New Meccano Model

Merry-go-round

EACH side of the base of the model consists of two 12½″ Angle Girders joined at their ends by 1½″ Angle Girders. The sides are filled in by three 5½″ × 1½″ Flexible Plates each, and they are then bolted together to form a square. The top of the base is filled in by four 12½″ × 2½″ Strip Plates and four 4½″ × 2½″ Flexible Plates, arranged as shown in Fig. 3 to leave a gap 3½″ square in the centre. Two 12½″ Angle Girders 1 are bolted underneath the top, and along one side four 12½″ Angle Girders are arranged to form steps.

The centre column consists of four 7½″ Angle Girders connected at the top by four 2½″ Strips and at their lower ends by four 2½″ Angle Girders 2. Each side of the column is filled in by two 4½″ × 2½″ Flexible Plates, and is strengthened at the centre by two 2½″ Strips. A 6″ Circular Plate 3 is attached to the top of the column by Angle Brackets, and a 1½″ Contrate is fixed to the centre of the Circular Plate by four ⅜″ Bolts. The Contrate is spaced from the Circular Plate by four Washers on each Bolt. A 5½″ × 3½″ Flat Plate is bolted to the Angle Girders 2, and this Plate is used to attach the column centrally to the base.

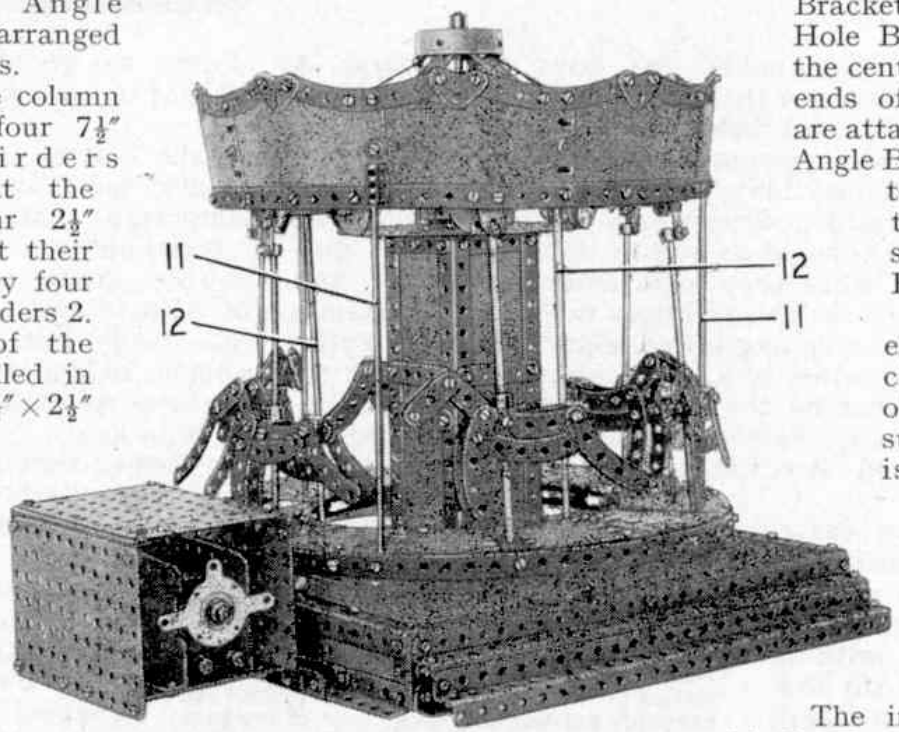

Fig. 1. A hobby horse Merry-go-Round, in which the horses are made to "leap" by a crank motion.

