Turn Right!

PART 2

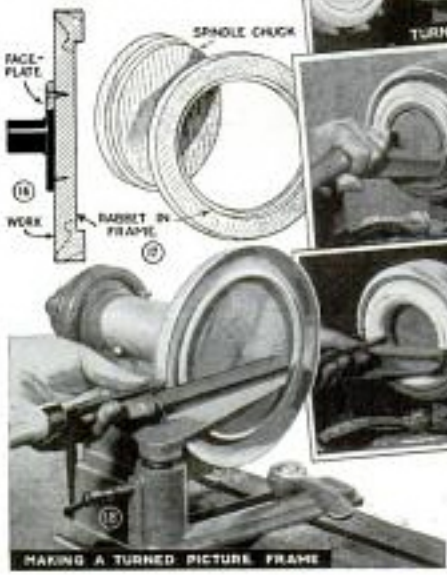
FACEPLATE and CHUCK TURNING

AS ALL lathe work cannot be turned between centers, but must be mounted on a faceplate or chuck, the correct method of working is far more important than skill in the handling of the turning tools. The turning of a ball is a typical example. Where the ball is over 2 in. in diameter, the method shown in Figs. 1 to 7 inclusive should be used. Stock for the job is first squared up, and is then marked on two adjacent sides with a circle slightly larger than the size of the required ball. The shape thus marked is cut out on a band saw, the pieces from the first cut being bradded back in position to permit making the second cut. The resulting shape is roughly blackened with a soft pencil along the center area of each of the four sides, after which the work is mounted in the lathe between centers. Using first a gouge and then a skew, the wood is turned down until the pencil mark shows as a

TOOL CUTS IN FACEPLATE TURNING

faint line, as in Fig. 4. Next, carefully caliper and turn the narrow neck at the dead-center end to ¾-in. diameter. The ball can now be cut off at the live end, as in Fig. 5. A wood chuck is made up, and is mounted on the single-screw center, or, better, fitted by means of a set screw to the end of the lathe spindle. The chuck has a ¾-in. hole in it to take the stub of the ball, as can be seen in Fig. 6. Sanding with a piece of paper held between the ball and a ¼-in. plywood template of the same diameter as the ball, as shown in Fig. 7, will bring it to an exact round, after which it is cut off carefully. Where several balls are to be made, they can be turned in line, as shown in Fig. 8. Notice that a spear-point tool is worked directly over a wooden template to obtain the proper shape at the center of each ball. After the center is perfect, the balls can be cut apart and finished in a cup chuck, shown in Figs. 33, 35 and 36.


