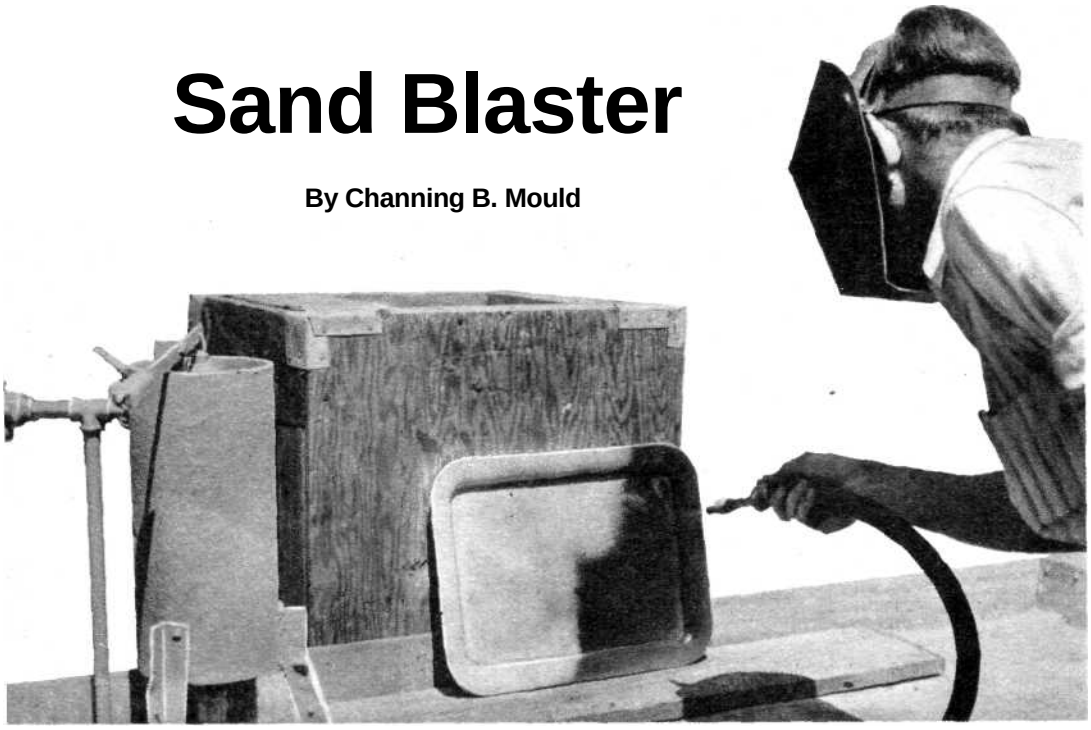
Sand Blaster

By Channing B. Mould



For quick removal of paint and grease from metal surfaces, you can't beat a sand-blast machine.

E VER try to clean the paint off a motorcycle wheel? Or, for that matter, any other metal object? Well, if you have occasion to do such work, you will find a small sand-blast machine worth its weight in gold.

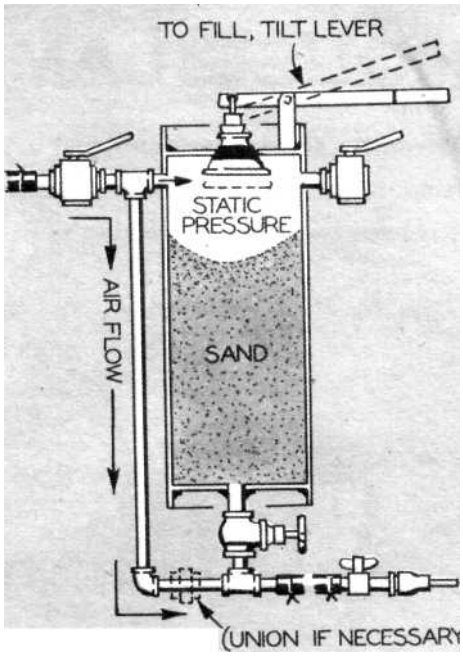
If you have a handy source of sand and a reasonably good supply of compressed air, the rest is simple.

