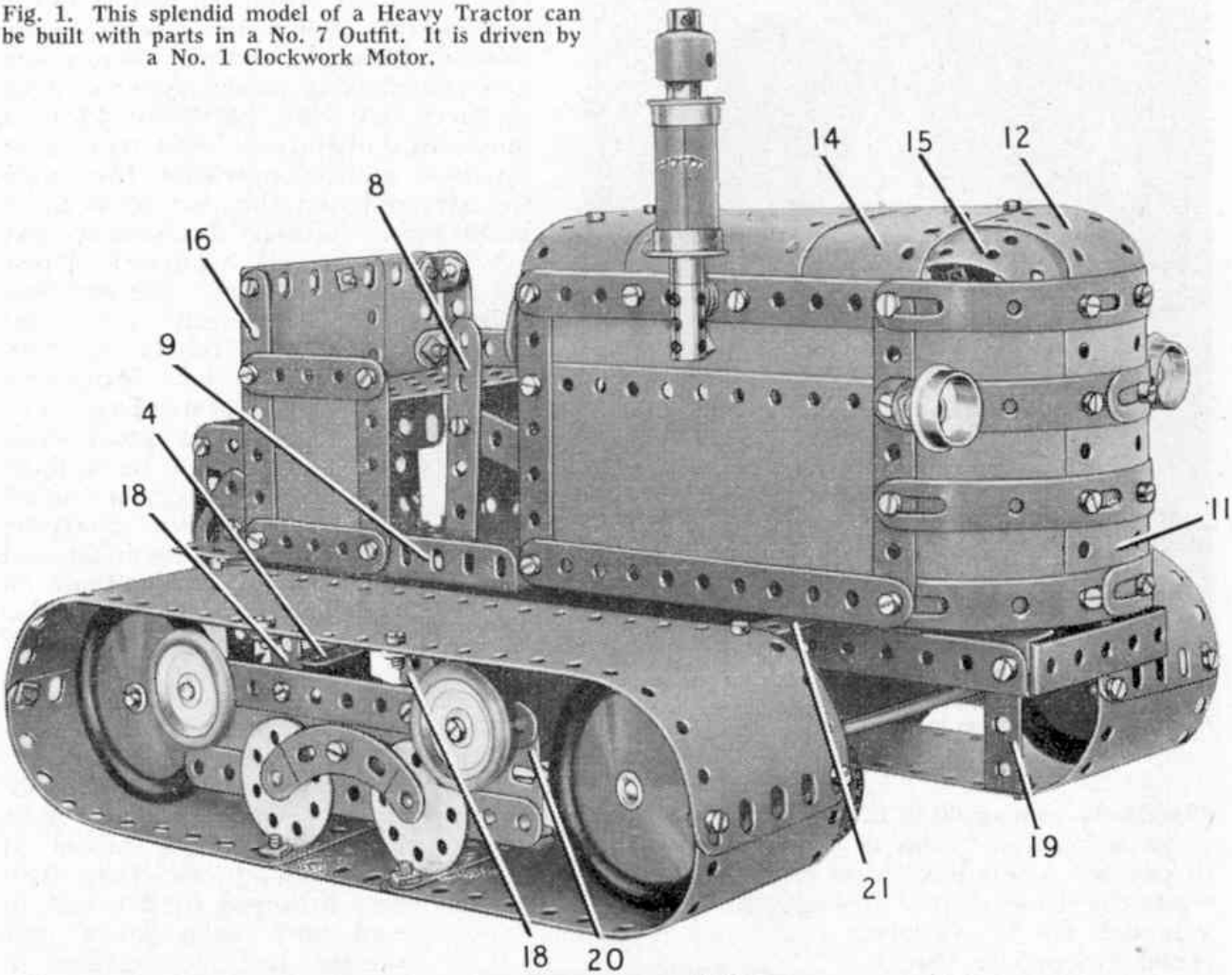
Fig. 1. This splendid model of a Heavy Tractor can be built with parts in a No. 7 Outfit. It is driven by a No. 1 Clockwork Motor.



MODEL OF THE MONTH

Heavy Tractor

THIS month our model is one that will appeal specially to those enthusiasts who delight in building well-detailed models of modern machines, but who have only a limited stock of parts at their disposal. It is based on a typical heavy-duty tractor, and can be constructed with the parts in a No. 7 Outfit.

