

A NEW MECCANO MODEL

Model No. 627. Automatic Weighing Crane

THIS is a model of a crane that, by means of a simple and ingenious contrivance, automatically registers the weight of the load which it is in the act of lifting.

The advantages of such an arrangement in actual practice are many and must be obvious. For example, a great deal of time is saved in loading goods wagons, ships, lorries, etc., where without a weighing crane much of the goods would have to be weighed on a separate machine, consequently incurring additional labour and increased expense in handling. Again, the crane operator can tell at any time from a glance at the load indicator, the extent of the stress to which the crane is being submitted and is thus able to keep within a certain safe margin of the capacity limit of the crane.

Constructing the Model

This is a simple and very interesting model to build, and our illustration shows very clearly most of the constructional details. The pedestal upon which it is mounted runs upon rails built up from Angle Girders, which, of course, may be extended to any desired length.

The wheel base consists of four Flanged Wheels (24), mounted in bearings (23) formed from 2½" Strips connected to the girders (20) by Angle Brackets. One of these Flanged Wheels is connected by gears to a hand-wheel (Fig. C), the operation of which imparts the traversing movement to the model along the rails. The upright columns (21) are connected at the top by 5½" Girders, and at the wheel base, where they are slightly splayed-out, by 9½" Girders. The construction of the strengthening struts is clearly shown.

The crane rotates on ball bearings (19) carried on an upper platform consisting of

two 5½" Flanged Plates, bolted between the upper 5½" Angle Girders.

The lower fixed race of the ball bearings is formed by bolting a Wheel Flange and 3" Pulley in the channel of the platform, and thus formed the Meccano Steel Balls are inserted. A further 3" Pulley Wheel is bolted to the under-side of the crane, and an Axle Rod wheel passes freely through the 3" Pulley fixed to the platform.

A 57-toothed Gear Wheel carried on this Rod is engaged by a Worm on the Crank Handle seen just in form in

side of the crane, secured in this through the 3" platform. Gear Wheel Rod is engaged Wheel mounted Crank Handle below the plat- the large illustration.

The Load Indicator

The load is raised or lowered by the operation of the Crank Handle (1), upon which is wound a lifting cord (2, Fig. B), passing round a 1" Pulley (3) and over another 1" Pulley (4) at the jib head (Fig. D) to the loaded Hook (5).

This Pulley (4) is mounted in two Cranks (6) carried by means of a Coupling from the 3½" Rod (7) which is slideable in two Double Brackets (8).

A Sprocket Chain (9) is connected to a Collar mounted on the Rod (7) and passing round a 1½" Sprocket Wheel (10) and under the 1" Sprocket Wheel (11, Fig. B), is connected to a Spring (12) secured to a 3½" Rod (13).

Thus, when a load is being raised, the increased tension on the hoisting cord (2) tends to pull down the Pulley (4); the movement consequently imparted to the Chain (9) extends the Spring (12) and in doing so rotates the Sprocket Wheel (11).

