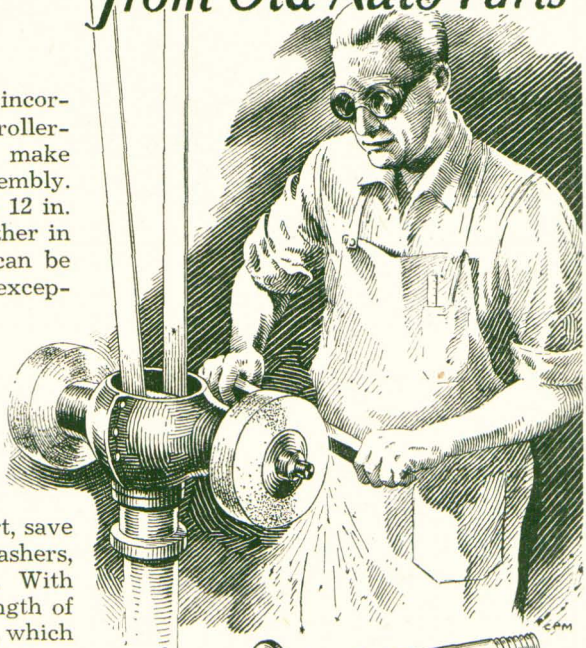
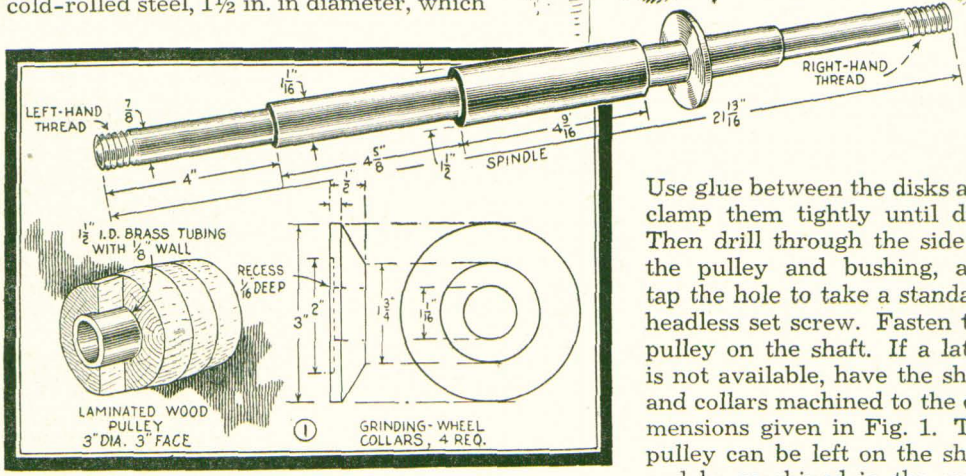
Heavy-Duty GRINDER from Old Auto Parts

by ROYCE M. ROATH

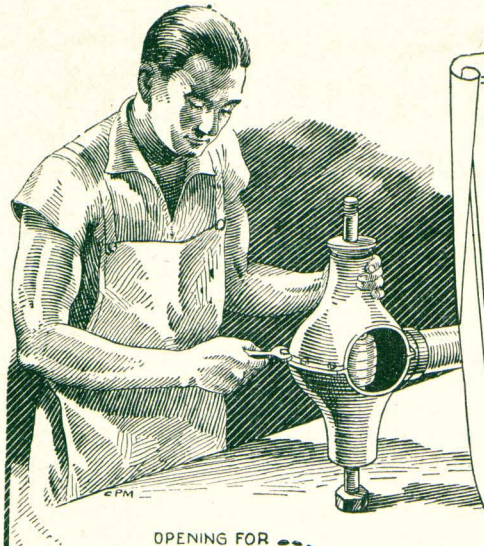


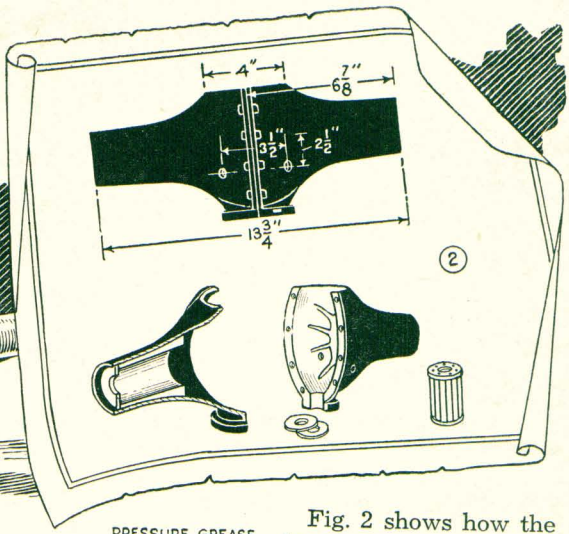
STURDINESS and accuracy are incorporated in this inexpensive, roller-bearing grinder, which you can make from an old auto-differential assembly. The grinder will take wheels up to 12 in. in diameter, and it can be made either in a floor or bench type. The work can be done with ordinary tools with the exception of a turned wheel shaft, which is substituted for the axles, the latter and the gears being discarded. The original grinder was made from a model-T Ford differential, although you also can use the housing from a model-A Ford or a Chevrolet.

