A VETERAN MOTOR CAR IN MECCANO

By "Spanner"

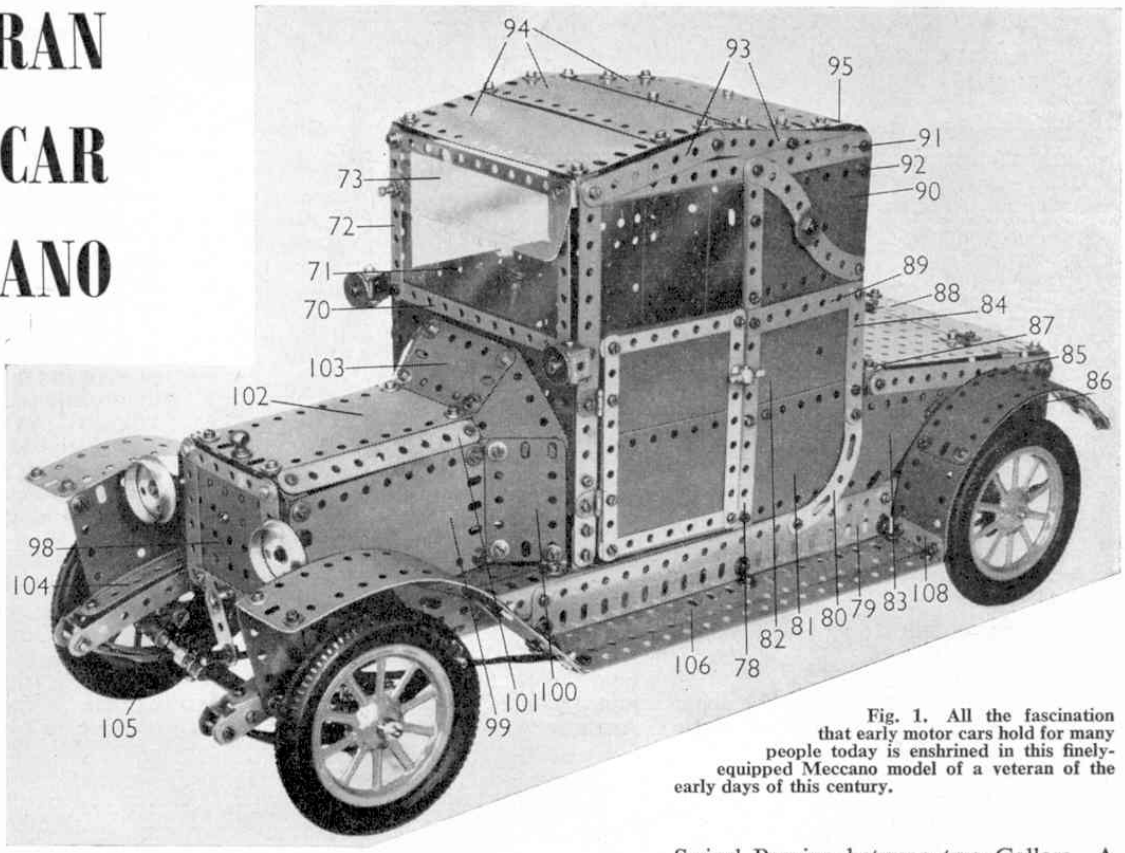

Fig. 1. All the fascination that early motor cars hold for many people today is enshrined in this finely-equipped Meccano model of a veteran of the early days of this century.

THE quaint early motor car shown in Fig. 1 provides an attractive subject for the more advanced model-builder. The Car is complete with a well-detailed chassis, including gear-box, clutch, differential, etc., and its construction is just the thing to while away long dark evenings indoors, in a pleasant and instructive manner.

Each side of the chassis consists of two 12½" Angle Girders 1 bolted together to form a channel section. The side girders are held together by a 5½" Narrow Strip 2 and a 5½"×2½" Flat Plate 3. The front ends of the Girders are extended by 5½" Curved Strips 4. Each inner 5½" Curved Strip 5 is secured to the upper Girder by two Angle Brackets. Two of the bolts that secure the Curved Strips are also pivots for the Fishplates 6 and should be locknutted. The main frame is extended over the back axle by 2½" Curved Strips 7 bolted together as shown. The rear Springs 8, consisting of a 5½", a 4½", a 3½" and a 2½" Strip, are bent and attached to the Angle Girders 1 by a ⅜" Bolt and an ordinary nut and bolt.

