

The old faithful

by 'Spanner'

ON numerous occasions in the past we have featured that old standby of the Meccano model-builder—the Traction Engine. Big ones, little ones, fat ones, thin ones, complex ones, simple ones, just about every conceivable shape and size—they've all appeared at some time or another, yet we still get plenty of requests for further examples. I am convinced, in fact, that the majority of British people, no matter how young they are, have a deep-rooted nostalgia for the fast-disappearing era of the steam engine, which is why these requests keep rolling in.

I am not at all sure of the reason for this keen interest in steam, but I do know that it exists and even count myself very much among the interested parties! Perhaps it is because Britain was the first to successfully harness the power of steam or because Britain owes her position in the world to the 'industrial revolution' made possible by successful exploitation of steam power. More probably, however, it's simply because there's something tremendously fascinating about the musical clanking of moving machinery accompanied by the sibilant hiss of escaping steam, and the whole thing surrounded by the warm, pleasing odour of hot oil and smoke.

Unfortunately, the pleasure evoked by steam-powered machinery will soon be a memory. Traction engines are now virtually extinct, except for a few examples preserved by enthusiasts, and British Rail's mighty steam locomotives are hurriedly being replaced by diesel and electric units, but this does not prevent Meccano builders from producing miniature versions of the old machines. The Traction Engine featured here is something for you to have a shot at.

Admittedly, it's not a very complex or detailed example of a traction engine, but it does reproduce the general lines of its prototype

and it's not difficult to build. It's based, incidentally, not on the large Showman's type of engine, but on the smaller 'work horse' machine used particularly by farmers.

BODY

As both sides of the body are identical I need describe only one of them. A 4½ in. by 2½ in. Flat Plate 1 is extended five holes rearwards by a 4½ in. Angle Girder 2, at the same time fixing a 3 in. Strip 3 to the inside edge of the Plate. Fixed to the inside forward edge of the Plate is a 3 in. Angle Girder 4 which is connected to Strip 3 by a 4½ in. Strip 5. The lower Bolts securing Angle Girder 4 also hold a 1 in. Corner Bracket overlaid by a 1½ in. Strip 6.

At the rear, a 3½ in. Angle Girder 7 and a 2½ in. Angle Girder 8 are bolted to the vertical flange of Girder 1, at the same time holding in position two 2½ in. by 1½ in. Flexible Plates 9, overlapped three holes. A 1½ in. Corner Bracket 10 is bolted to these Plates as shown. At this stage the sides can be joined. Two 3 in. Strips 11 are bolted between Angle Girders 2, while a 3 in. Stepped Curved Strip 12 is bolted between Angle Girders 4. Angle Girders 7 are joined by a 3 in. Angle Girder 13, to which a compound 3 in. by 2½ in. Flat Plate 14, built up from two 3 in. by 1½ in.

Flat Plates, is bolted. This plate is also secured to the sides by Angle Brackets, as is a similar compound 3 in. by 2½ in. Flat Plate 15 at the front end of the body. A compound 3 in. by 2½ in. Flexible Plate 16 is now built up from two 2½ in. by 2½ in. Flexible Plates laid side by side and connected by two 3 in. Strips. This is bolted between Angle Girders 8, whereas two 2½ in. by 1½ in. Flexible Plates 17, overlapped four holes, are attached to Corner Brackets 10 by Angle Brackets.