The rim of the rotating canopy consists of nine 4½″ × 2½″ Flexible Plates bolted end to end and strengthened along their lower edges by 4½″ Strips. The upper edge of the canopy is completed by nine 4″ Stepped Curved Strips joined by 1″ Corner Brackets and bolted to the Plates. Six spokes, each made from two 5½″ Strips placed face to face, are bolted radially to a Six Hole Bush Wheel 4 and are attached to the rim by Angle Brackets. A 2½″ × 1″ Double Angle Strip is fixed to each spoke and in it is mounted a 4½″ Rod 5. The Rod is held in the Double Angle Strip by Collars, and it carries a ¾″ Pinion 6, a 1⅛″ Flanged Wheel 7 and a Short Coupling 8. The canopy is completed by six 5½″ Strips, indicated at 9, and connected by Obtuse Angle Brackets to a Six Hole Bush Wheel at the centre. The outer ends of these Strips are attached to 1″ × ½″ Angle Brackets bolted to the rim of the canopy as shown in Fig. 2.

The outer edge of the circular floor of the rotating superstructure is made by curving a 3½″ and three 12½″ Strips and bolting them end to end. The inner edge of this floor consists of three Formed Slotted Strips and three 5½″ Slotted Strips, and is connected to the outer edge by six 2½″ × ½″ Double Angle Strips 10. The floor between each pair of Double Angle Strips is filled in by two 2½″ × 2½″ Flexible Plates and a 2½″ × 1½″ Triangular Flexible Plate, bolted together and attached to Angle Brackets.

The canopy and the circular floor are connected by three outer 8″ Rods 11 and three inner made-up rods 12. Each made-up rod consists of two 5″ Rods joined by a Rod Connector. The Rods 11 are held in Couplings attached by bolts to the canopy, and are fixed in Collars screwed on to bolts passed through the outer edge of the circular floor. Rods 12 are fixed in Collars attached by nuts and bolts to the Strips 9, and in Collars

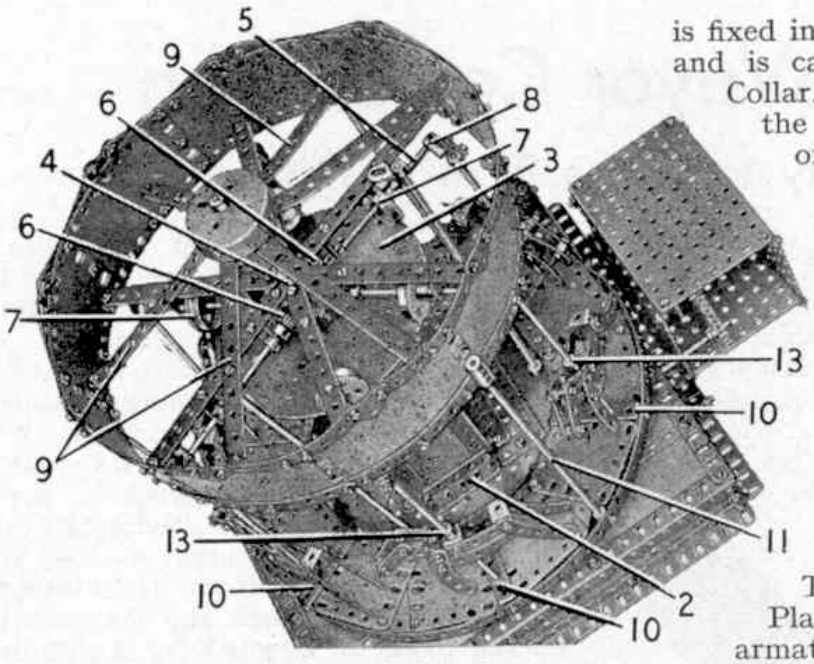

Fig. 2. Details of the crank mechanism that operates the leaping motion of the horses.

screwed on to bolts passed through the inner edge of the circular floor.

The six horses and their operating mechanisms are identical. The body of each horse consists of four $2\frac{1}{2}$" Curved Strips and the front and rear legs are further $2\frac{1}{2}$" Curved Strips. The neck and head are made from $1\frac{1}{2}$" Strips as shown. The two $1\frac{1}{2}$" Strips forming the head are connected at the front by a $\frac{3}{8}$" Bolt, with a Collar on the Bolt between the Strips. The sides of the body are connected by a Double Bracket and a Large Fork Piece 13.