The front springs are of the semi-elliptic type, and each consists of a 5½", a 4½", a 3½" and a 2½" Strip placed one upon the other and slightly bent. To each end of the 5½" Strip is secured a Double Bracket. The rear ¾" Bolt is pivotally attached to the Fishplates 6, whilst the front Double Bracket is mounted on a ¾" Bolt passed through the 5½" Curved Strips 4 and 5.

FOR ADVANCED MODEL-BUILDERS

Steering and Rear Axle

The fixed front axle 9 consists of two 5½" Strips overlapped nine holes and supporting at each end a Crank 10 that carries a 1½" Rod on which is placed three Washers, a Coupling 11 (in the centre hole) and a Collar. Fastened in the Coupling are two 1½" Rods 12 and 13. At each end of a 4½" Rod 14 a Swivel Bearing is fixed and this is also secured to the Rods 12 and 15. To the 2" Rod 15 is secured a Coupling 16 that carries a 1½" Rod 17 supporting a Swivel Bearing between two Collars. A 5½" Rod is fastened in the Swivel Bearing and with a Collar is attached to a Fishplate fixed to the 1½" Bevel Wheel 18 mounted on a 1" Rod 109. A 1"×½" Double Bracket bolted to the Angle Girder 1 forms the bearing for Rod 109. A Washer is placed between the Double Bracket and the Bevel Wheel.

A Coupling is fitted with a 1½" Rod carrying at each end a Collar 19. These Collars are held in place by the 1" Screwed Rods 20, by means of which the Coupling is secured to a 1½" Bevel Wheel 21. Between the Coupling and the Bevel, a ¾" Contrate Wheel 22 is fitted on a 5" Rod 23, two Washers being used for spacing. The 3½" Rod 24 has a ¾" Contrate Wheel fixed to it and it journals in the Coupling. The planetary pinions are now fitted. Each of these consists of a ¾" Pinion placed boss outwards on a Pivot Bolt secured to the Coupling. The Pinions mesh with the ¾" Contrates on the axles. Two Washers are placed on the Rod 24 before putting the Boiler End 25 in position. A Collar and two Washers are placed on the Rod 23 before adding the Boiler End 26. The Double Angle Strips 27 and 28 are bolted to the Boiler Ends before joining them together by the 2" Strips 29. The 2" Strip supporting the Double Bent Strip 30 is spaced away from the Boiler Ends by one Washer. On the 1½" Rod a ½" Bevel Wheel 31 and a Universal Coupling 32 is secured. The rear axle is now attached to the springs 8. Each pair of Double Angle Strips is joined together with a 1½" Strip that forms a bearing for the Rods 23 and 24.

