

# New Meccano Model

## Showman's Traction Engine

THE model seen in Fig. 1 represents a powerful traction engine of the kind used by travelling showmen for hauling fairground and circus equipment. Engines of this type are usually fitted with a dynamo mounted at the front of the boiler, and this supplies electricity for lighting the fairground and amusement machines, etc.

The body of the model is built from a frame of  $7\frac{1}{2}$ " and  $2\frac{1}{2}$ " Angle Girders 1 and  $9\frac{1}{2}$ " and  $2\frac{1}{2}$ " Angle Girders 2. Each side is filled in with two  $9\frac{1}{2}$ " Strip Plates, one  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ ", one  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " and two  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plates.

The boiler is built by attaching four  $12\frac{1}{2}$ " Angle Girders to a Circular Plate, and curving round the Girders four  $12\frac{1}{2}$ " Strip Plates. The underside is strengthened by two  $12\frac{1}{2}$ " Angle Girders bolted together to form a U-shaped girder. A Flanged Disc is bolted to the Circular Plate, the Bolts that hold it having several Washers on their shanks. A  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate attached at the front of the Boiler forms a canopy and is edged by two Formed Slotted Strips and two  $2\frac{1}{2}$ " Curved Strips. The boiler fittings are now bolted in position. The dynamo is represented by three Boiler Ends, and these are connected together by short Screwed Rods. The dynamo is attached by two  $1$ " x  $\frac{1}{2}$ " Angle Brackets to the canopy.

The cylinder is built by curving two  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates, overlapped four holes, round two Boiler Ends, and then attaching  $3$ " x  $1\frac{1}{2}$ " Flat Plates as shown. A Sleeve Piece with a  $\frac{1}{2}$ " Flanged Wheel at each end, represents the valve chest and is attached to the cylinder by a  $\frac{1}{2}$ " Bolt with one or

two Washers on its shank. The slide bars are formed by two  $3\frac{1}{2}$ " Strips 4, and they are attached to the front of the cylinder by Angle Brackets. The Strips are connected at the other end to two  $1\frac{1}{2}$ " Strips bolted at their lower ends to a  $1\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle

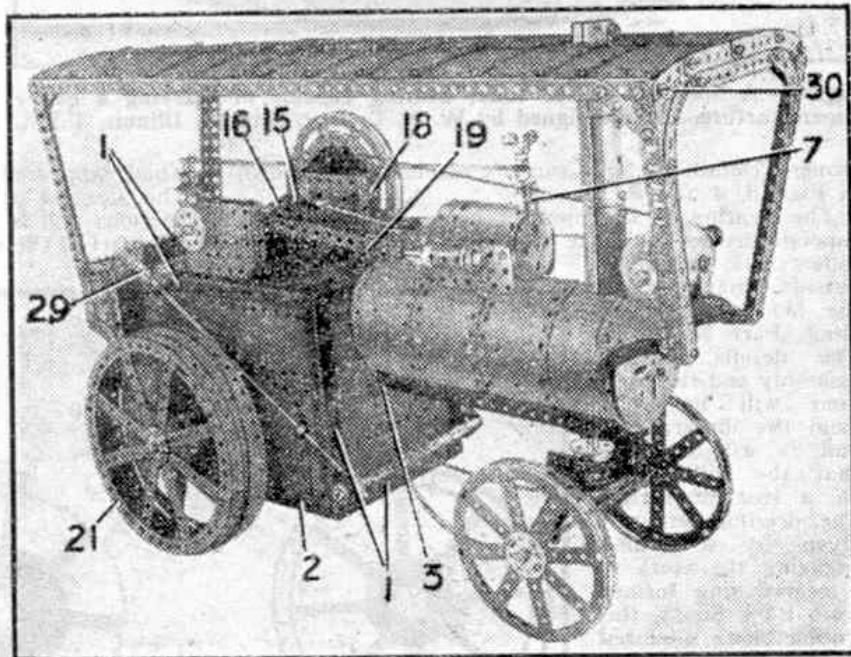


Fig. 1. A powerful traction engine. It is driven by an E20R type Electric Motor and will haul quite heavy loads.