The movement of this Sprocket Wheel is magnified to one three times as great

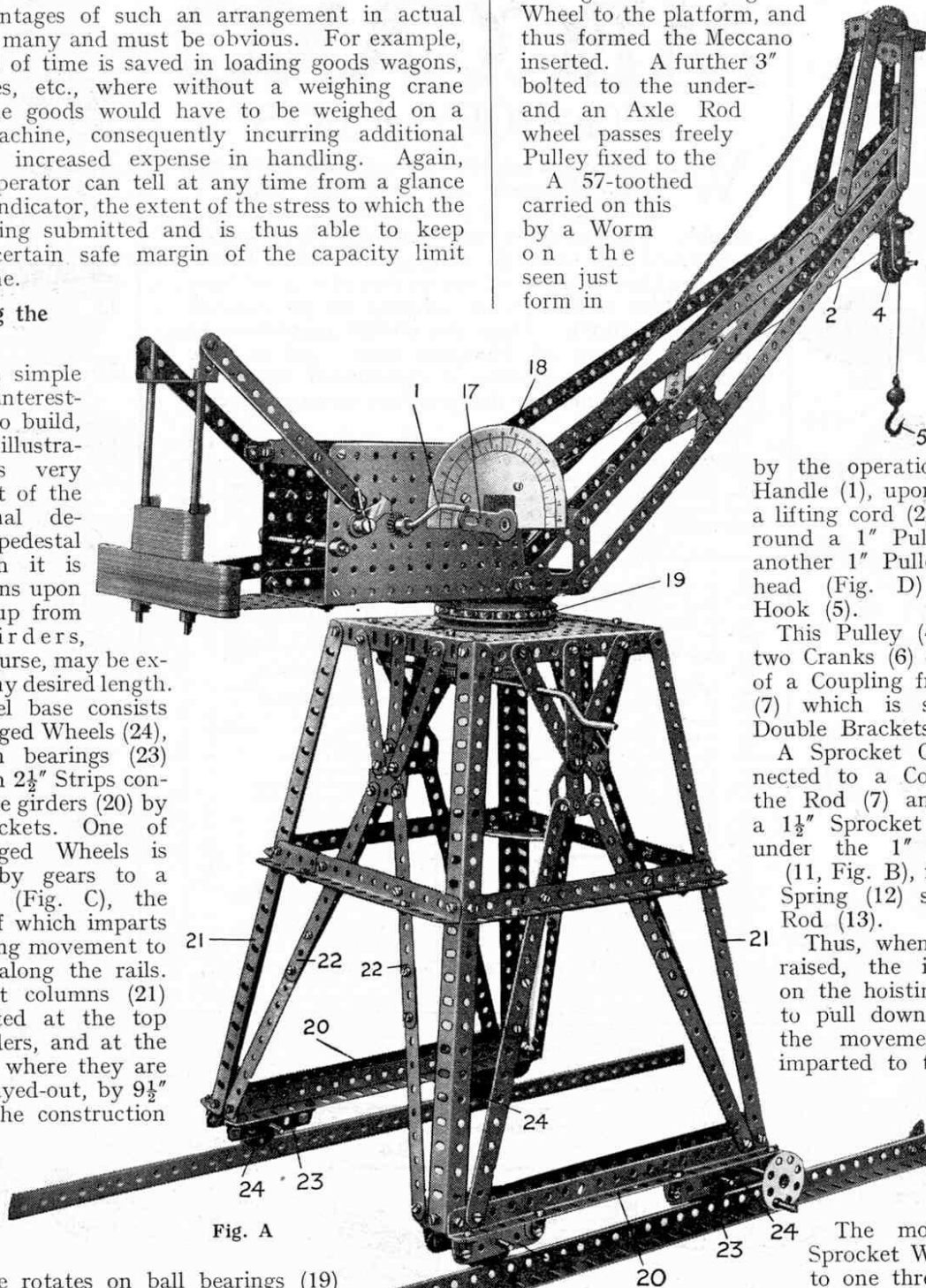


Fig. A

Automatic Weighing Crane—(continued from page 329)

by means of the 57-toothed Gear Wheel (14) and the 19-toothed Pinion (15). On the same Rod as the latter a Crank (17) is secured, which sweeps round the graduated dial (18), so registering the movements of the Chain (9).

Marking the Dial

The dial may be quite easily constructed by cutting out a semi-circular piece of cardboard and marking it in suitable degrees in order to indicate the weight of the load that is being lifted.

In the first place, with a view to ascertaining the correct position for the graduated divisions on the dial, a few experiments should be carried out with some known weights, and the respective positions of the pointer in regard to certain loads must be carefully recorded.

A friction brake is provided to control the hoisting cord. As may be seen from Fig. B, this brake consists of the usual lever and cord engaging a 1" Pulley mounted on the end of the Crank Handle (1).

It should be noted that the

Balls (19) in the Crane bearings have been only recently added to the Meccano system, and have not yet been included in the No. 6 Outfit, but they may be obtained separately. The model works well, of course, if the Jib is mounted on an ordinary swivel bearing, but its operation is greatly improved and better realism effected by the use of the ball bearings.

A counter-balance, consisting of a number of 5½" and 2½" Strips, is mounted at the rear of the jib, with the object of relieving the strain imposing upon the swivel-bearing.

