

# A NEW MECCANO MODEL

## PONTOON CRANE

ELSEWHERE in these pages mention is made of "Crane Lighter No. 4," the immense Pontoon Crane belonging to the British Admiralty, which was illustrated and described in the "*Meccano Magazine*" for September 1921. This crane has been carefully copied in the accompanying model, and the result must undoubtedly be considered as yet another splendid Meccano achievement.

Before proceeding with our description of the model it would be of service perhaps to recall the chief characteristics of "Crane Lighter No. 4." The crane is mounted on a pontoon 242 ft. in length and 86½ ft. in breadth. It is capable of lifting its load of 250 tons to a height of 77½ ft. above the level of the sea, and has a reach of 100 ft. radius. The base of the crane rotates and rests upon rollers, which have a path of 50 ft. in diameter.

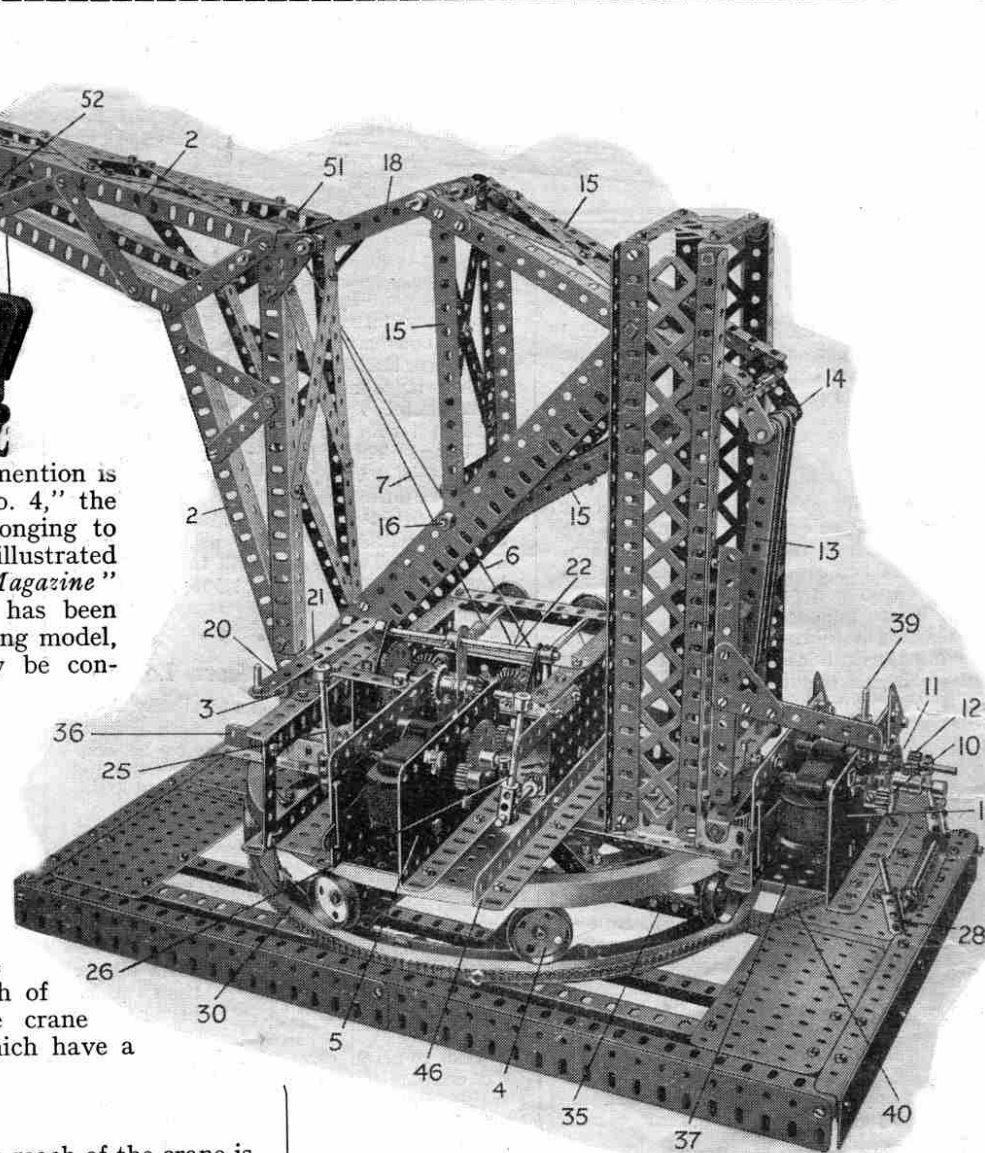
### A Large Working Area

By raising or lowering the jib the reach of the crane is altered, thus enabling loads to be picked up from the deck of the pontoon at, say, a reach of 50 ft., swung round and lowered into place at a reach of 100 ft. The crane, as erect as possible, picks up its load and swings round in line with the place where the load is to be dropped. The jib is then lowered, extending the reach of the load as it hangs, until it is immediately over the spot where it is finally deposited.

Hauling is accomplished by steel ropes, the maximum effort being made with the jib inclined at an angle of 40 or 45 degrees to the horizontal. When a heavy load is on, both steam and hydraulic brakes control the movements with wonderful precision.

### The Meccano Model

Those of our readers of sufficiently long standing who are able to turn up "*M.M.*" No. 20 and compare the illustration on page 6 with our new Meccano model



will be struck by the accuracy and realism of its reproduction in Meccano. Every movement of the original has not only been carefully copied, but identical methods are employed to bring about the required results, with the exception that in the Meccano model electricity takes the place of steam engines as the source of power. In this connection it may be mentioned that this model incorporates two electric