

Power feed is provided for the table longitudinal travel. A rotating feed screw feed is used, driven through the individual motor operated feed gear box giving twelve speed changes by means of convenient levers.

The drive from the motor to the gear box is by silent, self-oiling chain. All gears run in a continuous bath of oil to assure long trouble-free life. An oil level sight glass is provided on the gear box. Anti-friction bearings are used throughout.

Hand wheels are supplied on both ends of the table to permit convenient movement by hand from either left hand or right hand positions. The left hand wheel is removable to permit installation of gear train for spiral cutting with Van Norman 10″ Horizontal Swivel Universal Centers.

The main drive motor is mounted on top of the ram and drives the ram gears through a heavy V belt. All ram gears are of heat treated steel, accurately cut. Gear shafts are of heat treated steel mounted on anti-friction bearings throughout. Constant lubrication of gears is assured by a bath of oil in which they run. The oil level is visible through a sight glass in front of the machine.

Sliding gears controlled by two quick-change shifting levers provide for nine speeds, ranging from 70 RPM to 1465 RPM.

Provision is made to prevent locking any of the gear trains so that it is impossible for the operator to secure combinations of gears which might result in broken teeth.

The cutter head drive gears are of spiral bevel type, assuring smooth and quiet application of power to the cutter.

The cutter head, adjustable to any angle between its vertical and horizontal positions, is of the most rigid and substantial construction. Taper roller bearings are mounted at each end of the sturdy hardened and ground spindle, providing a firm, smooth drive to

. . . . *accurate* . . . .

the cutter. The spindle is hollow throughout its length, to take a draw bar, and the spindle nose is ground to fit standard Van Norman arbors and chucks adapted to this size of machine.

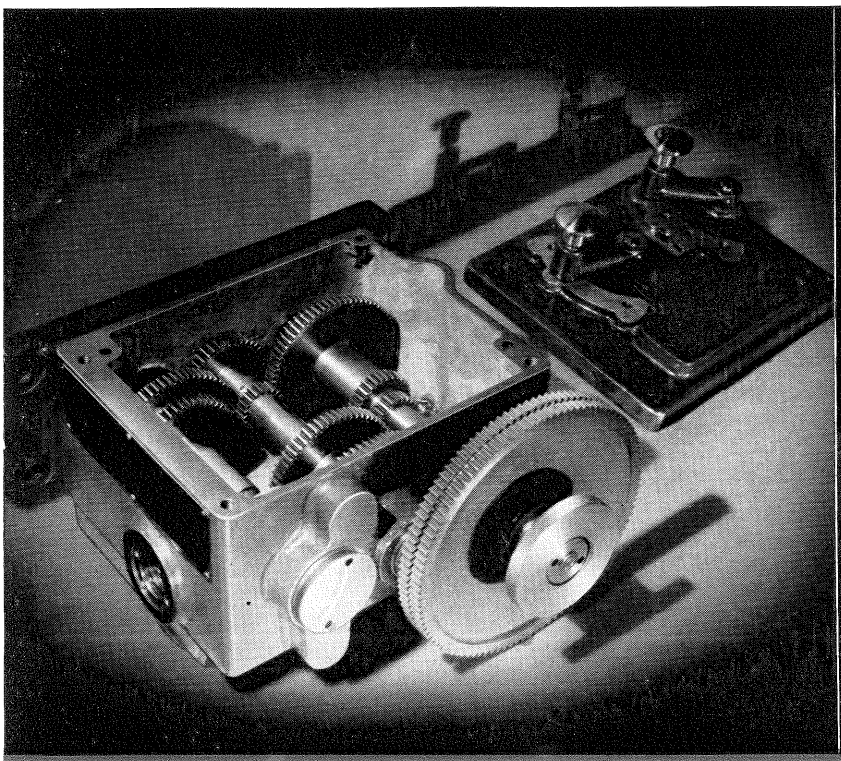
Throughout the design of the No. 12 Miller special attention has been given to ease and convenience of operation. Dials are large and legible, for quick and accurate adjustments. Control levers are placed for easy and convenient manipulation. A touch of a button reverses the rotation of the cutter. Quiet, smooth operation is obtained by accurately cut and designed gears.

Enclosed gears, chains and belts provide safe operation. Electric interlock between ram motor and feed motor insures protection against strain on machine in case of stoppage of ram motor due to overload or electrical interruption.

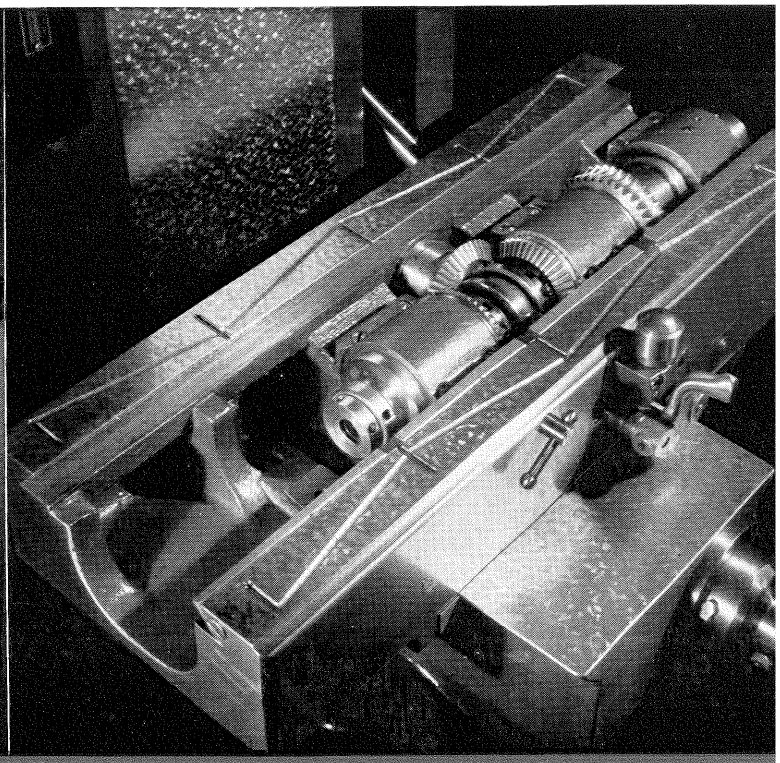
A number of attachments including full anti-friction bearing sub-head, slotter, and high speed milling attachment provide added flexibility and convenience. These are easily handled and installed in a few minutes.

