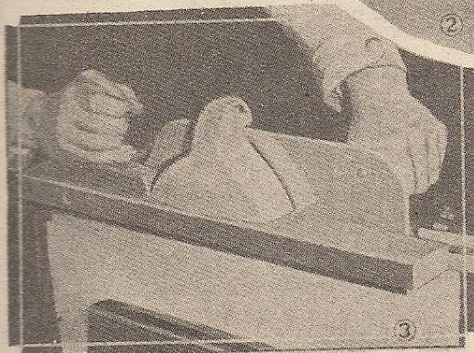
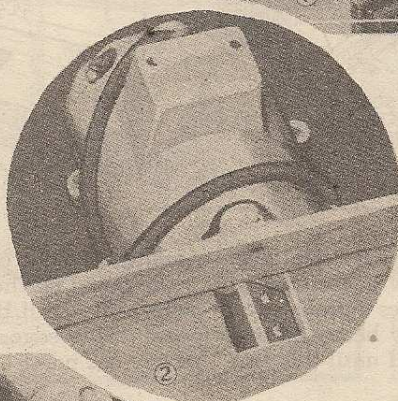
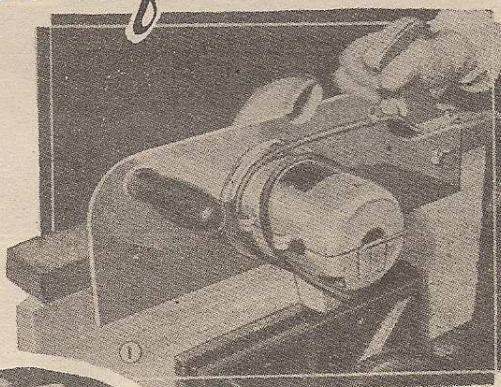


# *Motorized* HAND PLANE *gives smooth finish*

JUST the thing for edging long boards, fitting doors and jointing smaller pieces of stock at the bench, this electric hand plane is made from a discarded vacuum-cleaner motor, a piece of hardwood, some sheet aluminum and a few small bolts. If you've ever had the rather disagreeable task of fitting a door with the ordinary hand plane you will appreciate this tool, as the high-speed cutter whisks away the waste wood down to the dimension line in a fraction of the time and besides, it leaves a glass-smooth surface. Or, if you need a jointer just turn the machine upside down and clamp the handle in the bench vise as in Fig. 4. In this position



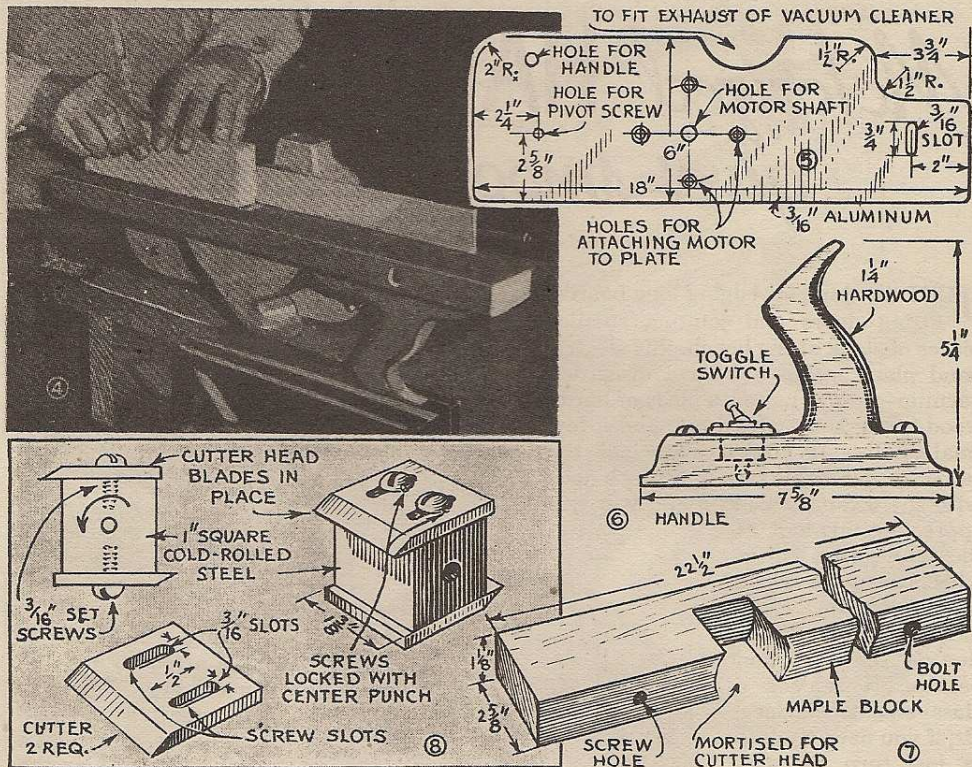
it's especially handy for squaring up small pieces of stock.