motors—a unique arrangement that has not hitherto been introduced into any other published Meccano model. The two motors function quite separately from each other and are employed for entirely different purposes. The use of separate motors eliminates a great deal of gearing that would otherwise be necessary. Both the motors may, of course, be run off the same accumulator. The model is complete in every detail—the wonderful rocking-bar, giving great leverage and movement at the expenditure of the

minimum of effort—the graceful jib, with its two pulley blocks; the wheel and roller race, to minimise friction, and the screw mechanism—by which the jib is raised or lowered—perfectly demonstrated by the Meccano Threaded Rods.

We strongly advise every boy to build this fine model if possible, for it affords endless amusement as well as imparts very sound ideas on the general construction of giant cranes such as the one from which it is modelled.

### Constructing the Model

The construction of the base, jib, etc., of the Crane may be clearly followed in the general view.

The wheel race (4) is identical to that used in the Hammer-head Crane and is clearly shown in the section of that model shown in Fig. B. It will be seen from this illustration that the lower race (30), formed of Channel Segments, is secured to the base, and an upper race (31) is bolted to the body of the model.

The spider frame (32) carries a series of Flanged Wheels (33), which run on the edges of the upper and lower races (30 and 31). Both the spider frame (32) and the upper race (31) swivel freely round a vertical Rod (34) which is secured in a Bush Wheel bolted to the centre  $18\frac{1}{2}$ " Angle Girder (35) in the base of the Crane. A Collar with set-screw should be placed on the Rod (34) above the Face Plate of the upper race (31). The spider frame (32) is shown in detail in Fig. A.

### Rotating the Crane

Two  $12\frac{1}{2}$ " Angle Girders (36) are bolted to the upper race (31) and the  $5\frac{1}{2}$ "  $\times$   $3\frac{1}{2}$ " Flat Plate (37) secured in the last holes at one end of the Girders (36). This Plate (37) carries the Electric Motor (1) which drives a secondary Rod (2a Fig. C) by means of the Pinion (10) and Gear Wheel (11).

