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MECCANO

DINKY TOYS · HORNBY DUBLO & GAUGE 'O'

Showman's Traction Engine by Spanner

TRACTION Engines have always been popular with model-builders and although they are now a very rare sight indeed, at one time there were many different types of engine in existence. Perhaps the most famous of all was the Showman's Engine, for this accompanied circuses and fairs all over the country. Not only was it used to haul wagons from one site to the next, but it powered a generator which was used to supply electric for sideshows, etc. I have received many requests for a model based on this type of machine, so here I give full building instructions for a large Showman's Engine which I am sure you will find interesting.

The Boiler

Twenty-nine 12½ in. Strips are bolted to a Hub Disc and two Circular Girders.

Two 12½ in. Angle Girders 1 are fixed to the bottom of the boiler leaving a gap, equalling the width of one Strip, between them. On top of the boiler the uppermost nine Strips are extended by 5½ in. Strips 2 overlapping five holes. At the front of the boiler, Flexible Gusset Plates 3, braced by 2½ in. Strips, are fixed and they are joined across the top by a 4½ in. × 2½ in. Flexible Plate and a 4½ in. Strip 4. Girders 1 are then extended by 9½ in. Angle Girder 5, overlapped eight holes.

At the front, the boiler consists of a Toothed Disc, Part No. 168d, held in place by two 2½ in. Strips. A 1 in. Bolt is passed through the centre hole and holds a ¾ in. Washer and two Collars, one of which has a Long Threaded Pin fixed in it and the other, a Threaded Pin. The front should not be fitted until the

model is completed, so as to allow easy access when the top fittings are being secured.