The model is neatly designed and easy to build. To bring it within the scope of as many enthusiasts as possible, and to avoid the use of a large number of Strips or Flat Girders, working creeper tracks are not fitted, but the tracks are represented neatly and realistically by Strip and Flexible Plates and the model runs on wheels concealed by the track assemblies. A No. 1 Clockwork Motor bolted underneath the chassis of the Tractor provides the drive to the rear wheels. The front wheels are mounted in a castor unit

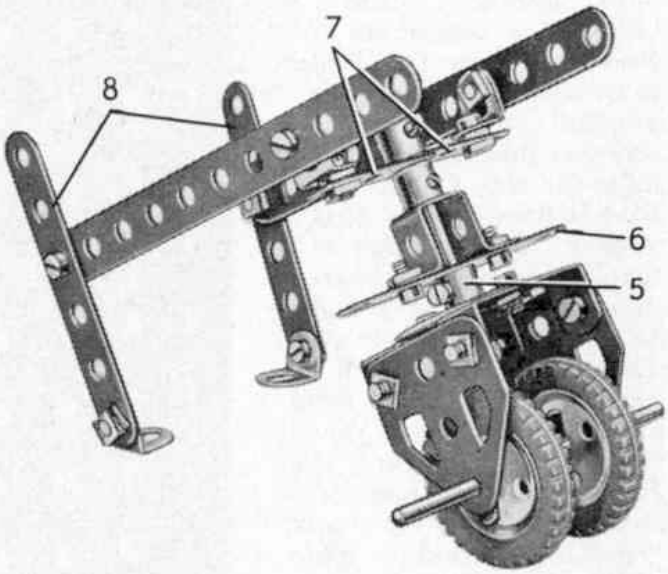


Fig. 2. A close-up view of the front wheel assembly removed from the chassis to show the layout of the steering controls.

HEAVY TRACTOR

Illustrated in the August 1957 issue of the Meccano Magazine

The Chassis and Driving Mechanism

The chassis of the model consists of two channel section girders connected at their ends by $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips 1 and 2. Each of the channel girders is made from two $12\frac{1}{2}$" Angle Girders bolted together.

The rear wheels are 2" Pulleys fixed on a $3\frac{1}{2}$" Rod, which carries also a 1" Pulley 3. The Rod is mounted in $1\frac{1}{2}$" Strips bolted to the lugs of a $2\frac{1}{2}$" x 1" Double Angle Strip fixed across the chassis.

A No. 1 Clockwork Motor is bolted underneath the chassis as shown, and a $\frac{1}{2}$" Pinion is fixed on its driving shaft. The Pinion engages a 57-tooth Gear on a 2" Rod, which is mounted in the corner holes of the Motor side-plates and is held in place by a Collar. A $\frac{1}{2}$" Pulley on the lower end of the 2" Rod is connected to the Pulley 3 by a Cord driving belt. A $\frac{1}{2}$" Reversed Angle Bracket is fixed to the Motor brake lever, and is extended by a $2\frac{1}{2}$" Strip 4.

Arrangement of the Steering Mechanism

The front wheels are 1" loose Pulleys fitted with Tyres and held on a $3\frac{1}{2}$" Rod by Spring Clips. The Rod is mounted in two Flat Trunnions bolted to the lugs of two $1\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips, which are fixed across a Bush Wheel 5. A 2" Rod is held in the Bush Wheel, and a $2\frac{1}{2}$" Strip 6 and a Double Bent Strip bolted together are passed over the Rod. Two Cranks 7 are fixed on the Rod as shown and an Angle Bracket is lock-nutted to each Crank. A $5\frac{1}{2}$" Strip is lock-nutted to each Angle Bracket and to a steering lever 8 formed by a 3" Strip.

The $2\frac{1}{2}$" Strip 6 is bolted to the chassis, and the levers 8 are lock-nutted to Angle Brackets attached to a $3\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate 9. The same bolts are used to fix the Flanged Plate to the chassis.

Details of the Bodywork.

Two $3\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips are fixed across the chassis. One of them is indicated at 10, and the other is positioned immediately in front of the Flanged Plate 9. The lugs of these Double Angle Strips support the sides of the bonnet, each of which consists of a $5\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plate extended upward by a $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate. Each side of the bonnet is braced as shown by two $5\frac{1}{2}$" and two $3\frac{1}{2}$" Strips.

The radiator is formed by two 1 11/16" radius Curved Plates, two curved $2\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates, a $2\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate 11 and a curved $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate 12. These Plates are arranged as shown and are bolted to the sides of the bonnet, with eight Formed Slotted Strips attached to them.

