

The Improved Meccano Platform Scales

A Model that will Accurately Register $\frac{1}{2}$ oz. to $4\frac{1}{2}$ lbs.

WE described the Meccano Platform Scales in our issue for May last, and asked readers to assist us in improving the model in such a way that it should weigh small amounts, such as two or three ounces, accurately. This meant reducing the friction present in the model to an absolute minimum. We find that this has proved a severe test on the resourcefulness of our readers, as we had expected, and unfortunately many of the suggestions we have received do not justify their claims when put into actual practice, although they were well thought-out and showed much originality.

As hinted in our first article, however, we had already effected important modifications in this model, and we describe these below. The chief improvements will be found in the knife-edge bearing which forms the fulcrum of the steelyard, and in the new arrangement of levers in the base, providing for a free lateral movement, as well as vertical, of the platform.

This improved construction of the model enables amounts varying from half an ounce to $4\frac{1}{2}$ lbs. to be weighed with remarkable accuracy.

Building the New Model

The steelyard 1, consisting of a $12\frac{1}{2}$ " Strip, is bolted at its extreme end at 2 to a Coupling mounted on an $11\frac{1}{2}$ " Rod 3, Fig. B, and at its other end 4 to a second Coupling 5 (Fig. B). This Coupling is carried on a short Rod 6 which passes through two further Couplings 7 and 8 and enters another Coupling 9

in which a further Axle Rod 10 is mounted. This Rod 10 carries the balance weights 11 which may be

secured by means of the Coupling 12 in any position on the Rod 10. The latter is also extended at its end by the Coupling 13 and Threaded Rod 14 carrying a Threaded Boss 15, by which very accurate balance adjustment may be made. When the steelyard is exactly balanced the Threaded Boss is secured in its position by the bolt 16.

The fulcrum rests upon a knife-edge bearing 17 consisting of two Centre Forks secured in the Coupling 7, with their points resting between the teeth of two $\frac{1}{2}$ " Pinions. These Pinions are bolted to a short Rod rigidly held in two Cranks, which are attached to $3\frac{1}{2}$ " Strips suspended from a Coupling mounted on the end of an $11\frac{1}{2}$ " Rod 18. The steelyard is lifted into weighing position by placing the $11\frac{1}{2}$ " Rod 18 under the stop 19. A Sprocket Chain 22,