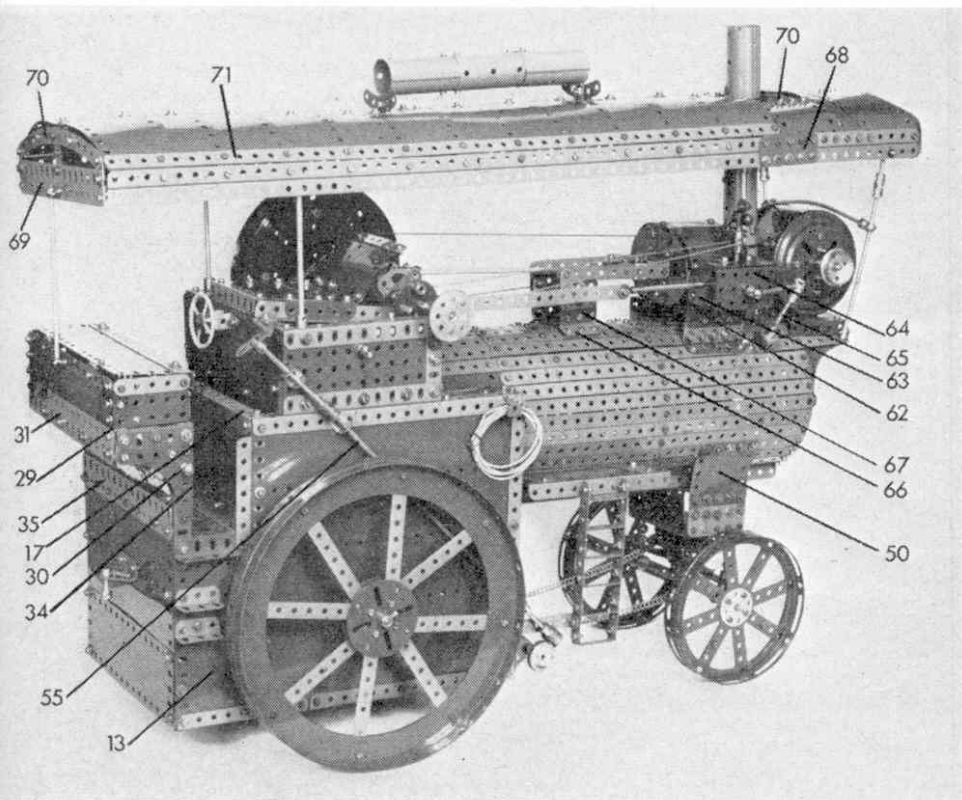
The Body

Both the sides of the body are similarly constructed. A framework is made from three 9½ in. Angle Girders 6, 7 and 8 and a built-up angle girder 9, which consists of a 7½ in. and a 5½ in. Angle Girder joined by a 2 in. Angle Girder. The framework is filled-in by four 9½ in. Strip Plates 10, which overlap one hole, the gap at the bottom being filled by two 5½ in. Flexible Plates. A further 9½ in. Angle Girder 11 is bolted to the end of the built-up angle girder 9 and a 5½ in. Angle Girder 8. The resulting space is filled in by three 2½ in. × 2½ in. Flexible Plates 13. In effect, these fill a space which reaches up to a position eight holes from the top of the Girders. The Strip Plates 10 are braced inside by two 9½ in. Angle Girders 14 and 15, which are fixed seven and eleven holes from the bottom respectively. The sides are then joined together by 7½ in. Angle Girders 16, 17, 18, 19 and 20, Angle Girder 20 being bolted to the Angle Girder 14. A sixth 7½ in. Angle Girder 21 is also bolted to the Angle Girder 14.

The boiler and body can now be joined by bolting Girders 5 between Girders 20 and 21, and by bolting the Hub Disc at the rear of the boiler to Angle Girders 18 and 19. The front of the body is filled in by two 7½ in. × 2½ in. Strip Plates 22, a 4½ in. × 2½ in. Plastic Plate 23 and a 5½ in. × 1½ in. Plastic Plate 24. A 2½ in. × 2½ in. Plastic Plate 25 is bolted to a 2½ in. × 1½ in. Plastic Plate and together they are bolted between the Strips 2 and Angle Girders 7. A 4½ in. Strip 26 and two 2 in. Strips are then bolted across the back.

At the rear of the body, two 2½ in. Angle Girders 27, joined together by two 7½ in. Angle Girders 28 and 29, are bolted to the top of Angle Girders 7. 1½ in. Corner Brackets are bolted to Girders 27 and 29 and also to Girders 27 and 28, behind the Flexible Gusset Plate 30, which is fixed to the Angle Girder 11 and the Angle Girder 27 by Fishplates.

The completed Meccano model of the Showman's Traction Engine.

