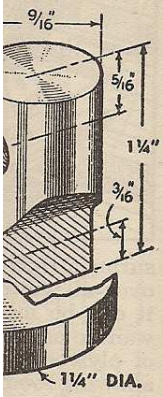
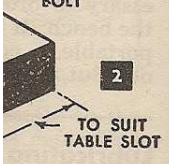
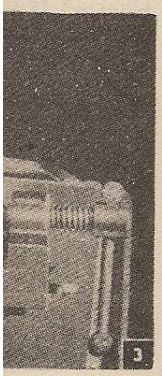


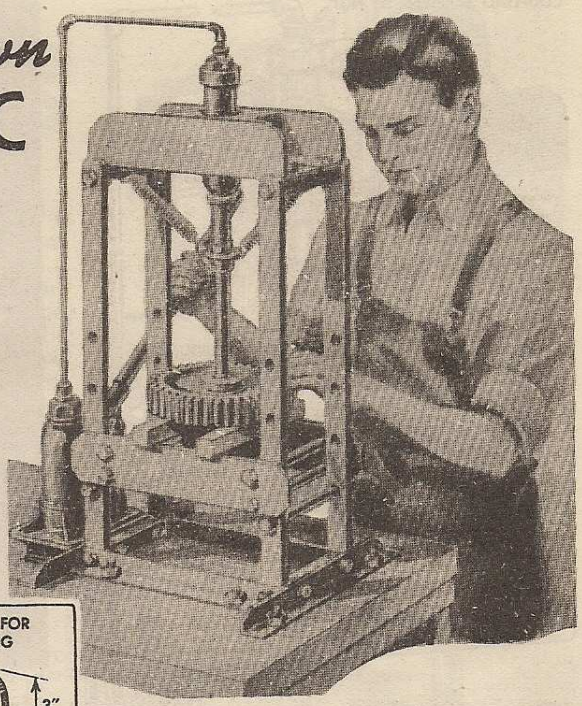


a milling machine
gular-shaped work

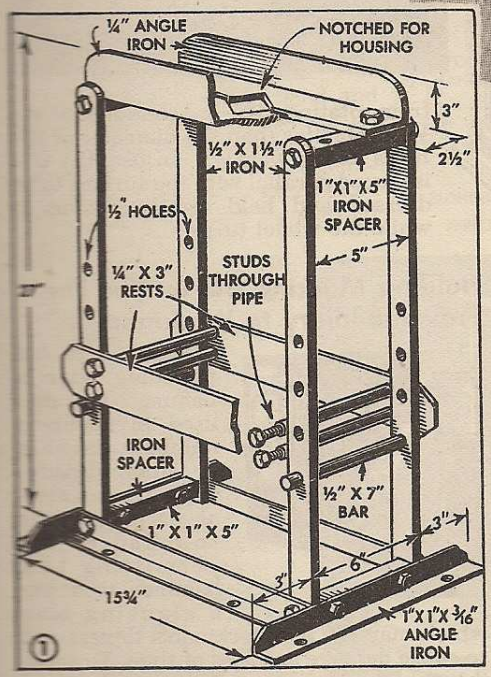


Make Your Own HYDRAULIC PRESS

By E. S. Harris



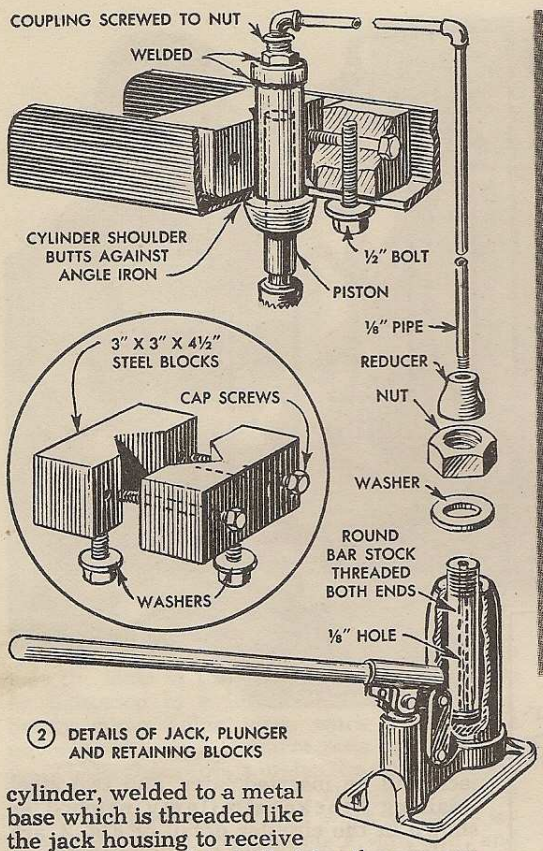
FOR fitting bushings into connecting rods, forcing gears on shafts, removing axles from small wheels and similar work in the garage, service station or shop, a hydraulic press like the one illustrated will do the job quickly and efficiently. It consists of a hydraulic auto jack, some pipe and pipe fittings and a frame made from odds and ends of scrap iron usually available at garages and machine shops.