The Rod (2a) which carries a further Pinion (27), slides in its bearings, and is arranged so that on operation of the lever (28), it alternatively engages

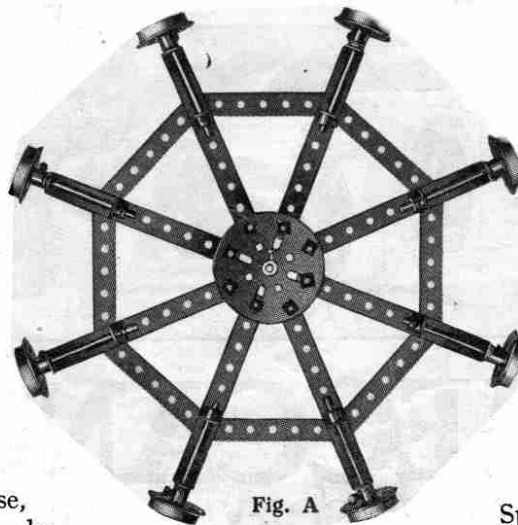


Fig. A

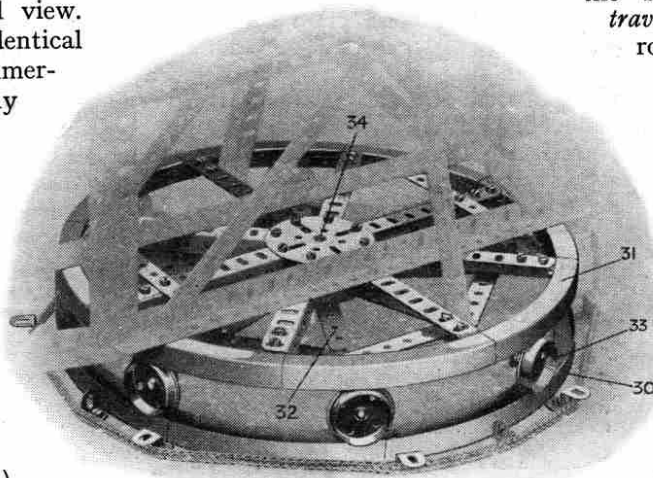


Fig. B

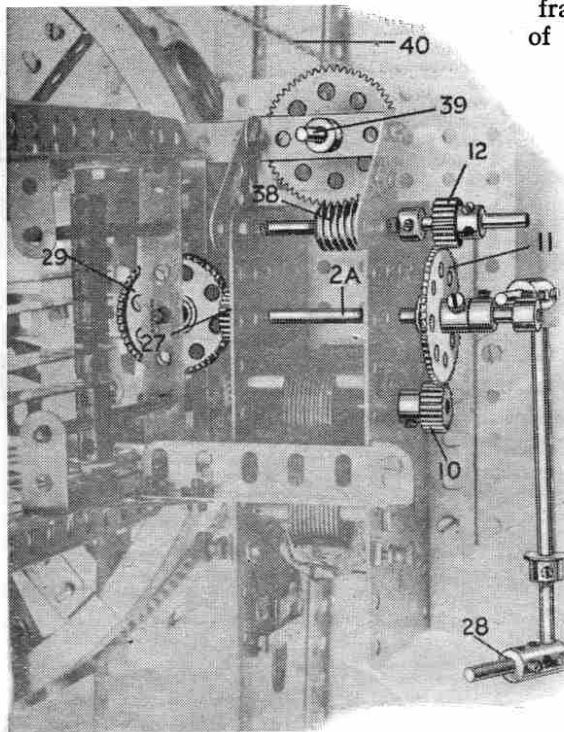


Fig. C

a Contrate Wheel (29) or the Pinion (12), although the Gear Wheel (11) remains constantly in mesh with the Motor Pinion (10).

A Worm Wheel (38) on the Rod of the Pinion (12) engages with a Gear Wheel on a vertical Rod (39).

On the lower end of the Rod (39) is mounted a 1" Sprocket Wheel engaging the Sprocket Chain (40) which passes firmly round the lower fixed race (30). Thus by throwing the Gear (11) into mesh with the Pinion (12) the Sprocket Wheel on the Rod (39) is rotated, and since the Sprocket Chain (40) tends to grip the base (30) the Sprocket Wheel travels round the Chain (40), so rotating the Crane.

### Operating the Jib

Now turn to Fig. F. The Contrate Wheel (29), which may be engaged by the Pinion (27), is mounted on a short Rod, to which a 1" Gear Wheel (41) is secured also. The latter meshes with two other Gears (42 and 43) mounted on the Threaded Rods (44) on which are journaled Threaded Couplings (45). Four  $5\frac{1}{2}$ " Strips (13) are pivotally connected to these Couplings and to the Rod (14) carried on the triangular framework (15, see general view of model).

