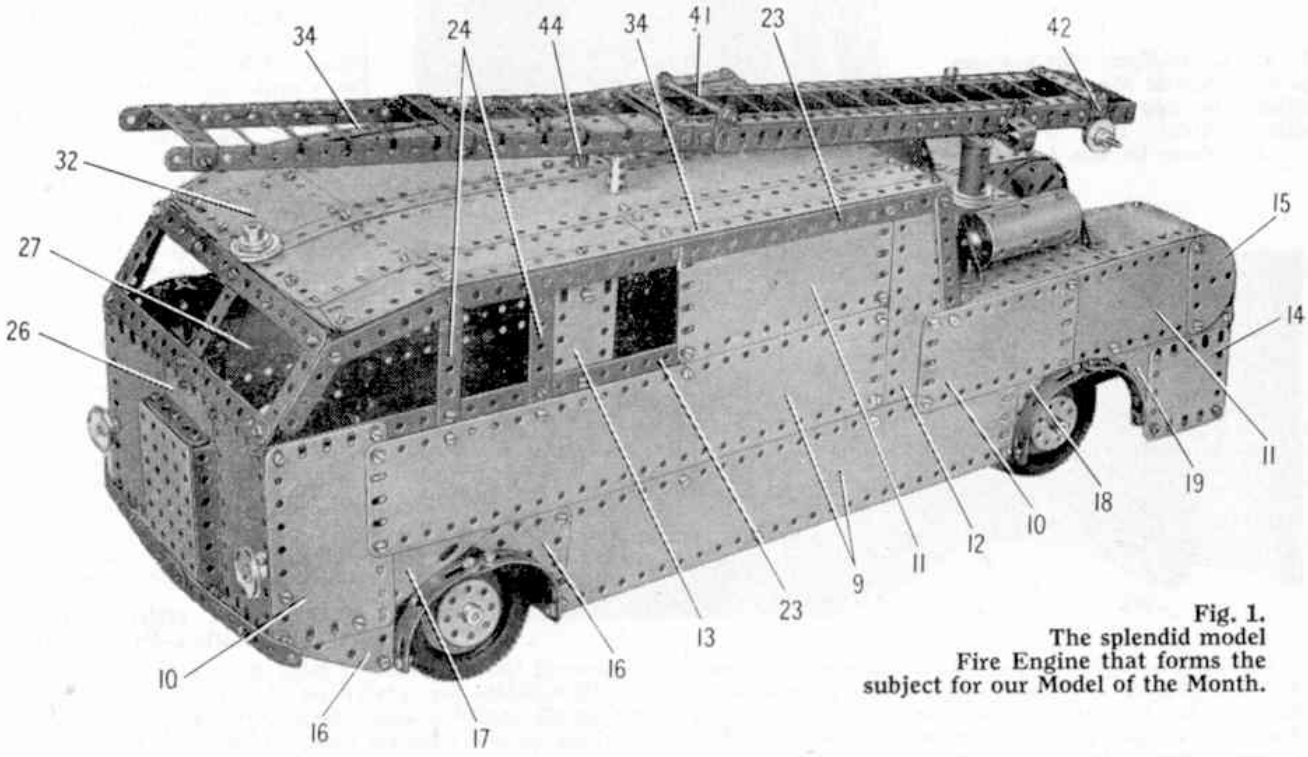

Fig. 1.
The splendid model Fire Engine that forms the subject for our Model of the Month.

MODEL OF THE MONTH: Fire Engine

OUR model this month is one that will appeal to every Meccano enthusiast who likes to build models of vehicles. Modern fire-fighting appliances, usually painted a glistening red and with gleaming brass fittings, present a thrilling sight as they speed along on their way to an outbreak of fire. These powerful vehicles attract young and old alike, and on this score alone it is no wonder that fire engines are among the most popular subjects for Meccano models.

