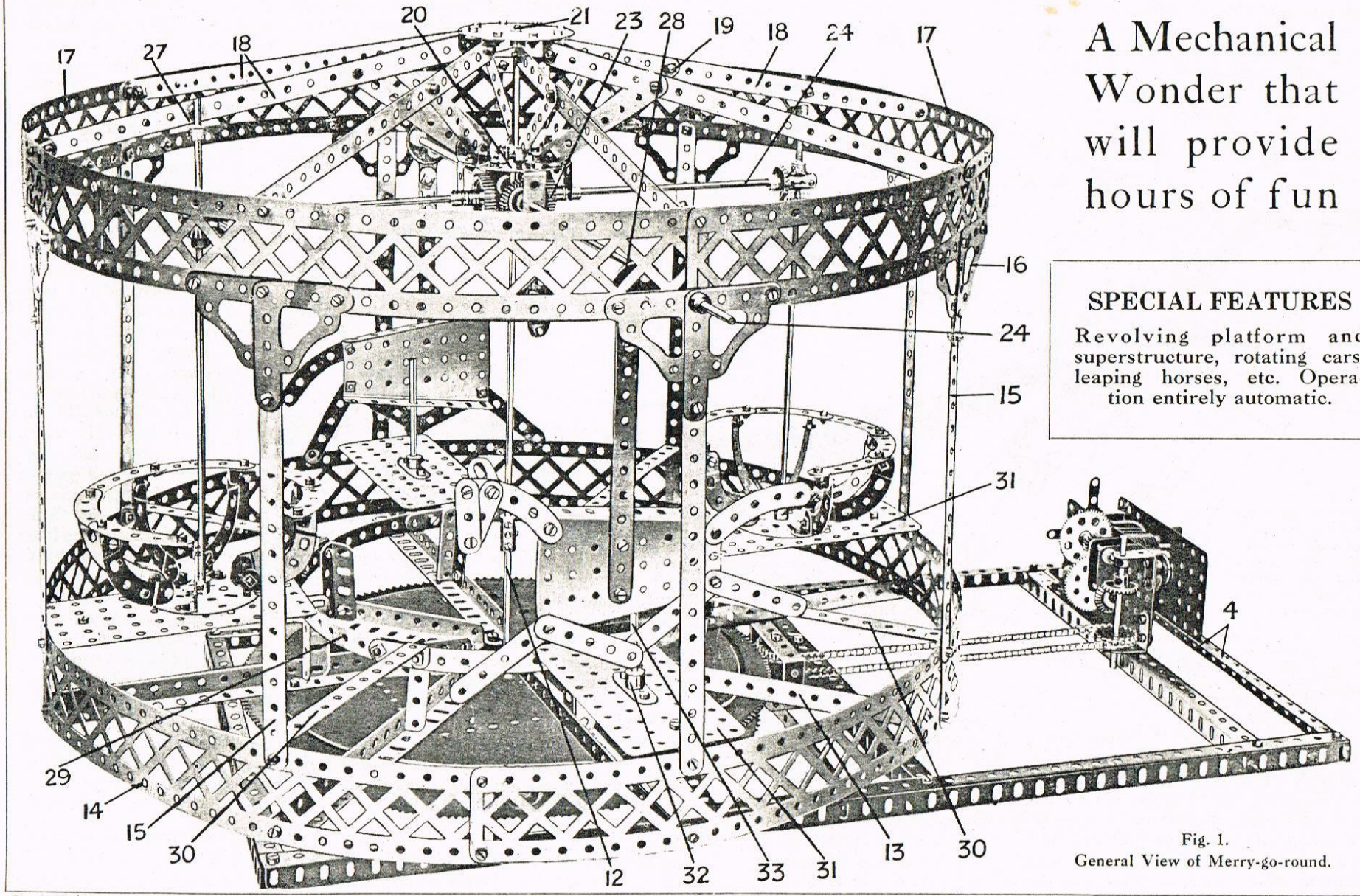
The Meccano Merry-go-round

A Mechanical Wonder that will provide hours of fun



SPECIAL FEATURES

Revolving platform and superstructure, rotating cars, leaping horses, etc. Operation entirely automatic.

Fig. 1.
General View of Merry-go-round.