TURNING A RING



MAKING A TURNED PICTURE FRAME

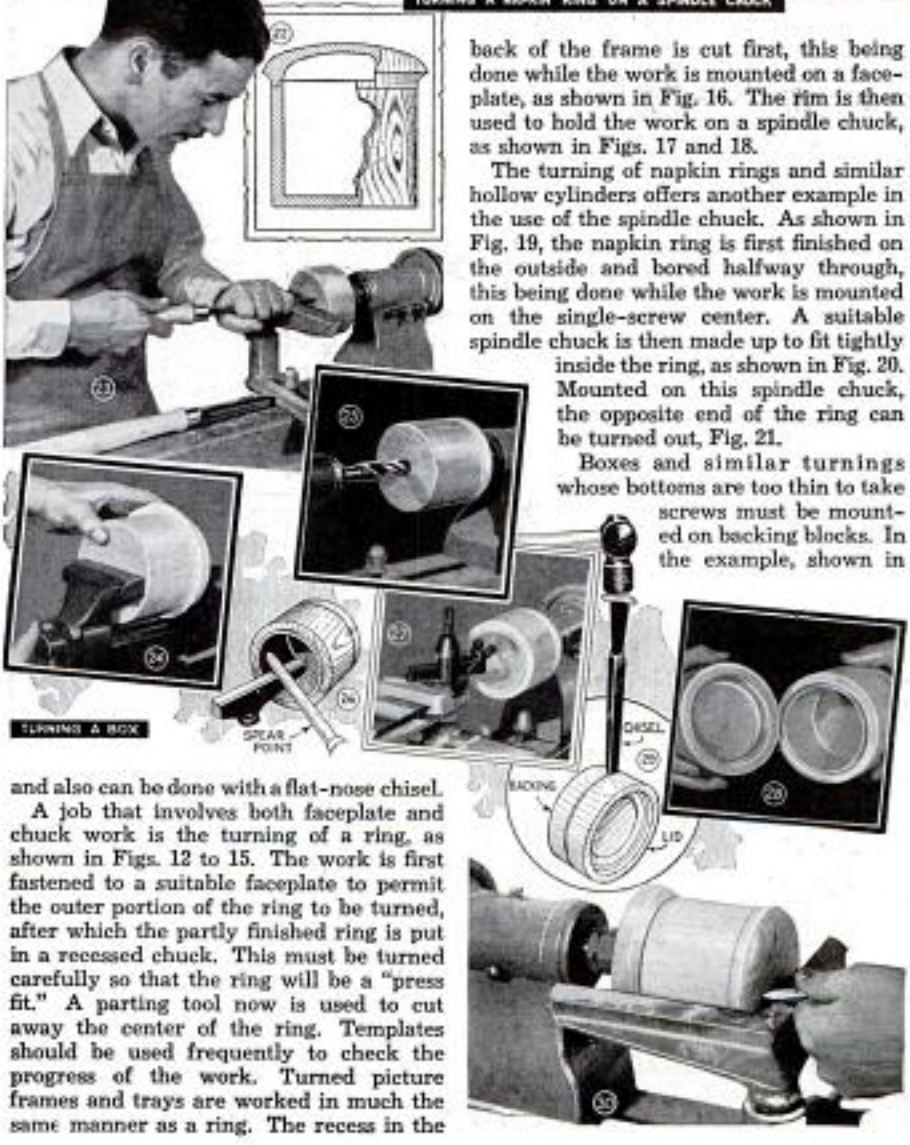
Figs. 9 to 11 show various cuts used in faceplate turning. Differing from spindle turning, practically all cutting on faceplate work is done by scraping. The chisel must be in line with the center of the work, especially when the face of the disk is being worked. Fig. 9 shows one of the most common methods of surfacing, in which a skew chisel is advanced across the face of the work. Surfacing is also done with the edge of a spear-point chisel, as shown in Fig. 10,

TURNING A NAPKIN RING ON A SPINDLE CHUCK

back of the frame is cut first, this being done while the work is mounted on a faceplate, as shown in Fig. 16. The rim is then used to hold the work on a spindle chuck, as shown in Figs. 17 and 18.

The turning of napkin rings and similar hollow cylinders offers another example in the use of the spindle chuck. As shown in Fig. 19, the napkin ring is first finished on the outside and bored halfway through, this being done while the work is mounted on the single-screw center. A suitable spindle chuck is then made up to fit tightly inside the ring, as shown in Fig. 20. Mounted on this spindle chuck, the opposite end of the ring can be turned out, Fig. 21.

Boxes and similar turnings whose bottoms are too thin to take screws must be mounted on backing blocks. In the example, shown in



and also can be done with a flat-nose chisel.

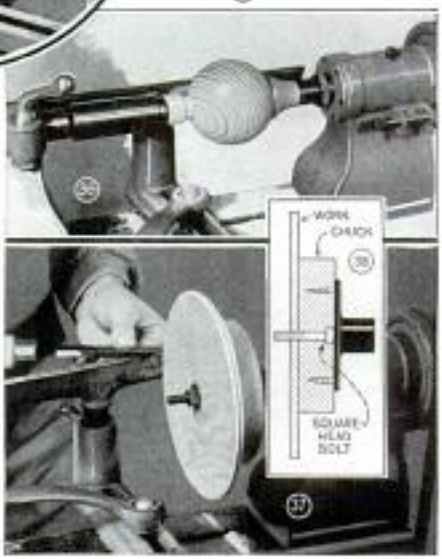
A job that involves both faceplate and chuck work is the turning of a ring, as shown in Figs. 12 to 15. The work is first fastened to a suitable faceplate to permit the outer portion of the ring to be turned, after which the partly finished ring is put in a recessed chuck. This must be turned carefully so that the ring will be a "press fit." A parting tool now is used to cut away the center of the ring. Templates should be used frequently to check the progress of the work. Turned picture frames and trays are worked in much the same manner as a ring. The recess in the

