

MECCANO

MORE NEW MODELS

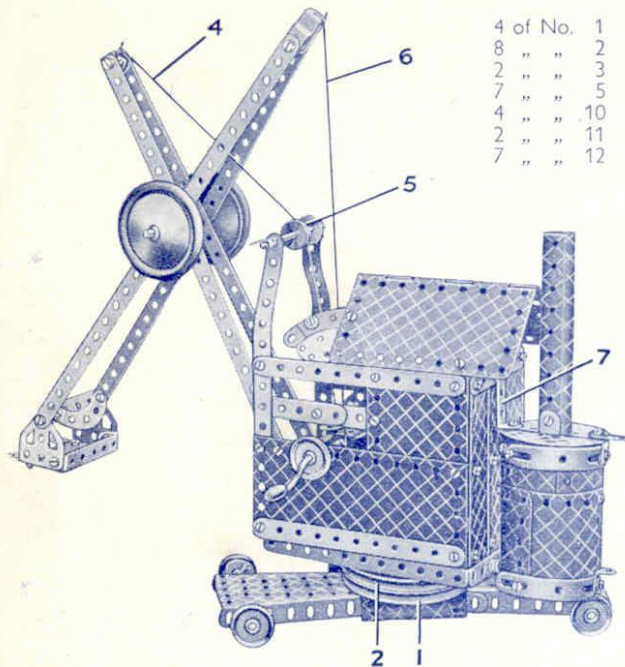
MECCANO is the greatest hobby in the world because it provides never-ending interest, fun and excitement. There is nothing to be compared with the joy and satisfaction of creating something new, and inventing new models in Meccano is a pastime that grows continually in fascination.

This Manual illustrates twelve splendid new models that can be built with Meccano. The building of these models will give you lots of fun, and as you build you will get ideas for models of your own invention. The possibilities of Meccano are endless !



These Models can be built with MECCANO No. 4 Outfit

4.26 MECHANICAL DIGGER



Parts required

4 of No. 1	4 of No. 12c	3 of No. 90a
8 " " 2	2 " " 15b	5 " " 111c
2 " " 3	3 " " 16	2 " " 125
7 " " 5	2 " " 17	2 " " 126
4 " " 10	2 " " 19b	2 " " 126a
2 " " 11	1 " " 19g	1 " " 176
7 " " 12	5 " " 22	3 " " 187
	1 " " 23	2 " " 188
	1 " " 24	2 " " 189
	8 " " 35	4 " " 190
	81 " " 37a	2 " " 191
	75 " " 37b	2 " " 192
	7 " " 38	1 " " 198
	1 " " 40	2 " " 199
	1 " " 44	2 " " 200
	1 " " 48	1 " " 212
	5 " " 48a	1 " " 213
	1 " " 51	2 " " 214
	1 " " 52	4 " " 215
	2 " " 54a	2 " " 217a
		2 " " 217b

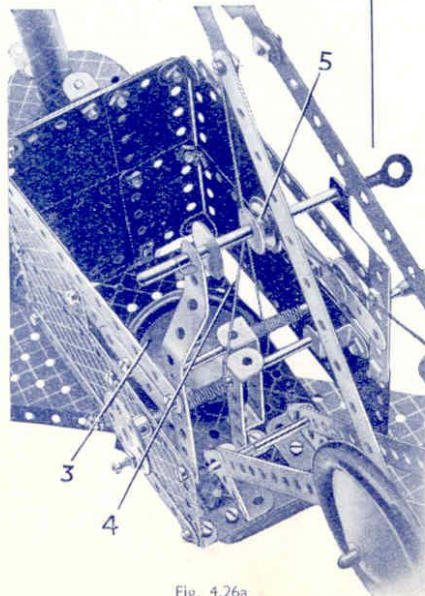


Fig. 4.26a

The bogie is constructed from two Flanged Sector Plates, the flanges of which are connected by two 2½" Strips. A gap of ¼" is left between the ends of the Plates. A 3" Pulley 1 is then bolted boss downwards, to the Flanged Sector Plates by two ⅜" Bolts.

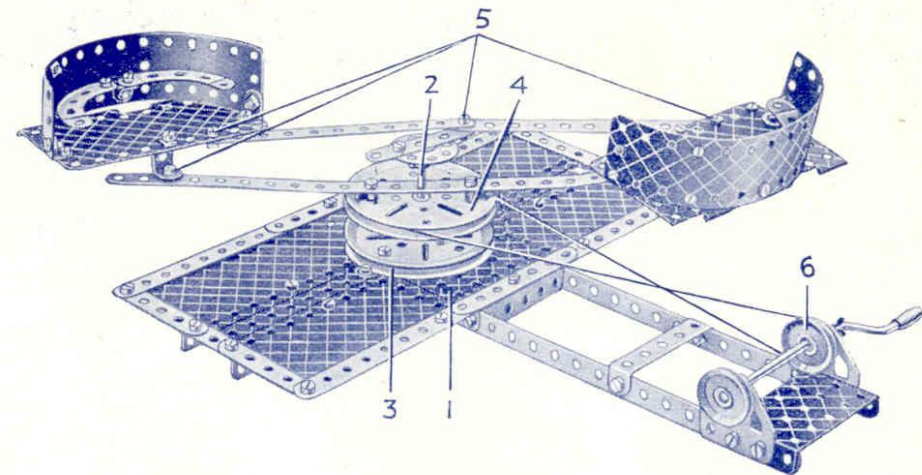
A 2" Rod is locked in the boss of Pulley 1, and on it is placed Pulley 2, boss downwards. The base of the cab is a 5½" x 2½" Flanged Plate, which rests on Pulley 2 and is retained on the 2" Rod by a Road Wheel 3.

The construction of the cab is clear from the illustrations. The boiler comprises a cylinder built up from two 1½" radius Curved Plates, a 4½" x 2½" Flexible Plate, and two 5½" x 1½" Flexible Plates. The edges of the cylinder are strengthened with Formed Slotted Strips. Semi-Circular Plates are attached to the top of the boiler by a 2½" x ½" Double Angle Strip. The Chimney is a 4½" x 2½" Flexible Plate rolled into a tube and fixed in place by a Double Bracket. The boiler is fastened to the back of the cab by a 1½" x ½" Double Angle Strip 7 at the top, and by a ⅜" Bolt at the bottom, where it is spaced from the cab by three Washers.

