MODEL OF THE MONTH

ROTATING BIG WHEEL

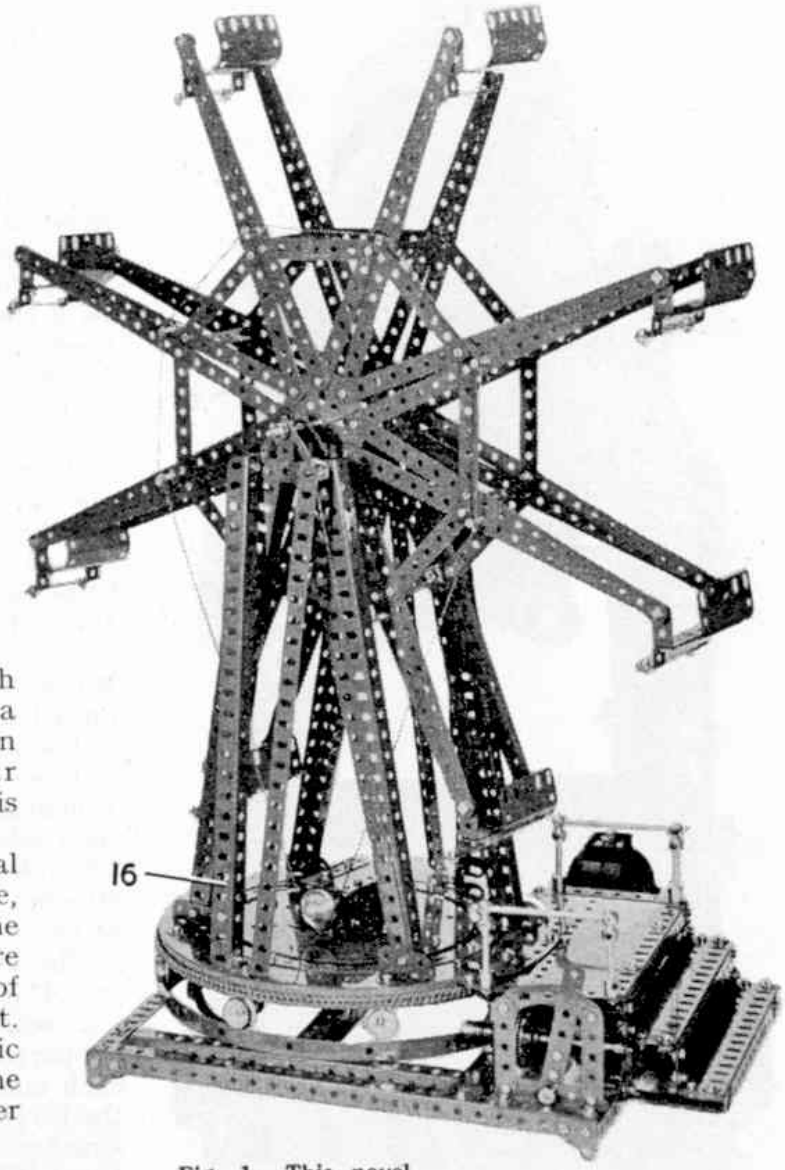

Fig. 1. This novel type of Big Wheel makes a splendid subject for the Model of the Month.

AMUSEMENT machine makers and fairground owners are constantly seeking new and more exciting rides for the thrill-seeking public, and with this end in mind a Big Wheel of a novel kind has been assembled in Battersea Pleasure Park. Our model this month is based on this machine.

The general design of the actual Wheel follows conventional practice, but instead of being fixed to the ground the supporting columns are attached to the rotating member of a large diameter roller bearing unit. In the real machine two electric motors are used, one to turn the Wheel on its axis and the other connected to bogie units in the roller bearing to rotate the entire superstructure.