USEFUL LATHE CHUCKS

Fig. 22, the stock for the body of the box is glued to a soft-wood backing block, Fig. 24. A piece of paper must be placed between the joints so that the work can be separated easily from the block. The lid for the box is mounted in the same manner on a second block, this, in turn, being fastened to a suitable lathe faceplate.

The inside of the lid is turned first, Fig. 23, after which the inside of the box is turned out, Fig. 27. If you have a slide rest, by all means use it for deep boring like this. The center can be turned out equally well, however, with a spear-point chisel or skew, as shown in Fig. 26. In either case, it is usually simpler to start the hole by drilling, as in Fig. 25. The inside of both lid and box completed, the lid can be tested on the box, as indicated in Fig. 28. A tight fit is essential. The lid can now be separated from its backing block. This is best done with a flat-nose chisel by inserting it into the backing block about ⅛ in. away from the joint and in the end grain, as shown in Fig. 29. The lid is now mounted on the box and the outside of both lid and box turned, Fig. 30. Keep the work on the faceplate until it is polished or otherwise finished, then sand the joint between the box and the lid lightly for a good working fit, and remove from the backing block.

Chucks, other than those already mentioned, are frequently useful in lathe work. A common type is shown in Fig. 31 and in 32. This chuck can be made any suitable size to accommodate the work. In use, the work is first turned between centers to form a plug which can be gripped tightly in the chuck by means of plywood ring. Fig. 34 shows a similar chuck, but without the expansive feature. The hole can be tapered or straight as de-

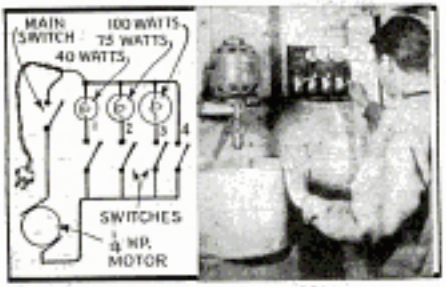


sired. This kind of chuck is ideal for turning wood goblets and similar work, as shown in Fig. 33.

Figs. 35 and 36 show a cup chuck, which is frequently used in turning balls. The use of the cup chuck for such work involves two important points: The portion of the ball which is seated against the chuck must be finish-turned; if it is not correctly shaped, the work will be out-of-center. The tailstock support for the ball must turn with the work in order to prevent burning. A spinning center, as shown in Fig. 36, solves this problem perfectly, but good results can be obtained by simply inserting a piece of leather between the ball and the cup center, as shown in Fig. 35. Figs. 37 and 38 show a useful chuck for turning disks and other work having a central hole. Its construction and use are apparent from the sketch and photo.

Lamp Rheostat Controls Speed of Electric Motor

To control the speed of a motor driving a mixing machine in a bakery, this simple lamp rheostat has been used successfully.



Rheostat consisting of three electric lamps used successfully to control speed of ¼-hp. motor

As shown in the detail, the rheostat consists of a 40, a 75 and a 100-watt lamp, each provided with a switch so that any one of them can be cut in. Also, there is a fourth switch to operate the motor on full amperage and a main switch to cut off the current entirely.

—Pat Fairmont, Cleveland, O.