NEXT MONTH :—
HAMMER-HEAD CRANE

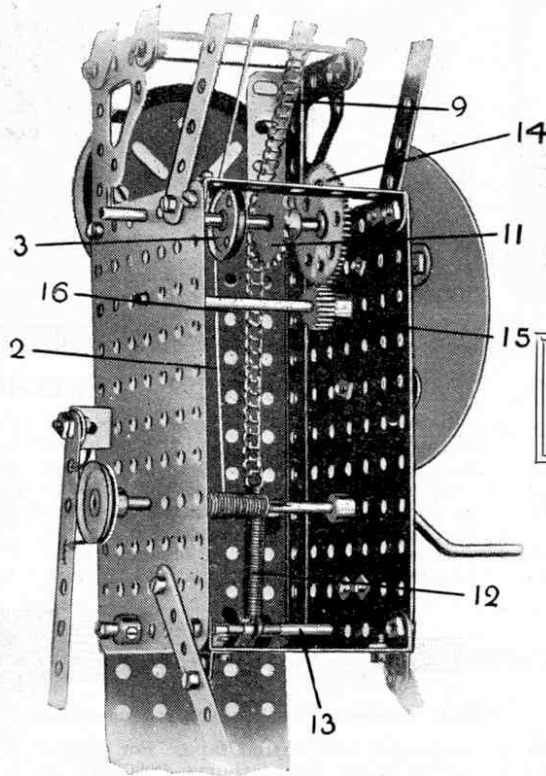


Fig. B

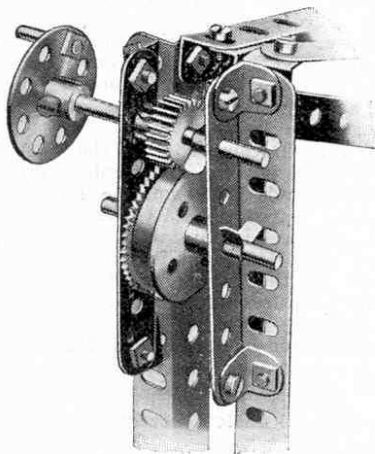


Fig. C

| Parts required : | | | | | | | | |
|------------------|--------|-----|-----|--------|-----|-----|--------|------|
| 8 | of No. | 1 | 2 | of No. | 19 | 4 | of No. | 48A |
| 50 | " | 2 | 2 | " | 19B | 3 | " | 52 |
| 2 | " | 2A | 4 | " | 20 | 2 | " | 52A |
| 10 | " | 3 | 1 | " | 22 | 1 | " | 57B |
| 12 | " | 4 | 2 | " | 22A | 15 | " | 59 |
| 36 | " | 5 | 1 | " | 24 | 3 | " | 62 |
| 2 | " | 6 | 1 | " | 25 | 2 | " | 63 |
| 2 | " | 6A | 2 | " | 26 | 1 | " | 70 |
| 8 | " | 8 | 1 | " | 27 | 2 | " | 77 |
| 4 | " | 8A | 2 | " | 27A | 27" | " | 94 |
| 12 | " | 9 | 1 | " | 32 | 1 | " | 95A |
| 5 | " | 11 | 1 | " | 33 | 1 | " | 96 |
| 30 | " | 12 | 9 | " | 35 | 2 | " | 108 |
| 2 | " | 14 | 198 | " | 37 | 2 | " | 115 |
| 5 | " | 16 | 7 | " | 38 | 21 | " | 117 |
| 2 | " | 16A | 1 | " | 40 | 3 | " | 125 |
| 4 | " | 17 | 1 | " | 43 | 4 | " | 126A |
| 3 | " | 18A | 1 | " | 46 | 1 | " | 137 |

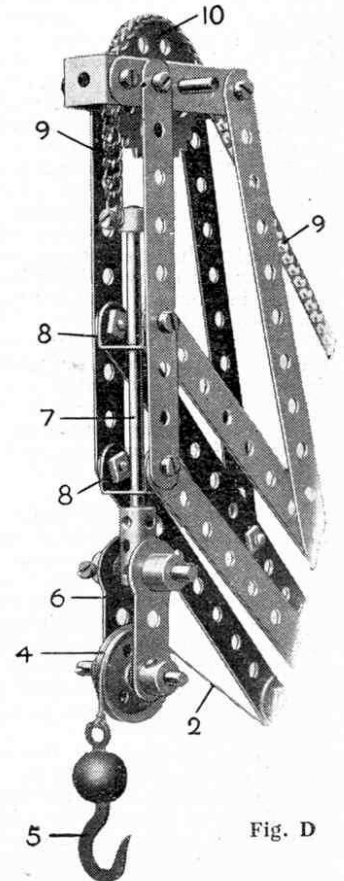


Fig. D

How Cranes Help Trade

Port Elizabeth, a seaport town some 400 miles east of Cape Town, is the second city in the colony and is situated on Algoa Bay, about 7 miles south of the mouth of the Zwartkop River. It is built along the base and up the rocky slopes of hills that rise to a height of 200 ft. above the bay.

The Port entirely owes its prosperity to its harbour and it has become the centre for the trade of the whole of the

interior of the country lying to the south of the great Zambesi. Previously there were no convenient landing places and so it was impossible for ships to load or unload. Some improvements in this respect were made in 1881 when the old pier was extended to a total length of 900 ft. and a second pier 800 ft. in length was constructed. Since that date even more extensive works have been carried out, and the harbour is now one of the finest in South Africa.

It is interesting to think of the indirect

part that Titan cranes have thus played in developing the trade of this wonderful colony—the cranes build the harbour, the harbour enables ships to load and unload, and the town becomes a leading port and the centre of trade for a wide and prosperous area. This is only one instance, of course, of how cranes help the engineer in his work, the execution of which would be quite impossible without them. No wonder, then, that cranes of all types are perhaps the most popular models among Meccano boys.