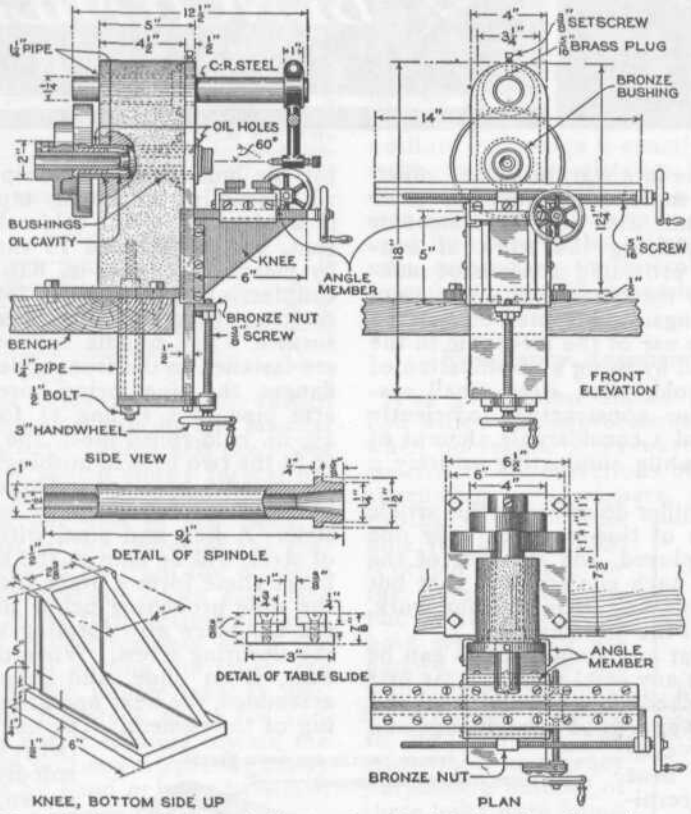
for a period of about a week. While the cement is thus seasoning, the screws, slides, spindle, knee, and various other component parts may be made up. The spindle should be turned and bored, using a No. 2 Morse taper in the nose, and cutting the thread for the chuck, which is 1/16-in. pitch; bronze bushings are used for the bearings, being turned to make a press fit in the spindle pipe. A three-step cone pulley is turned to the dimensions shown, and is fastened to the spindle by a safety setscrew. A simple pattern is built for the knee casting, which is made of soft gray iron, and machined as indicated. On the top of the knee is the main carriage slide; it is machined very carefully on the edges and faces, and must be perfectly square in all directions. On the vertical sides of this slide are screwed the angle members, two for the table slide and two for the carriage slide. These angle members are made of 3/16-in. angle iron, filed and fitted with great care, a cut being taken through the inside fillet, on the shaper, before fitting; 1/4,-in. round-head screws hold them to the carriage slide. The table is built up of cold-rolled steel, as shown in the detail drawing, the various pieces being held together with 1/4 in. flat-head screws. This job can best be done by using a few rivets to hold the assembly, while performing the drilling and tapping operations. The T-slot in the table permits the use of 3/8-in. bolts, to hold a vise, or the various fixtures used on the machine.

All screws used on the vertical, longitudinal, and crossfeeds, are turned out of cold-rolled steel, and run in brass or bronze nuts, fastened to the slides with round-head screws. The equipment necessary, such as arbors, centers, and a small vise with a homemade swivel base, can be made up as required. A good chuck should form part of the equipment, and should be fitted with a flange threaded to fit the spindle nose.

While foot power may be used with the machine, a small 1/4-hp. motor, driving through a countershaft and cone pulley mounted directly over the machine, is advised. The cone pulley should be of the same size as the one on the miller.

The builder of this miller will have a splendid little tool, at small cost.



By Adapting a Method of Construction Used in Building Very Heavy Machinery, to the Needs of the Man with a Small Shop, Machines Such as the One Shown may be Built at a Considerable Saving in Cost