

# New Meccano Model

## Road Sweeping Vehicle

THE mechanical road sweeper that forms the subject of our new model this month is built from the contents of a Meccano Outfit No. 8. It is fitted with a compact worm reduction unit in the rear axle, and also includes a neat belt drive that allows the height of the sweeping brushes to be adjusted

Strip, and the assembly is fitted at one end with an Angle Bracket. The Bracket is pivoted on the shank of a  $\frac{3}{8}$ " Bolt fixed to the chassis, and the free end of the spring is passed between the lugs of a Double Bracket attached to the chassis by a  $\frac{1}{4}$ " Bolt and two nuts.

The front axle consists of two  $5\frac{1}{2}$ " Strips bolted to springs made from  $3\frac{1}{2}$ " and  $2\frac{1}{2}$ " Strips. An Angle Bracket is bolted through its round hole to the rear end of each spring, and a bolt passed through the slotted hole is lock-nutted to the chassis. The forward end of one spring is placed between the lugs of a Double Bracket 4, and the end of the other spring fits between two Angle Brackets 5. A  $\frac{3}{8}$ " Bolt is fixed through the lugs of Double Bracket 4.

The front wheels run freely on  $1\frac{1}{2}$ " Rods fixed in Couplings 6, and  $1\frac{1}{2}$ " Flanged Wheels are used to hold them in place. The Couplings 6 are fixed on  $1\frac{1}{2}$ " Rods passed through the front axle and  $\frac{1}{2}$ " Reversed Angle Brackets 7, and each Rod is fitted at its lower end with a Crank 8. The Cranks are connected by a lock-nutted  $5\frac{1}{2}$ " Strip. The steering column is mounted in a  $1\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip 9 bolted to the chassis, and a Coupling on the lower end of the Rod is connected to one of the Cranks 8 by a  $5\frac{1}{2}$ " Strip 10.

The drive from the Motor is taken through a  $\frac{1}{2}$ " Pinion and a 57-tooth Gear to a Rod 11 mounted in the Motor side-plates. This Rod carries at its lower end a  $\frac{1}{2}$ " Pinion 12 engaging a  $1\frac{1}{2}$ " Contrate 13. The Contrate is fixed on a Rod supported in two  $3\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips 14, and the Rod

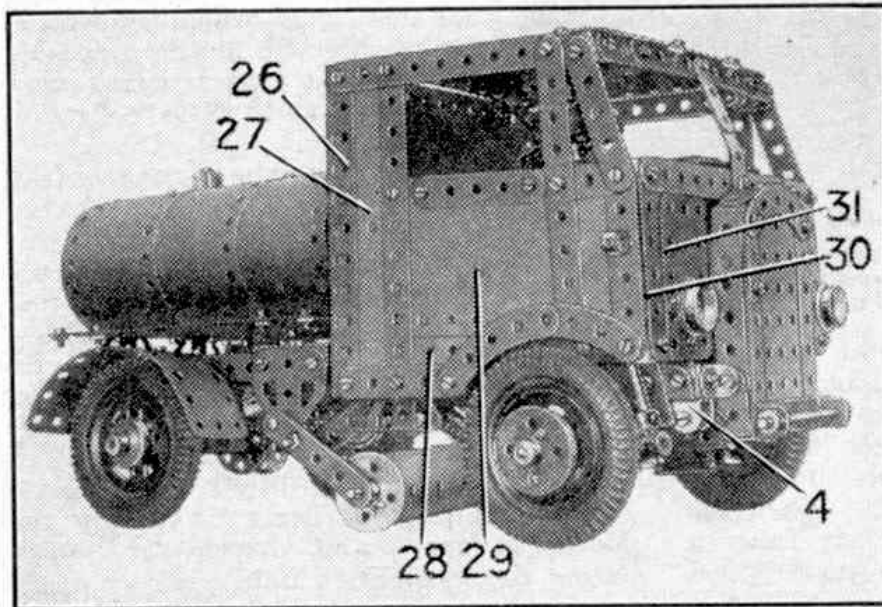


Fig. 1. A general view of the Road Sweeper showing details of the cab construction.

to suit varying road surfaces.

