

CARRY YOUR BATTERIES SIR?

'Spanner'
builds a
real live
(almost)
working
walking
porter.
Why not
make
his brother
—it's
surprisingly
easy!

WITH such an adaptable system as Meccano, it is possible to model all sorts of intricate structures and realistic movements. In the March 'M.M.', for example, we featured a novel Horse and Chariot, in which the Chariot was pulled along by the walking movement of the Horse. A similar movement is employed in the model described below which represents a Walking Porter!

Power for the model is obtained from an Emebo Motor that drives the legs through a quite simple gear arrangement. Three $4\frac{1}{2}$ volt batteries (Ever Ready 126 or equivalent), attached to a Hornby Battery Controller, provide the current, and they are carried on the handcart. This is most important, as the weight of the batteries gives stability to the model, thus preventing it from overturning. To help in construction, I have split the building instructions into appropriate sections, as follows:

Body and drive

An Emebo Motor, carrying $\frac{7}{16}$ in. Pinion on its output shaft, is fixed to the inside of a $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flanged Plate 1 by Bolts 2. The flanges of this Plate are extended by two $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flat Plates 3 and 4. In mesh with the $\frac{7}{16}$ in. Pinion is a 60-teeth Gear Wheel 5 on a $3\frac{1}{2}$ in. Rod 6, journaled in Plates 3 and 4. Also mounted on this Rod is a $\frac{1}{2}$ in. Pinion 7 which, in turn, meshes with a 57-teeth Gear Wheel 8 on another $3\frac{1}{2}$ in. Rod 9, held in place by a 1 in. Bush Wheel (Elektrikit part No. 518) at each end. Two Cranks 10 are bolted, one each, to Flat Plates 3 and 4 to serve as bearings for a $5\frac{1}{2}$ in. Rod 11, which is fixed tightly in position. A $3\frac{1}{2}$ in. Strip 12 is also fixed to Plates 3 and 4, as shown, and the front of the body is filled in by a second $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flanged Plate 13, using a Box Spanner to reach the Nuts.

The legs

Both legs are similarly built. Two $5\frac{1}{2}$ in. Curved Strips 14, connected by a $1\frac{1}{2}$ in. Strip 15, are bolted to the lugs of two $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strips. A $5\frac{1}{2}$ in. Slotted Strip 16, extended by a $4\frac{1}{2}$ in. Strip, is fixed to the centre of Strip 15. A $1\frac{1}{2}$ in. Corner Bracket and two Double Brackets, arranged in a box shape, are bolted to the lower end of the $4\frac{1}{2}$ in. Strip.

The inside leg is built up from three $4\frac{1}{2}$ in. Strips 17, fixed to a $1\frac{1}{2}$ in. Strip that is secured to the lugs of the $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strips. Their lower ends are brought together and are bolted, along with another $1\frac{1}{2}$ in. Corner Bracket 18, to the other lugs of the above-mentioned Double Bracket.

Three $4\frac{1}{2}$ in. Strips are bolted to each $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip, their lower ends also being brought together

and fixed to the above Double Brackets. Corner Brackets 18 are connected at the front by a Double Bracket to which a 1½ in. Strip 19 is bolted. In addition, a shaped piece of erasing rubber is held between the Corner Brackets by a ½ in. Bolt to serve as a shoe.

A 4½ in. Rod 20 is now mounted in the bottom centre holes of the Flat Plates. On each end of this Rod is placed, in order, a Spring Clip, a Collar 21, a Washer, Slotted Strip 16, the Rod passing through the upper slot in the Strip, and another Collar 22. Slotted Strip 16 is then lock-nutted to the 1 in. Bush Wheel. The other leg is attached in the same way, but make quite sure that the Bolt locking it to the 1 in. Bush Wheel is diametrically opposite the corresponding Bolt in the first leg.

The arms

Each arm consists of three Sleeve Pieces 23 joined together by Fishplates. A Crank 24, mounted on Rod 11, is bolted to the top Sleeve Piece, while a 1½ in. Flat Girder and a 12½ in. Strip 25 are bolted to the lower Sleeve Piece. Two Double Brackets are fixed to the 1½ in. Flat Girder and the 3½ in. Strip 12 on each side.