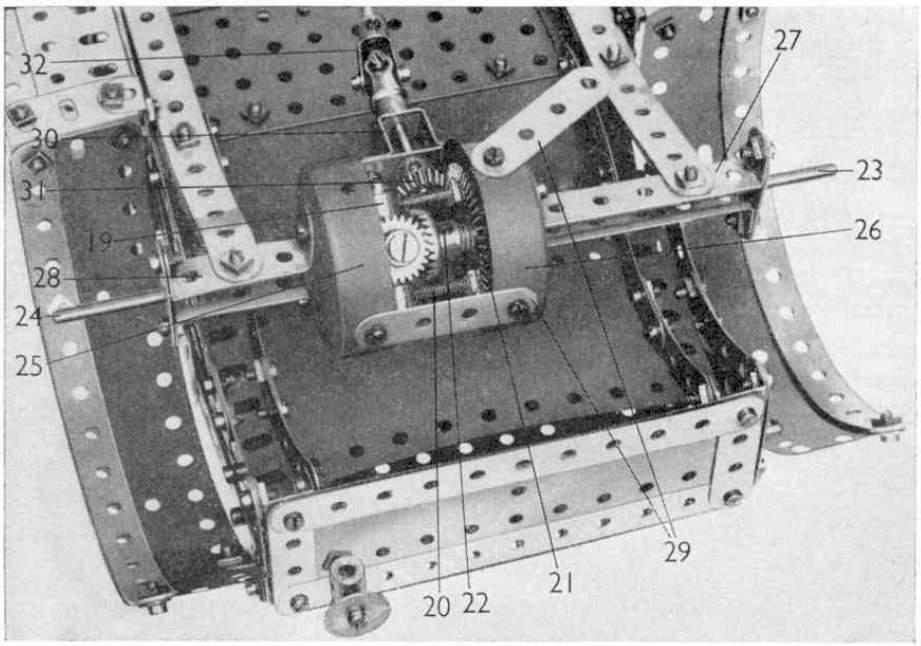

Fig. 2. An underneath view of the rear end of the chassis, showing the back axle and differential.

The Gear-box

The $4\frac{1}{2}$″ Strip 33 is fastened to the upper Angle Girders 1 by $\frac{1}{2}$″×$\frac{1}{2}$″ Reversed Angle Brackets. Two $9\frac{1}{2}$″ Angle Girders 34 are bolted to the latter and they are attached to the Angle Girders 1 by a 1″×$\frac{1}{2}$″ Angle Bracket and a 2″ Strip 35. A $2\frac{1}{2}$″×$\frac{1}{2}$″ Double Angle Strip 36 joins them at the front. An E15R Electric Motor is secured to the Angle Girders 34 by two Angle Brackets at the flange side and two $\frac{3}{8}$″ Bolts, with three Washers on each, at the other side. Two Fish-plates on each Angle Girder hold the $4\frac{1}{2}$″ Strips 37 and 38, which are joined by a $2\frac{1}{2}$″×1″ and a $2\frac{1}{2}$″×$\frac{1}{2}$″ Double Angle Strip 39 and 40. Two 1″×1″ Angle Brackets 41 and 42 are bolted to the Strip 38.

A $3\frac{1}{2}$″ Rod 44 is journalled in an Angle Bracket bolted to the Double Angle Strip 36 and it carries a Contrate Wheel 45, a 1″ Pulley with Rubber Ring 46, and a Collar 43. The end of this Rod goes $\frac{3}{16}$″ into the Bush Wheel held in the Socket Coupling 47. The Socket Coupling is free on the 4″ Rod 48. A Coupling 49 with a $\frac{1}{2}$″ Bolt screwed in tight is fixed to the Rod 48 with a Compression Spring between it and the Socket Coupling. Secured to this Rod is a $\frac{3}{4}$″ Pinion 50 and a 1″ Gear Wheel 51. A Collar is fastened on the end. The 3″ Rod 52 carries a 50-teeth Gear 53, a 1″ Gear 54, a $\frac{1}{2}$″ Pinion 55, a $\frac{1}{2}$″ Pulley, and a Universal Coupling. The lay-shaft is a $6\frac{1}{2}$″ Rod 56 carrying a $\frac{1}{2}$″ Pinion 57, a 1″ Gear 58, a $\frac{3}{4}$″ Pinion 59, a Collar 60, a 1″ Gear 61 and a 50-teeth Gear 62. The Gears and Pinions are placed on their shafts as shown and provide three forward and reverse drives, with a neutral position.

Two Angle Brackets are bolted in the third hole from the back of the Angle Girders 34 and they support a $2\frac{1}{2}$″ Rod carrying the Coupling 63 and a Crank that

