

Fig. 1. A Platform Weighing Machine of a practical working type.

## Meccano Platform Weighing Machine

THE platform weighing machine that is shown complete in Fig. 1 is remarkably accurate in operation, and after careful adjustment will register weights up to several pounds.

The base of the model is built up from  $5\frac{1}{2}$ " Angle Girders and Double Angle Strips bolted together as shown. The upright column is formed by four  $12\frac{1}{2}$ " Angle Girders. These are joined together by  $1\frac{1}{2}$ " and  $2\frac{1}{2}$ " Strips, and the sides and front filled in by Flexible Plates.

The steelyard consists of a  $12\frac{1}{2}$ " Strip 1, and an  $11\frac{1}{2}$ " Rod extending along the back of this Strip is secured to it by two Couplings, one of which is shown at 2. A 3" Rod in the Coupling 2 passes through further Couplings 3 and 4 and enters another Coupling in which a 4" Rod 5 is secured. This Rod carries the balance weights, which may be positioned at any point along the length of the Rod. The Rod 5 carries at its outer end a Threaded Coupling holding a 2" Screwed Rod.

Accurate adjustments are made by means of a second Threaded Coupling 6, which is moved along the Screwed

Rod until the steelyard is exactly balanced.

Friction is reduced to a minimum by the incorporation of a knife-edge bearing of similar type to that used in an actual machine. It consists of two Centre Forks 7 held in the Coupling 3. The points of these rest between the teeth of two  $\frac{1}{2}$ " Pinions, so that the whole weight of the steelyard is supported by the steel points of the Centre Forks, giving an exceptionally delicate balance. The  $\frac{1}{2}$ " Pinions are fixed to a 2" Rod locked in Cranks attached to the  $3\frac{1}{2}$ " Strips 8. These Strips are pivoted at their upper ends to a Coupling secured to the  $11\frac{1}{2}$ "

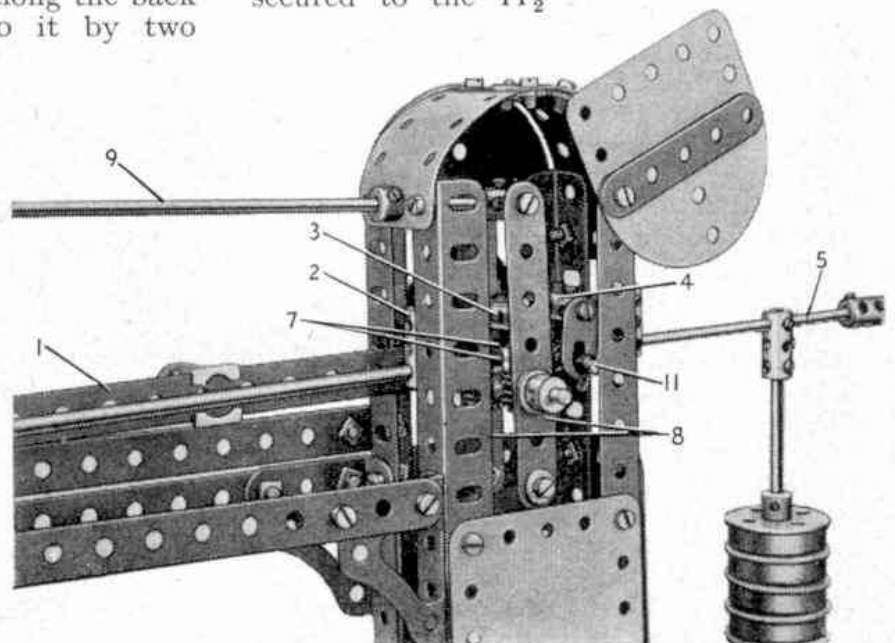


Fig. 2. The top of the Weighing Machine column with the cover plates removed.

Rod 9. This Rod passes through the centre hole of a  $1\frac{1}{2}$ " Strip forming part of the framework of the column, and is held in position by two Collars. A stop for the Rod, consisting of a Reversed Angle Bracket 10, is provided at the outer end of

