

this range include these two easily-made examples of a weighing machine and a map measurer.

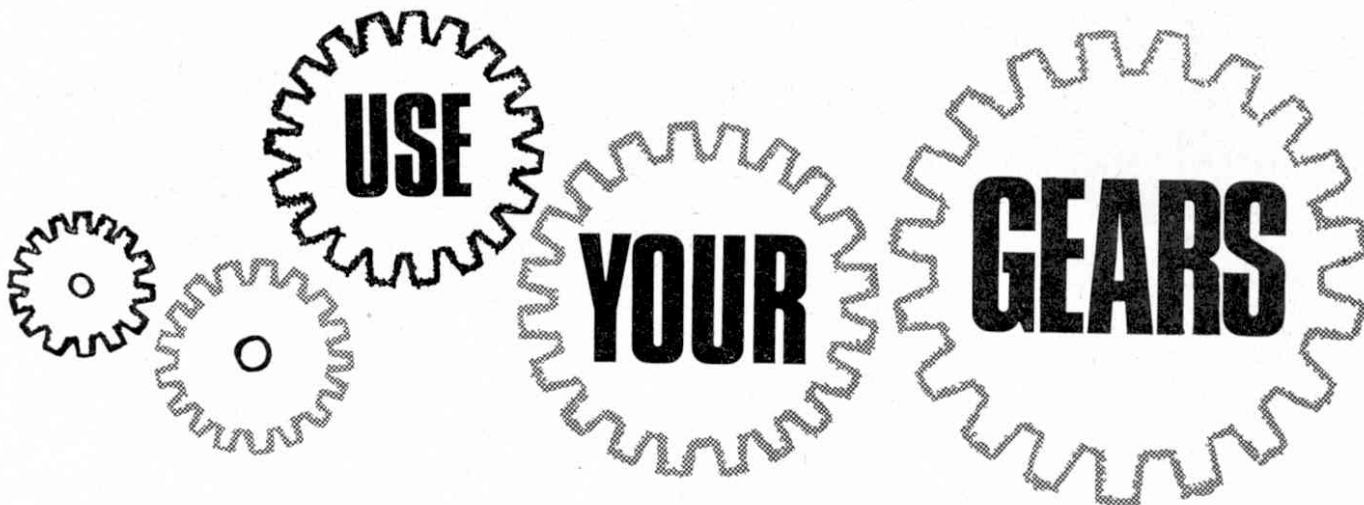
## The Weighing Machine

**M**ODEL-BUILDING scope is enormously increased by the Gear Wheels and Pinions that are included in the Meccano system. Not only do these parts help animate the more usual constructions, but they also allow an entirely new range of useful working models to be built. Models falling into