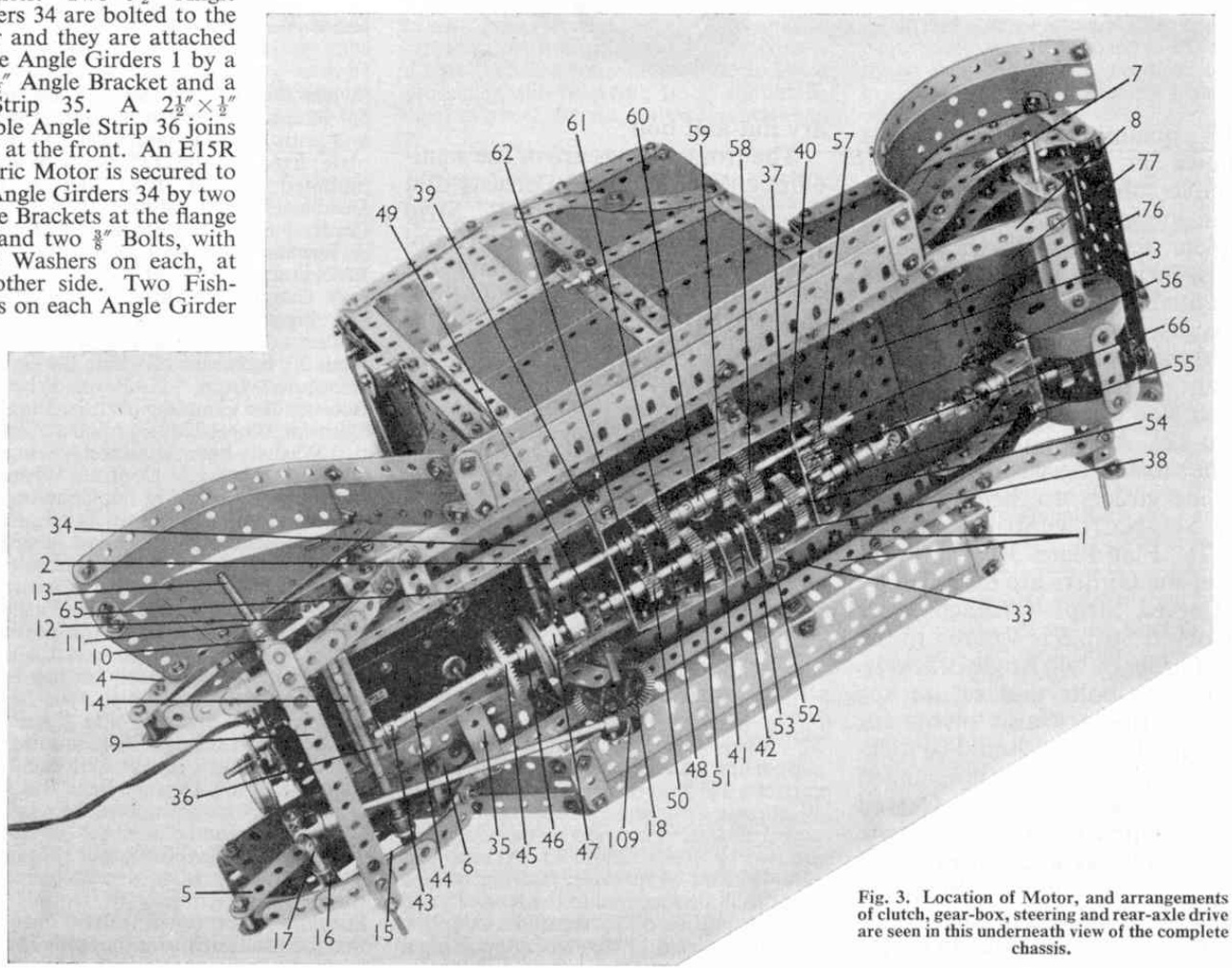

Fig. 3. Location of Motor, and arrangements of clutch, gear-box, steering and rear-axle drive are seen in this underneath view of the complete chassis.

is connected to the Collar 59 by a nut and bolt, the nut locking against the Collar. A 1½" Rod carrying a Handrail Support, is fixed in the Coupling 63. Two 2½" Stepped Curved Strips 64, spaced apart by two Washers, are bolted to 1"×1" Angle Brackets. One of these is secured to the 4½" Strip 33 and the other to a 3" Strip bolted in the fifth hole of the Angle Girders 34. In the tenth hole from the front, two more Angle Brackets are bolted and in them is placed a 3" Rod 65. Pivoted between Collars, one on the inside and one on the outside of the Angle Girders 34, are two 2½" Curved Strips, the inside having a Threaded Pin that engages with the Socket Coupling. Both Strips have Angle Brackets bolted to them to represent the pedals. The Coupling 49 is adjusted so that the Bush Wheel presses against the Rubber Ring on the 1" Pulley 46.

For the reverse gear a ½" Pinion 66 revolves freely on a ¾" Bolt fastened by two nuts locked to the Double Angle Strip 40. The following Gears and Pinions mesh together to give the different gear changes: Reverse: 50, 62, 57, 66, 57; 1st Gear: 50, 62, 59, 53; 2nd Gear: 51, 61, 59, 53; Top Gear: 51, 61, 58, 54. The two Universal Couplings are connected together by a 1" Rod.