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From times beyond memory the merry-go-round has been a source of pleasure to young people. The progress of civilization has changed it, of course, as it has changed almost everything else, and it is difficult to recognize the huge whirling structures of to-day as the direct descendants of the creaking contraption which, at the instance of a perspiring operator, was induced to revolve slowly with its load of half-a-dozen children. Yet from this humble source have sprung all the hurtling dragons, flying boats, and similar ingenious devices with which our modern fairs are provided.

In its original form, however, with a few alterations such as increased size and the use of steam or electric power, the old favorite is as popular as ever, and it is a poor fair that does not boast an old-fashioned merry-go-round. Young people who, having attained the mature age of sixteen or seventeen, are restrained by an overburdening sense of responsibility from taking part in the general "fun of the fair," often yield to the temptation to bestride a glorified quadruped bearing the somewhat fanciful inscription "Sally" or "Dobbin," and even staid old men who, if they have smiled at all during the last ten years, do not betray the fact by their faces, have been known to cast dignity to the winds and take a ride "for old times' sake." Modern amusement devices cannot completely oust from our fairs the old-fashioned merry-go-round.

The Meccano Merry-go-round is an excellent example of the adaptability of the Meccano system. The different movements, which include the rotating superstructure, the revolving cars, and the leaping horses, are all faithfully reproduced as in the prototype of the model, and its appearance when working gives an effect of realism that can only be fully appreciated by those who have actually seen the model in operation.

The base of the merry-go-round (Fig. 2) is built of two 24½" Angle Girders joined by nine 12½" Angle Girders 1, 2, 3, 4. A 5½" by 2½" Flat Plate 5, bolted to the Girders 3, carries two Trunnions joined by a 2½" by 1" Double Angle Strip 6, which, together with the Plate 5, provides bearings for a short Axle Rod carrying a 1" Sprocket Wheel 7 and a special toothed wheel 8.

The Roller Bearing (Fig. 2).

The large Geared Roller Bearing on which the whole of the superstructure rotates may be purchased as a complete self-contained unit (part No. 167). It is suitable for incorporation in many different models, and comprises two large Geared Roller Races (9 in the illustration, Fig. 2), each about a foot in diameter, a Ring Frame, sixteen ¾" Flanged Wheels 11, sixteen Pivot Bolts with nuts, and a special Pinion. The small Flanged Wheels are journalled on the Pivot Bolts, which are secured round the outer edge of the Ring Frame, and the latter is inserted between the two Roller Races so that the Flanged Wheels run smoothly on a shoulder near the edge of the lower Race 9, which is bolted to the Girders 2, while the upper Roller Race, by means of a similar shoulder resting on the ¾" Flanged Wheels, revolves easily, yet steadily, about the Axle Rod 12. In this way no points in the moving surfaces are allowed to be in sliding contact with each other; hence friction is reduced to a minimum.