When you take the assembly apart, save the bearings and the thrust washers, which are used on the new shaft. With these parts at hand, get a 24-in. length of cold-rolled steel, 1½ in. in diameter, which is used for the shaft. Rough, cast-iron disks, commonly known as building washers, are cheapest for the four wheel collars needed. To make the drive pulley, shown in Fig. 1, four hardwood disks are bored to a drive fit over a bushing made from a 3-in. length of brass tubing having an inside diameter of 1½ in. and a ⅛-in. wall.



Use glue between the disks and clamp them tightly until dry. Then drill through the side of the pulley and bushing, and tap the hole to take a standard headless set screw. Fasten the pulley on the shaft. If a lathe is not available, have the shaft and collars machined to the dimensions given in Fig. 1. The pulley can be left on the shaft and be machined in the same operation. Note that each wheel collar is recessed 1/16 in. on the flat face which goes next to the wheel. This is important. It is equally important that the faces of each collar be machined exactly parallel to assure that the grinding wheels run true. The finished collars are then bored to a snug, sliding fit over the outer ends of shaft.





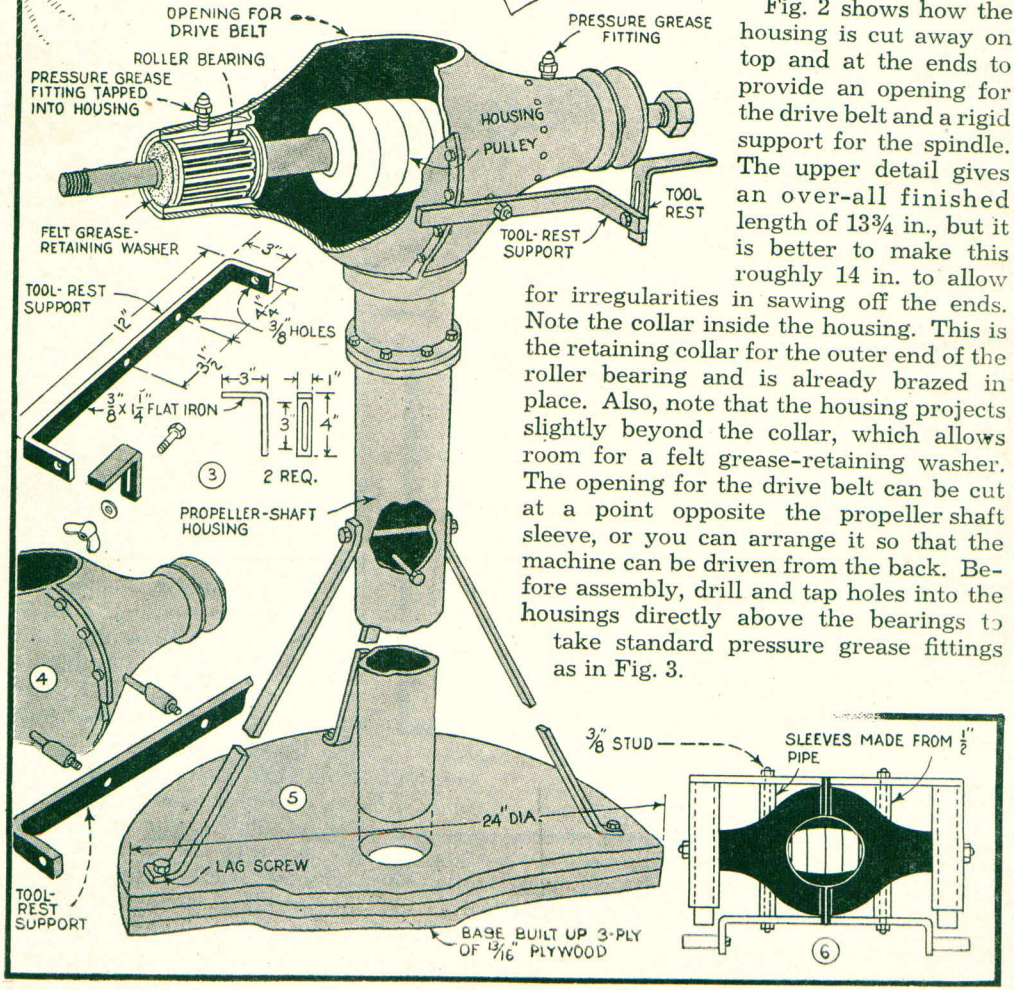
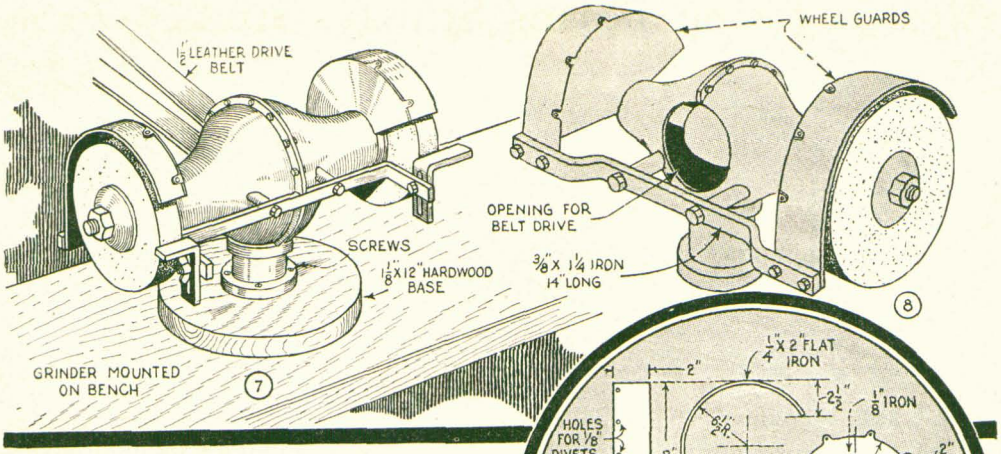
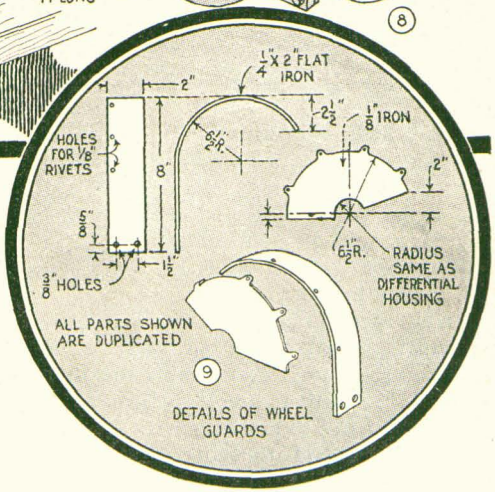