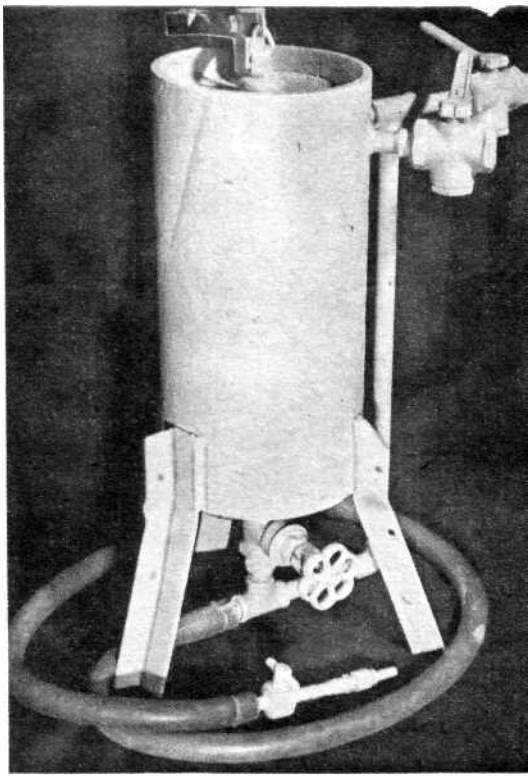
A sand blaster is merely a tank that will safely withstand the pressure of the air supply. It has provisions for pouring sand into the top and allowing it to trickle out the bottom, where it is entrained in a stream of air. It is necessary that the tank be pressurized to prevent the air that flows to the nozzle from blowing up through the sand supply instead.

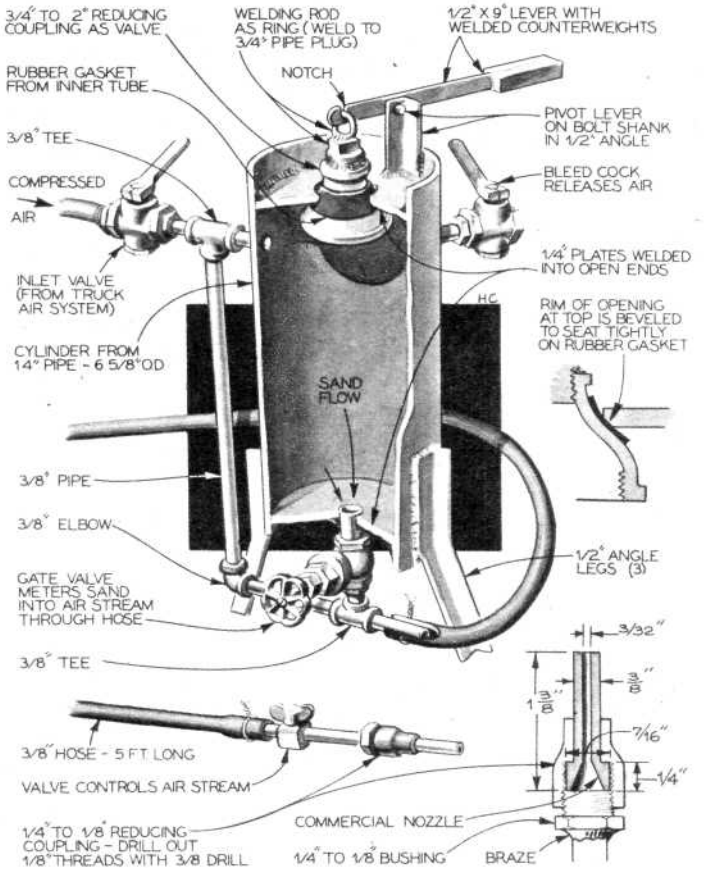
The machine illustrated was constructed of a 14-in. length of 6-in. pipe with 1/4-in. plate for the ends. The only part of the machine that cannot be made with hand tools is the filler hole in the top plate. This hole must be made to properly fit whatever object is used as a stopper. The author found a 3/4-to-2-in. reducing pipe coupling to be the simplest thing to adapt. The stopper must have a tapered portion that will produce a wedging action when air pressure is applied. The hole in the top plate, then, is machined to the size that will allow the tapered section of the stopper to seat. The underside of the hole should be chamfered a little so the gasket won't be cut by the pressure. A little allowance (about *Vs* in. on the diameter) is made for the gasket material, which, in this case, was two layers of automobile inner tube cut in rings and slipped down over the stopper.