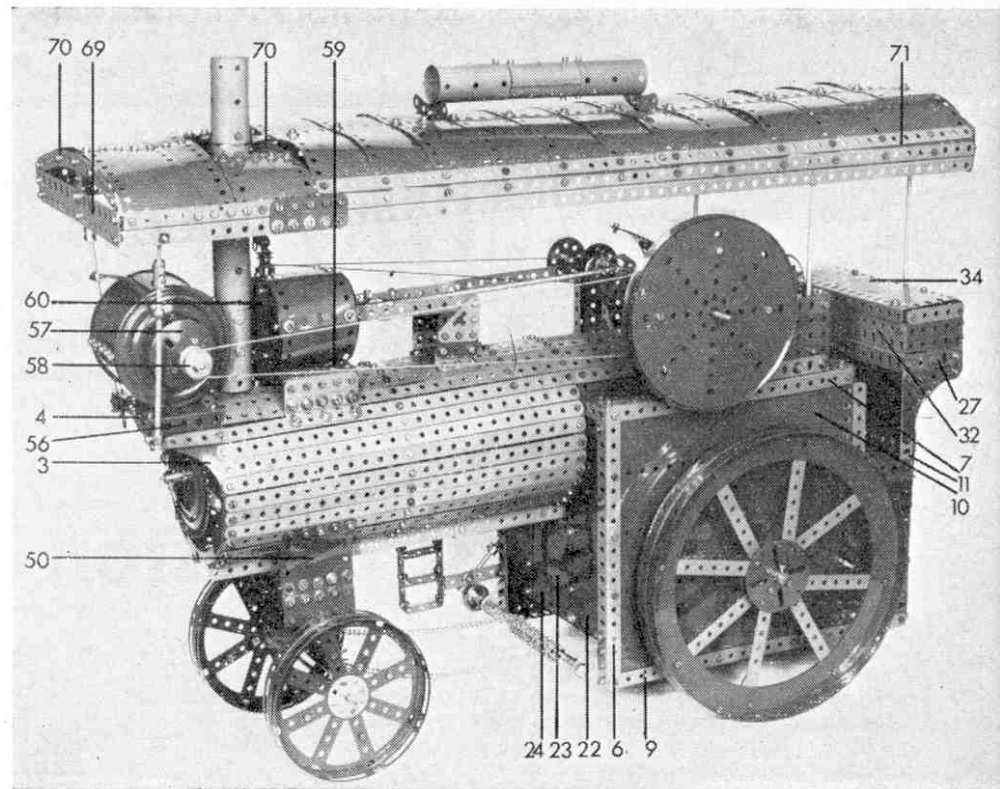


Next, a 7½ in. Flat Girder 31 is bolted, with a 7½ in. × 2½ in. Strip Plate, to the Angle Girder 29. The top of the Plate is edged by a 7½ in. Strip. Two 2½ in. × 1½ in. Flanged Plates, edged by 2½ in. Strips, are fixed to the Strip Plate and bolted to their other flanges is a second 7½ in. Flat Girder 32. Another 7½ in. × 2½ in. Strip Plate 33, with a 7½ in. Angle Girder bolted to it, is fixed to the top by hinges.

To fill in the driver's compartment, two 5½ in. × 2½ in. Flat Plates 34 are bolted to Angle Girder 17. They in turn have a 7½ in. Angle Girder bolted at the bottom which has two 5½ in. × 2½ in. Flat Plates fixed to it to form the floor. The underneath of the coalbunker is filled-in by bolting four 3½ in. × 2½ in. Plastic Plates to the Flat Girder 35 and these are held behind a 7½ in. Strip fixed to the Flexible Gusset Plates 30 by 1 in. Angle Brackets.

Crank Shaft and Gear Train Casing

A 5½ in. Angle Girder is bolted to each Angle Girder 7, then a 7½ in. Angle Girder 36 is bolted between Angle Girders 7 as shown. Girder 36 is connected to the 5½ in. Angle Girders by 2½ in. Angle Girders and the side is filled in by a 5½ in. × 2½ in. Flat Plate 37 which has a 5½ in. Angle Girder fixed along the top. The 5½ in. Angle Girders are joined at the rear by another 7½ in. Angle Girder and the back is then filled in by two 5½ in. × 2½ in. Flat Plates, which are fixed to the Flat Plate 37 by 1½ in. Angle Girders. Corner Brackets should be used at the front to strengthen the structure. A right-handed and a left-handed Flanged Bracket are bolted to Angle Girder 36 and each is extended one hole by means



Drive for the model is supplied by the E15R Electric Motor.

of a 1 in. Strip. They are braced by 5½ in. Angle Girders 38, which are fixed between the Flanged Brackets and the Angle Girder at the back of the gears casing. These Flanged Brackets will later hold the Crank Shaft.