This framework (15) is pivoted at (16) and connected to the Jib (2) by the Links (18). The Jib (2) is mounted on a Rod (3, Fig. D).

It will now be seen that on moving the lever (28) so that the Pinion (27) is brought into gear with the Contrate (29), the Threaded Rods (44) are rotated and the Threaded Couplings (45) move up or down, according to the direction of the Motor (1), so causing the Jib to be elevated or lowered.

### The Hoisting Blocks

The other Electric Motor (5) is mounted in a framework (46, Fig. E) formed by  $9\frac{1}{2}$ " Angle Girders bolted to Flanged Plates (47) which in turn are bolted to the transverse  $12\frac{1}{2}$ " Angle Girders (36). This motor

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**The New Meccano Pontoon Crane**—(continued from page 123)

drives through Bevels (19, 23 and 24) either one or other of the axles (48 and 49).

The change-over is effected by means of the lever (20) pivoted at (21) which slides a Rod (22), this in turn sliding the shaft carrying the Bevels (19) to which it is connected by a Crank (50). Thus if the lever (20) throws one of the Bevels (19) into gear with the Bevel (23) on the Rod (48), the Pulley Block (9) is raised or lowered by means of the cord (7) which passes over one of the 1" Pulleys set between the two Bush Wheels (51) and over another Pulley similarly situated at (52); from there it is led to one of the Pulleys in the block (9), thence round the second Pulley at (52) and

then over the second Pulley in the Block (9), finally being secured to one of the Bush Wheels at (52).

In a similar manner the Pulley Block (8) may be operated from the Rod (49), the cord (6) from which is led over the second Pulley at (51) to the Pulley in the end of the Jib (2); from there it passes over a  $\frac{1}{2}$ " Pulley in the Block (8) and is secured to the Jib (2).

The shafts (48 and 49) carry at their extreme ends two 1" Pulleys, the grooves of which are gripped by

cords tied to Cranks secured to two 8" Rods arranged on either side of the Motor (5). These 8" Rods carry Couplings and shorter Rods (25 and 26) which act as brake levers in controlling the loads on the Pulley Blocks (8 and 9).

**NEXT MONTH:—  
AUTOMATIC BAGATELLE TABLE**

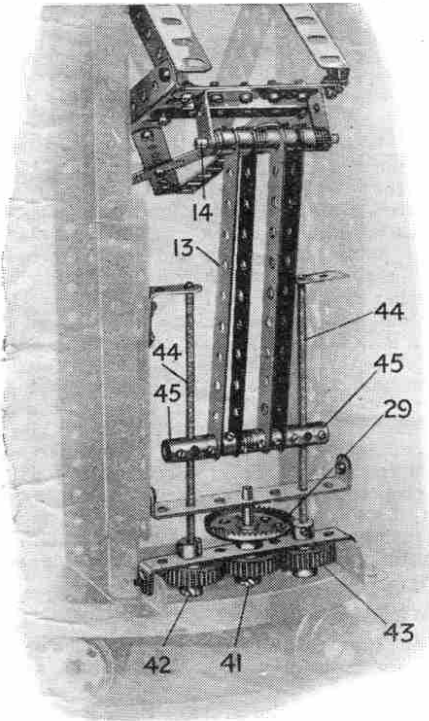


Fig. F

**List of parts required ;**

12 of No. 2	1 of No. 17	1 of No. 53
11 " " 2A	3 " " 18A	1 " " 57
12 " " 3	8 " " 20	1 " " 57B
15 " " 4	2 " " 22	62 " " 59
4 " " 5	7 " " 22A	3 " " 62
1 " " 6	1 " " 23	6 " " 63
3 " " 6A	5 " " 24	4 " " 70
11 " " 7A	4 " " 26	3 " " 76
8 " " 8	5 " " 27A	2 " " 80
8 " " 8A	4 " " 30	1 " " 94
6 " " 8B	3 " " 31	1 " " 96
2 " " 9	1 " " 32	1 " " 97
10 " " 9A	135 " " 37	2 " " 99
1 " " 9B	58 " " 38	4 " " 103A
1 " " 9D	1 " " 40	4 " " 103B
4 " " 12A	1 " " 45	1 " " 103F
16 " " 12B	1 " " 48	3 " " 111
2 " " 13A	1 " " 48A	16 " " 119
2 " " 15	4 " " 48B	2 " " 126
5 " " 15A	2 " " 48D	2 " " 126A
6 " " 16	2 " " 52	5 " " 133
13 " " 16A	2 " " 52A	