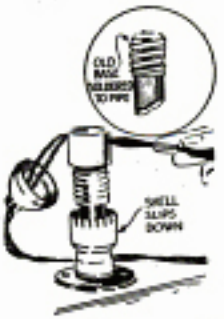
When placing a dish on ice, put a fruit-jar rubber under it. The ring will adhere to both the ice and dish and tend to prevent slipping

Small Gutter on Show Window Keeps Water Off Sidewalk

Gutter at bottom of show window drains dirty water into a bucket and keeps it off sidewalk

Getting dirty water on sidewalks in front of stores, which often results when washing the windows, can be prevented by using a small gutter or trough at the bottom of the glass as indicated. The gutter is a permanent fixture and is attached at a slight angle so water running into it will drain into a bucket placed at one end.

Jig for Wiring Light Sockets



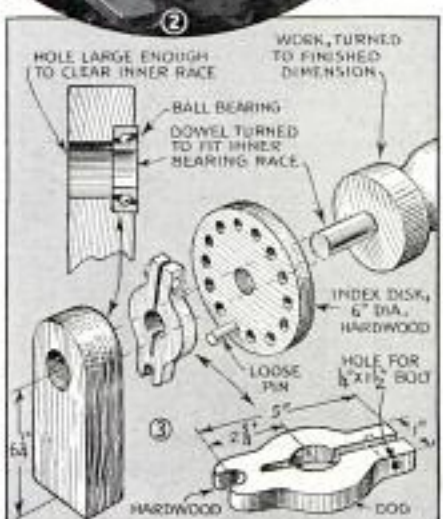
Used to speed up the work of wiring light sockets, this jig consists of a ½ by 4-in. pipe nipple screwed into a floor flange, which is bolted to a bench top. The brass base of a standard light bulb is cleaned out and soldered to the top of the pipe. In use, a socket is screwed into the base, the cap removed and the shell allowed to slip down out of the way while connecting the cord to the binding terminals.—W. C. Wilhite, Carlinville, Ill.

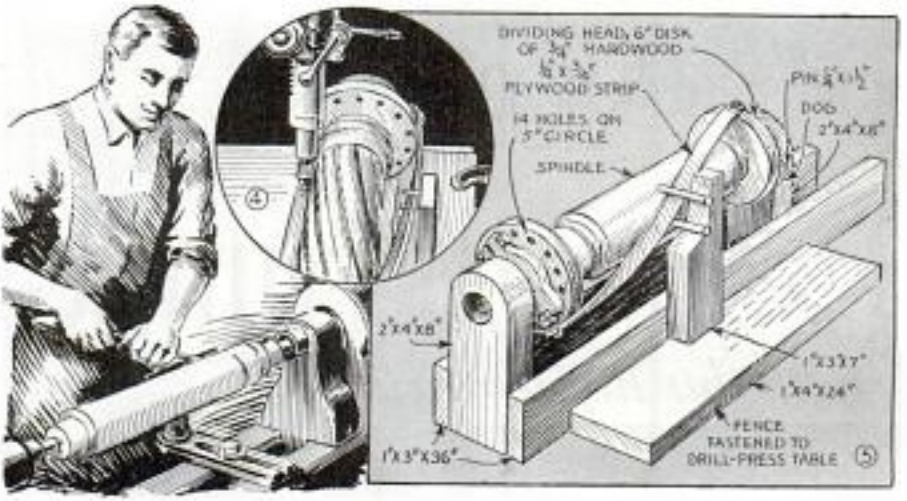
Accurate SPIRAL FLUTING with this homemade jig

By EDWIN M. LOVE

USUALLY spiral reeding and fluting on a turned column means a tedious job of hand carving. However, if you take time out to build this simple jig, your shaper, drill press or lathe will do the hard work, and the variety of patterns will depend only on the assortment of shaper cutters at hand. Once set up, it takes but a few minutes to do the most intricate job, for the jig mounts the column on bearings and rotates it against the cutters as the assembly is pushed along the fence.