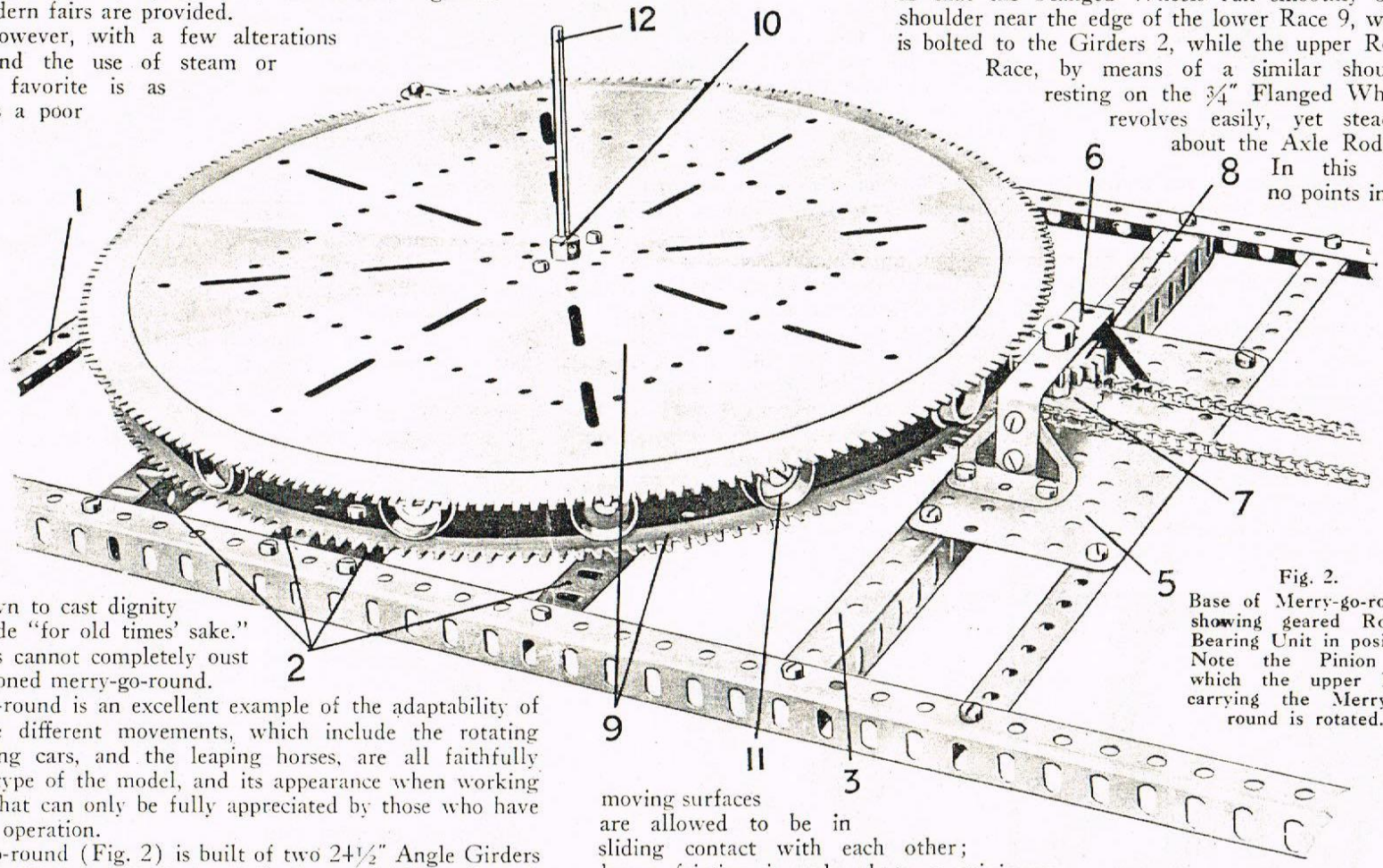

Fig. 2.
Base of Merry-go-round, showing geared Roller-Bearing Unit in position. Note the Pinion by which the upper Race carrying the Merry-go-round is rotated.

The Rod 12 is secured rigidly in the boss of a Bush Wheel that is bolted to the lower Roller Race 9, and passes through another Bush Wheel secured to the centre of the upper Roller Race. The set-screw of the latter Bush Wheel should be removed so that the upper Race is quite free to revolve about the Rod 12. The revolving portion of the model is built on to a base formed of eight 9½" Angle Girders 13 bolted to the upper Geared Race 9 of the Roller Bearing and having their outer ends secured by means of Angle

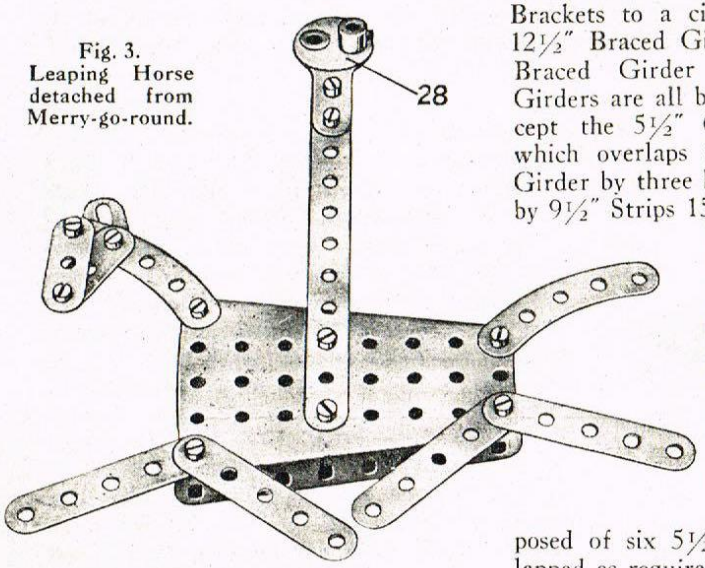

Fig. 3.
Leaping Horse detached from Merry-go-round.