The top of the bonnet consists of two $4\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates 13, two opened out U-section Curved Plates 14, and the upper end of the Flexible Plate 12. A $2\frac{1}{2}$" x 2" Triangular Flexible Plate 15 on each side completes the assembly. Two Semi-Circular Plates are bolted together and are attached to the top of the bonnet by Angle Brackets.

The headlamps are $\frac{3}{4}$" Flanged Wheels on $\frac{1}{2}$" Bolts, which are fixed by nuts in Angle Brackets bolted to the sides of the bonnet. The exhaust

pipe and silencer are represented by a Chimney Adaptor, two $\frac{3}{4}$" Flanged Wheels and a Sleeve Piece held on a $3\frac{1}{2}$" Rod by a Collar and a Coupling. Bolts passed through one side of the bonnet are screwed into the Coupling to support the assembly. A nut on one bolt and two Washers on the other space the Coupling from the side of the bonnet.

The driver's seat is a $3\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate bolted between two $2\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates, each of which is edged by a $3\frac{1}{2}$" Strip 16 and three $2\frac{1}{2}$" Strips. The Flexible Plates are bolted to the Flanged Plate 9 and are attached to Angle Brackets fixed to a $5\frac{1}{2}$" Strip 17. The back of the seat consists of two $2\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates and a $2\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate bolted together and supported by Angle Brackets fixed to the Strips 16.

The tool box at the rear of the chassis is made by bolting a $2\frac{1}{2}$" x $1\frac{1}{2}$" Flanged Plate across the channel girders, and by fixing a Trunnion extended by a Flat Trunnion to each flange of the Plate. The back of the box consists of two $2\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plates bolted to the Double Angle Strip 2 and connected to the Flat Trunnions by Angle Brackets. The towing attachment is a Large Fork Piece held by a Pivot Bolt.

Construction of the Creeper Track Assemblies

The two track assemblies are identical in design. Each of them is made by curving the ends of a $12\frac{1}{2}$" x $2\frac{1}{2}$" Strip Plate as shown, and curving also the outer ends of two $5\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates connected by a $2\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plate. The ends of the Strip Plate and the $5\frac{1}{2}$" x $2\frac{1}{2}$" Flexible Plates are bolted together, and two $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips 18 and two similar parts 19 are fixed between the Plates.

A $5\frac{1}{2}$" x $1\frac{1}{2}$" Flexible Plate 20, edged by two $5\frac{1}{2}$" Strips, is fixed to the Double Angle Strips 18. Two Wheel Discs are bolted in place, and a $2\frac{1}{2}$" Stepped Curved Strip is attached to the Flexible Plate by a $\frac{3}{8}$" Bolt but is spaced from it by three Washers. A 1" Pulley fitted with a Rubber Ring is fixed to a Threaded Pin at one end of the Plate 20, and at the other end a similar Pulley is held by a $\frac{3}{4}$" Bolt.

The track assemblies are bolted to the ends of the $5\frac{1}{2}$" Strip 17 and another $5\frac{1}{2}$" Strip 21 fixed across the chassis. Four Road Wheels are attached to the ends of two made-up rods, each of which is supported in two of the Double Angle Strips 19. One of the made-up rods is formed by a $4\frac{1}{2}$" and a $3\frac{1}{2}$" Rod, and the other consists of a $6\frac{1}{2}$" and a $1\frac{1}{2}$" Rod. The Rods are joined by Rod Connectors.

PARTS REQUIRED

12 of No. 2.	1 of No. 23a	1 of No. 51	4 of No. 155
6 " " 3	1 " " 24	2 " " 53	1 " " 163
2 " " 4	2 " " 24a	2 " " 59	1 " " 164
11 " " 5	2 " " 24c	2 " " 62	4 " " 187
2 " " 6a	1 " " 26	1 " " 63	6 " " 188
4 " " 8	1 " " 27a	2 " " 90a	5 " " 189
16 " " 12	7 " " 35	2 " " 111	6 " " 190
1 " " 14	158 " " 37a	2 " " 111a	2 " " 191
2 " " 15a	144 " " 37b	2 " " 111c	6 " " 192
3 " " 16	25 " " 38	2 " " 115	2 " " 197
2 " " 17	1 " " 40	1 " " 116	2 " " 199
1 " " 18a	1 " " 45	1 " " 125	2 " " 200
2 " " 20a	1 " " 46	2 " " 126	2 " " 213
4 " " 20b	2 " " 48	4 " " 126a	2 " " 214
5 " " 22	10 " " 48a	2 " " 142c	8 " " 215
2 " " 22a	2 " " 48b	1 " " 147b	2 " " 222
			1 No. 1 Clockwork Motor.