The ends of the jig are cut from scraps of 2 by 4-in. stock. Two ball bearings are obtained, not less than ¾ in. in diameter, and preferably larger. These are mortised into the jig ends by counterboring with an expansive bit as in Fig. 3, the smaller hole being large enough to clear the inner ball races. Side pieces are 36 in. long, to accommodate a 30-in. spindle. One bearing end is nailed rigidly in place, the other being screwed or nailed where needed when a column is mounted. Equidistant holes are drilled near the circumference of the index disks, the number being a matter of





choice, although seven, or some multiple of seven, is usually sufficient for average work. Each hole is numbered with a lead pencil. The work is turned with dowels on both ends long enough to take the index disks, dogs and washers, leaving about ¾ in. to enter the bearings, Figs. 3 and 5. The spindle is mounted in the jig with an index disk, dog and washer on each end. For the spiral guide, a strip of plywood cut with the outer plies running crosswise is used. The ends are screwed to the disks as in Fig. 5. After one end has been fastened, the index pins are inserted in the holes numbered 1 to lock the disks. Then the guide strip is flexed to the desired spiral and the free end fastened to the second disk. The fence has an upright notched into one edge, Fig. 5, the latter being pieced out if necessary with a ¾-in. strip, so that the upright will clear the spiral guide. For the upper pin use a ¼-in. dowel; for the lower, a headless nail, bearing lightly against the guide strip.

When setting up the jig on a drill press, depth-stop parts are removed from the machine, the cutters put on and the table tilted to the angle of the spiral by resting the jig on the table and shifting it until the spiral appears to be level alongside the cutter. Then the jig is placed in cutting position and the fence clamped against it. After checking for easy movement, the jig is shifted until the cutter clears at the starting end. Then the machine is started and the jig pushed slowly forward against the fence and table, Fig. 2. When the cut is finished the jig is removed, the index pins withdrawn and the disks shifted to holes numbered 3, and the process repeated until all seven cuts are made. If intermediate spirals of different pattern are desired, the shaper cutters are changed and the index pins inserted in the even-numbered holes as in Fig. 4.

The jig is used on a spindle shaper by laying it on its side, suitably blocked up from the table, and running the bottom against a fence, the cutters working at the top of the jig. Here the guide pins are mounted on the shaper table. A similar arrangement is used on a lathe, the cutter working on the upper side. When designing the column to be fluted, leave coves or small-diameter cylindrical sections at the starting end, Fig. 1, to clear the cutters. Tapered columns are fluted by using a dividing disk at the small end proportionally smaller than that at the larger end.