In short, the Van Norman Ram Type Universal Miller, always reliable mechanically, reaches in the No. 12 a new standard of accuracy and utility. Check over these advances in design:

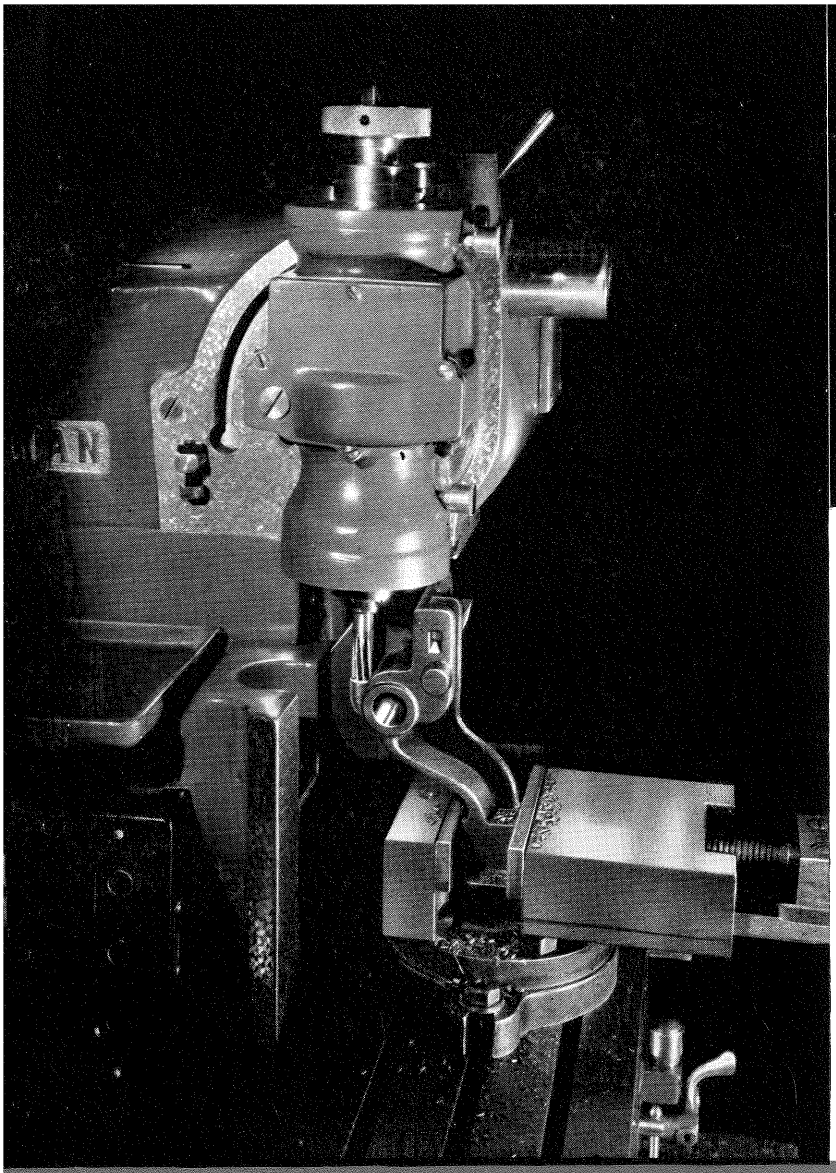
- **Universal flexibility.**
- **Spindle speeds up to 1465 R. P. M.**
- **Increased range.**
- **Heavier, more rigid construction.**
- **Precision built.**
- **Individual motor drive.**
- **Anti-friction bearings throughout.**



Feed gear box. Anti-friction bearings throughout. Heat treated gears run in oil.



Saddle assembly—Note sturdy construction which contributes to accuracy.