Each horse is supported by a rod made from a 4" and a 3" Rod joined by a Rod Connector and fixed in the Fork Piece 13. This rod is free to slide in one of the Double Angle Strips 10, and it carries at its upper end a Collar. A bolt fitted with a nut is passed through a Fishplate and is screwed into the Collar. The nut is then tightened to fix the Fishplate and the Collar together, but the bolt must be at the lower end of the slotted hole in the Fishplate. A bolt is passed through each Fishplate, is fitted with a nut and is screwed tightly into one of the Short Couplings 8. The Fishplate must pivot freely on the bolt.

The main driving shaft is made from an $11\frac{1}{2}$" and a 2" Rod joined by a Coupling. It is fixed in the Bush Wheels of the canopy and is capped by a Boiler End and a Collar. The shaft passes freely through the boss of the Contrate at the top of the column and through the centre hole of the $5\frac{1}{2}$" × $3\frac{1}{2}$" Flat Plate. The lower end of the shaft is fitted with a $3\frac{1}{2}$" Gear 14. The Pinions 6 mesh with the $1\frac{1}{2}$" Contrate, and the Flanged Wheels 7 are free to run round the edge of the Circular Plate 3.

The housing for the E20R Electric Motor consists of two $3\frac{1}{2}$" × $2\frac{1}{2}$" Flanged Plates connected by $5\frac{1}{2}$" × $3\frac{1}{2}$" Flat Plates bolted to their flanges. The Motor is fixed to the Flanged Plates, and a $\frac{1}{2}$" Pinion on the armature shaft drives a 57-tooth Gear on a $2\frac{1}{2}$" Rod 15. A $\frac{1}{2}$" Pinion on Rod 15 engages a 57-tooth Gear on a $2\frac{1}{2}$" Rod that carries also a 1" Sprocket 16. A $7\frac{1}{2}$" Angle Girder 17 is bolted to one side of the housing, and is fixed to Double Brackets bolted to the base. A cover over the Motor is provided by a $5\frac{1}{2}$" × $3\frac{1}{2}$" Flat Plate supported by $5\frac{1}{2}$" Angle Girders.

The Sprocket 16 is connected by Chain to a 1" Sprocket on an $11\frac{1}{2}$" Rod 18. This Rod is supported in the Girders 1 and in the sides of the base and the Motor housing. A Worm on Rod 18 drives the $3\frac{1}{2}$" Gear 14.

Parts required for the Merry-go-round: 3 of No. 1; 18 of No. 2; 9 of No. 2a; 1 of No. 3; 12 of No. 5; 24 of No. 6a; 14 of No. 8; 5 of No. 8b; 2 of No. 9; 4 of No. 9e; 4 of No. 9f; 6 of No. 10; 8 of No. 11; 28 of No. 12; 6 of No. 12b; 6 of No. 12c;

(Continued on page 114)