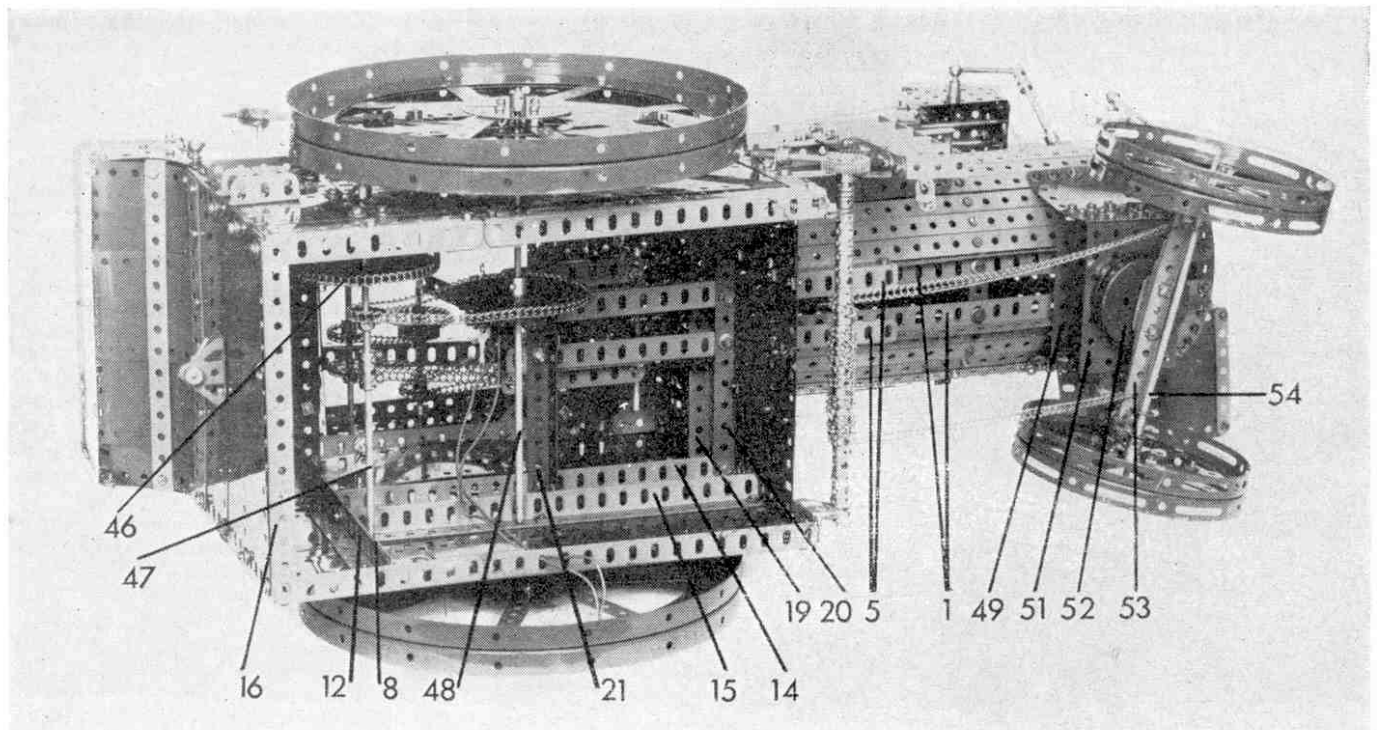
Power unit and Drive to Rear Wheels

Power is supplied by an E15R Electric Motor, housed in the body, which is supported on two 3½ in. Angle Girders 5. An extension switch for the motor is

formed by locknutting a 5½ in. Strip to the Motor switch. The Strip should be bent sufficiently to enable it to be lock-nutted to the 1 in. Bolt fixed to Bush Wheel 39. Bush Wheel 39 is fixed to a 2½ in. Rod, carrying a 1½ in. Steering Wheel and a Collar, which is journaled in two Double Bent Strips.

A ½ in. Pinion on the Motor armature shaft meshes with a 57-teeth Gear on a 4 in. Rod journaled in the side plates of the Motor. On the opposite end of

An underside view of the model showing front wheel and steering arrangements.



the Rod is a $\frac{3}{4}$ in. Pinion which meshes with a 50-teeth Gear Wheel also on a 4 in. Rod journalled in the top holes of the Motor side plates. On both Rods, the Gears are spaced from the Motor by Collars. On the same side as the 50-teeth Gear is a $\frac{3}{4}$ in. Sprocket Wheel, linked by Chain to a 1 in. Sprocket Wheel 40 on an 8 in. Rod 41. The Rod is held in place by Collars.

On Rod 41 is a second 1 in. Sprocket Wheel, joined by Chain to a $1\frac{1}{2}$ in. Sprocket 42 on an 8 in. Rod 43. Also mounted on Rod 43 is a 1 in. Sprocket Wheel 44 and a $\frac{3}{4}$ in. Sprocket Wheel 45. Sprocket Wheel 45 is, in turn, connected by Sprocket Chain to a 3 in. Sprocket Wheel 46 on a compound rod 47 formed from two $4\frac{1}{2}$ in. Rods joined by a Coupling. A $\frac{3}{4}$ in. Sprocket Wheel on rod 47 drives, by Sprocket Chain, a 3 in. Sprocket Wheel on an $11\frac{1}{2}$ in. Rod 48.