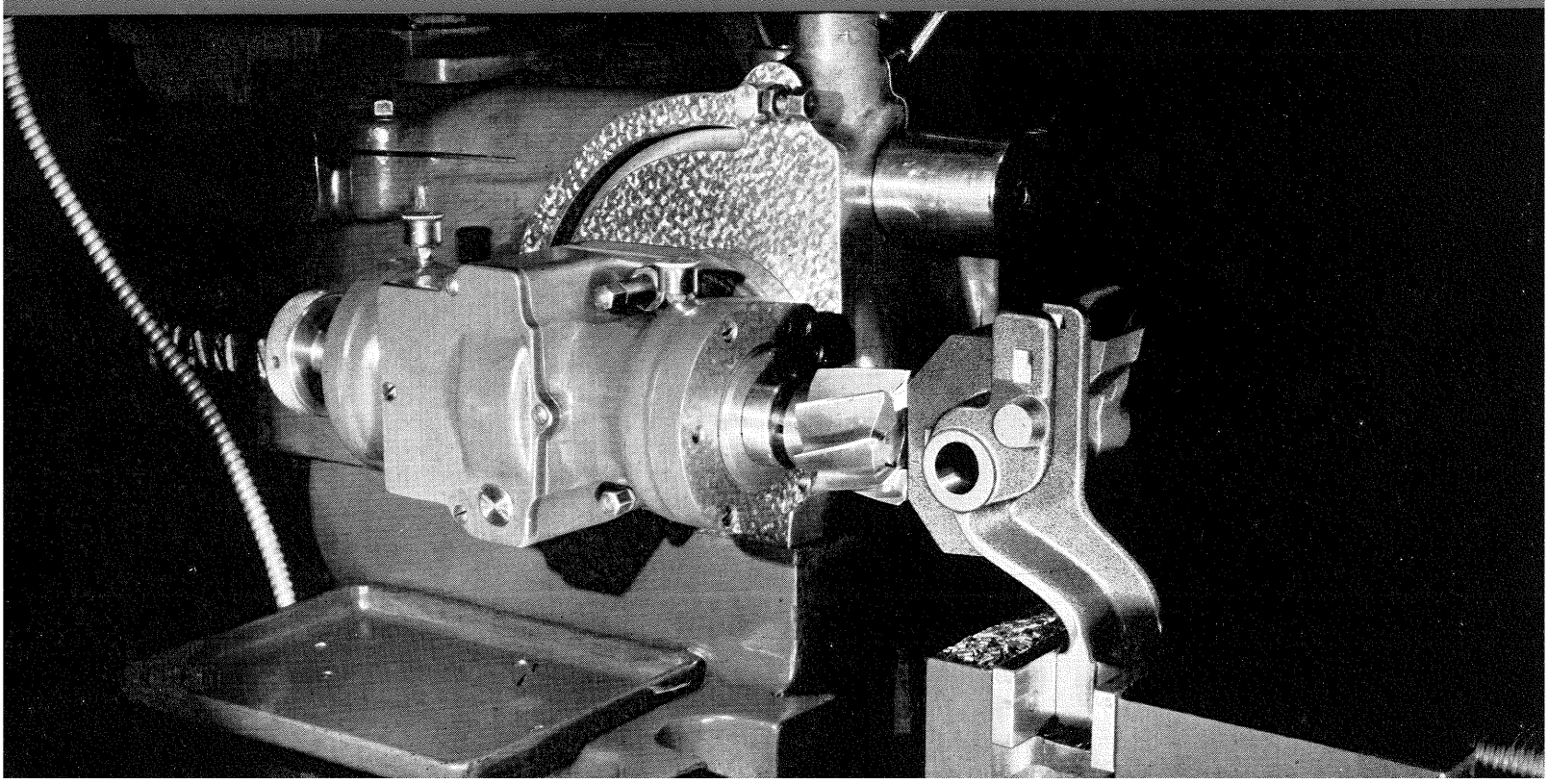


How Van Millers...

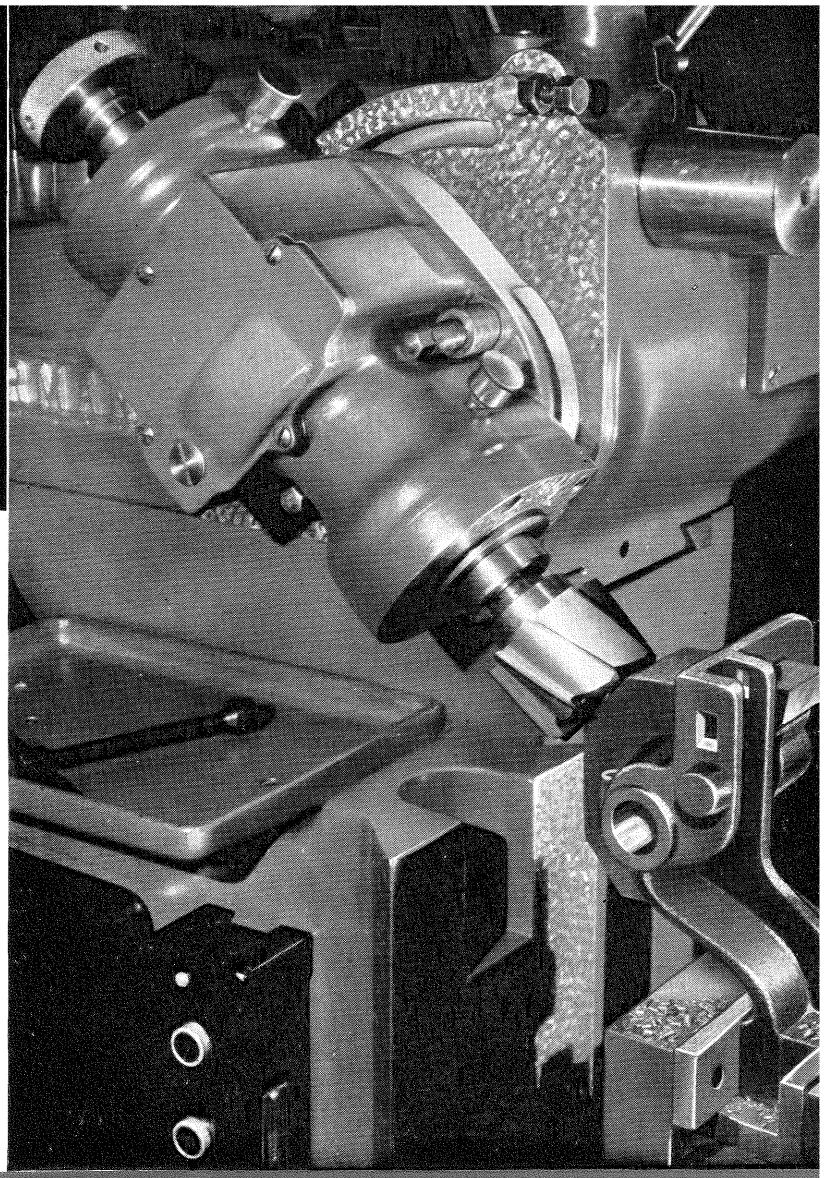
The Van Norman Ram Type Universal Miller combines in one compact unit the utility ranges of three machines—the vertical, the horizontal and the angular miller. It performs the work of all three of these machines—together with a number of operations usually carried out on other equipment—with a minimum of resetting. Even on complicated work, the job can usually be set up *once*, and carried right through to completion without going to another machine and without disturbing

