

# Two "Easy-to-Build" Models

By "Spanner"

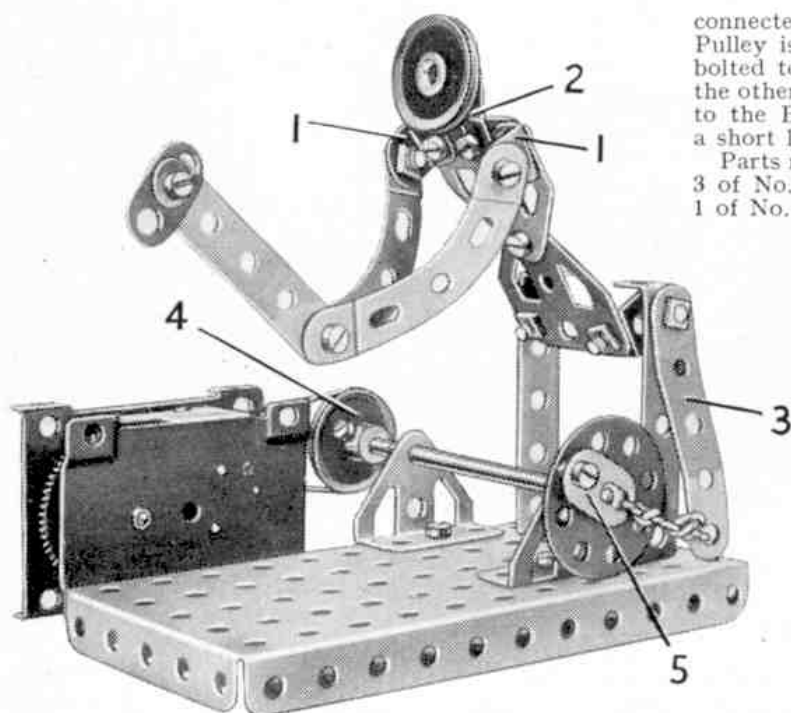


Fig. 1. "Rocky, the road repairer." This simple working model can be built from Outfit No. 0.

## ROAD NAVVY—MOVABLE CRANE

Some years ago I illustrated in the *M.M.* several very simple workable models representing people engaged in various tasks or sports. I was very pleased to find that these proved very attractive to my younger friends and I received lots of letters asking me to design some more models of this kind. I am always glad of course to meet the wishes of my readers as far as possible, and therefore I have designed another mechanical figure that I hope they will like.

This one is the result of my efforts recently to amuse a young relative who was paying a visit to my home. It represents a road navvy at work, and is most amusing to watch in action when it is set working by the *Magic Motor* with which it is fitted.

The man's legs are  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips, and it will be seen that they are bolted direct to a  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{4}$ " Flanged Plate that forms a base for the model. Two Flat Trunnions bolted together at their pointed ends represent his body, and his arms are  $2\frac{1}{2}$ " stepped Curved Strips attached to Angle Brackets 1. The hammer is a  $2\frac{1}{2}$ " Strip with a Fishplate for a head, and it is bolted between the ends of the man's arms. The 1" Pulley representing the man's head is fixed by its set-screw on a bolt passed through a Fishplate 2.

An Angle Bracket is bolted through its round hole to each corner of the lower Flat Trunnion, and in its slotted hole a  $\frac{3}{8}$ " Bolt is fixed by a nut. The Bolts are then passed through the upper holes of the  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips and fitted with lock-nuts, so that the man's body is able to move freely on the legs. A  $2\frac{1}{2}$ " Strip 3 is clamped tightly to one of the  $\frac{3}{8}$ " Bolts by the lock-nuts.

To complete the model the *Magic Motor* is bolted in position and its pulley is

connected by a Driving Band to a 1" Pulley 4. This Pulley is fixed on a  $3\frac{1}{2}$ " Rod mounted in Trunnions bolted to the base, and a Bush Wheel is fastened at the other end of the Rod. A Fishplate 5 is lock-nutted to the Bush Wheel, and is connected to Strip 3 by a short length of cord.