The Motor Drive

A $\frac{7}{16}$" Pinion secured on the uppermost end of the armature shaft engages with a 60-teeth Gear Wheel on a 2½" Rod. On the lower end of the Rod is placed a ½" Pinion spaced away from the Motor by three Washers. The 1½" Contrate Wheel 45 is adjusted to engage with the ½" Pinion.

The Car Body

A 1"×½" Angle Bracket 67 is attached to the Angle Girders 1 using the same Bolts that secure the Narrow Strip 2. These are extended by 7½" Strips 68. A 5½"×3½" Flat Plate 69 is bolted to the Strips 68 by Angle Brackets. To the top of the Flat Plate is bolted a 5½"×2½" Transparent Plastic Plate 71 edged by 5½" and 3½" Narrow Strips 70 and 72. A 5½" × 1½" Transparent Plastic Plate 73 is fixed in position and rests on the ⅜" Bolts locked to the 3½" Narrow Strips. The side lamps, built with three Double Brackets and a ¾" Washer are attached by Angle Brackets. Two 5½"×2½" Flat Plates 74 and a 3"×1½" Flat Plate 75 are placed in position. To complete the floor, a 5½"×2½" Flexible Plate 76 is attached to the Plate 3 and a further 5½"×2½" Flexible Plate 77 is fastened by Obtuse Angle Brackets to Flexible Plate 76. A 9½" Flat Girder 79 is bolted to the Angle Girders 1, the 3" Stepped Curved Strip 80 also being added. To the Flat Girder is bolted the compound strip (a 7½" and a 3" Strip) 78. A 3½"×2½" Flexible Plate 81 and a 4½"×2½" Red Plastic Plate 82 are attached to the strip 78.

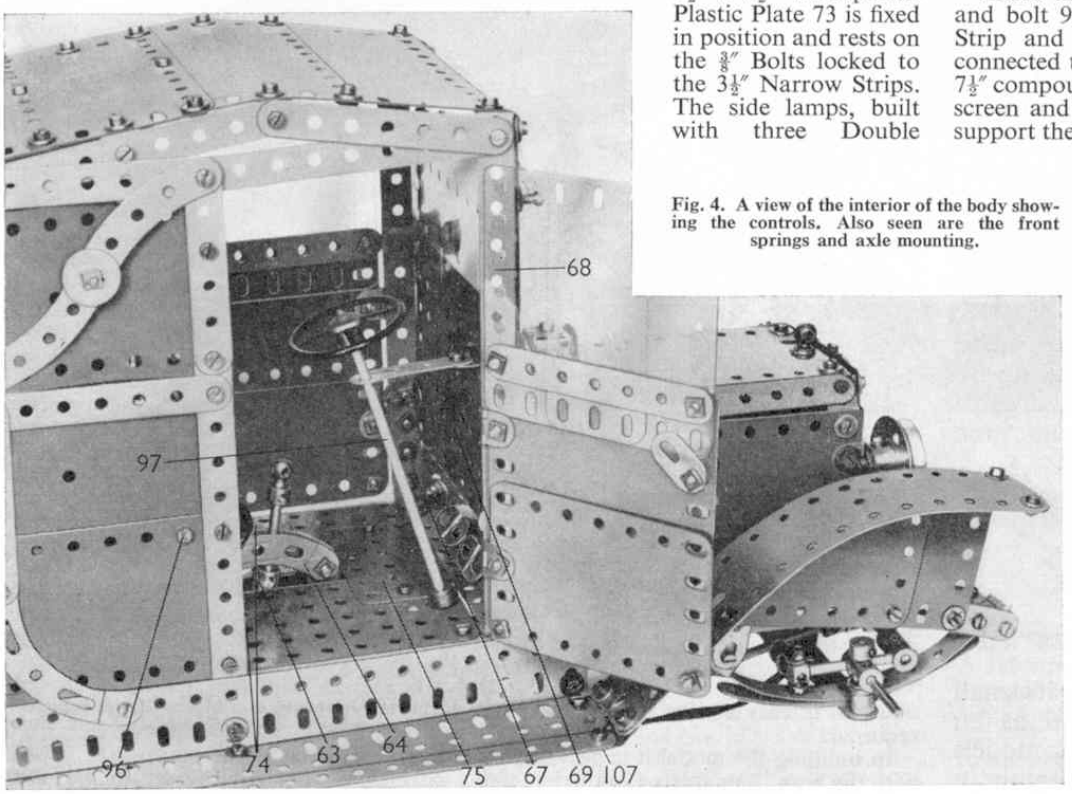

Fig. 4. A view of the interior of the body showing the controls. Also seen are the front springs and axle mounting.