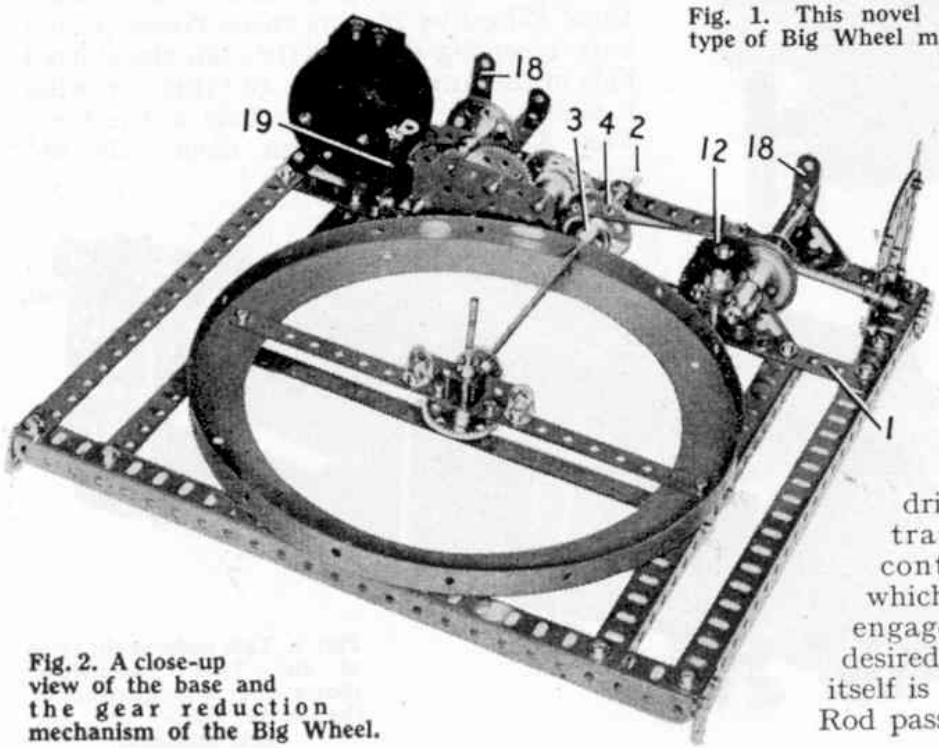

Fig. 2. A close-up view of the base and the gear reduction mechanism of the Big Wheel.

For the convenience of model-builders who have only one Electric Motor, our model uses a single E020(S) Electric Motor that provides power for both the drives. The drive to the roller bearing is transmitted by a lever-controlled friction clutch, which enables this drive to be engaged or disconnected as desired. The drive to the Wheel itself is transmitted by a vertical Rod passed through the centre of

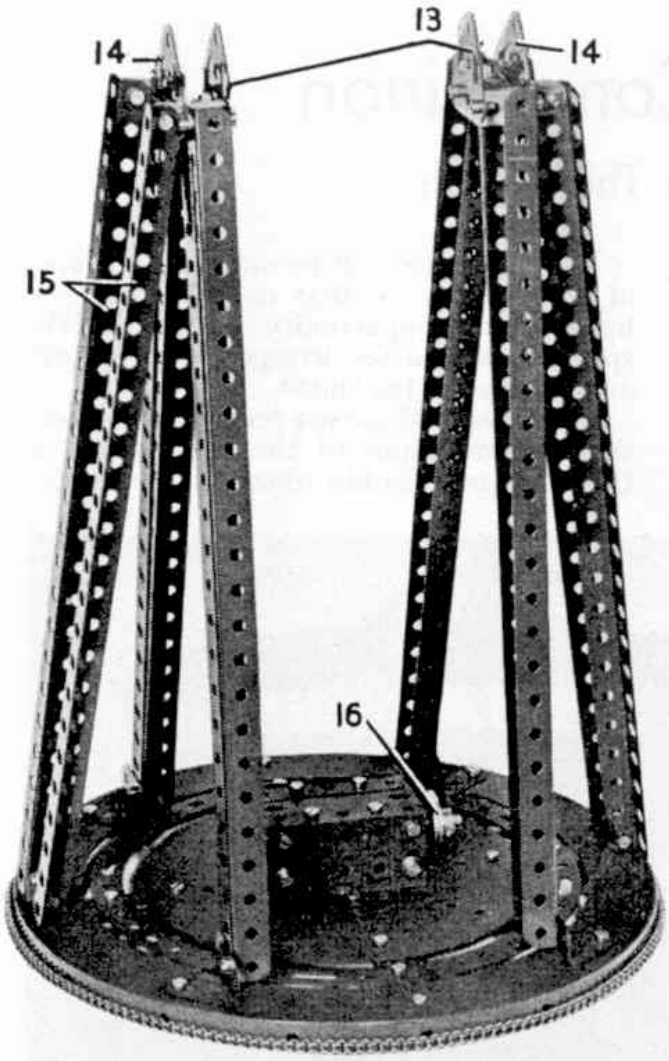

Fig. 3. The supporting columns and the upper member of the roller bearing.

