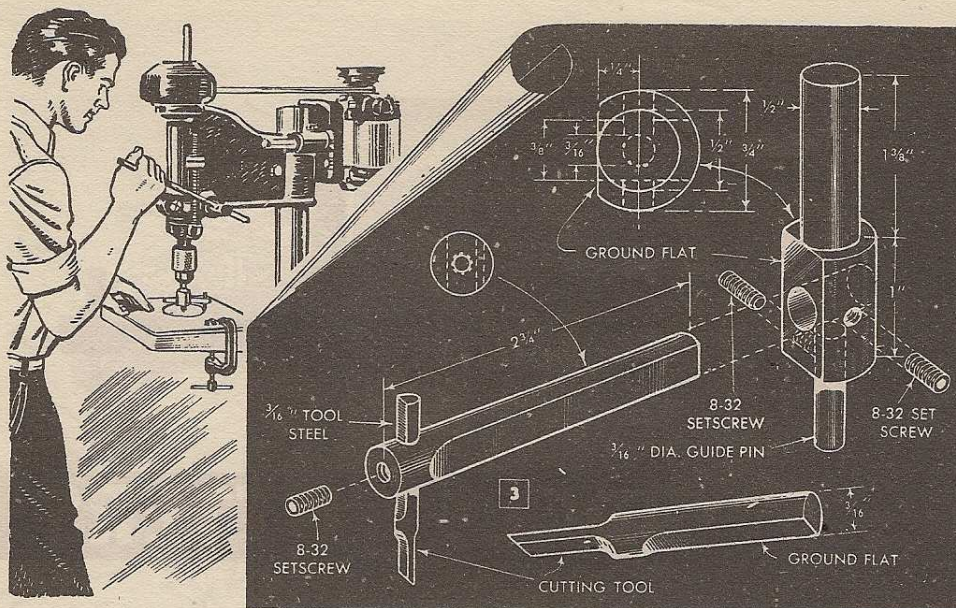


IN THE AVERAGE JOB SHOP there's only occasional need for a circle cutter, but when you do need one you generally need it badly. It does work which is impractical to do by any other means except in a lathe or perhaps with a hole saw, that is, if you happen to have one just the right size for the work at hand. Within its limits, the circle cutter is adjusted quickly to cut different sizes of circular disks or holes in any ordinary material such as wood, fiber, plastic, aluminum, brass or mild steel. Not only that, but by grinding shapes on the cutters you can cut disks with molded edges as in Fig. 2. Or by grinding a shape on the outside edge of the cutter you can cut holes with molded edges. The swinging arm, made from drill rod, carries the cutting bit and must be hardened and drawn on both sizes of the circle cutters detailed. All turning, milling, tapping and broaching must be done first, of course. Broaching required is merely the squaring of the hole taking the larger cutter bit and this can be done with a small file if necessary. The flat on one side of the arm can be milled or ground to size according to the facilities available. Hardening procedure is quite simple. First you heat the part to a cherry red and quench in No. 20 lubricating oil. Clean with fine emery cloth to remove the scale completely. Again heat slowly and uniformly until the metal comes to a light straw color. This temperature is quite critical and the process must be closely watched. At the instant the metal turns uniformly straw color, and before it turns blue, quench in cold water. This process hardens the part sufficiently to prevent the locking setscrew from cutting into the milled surface.

The holder, Fig. 1, is a simple machining job in mild steel. If so desired, the guide pin can



be hardened by the process already described. It will last much longer if hardened. Holes drilled in the holder for the guide pin and the arm carrying the cutting bit are reamed to final size. The groove milled in the body of the holder allows the cutting arm and the bit to slide to within $\frac{1}{16}$ in. of the center of the pilot hole. This brings the minimum hole size that the tool will cut down to $\frac{3}{8}$ in.

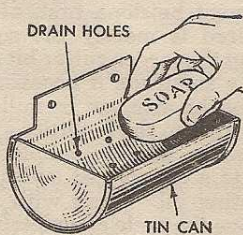
The small cutter detailed in Fig. 3 is made up in essentially the same way as the larger size already described. The cutting

tool is made from $\frac{3}{16}$ -in. drill rod, hardened by heating and quenching. The cutter is not drawn, however. The body of the tool is turned from $\frac{3}{4}$ -in. drill rod. A flat is milled or ground on one side of the full-diameter section as shown.

When using circle cutters in the drill press, drive with slowest spindle speed and clamp work securely to the table. Use a cutting oil on steel. Be sure that the pilot hole is the proper diameter and that the cutting tool is adjusted to the proper depth with respect to the guide pin.

Tin Can Serves as Soap Dish In Workshop

For use in the shop or basement where appearance is not too important, a handy soap dish is made from an ordinary tin can. Obtain a fruit-juice can from which the top has not been removed, and cut it in half lengthwise, leaving a tab on one side as shown. Dull the sharp edges of the metal with a file, and then drill or punch several drain holes in the can and holes in the tab to fasten it to the wall. If you prefer, leave off the tab and punch holes through the ends of the can to suspend it with wire between two faucets on the sink.



Hole in Hammer to Start Nails

When it is necessary to hold both the stock and a nail in position somewhere overhead, or when starting a finishing nail in a spot that is hard to reach, the problem can be solved by using an old hammer that has a hole drilled in the head to hold the nail. Drill the hole near the edge of the face so it will not interfere with hammering, and make it large enough to accommodate a nail of the largest diameter commonly used. To use, merely insert the nail in the hole, tap it lightly until it grips the wood, and then finish hammering in the normal manner.

