A Meccano Fork Lift Truck

THE chassis of the model Fork Lift Truck shown in Fig. 1 consists of two 7½" Angle Girders 1, connected by Angle Brackets at the front to a 3"×1½" Flat Plate 2. A No. 1 Clockwork Motor is supported by two Double Brackets bolted to the chassis on each side. The Motor brake and reverse levers are fitted with 2" Screwed Rods, each of which is fixed in its lever by two nuts.

A ¾" Pinion fixed on the Motor driving shaft engages a 1½" Contrate on a 3½" Rod 3. This Rod is mounted in the Girders 1 and is held in position by Collars, and is fitted with a wide face pulley 4 made from two ¾" Flanged Wheels. From this pulley a 6" Driving Band takes the main drive to a 1" Pulley on a 3½" Rod 5. Rod 5 is mounted in the Girders also, but it is free to slide endways in its bearings, within limits set by two restraining Collars. In addition to the Pulley and the two Collars the Rod carries two ½" Pinions 6 and 7 and a third Collar indicated at 8.

The drive to the road wheels is engaged by sliding Rod 5 so that Pinion 6 engages a 57-tooth Gear on the front axle. This axle is a 4" Rod supported in the Girders 1 and held in position by the road wheels, which are 1½" Pulleys fitted with Motor Tyres. The drive to the winding drum that controls the lifting movement of the forks is engaged by sliding Rod 5 to bring Pinion 7 into mesh with a 57-tooth Gear on a 3½" Rod 9. The latter Rod is held in the Girders 1 by Collars, and it carries a winding drum 10. This drum consists of two Collars with a ¾" Washer at each end. One of the ¾" Washers is spaced from the 57-tooth Gear by three small Washers, and the components of the drum are pressed tightly together by another Collar on Rod 9.

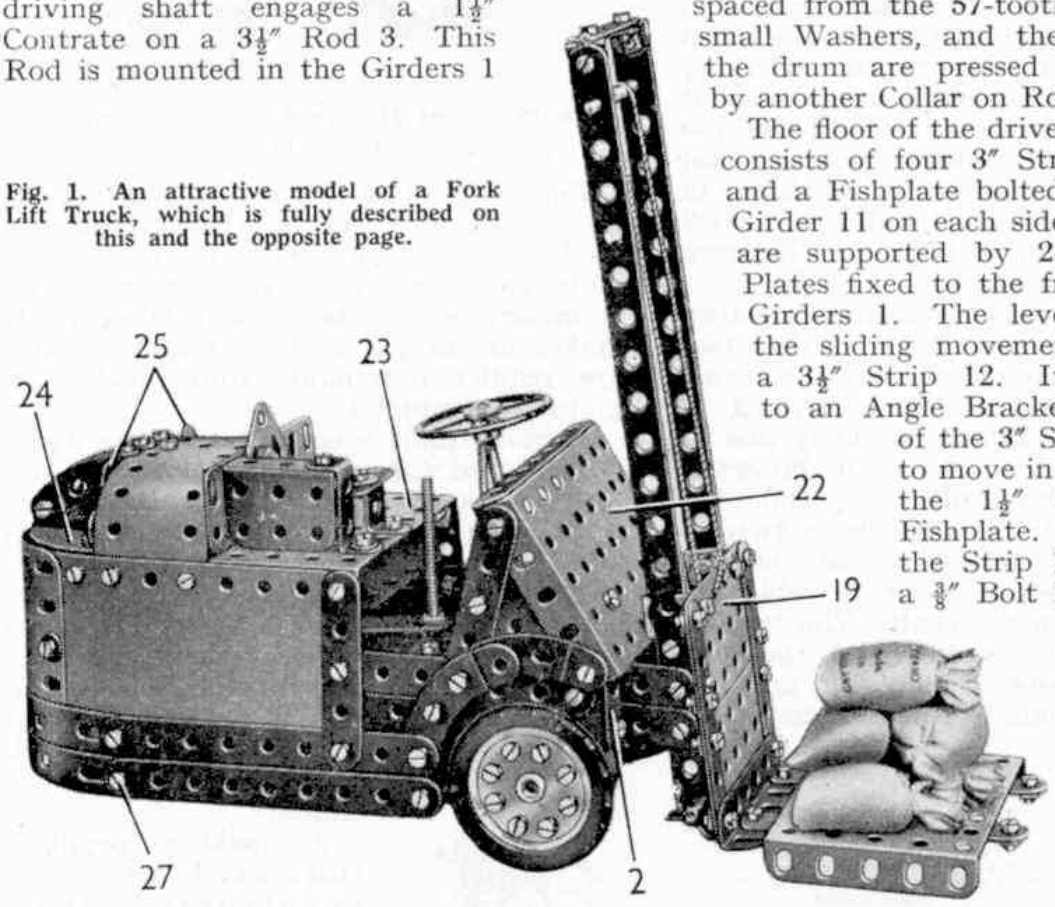

Fig. 1. An attractive model of a Fork Lift Truck, which is fully described on this and the opposite page.