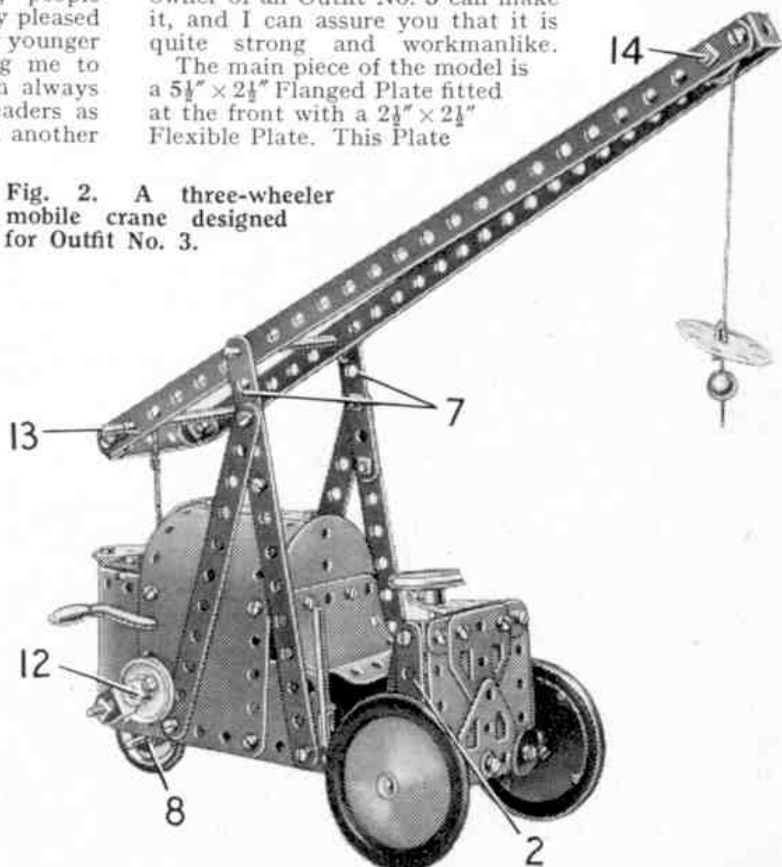
Parts required to build the Road Navvy: 2 of No. 5; 3 of No. 10; 4 of No. 12; 1 of No. 16; 2 of No. 22; 1 of No. 24; 1 of No. 35; 18 of No. 37; 4 of No. 37a; 2 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 2 of No. 111c; 2 of No. 126; 2 of No. 126a; 1 *Magic Clockwork Motor*.

## AN ATTRACTIVE MOBILE CRANE

Of all the many different models it is possible to build with Meccano, I doubt if any has greater interest for a youngster, than a crane! How well I remember in my own young days, the fun I got from building and playing with simple Meccano cranes! I am afraid some of my early efforts were a bit rickety, because I always wanted to have a tall jib, and to build this from my small Outfit I had to use up nearly all my parts and so had hardly any left to provide a good steady supporting structure! However, rickety and spidery though they were, my cranes gave me lots of fun. I remember that I used to perch them on the edge of a table so that I could hook up small objects off the floor, and how exasperated I was when after raising the load almost to table level the Cord slipped on the winding handle and down it crashed again, often taking the crane itself along with it! I feel sure that this will not happen with the simple three-wheeled crane I am illustrating in Fig. 2. I have designed this so that every owner of an Outfit No. 3 can make it, and I can assure you that it is quite strong and workmanlike.

The main piece of the model is a  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{4}$ " Flanged Plate fitted at the front with a  $2\frac{1}{2}$ "  $\times$   $2\frac{1}{4}$ " Flexible Plate. This Plate

Fig. 2. A three-wheeler mobile crane designed for Outfit No. 3.



is braced along its top edge by a  $2\frac{1}{2}$ " Strip, and it is connected by Angle Brackets to two  $2\frac{1}{2}$ " Strips 1 and 2 on each side. The Strips 1 are bolted to the side flanges of the Flanged Plate, and the front axle, a  $3\frac{1}{2}$ " Rod, is passed through Strips 2 and the end holes in the flanges. A Trunnion 3 is fixed to the Flexible Plate as shown in Fig. 3.

