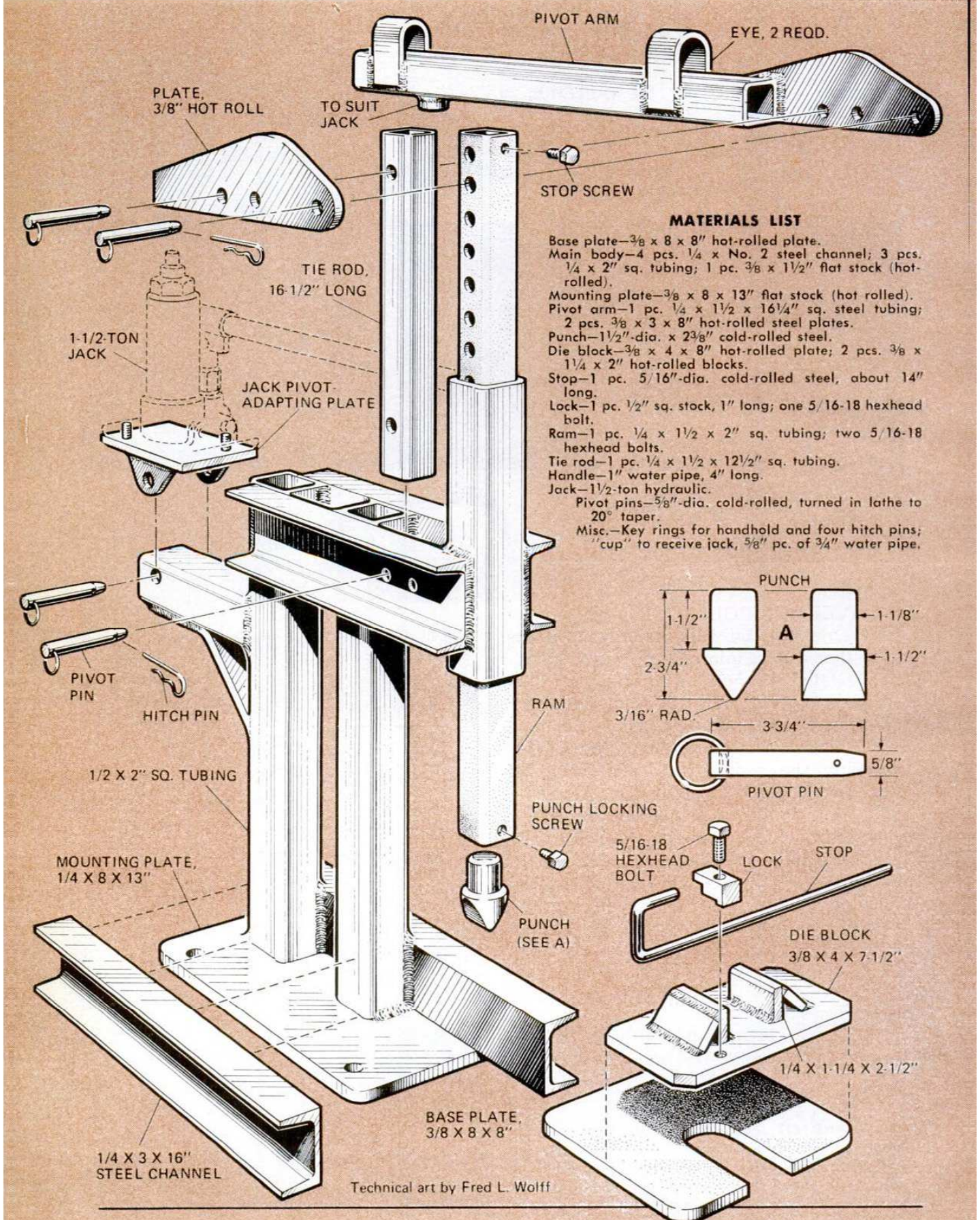
Hand-operated arbor press

By LOUIS ASHLEY



MATERIALS LIST

Base plate—3/8 x 8 x 8" hot-rolled plate.
Main body—4 pcs. 1/4 x No. 2 steel channel; 3 pcs. 1/4 x 2" sq. tubing; 1 pc. 3/8 x 1 1/2" flat stock (hot-rolled).
Mounting plate—3/8 x 8 x 13" flat stock (hot rolled).
Pivot arm—1 pc. 1/4 x 1 1/2 x 16 1/4" sq. steel tubing; 2 pcs. 3/8 x 3 x 8" hot-rolled steel plates.
Punch—1 1/2"-dia. x 2 3/8" cold-rolled steel.
Die block—3/8 x 4 x 8" hot-rolled plate; 2 pcs. 3/8 x 1 1/4 x 2" hot-rolled blocks.
Stop—1 pc. 5/16"-dia. cold-rolled steel, about 14" long.
Lock—1 pc. 1/2" sq. stock, 1" long; one 5/16-18 hexhead bolt.
Ram—1 pc. 1/4 x 1 1/2 x 2" sq. tubing; two 5/16-18 hexhead bolts.
Tie rod—1 pc. 1/4 x 1 1/2 x 12 1/2" sq. tubing.
Handle—1" water pipe, 4" long.
Jack—1 1/2-ton hydraulic.
Pivot pins—5/8"-dia. cold-rolled, turned in lathe to 20° taper.
Misc.—Key rings for handhold and four hitch pins; "cup" to receive jack, 5/8" pc. of 3/4" water pipe.