Construction of the model should begin with the chassis side-members, each of which consists of two  $12\frac{1}{2}$ " Angle Girders connected by Fishplates, the channel girders thus formed being joined at each end by two  $3\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips. The power unit is an E20R Electric Motor, which is attached by Fishplates to the chassis in the position shown. The Motor is enclosed by Flexible Plates as shown in Fig. 2, and one of its switch arms is extended by a  $1\frac{1}{2}$ " Strip 25.

The rear axle casing is built in two sections, each consisting of two  $2\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips bolted between a Wheel Disc and a Bush Wheel 1. The Bush Wheels are connected by two Double Brackets, one of which is fitted with a Fishplate and the other with a  $\frac{1}{2}$ " Reversed Angle Bracket 2. A divided axle is used and is made from a 4" Rod and a  $3\frac{1}{2}$ " Rod. The 4" Rod is free to turn in the casing, and carries a  $\frac{1}{2}$ " Pinion 3. The  $3\frac{1}{2}$ " Rod however, is fixed in the casing by the Bush Wheel, and its road wheel runs freely on it, but is held in place by a  $\frac{1}{2}$ " Flanged Wheel.

The rear axle is bolted to Double Bent Strips attached to leaf springs. The parts forming each spring are a  $4\frac{1}{2}$ ", a  $3\frac{1}{2}$ ", and a  $2\frac{1}{2}$ "

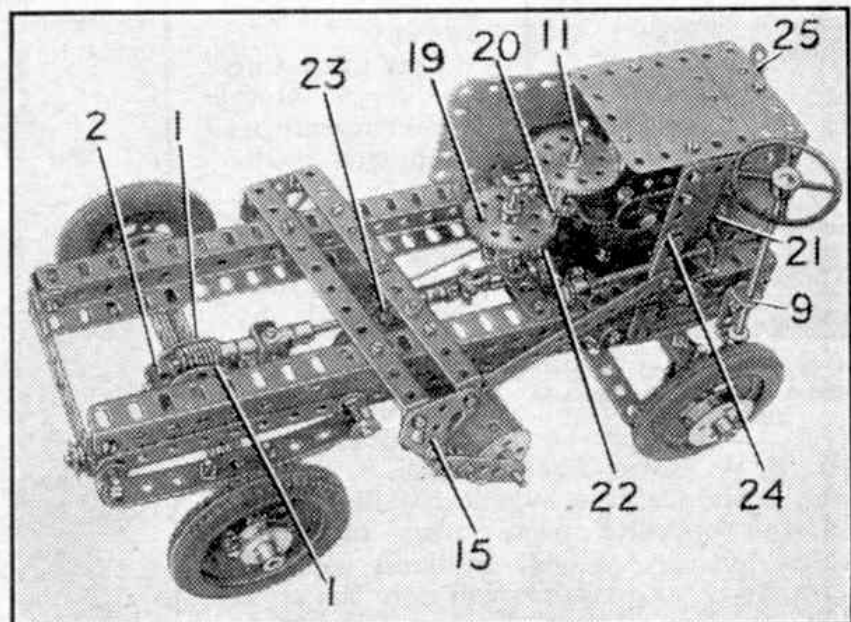


Fig. 2. The Road Sweeper with cab and tank removed to show the gearing and the method of mounting the brushes.

is fitted with a universal coupling assembled from a Swivel Bearing and a small Fork Piece. This coupling is connected by a Rod to a second universal coupling made from a Swivel Bearing and a large Fork Piece, and this is fixed on a  $1\frac{1}{2}$ " Rod supported in the Reversed Angle Bracket 2 and the Fishplate fixed to the rear axle. A Worm on the  $1\frac{1}{2}$ " Rod engages the  $\frac{1}{2}$ " Pinion 3.