The bodywork is extended by a 3½"×2½" Triangular Flexible Plate 83 and two 2½"×1½" Triangular Flexible Plates that form the wheel arch. These Plates are edged by 5½" and 2" Strips 85 and 86. A 5½" Angle Girder 87 is bolted across the car and the Strips 85 are attached by Angle Brackets. The rear of the boot is a 5½"×1½" Flexible Plate edged by Strips and fastened with Angle and Double Brackets. A Coupling and a ¾" Washer held by a ¾" Bolt and two nuts, represents the tail light. A 5½"×3½" Flat Plate hinged to a 5½"×1½" Flexible Plate 88, completes the "boot", which is fitted with a lock similar to the door lock. The Flexible Plate 88 is fastened to the body of the car by a 5½" Angle Girder at the rear and by a 5½"×½" Double Angle Strip inside the "boot". Around the edges of the Red Plastic Plate 82 a 3" and a 3½" Strip 84 and 89 are bolted. Another 4½"×2½" Red Plastic Plate 90 is secured to the Strip 78.

Inside the car, and secured by the nut and bolt 92, is a 5½"×½" Double Angle Strip and also a 5½" Strip, which is connected to the back of the Strip 84. A 7½" compound strip 91 supports the windscreen and door jamb and the Strips 93 support the roof. Three 5½"×2½" Flexible Plates 94 and a 5½"×2½" Red Plastic Plate 95 are attached by Angle Brackets to form the roof. Two 2½" Curved Strips bolted together, with the addition of a ¾" Washer, are fastened to the side of the car. A 4½"×2½" Flexible Plate joins together the Red Plastic Plates 82 at the rear of the cab. The Plates 90 are extended by 2½"×1½" Flexible Plates and these are joined together by a 2½"×2½" Transparent Plate. A 5½"×1½" Red Plastic Plate is fixed to the Plates 90 and 95. A 5½" Strip is bolted on the back in line with the Strips 89 and is slightly bent at each end. On the inside of the car a 4½" Strip and two Fishplates strengthen the joinings of the Flexible and Red Plastic Plates.

Two 5½" × 2½" Flexible Plates are joined together by two Obtuse Angle Brackets in their centre holes. On the front of the first mentioned Plate three 2½"×2½" Curved Plates are bolted. The completed seat is attached by Angle Brackets on the Bolts 96.

A 6½" Rod 97 is passed through a 2" Strip that is fastened to the 5½"×3½" Flat Plate 69 by an Angle Bracket, and it also passes through the Plate 74. A Steering Wheel is secured to the upper end and a ½" Bevel Wheel that engages with the 1½" Bevel Wheel 18 is fixed to the lower end. Collars hold the Rod in position.

The flanges of a 3½"×2½" Flanged Plate 98 are extended by a 4½"×2½" Flexible Plate 99 and to this is attached a 2½"×1½" Flexible Plate 100. A 5½" Strip 101 and a 4½"×2½" Flexible Plate 102 are attached with Obtuse Angle Brackets to the bonnet sides. Again with Obtuse Angle Brackets a 2½"×1½" Flexible Plate 103 is attached. The Plates 100 and 103 are joined together by 2½"×1½" Red Plastic Plates. A Handrail Support represents the radiator cap. Two 3" Strips and a 3" and a 2½" Narrow Strip are bolted to the Flanged Plate 98.