Four pieces of angle iron forming the base are bolted to the workbench, and the uprights are attached with ½-in. bolts. Four spacers, shown in Fig. 1, are drilled and tapped for ½-in. bolts which hold them to the uprights. The top of the press is made from two lengths of angle iron which are bolted to the spacers. A notch is cut in each piece of angle iron through which the jack will be inserted later, and two steel retaining blocks, similarly notched as shown in the circular detail of Fig. 2, are drilled and tapped for two ½-in. bolts on each side and on the underside to receive a similar bolt extending through the slot where the pieces of angle iron butt together. The adjustable rests are supported at any one of four positions by bars placed through ½-in. holes spaced at 3-in. intervals in the uprights, and are held together tightly by four studs running through sections of iron pipe.

The cylinder and piston of the hydraulic jack are removed as a unit, and a piece of round bar stock of the same diameter and length as the cylinder is substituted. A hole is drilled through it lengthwise for the passage of fluid, and the ends are threaded, one end to screw into the base of the jack housing, the other to take a nut and pipe reducer into which the feed pipe is to be fitted. After the bar is screwed into the housing, a washer is placed over it and the nut turned down tightly to prevent loss of fluid. It may be necessary to put a gasket under the washer as a seal. Instead of using a reducer, the feed pipe can be threaded and fitted into a counterbored, tapped hole in the bar.

Next, make a housing for the cylinder and piston. This is made from a length of 1¾-in. iron pipe about half as long as the

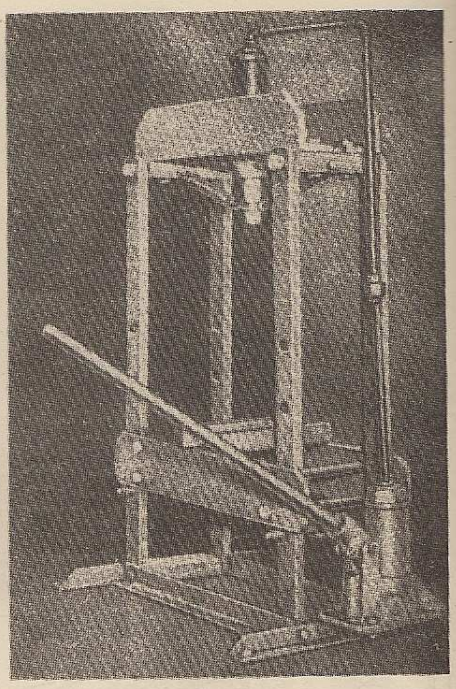


② DETAILS OF JACK, PLUNGER AND RETAINING BLOCKS

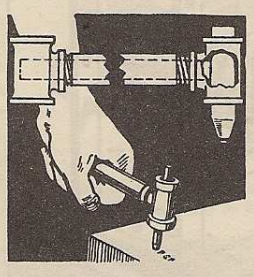
cylinder, welded to a metal base which is threaded like the jack housing to receive the cylinder, and is drilled for the passage of fluid. A nut is welded to the base and a feed-pipe coupling screwed into it. The cylinder and piston in the substitute housing are mounted on the frame as shown in Fig. 2, upper detail, with the end of the housing resting on the angle iron and the shoulder of the cylinder butting up against the underside of the angle iron. The housing is clamped securely between the retaining blocks. In this position, the piston will press down on the work when fluid is pumped into the cylinder. The feed pipe is attached by couplings and elbows, and the jack is supported by a brace at the side of the frame. Coil springs, which are attached to the frame spacers by eyebolts, pull up the piston and force the fluid back when the valve is released.

Dressing Tool For Emery Wheel

The surface of an emery wheel can be dressed satisfactorily with a tool made from 10 steel washers and a 6-in. length of iron rod threaded at both ends to receive a nut. The washers are slipped over the rod and the nuts tightened to hold them fairly close together, but without preventing them from rotating. The rod should be about ⅛ in. smaller than the diameter of the holes in the washers. In use, the tool is placed parallel with the surface to be dressed and held tightly against it while the wheel turns.



Holding Marking Die in Pipe Tee Prevents Injury to Workman



After repeated pounding with a hammer, the dies used in stamping numbers, initials, or other identifying marks on metal parts become rounded on top, permitting the hammer to strike a glancing blow which may hit the workman's fingers and so cause damage and loss of time. To avoid this threat of injury, one worker designed the die holder illustrated. It is made from two ⅜-in. pipe tees joined by a length of ⅜-in. pipe within which a ¼-in. pipe is inserted. With the die slipped in place, the tees are turned to tighten the inside pipe against it, thus holding it firmly.

¶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.