Apart from this fascination however, fire-fighting appliances appeal particularly to the model-builder who delights in building models with plenty of mechanical details. In addition to the steering gear and other mechanisms usually fitted to model vehicles, with a fire engine there is almost unlimited scope for model-builders to use their skill in building extending ladders, pumps and other pieces of fire-fighting equipment. The design of fire-fighting appliances has been developed considerably to meet the exacting requirements of modern life, and the latest machines are a far cry from the earliest horse-drawn engines with hand-operated pumps. Many present-day appliances have

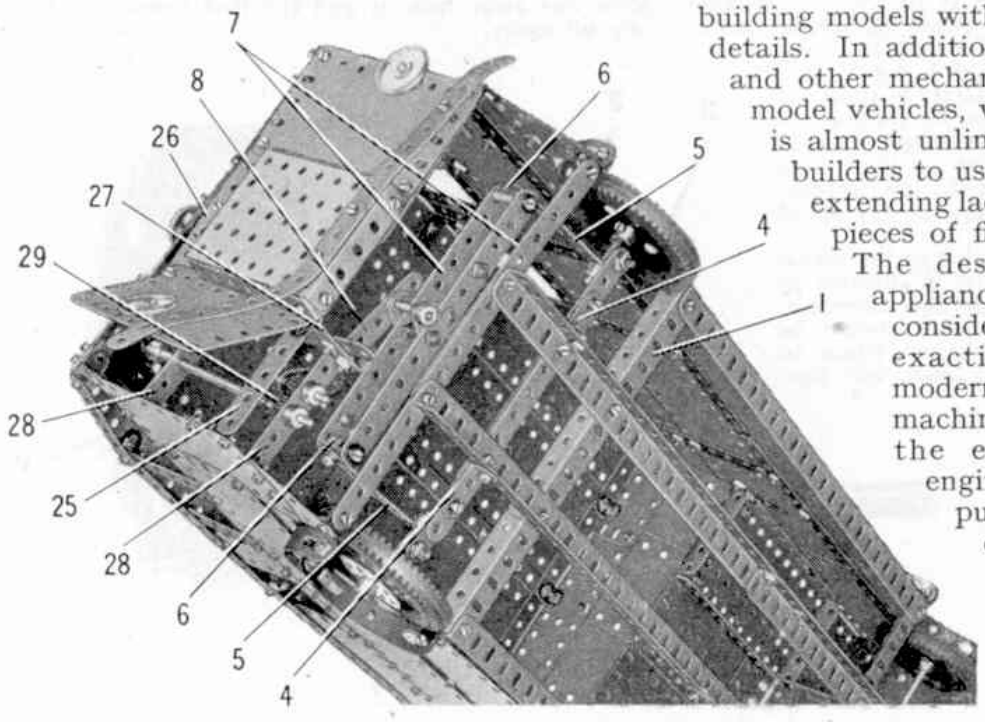

Fig. 2. This view of the Fire Engine shows the arrangement of the steering mechanism.

