New Meccano Model

Diesel Shunting Locomotive

OUTFIT No. 6 contains all the parts required to build the sturdy diesel locomotive shown in Fig. 1 on this page. The model represents one of the powerful locomotives used mostly for shunting purposes in large industrial works and docks.

The main frames of the locomotive consist of 3½″ × 2½″ Flanged Plates 1 connected by a 12½″ Angle Girder 2 and four 12½″ Strips on each side. A 5½″ × 2½″ Flanged Plate 3 is bolted across the rear of the main frames, and a 5½″ Strip 4 is fixed across the front. A 12½″ Angle Girder 5 and a 12½″ Strip 6 on each side are attached to the Flanged Plate 3 and the Strip 4 to form the running plates.

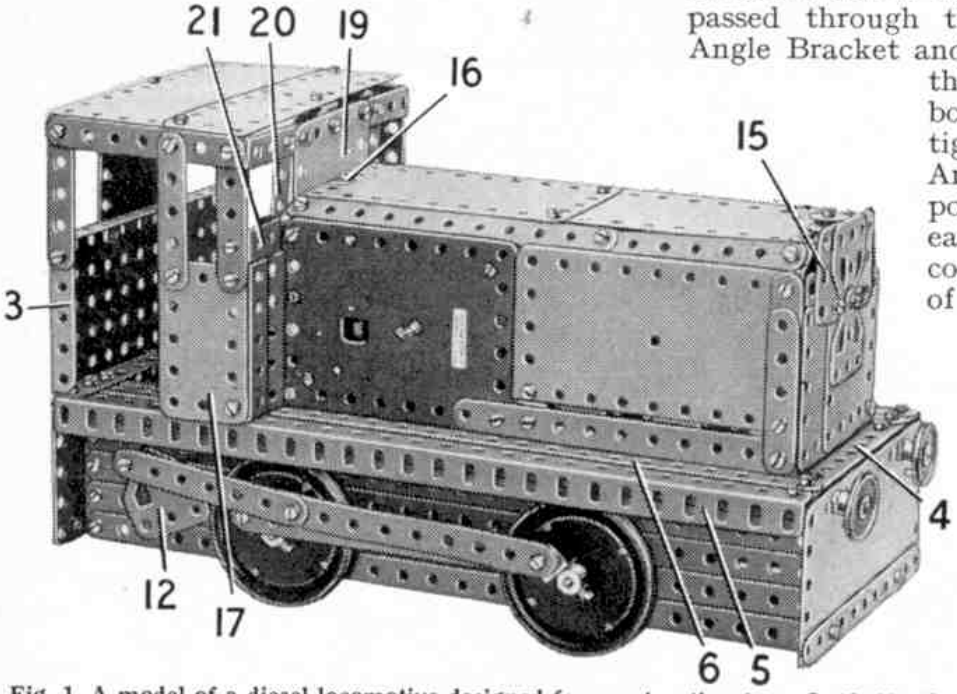

Fig. 1. A model of a diesel locomotive designed for construction from Outfit No. 6.

The sides of the engine housing are attached to 3½″ × ½″ Double Angle Strips 7 and 8 bolted to the Angle Girders 2. The side seen in Fig. 1 is made by bolting a No. 1 Clockwork Motor to Double Angle Strip 7, Fig. 2, and to an Angle Bracket fixed to the Girder 2. The Motor side-plate is extended forward by a 5½″ Strip and one half of a Hinged Flat Plate, and the front ends of these parts are edged by two 2½″ Strips overlapped four holes and bolted to the Double Angle Strip 8.

The side shown in Fig. 3 consists of a 4½″ × 2½″ Flexible Plate and the other half of the Hinged Flat Plate. It is attached at the rear to a 3″ Strip bolted to Double Angle Strip 7, and at the front to two 2½″ Strips overlapped four holes and fixed to Double Angle Strip 8. The overlapped 5½″ Strips 9 complete the lower edge of this side.