The floor of the driver's compartment consists of four 3" Strips, a 1½" Strip and a Fishplate bolted to a 2½" Angle Girder 11 on each side. These Girders are supported by 2½"×1½" Flexible Plates fixed to the front ends of the Girders 1. The lever that controls the sliding movement of Rod 5 is a 3½" Strip 12. It is lock-nutted to an Angle Bracket bolted to one of the 3" Strips, and is free to move in the gap between the 1½" Strip and the Fishplate. At its lower end the Strip 12 is fitted with a ⅜" Bolt held in place by two nuts. The head of this Bolt engages between Pinion 7 and the Collar 8.

The rear castor wheels are 1" Pulleys fitted with Rubber Rings. They are mounted as shown in Fig. 2 on a 2" Rod supported in two 1"×1" Angle Brackets, which are bolted to a Bush Wheel 13. A 2" Rod fixed in the Bush Wheel is passed through two 1" Triangular Plates bolted to the Motor side-plates. The Rod is held in place by a Collar.

The steering column is a 3½" Rod mounted in one of the 3" Strips that form the floor at the front, and in a ½" Reversed Angle Bracket bolted to this Strip. At its lower end the Rod carries a Crank 14, and to this is lock-nutted a 5½" Strip 15. This Strip is lock-nutted also to a 2" Strip 16 that is pivotally mounted on a

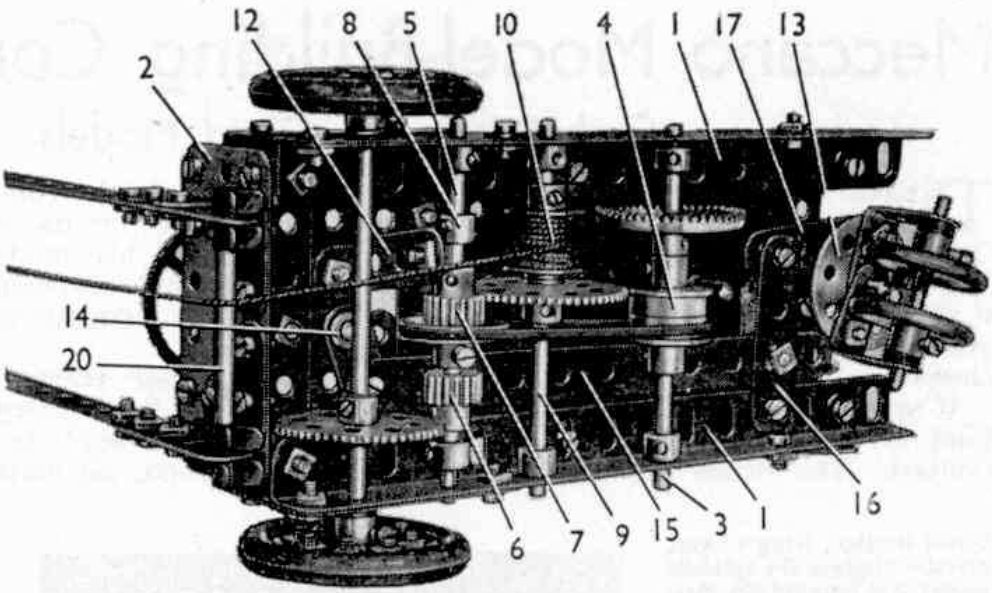

Fig. 2. An underneath view of the Fork Lift Truck.

bolt attached to one of the Girders 1 by two nuts. A $\frac{1}{2}$" Bolt is passed through the hole at the inner end of Strip 16. Five Washers are placed on this Bolt, which is then fixed by two nuts in a 2" Strip 17. The rear end of Strip 17 pivots freely on the Bolt used to connect one of the 1"×1" Angle Brackets to the Bush Wheel 13.