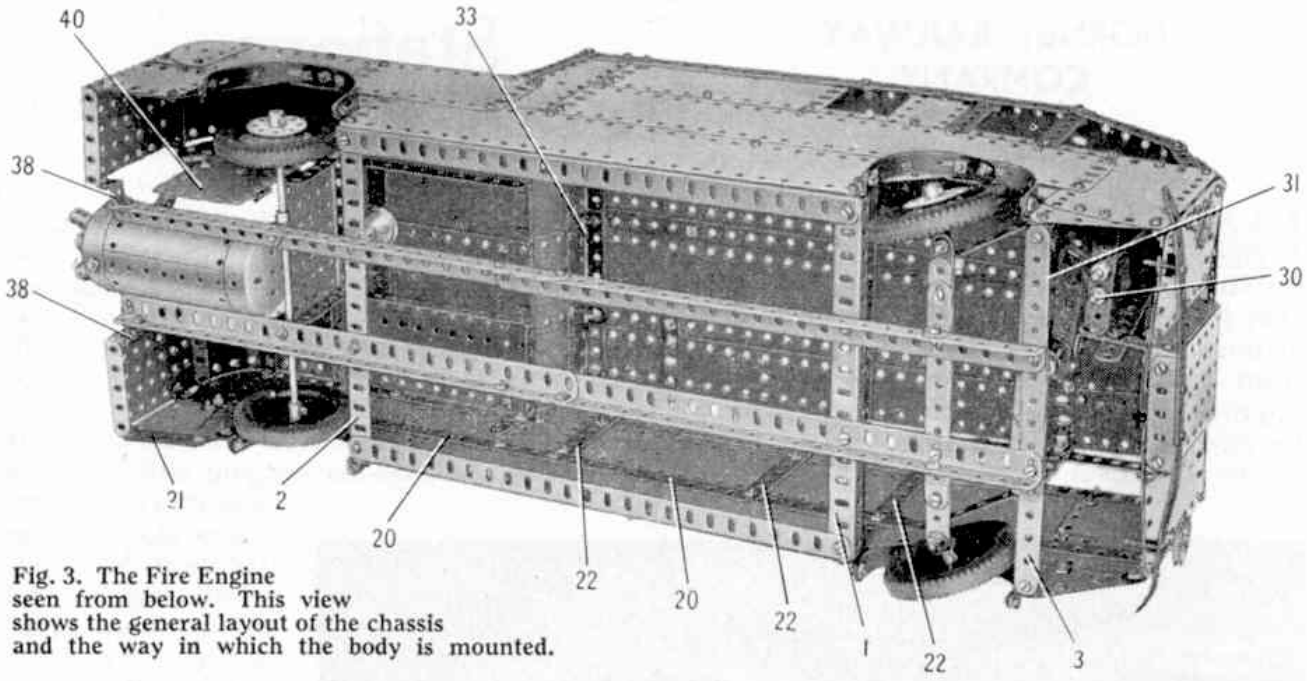

Fig. 3. The Fire Engine seen from below. This view shows the general layout of the chassis and the way in which the body is mounted.

powerful motor pumps capable of delivering thousands of gallons of water at high pressure, foam equipment for fighting petrol and oil fires, and storage lockers for the hoses and other necessary articles.

The Meccano model is based on a modern streamlined fire engine with enclosed accommodation for the firemen. It is fitted with a detachable extending ladder, which is located on the vehicle by special supports. The ladder can be removed easily and will reach to a height of approximately 2 feet 9 inches when extended. The model is fitted with a simple but effective steering mechanism.

The rear end of the fire engine carries fittings that represent the pump, hose connections and control wheels. The back of the model is shaped specially to accommodate these fittings, and good use is made of Flexible Plates and Triangular Flexible Plates.

The chassis of the model can be built as a unit, complete with the rear axle mounting and the main sections of the steering mechanism. The body is built directly on supporting Girders and Strips attached to the chassis, and the steering column is mounted in bearings fixed to the body. The model is over 2 ft. long and is approximately 9 in. wide.

The fire engine is designed for construction with parts in a No. 8 Outfit, and model-builders can obtain full constructional details and a list of the parts required by writing to the Editor, sending a 2d. stamp to cover return postage.