the roller bearing unit. This Rod is geared to a horizontal Rod, and a Pulley on the latter is connected by a Cord belt to the Wheel. The Cord is passed round Bolts fitted to the spokes of the Wheel, to give the same effect as a large diameter pulley.

The triangular arrangement of the supporting columns for the Wheel is noteworthy. It provides a sturdy structure, but the weight is carried directly over the rollers of the bearing, so that the centre section of the bearing does not actually support the superstructure and is required only to locate the bearing member on its axis.

Readers wishing to build the Big Wheel should write to the Editor for full constructional details and a list of the parts required, enclosing a 2d. stamp for postage. Overseas readers in Canada, Australia, New Zealand, South Africa, Ceylon, Italy, Rhodesia and the United States of America can obtain copies of the *current* Model of the Month instructions by writing to the main Meccano agents in those countries, enclosing suitable stamps for postage. We advise model-builders to send for the instructions right away. The main Meccano model-building season is now well under way, and there is sure to be a big demand for details of this attractive model, construction of which will provide pleasant occupation for a winter evening.

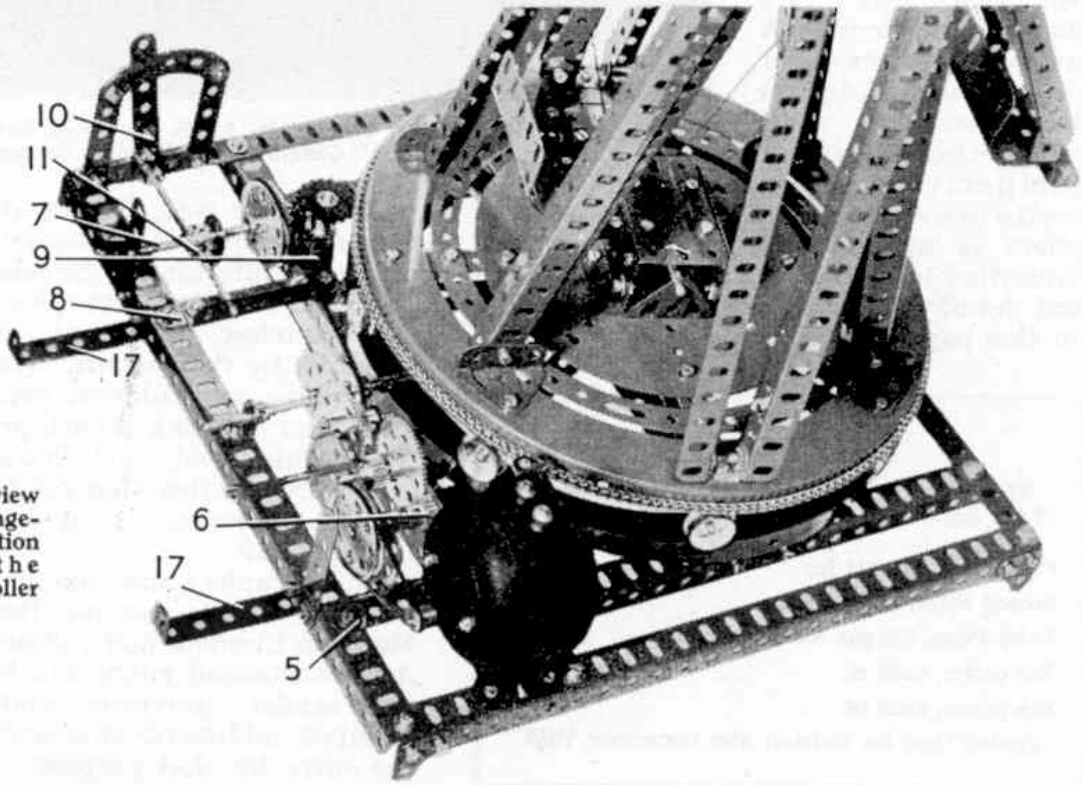

Fig. 4. This view shows the arrangement of the friction clutch and the drive to the roller bearing.