Brackets to a circle formed of five 12½" Braced Girders and one 5½" Braced Girder (Fig. 1). These Girders are all bolted end to end except the 5½" Girder, one end of which overlaps the adjoining 12½" Girder by three holes, and are joined by 9½" Strips 15 and Architraves 16 to a similar circle of Braced Girders 17, connected in their turn by means of the 9½" Strips 18 and the 3½" Strips 19 to Angle Brackets bolted to two Face Plates 20 (see Figs. 1, 4).

A circle composed of six 5½" Strips 29, overlapped as required, is carried on eight vertical 2" Angle Girders bolted to the Girders 13, and is connected to the Braced Girders 14 by four 5½" by ½" Double Angle Strips 30.

The bosses of the Face Plates 20 form journal bearings for an 11½" Axle Rod 21 to which is secured a Contrate Wheel 22 (Fig. 4) that engages the teeth of the four 1" Gear Wheels 23 on the Rods 24. The Axle Rod 21 is extended by means of a Coupling 25 and the short Rod 12, which is secured in the boss of the lower Geared Race of the Roller Bearing, so that the Contrate Wheel 22 remains immovable, and the revolving structure causes the Gear Wheels 23 to travel around the Wheel 22, at the same time rotating about their own axes and operating the jumping horses and revolving cars.

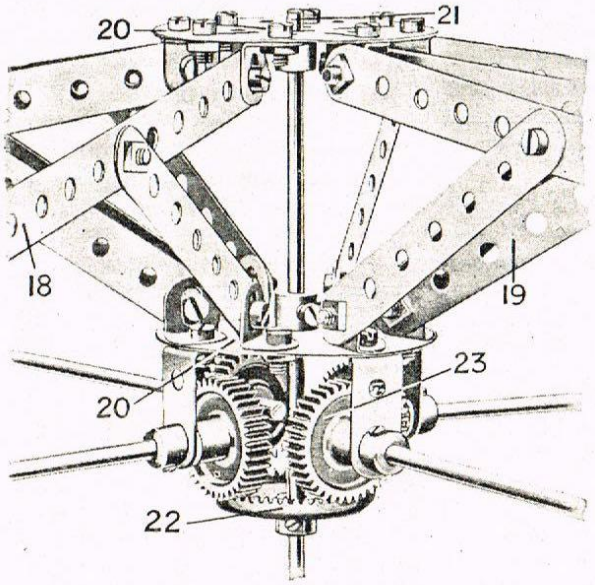

Fig. 4.
Operating Mechanism at top of Main Stem.

Leaping Horses.

The horses on the merry-go-round are no common hacks: indeed they are rather remarkable creatures, and the fact that they bear only a slight general resemblance to the animals whose name they boast will, unless our experience of merry-go-rounds is at fault, make them all the more suitable for incorporation in this model. The body of each horse, as will be seen from Fig. 3, consists of a Sector Plate, and is provided with a tail (a 2½" large radius Curved Strip) and four 2½" Strips representing legs. The passenger is expected to sit astride the horse immediately behind the supporting Strip. During "rush hours" no doubt an extra passenger could be squeezed in between the front of the supporting Strip and the horse's neck. The gracefully arched but rather ill-nourished neck may be distinguished from the tail by the fact that it bears a shapely head (two 1½" Strips) surmounted by a Flat Bracket with which the poor beast must do his best to hear. Much fun may be obtained by adjusting the angles of the neck, tail, and legs to represent the characteristic trotting and galloping attitudes.

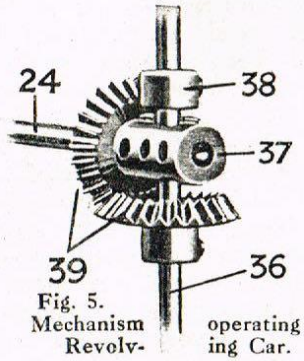

Fig. 5.
Mechanism operating Revolving Car.

Each of the horses is carried on a 5½" Strip bolted to a Single Throw Eccentric 28, which, secured to one of the Rods 24, imparts a realistic leaping motion to the horse. One end of the horizontal Rod 24, on which the Eccentric 28 is mounted, is journalled in a 1" by 1" Angle Bracket secured to the lower of the Face Plates 20, while the Braced Girders 17 and the Architraves 16 provide a bearing for the opposite end.