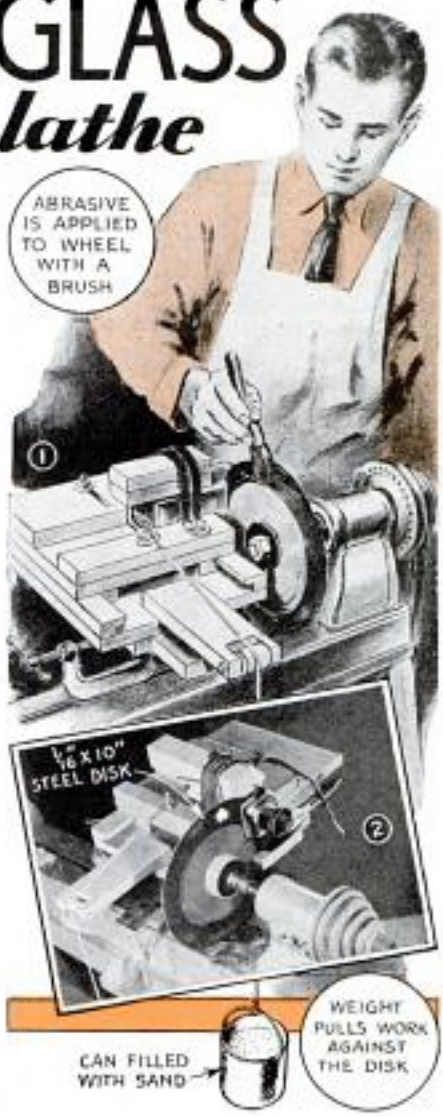
"SAWING" GLASS *on your lathe*

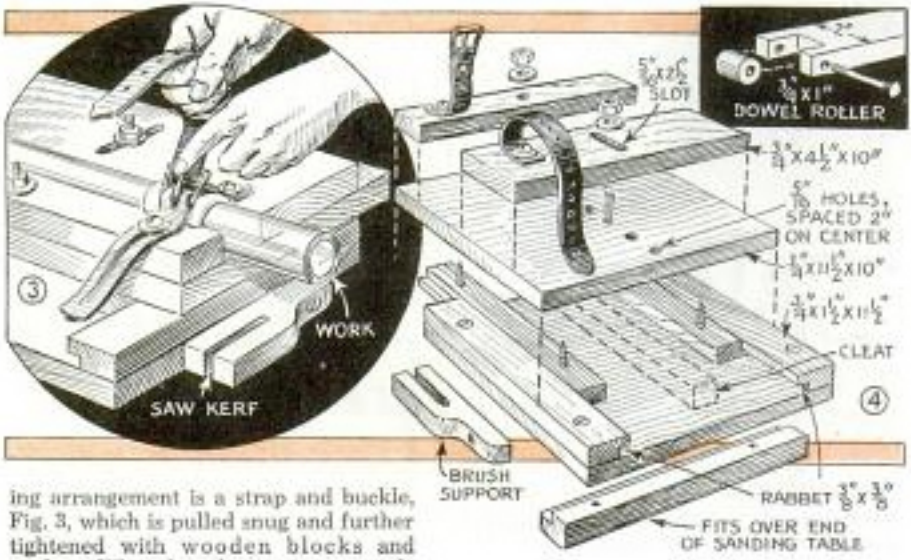
Counterweight maintains constant pressure of work against a steel disk "charged" with emery powder

By EDWIN M. LOVE

USED in combination with a lathe, this simple jig cuts glass tubing, rods, and bottles accurately to length. Not only square ends, but angles may be cut, or a tube can be split. A steel disk which is charged with emery powder and crankcase oil does the sawing, while the work is fed against it by a weight on a string as in Figs. 1 and 2. As this process is continuous, no further attention after starting is needed, except to apply a little more abrasive occasionally.

The body of the jig is in two sections. The lower part has a cleat underneath, near the front, to clasp the end of a sanding-disk table, and another placed lengthwise to clamp to the edge of the table as in Fig. 1. Slides of L-section are screwed to the top of the lower part and also to the bottom of the upper section to guide the upper part as it slides on the lower, Fig. 4. Two clamp strips attach to the top of the jig by means of a carriage bolt through each, so that they can be swiveled for angular cuts, and the wide front strip is slotted for adjusting, the bolt being shifted, as necessary, in the holes bored in the upper section. For most work the simplest clamp





ing arrangement is a strap and buckle, Fig. 3, which is pulled snug and further tightened with wooden blocks and wedges. Where lengthwise cuts are made in a piece of glass, it should be gripped in a wooden handscrew and clamped to the base at the desired angle.

To hang the weight string sufficiently far behind the machine to clear, an extension arm is made for the roller, and screwed to the lower section of the jig. The roller is a piece of dowel rod, grooved at the center, with pivot nails driven in the ends through small holes drilled in the sides of the notch.

Use a disk from 8 to 10 in. in diameter and about 1/16 in. thick, and run the lathe at 200 r.p.m., or slower, applying a mixture of oil and emery powder of about No. 25 grit by means of a cheap paintbrush, which is afterward laid on a cleat at the side of the jig and alongside the wheel to keep the supply of abrasive replenished.

Warehouse Chute Has Wheel at Curve to Turn Cases

In a warehouse where a gravity chute for delivering cases and packages from the upper floors to the loading platform had to be constructed with a sharp curve in it, trouble of having the cases lodge at this point was eliminated with an old auto wheel and tire. The wheel was mounted in the position indicated. When the cases and packages came to the wheel, it rotated and turned them around the curve.

Covering Fresh Cement in Winter

If you have just put in a cement sidewalk and it is necessary to cover it to avoid freezing, be sure to use building paper rather than waterproof paper. Moisture condenses and collects under waterproof paper and may freeze fast to the work, but building paper absorbs moisture.