The Cord 4 is taken over the ½" Pulley 5 and tied to the Double Bracket at the top of the jib. This ½" Pulley 5 is clamped loosely between the two ¾" Discs by two Spring Clips to form a deep-grooved pulley.

The Cord 6 is wound around the Crank Handle and is tied to the Cranked Bent Strip at the top of the dipper stick.

4.27 "WHIP" ROUNDABOUT



Parts required

3 of No. 1	2 of No. 19b	1 of No. 40	2 of No. 188
7 " " 2	1 " " 19g	1 " " 48a	2 " " 189
2 " " 3	2 " " 22	1 " " 51	2 " " 191
4 " " 5	1 " " 24	1 " " 52	2 " " 192
4 " " 10	4 " " 35	2 " " 54a	1 " " 198
2 " " 11	65 " " 37a	4 " " 90a	
6 " " 12	53 " " 37b	5 " " 111c	
1 " " 17	6 " " 38	2 " " 126a	

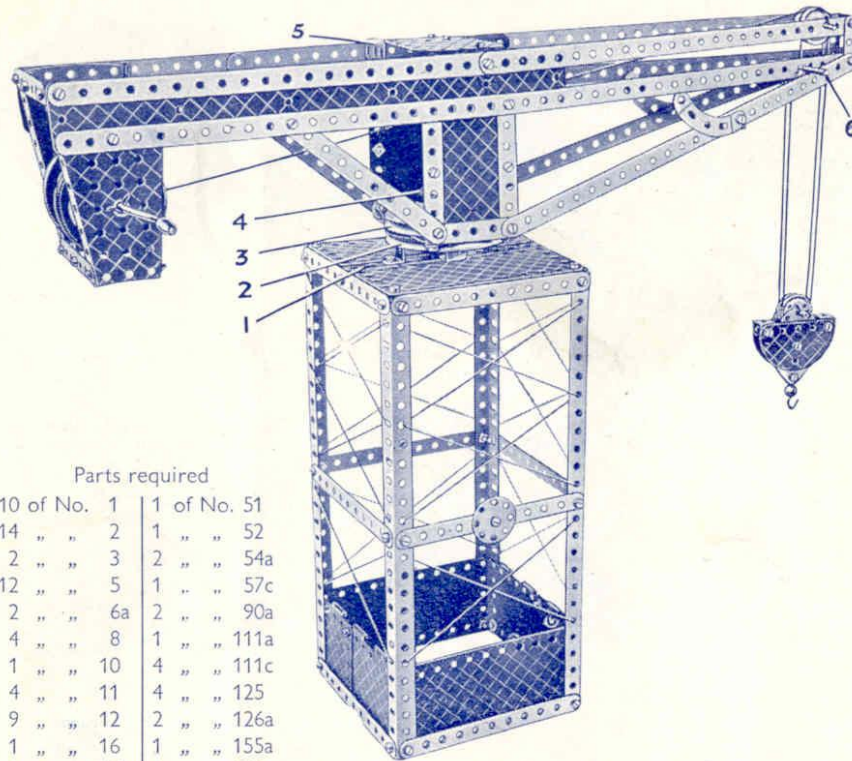
The base of the model is formed by a 5½" x 2½" Flanged Plate 1 extended on each side by a Flanged Sector Plate, a 5½" x 2½" and a 4½" x 2½" Flexible Plate. The edges of the base are strengthened with Strips. Two 12½" Strips are bolted to the flanges of Plate 1 and their ends are connected by a 2½" x 1½" Flanged Plate. Two Flat Trunnions provide bearings for a Small Crank Handle.

A 3" Pulley 3 is bolted to Flanged Plate 1 and in its boss is fixed a 2" Rod 2. A second 3" Pulley 4 is spaced from Pulley 3 by a Spring Clip and is free to turn on Rod 2. Across its face is bolted a 12½" Strip, the Strip being spaced from the Pulley by a Spring Clip and two Washers placed on the shank of each securing Bolt.

A Bush Wheel fitted with a 2½" Strip is secured on Rod 2 in the position shown, the end of the Strip being connected to the cars by 5½" Strips. All the Bolts 5 are lock-nutted.

The 1" Pulley 6 mounted on the Crank Handle, drives Pulley 4 through a belt of Cord.

5.26 HAMMERHEAD CRANE



Parts required

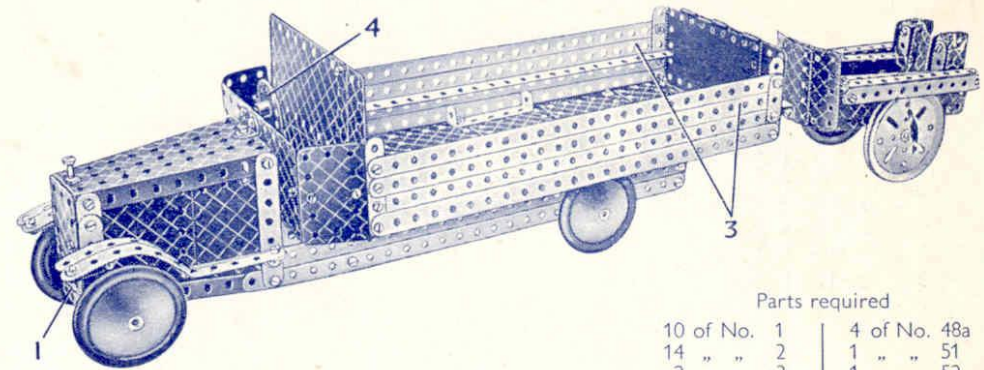
10 of No. 1	1 of No. 51
14 " " 2	1 " " 52
2 " " 3	2 " " 54a
12 " " 5	1 " " 57c
2 " " 6a	2 " " 90a
4 " " 8	1 " " 111a
1 " " 10	4 " " 111c
4 " " 11	4 " " 125
9 " " 12	2 " " 126a
1 " " 16	1 " " 155a
1 " " 17	1 " " 176
3 " " 18a	2 " " 187
2 " " 19b	4 " " 188
1 " " 19g	4 " " 189
4 " " 22	3 " " 190
2 " " 22a	2 " " 191
10 " " 35	4 " " 192
90 " " 37a	1 " " 198
85 " " 37b	1 " " 213
9 " " 38	2 " " 214
1 " " 40	3 " " 217a
2 " " 48a	

The top of the tower is filled in with a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate 1 extended on each side by a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate. The 3" Pulley 2 on which the jib swivels is bolted to the tower by four Reversed Angle Brackets, and in its boss is secured a 2" Rod on which the 3" Pulley 3 is free to turn. A 1" Pulley 4 fitted with a Rubber Ring is fastened at the upper end of the 2" Rod and retains the jib in position on its pivot.

