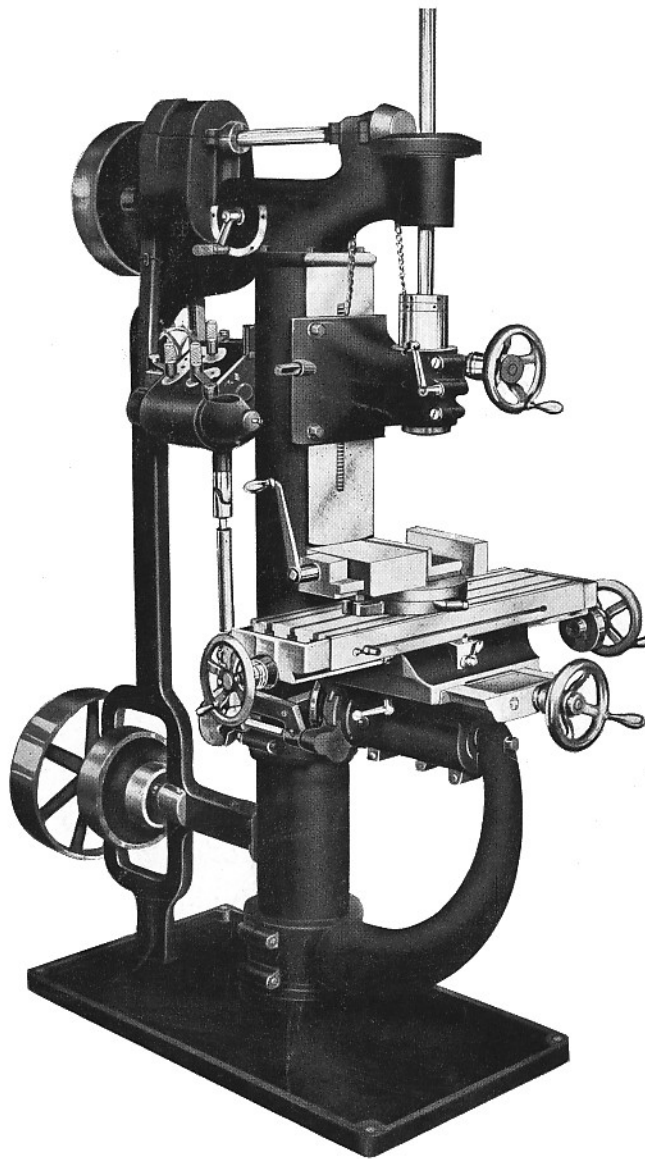


# No. 2 Knight Miller



Manufactured by  
**W. B. Knight Machinery Co.**  
St. Louis, Mo., U. S. A.

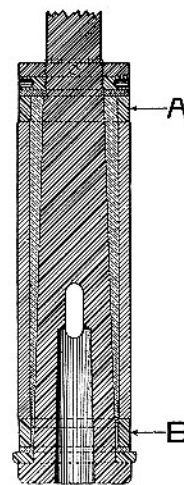
The Knight Miller is carefully designed and constructed with the view of obtaining a versatile and adaptable machine capable of reducing the time wasted in setting up and changing a job from one machine to another and also capable of producing accurate work both in the tool room and in the shop. This design makes it possible to perform many operations at one chucking which without a Knight Miller would require several set-ups and often more than one machine. Thus the expense of resetting the work is eliminated and the accuracy thus obtained dispenses with a large amount of costly and laborious hand work.

The tilting table is one of the time and labor saving features of this machine. Often there is work that requires the machining of several surfaces at different angles and in such cases the Knight is particularly valuable. The work is fastened on the table and milling, drilling, boring and shaping done at the horizontal position. Then by simply tilting the table to the desired angle all of the above operations can be done on other surfaces without changing the original set-up. This feature saves the time and labor of making the additional set-up and also insures greater accuracy. The degree to which the table is to be tilted is indicated by a graduated dial on the projecting arm around which the table and knee is tilted. When the table is in a horizontal position a special large taper pin is placed through the knee and projecting arm. This taper pin insures rigidity and quick and perfect horizontal alignment.