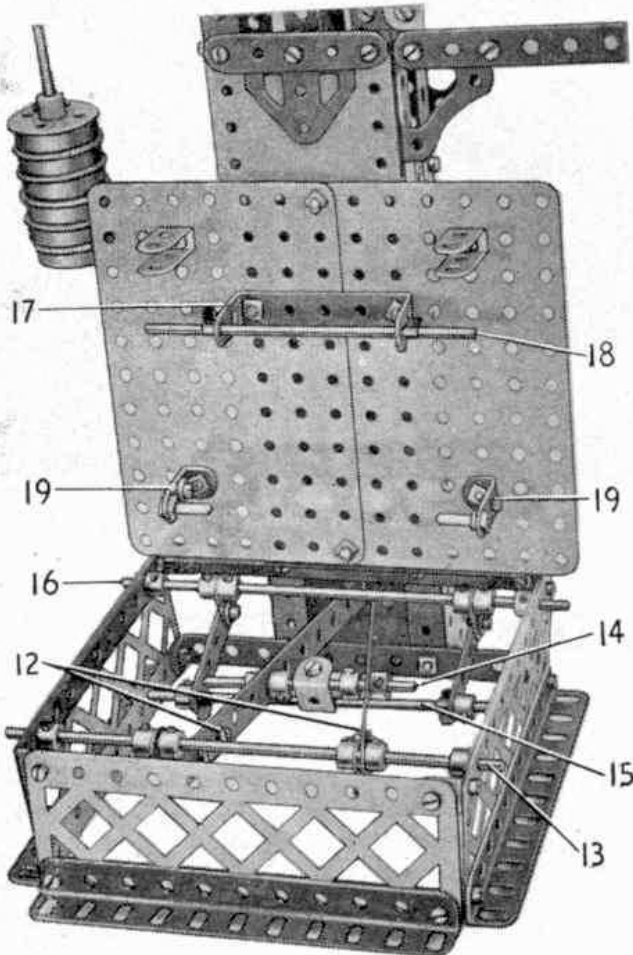


Fig. 3. The interior of the base showing the platform lever arrangement.

the framework.

Two Fishplates suspended from the Coupling 4 support a  $1\frac{1}{2}$ " Rod 11 held in place by Spring Clips. A Hook on this Rod is connected with levers 12 in the base by a length of Sprocket Chain and a second Hook.

The levers 12 consist of  $5\frac{1}{2}$ " Strips extended by  $1\frac{1}{2}$ " Strips overlapped two holes. They are pivoted by two Fishplates held in position on the Rod 13 by Collars. A 3" Rod 14 is journalled in the Strips 12 and is linked to the Rod 15 by a Double Bracket fitted with a  $\frac{3}{4}$ " Bolt. Two further levers consisting of 2" Strips are attached to the ends of the Rod 15 and pivoted to the Rod 16 by Fishplates. This arrangement of levers ensures that a weight placed in any position on the platform produces an even pull on the Sprocket Chain.

The platform is made from two  $5\frac{1}{2}$ "  $\times$   $3\frac{1}{2}$ " Flat Plates overlapped one hole. A  $2\frac{1}{2}$ "  $\times$  1" Double Angle Strip 17 carries a  $4\frac{1}{2}$ " Rod 18 retained in place by Spring Clips. Two  $1$ "  $\times$   $\frac{1}{2}$ " Angle Brackets 19 are spaced from the platform by four Washers and each carries a Threaded Pin. When the platform is in position the Rod 18 bears on the levers 12 and the Threaded Pins on the 2" Strips forming the second pair of levers. Two Single Bent Strips fit over the Rod 13 and provide a guide for the platform.

The Strip 1 is fitted with a sliding weight formed by a Slide Piece. A Pawl 20 is attached to this by a  $\frac{3}{4}$ " Bolt, and indicates the weight of the load on the calibrated scale 21. This scale is cut from cardboard and is bolted to a  $9\frac{1}{2}$ " Strip. An arrow-shaped piece of cardboard 22 is attached to the Strip 1 by a Reversed Angle Bracket so that it is exactly opposite a line on the indicator 23 when the steelyard is horizontal.

The steelyard is lifted into weighing position by replacing the Rod 9 under the Reversed Angle Bracket 10. When the scales are complete, the steelyard should be balanced carefully by moving the weight and minute adjustment made by means of the Threaded Coupling 6 until the arrow 22 is exactly on the line on the indicator 23 when the sliding weight is in its innermost position.

To graduate the scale, known weights are placed on the platform, and the sliding weight 20 is moved along the steelyard until the arrow 22 points once more to the line on the indicator 23. The position of the pointer should be noted on the scale in each case, and the magnitude of the weight marked against it.

*Parts required to build model Platform Weighing Machine:* 1 of No. 1; 3 of No. 1a; 2 of No. 2; 2 of No. 3; 4 of No. 4; 4 of No. 5; 2 of No. 6; 8 of No. 6a; 4 of No. 8; 4 of No. 9; 1 of No. 9d; 9 of No. 10; 1 of No. 11; 2 of No. 12b; 2 of No. 13; 2 of No. 14; 1 of No. 15; 1 of No. 15a; 1 of No. 15b; 2 of No. 16; 1 of No. 17; 1 of No. 18a; 6 of No. 20; 2 of No. 26; 8 of No. 35; 78 of No. 37; 22 of No. 38; 2 of No. 44; 1 of No. 46; 2 of No. 48; 4 of No. 48d; 1 of No. 50; 2 of No. 52a; 1 of No. 57b; 1 of No. 57c; 20 of No. 59; 2 of No. 62; 7 of No. 63; 2 of No. 63c; 1 of No. 65; 1 of No. 81; 1 of No. 94; 3 of No. 115; 2 of No. 125; 4 of No. 126a; 2 of No. 136a; 1 of No. 139; 1 of No. 139a; 1 of No. 147c; 1 of No. 188; 3 of No. 189; 1 of No. 190; 1 of No. 191; 2 of No. 192; 2 of No. 214.