The $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate 5 is connected to the other side of the jib by a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip, on top of which is bolted a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate.

The hoisting Cord is tied to the Crank Handle journaled in the Flanged Sector Plates at the rear end of the jib. It is then taken over one of two 1" Pulleys mounted at the front end of the jib, then down and around one of the 1" loose Pulleys in the pulley block, up and over the other 1" fast Pulley in the jib and around the other 1" loose Pulley of the pulley block. Finally it is tied to a Flat Bracket in the middle of Rod 6.

5.27 ARMY LORRY AND TRAILER



Parts required

10 of No. 1	1 of No. 48a
14 " " 2	1 " " 51
2 " " 3	1 " " 52
10 " " 5	2 " " 54a
2 " " 6a	1 " " 57c
4 " " 8	2 " " 111a
6 " " 10	4 " " 111c
2 " " 11	1 " " 115
12 " " 12	2 " " 126a
2 " " 12a	1 " " 147b
2 " " 12c	4 " " 187
1 " " 15a	4 " " 188
1 " " 15b	4 " " 189
2 " " 16	4 " " 190
2 " " 19b	2 " " 191
1 " " 24	4 " " 192
4 " " 35	1 " " 198
91 " " 37a	2 " " 199
85 " " 37b	2 " " 200
13 " " 38	2 " " 217a

The radiator front is a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate 1 extended for $\frac{1}{2}"$ at its upper edge by a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate. The rear end of the chassis is fastened to the body by a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 2, the turned-up ends of which are bolted between the Trunnions and the $12\frac{1}{2}"$ Strips.

The rear ends of the Strips 3 are clamped between the $1\frac{1}{2}"$ Strips and the $2\frac{1}{2}"$ Strips forming the uprights at the sides of the body. The Bush Wheel 4 representing the steering wheel is locked on a Threaded Pin.

Eight Washers are used to space the two $1\frac{1}{8}"$ radius Curved Plates forming the front of the trailer from the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate

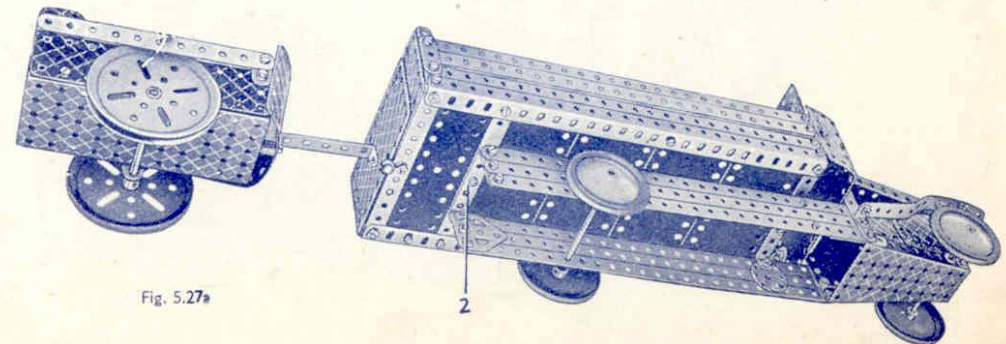


Fig. 5.27a

This Model can be built with MECCANO No. 6 Outfit

6.26 STEAM TUGBOAT

Parts required

12 of No. 1	11 of No. 12	2 of No. 22a	2 of No. 54a	4 of No. 188
14 " " 2	2 " " 12a	1 " " 23	1 " " 57c	4 " " 189
4 " " 3	2 " " 12c	1 " " 23a	4 " " 59	6 " " 190
2 " " 4	2 " " 15	1 " " 24	1 " " 80c	2 " " 191
12 " " 5	1 " " 15b	7 " " 35	1 " " 90	4 " " 192
2 " " 6a	2 " " 16	111 " " 37a	4 " " 90a	2 " " 197
4 " " 8	1 " " 17	104 " " 37b	2 " " 111	1 " " 198
8 " " 10	1 " " 18a	20 " " 38	1 " " 111a	2 " " 199
3 " " 11	5 " " 22	1 " " 40	6 " " 111c	2 " " 200
		2 " " 48	1 " " 115	1 " " 212
		8 " " 48a	2 " " 125	2 " " 213
		2 " " 48b	2 " " 126	2 " " 214
		1 " " 51	4 " " 126a	4 " " 215
		1 " " 52	4 " " 155a	1 " " 216
		2 " " 53	1 " " 176	4 " " 217a

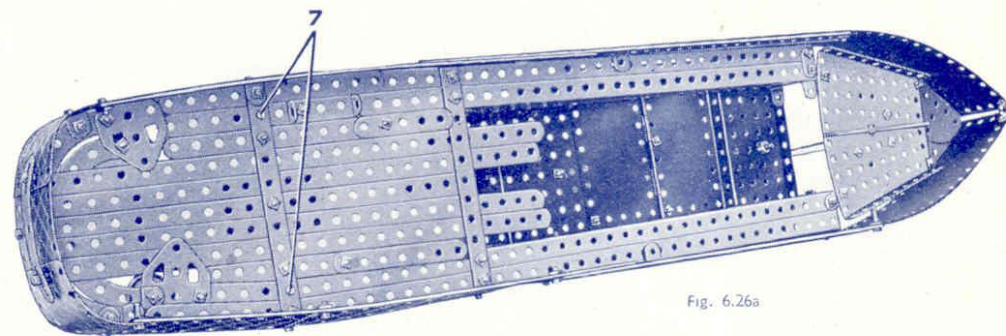


Fig. 6.26a

Both sides of the hull are constructed alike. The rounded stern is formed by two $1\frac{1}{8}$ " radius Curved Plates and one $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. The sides are spaced $5\frac{1}{2}$ " apart amidships.

The deckhouse is based on two $12\frac{1}{2}$ " Angle Girders. The latter are supported at the rear on a $5\frac{1}{2}$ " Strip, the ends of which are bolted to further $12\frac{1}{2}$ " Angle Girders fixed to the sides of the hull. The Angle Girders are supported at their front ends by Flat Brackets.