Another advantage of the tilting table is that straight milling cutters may often be used instead of angle cutters. Also horizontal milling cutters mounted on a standard cutter arbor may be used for slotting, spline milling, etc. Thus it is possible to do a broad range of work without keeping a large stock of special cutters which are seldom used. Further the tilting table eliminates the need of jigs and fixtures for holding the work at an angle.

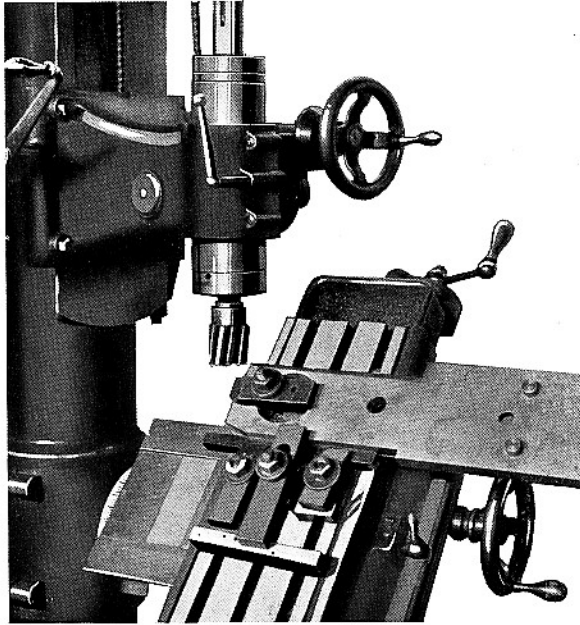
In addition to tilting to either side of horizontal, the table may also be swung about the column in a horizontal plane, thereby considerably increasing the range of the machine. The table is held in place on the saddle by a taper gib, which is provided with an adjusting screw at each end. This forms a means not only of adjusting the gib in either direction, but of locking it solidly so that it will not get out of adjustment. Suitable means are provided for locking the saddle to the knee and the knee to the column.

Instead of moving a large heavy knee and table to get vertical adjustment on the Knight Miller, only the spindle or spindle head is moved. This head can be clamped solidly to the column of the machine, thus giving the advantage of fixed



*Sectional View of Spindle Bearing  
To take up wear, slacken nut A and  
tighten nut B*

head construction as well as the advantage of a vertically adjustable head when the clamping screws are released. This construction is decidedly rigid and can be relied upon to maintain correct alignment through many years of service.



The spindle is made from a high carbon steel forging, accurately ground to size and runs in a solid bronze taper bearing, adjustment of which may be made as shown in the illustration. A locking screw is provided for locking the spindle in the head. The spindle is equipped with draw bar for holding cutters.

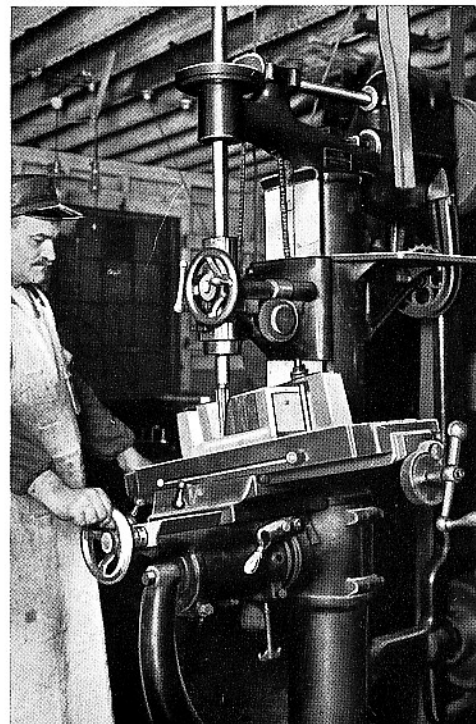
The No. 2 Knight Miller has both cross and longitudinal power feed on the table. All feed changes are accomplished through hardened steel gears and clutches located in the feed gear box.