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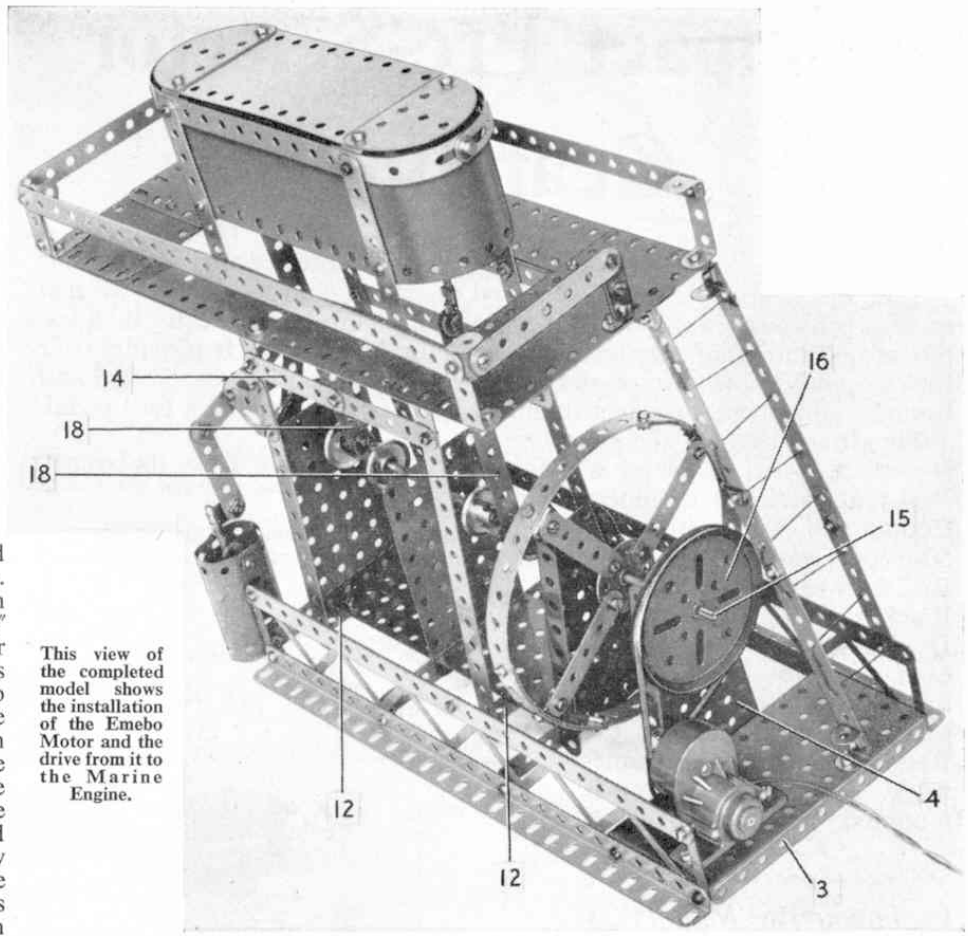
Pulley 17 being one of the Pulleys while the other is fixed to a 3½" Rod 19. A further similar crank assembly is fitted, one of the Pulleys being on the other end of Rod 19 and the other Pulley on Rod 20, which also carries a 2" Pulley 21. The cranks should be positioned so that when one of them is at its highest point the other is at rather more than 90° to it. A Pivot Bolt carrying a 2½" Strip 24 is fixed to the Pulley 21, which operates a water pump. The Strip 24 is lock-nutted to a 3½" Strip, which in turn is lock-nutted to a 1"×½" Double Bracket bolted to a Flat Trunnion 22 fixed as shown. A further 2½" Strip 23 is lock-nutted to the other end of the 3½" Strip and to the lower end of this is pivoted a Right-Angle Rod and Strip Connector that carries a 2" Rod. This Rod slides in two ½" Reversed Angle Brackets bolted inside the pump cylinder, which is built from a 2½"×2½" Red Plastic Plate and a 2½"×2½" Curved Plate.

Two 12½" Angle Girders are bolted in the eighth hole from the top of the 12½" Strips forming the supporting columns for the cylinder block. On both long sides two 5½"×1½" Flexible Plates are bolted to the Angle Girders, with 12½" Strips on the outside edges. The short sides are filled in with a 5½"×2½" and a compound Flexible Plate consisting of two 2½"×2½" and one 2½"×1½" Flexible Plate. 1½"×½" Double Angle Strips are bolted at two corners and two 1"×1" Angle Brackets extended by 1½" Strips at the other two corners. These are connected together by two 12½" Strips and a 5½" Strip to form handrails. An entrance to the platform is made by bolting a 3½" Strip to two Fishplates and an Angle Bracket. Two 5½" Strips, overlapped four holes, and a 5½" Strip and a 3½" Strip overlapped two holes are bolted to the model as shown to form the sides of the ladder. The rungs are made with Cord.