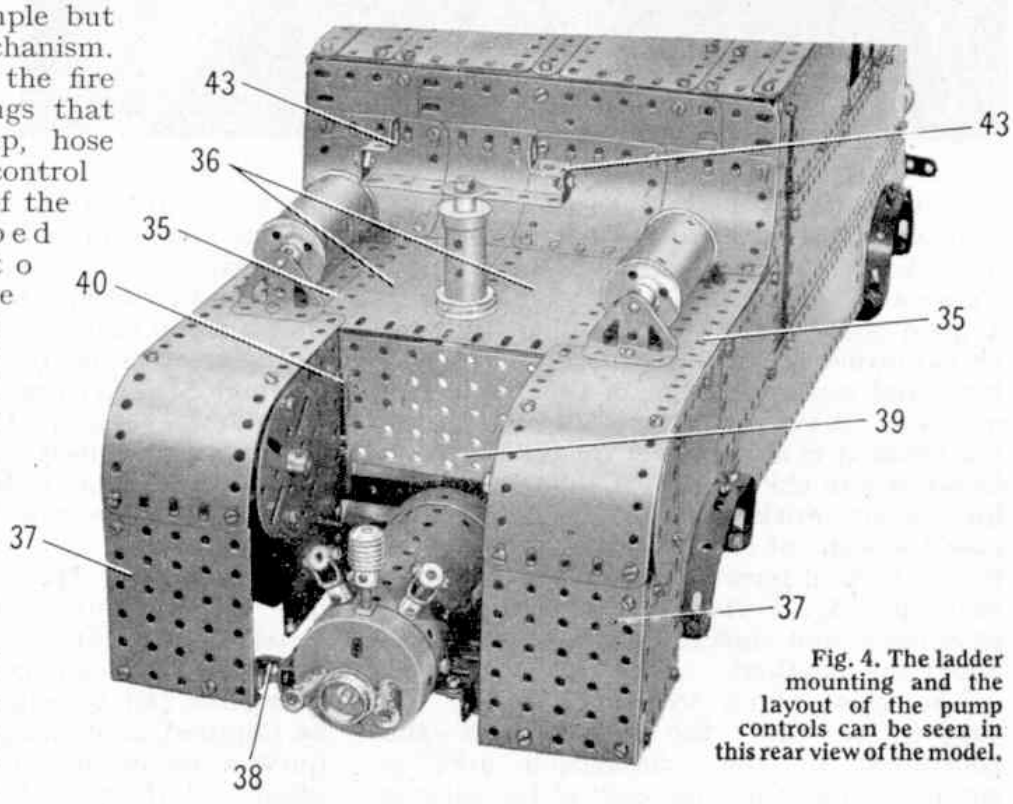

Fig. 4. The ladder mounting and the layout of the pump controls can be seen in this rear view of the model.

MODEL OF THE MONTH

FIRE ENGINE

Constructional details of the model Fire Engine illustrated in the Meccano Magazine for July 1956.

Construction of the Chassis.

Each girder of the chassis is formed by two 12½" Angle Girders overlapped four holes. The Girders are connected by two built-up angle girders 1 and 2 and a built-up strip 3. The girders 1 and 2 are each made from two 5½" Angle Girders overlapped five holes, and the strip 3 consists of two 5½" Strips similarly overlapped.

The rear wheels are fixed on an 8" Rod supported in Double Brackets bolted to the chassis. A Conical Disc is fitted to each wheel and is held in place by a Bush Wheel.

The front axle beam is formed by two 5½" Strips overlapped eight holes and bolted across the chassis. At each end it is strengthened by a 1" x ½" Angle Bracket 4. Each of the front wheels is fixed on a 2" Rod supported in a Double Bracket that is lock-nutted to the end of the axle beam. A Conical Disc and a Wheel Disc are held on the Rod by a Collar, and a 2½" Strip 5 is pivoted on the inner end of the Rod and is also kept in position by a Collar. The other ends of these Strips are fitted with ⅜" Bolts screwed tightly into the centre threaded holes of Couplings 6. Two built-up strips 7 are pivotally connected to the ends of the Couplings by ⅜" Bolts gripped in the Couplings by their Grub Screws. One of the Strips 7 consists of a 4½" and a 3" Strip, and the other is made from a 5½" and a 3" Strip. A 1" Triangular Plate is bolted to the centre of each of the Strips 7 as shown. A 1½" Rod is held in the Triangular Plates by Collars, and a 3" Strip 8 is pivoted on the Rod.

The Sides of the Body.

Each side of the body consists of two 12½" x 2½" Strip Plates 9, two 4½" x 2½" Flexible Plates 10, two 5½" x 2½" Flexible Plates 11, a 5½" x 1½" Flexible Plate 12, a 2½" x 1½" Flexible Plate 13, a 2½" x 2½" Flexible Plate 14 and a Semi-Circular Plate 15. The front wheel arch is formed by two 2½" x 1½" Triangular Flexible Plates 16 and a 3½" x 2" Triangular Flexible Plate 17. The rear wheel arch is filled in by a 2½" x 2" Triangular Flexible Plate 18 and a 2½" x 2½" Triangular Flexible Plate 19.