The guides for the fork lift platform are two $9\frac{1}{2}$" Strips, each of which is bolted to a 1"×1" and a 1"×$\frac{1}{2}$" Angle Bracket fixed to the Flat Plate 2. The top ends of the Strips are connected by Angle Brackets to a 2" Strip, and a Slide Piece 18 is passed over each $9\frac{1}{2}$" Strip. Two $\frac{3}{8}$" Bolts are passed through a 3"×$1\frac{1}{2}$" Flat Plate 19. Four Washers are placed on each Bolt, which is then screwed tightly into one of the Slide Pieces.

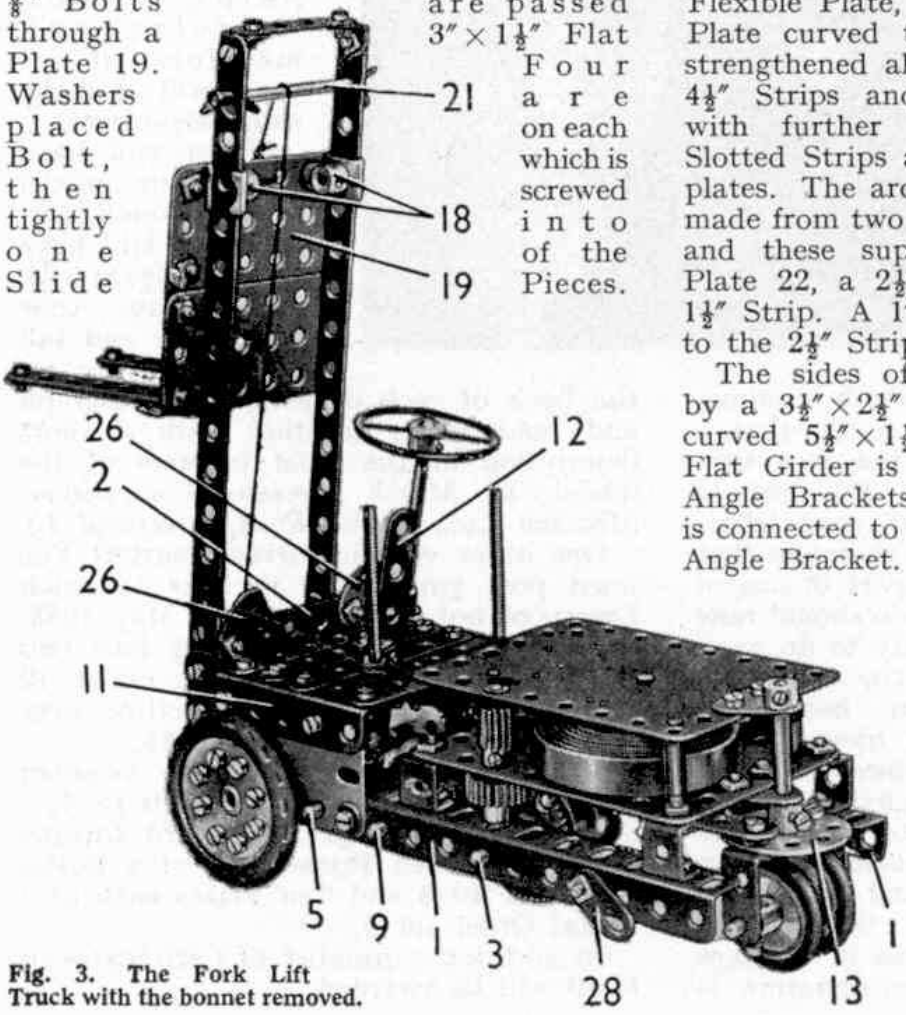

Fig. 3. The Fork Lift Truck with the bonnet removed.

A second 3"×$1\frac{1}{2}$" Flat Plate, fitted along its lower edge with a 3" Angle Girder, is connected to the Plate 19 by two 3" Strips. The lifting forks are pairs of $3\frac{1}{2}$" Strips bolted to the Angle Girder.

A length of Cord tied to the winding drum 10 is taken round $2\frac{1}{2}$" Rods 20 and 21, and is tied to the Plate 19.

Each side of the body is a $4\frac{1}{2}$"×$2\frac{1}{2}$" Flexible Plate, and the back is a similar Plate curved to shape. The Plates are strengthened along their lower edges by $4\frac{1}{2}$" Strips and Formed Slotted Strips, with further $4\frac{1}{2}$" Strips and Formed Slotted Strips attached to them by Fish-plates. The arch over each front wheel is made from two $2\frac{1}{2}$" Stepped Curved Strips, and these support a $3\frac{1}{2}$"×$2\frac{1}{2}$" Flanged Plate 22, a $2\frac{1}{2}$" Strip, a 2" Strip and a $1\frac{1}{2}$" Strip. A 1" Corner Bracket is bolted to the $2\frac{1}{2}$" Strip.