Fig. 2 shows how the housing is cut away on top and at the ends to provide an opening for the drive belt and a rigid support for the spindle. The upper detail gives an over-all finished length of 13¾ in., but it is better to make this roughly 14 in. to allow for irregularities in sawing off the ends. Note the collar inside the housing. This is the retaining collar for the outer end of the roller bearing and is already brazed in place. Also, note that the housing projects slightly beyond the collar, which allows room for a felt grease-retaining washer. The opening for the drive belt can be cut at a point opposite the propeller shaft sleeve, or you can arrange it so that the machine can be driven from the back. Before assembly, drill and tap holes into the housings directly above the bearings to take standard pressure grease fittings as in Fig. 3.





To assemble, place two of the original steel washers taken from the differential assembly on the spindle, one on each end, and slide them up against the inner shoulder. Place the bearings in position with one end against the washer. Then slip on the two halves of the housing and bolt them together. Drill four holes through the housing to take ⅜-in. iron rods, Figs. 4 and 6, which support the guards on one side and the tool rest on the other. As these holes pass through the housing at an angle, it is best to drill them with a 5/16-in. bit, and then enlarge them with a reamer. In order to tighten the bolts effectively, sleeves are cut from ½-in. pipe and placed over the threaded ends of the rods between the flat-iron supporting bars and the housing as in Figs. 4 and 6. One end of each sleeve is beveled so that it fits snugly against the housing. The assembly of the wheel guards is shown in Figs. 8 and 9, the latter giving the essential dimensions. The wheel guard is bolted to the supporting bar at the back. It is not fastened to the housing. The balance of the assembly for the floor-type grinder with overhead belt drive is clearly shown in Fig. 5, while the bench type is shown in Fig. 7.

Safety requires that the speed of 12-in. grinding wheels should not exceed 2,000 r.p.m.; 1,800 r.p.m. is better for a wheel of this diameter. Smaller wheels can be driven at proportionately higher speeds.

¶If you have occasion to use a drill that is too small to fit your brace, slip a piece of wire solder over the shank.

Indicator for Setting Tailstock Of Lathe at Zero Position

After turning a taper on work by means of the tailstock setover method, you can move the tailstock back to align the centers without loss of time if this indicator is used. It consists of a sheet-metal pointer pivoted to a pin in the lathe bed, and a length of spring wire, which is fastened rigidly in the pin and wrapped around the pointer. The wire causes the pointer to bear against a stop pin in the tailstock so that the pointer follows the pin. After aligning the centers perfectly, mark the position of the pointer end on the tailstock with white enamel. Then if the tailstock is moved, just move it back to bring the pointer to the mark and the centers will be in alignment.