Each side of the body is made from a  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Flexible Plate 4 and a  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate 5. The upper ends of the  $4\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plates are curved similar to a Semi-Circular Plate, and are bolted together, and two  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ " Double Angle Strips are fitted between the Flexible Plates by bolts 6 on each side. The bolts holding the Flexible Plates to the Flanged Plate are used also to fix two  $5\frac{1}{2}$ " Strips, extended by  $2\frac{1}{2}$ " Strips 7, to each side. A  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flexible Plate is curved and used to form the rounded end of the model.

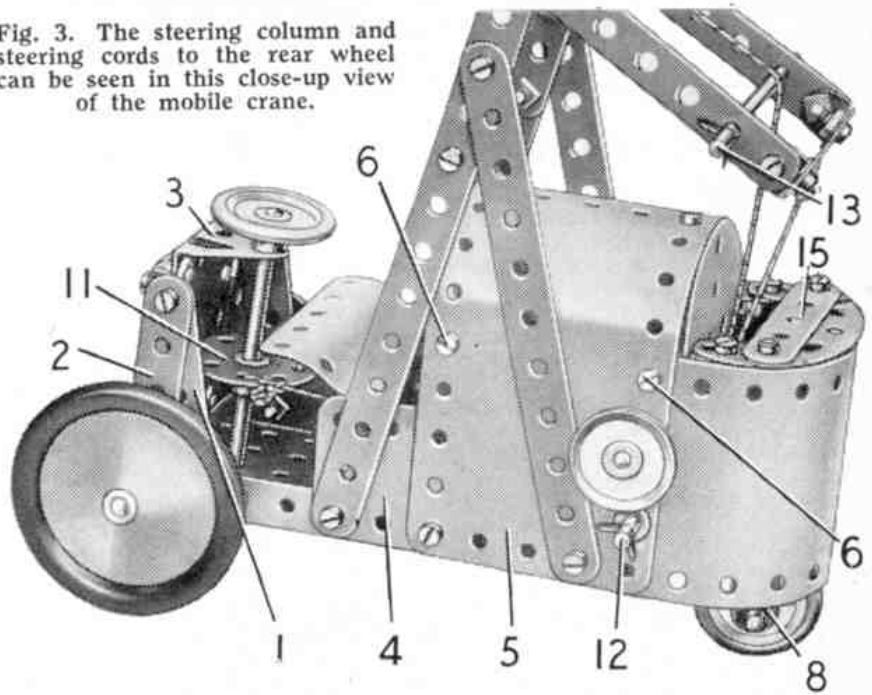
The rear wheel is a 1" Pulley fitted with a Rubber Ring, and is fixed on a  $1\frac{1}{2}$ " Rod supported in a Stepped Bent Strip 8. A  $\frac{3}{8}$ " Bolt held tightly by a nut in the Bent Strip, is then passed through a Trunnion 9 bolted to the rear end of the Flanged Plate. A Wheel Disc 10 is gripped between two nuts on the shank of the Bolt coming through the Trunnion.

The model is steered from a  $3\frac{1}{2}$ " Rod passed through Trunnion 3 and the Flanged Plate. This Rod is fitted with a Bush Wheel 11 and is held in place by a Spring Clip. The Bush Wheel is connected by a short length of Cord at each side to the Wheel Disc 10.

The jib uses two  $12\frac{1}{2}$ " Strips, joined at the front by a Double Bracket and connected at the rear by Angle Brackets to a  $2\frac{1}{2}$ " Strip. It hinges on a  $3\frac{1}{2}$ " Rod, which is passed through the end holes of Strips 7, and held by Spring Clips.

The jib can be raised and lowered by turning a 4" Rod 12. The Rod is fitted with a 1" Pulley, to the boss

Fig. 3. The steering column and steering cords to the rear wheel can be seen in this close-up view of the mobile crane.



of which an Angle Bracket is fixed by a nut and bolt. The bolt is passed through the Angle Bracket and is screwed into one of the threaded holes of the boss. The nut is then tightened to hold the Bracket in position. A  $\frac{3}{8}$ " Bolt fixed by a nut in the Angle Bracket serves as a winding handle, and a length of Cord fastened to the Rod is tied to the rear of the jib. The Rod is held in place by a Spring Clip.

