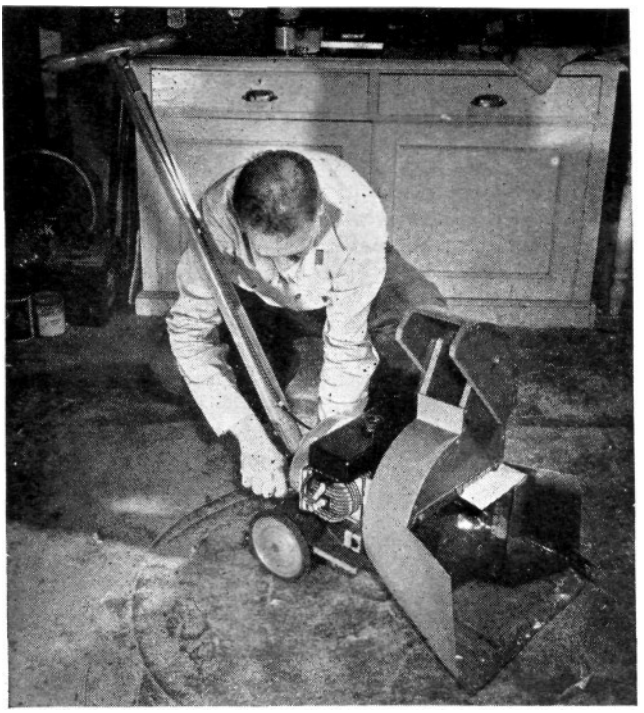


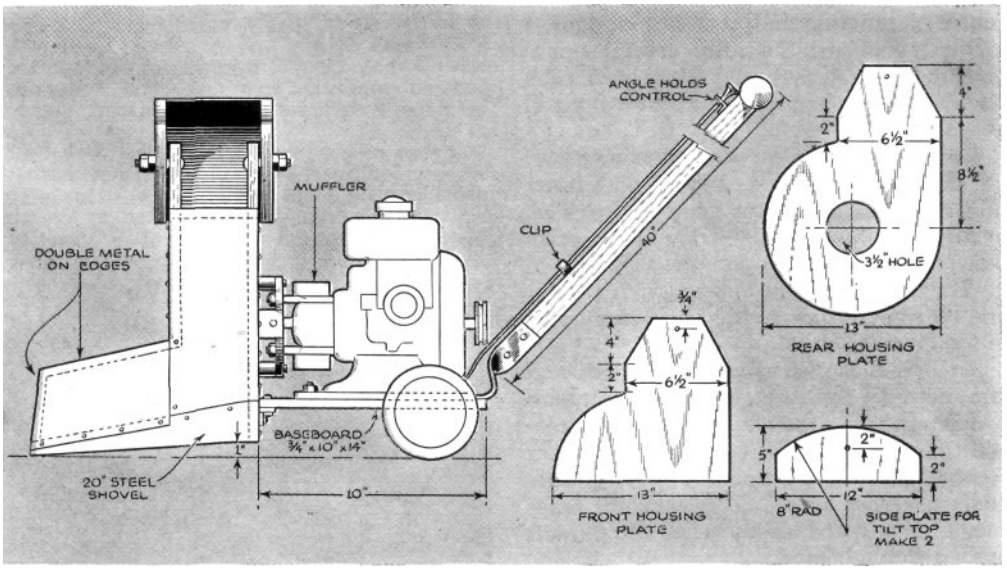
I Shovel Snow with a Lawn-Mower Engine

Blizzards needn't mean backaches if you hitch gasoline, instead of your sacroiliac, to the snow shovel.

By Howard G. McEntee

THOSE big rotary plows clear snow from the highways with impressive ease. My midget works on the same principle. It's not meant for Minnesota drifts, but it can handle snowfalls under 6" deep and will even take care of heavier storms if you don't mind running it back and forth during the storm.

Building the plow gave me a chance to use a lawn-mower engine that would otherwise be standing idle. Now, before cold weather arrives, I simply transfer the engine



—a 1.2-hp., two-cycle job—from mower to plow.

When a storm comes, I roll the plow along my walk and driveway, scooping up the snow while the engine drives a whirling rotor, throwing the snow up and to one side by centrifugal action.

Materials used. Wood parts were all cut from ½" exterior (weatherproof) plywood except the baseboard. Here, I used the ¾" size for additional strength. The rest of the housing is sheet metal, with some angle iron to join or reinforce various parts.

For the scoop that is pushed into the snow, I chose a heavy old steel snow shovel. This is better than an aluminum one, since the steel is stronger.

Making the scoop. I kept the steel edging and underneath braces of the shovel to maintain stiffness. The back edge was cut and bent to fit around the wood housing plate. The shovel should be nearly level, just enough incline so it clears the sidewalk at the rear when the wheels are in place. Two wings or cheek pieces join the scoop and housing rim.