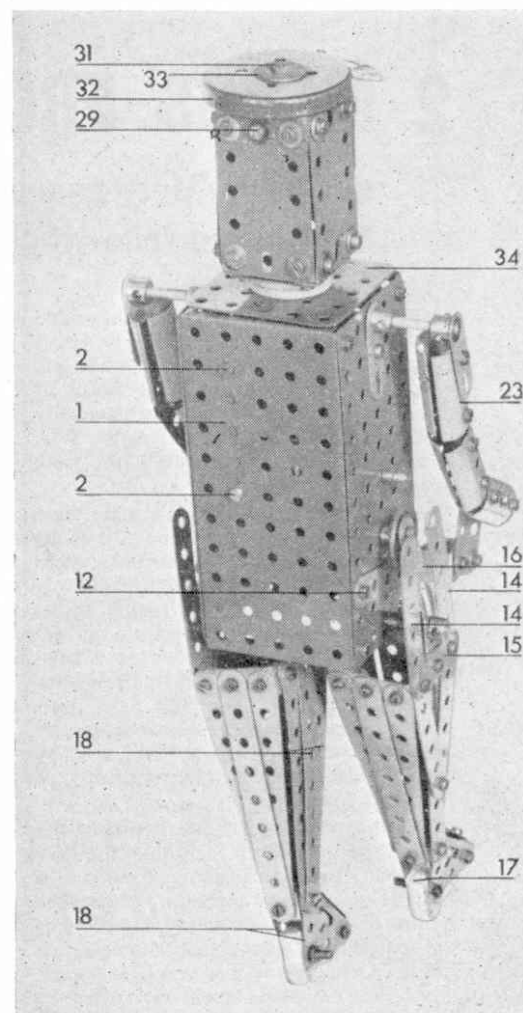
The handcart is built up from 12 in.

Strips 25, extended by 3½ in. Strips with 3 in. Stepped Curved Strips being used as bracers. Six 3½ in. by ½ in. Double Angle Strips join each side of the cart, while the axle, a 5 in. Rod, is journalled in Flat Trunnions bolted to Strips 25. Two spoked Wheels represent the road wheels.

The head

Four 1½ in. Angle Girders are bolted to a 1½ in. by 1½ in. Flat Plate. To three of these, 2½ in. by 1½ in. Flexible Plates 26 are fastened, while the front Angle Girder supports two 1½ in. by 1½ in. Flat Plates 27 overlapped one hole. Four Fishplates 28, bolted to the Plates, represent the nose and mouth, and washers on the shanks of Bolts represent the eyes. The Flexible Plates and Flat Plates are held together at the top by two 1½ in. by ½ in. Double Angle Strips connected by a third 1½ in. by ½ in. Double Angle Strip held by Bolt 29 at the back. The front Bolt supports an Angle Bracket carrying a 2½ in. Stepped Curved Strip 30.

A 3½ in. Screwed Rod 31 is fastened to a Wheel Flange 32 using a ¼ in. Washer 33 on each side of the Wheel Flange. The Screwed Rod is then slipped through the 1½ in. by ½ in. Double Angle Strip and the 1½ in. by 1½ in.



Rubber soles too! Shaped pieces of erasing rubber are cut to act as shoes and to provide traction

Flat Plate. Two 1 in. loose Pulley Wheels with Rubber Rings are now placed on the Rod before fastening a 2½ in. by 2½ in. Flat Plate 34 to the head. Two ⅜ in. Bolts with Nuts are secured in the centre holes of the upper flanges of the Flanged Plates 1 and 13, then Plate 24 is mounted on these Bolts and secured with two Nuts.

Parts required

2 of No. 1	2 of No. 55
20 of No. 2a	4 of No. 59
4 of No. 3	4 of No. 62
6 of No. 6a	2 of No. 70
8 of No. 10	1 of No. 72
10 of No. 11	3 of No. 74
1 of No. 12	1 of No. 80a
4 of No. 9f	4 of No. 89
1 of No. 14a	2 of No. 89a
1 of No. 15	1 of No. 90a
1 of No. 15a	2 of No. 103h
2 of No. 16	6 of No. 111
2 of No. 19a	5 of No. 111a
2 of No. 22a	7 of No. 111c
2 of No. 26c	2 of No. 126a
2 of No. 27d	4 of No. 133
2 of No. 35	1 of No. 137
128 of No. 37a	2 of No. 155
107 of No. 37b	6 of No. 163
33 of No. 38	3 of No. 188
2 of No. 38d	2 of No. 518
7 of No. 48	1 Emebo
6 of No. 48b	Motor
2 of No. 52	

X-ray of a robot! Heart of the mechanism is an Emebo motor which operates a very simple gear train