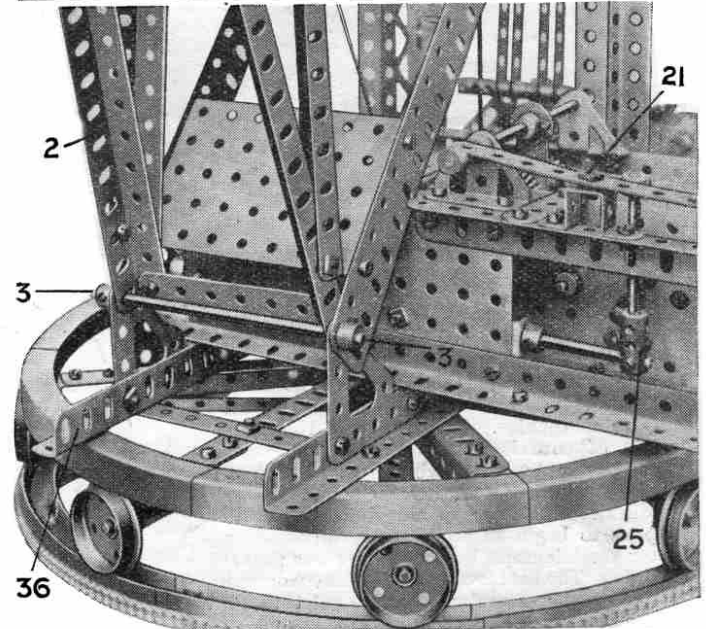


Fig. D

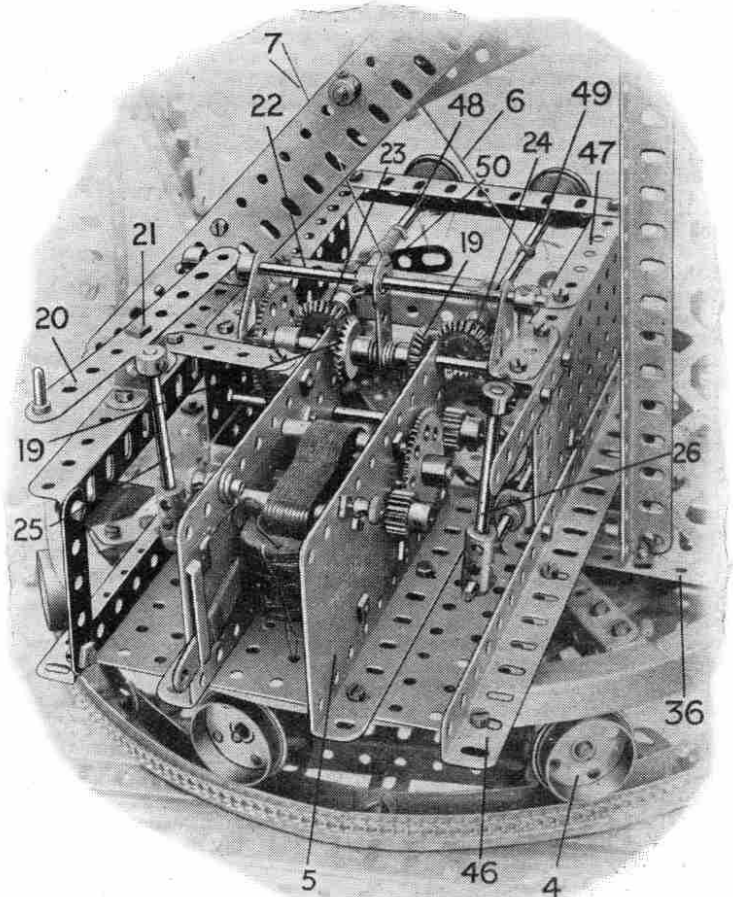


Fig. E