Technical art by Fred L. Wolff

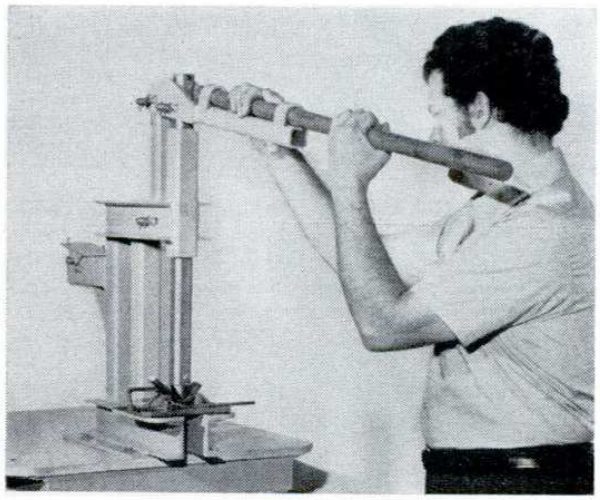
IF YOUR SHOP ACTIVITIES include pressing on bushings or bearings, or bending steel bar stock and the like, you don't have to be sold on the advantages of having a professional-quality arbor press.

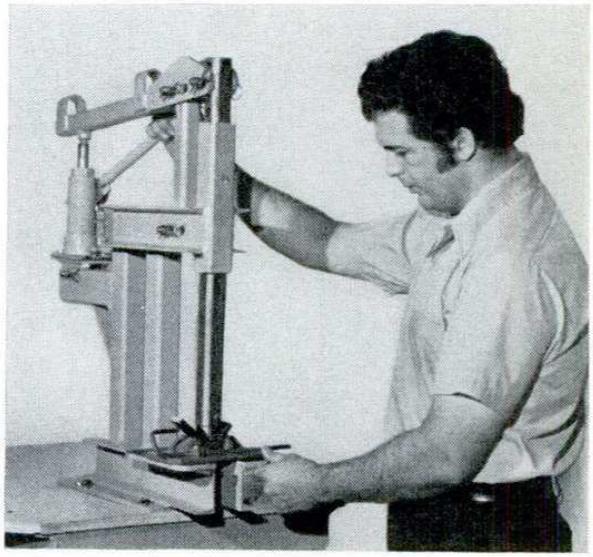
The version I built has the following capacities: Fully extended, the press opens up to 12¼ in. from ram to base plate. The ram has 14 holes for easy adjustment, and when the tie rod is in the holes closest to the ram, the ram will compress 10 tons. And, used with a hydraulic jack, the press will bend up to ⅜ x 1½-in. rectangular bar stock.

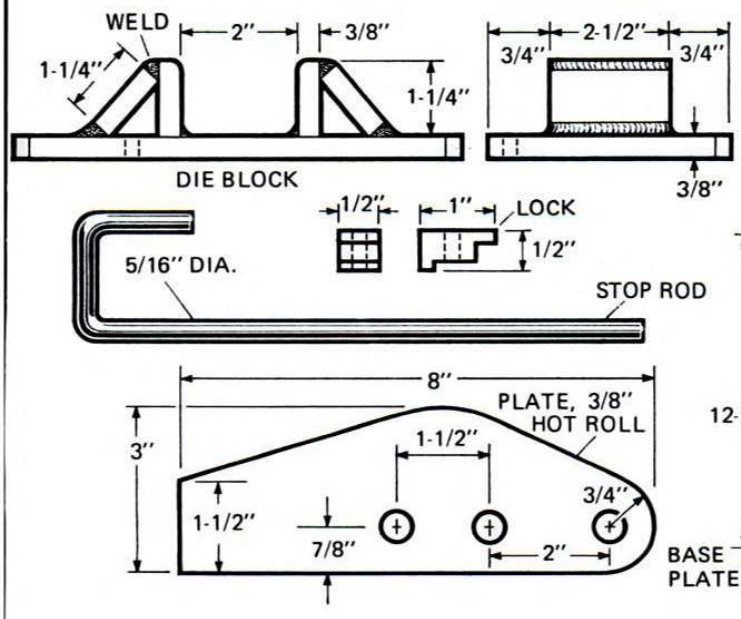
To adjust the ram, pull the pivot pins out of the ram, slide it up or down to correct position, and replace the pins. To use by hand, remove both pivot pins, turn the arm around and replace the pins. A 1-in. water pipe (into the eyes of the pivot arm) serves as a handle.