A 5½"×2½" Flexible Plate 26 with a 4½"×2½" Flexible Plate 27 at each end is bolted to the 12½" Strips by the bolts 28. These bolts also hold a 2½"×½" Double Angle Strip that joins both sides of the cylinder block together, and a ½"×½" Reversed Angle Bracket is bolted in the second hole of these Double Angle Strips.

Each piston rod is a 2" Rod fixed in a Rod and Strip Connector that is lock-nutted to each of the 5½" Strips 18 and this slides up and down in the Double Angle Strip and the ½"×½" Reversed Angle Bracket. The upper edges of the Flexible Plates are strengthened by two 5½" Strips 25 and four Formed Slotted Strips 29. Two Double Angle Strips bolted between the sides support the top of the cylinder, which consists of a 5½"×2½" Flexible Plate and two Semi-Circular Plates.

Parts required to build the Marine Engine: 12 of No. 1; 14 of No. 2; 4 of No. 3; 1 of No. 4; 6 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 4 of No. 11; 1 of No. 11a; 16 of No. 12; 2 of No. 12c; 1 of No. 15; 2 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 19b; 1 of No. 20a; 4 of No. 22; 1 of No. 24; 139 of No. 37a; 122 of No. 37b; 12 of No. 38; 2 of No. 48; 4 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 2 of No. 53a; 2 of No. 54; 1 of No. 59; 2 of No. 99; 2 of No. 111a; 6 of No. 111c; 4 of No. 125; 1 of No. 126a; 1 of No. 147b; 1 of No. 188; 4 of No. 189; 2 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 194a; 1 of No. 199; 2 of No. 212; 1 of No. 212a; 2 of No. 214; 4 of No. 215. 1 Emebo Motor; 1 Driving Band.



This view of the completed model shows the installation of the Emebo Motor and the drive from it to the Marine Engine.

A Veteran Motor Car in Meccano—

(*Continued from page 413*)

A Threaded Crank with a Threaded Pin is fixed to the Flanged Plate by a Bolt locked by the Grub Screw. Flanged Wheels secured to Angle Brackets represent the head-lamps. A 4½" Strip 104 is bolted to the 5½" Curved Strips 5. At the rear the bonnet is fastened to the Angle Girders 1 by Angle Brackets, and at the front by Fishplates 105 attached to the 5½" Curved Strips with ¾" Bolts and also the Flanged Plate 98.

Two 3½"×2½" Flexible Plates are joined together by two 4½" Narrow Strips with 3½" Narrow Strips at the centre and bottom of the door. The door is extended by two 3½"×2½" Transparent Plates, strengthened by a 3½" Strip inside the door. The doors are attached to the Strip 68 with Hinges.

A 9½" Flat Girder 106 is attached by Angle Brackets to the 9½" Flat Girder 79. A 9½" Strip is attached to the Flat Girder by a 1½" Strip 107 and a 1½" Angle Girder 108. Each front mudguard consists of a 5½"×1½" and a 2½"×1½" Flexible Plate, strengthened on the outside edge by a 7½" Strip and secured to the running board by Obtuse Angle Brackets. A 3½"×2½" Triangular and a 2½"×1½" Flexible Plate form the front wheel arch and are connected by an Angle Bracket to the mudguard. The rear mudguards are built similarly to the front ones and fastened to the 1½" Angle Girder 108.

The road wheels are 3" Tyres fitted to 3" Spoked Wheels. The ridge inside the 3" Tyres is removed with a wet pen-knife blade. The tyres will now fit on the 3" Spoked Wheels. The rear wheels are fastened by their set-screws and the front wheels are loose on the axles but held in place by Collars. If the builder does not wish to use this assembly, the Tyres can be fitted to 3" Pulleys in the ordinary way.

To make the door lock a Handrail Support with a 1" Rod is placed in position with a Fishplate locked between two nuts.

The space between the Angle Girders 1 and the bonnet sides are filled in on the near side by a 5½" Flat Girder and a 4½" Flat Girder attached by a Fishplate on the "off" side.

A list of the Parts required will be supplied on request.