Strip 5 bolted to the top of the body. A crosshead is formed by a  $1\frac{1}{2}$ " Rod which carries two Slide Pieces, and large and small Fork Pieces. A  $3\frac{1}{2}$ " Rod 6 is held in the small Fork Piece and represents the piston rod. Bearings for the governor are made by bolting a  $1\frac{1}{2}$ " Strip 7 to the Boiler End and attaching a Double Bracket to it. The governor itself is a small Fork Piece to which two Collars are attached. The boiler is attached to the body by  $1$ " x  $1$ " Angle Brackets, which are bolted to the ends of the  $12\frac{1}{2}$ " Angle Girders and to compound girders at the front of the body.

The Motor is bolted to two  $7\frac{1}{2}$ " Angle Girders 9, which are part of a frame built with two  $9\frac{1}{2}$ " and two  $7\frac{1}{2}$ " Angle Girders and two compound girders 10. The sides of the Motor are extended by  $2\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flat Plates which form bearings for the gear rods. The Motor drives through four stages of gearing each consisting of a  $\frac{1}{2}$ " Pinion and a 57-tooth Gear Wheel.

The Motor unit complete is fixed in the body by bolts passed through the sixth hole from the lower end of vertical girder 1, and similar girders at the rear of the body. A  $1\frac{1}{2}$ " Bolt is fixed tightly to the centre arm of the Motor switch, and carries a Collar in which is locked a  $3\frac{1}{2}$ " Rod that forms a control lever and allows the Motor to be stopped or reversed when the fire-box front plate is in position.

Two  $3\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plates bolted

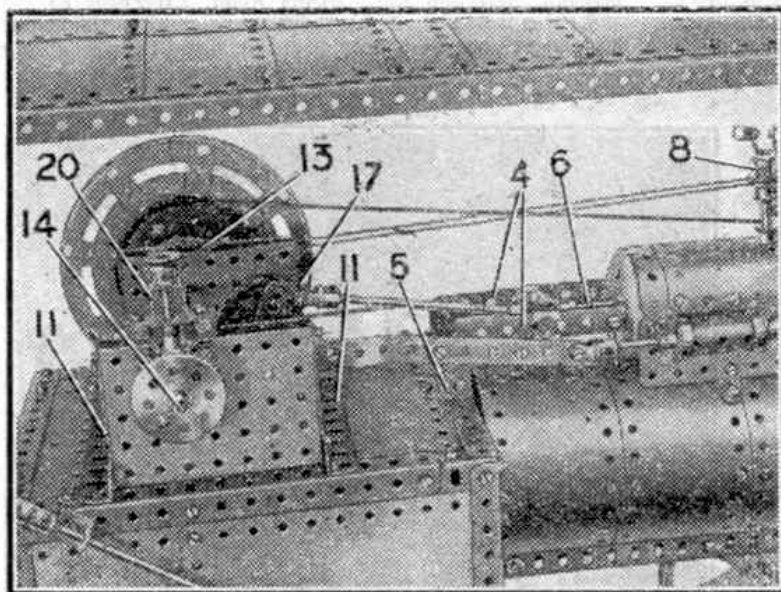


Fig. 2. The engine, showing details of the crankshaft, slide bars, crosshead and the governor drive.