The deckhouse sides each consist of two $12\frac{1}{2}$ " Strips. The Strips at one side are clamped between a $1\frac{1}{2}$ " Strip and a $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip, and at the other side the lower Strip is bolted between a $1\frac{1}{2}$ " Strip and a $1"$ \times $1"$ Angle Bracket. At their rear ends the Strips are bolted to Flat Trunnions and Flat Brackets. Two $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates, which are connected together by joining their flanges with $5\frac{1}{2}$ " Strips, form the roof of the deckhouse. The stern end of the deckhouse is completed by bolting $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips between the $12\frac{1}{2}$ " Angle Girders and the flanges of the rear Flanged Plate. Two $1\frac{1}{4}$ " Discs and a ladder represented by two $2\frac{1}{2}$ " Strips bolted to a Double Bracket, are attached to the upper $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip.

The foredeck comprises two Flanged Sector Plates and two Semi-Circular Plates. The aft deck is completed with Strips of various sizes, which are bolted together in the manner shown in the underneath view of the hull.

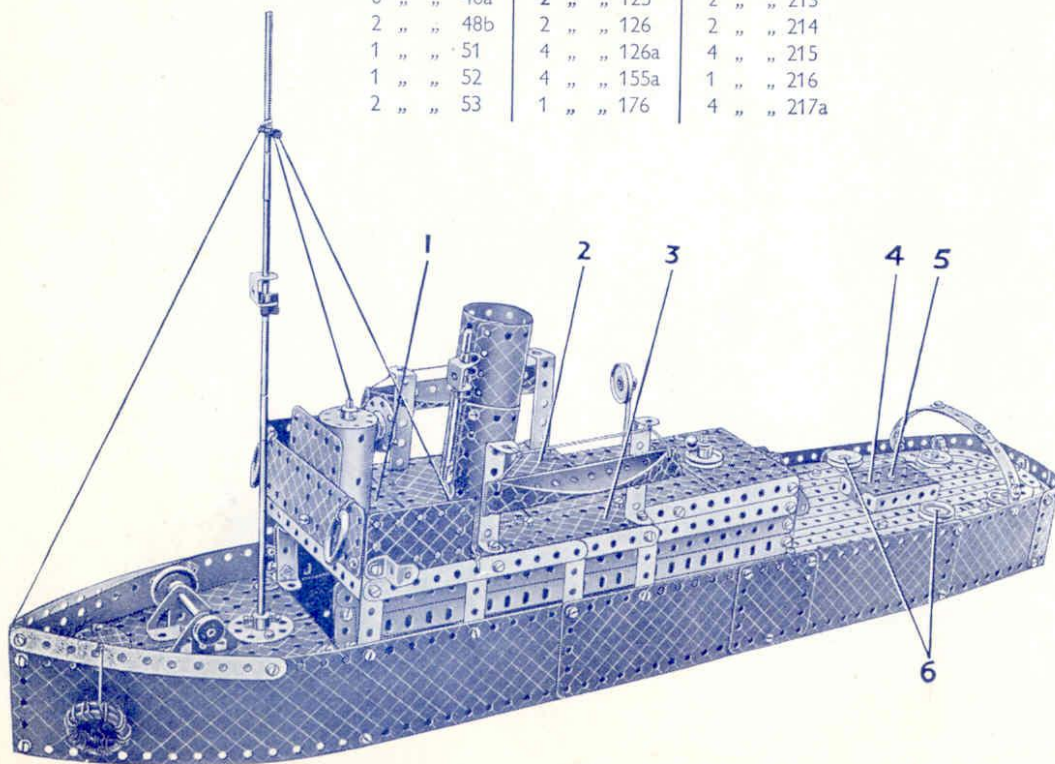
The hatchway 4 is constructed from a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flanged Plate with $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips bolted to its rear flange. It is held in position by a $\frac{1}{4}$ " Bolt 5, Washers being used to space it from the deck.

The 1" Pulleys 6 are fastened on the shanks of $\frac{3}{8}$ " Bolts 7 pushed up through the deck.

The forward part of the bridge deck is filled in with a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate 1, a $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Hinged Flat Plate 2 and a $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate 3. The steering wheel is a $1\frac{1}{4}$ " Disc fitted with a Threaded Pin, and is mounted with a $\frac{1}{2}$ " Pulley on a $1"$ Rod passed through a hole in a $2\frac{1}{2}$ " Cylinder and retained in place by Collars. The Cylinder is fixed to the bridge by a $3\frac{1}{2}$ " Rod and Collars.

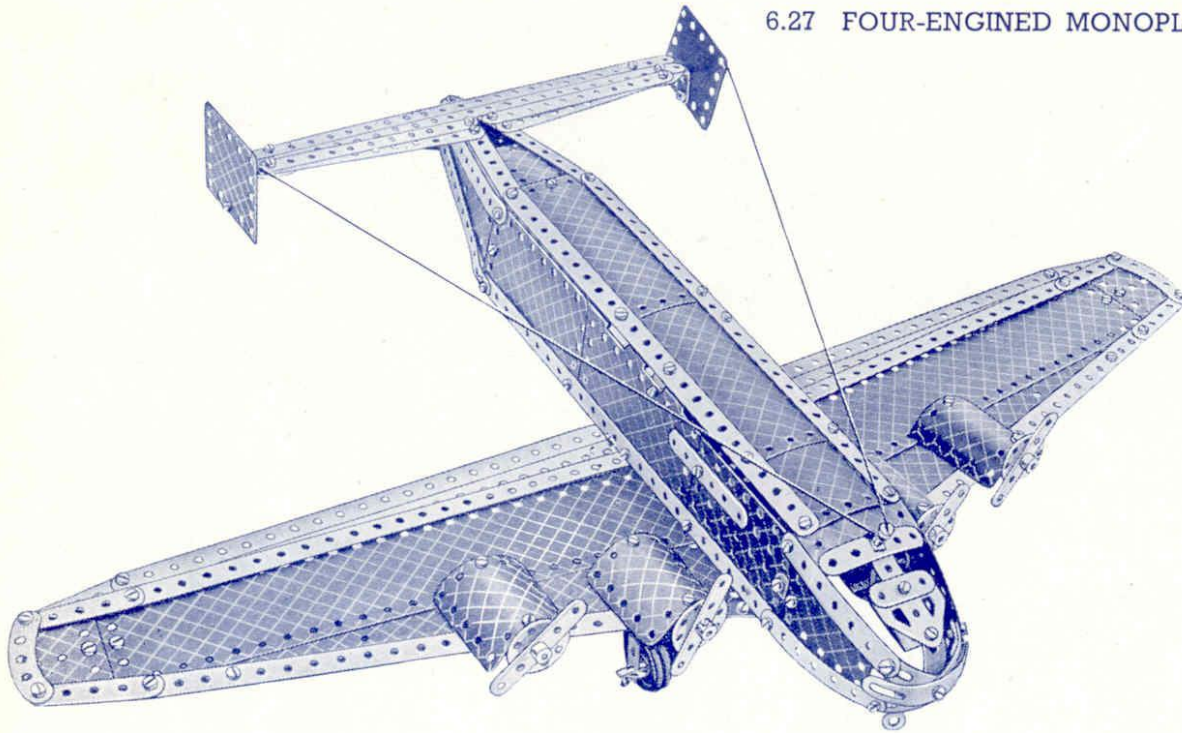
The funnel comprises two U-Section Curved Plates, two $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " and two $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates, all of which are bolted together to form a cylinder. It is attached to the bridge deck by a $1"$ \times $1"$ Angle Bracket.