The drive is carried from the gear box by a telescopic shaft with universal joints to a forged steel ring gear which runs on ball bearings and is located on the projecting arm. A shearing screw is located in the top universal joint to prevent damage to the machine in case of an overload.

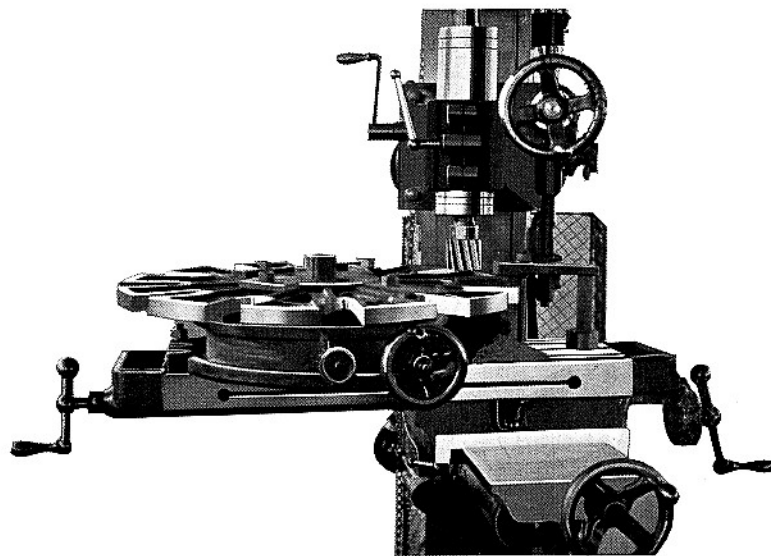
The speed changes are made through a train of coarse pitch gears located in the top bracket. These gears are engaged individually by a hardened tool-steel dog which drops into a hardened pocket inserted in each gear.

The illustration above shows the milling of a bevel on one end of a forged steel wedge. With the table easily tilted to the correct angle the machining was quickly and accurately accomplished without the use of any special equipment for holding the work.

The photograph at the right illustrates the convenience of the tilting table



of the Knight Miller on a typical angle job. The work shown is an aluminum core-box for the crank case of an automobile engine. The operator has easy control of the table movement in following the lines laid out on the work. Several surfaces at different angles are finished at the one set-up, thereby greatly reducing the time required to do this work.



This photograph illustrates the advantage of the swivel feature of the table. The openings in this spacing circle had to be accurately machined. The casting was twenty-six inches in diameter while the throat of the No. 2 Knight Miller is nine inches. To accommodate the large diameter of the spacing circle the table was simply swiveled to the right and the work fed in at an angle of 45 degrees to the face of the column.

## Specifications

Vertical adjustment of spindle head.....12"  
Maximum distance from table to spindle.....18"  
Distance from column to center of spindle.....9"  
Longitudinal table feed.....20"  
Cross table feed.....8"  
Working surface of table.....8½"x29"  
Number and width of T-slots...3—5⁄8"  
Number of table feed changes.....8  
Range of feeds......008 to .060  
Vertical spindle feed.....4½"  
Hole in end of spindle, B. & S. taper.....No. 10

Number of spindle speeds .....8  
Range of spindle speeds .....25 to 350  
Length of vise jaws.....7"  
Depth of vise jaws.....1¾"  
Vise jaws open.....5"  
Diameter of countershaft.....1⅞"  
Two clutch pulleys.....3"x10"  
Driving pulley.....3"x14"  
Hangers drop.....10"  
Countershaft R. P. M.....350  
Horse power required.....2  
Floor space.....60"x68"  
Approximate net weight.....2200 lbs.  
Approximate crated weight...2500 lbs.