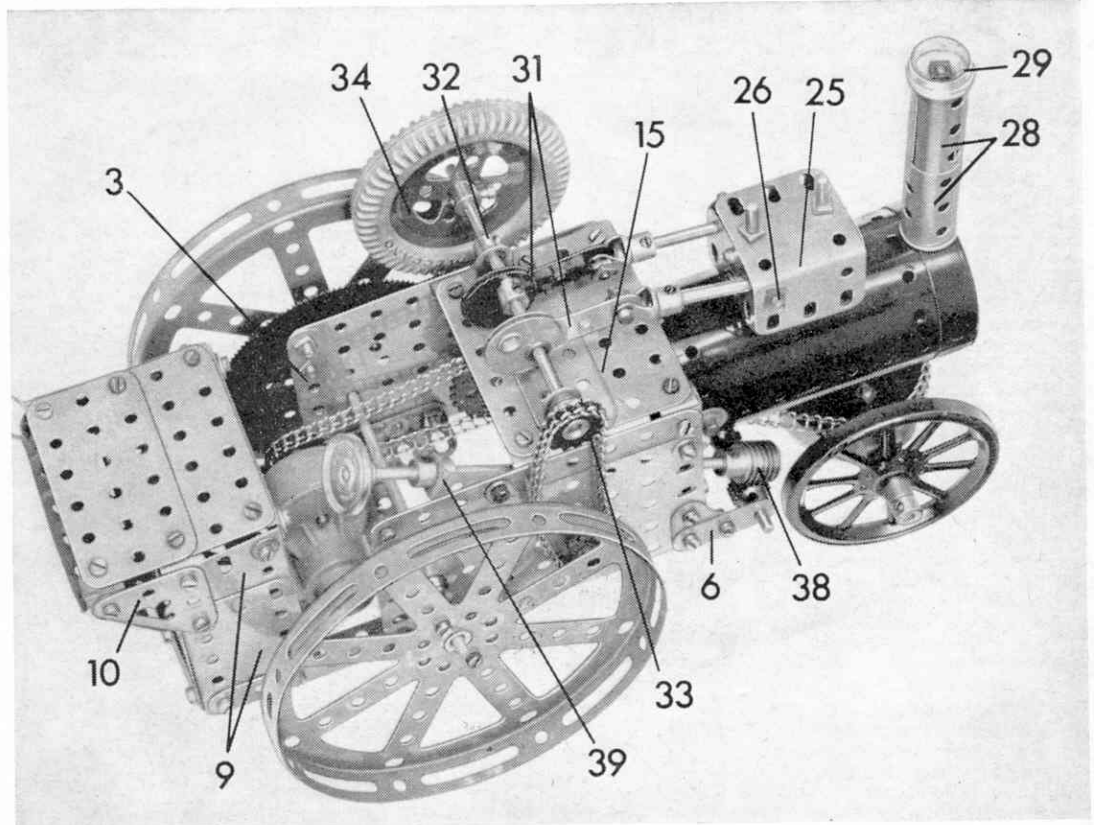
BOILER AND ATTACHMENTS

It is advisable to build up the valve gear, chimney and front axle, and fit these to the boiler before attaching the boiler to the body. The boiler itself consists of a Meccano Boiler fitted with a Boiler End 18 at the front. Bolted to the inside of the Boiler, at its lowest point, is a Crank arranged so that the hole in the boss of the Crank lies over the third hole from the front of the Boiler. Loose in the boss of the Crank is a 1½ in. Rod, held in place by a Collar above the Crank and a 1 in. Sprocket Wheel 19 below the Boiler. A 2½ in. by ½ in. Double Angle Strip is fixed to the face of this Sprocket Wheel, after which a Boiler End 20 is secured to the underside of the Double Angle Strip by 1½ in. Bolts

passed through the Boiler End and into the Sprocket Wheel. A $4\frac{1}{2}$ in. Rod is journaled in this Boiler End and in the lugs of the Double Angle Strip. Loose on this Rod are two Spoked Wheels 21, held in place by Collars.

The valve gear is simply built up from two $1\frac{1}{2}$ in. Flat Girders 22, the upper and lower edges of which are joined by two $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Double Angle Strips. A $2\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Flexible Plate 23 is bent to shape over the centre of the Boiler where it is secured in position by bolting the Flat Girder 22 Double Angle Strip arrangement to the Boiler. An Angle Bracket is fixed to the inside of the Plate by Bolt 24. Another $2\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Flexible Plate 25, to which a second Angle Bracket is fixed by Bolt 26, is attached to the upper Double Angle Strip by Threaded Pins 27, then the Plate is bent to shape, as shown.

Finally, a chimney is built up from two Sleeve Pieces 28, connected on the inside by a 3 in. Narrow Strip. Placed in the upper Sleeve is a $\frac{3}{4}$ in. Flanged Wheel 29, in the boss of which a $3\frac{1}{2}$ in. Screwed Rod is fixed. A $\frac{3}{4}$ in. Washer is added below the Sleeve Pieces and the Rod is passed through the Boiler End and Boiler to be secured by a Nut. The completed boiler is now attached by Angle Brackets to Angle Girders 4 and Stepped Curved Strip 12.