The sides of the body are connected by a $3\frac{1}{2}$"×$2\frac{1}{2}$" Flanged Plate 23 and a curved $5\frac{1}{2}$"×$1\frac{1}{2}$" Flexible Plate. A $3\frac{1}{2}$" Flat Girder is attached to Plate 23 by Angle Brackets, and a Channel Bearing is connected to the Plate by a 1" Reversed Angle Bracket. The driver's seat is made from two Flat Trunnions and a Trunnion. It is bolted to the Flat Girder and is supported at the front by a $\frac{1}{2}$" Reversed Angle Bracket.

A $2\frac{1}{2}$"×$1\frac{1}{2}$" Flexible Plate is curved and is bolted to the back of the body and to the curved $5\frac{1}{2}$"×$1\frac{1}{2}$" Flexible Plate. On each side of the $2\frac{1}{2}$"×$1\frac{1}{2}$" Flexible

(*Continued on page 284*)

Blondins of Industry—(*Continued from page 229*)

also can be given by means of telephones connecting the operator with a signaller on the site.

Two Henderson aerial cableways were used during the construction of the Loch Sloy dam, in the north of Scotland, which is 1,200 ft. long and provides a reservoir storing 1,200 million cu. ft. of water. Thousands of tons of concrete were transported into position during the building of the dam by means of the cableways. These had a span of 1,350 ft., and the tail carriage of each machine could be travelled over a distance of 150 ft., by electric power. The two fixed headmasts were 125 ft. high, and the tail carriage 36 ft. The maximum load on the hook of each cableway was 10 tons, this including the weight of the skip and the slings, together with the contents. The skip contained four cubic yards of concrete, which could be placed at any point over an area of 8,700 square feet.

Other great engineering schemes on which these cableways have been employed include the building of the Otto Beit bridge in South Africa, the Conisborough Viaduct near Doncaster and the reconstruction of the Menai Bridge. Besides the building of innumerable dams in all parts of the world, cableways have been used in causeway construction, notably at Scapa Flow, the famous Fleet anchorage in the Orkneys.

Road and Track—(*Continued from page 247*)

the four-speed gearbox is developed from the three-speed Vanguard box, while the rear axle and front suspension are Triumph Mayflower units. With a maximum speed of 107 m.p.h., nearly 80 m.p.h. in third gear, a petrol consumption figure of 34 m.p.g., when driven hard, and a 0-60 acceleration figure of 12 sec., the TR2 is remarkable value at £900 including Purchase Tax. A special high speed version of the car attained a mean speed of 124 over the measured mile at Jabbeke in Belgium during the development period. Having seen Edgar Wadworth's privately owned TR2 average 74.71 for 1,793 miles at Le Mans last year, I expect great things from the Coventry pair this year.

There are two other major races in June, both World Championship events. Round 4, the Belgian Grand Prix, is on 5th June; Round 5, the Dutch Grand Prix, is on 19th June.

On the W.R. "Inter-City"—(*Continued from page 250*)

80 m.p.h. again approaching Denham Golf Club halt. Then came a gentle easing of the regulator and after the troughs at Ruislip the engine was opened up again to bring us rapidly to yet another flying junction.

This was Northolt, where the joint line that we had followed from Ashendon Junction comes to an end, the Marylebone line cutting across to Neasden and the Paddington line heading for its junction with the main Western line at Old Oak Common. So we came through Greenford and with brakes slightly on at Park Royal Signal Box we were already slowing when the A.T.C. warning siren once more gave its message. There is a restriction between Old Oak Lane and Old Oak Common West Junction, but green lights ushered us on to the real main line again and we cruised in past Westbourne Park, and on to Paddington.

There No. 11 platform was our berth and the brakes eased us before we whistled twice, and then applied the brakes again after the regulator had been opened and shut once more to bring us alongside the platform. Engineman Roden had more than kept his promise; the time was just 7.1 p.m.—we were four minutes early!

Stamp Collectors' Corner—(*Continued from page 281*)

"First Day" covers were prepared by the Australian Post Office, and these were postmarked at Macquarie Island, Heard Island and Mawson. The three covers are quite inexpensive, and they will set off a collection. The 3½d. stamp itself, with its map of the Antarctic and its frame of marine creatures, is very interesting. So if you cannot get the covers, a stamp will be available for a copper or two.

A Useful Reversing Mechanism—

(*Continued from page 267*)

lifts. A 1½" Pulley 19 is placed on Rod 18 and round it is passed a length of Cord, with each end tied to the base of one of the lifts. A second Cord is fastened at each end to a Spring bolted to the top of each lift, and is passed round a Pulley at the top of the tower.