Above—Milling boss—cutter head in vertical position.

Below—Milling vertical surface, cutter head in horizontal position.



Norman *save set-ups*

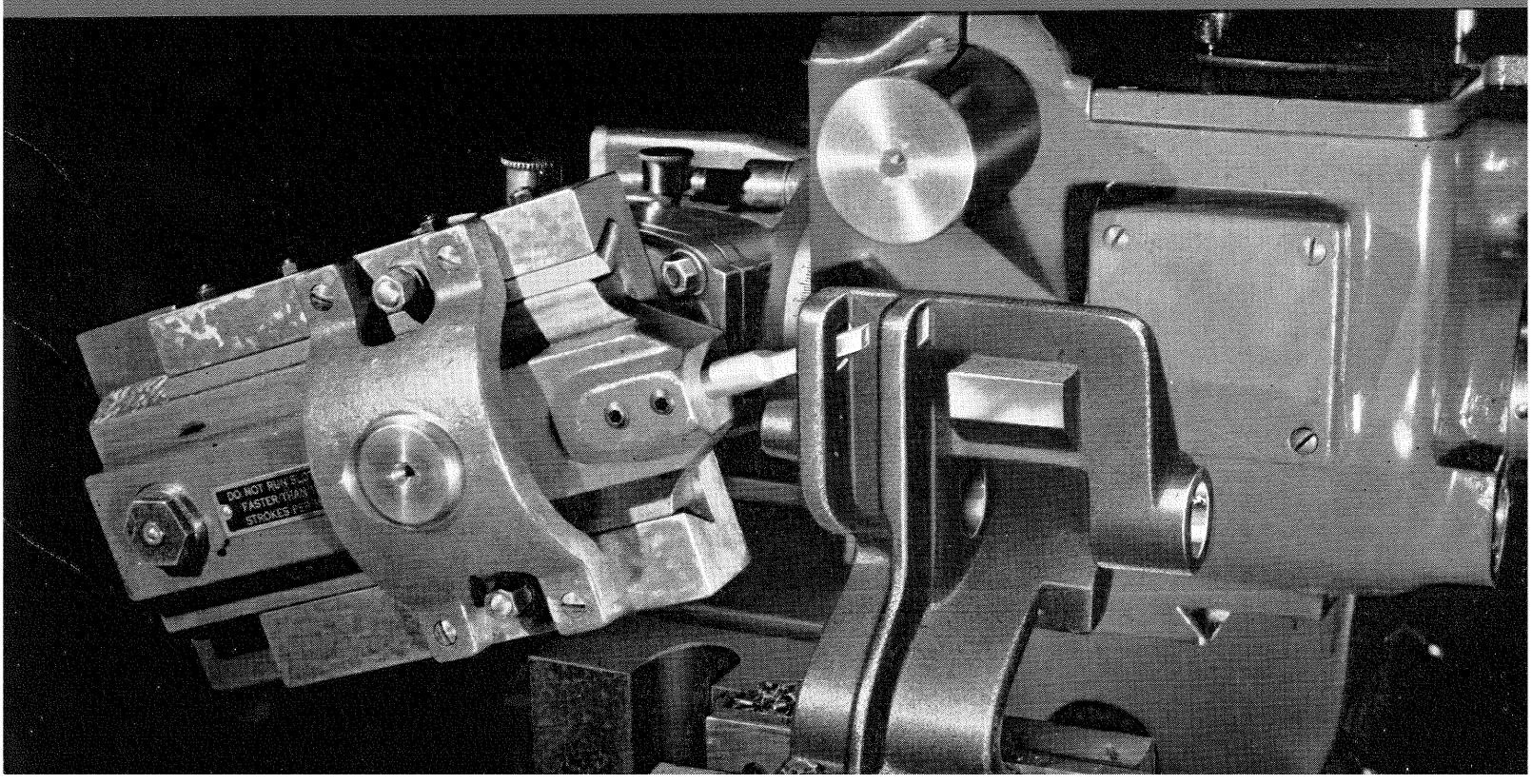


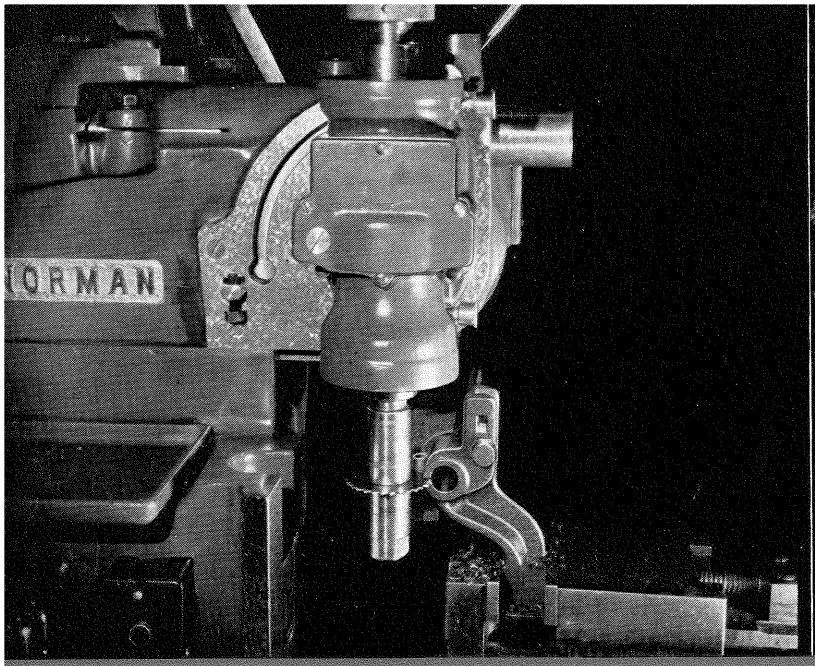
the original set-up. Moreover, it is only on the rarest job that blocking-up is required. The result is a saving of 30 to 50 per cent, or more in total operating time—and very definite advantages in accuracy.