Behind the funnel is a ventilator, the mouth of which is formed by a $1"$ Pulley on the end of a $3"$ Screwed Rod. The Rod is passed through a hole in the deck and is held in place by Nuts.



This Model can be built with MECCANO No. 6 Outfit

6.27 FOUR-ENGINED MONOPLANE



Parts required

12 of No. 1	3 of No. 18a	2 of No. 90	4 of No. 189
10 " " 2	4 " " 22	4 " " 90a	5 " " 190
4 " " 3	1 " " 23	1 " " 111	2 " " 191
2 " " 4	7 " " 35	2 " " 111a	4 " " 192
11 " " 5	108 " " 37a	6 " " 111c	2 " " 197
2 " " 6a	99 " " 37b	1 " " 115	1 " " 198
2 " " 8	3 " " 38	4 " " 125	2 " " 199
6 " " 10	1 " " 40	3 " " 126a	2 " " 200
6 " " 12	2 " " 48a	1 " " 147b	1 " " 212
2 " " 12a	2 " " 53	4 " " 155a	2 " " 214
6 " " 12c	4 " " 59	4 " " 188	4 " " 215

4 of No. 217a

The sides of the fuselage are constructed on two 12½" Angle Girders 1, and as they are identical their construction can be followed from the illustration above. The fuselage top is connected to the sides by Obtuse Angle Brackets. The tail of the fuselage is tapered to a point with 5½" Strips and 5½" × 1½" Flexible Plates, the upper Strips being joined by two Angle Brackets. Two 3½" Strips and a 2½" × 1½" Flexible Plate form each side of the forward part of the fuselage, and the nose is made up of four Formed Slotted Strips bolted together through their centre holes.

Three 12½" Strips form the trailing edge of each wing, and the leading edge also is a 12½" Strip. These are lengthened with 2½" Strips and are connected by a 2½" Curved Strip at the tip, the framework so formed being filled in with a 12½" Strip Plate, a 5½" × 2½" and a 5½" × 1½" Flexible Plate. A Semi-Circular Plate completes the tip.

The engine nacelles are 1½" radius Curved Plates and 2½" × 2½" Flexible Plates, which are connected to the wings by Reversed Angle Brackets. A 1½" Disc is attached to the front of each nacelle by an Angle Bracket. The shanks of the ⅜" Bolts 2 form propeller shafts on which the propellers, 2½" Strips, are retained by Collars.

U-Section Curved Plates bolted underneath the wings form supports for 2½" Curved Strips, which provide bearings for the landing wheel axles. The axles are 1½" Rods, and each carries two 1" Pulleys.

A direction-finding aerial is represented by Rod and Strip Connector 3 mounted on a Threaded Pin fastened under the fuselage nose.

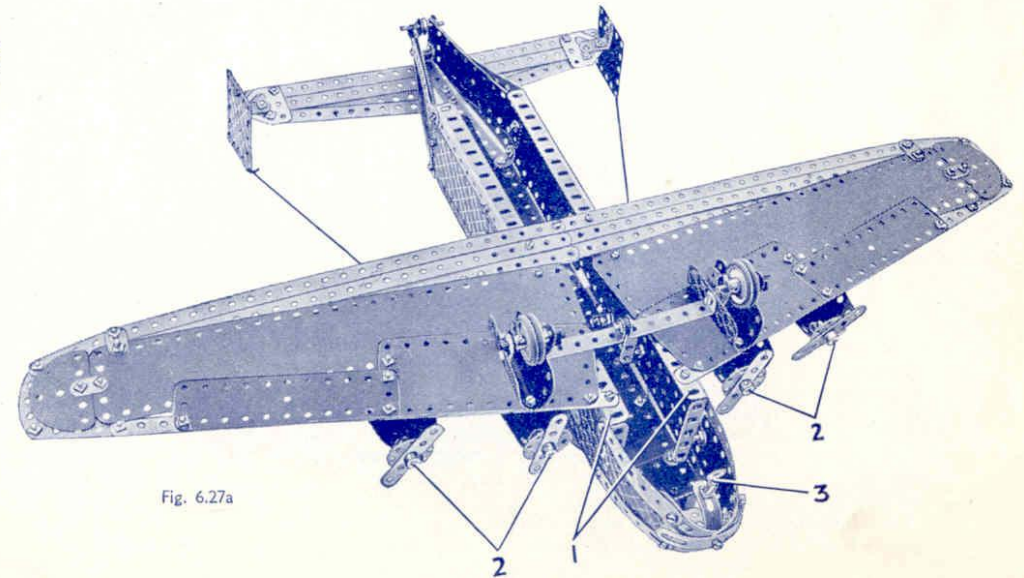
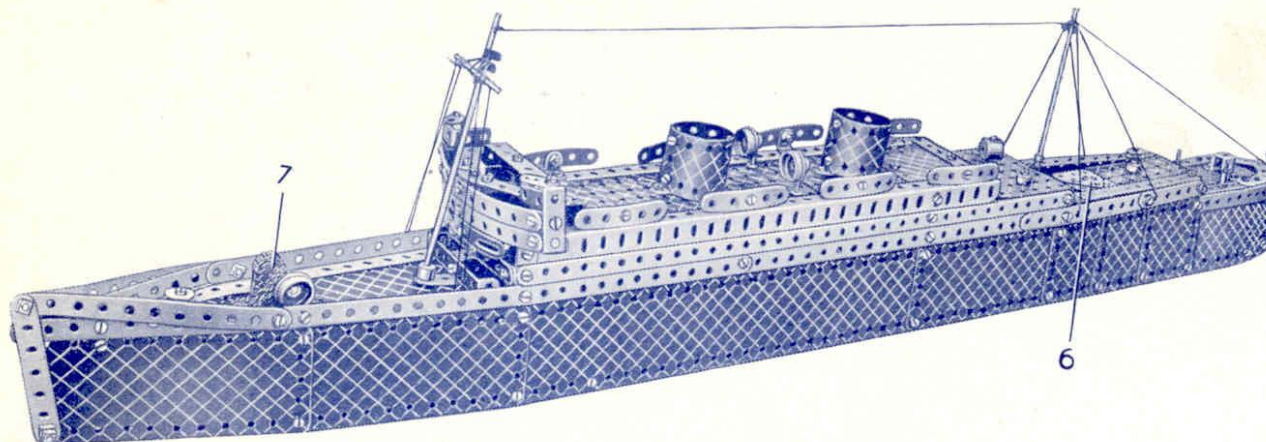