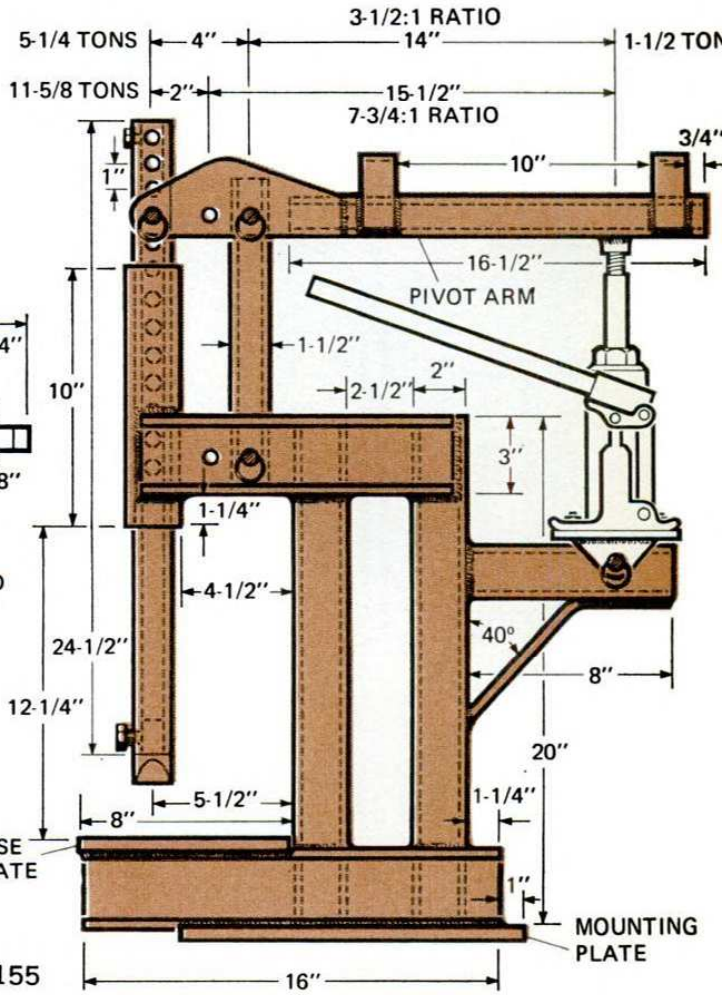
Notice that there are two sets of holes for the tie rod; put the tie rod in the holes nearest the ram for high pressure, into the farthest holes for low pressure. To bend stock, use a die block and punch. ★★★

JACK USED IN PRESS shown is a 1½-ton Western Auto jack that costs about $11 (right). To use press by hand (below), pull both pivot pins, turn arm around, replace pins. Ample leverage is supplied by water-pipe handle inserted into eyes of pivot arm









A simple frame and hydraulic auto jack make a powerful press for bending jobs.