A 5½" by 2½" Flat Plate 31 is bolted to the Girders 14 and the Strips 29 by means of Angle Brackets, and carries a Double Arm Crank 32, in the boss of which is secured a 3" Rod 33 acting as a vertical guide for the leaping horse. The rod 33 passes through the lower flange

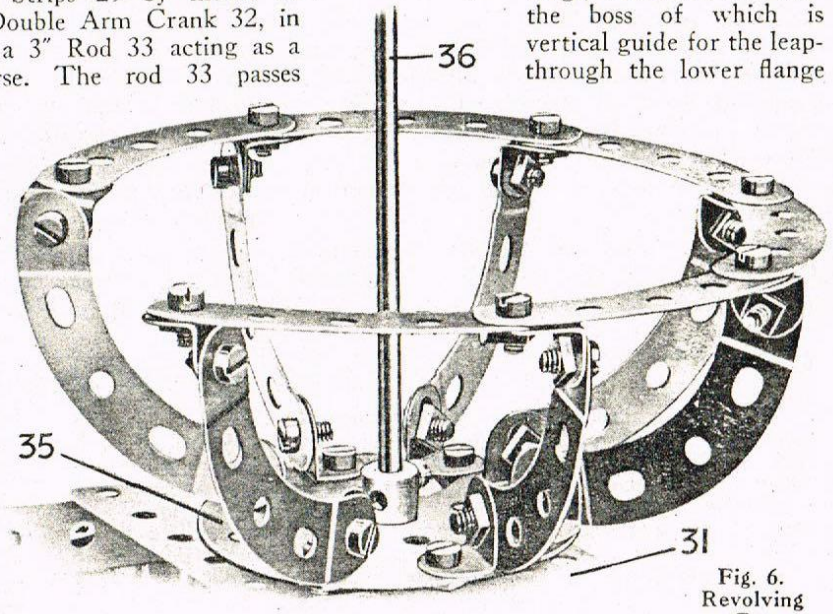

Fig. 6.
Revolving Car.

of the Sector Plate forming the body of the horse. This arrangement is identical for both horses, as can be seen in Fig. 1.

Revolving Cars.

Each revolving car (Fig. 6) comprises a Face Plate 35 to which seven 2½" small radius Curved Strips are affixed by means of Angle Brackets. Six 2½" large radius Curved Strips attached to the upper ends of the small radius Strips form an arm rest for the occupants of the car. An 11½" Axle Rod 36, secured in the boss of the Face Plate, is journalled in bearings consisting of the 5½" by 2½" Flat Plate 31 and an Angle Bracket 27 bolted to one of the 9½" Strips 18. This Rod 36 passes through the central transverse hole of a Coupling 37, in the longitudinal bore of which is journalled one end of the Rod 24. The Rod 36 is supported in the Coupling 37 by a fixed Collar 38, and carries a second fast Collar between the Face Plate 35 and the Flat Plate 31.

The Rods 24, 36 carry ¾" Bevel Gears 39 that are in continuous engagement with each other. Thus, as the whole upper structure revolves, the 1" Gear Wheels 23, rolling around the teeth of the Contrate Wheel 22, rotate the Axle Rods 24, and this movement, transmitted via the Bevel Gears 39 to the vertical Rods 36, causes the cars to spin round, while at the same time the horses, actuated by the Eccentrics 28, leap in the most approved merry-go-round fashion.

The effect produced by the variety of motions embodied in the model is remarkable. For this reason the Meccano Merry-go-round is an ideal model for attracting attention to window displays or Meccano Club exhibitions, etc.

Arrangement of the Gearing.

A Worm Wheel secured to the armature spindle of the Electric Motor (see Fig. 7) meshes with a 57-teeth Gear Wheel 40 on the Rod 44, to which is also secured a ½" Pinion 42 that engages a second 57-teeth Gear Wheel on the Rod 43. The drive is then led via a pair of ⅞" Bevel Gears to a 1" Sprocket Wheel 41, which is connected by an endless Sprocket Chain to the 1" Sprocket Wheel 7 (Fig. 2). The special 1" Pinion 8 is secured to the same Rod as the Sprocket Wheel 7, and by turning the upper Geared Race of the large Roller Bearing causes the platform and superstructure of the merry-go-round to revolve about the Rods 12, 21.