Two of the driving wheels are fixed on a 5″ Rod mounted in the main frames, and the other two are held on a compound rod made from a 3½″ and a 1½″ Rod joined by a Rod Connector. Each wheel has an Angle Bracket fixed to its boss. A nut and bolt is passed through the round hole of the Angle Bracket and is screwed into one of the tapped holes of the boss. The nut is then tightened to hold the Angle Bracket firmly in position. The wheels on each side are linked by coupling rods consisting of 5½″ Strips lock-nutted to the Angle Brackets. The setting of the coupling rods is very important. They must be adjusted so that they are at an angle of 90° to each other.

The wheels are driven by cranks on a 5″ Rod 10. The crank 11 consists of a Flat Trunnion bolted to the face of a Bush Wheel, and crank 12 is made by bolting a Flat Trunnion to an Angle Bracket fixed by a nut and bolt to the tapped hole of a Collar. The Bush Wheel and the Collar are fixed on the ends of Rod 10, which is held in place by Spring Clips and is fitted with a 3″ Pulley 13.

The cranks drive the wheels through connecting rods. One of these is made from a 5½″ and a 3″ Strip, and the other consists of a 5½″ and a 3½″ Strip. One end of each connecting rod is lock-nutted to the Angle Bracket on one of the front driving wheels, and the other is pivoted on a ¾″ Bolt held in the crank by two nuts. A Collar and six Washers on each bolt space the connecting rod from the crank.

The drive to Rod 10 is taken by a Driving Band from a ½″ Pulley on the Motor to a 3″ Pulley on a 4″ Rod 14.

A 1″ Pulley on this Rod is connected by a Cord belt to the 3″ Pulley 13.

The front of the engine housing is made from two 2½″ × 2½″ Flexible Plates overlapped three holes, and a 2½″ × 1½″ Flexible Plate 15. Then it is attached to the sides by Angle Brackets. A 5½″ Strip and a 3½″ Strip on one side, and two 5½″ Strips on the other, are fixed to Obtuse Angle Brackets bolted to the sides, and the top of the housing, made from a 5½″ × 2½″ and a 4½″ × 2½″ Flexible Plate, is connected to the forward ends of these Strips by Obtuse Angle Brackets. The top is supported at the rear by an Angle Bracket 16 fixed to the front of the cab.

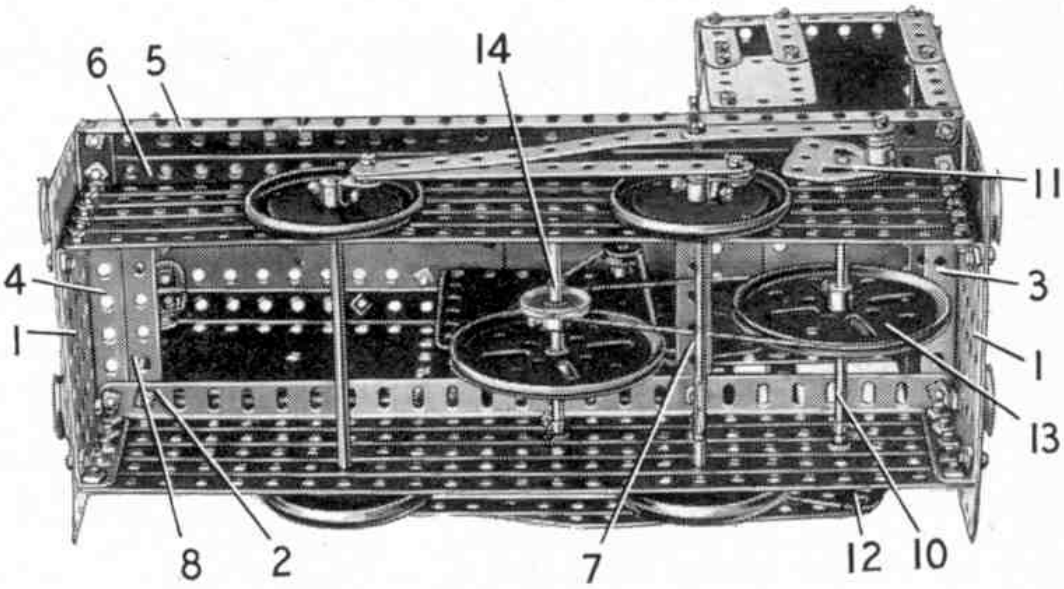

Fig. 2. An underneath view of the locomotive showing the pulley and belt reduction drive to the wheels.