The photos on these pages suggest, as far as space permits, the range of work which the machine can do. The casting shown in many of the illustrations was completely machined without a single change in set-up: a typical example of the flexibilty of the Van Norman Ram Type Universal Miller.

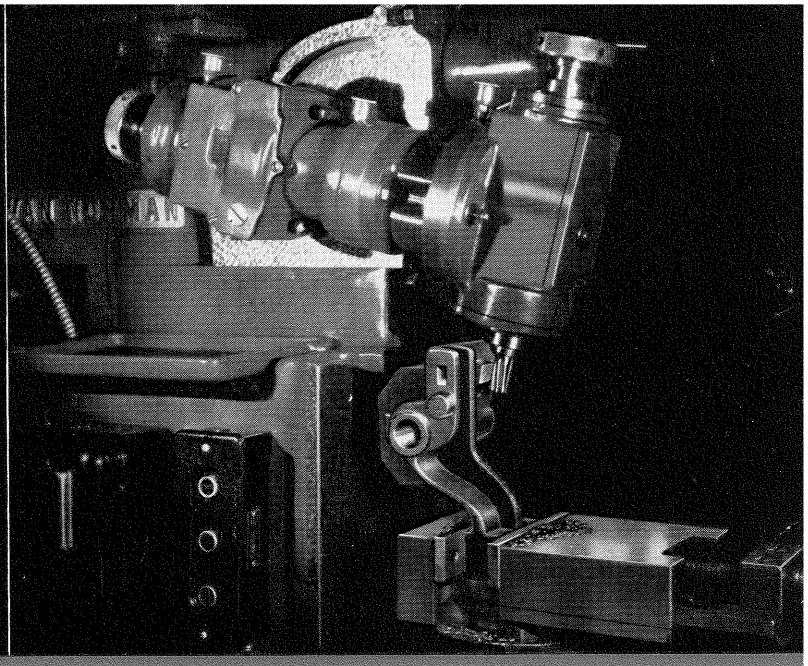
Below—Slotter mounted on cutter head for angular slotting in same piece.

Above—Head set to mill angular surface.





Head set vertically for sawing clamping slot.