The sweeping brushes are represented by Cylinders fitted over  $1\frac{1}{2}$ " Flanged Wheels and fixed on a  $6\frac{1}{2}$ " Rod. A small gap is left between the Cylinders, and a 1" Pulley is fixed so that its rim coincides with the gap. The axle of the brush is supported in pivoted arms formed by  $2\frac{1}{2}$ " Strips held by Threaded Pins to Couplings 15. These Couplings are fixed on a  $6\frac{1}{2}$ " Rod that carries also another Coupling 16 and two 1" loose Pulleys 17 placed between Collars. The  $6\frac{1}{2}$ " Rod is carried in Flat Trunnions bolted to  $5\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips fixed at an angle across the chassis.

The brushes are driven from a  $\frac{1}{2}$ " Pulley 18 fixed on a Rod supported in a  $3\frac{1}{2}$ " Strip and a Double Bent Strip bolted across the chassis. The upper end of the Rod carries a 57-tooth Gear 19, which can be raised by means of a lever 21 to mesh with a  $\frac{1}{2}$ " Pinion 20. The lever is a 2" Strip fixed between nuts on a  $3\frac{1}{2}$ " Screwed Rod mounted in a  $2\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip bolted to the chassis. A Rod and Strip Connector 22 is also clamped between nuts on the Screwed Rod, and a 1" Rod in the Rod and Strip Connector engages underneath the 57-tooth Gear 19. A Driving Band from Pulley 18 passes over two  $\frac{1}{2}$ " loose Pulleys 23 and the 1" loose Pulleys 17, and is then passed round the 1" Pulley on the brush axle. The Pulleys 23 are mounted on a 1" Rod passed through Angle Brackets bolted to one of the  $5\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strips.

The brush can be raised or lowered from the ground by moving a lever formed by a 3" Strip 24. The Strip is lock-nutted to the chassis and operates in a quadrant made from two  $2\frac{1}{2}$ " Stepped Curved Strips. A  $5\frac{1}{2}$ " Strip lock-nutted to the Strip 24 is pivoted on a Pivot Bolt fixed in Coupling 16.

The driver's cab is built up on a  $5\frac{1}{2}$ " Angle Girder bolted across the chassis, and on a strip made from two  $5\frac{1}{2}$ " Strips overlapped nine holes and fixed to the upper  $3\frac{1}{2}$ " x  $\frac{1}{2}$ " Double Angle Strip at the front of the chassis. The back of the cab is filled in by two

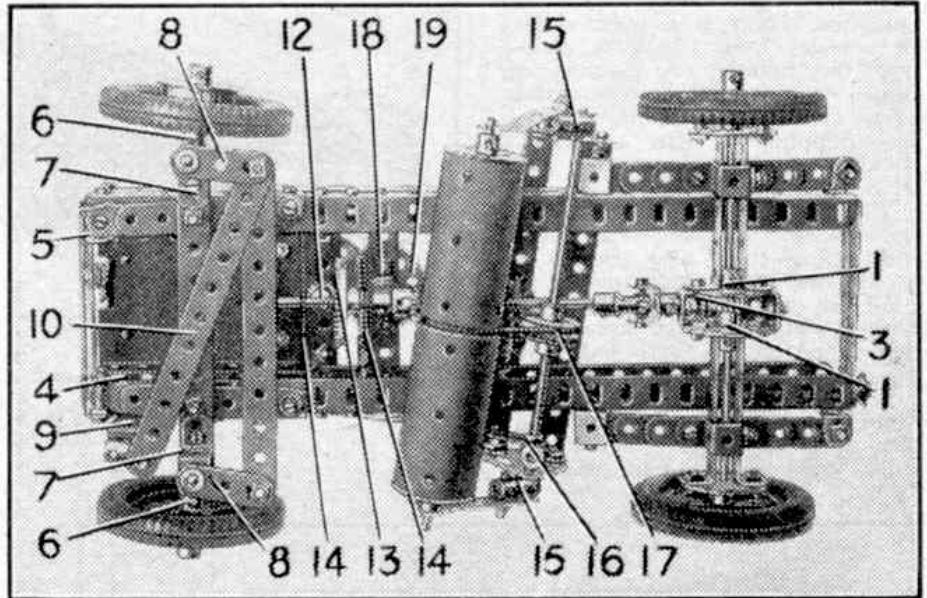


Fig. 3. An underneath view of the model showing the transmission and the steering mechanism.