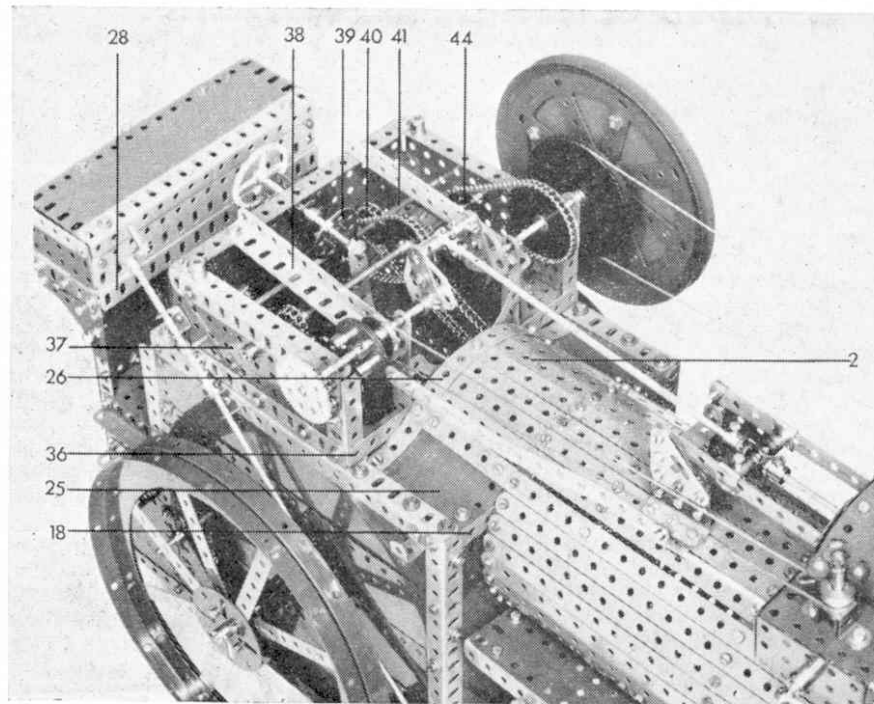
The Wheels and Steering Assembly

Both rear wheels consist of two Face plates joined by $\frac{3}{4}$ in. Bolts passed through the four inside holes. Between the Face Plates are Collars and a $4\frac{1}{2}$ in. Strip is placed on each side of the Collar. The eight Strips are then bolted alternately in between two $9\frac{3}{4}$ in. Flanged Rings. After this the wheels are fixed to Rod 48, being spaced from the sides of the body by a Double Bent Strip.

The front wheel mountings are formed as follows: A $3\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Flanged Plate 49 is fixed to the Angle Girders 1 by $1\frac{1}{2}$ in. Bolts, but are spaced apart by a Collar and three Washers. A $2\frac{1}{2}$ in. Flat Girder is fixed to the Flanged Plate and butt-jointed to this by a further $2\frac{1}{2}$ in. Flat Girder is Plastic Plate 50, which is also fixed to the side of the boiler. A second $3\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Flanged Plate 51 also has $2\frac{1}{2}$ in. Flat Girders attached to its Flanges. The Flat Girders are then bolted to the Flat Girders on Flanged Plate 49.

Next, two $1\frac{1}{2}$ in. Bolts are passed through opposite holes in a 2 in. Pulley and three Washers are placed on their shanks. They are then locked in position with Nuts. The Pulley is fitted in Wheel Flange 52, so that the Boss and the $1\frac{1}{2}$ in. Bolts protrude through the holes, and is locked in position by Nuts. A $1\frac{1}{2}$ in. Strip is then placed on the shanks of the Bolts. A 2 in. Rod is passed through the Boss of the 2 in. Pulley and a Collar placed on it to hold the $1\frac{1}{2}$ in. Strip in place.

On the other end of the Rod, a Double Arm Crank is fixed so that its Boss rests on the 2 in. Pulley and a 1 in. Rubber Ring is slipped over it to rest on the Pulley. A bolt is placed loosely through each arm of the Crank from below, the shank projecting upwards. The Rubber Ring can now be slipped underneath to hold the Bolts in place. Twelve Balls are placed round the edge of the 2 in. Pulley so that they rest against the Rubber Ring and a second Wheel Flange is placed on top so the bolts resting on the Rubber Ring pass through. The Bolts are then passed through the centre



A close-up of the body of the model showing the gearbox.

holes in Flanged Plate 51 and fixed in place.