Weld in the bottom plate first by recessing it sufficiently to allow a good fillet weld. Now is a good time to drill the holes for the piping because it is easy to burr the inside and clean out the chips. With the stopper and its lever assembly in place on the top plate, tap the plate down into the tank an inch or more before welding to allow a place for the sand to pile up while running through the filler hole. If there seems to be any danger that the gaskets will be burned by the subsequent welding operations, they can be added after the complete assembly is made.

The piping of the machine is perfectly straightforward and the choice of valves is up to the builder with the exception of the sand valve in the bottom of the tank. This must be of the gate type since such a valve provides a *[Continued on page* 195]


TO FILL, TILT LEVER
STATIC PRESSURE
AIR FLOW
SAND
(UNION IF NECESSARY




3/4" TO 2" REDUCING COUPLING AS VALVE
WELDING ROD AS RING (WELD TO 3/4" PIPE PLUG)
1/2" X 9" LEVER WITH WELDED COUNTERWEIGHTS
RUBBER GASKET FROM INNER TUBE
NOTCH
PIVOT LEVER ON BOLT SHANK IN 1/2" ANGLE
3/8" TEE
COMPRESSED AIR
BLEED COCK RELEASES AIR
1/4" PLATES WELDED INTO OPEN ENDS
INLET VALVE (FROM TRUCK AIR SYSTEM)
RIM OF OPENING AT TOP IS BEVELED TO SEAT TIGHTLY ON RUBBER GASKET
CYLINDER FROM 14" PIPE - 6 5/8" OD
SAND FLOW
3/8" PIPE
3/8" ELBOW
1/2" ANGLE LEGS (3)
GATE VALVE METERS SAND INTO AIR STREAM THROUGH HOSE
3/8" TEE
3/32"
3/8"
1 3/16"
7/16"
1/4"
3/8" HOSE - 5 FT. LONG
VALVE CONTROLS AIR STREAM
1/4" TO 1/8" REDUCING COUPLING - DRILL OUT 1/8" THREADS WITH 3/8 DRILL
COMMERCIAL NOZZLE
1/4" TO 1/8" BUSHING
BRAZE

Sand Blaster

[Continued from page 154] clear path through which the sand can flow freely. The valve seat need not be in good condition. If cocks are available for the rest of the valves, they are desirable since they make for quick action. The cocks on this machine are air-brake valves from a tractor-trailer. Although the photos show a petcock on the nozzle, it is a convenience rather than a necessity in that it allows the nozzle to be removed for clearing without the waste of bleeding the tank.

When construction has progressed to the point where it can be done, it is well to test the tank for a value well above the pressure of the proposed air supply. Fill the machine completely with water and apply the test pressure with a hand tire pump via an inner-tube valve soldered into a pipe fitting. If a gauge is available, fine, but if not, the author found the practical limit of a tire pump to be about 150 lb., which should be enough to insure safety on an 80 to 100-lb. air supply.

Nozzles are obtainable from Granite City Tool Co., Barre, Vt., for 15 cents each and are classified as "Standard Steel Lettering Nozzles—3/32" Pipe or tubing with a similar inside diameter will make a very good substitute nozzle.

With a 3/32-in. aperture, the air consumption is approximately 14 cu. ft. of free air per minute with a supply pressure of 80 lb. per sq. in. Even if the available air supply has somewhat less capacity, it will serve satisfactorily if it has a sufficiently large receiver in which to store air during "down" periods of the sand-blast machine.

Operating procedure is as follows: Close the sand valve in the bottom of the tank and fill the machine with *dry* sand that's been carefully sifted through window screen. Any oversize material is sure to cause annoying stoppages at the nozzle. Close the petcock at the nozzle, seat the filler plug (shaking down any sand left on the gaskets), and open the air-supply cock. The filler plug should promptly jam into its seat and seal completely. Aim the nozzle at the work, open the nozzle petcock wide, and adjust the sand valve until the desired amount of sand is flowing. Just a few moments of experimentation will determine the best amount; but one hint: work the volume up slowly because too heavy a flow will probably clog the nozzle even though it produces quick results. A little rocking of the tank will help to get the flow going evenly. When shutting down, close the sand valve first to prevent sand from piling up in the pipe after air has stopped flowing.

Some sort of eye protection is absolutely essential. •