Fig. 6.27a

This Model can be built with MECCANO No. 7 Outfit

7.26 MOTOR LINER



		Parts required	
12 of No.	1	2 of No.	26
18 " "	2	4 " "	35
6 " "	3	147 " "	37a
2 " "	4	135 " "	37b
12 " "	5	9 " "	38
4 " "	6a	1 " "	40
6 " "	8	1 " "	45
11 " "	10	1 " "	46
3 " "	11	2 " "	48
18 " "	12	9 " "	48a
4 " "	12a	2 " "	48b
2 " "	12c	1 " "	51
1 " "	14	1 " "	52
1 " "	15	3 " "	53
2 " "	17	1 " "	54a
2 " "	18a	5 " "	59
3 " "	20b	1 " "	62
2 " "	23	2 " "	80c
1 " "	23a	2 " "	90
		3 of No.	90a
		1 " "	111
		2 " "	111a
		6 " "	111c
		2 " "	115
		1 " "	116
		2 " "	125
		3 " "	126a
		1 " "	164
		6 " "	188
		4 " "	189
		8 " "	190
		2 " "	191
		6 " "	192
		2 " "	197
		1 " "	198
		2 " "	212
		4 " "	215

The construction of each side of the hull is identical and is clear from the illustrations.

The superstructure is attached to the hull by $5\frac{1}{2}$ " Strips at the bridge end and a $2\frac{1}{2}$ " \times $\frac{1}{2}$ " and a $2\frac{1}{2}$ " \times 1" Double Angle Strip is used at the other end. The boat deck comprises two $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates, a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate and a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate, all of which are fixed end to end by their flanges and bolted at one end under a $3\frac{1}{2}$ " Strip and at the other to the bridge structure.

In assembling the bridge, a $3\frac{1}{2}$ " Strip is attached by Angle Brackets to the ends of the $12\frac{1}{2}$ " Strips that form the sides of the superstructure, and a $2\frac{1}{2}$ " Strip bolted vertically connects the $3\frac{1}{2}$ " Strip to the flange of the $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate forming part of the boat deck. Next, two $5\frac{1}{2}$ " Strips and a Formed Slotted Strip are connected together by Flat Brackets at their ends and centres, and the front of the bridge so formed is bolted to the Flanged Plate by a $\frac{3}{4}$ " Bolt, a Collar being used for spacing purposes.

The chart house is a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flanged Plate with a Double Angle Strip fitted to its flanges, and it is attached to the boat deck by a Double Bracket. Two Double Angle Strips bolted to a Double Bracket are also attached to the Flanged Plate. Half of a Hinged Flat Plate 1 is used in the construction of the forecastle deck and is extended by a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate 2, a Flat Trunnion 3 and two $2\frac{1}{2}$ " Curved Strips 4. The end of the Flexible Plate is bolted under the $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip 5.

The two Flat Trunnions 6 bolted on the aft deck represent a hatch cover. A Large Fork Piece 7 fastened to the deck by a $\frac{1}{2}$ " Bolt forms part of a winch.