Figs. 1, 2 and 3 tell practically the whole story of the assembly. Of course, the arrangement of the parts shown is that suited to the characteristics of one particular motor. This means that if another motor of somewhat different design is used, minor

changes in details of the assembly may be necessary. Now referring to Figs. 5 to 8 inclusive, you'll get a good idea of how the parts are made. The guide, Fig. 5, is bolted to the motor and then to the base, Fig. 7. A slotted bolt hole, Fig. 5, provides a means of adjusting the depth of cut. You

will notice from Figs. 1 and 3 that the fan housing has been cut and fitted to the plane in such a way that it forms a combination knife guard and dust chute. The fan housings of most vacuum cleaners can be adapted in the manner shown by a bit of careful work with the hacksaw and a file.

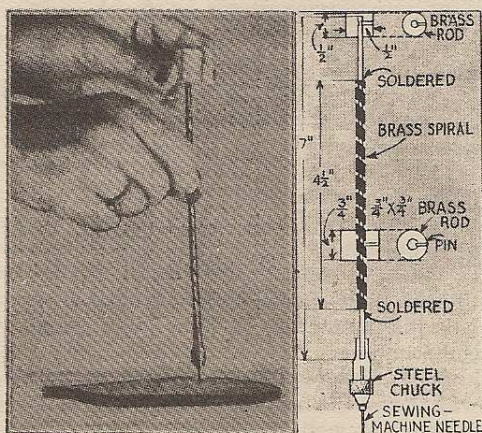
The cutterhead is shown in Fig. 8. It is of the square two-knife type and is drilled to fit over the motor shaft. Perfect running balance is of the utmost importance as the head must operate without vibration at high speed. This means that the hole for the motor shaft has to be exactly centered and the cutting edges of the knives must describe the same arc. One way to test the head for static balance is to mount it on a short length of shafting with the ends projecting equally. Then fasten



two razor blades to a block of wood, level them, and place the head with the ends of the shaft resting on the edges of the blades. If the head is even slightly heavy on one side it will immediately roll until this side

is down. To correct this tendency you remove metal on the heavy side of the head with a file until the head will roll on the razor-blade edges without coming to rest at any one point.

### Drill for Modelmakers Assembled From Scrap Parts



This handy drill for use in making model ships, planes, etc., is constructed easily. A 7-in. length of  $\frac{1}{8}$ -in. brass or steel rod is used for the shaft, and a spiral, removed from an automatic lead pencil, serves as a rotating device, which is soldered at the ends to the brass shaft. A finger grip, which rotates the drill when moved up and down the spiral, is made from a  $\frac{3}{4}$ -in. length of brass rod. This has a hole drilled through the center so it will slide loosely over the spiral, and is fitted with a pin, which extends slightly into the center of the hole to engage the spiral. The chuck is one removed from a small pin drill. Drill bits are made from steel sewing-machine needles.