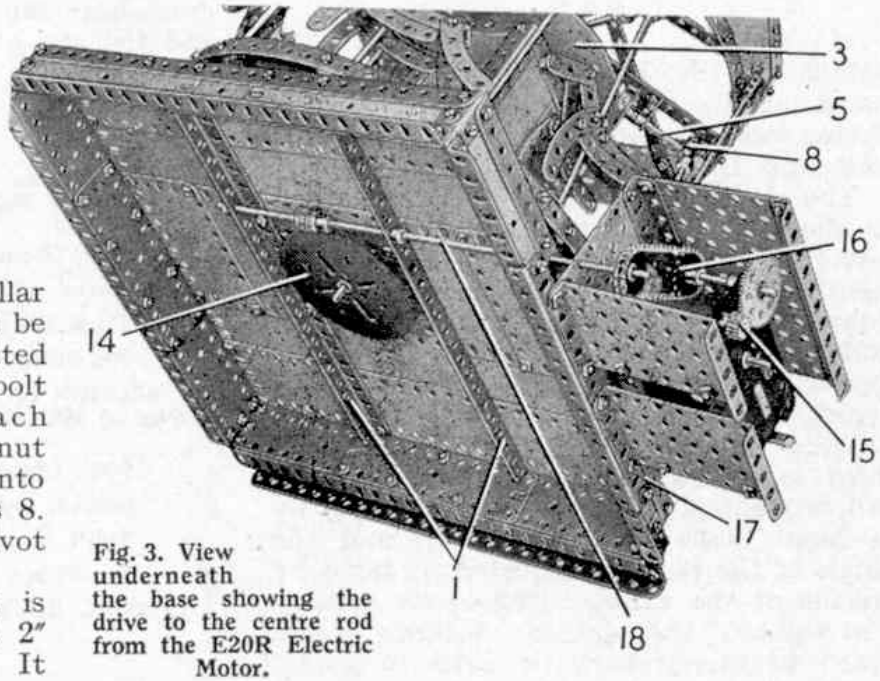

Fig. 3. View underneath the base showing the drive to the centre rod from the E20R Electric Motor.

Smoke-Jumping—(*Continued from page 66*)

Service's 231 parachutists made 1,153 jumps to 328 fires. The cost was £100,000, but the estimated saving in fire-fighting expenses was nearly £200,000, not counting the value of the timber that was saved.

Ground fire-fighters are still used in areas where good roads exist. Elsewhere, the use of smoke-jumpers can save up to 10 hours of hard travel. This is of vital importance, because one or two men reaching a fire soon after it starts are more effective than an army of men a day or so later, when a smoulder may have grown into a roaring, forest-devouring monster that destroys everything in its path.

Because of this, the number of trained smoke-jumpers is growing every year, and so is the value of timber which they save. In the last year for which figures are available, there were 269 of them, and they made 1,754 jumps to 489 fires. In addition, a total of 23,371 fire-fighters and other passengers were carried by aircraft owned or hired by the Forest Service, including quite a lot by helicopter, and more than a million pounds of supplies and equipment were parachuted to fire-fighters.

As well as locating and fighting fires, aircraft are used today for aerial survey of forests, re-seeding burned areas, spraying insect pests, search and rescue, to trap people who start fires, and even for dropping thousands of tiny fish from the air to re-stock lakes in mountain regions. But that is, of course, another story.

Runs on Anglo-Scottish Expresses—(*Continued from page 69*)

The hard work was over; *Seagull* was eased and was still in splendid form, with plenty of steam and coal left on the tender as an indication of efficient and economical performance. Operating efficiency, too, had ensured that the hundreds of signals for which the driver must watch closely had all been at clear in the country, as well as at big stations and numerous junctions for 387 miles, and the all-important water supply for the boiler had been replenished five or six times from track troughs.

In the London suburbs adverse signals did slow us, twice, but we kept moving and glided to a stop in No. 2 platform, King's Cross, at 4.14, a minute early. We had run almost 393 miles in 389 min. overall, or about 384 min. net on allowing for extra speed restrictions. The world-record run had been achieved once more on its fastest-ever timing and with a little in hand. Congratulations to all concerned!

Meccano to the Rescue!—(*Continued from page 99*)

was soon made and proved so effective that they are still in use. A picture of these compasses and other useful drawing instruments made by the young Watsons appears on page 99.

These two examples of the domestic uses of Meccano proved the turning point. Household crises are now met quite calmly, sure in the knowledge that whatever the gremlins prepare, Meccano is a beneficent fairy godmother who with a few waves of a Screwdriver can wreck their most diabolical plans!

Tyewriter Story—(*Continued from page 95*)

in a line of otherwise correctly aligned type. Skilled inspectors carry out test after test to ensure that no machine leaves the works until type alignment is perfect.