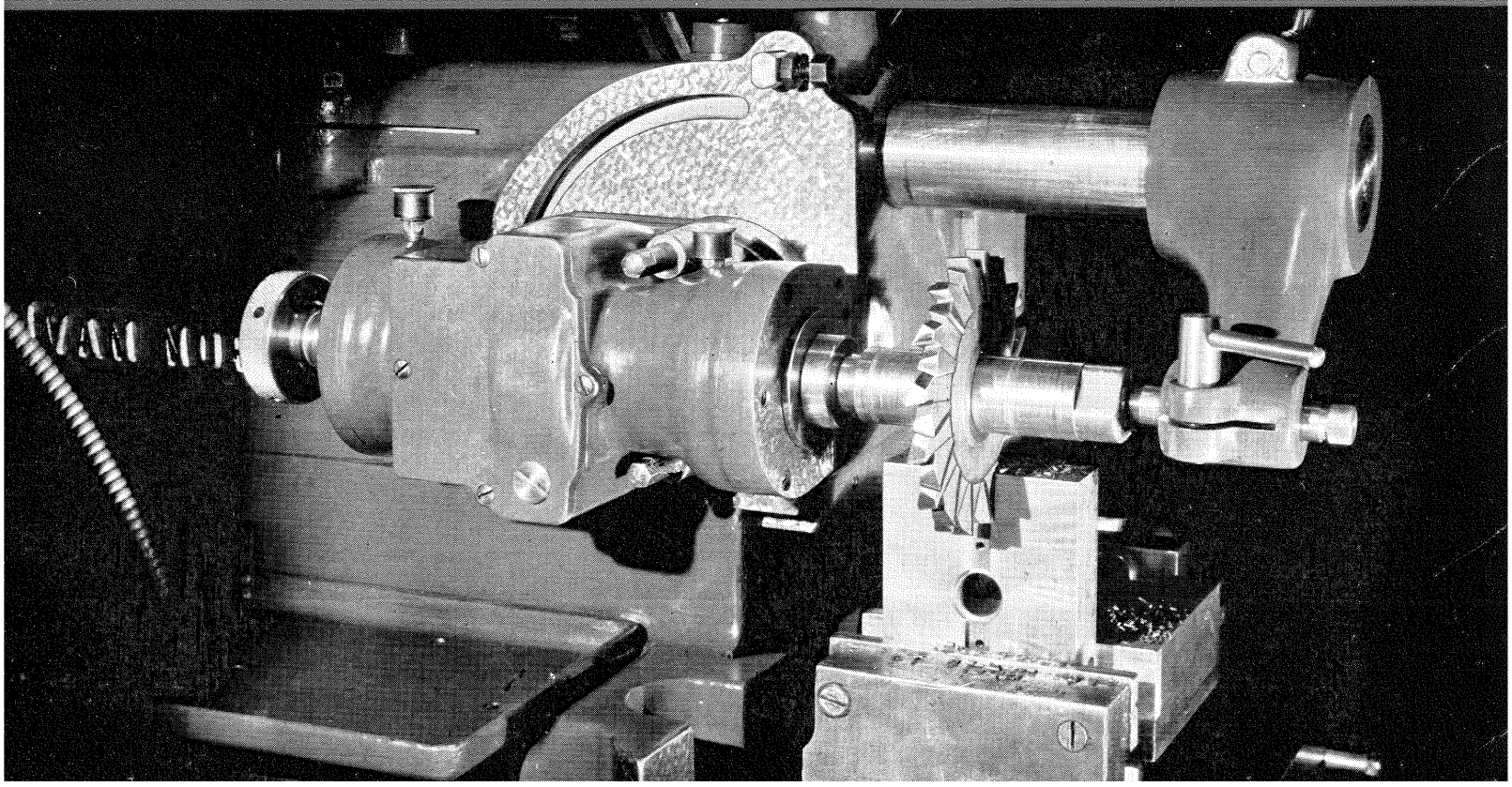


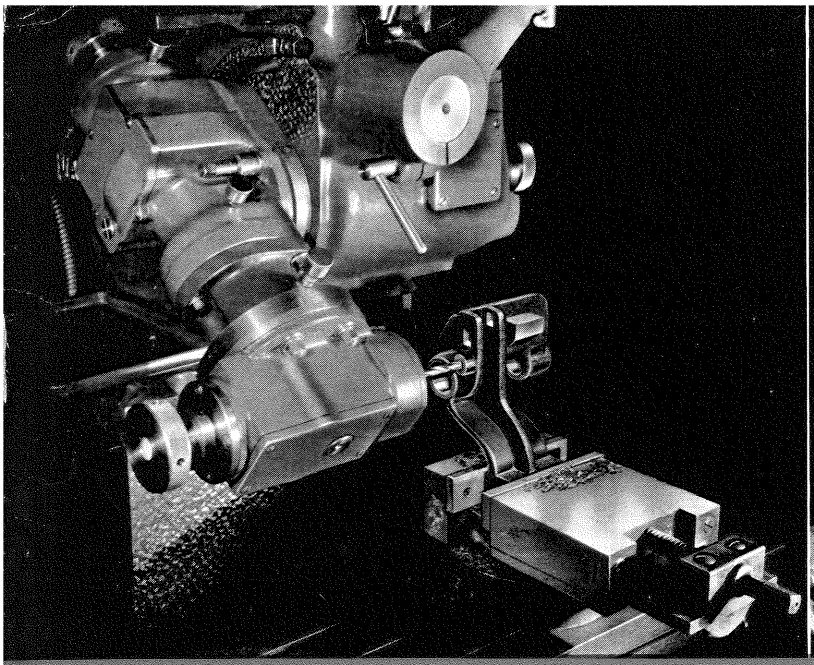
Milling angular surface with subhead.

. . . *save time* . . .

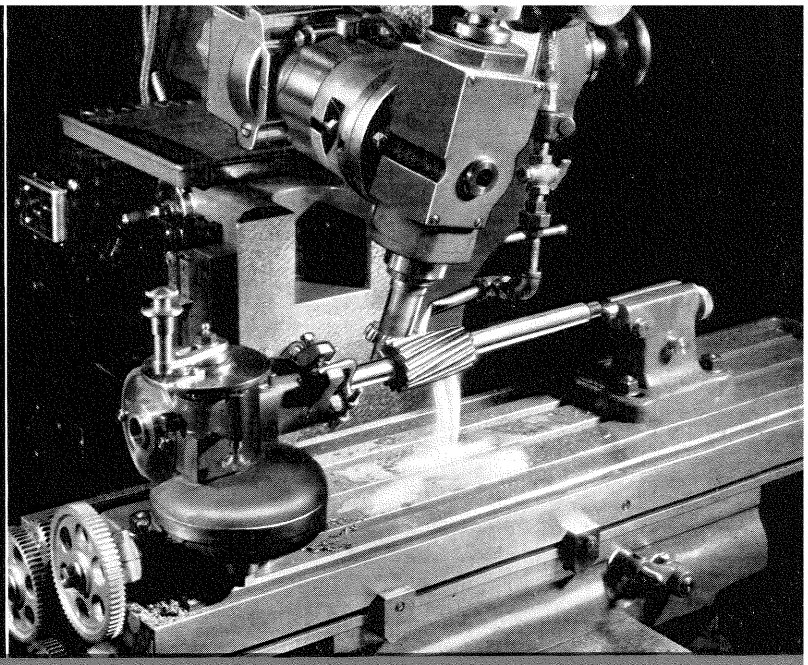
Note, in each of the series of operations shown, that the simplest types of milling cutters handle most operations. Fewer cutters are required and these are standard types, inexpensive and quickly available. The re-setting of the cutter head between operations is simple and easy, requiring only a fraction of the time which would be required for shifting the set-up. To many users, however, the gain in ACCURACY is as important as the saving in time. As the number of set-ups goes down the precision of the job goes up. Errors are reduced to a minimum. The accuracy built into the

Below—Horizontal milling with overarm support.