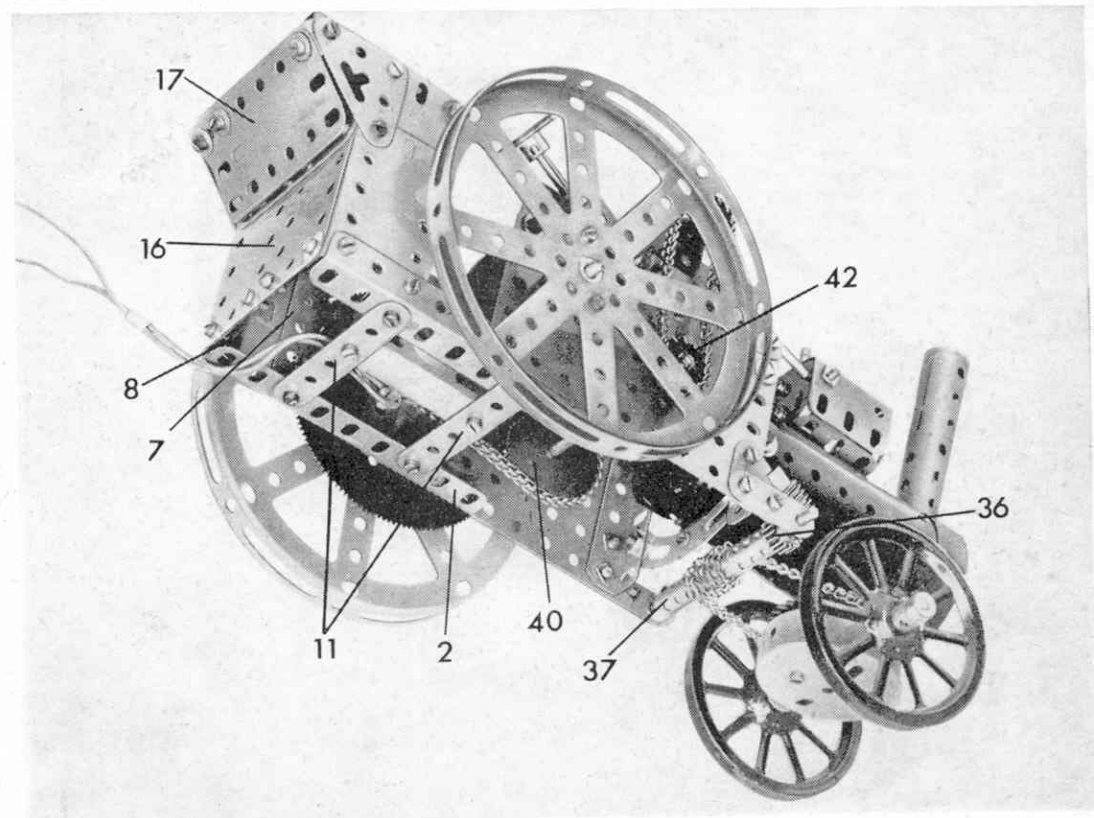
CRANKSHAFT AND STEERING

In constructing this part of the model a $2\frac{1}{2}$ in. by 1 in. Double Angle Strip 30 is bolted to Compound Flat Plate 15. Journaled in the lugs of this Double Angle Strip is a $4\frac{1}{2}$ in. Rod, carrying two Single Throw Eccentrics 31 and held in place by a Collar 32 and a $\frac{3}{4}$ in. Sprocket Wheel 33, the latter spaced from the Double Angle Strip by two Washers. A 2 in. Pulley, with Motor Tyre 34 is mounted on the other end of the Rod to represent the flywheel. Lock-nutted to the arm of each Eccentric is an End Bearing 35, carrying a 2 in. Rod which slides in rearmost Flat Girder 22 and the lugs of the Angle Brackets held by Bolts 24 and 26.

Mounted in Strip 6 is a 4 in. Rod carrying a $\frac{1}{2}$ in. Pinion 36, three Couplings 37 and a Collar. Pinion 36 engages with a Worm 38, journaled in off-side Angle Girder 4 and in a 1 in. by $\frac{1}{2}$ in. Angle Bracket 39, bolted to Strip 5, and held in place by Collars. A 1 in. Pulley with boss is fixed on the end of the Rod to act as the steering wheel. A length of Sprocket Chain is wrapped tightly three times round Couplings 37, and is taken round Sprocket Wheel 19, after which the ends of the Chain are joined. Note that this Chain should be as tight as possible.

MOTOR AND DRIVE

Power for the Traction Engine comes from a Meccano Emebo Motor bolted to Strips 11. A $\frac{3}{4}$ in. Sprocket Wheel on the Motor output shaft is connected by Chain to a $1\frac{1}{2}$ in. Sprocket Wheel 40 fixed on a 4 in. Rod, journaled in Flat Plates 1. This Rod is held in place



by a $\frac{1}{2}$ in. Pinion 41 and a $\frac{3}{4}$ in. Sprocket Wheel 42 that is connected by Chain to Sprocket Wheel 33 on the crankshaft. Pinion 41, in turn, meshes with a $3\frac{1}{2}$ in. Gear Wheel 43 fixed on the rear axle, which is a $5\frac{1}{2}$ in. Rod held in place by the Gear Wheel at one side and by a Collar at the other. Mounted on each end of the axle is a 8-hole Bush Wheel to which a Hub Disc 44 is bolted.

PARTS REQUIRED

2 of No. 2a	1 of No. 14a	1 of No. 27b	8 of No. 59	2 of No. 103h	2 of No. 162a
6 of No. 4	2 of No. 15b	1 of No. 32	1 of No. 62	4 of No. 111c	2 of No. 163
2 of No. 6a	2 of No. 17	100 of No. 37a	3 of No. 63	2 of No. 111d	2 of No. 166
2 of No. 9a	1 of No. 18a	88 of No. 37b	4 of No. 73	2 of No. 115	10 of No. 188
2 of No. 9b	2 of No. 19a	19 of No. 38	1 of No. 80a	2 of No. 118	1 of No. 235a
3 of No. 9c	1 of No. 20a	1 of No. 38d	1 of No. 89a	2 of No. 130a	1 Emebo Electric Motor
2 of No. 9d	1 of No. 20b	1 of No. 46	1 of No. 94	2 of No. 133	
15 of No. 12	1 of No. 22	2 of No. 48	1 of No. 95	2 of No. 133a	
1 of No. 12b	2 of No. 24	1 of No. 48a	1 of No. 95a	1 of No. 142a	
1 of No. 14	2 of No. 26	2 of No. 53a	3 of No. 96a	1 of No. 162	