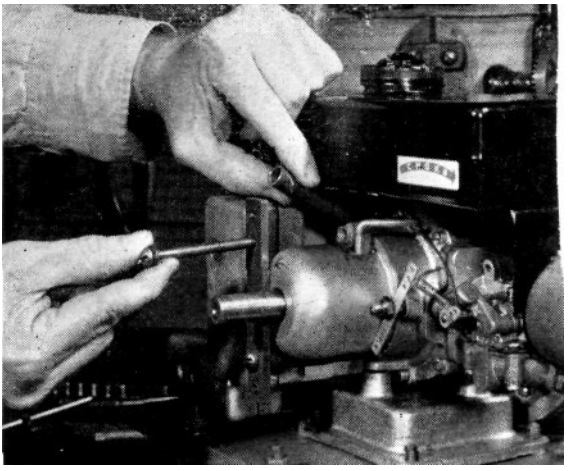
Roundhead wood screws hold the metal to the plywood plates. I made the many sheet-metal holes required with a hand punch, which is much faster than drilling. I used washers wherever nuts or bolts bear against the wood.

The rotor. Mounted on the motor shaft, the rotor required careful construction and exact balancing. An unbalanced rotor could shake the plow to pieces.

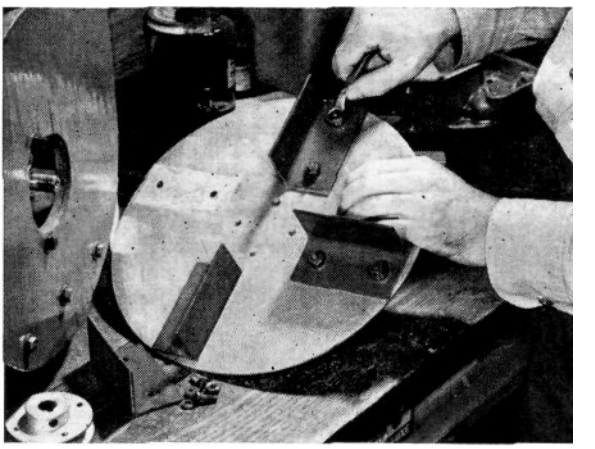
But balancing isn't difficult. During the course of building and changing designs, I had to rebalance the rotor several times. Smooth running showed I hit it well each time. Lock washers secure all nuts used in assembly.

Final details. Express-wagon wheels of 6½" diameter were used. Wheels with fatter tires would be better, for mine tend to stick in ruts. The handle came from an old lawn mower, as did the strap-iron pieces that hold, it. These were heated dull red with a gasoline blowtorch, then twisted and hammered to the desired shape.

An auto choke wire, linked to the pivoted arm, controls the throttle. Radio spaghetti was slipped over the wire to protect it from moisture. Actually, the centrifugal governor controls the throttle, and the hand control limits governor action. The governor helps keep engine speed steady when the plow is pushed through snow.

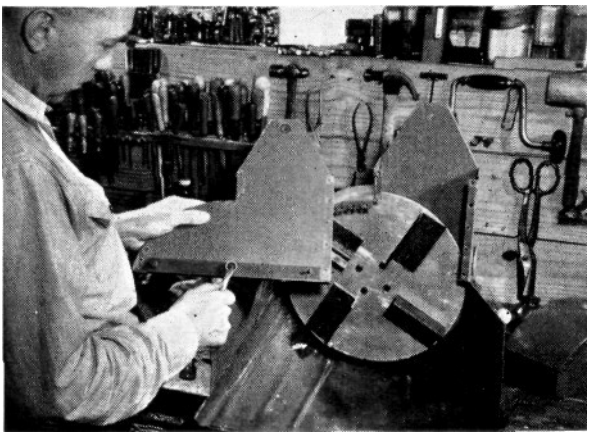


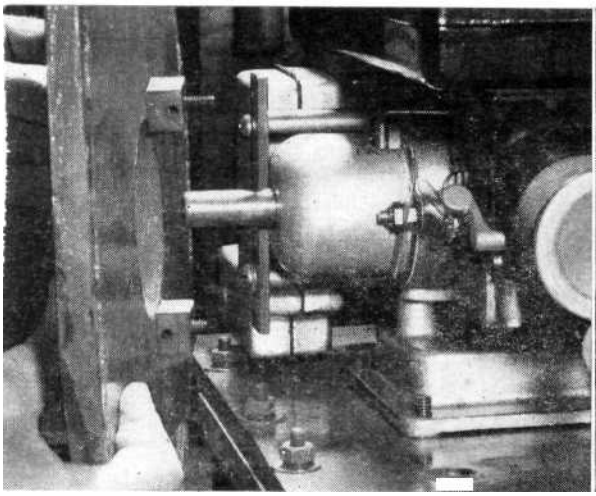
1 **Engine was mounted** with shaft projecting beyond one side of ¾" by 10" by 14" baseboard, bolts holding it in place. To support rotor housing, a piece of strap iron was attached to governor-shell boltholes. Two long screws and pipe spacers hold it alongside shaft.