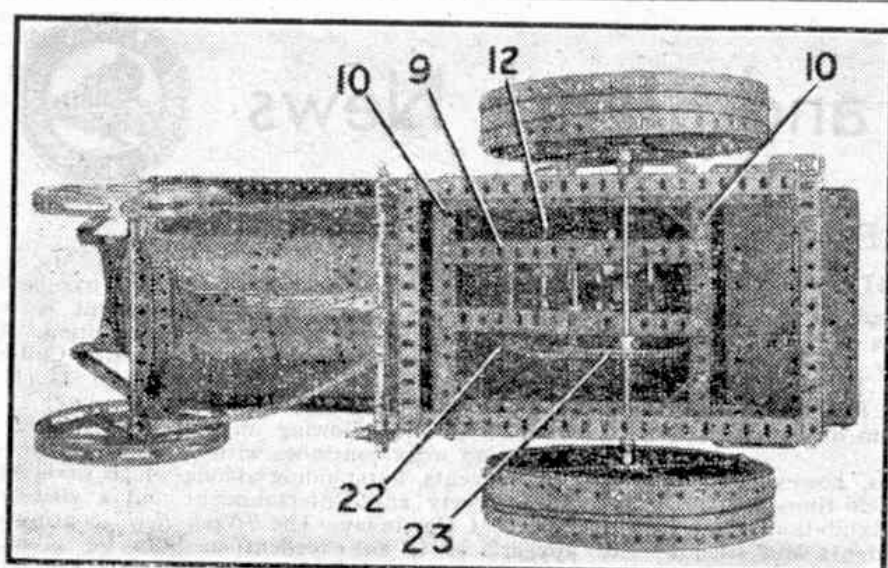


Fig. 3. An underneath view of the tractor showing the Motor unit in position and the drive to the rear axle.

together form each of the bearings for the crankshaft, and each set is bolted to compound girders 11. A length of Chain takes the drive from a  $\frac{1}{2}$ " Sprocket Wheel 12 to a 2" Sprocket 13, which is mounted on 8" Rod 14 inside one of the bearings. Each crank web is made by bolting a Crank 15 and a Double Arm Crank 16 to a Flat Trunnion. Two of these units are constructed, and are connected by a 1" Rod, on which is a Fishplate 17 bolted to an End Bearing. The connecting rod is locked in the End Bearing and also in the large Fork Piece on the crosshead. A  $3\frac{1}{2}$ " Rod is locked in each Double Arm Crank 16, and the crankshaft so formed connected to Rod 14 by 1" Sprocket Wheels and Chain, part of which can be seen at 18.

A compound strip 19 made by bolting a  $5\frac{1}{2}$ " and a 3" Strip together is attached to the arm of a Single Throw Eccentric. At the other end it is pivotally connected to an End Bearing in which is locked a 2" Rod.

The governor drive is taken from the crankshaft through a  $\frac{1}{2}$ " Pulley fixed on a Rod mounted in a  $1\frac{1}{2}$ " Angle Girder and Double Bent Strip fixed to one of the crankshaft bearings.

The flywheel is made by bolting a 4" Circular Plate and a 3" Pulley to a Hub Disc. A double length of Cord takes the drive from the 3" Pulley to a  $\frac{1}{2}$ " Pulley on the dynamo.

The rear wheels are identical in construction, each being built by connecting two Circular Strips 21 by four  $1\frac{1}{2}$ " Double Angle Strips and curving five  $5\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plates round them. The spokes of the wheels are  $3\frac{1}{2}$ " Strips. The rear axle is a compound rod made by joining an  $11\frac{1}{2}$ " Rod and a  $1\frac{1}{2}$ " Rod. It carries a 3" Sprocket 23 that is driven by Chain from a  $\frac{1}{2}$ " Sprocket 22.

The front wheel spring 24 is assembled from  $5\frac{1}{2}$ ",  $4\frac{1}{2}$ ",  $3\frac{1}{2}$ ",  $2\frac{1}{2}$ " and  $1\frac{1}{2}$ " Strips bolted face to face and bent as shown in Fig. 4. It is then bolted to a  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flanged Plate, the bolts by which it is secured holding also a Bush Wheel 25. This Flanged Plate is then connected to a second Flanged Plate by two  $1\frac{1}{2}$ " Flat Girders. A 2" Rod is fixed in the Bush Wheel and Flanged Wheel 26, and passes through two  $1\frac{1}{2}$ " Angle Girders 27 and is held in place by a Collar. The Flanged Wheel carries five Metal Balls inside its flange.

The front axle is an  $8\frac{1}{2}$ " Rod and passes through Double Brackets 28.