The winding shaft for raising and lowering the load is a Crank Handle. This is passed through the sides of the body, and a length of Cord is tied to a Cord Anchoring Spring placed on it. The Cord is fed over a 4" Rod 13 and then round a  $\frac{1}{2}$ " loose Pulley that is free to turn on a  $\frac{3}{8}$ " Bolt 14 held by two nuts in one of the  $12\frac{1}{2}$ " Strips.

A Semi-Circular Plate is bolted to each of the Double Angle Strips held by bolts 6, and the driver's seat, a U-section Curved Plate, bent as shown in Fig. 2, is attached to the Semi-Circular Plate at the front. A  $2\frac{1}{2}$ " Strip 15 is bolted to a Curved Strip and is fitted at each end with a Fishplate. The Fishplates are bolted to Angle Brackets held by the same bolts that fix the rear Semi-Circular Plate to its Double Angle Strip. This construction leaves a gap between the Strip 15 and the Semi-Circular Plate, through which the hoisting and luffing Cords are passed.

Well, that completes the model, and if you have followed the directions carefully you should now have a sturdy workable crane that will give you lots of fun. Real cranes of this type are very popular now-a-days and they are used in large numbers in big warehouses, dockyards and factories of all kinds. Usually they are designed to lift loads weighing up to about 5 tons, and one of the main reasons for their popularity is the ease with which they can be turned around and manoeuvred into position in the cramped spaces in which they very often have to work. Another useful point is that they can be readily driven from one job to another.

Parts required to build Mobile Crane: 2 of No. 1; 4 of No. 2; 9 of No. 5; 2 of No. 10; 1 of No. 11; 7 of No. 12; 2 of No. 15b; 3 of No. 16; 1 of No. 17; 1 of No. 18a; 1 of No. 19g; 4 of No. 22; 1 of No. 23; 1 of No. 24; 2 of No. 24a; 6 of No. 35; 45 of No. 37; 6 of No. 37a; 1 of No. 40; 6 of No. 38; 2 of No. 38d; 1 of No. 44; 2 of No. 48a; 1 of No. 52; 1 of No. 57c; 1 of No. 90a; 3 of No. 111c; 2 of No. 126; 2 of No. 126a; 2 of No. 155; 1 of No. 176; 2 of No. 187; 2 of No. 188; 1 of No. 190; 2 of No. 191; 1 of No. 192; 1 of No. 199; 1 of No. 212; 2 of No. 214.

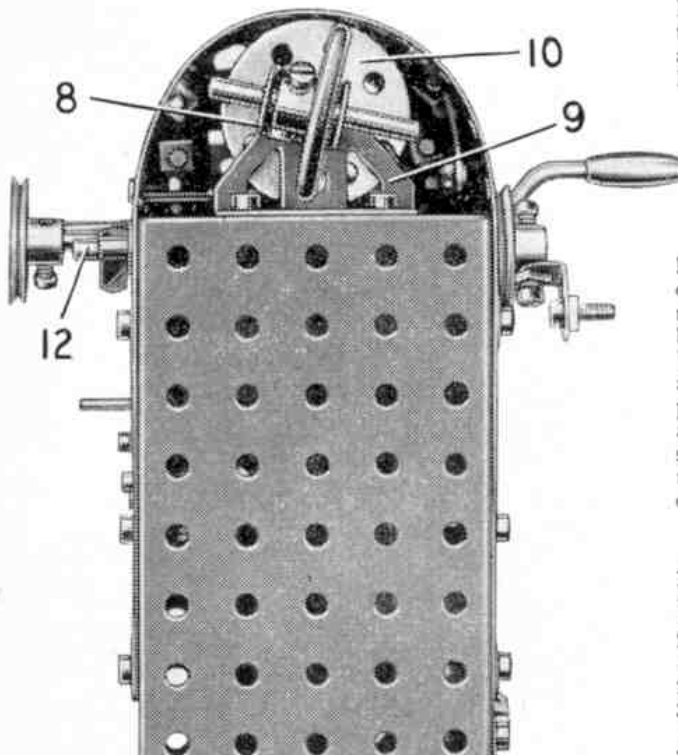


Fig. 4. An underneath view of the mobile crane,