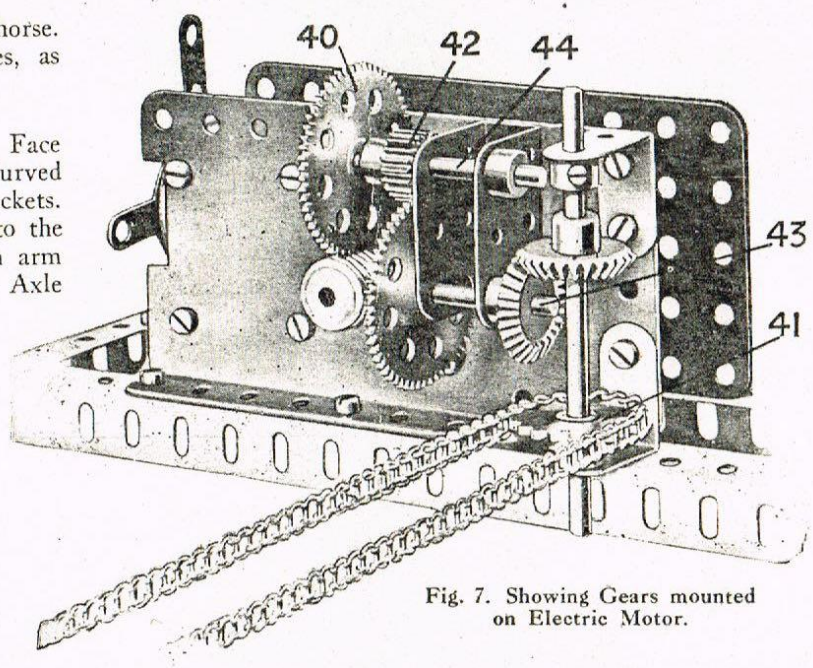

Fig. 7. Showing Gears mounted on Electric Motor.

It should be noted that the gearing just described was designed for use with the Meccano high-voltage Electric Motor, and is unsuitable for the 4-volt type. The latter is, however, quite powerful enough to operate the model at a considerable speed, and if it is desired to make use of the smaller Motor it is only necessary to omit the ½" Pinion 42 and the gears on the Rod 43, adding a ⅞" Bevel Gear on the end of the Rod 44 to mesh with a similar Bevel Gear on the vertical Rod that carries the Sprocket Wheel 41. By this means the total reduction of the gearing will be diminished to one-third of that afforded by the original arrangement.

The operation of the Merry-go-round is entirely automatic, and once the Motor has been started the model will work continuously without any attention whatever. The realism of its appearance will be greatly enhanced if the roof, floor and central part are filled in with suitably colored cardboard.

All gears and bearings in the Merry-go-round should be oiled at frequent intervals, particular attention being paid in this respect to the Geared Roller Bearing. If this is done, the model should work almost noiselessly and without any sign of shaking or rattling. The gearing has been so arranged that the Merry-go-round will operate at a speed proportional to that of its prototype, but if a greater speed is required, it is only necessary to make a slight alteration to the gearing similar to that already described, as the Electric Motor has an ample reserve of power.

Those boys who possess a sufficient number of parts will doubtless be able to improve the model considerably. For example, the revolving platform might be filed in with Flat Plates, and steps might be arranged around its sides.

List of Parts Required to Build the Meccano Merry-go-round.

17 of No.	1a	62 of No.	12	1 of No.	26	2 of No.	54	2 of No.	100
8 " "	2	6 " "	12a	2 " "	27a	12 " "	59	16 " "	108
8 " "	3	5 " "	13	6 " "	30	2 " "	62b	4 " "	109
8 " "	5	2 " "	14	1 " "	30c	3 " "	63	2 " "	126
4 " "	6a	1 " "	15	4 " "	31	5 " "	70	4 " "	126a
2 " "	7	2 " "	16	1 " "	32	16 " "	90	2 " "	130
7 " "	8	1 " "	16a	288 " "	37	14 " "	90a	1 " "	160
8 " "	8a	1 " "	16b	8 " "	38	2 " "	94	1 " "	167
8 " "	9e	1 " "	18a	1 " "	48a	2 " "	96	1 Electric	
2 " "	10	2 " "	24	8 " "	48d	10 " "	99	Motor	

Alternative Construction.

If desired Meccano built-up roller bearings may be substituted for the special Geared Roller-Bearing unit. Suitable built-up roller bearings are described in the "Standard Mechanisms Manual" (detail No. 101). If this form of construction is adopted the following alterations are necessary to the list of parts required. For part No. 167 substitute:—

8 of No.	2a	8 of No.	20	3 of No.	94
8 " "	3	76 " "	37	2 " "	109
8 " "	9a	16 " "	38	16 " "	119
16 " "	12b	8 " "	48	8 " "	125
8 " "	16a	8 " "	59		