

used. A very suitable tin-plate is the material known as Taggart. This is almost as thin as paper, being, in

venient to drill the holes in place of cutting them with a chisel or knife. Round holes must then, of course, be used. A round hole does not give such good results as a square hole, but if it is desired to get the best results the circular hole can be filed square with a rat-tailed file.

If you are using cardboard there is a tendency to warp which makes the use of tin or other metal preferable. In place of tin an aluminium plate gives a more satisfactory disc, and can be recommended in preference, although, of course, in cutting it entails a greater amount of mechanical skill and labour.

The marking off of the disc is done as follows: First of all, using either a sufficiently large protractor, a pair of trammels or, if you have not any of these, a piece of cardboard as previously described, mark off a circle

with a 10-inch radius, then with the same centre mark off a second circle with a radius of 9 inches, then a third circle as shown in the drawing, and so on until you come to the tenth circle with a radius of $7\frac{1}{2}$ inches. Now divide the circumference of your disc into twenty parts. To do this you will require a large pair of dividers. First of all draw two diameters at right angles to each other, thus dividing the disc into four equal parts, then divide each of these four equal parts into five equal sections, using your dividers to do this, or, of course, you may divide the disc by using a protractor and drawing radii at angles of 360 degrees divided by 20, that is 18 degrees.

You will now have your disc divided into twenty segments, and at the point where the radii cut the concentric circles square holes should be cut, as shown in the sketch, Fig. 1; or, of course, as previously stated, round holes may be used. The centre of the disc must be bored with a hole to fix on the spindle of the driving motor.

Any simple little 4-volt motor may be used. In the actual model which we are describing the motor used was obtained from Messrs. Bond, of Euston Road, London, its spindle being $\frac{3}{16}$ inch in diameter. A Meccano pulley was used for fixing. Three bolts ($\frac{3}{16}$ inch diameter) were used to fix the disc to the pulley, as shown in the sketch, Fig. 9.

The motor carrying its disc is then fixed to a pedestal, the dimensions of which are given in Fig. 2. This pedestal is simply a wooden box, $\frac{1}{2}$ inch wood being used, and is

fact, the same material out of which biscuit tins and similar light tinware is made. It is very easily handled, and can readily be cut with an ordinary pair of scissors. It is sold in sheets of 22 inches by 30 inches. Any ironmonger will supply these.

A heavier grade of tin may, of course, be used, but it is not so easily handled.

In marking off the circles the proper instrument to use is a large protractor, but this may not be available, in which case a strip of cardboard 11 inches long by 2 inches wide may be employed. This is used in a similar way to a draftsman's trammels. With the point of a pair of dividers pierce the cardboard at one end and place on the tin as shown in the sketch, Fig. 1.

Using the point of the dividers as a pivot, mark off the radii along the card, and at the end of each radius pierce a hole with another pair of dividers. Then using the cardboard as a link swing a circle round on the tin-plate, this being repeated for each radius.

Where thick tin is used it may be more con-

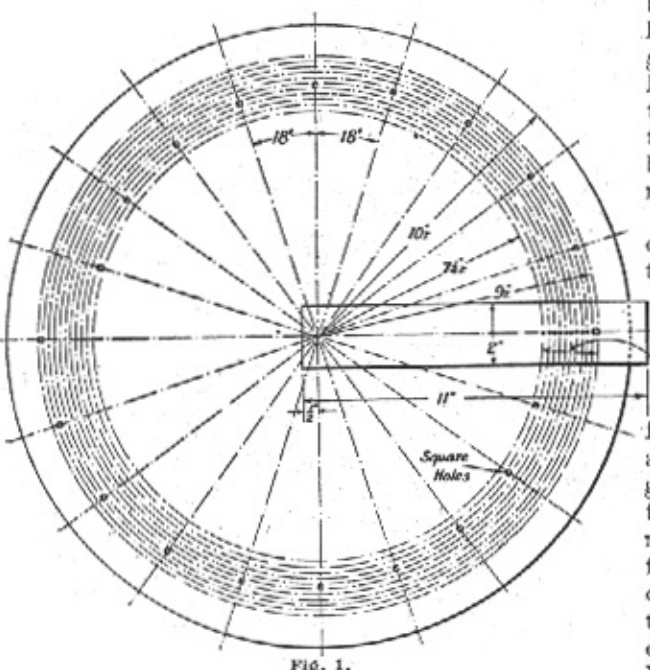


Fig. 1.

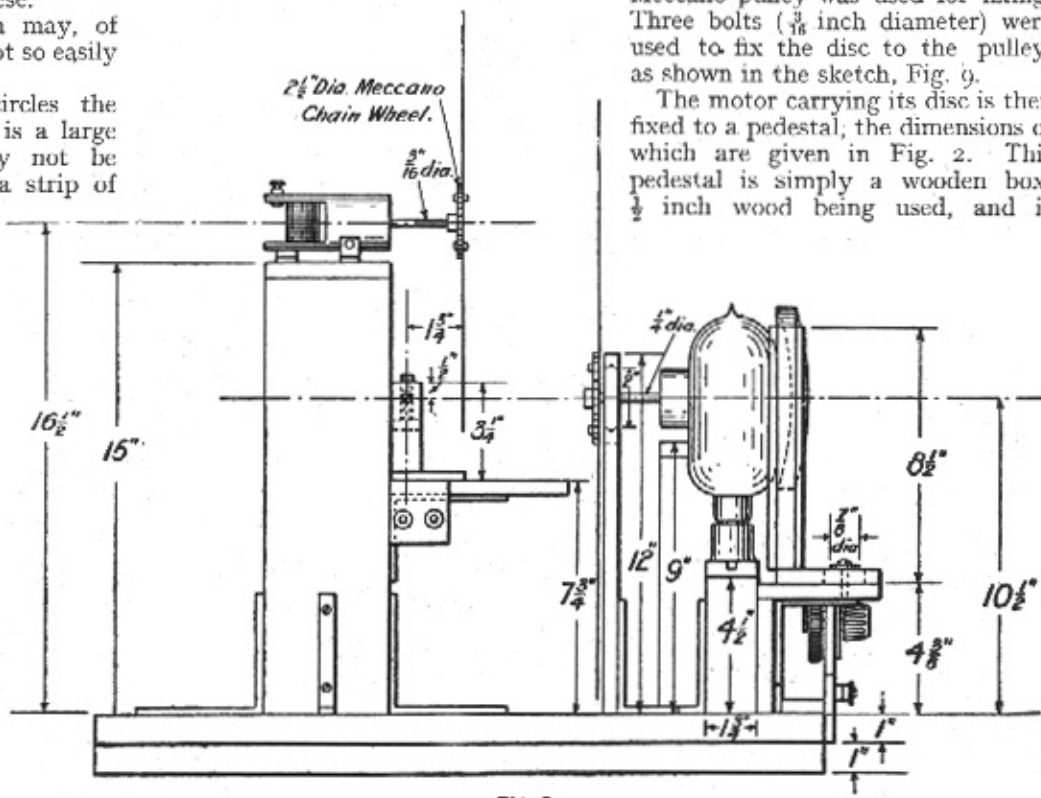


Fig. 2.