Drilling boss with subhead attachment.



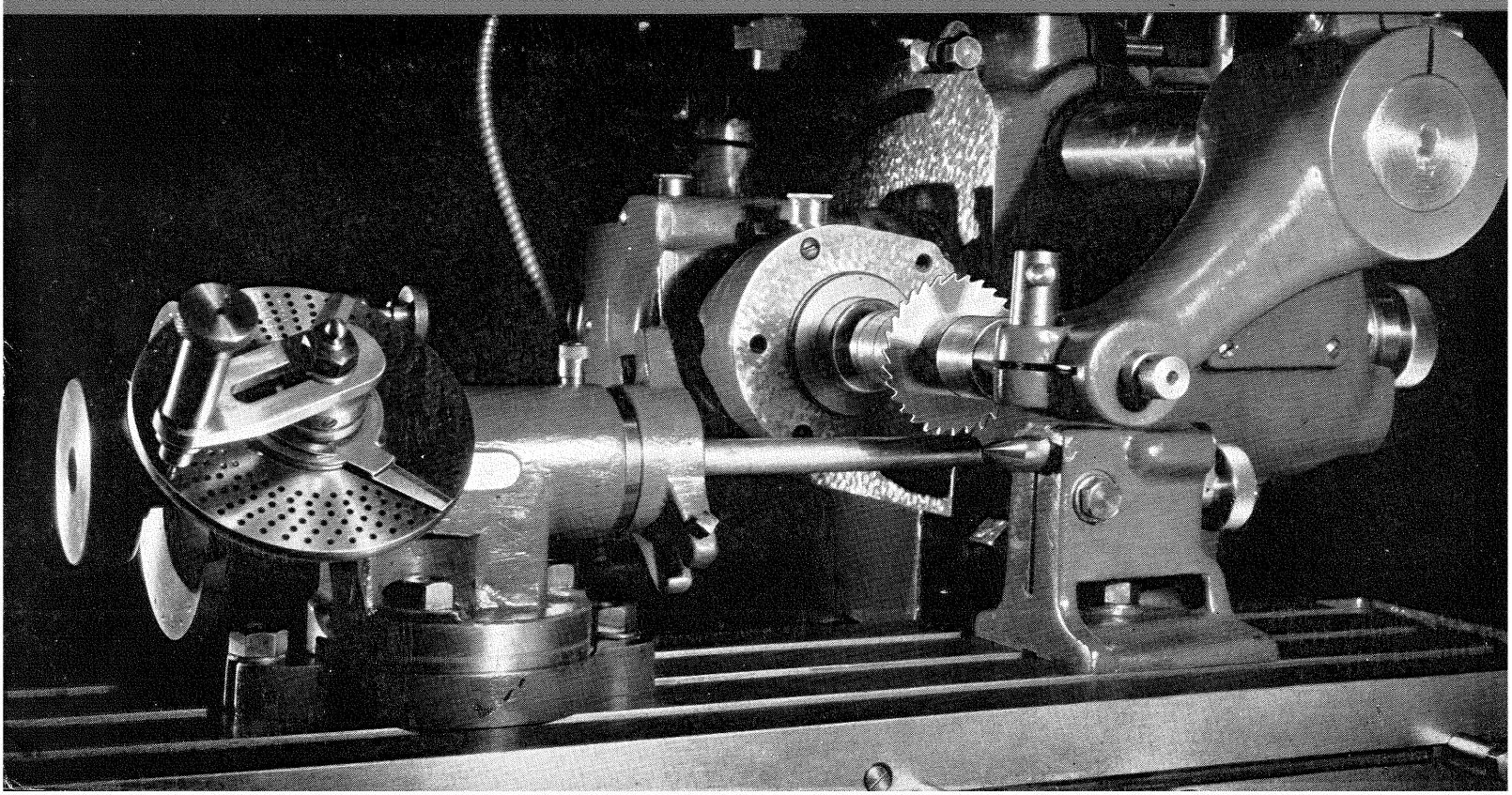
Milling taper spiral using 10″ Universal Index Centers.

. . . save money . . . .

machine shows directly in the accuracy of the work, with less chance of the small inaccuracies so likely to creep in during a series of set-ups.

Note further that the Van Norman Ram Type Universal Miller employs only a few simple attachments to handle all types of operations. Each is quickly and easily adjusted. Together they extend the range of the machine—make it a genuinely UNIVERSAL miller, a time and money saver for any tool room, pattern shop, developmental or research laboratory, production department, machine shop or educational institution.

Indexing operation using worm index centers.



Specifications

VAN NORMAN Universal RAM TYPE MILLER No. 12

RAM

Length at ways	25¾ inches
Ram Movement in and out on column	12¾ inches
Ram Bearing on column	16 inches

OVERHANGING ARM

Solid Steel Bar with Arm Head.