$5\frac{1}{2}$ " x  $2\frac{1}{2}$ " and two  $2\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates bolted together and fixed to the  $5\frac{1}{2}$ " Angle Girder, and edged on each side by a  $5\frac{1}{2}$ " Angle Girder 26.

The two sides are identical in construction. Each consists of a  $5\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate 27, a  $2\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate 28, and a  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate 29. These Plates are edged by Strips of various sizes as shown in Fig. 1. The front of the cab is made from a vertical 3" Strip 30 on each side connected by a  $5\frac{1}{2}$ " and a 1" Strip joined together, and is partly filled in by  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plates 31.

The radiator is a  $3\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plate edged by Strips, Double Angle Strips, 1" x 1" Angle Brackets and a  $2\frac{1}{2}$ " stepped Curved Strip as shown. It is attached to the chassis by Angle Brackets. The cab roof is made from three  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates and two  $5\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plates, and is fixed to Angle Brackets.

The sides of the water tank are  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates curved to the same radius as Semi-Circular Plates. The top is made from a  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate and a  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate. The construction of the rear end is shown in Fig. 4, and the front end is similar except that the  $3\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plate is extended by Face Plates in place of Semi-Circular Plates. The tank is provided on each side with a platform 32 made from  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates edged by Strips. The front of the tank is supported by Trunnions bolted to the chassis, and the rear is fixed to Flat Trunnions as shown in Fig. 4.

The rear mudguards are made from  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates curved to fit closely round the Tyres on the rear wheels. The Flexible Plates are bolted to a  $5\frac{1}{2}$ " Strip fixed across the chassis immediately above the rear axle.

When the sweeping brush is working the centre lever should be adjusted so that the brush just clears the ground. The arrangement of the Driving Band and Pulleys allows the height of the brush to be altered without affecting the drive in any way, so that the brush can be adjusted while the drive is engaged.

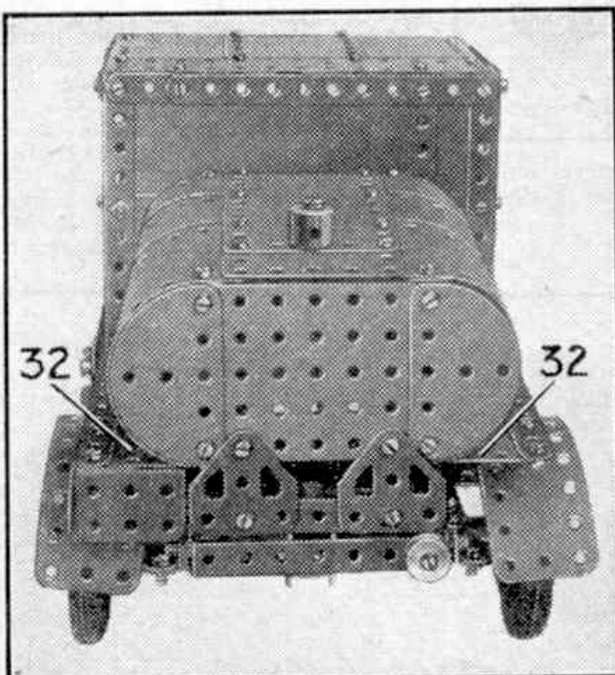


Fig. 4. This rear view shows the tank supporting brackets and details of the tank ends.