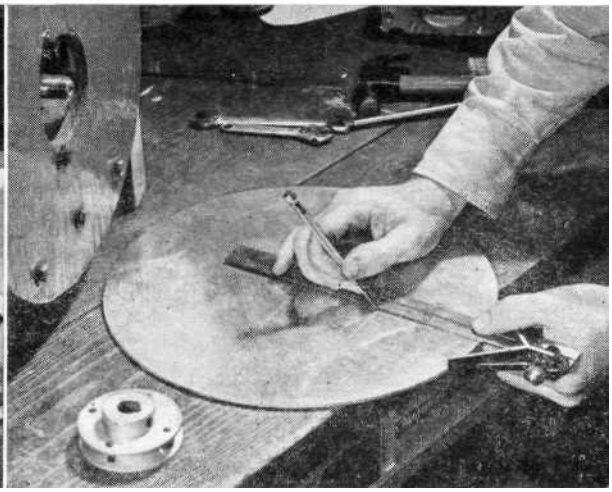


4 **Rotor blades,** 3½" matched lengths of 1/8" by 1½" by 1½" angle iron, are mounted with ¼"-20 bolts. Blades are spaced 90° apart with vertical flanges radial to center of disk and the ends all equidistant from disk edge. Hub must be carefully centered for good balance.

7 **Front edges of housing sides** were bent over and punched for bolts that secure front plywood plate (here held in hands). This piece has a length of angle stock bolted to bottom edge for reinforcement. Iron takes shock of small ice chunks, prevents damage to wood.

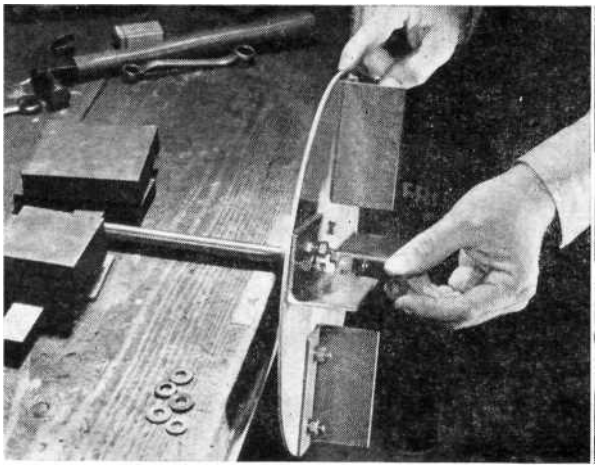


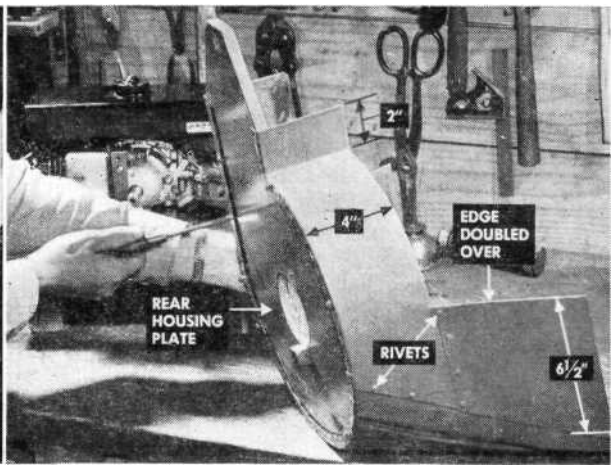




2 **Back plate of rotor housing,** cut to shape shown in drawing, was then fastened to strap iron. Two 1/4"-20 screws, run through plate and wood spacing blocks, were turned into holes tapped in strap ends. Plate was also bolted to angle iron bolted under base.

3 **Rotor** consists of 12 1/2" disk cut from 1/8″ aluminum, a 3" cast-iron V pulley (used as a hub) and four heavy angle-iron blades. Here, disk center is being found with combination square. I avoided a die-cast pulley for hub; it might fly apart under centrifugal force.





5 **Balancing the rotor.** Rest a 5/8″ shaft on steel rule at edge of bench; weight down second rule over end of shaft. Slip washers on bolts until rotor stops at different place every time you spin it. Then take off nuts and clamp washers on.

6 **Making the scoop.** Rear housing plate was removed to attach scoop and housing sides. Steel snow shovel was bent at rear to conform to housing curve. Tabs cut in edge were bent over and fastened to plate with wood screws. Wings were riveted to scoop sides, housing rim.

8 **Sheet-metal shield** mounted like this was my solution when counterclockwise rotation of blades threw some snow out of scoop instead of up stack. Later experience has shown it may be best to omit front vertical flange of shield. Shield is bent from single metal strip.

9 **Tilting top,** made of two pieces of plywood with curved sheet-metal hood joining them, pivots on two bolts set into stack. Bolts are drawn up just tight enough to hold, so I can swing the top and direct stream of snow to whichever side happens to be best. END