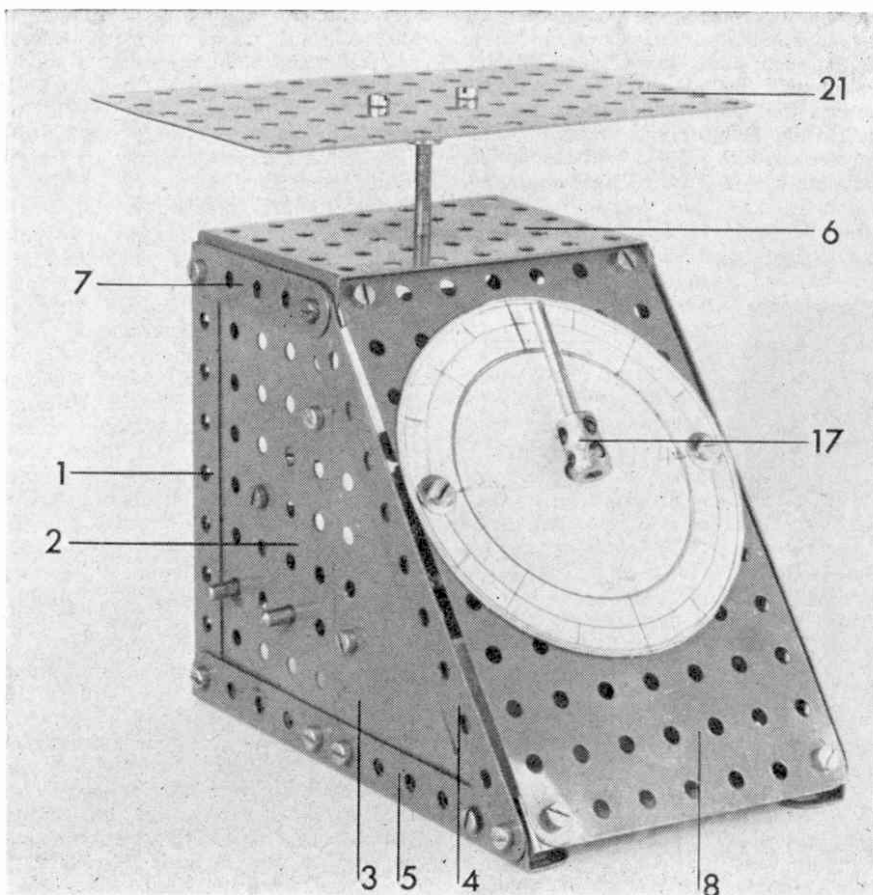
To begin with, I shall describe the construction of the Weighing Machine, both sides of which are similarly built. A  $4\frac{1}{2}$  in. Angle Girder 1, a  $4\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flat Plate 2, a  $3\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Triangular Flexible Plate 3 and a  $5\frac{1}{2}$  in. Strip 4 are all bolted to a  $5\frac{1}{2}$  in. Angle Girder 5. The two sides are then joined together at the top by a  $3\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flanged

Plate 6, at the same time fixing a  $2\frac{1}{2}$  in. Strip 7 in position.

A  $5\frac{1}{2}$  in. by  $3\frac{1}{2}$  in. Flat Plate 8, attached to the sides by an Angle Bracket at each corner, completes the front of the model. At the back, two  $3\frac{1}{2}$  in. Strips 9, one at the top and one at the bottom, connect Angle Girders 1. In the second illustration on page 37, the lower Strip 9 has been removed to help in showing the layout of the gears. Two  $3\frac{1}{2}$  in. by  $\frac{1}{2}$  in. Double Angle Strips 10 and 11 are bolted between the sides but are spaced from them by a Washer on the shank of each bolt.



The weighing machine is graduated by placing various weights on it and marking the disc accordingly



Fixed on a 4 in. Rod, journaled in Plates 2, are a  $\frac{1}{2}$  in. Pinion 12 and a 50-teeth Gear 13. Gear 13 is in constant mesh with a  $\frac{1}{2}$  in. Pinion 14 mounted, together with a  $\frac{1}{2}$  in. Bevel Gear 15, on another 4 in. Rod. A  $2\frac{1}{2}$  in. Rod, carrying a second  $\frac{1}{2}$  in. Bevel Gear 16, is journaled in Plate 8 and a Fishplate bolted to Double Angle Strip 11, a Collar between the Bevel Gear and the Fishplate holding it in position. Bevel Gears 15 and 16 engage with each other.

### Fitting the dial

A graduated piece of cardboard, circular in shape, is fixed to the outside of Plate 8, in such a position as to allow the  $2\frac{1}{2}$  in. Rod to protrude through a hole in its centre. A Short Coupling 17, carrying a  $1\frac{1}{2}$  in. Rod, is then secured on the end of the Rod to act as a pointer.

Two Worms 18 and a Coupling 19 are mounted on a 5 in. Rod journaled in Flanged Plate 6, and the centre hole of Double Angle Strip 10. The Rod passes through one end transverse bore of the Coupling. Held in the other end transverse bore of the Coupling is a 2 in. Rod which passes through the third hole of Double Angle Strip 10. A Tension Spring 20 is fixed to the boss of the upper Worm by a  $\frac{1}{2}$  in. Bolt and its other end is bolted to Strip 9.

Finally, a Double Arm Crank is bolted to a  $5\frac{1}{2}$  in. by  $3\frac{1}{2}$  in. Flat Plate 21, and the whole assembly is mounted on the 5 in. Rod to serve as the weighing platform. Note, incidentally, that Pinion 12 engages with Worms 18.