A $1\frac{1}{2}$ in. Strip, three $2\frac{1}{2}$ in. Strips, two $3\frac{1}{2}$ in. Strips and three $5\frac{1}{2}$ in. Strips 53 are mounted on the shanks of the $1\frac{1}{2}$ in. Bolts in the Wheel Flange. A 1 in. Bolt is passed through the centre hole of a Double Bracket, so that the bolthead lies between the lugs and it is secured with a nut. A Collar is placed on it and it is then passed through the end hole in Strips 53 and held with a nut. A Hand-rail Coupling is mounted on the top. A similar arrangement is fixed to the other end of Strips 53. An 8 in. Rod 54 is passed through the two Double Brackets and is held in place by Collars.

Two Hub Discs bolted face to face, with a Bush Wheel bolted to the centre, are secured on the ends of Rod 54 to serve as front wheels. The steering shaft consists of a $11\frac{1}{2}$ in. Rod 55, which is joined to a $3\frac{1}{2}$ in. Rod by a Short Coupling. It is journalled in three Double Brackets fixed to the side of the body and held in place by Collars. The steering handle is a Double Arm Crank with a Threaded Pin secured in one hole. At the other end is a Worm which meshes with a 1 in. Gear Wheel on an 8 in. Rod. The Rod is supported in two Trunnions, bolted to the Angle Girders 6, and has eight Couplings secured on it. The 1 in. Gear is spaced from the Trunnion by a Collar and four Washers. A length of Sprocket Chain is wrapped eight times round the Couplings and the ends are tied to Strips 54 with Cord. The Grub Screws on the Couplings should grip the Sprocket Chain so that when the steering handle is turned the Chain will be pulled and the wheels will turn.

The dynamo base is a $3\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Flanged Plate 56, which is fixed to the

front of the boiler by four $1\frac{1}{2}$ in. Bolts. Its sides are Ball Flanged Discs joined by four $2\frac{1}{2}$ in. \times 1 in. Double Angle Strips and two 3 in. Screwed Rods. A $6\frac{1}{2}$ in. Rod is passed through the centre holes and is held in place by Collars. A Boiler End 57, fixed to the side of the Dynamo by two $1\frac{1}{2}$ in. Bolts, a Washer and a Collar, are also mounted on the $6\frac{1}{2}$ in. Rod, along with two $\frac{3}{4}$ in. Flanged Wheels 58, placed so that their Flanges touch. The Dynamo is completed by a $4\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. and two $2\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Plastic Plates. They are not secured at the bottom but merely rest on the base Plate.

Four $2\frac{1}{2}$ in. Cylinders, forming the chimney, are joined by Fishplates and are attached to the boiler by two Angle Brackets. The chimney should be fixed so that it lies flush against the dynamo. A $3\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Flanged Plate 59 has a $2\frac{1}{2}$ in. Flat Girder bolted to each flange. These Flat Girders are, in turn, bolted to two $2\frac{1}{2}$ in. Angle Girders fixed to the boiler. The Angle Girders should be bent so that the Flat Girders will be perfectly vertical, thus forming the base for the cylinder. Two $2\frac{1}{2}$ in. \times $\frac{1}{2}$ in. Double Angle Strips are bolted to the Flanged Plate 59 through the third row of holes in from each side. To their lugs are bolted a 3 in. \times $1\frac{1}{2}$ in. Flat Plate 60 and two Semi-circular Plates one each side of the Flat Plate, at the front and, at the rear a $2\frac{1}{2}$ in. \times $1\frac{1}{2}$ in. Flat Plate and two Semi-circular Plates. A $1\frac{1}{2}$ in. \times $\frac{1}{2}$ in. Double Angle Strip 61 is bolted across the middle holes. Two two sides are joined at the top by two $2\frac{1}{2}$ in. \times $1\frac{1}{2}$ in. Plastic Plates, which are bolted to Angle Brackets fixed to the Semi-circular Plates, at the same time bolting in place two $2\frac{1}{2}$ in. \times $2\frac{1}{2}$ in. Flat Plates which fill in the sides.