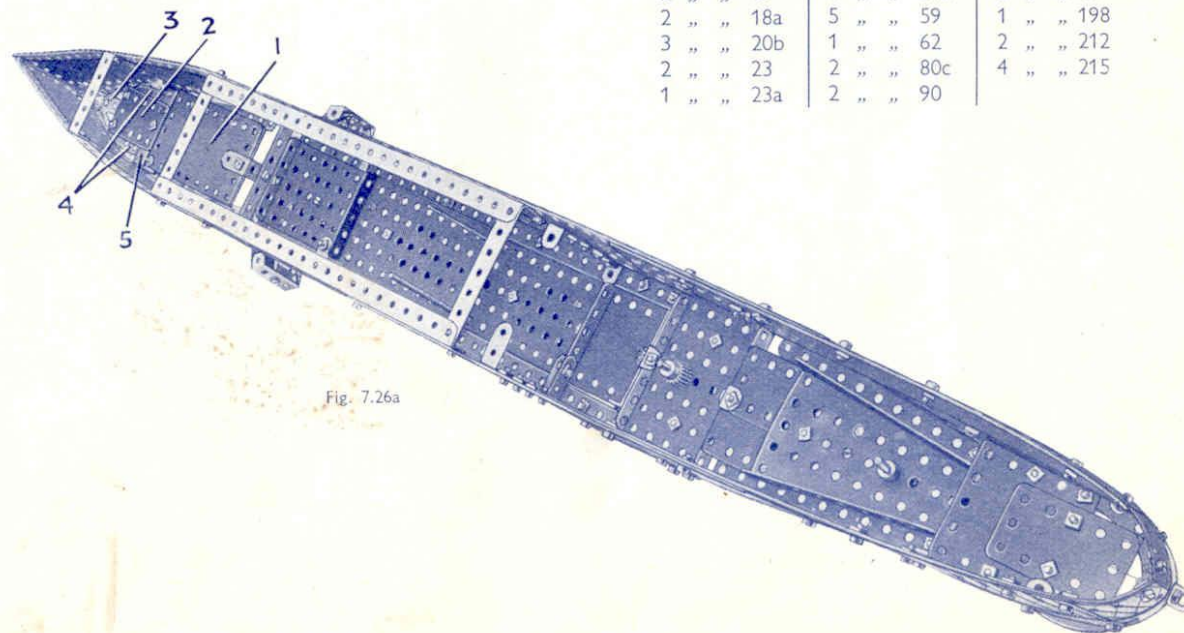


Fig. 7.26a

7.27 DOUBLE-DECKER BUS

The two $12\frac{1}{2}$ " Angle Girders 1 form the chassis side members and are joined across by a $5\frac{1}{2}$ " Strip at each end. The E120 Electric Motor 2 is bolted to Angle Girders 1 and to it is attached the bonnet, by the same Bolt that holds Double Bracket 12. The bonnet comprises two Flanged Sector Plates connected by a $2\frac{1}{2}$ " x $1\frac{1}{2}$ " Flanged Plate that forms the radiator. The side of the bonnet is filled in with a $2\frac{1}{2}$ " x $2\frac{1}{2}$ " Flexible Plate 3 and two $2\frac{1}{2}$ " x $1\frac{1}{2}$ " Flexible Plates 4. A $3\frac{1}{2}$ " Strip 5 is bolted behind the $2\frac{1}{2}$ " x $1\frac{1}{2}$ " Flanged Plate by Bolt 6, which passes through its centre hole. One end of this Strip supports the rear side mud-guard, and its other end carries the cab front.

The $12\frac{1}{2}$ " Strips at the sides of the roof are connected together by Flat Brackets and Obtuse Angle Brackets, the ends of the centre Strips being placed under the Formed Slotted Strips so that the parts are clamped in place. The centre pin of a Hinged Flat Plate is withdrawn and the halves are used at 7 in the construction of the sides.

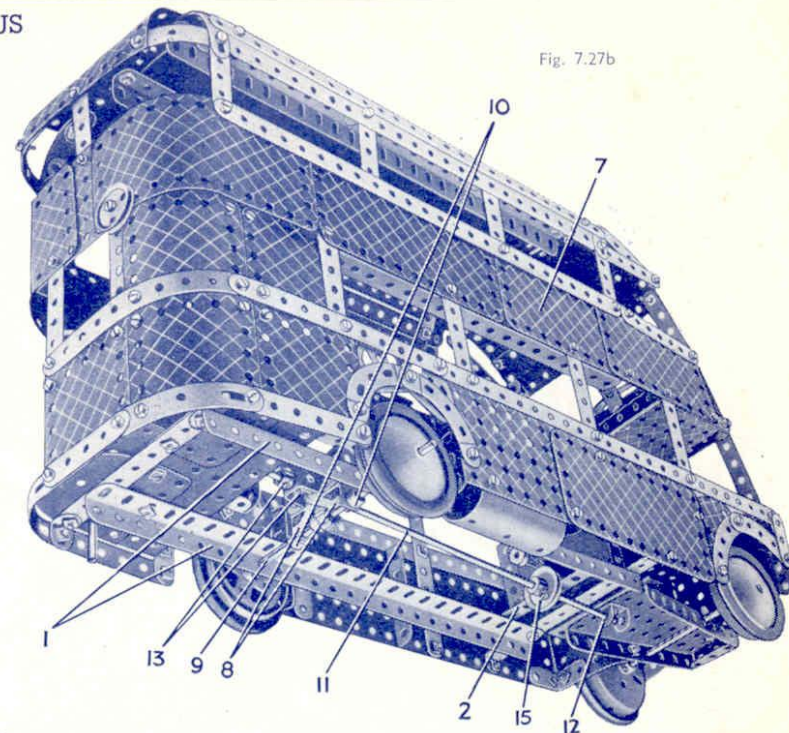
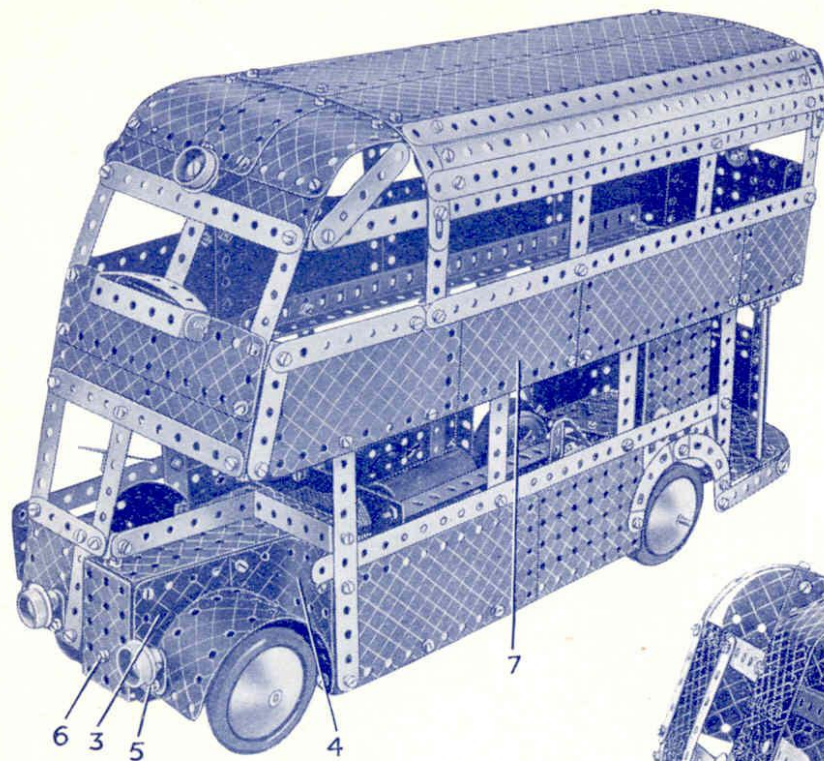