MODEL OF THE MONTH

BIG WHEEL

Illustrated in the December 1957 issue of the Meccano Magazine

Details of the Base

The base structure is made by bolting together four 12½" Angle Girders to form a square, with 1" Corner Brackets attached to the corners to raise the structure slightly. A 12½" Angle Girder 1 is bolted across the square and two 9½" Angle Girders are arranged between the Girder 1 and one side of the base. A 9⅞" diameter Flanged Ring is bolted to the Girders as shown, and a 9½" Strip with a Double Bent Strip attached centrally to it is fixed across the Flanged Ring. Another 9½" Strip is bolted to 1½" Angle Girders fixed to the 9½" Angle Girders.

A 3" Rod mounted in the 9½" Strips and the Double Bent Strip carries a 1½" Contrate and is held in place by a Collar. The Contrate is spaced from the upper 9½" Strip by four Washers, and engages a ¾" Pinion on an 8" Rod 2. This Rod is mounted in the Flanged Ring, in an Angle Bracket bolted to the base, and in a 2½" Strip attached to the upper 9½" Strip by Angle Brackets. The Rod carries a 1" Pulley 3 and a 57-tooth Gear 4.

Arrangement of the Roller Bearing

The hub of the bearing "spider" is a Face Plate, and to this eight 3½" x ½" Double Angle Strips are bolted radially. Each Double Angle Strip supports a 4½" Rod in its lugs, and each Rod carries a Collar and a ¾" Flanged Wheel with its boss spaced from the Double Angle Strip by four Washers. The boss of the Face Plate is free to turn on the centre 3" Rod, and the Flanged Wheels must rest freely on the upper edge of the Flanged Ring.

The Driving Mechanism

An E020(S) Electric Motor is bolted to one of the base Girders and to a 3½" Strip 5. The Motor pulley is connected by a Driving Band to a 1½" Pulley on a 1½" Rod, which carries a ½" Pinion 6 and is mounted in two 3" x 1½" Flat Plates. These Plates are held by nuts on two 3½" Screwed Rods, which are fixed by further nuts in the Girder 1 and one of the outer Girders of the base.

Pinion 6 drives a 57-tooth Gear on a 1½" Rod also mounted in the Flat Plates, and a ½" Pinion on the same Rod engages another 57-tooth Gear on a further 1½" Rod. A ¾" Pinion on the latter Rod is arranged to mesh with the Gear 4.

Pulley 3 is connected by a Driving Band to a 1½" Pulley loosely mounted on a 4" Rod 7 supported in 1½" Corner Brackets. The Rod carries a Worm Gear, a 1" Pulley with Rubber Ring and a Collar fixed in position, and a Compression Spring and a ¾" Washer. The Compression Spring is placed next to the boss of the 1½" Pulley and the ¾" Washer is arranged next to the Compression Spring.

A 4" Rod is mounted in a 2½" Angle Girder bolted to the frame and in a 2½" Angle Girder supported by a 3½" Strip 8. One of the bolts fixing Strip 8 in place secures also a 1½" Strip and a Double Bent Strip 9, and the other bolt carries two Washers to space the Strip from the frame

Two 2½" Strips bolted to the 2" Angle Girder support two 2½" Stepped Curved Strips that form a quadrant for a lever 10. This lever is a 3" Strip bolted to a Crank fixed on the 4" Rod. A Coupling 11 on the same Rod is fitted with two bolts that bear against the ¾" Washer on Rod 7. By moving the lever the loose 1½" Pulley is pressed against the Rubber Ring on the fixed 1" Pulley, to complete a friction drive to the Rod 7. The Worm on Rod 7 meshes with a ½" Pinion on a 2" Rod mounted in the 1½" Strip and the Double Bent Strip 9. The 2" Rod carries a 1" Sprocket 12.