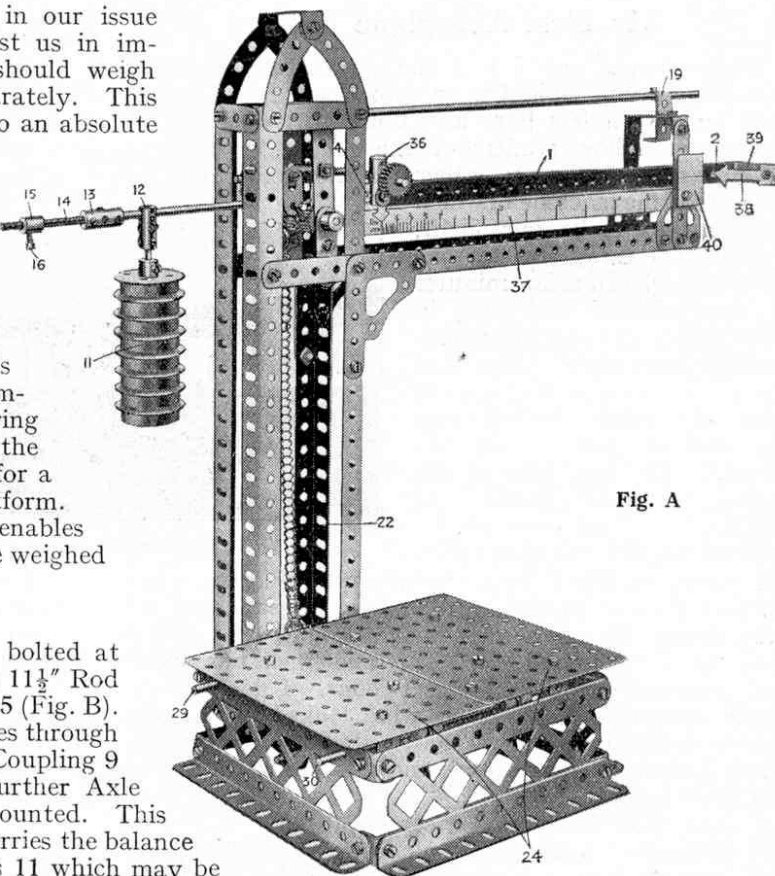


Fig. A

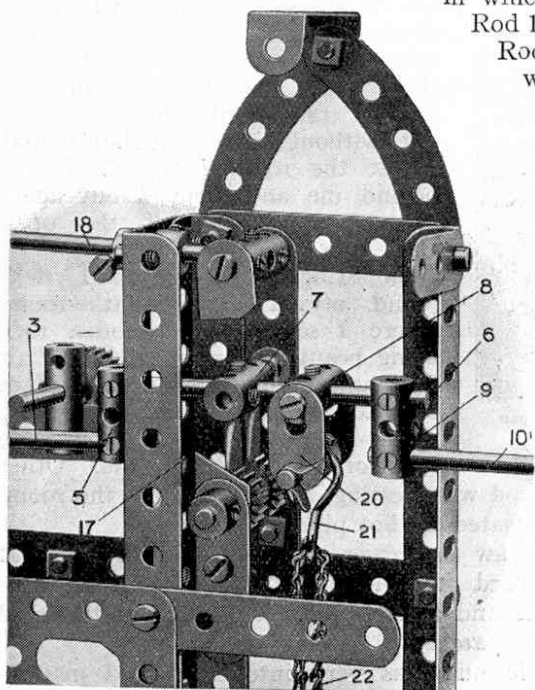


Fig. B

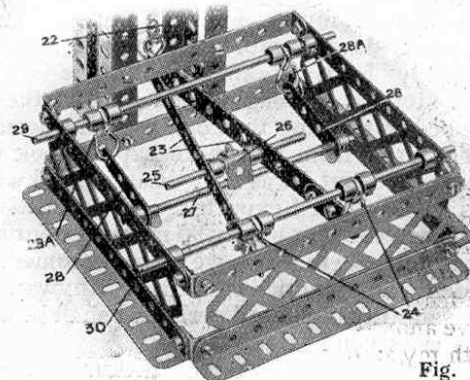


Fig. C

(Continued on page 584)



CHOOSE YOUR OWN CHRISTMAS PRESENT

An opportunity for "M.M." readers

It is a wonderful sensation to sit down and study illustrations and descriptions, and select your own Christmas present. Try it! The Special Christmas Number of the "M.M." will contain advertisers' announcements of all kinds of splendid toys, books, and all manner of articles for giving pleasure to boys at Christmas. We are going to make at least one boy happy by giving him the very thing he wants, from amongst the articles advertised in our columns.

Let us know what you want—

On a Postcard

Obtain a copy of the Christmas number of the *Meccano Magazine*, which will be ready on 9th December, look at *all* the articles

advertised and then decide which you would like the postman to hand to you on Christmas morning. Write the name of it on the top of your postcard, marking it No. 1. Then write the name of the article that you would like second best and mark it No. 2. Do this with six articles altogether, write your name and address at the bottom in very plain letters, and send the postcard to "Christmas Presents, *Meccano Magazine*, Binns Road, Liverpool."

To the boy whose list corresponds most nearly in order of merit with the total voting we will post the article that heads his list, to reach him on Christmas morning.

"Christmas Presents" postcards must reach us not later than 18th December.

Lives of Famous Engineers—

(Continued from page 559)

degree upset there was always the danger of a splash of hot metal, which frequently set the men's clothes on fire or caused terrible scalds and burns.

Nasmyth's safety ladle was designed to prevent these accidents. He applied a screw wheel keyed to the trunnions of the ladle, which was acted upon by an endless screw attached to the sling of the ladle. By this arrangement one man could move on its axis the largest ladle and pour out its contents with perfect safety, at the same time securing better castings by means of the increased steadiness of the flow of metal into the mould.

Another improvement brought about by Nasmyth was the fixing of a skimmer to the edge of the ladle to keep back the dross or slag floating on the surface of the molten metal. This process also was previously done by hand and many accidents occurred in consequence. Nasmyth did not patent these inventions, but preferred to make them over to the public.

The Story of the Forth Bridge—

(Continued from page 581)

hard wood were placed beneath them to hold them in position while the jacks were moved to a new bearing, when a second lift was made. By repeating this process the lifting of the girders and the building of the masonry proceeded until the required height was attained. The building of the masonry between each lift, including the time required for setting of the work on one half of the pier before the other was commenced, was carried upward at the rate of about 9 ft. on each pier per month. As the girders were ultimately raised to

150 ft. above high water, and as each lift was only about 3 ft. 6 in., the time occupied in the process was considerable. The first lift was made in April 1886 and the last in April 1887. The steel girders used were of the ordinary lattice type having a depth of 22 ft. 6 in.

The Conquest of the Air—(cont. from p. 585)

The petrol tank is fitted in rather a novel position, it being incorporated in the upper wing of the machine. It will be clearly seen from our illustration that part of the upper wing above the fuselage is a metal tank, and it is here that the petrol is stored, being fed to the engine by gravity.