The front of the cab is made by bolting two 2½″ × ½″ Double Angle Strips to the Girder 5 and Strip 6 on each side. A third 2½″ × ½″ Double Angle Strip is fixed to the Girder 5 at right-angles to the others, and this serves to support a 2½″ × 1½″ Flexible Plate 17 that forms the side of the cab. The roof is supported on each side by three 2½″ Strips connected at their upper ends by a 3½″ Strip. At the rear the 3½″ Strips are connected by Angle Brackets to a 5½″ Strip 18, and at the front they are joined by 2½″ × ½″ Double Angle Strips to a 2½″ × 1½″ Flexible Plate 19. The Angle Bracket 16 is attached to the lower edge of this Flexible Plate. The front of the cab is completed by a 1½″ Strip 20 and a 1½″ × ½″ Double Angle Strip 21 on each side.

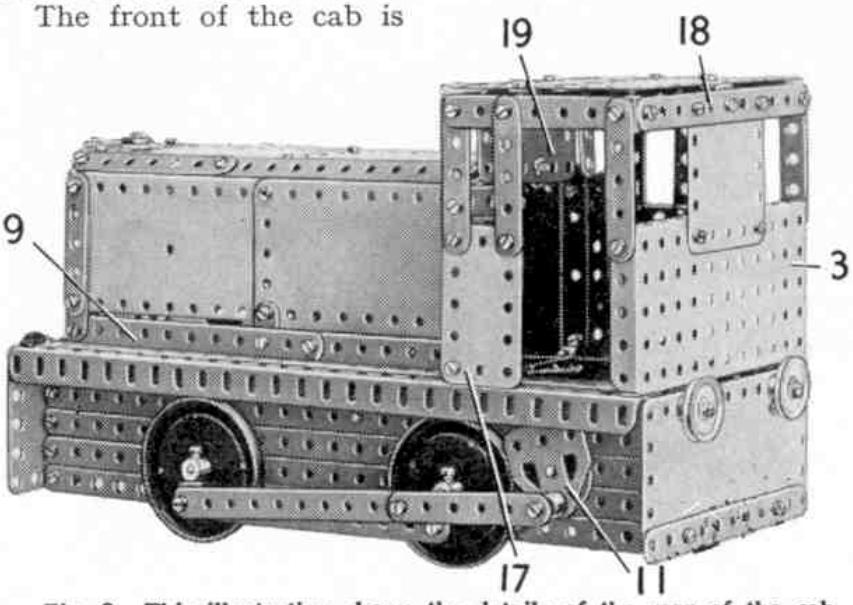

Fig. 3. This illustration shows the details of the rear of the cab.

The cab roof consists of a 5½″ × 2½″ and a 5½″ × 1½″ Flexible Plate attached to the Strip 18 and the Flexible Plate 19 by Angle Brackets.

The model is completed by a 5½″ × 2½″ Flexible Plate bolted to each of the Flanged Plates 1. The buffers are 1″ Pulleys, and they are fixed on ⅜″ and ½″ Bolts.

The drive fitted between the Clockwork Motor and the driving wheels gives a reduction ratio of approximately 12:1, and quite a powerful drive is obtained. The throw of the cranks 11 and 12 should be exactly the same as the throw provided by the Angle Brackets on the driving wheels.

Parts required to build the model Diesel Shunting Locomotive: 10 of No. 1; 14 of No. 2; 4 of No. 3; 2 of No. 4; 11 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 13 of No. 12; 6 of No. 12c; 2 of No. 15; 1 of No. 15b; 1 of No. 16; 1 of No. 18a; 2 of No. 19b; 5 of No. 22; 1 of No. 23; 1 of No. 23a; 1 of No. 24; 4 of No. 35; 120 of No. 37; 10 of No. 37a; 16 of No. 38; 1 of No. 40; 2 of No. 48; 8 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 3 of No. 59; 2 of No. 111; 2 of No. 111a; 4 of No. 111c; 4 of No. 126a; 1 of No. 186b; 4 of No. 187; 4 of No. 188; 1 of No. 189; 3 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 198; 1 of No. 213; 1 No. 1 Clockwork Motor.