Diameter	2⅜ inches
Length	28 inches

ADJUSTABLE CUTTER HEAD

Pivotally attached to the face of the Ram. Head is held in position by three quickly operated binder bolts. Adjustable between vertical and horizontal—graduated dial ..... 90°

SPINDLE

Hardened and ground.
Formed to receive No. 5 Van Norman split chuck, taper collets and arbors having No. 5 chuck shank. Length ..... 12 3/16 inches
Number of Speeds 9
Speeds—70, 130, 175, 270, 320, 385, 490, 960, 1465 R.P.M.
Spindle Bearings—anti-friction.

FEED

Gear Box, Motor operated by silent chain.

Number of Speeds	12
Feed of table per minute	⅜ to 14 inches

TABLE

Length	37 inches
Work Holding Surface	33 x 8⅛ inches
3 Table Tee Slots	Width ½ inch
Table Travel (Automatic)	17 inches

SADDLE

Length	21 inches
Hand Cross Feed	6⅝ inches

KNEE

Vertical Range from center line of Spindle in Horizontal position to top of table in lowest position	17 inches
Vertical Range from top of table to cutter head nose with head in vertical position	12⅛ inches
Maximum distance from face of column to center line of spindle with head in vertical position	7 inches

PROFILE STUD

Distance from center line of main spindle in vertical position to center line of Profile Stud	6½ inches

MACHINE CASTINGS ARE SEMI-STEEL

MOTORS REQUIRED:

SPINDLE: 1½ HP., 1150 RPM. for 60 cycle; 1425 RPM. for 50 and 25 cycle.
FEED: ¼ HP., 1725 RPM. for 60 cycle; 1425 RPM. for 50 and 25 cycle.

BASE DIMENSIONS 25 (in direction of table travel) ..... x 29 inches

FLOOR SPACE REQUIRED 71 (in direction of table travel) ..... x 56 inches

HEIGHT OF MACHINE FROM FLOOR TO CENTER LINE OF SPINDLE ..... 51 inches

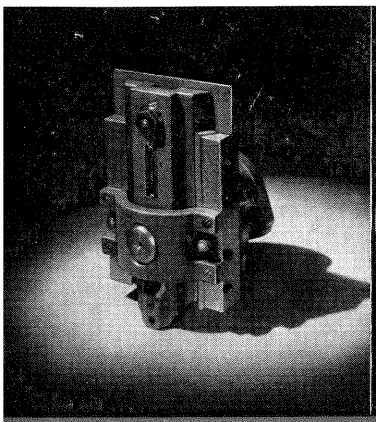
WEIGHT OF MACHINE WITHOUT MOTOR, INCLUDING STANDARD EQUIPMENT.

Net (approximate)	1650 lbs.
Crated (approximate)	2025 lbs.
Boxed (approximate)	2085 lbs.

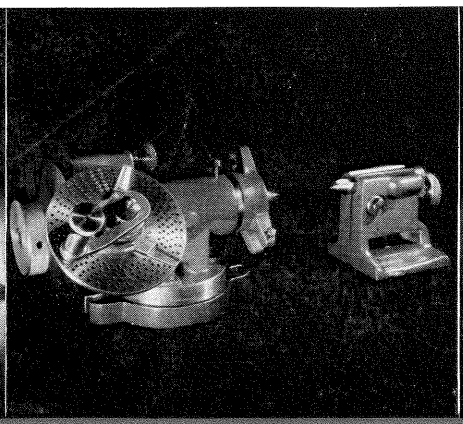
STANDARD EQUIPMENT FURNISHED WITH No. 12 RAM TYPE UNIVERSAL MILLING MACHINE:

Main Drive Motor Plate, Pulleys, Belts, and Belt Guard; Feed Motor Chain and Sprockets, (No Motors or Controls included); Vise; 2 Table Stops; ½" "C" Style Collet; necessary Wrenches; Profile Stud.

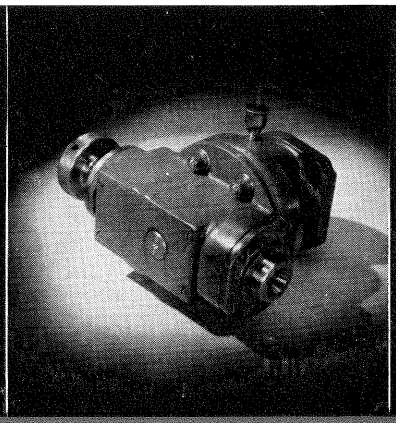
ATTACHMENTS



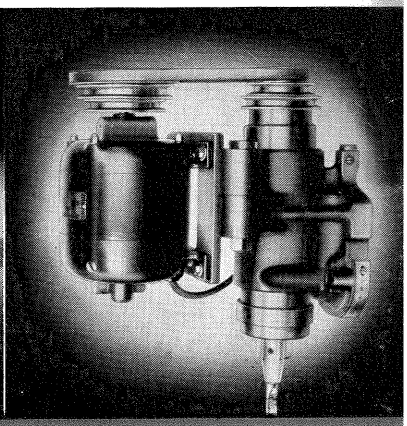
Slotter — 2 inch stroke.



Worm Index Centers.



Subhead.



High Speed Milling Attachment 1900—2700—4000 RPM.

VAN NORMAN MACHINE TOOL CO., SPRINGFIELD, MASS., U. S. A.

1500-1-40—JCO

Printed in United States of America