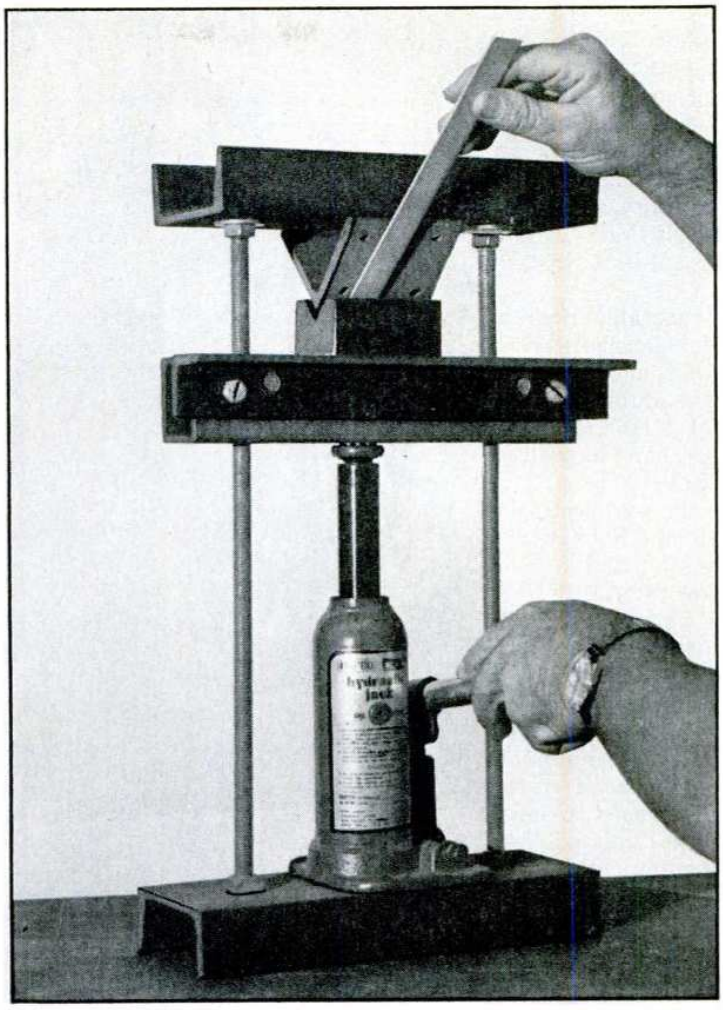
Hydraulic press you can build

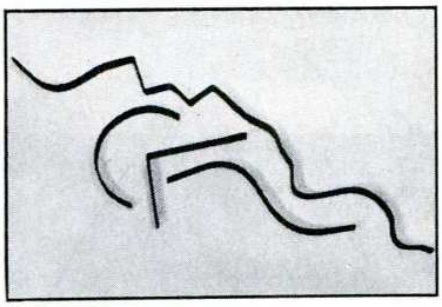
by Morton E. Milliken

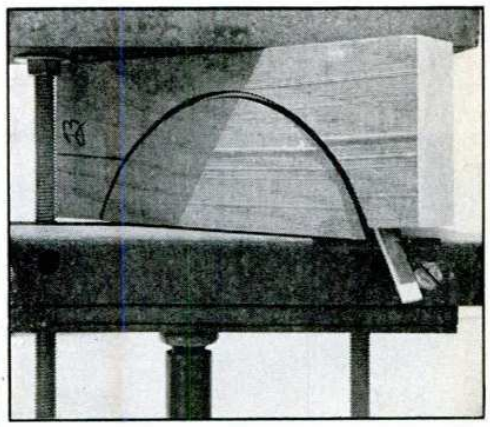
Trying to bend a piece of strap iron cold with only a hammer and vise or force a tight press fit between metal parts makes you want a hydraulic press that will do the work for you. They're expensive ready-made, but you can make one from a few dollars' worth of structural iron and a $20 hydraulic auto jack. My press uses a 3-ton jack; do not use a larger one. A 1½-ton jack would do.

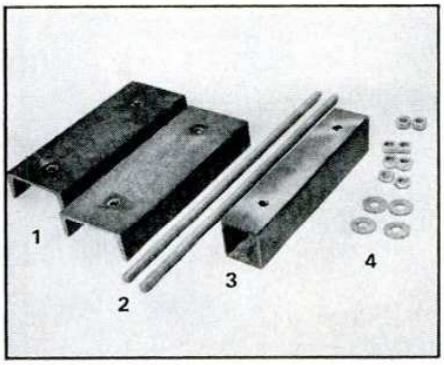
Base and top parts (1) below are 10-in. lengths of 4-in. channel; the movable jaw is made of two 10-in. lengths of 2-in. angle. If you have a welding shop cut the iron and weld or braze the movable jaw together, the only tools you'll require to complete the frame are a hacksaw (to cut threaded rod) and a drill press with ½-in. bit. The two rods parts (2) are the result of cutting a 3-ft. length of ½-in.-dia. threaded rod (standard hardware item) in half. Parts (4) include 8 nuts and 4 washers.

The only potential problem in construction is the alignment of ½-in. holes through base, top and jaw. Make a cardboard template to help locate these holes 7 in. apart, center to center; 7 in. allows sufficient working area, yet keeps holes far enough from ends of iron parts. If necessary, a tight fit can be widened with a round file. When frame parts are assembled with nuts and washers (one on each side of each hole in channels), the jaw should drop to the base without binding. Put the jack in place (it is not attached, so remains available for other uses) and the press is complete. In use, you'll notice that both jack and work must be centered to keep the jaw from sagging. You can widen the jaw's work surface as I did by bolting an extra length of angle to it. ★★★









Neat right-angle bends in mild steel are easy (top) with V-block, angle iron as form. Two-part form (above) bandsawed in 2-in. oak block produced curved work. Variety of angles, curves (above, left) can be formed in ⅛ x ¾-in. mild steel; press also handles ½-in.-dia., mild-steel rod. A welding shop can cut the frame parts (left) for you and weld or braze the angle sections (3) to make the box for the moving jaw.