The Plates of each side are bolted together as shown and are strengthened on the inside by two 12½" Strips 20, a 2½" Strip 21 and three 5½" Strips 22. On the outside the Plates are edged by two 12½" Strips 23. The window divisions are made with two 3½" Strips 24, a 3" Strip and a 2" Strip.

The completed sides are fixed to 12½" Angle Girders bolted to the ends of the girders 1 and 2, and are connected to the strip 3 by Angle Brackets. The mudguards are each made from two Formed Slotted Strips joined by a Fishplate and attached to the sides by Angle Brackets.

The Front of the Cab and the Radiator.

Each side of the front of the cab is a 4½" x 2½" Flexible Plate, bolted at its lower end to a 3½" Strip 25 and connected at the top by a 5½" x 1½" Flexible Plate 26. The 4½" x 2½" Flexible Plates are attached to the cab sides by Angle Brackets. The radiator is a 3½" x 2½" Flanged Plate, edged by 3½" x ½" Double Angle Strips, and it is connected to the front of the cab by three Angle Brackets.

The top edge of the windscreen consists of two 5½" Strips overlapped seven holes, and the lower edge is made from two 4½" Strips overlapped three holes. These Strips are connected by three 2½" Strips. The windscreen is attached to the front of the cab by three Obtuse Angle Brackets, and to the 3" Strips at the top of the cab sides by Angle Brackets.

The front bumper is made from two 5½" Strips overlapped three holes and bolted to the radiator. The bumper is connected also to the front of the cab by ¾" Bolts, but is spaced from it by a Spring Clip on each bolt.

Steering Assembly.

Two 1½" x ½" Double Angle Strips 27 are bolted to the front of the cab, and these are connected to the side by two 2½" x ½" Double Angle Strips 28. The steering column is a 5" Rod held in the Double Angle Strips 28 by a ½" Pinion 29 and a Collar. The Pinion 29 engages a second ½" Pinion on a 1½" Rod 30, and this Rod is fitted also with a Crank 31 lock-nutted to the Strip 8.

Cab Roof.

The roof consists of two 12½" x 2½" Strip Plates bolted at the front to a 5½" x 2½" Flexible Plate 32 and spaced apart by a 12½" Strip extended by a 3" Strip. To the front end of the roof is bolted a built-up strip made from a 5½" x ½" Double Angle Strip extended at each end by a 2½" Strip overlapped three holes. To the rear of the roof is bolted a built-up Strip 33 made from a 5½" and a 4½" Strip overlapped three holes, and at the centre the roof is braced by two 5½" Strips overlapped five holes. The roof is extended at each side by two 5½" x 1½", two 2½" x 1½" and two 2½" x 2½" Flexible Plates. These are bolted to the three built-up strips already mentioned, and are strengthened along their outer edges by a 12½" Strip 34.

The Roof is connected to the top of the windscreen by three Obtuse Angle Brackets, and to each side of the cab by three ½" x ½" Angle Brackets and a 1" x 1" Angle Bracket. The bell at the front of the roof is represented by a 1" loose Pulley and a ½" fixed Pulley mounted on a Threaded Pin.

Rear Platform and Pump Assemby.

To each side of the body is bolted a 5½" x 2½" Flanged Plate 35, and these are connected by two 5½" x 2½" Flexible Plates 36. A further 5½" x 2½" Flexible Plate is bolted to each Flanged Plate, and these are curved as shown and fixed to 3½" x 2½" Flanged Plates 37. A 2½" x ½" Double Angle Strip is attached to the lower end of each of the Plates 37. The Double Angle Strips are secured by their lugs to the

sides of the body and to ½" Reversed Angle Brackets 38 bolted to the chassis.