Before the tabs showing the various characters are fitted to the ends of the key-levers, the type-unit has all its working parts thoroughly lubricated. It is then subjected to a test lasting at least an hour carried out by the robot typist seen in the picture on page 93. This is an automatic exercising machine that strikes the key-levers at the rate of 900 per minute, which is equivalent to 180 words a minute.

Final assembly proceeds with all the precision and teamwork associated with the D-Day landings. It's action stations for people and parts, with group leaders, adjusters and inspectors all along the line. The finished machine then undergoes a rigorous operator's test at the hands of a typist and any minor faults revealed are promptly adjusted. A final check is made, a specimen of the work done by the particular machine is filed for reference and then the new-born typewriter goes on its way rejoicing to the Finished Products Store.

New Meccano Model—(*Continued from page 101*)

2 of No. 13; 3 of No. 13a; 6 of No. 15; 6 of No. 15a; 6 of No. 15b; 2 of No. 16a; 6 of No. 16b; 1 of No. 17; 6 of No. 20; 2 of No. 24b; 6 of No. 25; 2 of No. 26; 2 of No. 27a; 1 of No. 27b; 1 of No. 28; 1 of No. 32; 437 of No. 37a; 434 of No. 37b; 96 of No. 38; 6 of No. 48a; 4 of No. 52a; 2 of No. 53; 3 of No. 55; 34 of No. 59; 4 of No. 63; 6 of No. 63d; 9 of No. 89b; 48 of No. 90; 1 of No. 94; 2 of No. 96; 10 of No. 111c; 6 of No. 116; 9 of No. 133a; 1 of No. 146; 1 of No. 162a; 12 of No. 189; 12 of No. 190; 13 of No. 191; 4 of No. 197; 9 of No. 213; 3 of No. 215; 6 of No. 221; 1 E20R Electric Motor.

Stamp Collectors' Corner—(*Continued from page 111*)

to illustrate them all. But when you cut your own out, leave these on the piece of course.

I have said already that collectors like round postmarks, but most envelopes are cancelled by machines nowadays, and all you generally get across the stamps are a few straight lines; the round cancellation is more to the middle of the envelope. Collectors get over this by asking people who write to them to affix their stamps more to the left than is normally the case.

Whether you go in for postmarks or not, do go in for washing your stamps properly, and after taking out the colours give them that good soaking. Incidentally, our own stamps are as safe as houses. So are stamps from Australia, Canada, South Africa and U.S.A., and all the line engraved of the colonies. As for those of Europe of today, I don't know any that will suffer in the slightest for a good ducking, but do watch the paper they are on. See that it is not coloured.

Making Heavy Diesel Engines—(*Continued from page 63*)

on a machine in which the crankshaft is rigidly mounted, and the cutting tool travels round the crank pin. One of these machines is seen on the right of the upper illustration on page 63.

Other parts of a finished diesel engine are made by similar means, each with the greatest precision. The final stage is the assembly of a finished engine, and the flow plan is such that all components are issued direct from stores to the sub-assembly sections and main engine components direct to the main assembly stations.

In addition to the K range, two other series are in current production at Hazel Grove. Those of the TL range have a bore of 8½ in. and a stroke of 13¾ in. in the three to five cylinder units, and a 13 in. stroke in the six cylinder unit. They cover a power range from 157 to 405 b.h.p. at a standard speed of 600 r.p.m. The third range, distinguished as J engines, is produced in both in-line and Vee form, with from three to sixteen cylinders. With a bore of 9¾ in. and stroke of 10½ in., it is suitable for speeds up to 1,000 r.p.m. and covers a power range of 114 to 2,240 b.h.p.

THE MINIATURE SKYLON

The article on the weather station at St. Crispins' Secondary Modern School, Wokingham, promised last month, has been unavoidably held over. It will appear in the March *M.M.*