An improvement has been made in the tail skid, so that better control on the ground is obtained, and any sudden stress on the rudder bar prevented.

The machine is fitted with a seaplane undercarriage for use with either normal or large wings. The undercarriage is interchangeable and special provision is made in the fuselage for hoisting so that the machine may be lifted by crane or derrick from the sea without damage.

Dimensions of the Fokker C.V Aeroplane

| | Normal | Small | Large Wings |
|---------------|----------------|----------------|--------------|
| Wing Area ... | 48.68 sq. yds. | 43.65 sq. yds. | 55 sq. yds. |
| Span ... | 42.04 ft. | 40.55 ft. | 48.25 ft. |
| Length ... | 30.35 " | 30.35 " | 30.64 " |
| Height ... | 10.86 " | 10.77 " | 11.09 " |
| Weight empty | 3,160 lbs. | 3,050 lbs. | 3,271 lbs. |
| " laden | 4,928 " | 4,376 " | 5,481 " |
| " per h.p. | 10.0 | 9.72 | 12.16 " |
| Speed (max.) | 137.4 m.p.h. | 143.7 m.p.h. | 131.2 m.p.h. |

Meccano Platform Scales—

(Continued from page 565)

suspended by means of Flat Brackets 20 and Hook 21, connects with the levers 23 in the base of the model (Fig. C, page 565). These levers are pivoted on Hooks 24 and carry a central 3" Rod 25 from which hangs a link 26 consisting of a Double Bracket and 3/4" Bolt. This link supports a further Rod 27 carried in the ends of another pair of levers 28 pivoted to the Hooks 28A. The 6 1/2" Rods 29 and 30, on which the Hooks are mounted, are journaled in the framework of the base.

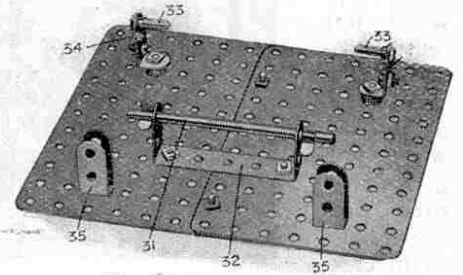


Fig. D

The platform, shown inverted in Fig. D, is composed of two large Flat Plates overlapped one hole and secured together; the Axle Rod 31 carried in a Double Angle Strip 32 rests upon the levers 23, while the Threaded Pins 33 bolted in 1" by 1/4" Angle Brackets 34 rest upon the levers 28. Two Washers are placed on the bolts underneath each end of the Double Angle Strip 32 and four Washers are placed beneath each of the brackets 34. Single Bent Strips 35 form guides for the platform and fit over the Rod 30 in the base.

A weight 36 consisting of a Strip Coupling, short Rod, and 3/4" Pinion slides along the steelyard 1 and carries a small pointer, cut from cardboard, which indicates the load being weighed by means of the graduated rule 37. A piece of cardboard 38 cut in the form of an arrow may be bolted to a 1" Reversed Angle Bracket 39 and arranged to rest against the cardboard indicator 40 when the scales are exactly balanced.

When the model is complete, and before commencing to weigh, care should be taken in balancing the steelyard by means of the weight 11 and adjustment 15, so that the arrow 38 rests on the line at 40 when the sliding weight 36 is at the "O" mark in the rule 37.

The graduated scale may be prepared by placing known weights on the platform, and accurately marking the position at which the sliding weight 36 must point in order to maintain the arrow 38 dead on the line at 40.

The model should be oiled at frequent intervals, and all working parts must be perfectly free to move. The fulcrum 7, especially, should not be allowed to make contact with the suspended 3 1/2" Strips.

Parts required : (Revised List)

| 3 of No. | 1 | 1 of No. | 15 | 6 of No. | 57 |
|----------|---|----------|----|----------|----|
| 2 | " | 3 | " | 20 | " |
| 2 | " | 2 | " | 2 | " |
| 2 | " | 1 | " | 8 | " |
| 3 | " | 2 | " | 1 | " |
| 2 | " | 1 | " | 1 | " |
| 6 | " | 8 | " | 2 | " |
| 4 | " | 1 | " | 1 | " |
| 2 | " | 2 | " | 4 | " |
| 4 | " | 8 | " | 3 | " |
| 1 | " | 78 | " | 2 | " |
| 2 | " | 14 | " | 2 | " |
| 1 | " | 1 | " | 1 | " |
| 3 | " | 3 | " | 1 | " |
| 2 | " | 4 | " | 2 | " |
| 2 | " | 2 | " | 2 | " |