It is preferable to allow a slight over-run so that the lifts reach the limits of their travel slightly before the reversing mechanism changes the direction of the drive. This is accomplished by a simple friction drive, which 'slips' when the lifts reach stops that prevent further movement. Instead of the Pulley 19 being fixed on Rod 18, it is mounted freely, and is pressed by a Compression Spring against a Motor Tyre 20 on a 1" Pulley fixed on the Rod.

The following is a list of the parts required to build the Motor unit and the automatic reversing mechanism: 1 of No. 3; 4 of No. 4; 2 of No. 9d; 2 of No. 15a; 1 of No. 15b; 3 of No. 16a; 1 of No. 17; 1 of No. 18a; 6 of No. 26; 1 of No. 26b; 5 of No. 27a; 2 of No. 31; 1 of No. 32; 21 of No. 37a; 12 of No. 37b; 10 of No. 38; 1 of No. 50; 2 of No. 53; 7 of No. 59; 1 of No. 62; 2 of No. 72; 1 of No. 94; 1 of No. 95; 2 of No. 96; 5 of No. 111c; 2 of No. 133; 1 E20R Electric Motor.

Among the Model-Builders—(*Continued from page 269*)

of 1" Triangular Plates 16 using Washers for spacing purposes. Now place the rocking member horizontally on a table with the Wheel Flange uppermost, and insert into the Wheel Flange a 1½" Pulley 8, with 22 steel balls ¼" dia. between the groove of the Pulley and the inner face of the Wheel Flange.

The assembly consisting of the rocking arm and the ball bearing is slipped on to the Rod 6 and held in place by a Collar; the Pulley 8 is clamped to the Rod. The rocking arm is guided at its upper end by two 2½" Strips bent as shown in the inset illustration in Fig. 3. Pivot Bolts connect these Strips to the rocking arm and the frame; the one at the top of the rocking arm has its threaded end outward.

The walking shoe is constructed from 9½" Angle Girders 24 and Strips 22, held together by 2" Angle Girders 27. The sides are 5½" Flat Girders 29, and the bottom is shaped from four 2½" Angle Girders 26 and two 4½" Angle Girders 25. The shoe pivot is a 1" Rod 7 held in Collars fixed to the Strips 22. A 2" Strip 23 strengthens the assembly.

A Meccano Fork Lift Truck—

(*Continued from page 271*)

Plate a Semi-Circular Plate 24 is fixed to Angle Brackets bolted to the sides and the back of the body. A 2½" Stepped Curved Strip and a 2½" Strip are bolted together and are supported by Angle Brackets fixed to each Semi-Circular Plate. A 1" Corner Bracket 25 on each side also is supported by an Angle Bracket.

Attach the body to the chassis by bolting the Flanged Plate 22 to the top ends of two slightly curved 1" Triangular Plates 26. At the rear two ½" Bolts 27 are fixed by nuts in the body, and each Bolt is held by two nuts in a Fishplate 28 bolted to the chassis.

A 3½" × 2½" Flanged Plate can be used as a pallet for the model as shown in Fig. 1.

Parts required to build the Fork Lift Truck: 2 of No. 1a; 1 of No. 2; 5 of No. 3; 6 of No. 4; 6 of No. 5; 5 of No. 6; 5 of No. 6a; 2 of No. 8b; 1 of No. 9c; 2 of No. 9d; 6 of No. 10; 4 of No. 11; 15 of No. 12; 4 of No. 12a; 2 of No. 12b; 1 of No. 15b; 4 of No. 16; 2 of No. 16a; 2 of No. 17; 2 of No. 20b; 2 of No. 21; 3 of No. 22; 1 of No. 24; 1 of No. 25; 2 of No. 26; 2 of No. 27a; 1 of No. 28; 9 of No. 35; 177 of No. 37a; 160 of No. 37b; 40 of No. 38; 2 of No. 38d; 1 of No. 40; 1 of No. 48b; 2 of No. 50; 1 of No. 103d; 2 of No. 111a; 4 of No. 111c; 1 of No. 124; 2 of No. 125; 1 of No. 126; 2 of No. 126a; 4 of No. 133a; 2 of No. 142d; 2 of No. 155; 1 of No. 160; 1 of No. 185; 1 of No. 186a; 3 of No. 188; 1 of No. 189; 3 of No. 191; 2 of No. 214; 4 of No. 215; 1 No. 1 Clockwork Motor.