Assembly of the Supporting Columns

Two 9½" Strips are bolted across a 9⅞" diameter Flanged Ring and a 7½" Circular Strip and a 6" Circular Plate are bolted to the Strips. Four Trunnions are fixed to the Flanged Ring, and each is used to support the lower ends of two 12½" Angle Girders. The two Girders are joined by a Fishplate at their upper ends, and the pairs of Girders on each side are connected by a Flat Trunnion 13. Another Flat Trunnion 14 is attached to Double Brackets bolted to the Girders.

Two 12½" Angle Girders 15 on each side are fixed to a Double Bracket bolted to the Flanged Ring, and are attached to Angle Brackets at their upper ends.

The Flanged Ring is placed on the central 3" Rod of the base, so that the Ring rests on the Flanged Wheels of the bearing. A ¾" Pinion is fixed on the Rod to hold the Flanged Ring in place. The ¾" Pinion engages a ¾" Contrate on a 3½" Rod fitted with a 1" Pulley 16. The 3½" Rod is mounted in Trunnions bolted to the 6" Circular Plate. A cover over the gearing is provided by a 2½" x 1½" Flexible Plate, two 2½" Flat Girders and four 2½" Angle Girders arranged as shown in the pictures. A length of Sprocket Chain pressed tightly round the upper Flanged Ring engages the teeth of the Sprocket 12.

Construction of the Wheel

Each side of the wheel is made by bolting sixteen 9½" Strips to a Face Plate as shown, joining the outer ends of the Strips in pairs to form eight spokes. The spokes are connected by a ring of eight 3½" Strips, and the two completed sides are joined by eight 2½" x ½" Double Angle Strips Each carriage consists of a U-section Curved Plate opened out slightly and fitted with a 2½" x 1" Double Angle Strip and two ½" Reversed Angle Brackets. The Reversed Angle Brackets support a 2½" Strip and the lugs of the Double Angle Strips are lock-nutted to the ends of the spokes of the wheel. A ½" Bolt is attached to each spoke by two nuts, and a length of Cord is passed round these Bolts and round the 1" Pulley 16.

The wheel is mounted on a 6½" Rod held by Collars in the Flat Trunnions 13 and 14.

The Steps and Loading Platform

The steps are formed by 7½" Angle Girders and 7½" Flat Girders bolted together, and they are attached to two 2½" x ½" Double Angle Strips 17 and two 2½" Strips 18. The platform consists of two 5½" x 2½" Flexible Plates and two 2½" x 1½" Triangular Flexible Plates bolted together and attached to the upper step and to two 3½" Strips fixed to the step. The inner edge of the platform is formed by two 4" Stepped Curved Strips attached to the Plates by three Fishplates. The handrails are made from Rods supported in Rod Sockets and Handrail Couplings. The platform is bolted to an Angle Bracket fixed to a 2" Strip 19, which is connected to the base by another Angle Bracket.

PARTS REQUIRED

36	of No.	1A	3	of No.	22	1	of No.	96
4	" "	3	3	" "	25	2	" "	103F
1	" "	4	3	" "	26	3	" "	103K
13	" "	5	3	" "	27a	3	" "	109
1	" "	6	1	" "	28	8	" "	111A
1	" "	6A	1	" "	29	18	" "	111C
17	" "	8	1	" "	32	1	" "	120B
2	" "	8A	294	" "	37A	16	" "	125
5	" "	8B	228	" "	37B	6	" "	126
6	" "	9D	64	" "	38	4	" "	126A
2	" "	9F	2	" "	38D	2	" "	133
7	" "	10	1	" "	40	4	" "	133A
6	" "	11	2	" "	45	4	" "	136A
9	" "	12	8	" "	46	1	" "	145
1	" "	13A	10	" "	48A	1	" "	146
1	" "	14	8	" "	48B	1	" "	155
8	" "	15A	21	" "	59	2	" "	167B
2	" "	15B	1	" "	62	4	" "	179
3	" "	16	1	" "	63	1	" "	186
1	" "	16B	2	" "	73	1	" "	186A
1	" "	17	2	" "	80A	1	" "	188
7	" "	18A	2	" "	89B	2	" "	192
8	" "	20B	2	" "	90A	8	" "	199
2	" "	21	1	" "	94	2	" "	221

1 E020(S) Electric Motor.