The steering column is an  $11\frac{1}{2}$ " and a 1" Rod joined by Coupling 29. It carries a Worm Gear that engages a  $\frac{1}{2}$ " Pinion on an 8" Rod that has eight Couplings and a Collar on it. A length of Chain is passed round the Couplings several times, and each end is then connected to a Handrail Support on the front axle.

The roof is built on a frame of two  $24\frac{1}{2}$ " Angle Girders and two compound girders 30 consisting of a  $5\frac{1}{2}$ " and a  $4\frac{1}{2}$ " Girder overlapped three holes.

## Meccano Competition Results

### June "General" Contest (Overseas Section)

First Prize, Cheque for £3/3/-: A. W. Dickie, St. Clair, Dunedin, New Zealand. Second Prize, Draft for £2/2/-: C. F. Th. von Ziegenweidt, Delft, Holland. Third Prize, P.O. for £1/1/-: P. K. Coetzee, Pretoria, South Africa.

Five Prizes each of 10/6: M. Lomax, Kenya, South Africa; L. Phillips, Westport, New Zealand; S. Pearce, Malta, G.C.; W. N. Cramer, Illinois, United States; W. M. Fisher, Ashland, Pennsylvania, United States.

Five Prizes each of 5/-: B. Fraser, Palmerston North, New Zealand; G. Skinner, Auckland, New Zealand; Jacob I. Bahemia, Mauritius; R. Stewart, Timaru, New Zealand; J. Xuereb, Malta, G.C.

### Meccano Parts Voting Contest (Home Section)

First Prize, Cheque for £2/2/-: N. C. Gray, London N.7. Second Prize, Cheque for £1/1/-: T. Hellaby, London E.7. Third Prize, Postal Order for 10/6: R. Pearse, Romford.

Thirteen Prizes each of 5/-: D. Marrow, Shotton; J. F. Chipping, London E.7; M. J. James, London S.E.9; J. Greenman, Kingston; K. Oakley, Hurst Green; D. Butterworth, Leeds, 8; D. H. Tomlinson, Wells Green, Nr. Crewe; D. E. Franklin, London W.7; R. Williams, Edinburgh; P. A. Klassen, Bradford; M. G. Nutt, Cuckfield; R. Martin, Ewhurst.

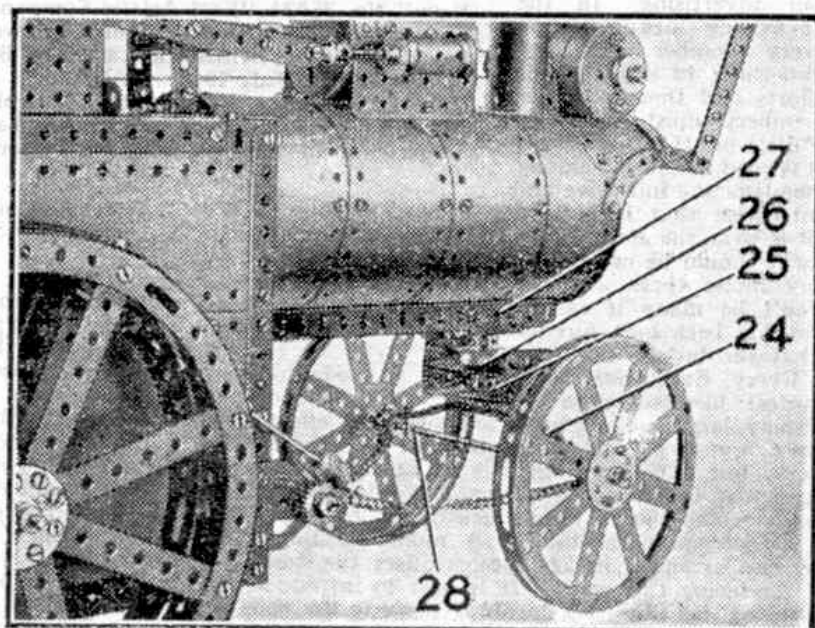


Fig. 4. A close-up view of the front wheel mounting.