A 3½" x 2½" Flanged Plate 39 is bolted between the Flanged Plates 35, and a Face Plate and one half of a Hinged Flat Plate 40 are fixed to the inner lug of a 2½" x ½" Double Angle Strip attached to each side of the body.

Four 1 11/16" radius Curved Plates are bolted to the front ends of the Plates 35 and 36, and are extended upward by one 5½" x 1½" and two 2½" x 1½" Flexible Plates. The last mentioned Plates are connected to the rear end of the roof by three Angle Brackets.

Each hose reel is a cylinder fitted with two 1⅛" Flanged Wheels. It is mounted on a 3½" Rod supported in Trunnions.

A Boiler is bolted to Angle Brackets fixed to the rear end of the chassis, and is provided with the fittings shown. Two Couplings and a ¾" Flanged Wheel are fixed on ⅜" Bolts passed through the Boiler End, and the Swivel Bearings are secured on Pivot Bolts. The Worm is fixed to the end of a Screwed Rod passed through the Boiler and held in place by nuts.

Construction of the Extending Ladder.

The lower section of the ladder consists of two 12½" Angle Girders joined at their ends by 2½" x 1" Double Angle Strips, 1 of which is fitted with a Screwed Rod 41. The sliding section is formed by two 12½" Angle Girders connected by 2½" Strips, and fitted at one end with two 1" x 1" Angle Brackets 42. These Angle Brackets support a 4" Rod, which is held in place by ¾" Flanged Wheels.

The sliding section is extended by 12½" Strips connected by two 2½" x ½" Double Angle Strips, and the two sections are fitted together as shown. The ladder rungs are represented by Cord.

The rear ladder support is formed by two 1" loose Pulleys, a Sleeve Piece, a ¾" Flanged Wheel, a 3½" x ½" Double Angle Strip and a ¾" Washer clamped by nuts on a Screwed Rod passed through the Flexible Plates 36.

The ladder is located by two ½" Reversed Angle Brackets 43.

The front ladder support is made by fixing a large Fork Piece 44 to the roof by means of a ½" Bolt. A 3½" Rod, fitted with two Couplings, is held in the Fork Piece by Spring Clips.

Parts required to build the Fire Engine:- 13 of No. 1; 21 of No. 2; 6 of No. 2a; 6 of No. 3; 6 of No. 4; 12 of No. 5; 2 of No. 6; 10 of No. 8; 4 of No. 9; 8 of No. 10; 4 of No. 11; 32 of No. 12; 4 of No. 12a; 2 of No. 12b; 6 of No. 12c; 1 of No. 13a; 1 of No. 15; 1 of No. 15a; 3 of No. 16; 2 of No. 17; 2 of No. 18a; 4 of No. 20; 4 of No. 20a; 4 of No. 20b; 3 of No. 22; 3 of No. 22a; 1 of No. 23a; 2 of No. 24; 2 of No. 24a; 2 of No. 26; 1 of No. 32; 4 of No. 35; 278 of No. 37a; 260 of No. 37b; 10 of No. 38; 2 of No. 38d; 1 of No. 40; 2 of No. 46; 2 of No. 48; 8 of No. 48a; 3 of No. 48b; 1 of No. 48d; 2 of No. 52; 4 of No. 53; 10 of No. 59; 1 of No. 62; 6 of No. 63; 2 of No. 77; 1 of No. 80a; 2 of No. 80c; 2 of No. 109; 1 of No. 111; 6 of No. 111a; 6 of No. 111c; 1 of No. 115; 4 of No. 125; 4 of No. 126; 4 of No. 142a; 2 of No. 147b; 1 of No. 162; 1 of No. 163; 2 of No. 165; 1 of No. 185; 4 of No. 187a; 8 of No. 188; 8 of No. 189; 2 of No. 190; 6 of No. 191; 9 of No. 192; 6 of No. 197; 1 of No. 198; 4 of No. 200; 2 of No. 214; 8 of No. 215; 2 of No. 216; 4 of No. 221; 2 of No. 222; 2 of No. 223; 2 of No. 225.