Fig. 7.27b

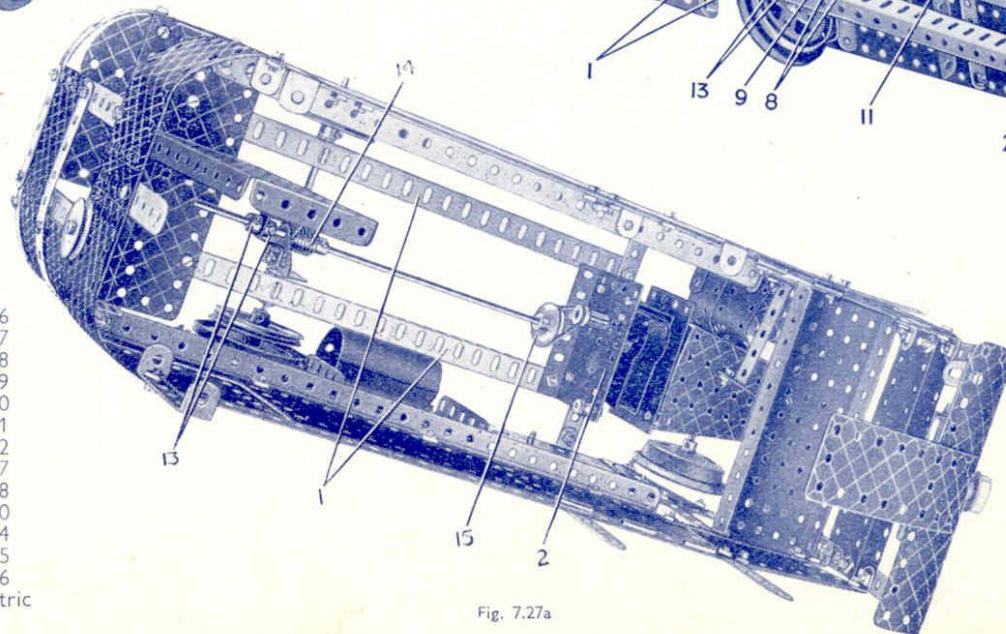


Fig. 7.27a

Parts required

12 of No. 1	1 of No. 17	1 of No. 51	1 of No. 186
18 " " 2	2 " " 20a	2 " " 52	4 " " 187
6 " " 3	3 " " 20b	3 " " 53	6 " " 188
2 " " 4	1 " " 22	2 " " 54a	6 " " 189
11 " " 5	1 " " 22a	6 " " 59	8 " " 190
1 " " 6a	1 " " 24	1 " " 63	2 " " 191
7 " " 8	1 " " 26	1 " " 80c	6 " " 192
12 " " 10	1 " " 32	2 " " 90	2 " " 197
1 " " 11	4 " " 35	4 " " 90a	1 " " 198
12 " " 12	152 " " 37a	2 " " 111a	2 " " 200
1 " " 12a	144 " " 37b	6 " " 111c	2 " " 214
4 " " 12c	4 " " 38	2 " " 126	8 " " 215
1 " " 13	1 " " 45	4 " " 126a	1 " " 216
1 " " 14	10 " " 48a	1 " " 147b	1 E120 Electric Motor
2 " " 15	2 " " 48b	2 " " 162a	

The drive from the Electric Motor 2 is taken through a Driving Band to Pulley 15 on the $11\frac{1}{2}$ " Rod 11, bearings for which are provided by Double Bracket 12 and the holes in the pointed ends of the two Trunnions 8, which are connected by a Double Bent Strip. Rod 11 is prevented from moving endways in its bearings by two Collars 13, and it carries a Worm 14 that drives a $\frac{1}{2}$ " Pinion fixed on the $6\frac{1}{2}$ " Rod 9. Bearings for Rod 9 are provided by Trunnions 8 and holes in the $12\frac{1}{2}$ " Angle Girders 1. The rear axle is prevented from moving endways in its bearings by Collars 10.

8.26 MECHANICAL MAN

Parts required

13 of No. 1	5 of No. 16	7 of No. 48a	6 of No. 111c
19 " " 2	2 " " 17	5 " " 48b	4 " " 126
4 " " 2a	2 " " 18a	2 " " 48d	4 " " 126a
5 " " 3	2 " " 18b	2 " " 51	2 " " 147b
4 " " 4	2 " " 19b	2 " " 52	1 " " 162b
16 " " 5	4 " " 20b	4 " " 53	1 " " 163
2 " " 6	1 " " 21	2 " " 54a	1 " " 186b
2 " " 6a	2 " " 22	9 " " 59	2 " " 187
10 " " 8	4 " " 22a	2 " " 62	3 " " 189
4 " " 9	2 " " 23	4 " " 63	1 " " 190
2 " " 10	1 " " 24	2 " " 80c	5 " " 191
4 " " 11	2 " " 26	1 " " 94	12 " " 192
6 " " 12	2 " " 27a	1 " " 95	6 " " 197
4 " " 12a	10 " " 35	2 " " 96	2 " " 199
2 " " 13	217 " " 37a	1 " " 96a	6 " " 200
1 " " 14	196 " " 37b	2 " " 109	3 " " 219
1 " " 15	10 " " 38	2 " " 111	E06 or E020
2 " " 15a	1 " " 45	6 " " 111a	Electric Motor
1 " " 15b	2 " " 48		

This striking model of a mechanical man walks at a good speed and swings its arms in a most realistic manner. It is driven by either an E06 or an E020 Electric Motor, which is housed inside the body.

The construction of the body is clearly shown in the illustrations and therefore needs no explanation. The gearing that operates the limbs is contained between two $3\frac{1}{2} \times 2\frac{1}{2}$ " Flanged Plates 2, which are bolted to two $5\frac{1}{2}$ " Angle Girders 1. The latter are connected by $2\frac{1}{2} \times 1\frac{1}{2}$ " Flanged Plates, the end flanges of which are bolted to the body. The upper flanges of the Flanged Plates 2 are connected to a compound strip 3 by $2\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips. Strip 3 comprises duplicate $5\frac{1}{2}$ " and $4\frac{1}{2}$ " Strips overlapped seven holes.

An E06 or E020 Electric Motor is bolted inside the body in the position shown in Fig. 8.26c and it drives through a 10" Driving Band a 3" Pulley 5 fixed on a $6\frac{1}{2}$ " Rod 4. Bearings for Rod 4 are provided by a Double Bent Strip and a $12\frac{1}{2}$ " Strip that forms part of the side of the body. A $\frac{3}{4}$ " Sprocket Wheel on Rod 4 drives a 2" Sprocket Wheel on a 2" Rod 6 that carries also a $\frac{1}{2}$ " Pinion. The latter drives a 57-teeth Gear on a second 2" Rod 7, which in turn carries a $\frac{1}{2}$ " Pinion driving a 57-teeth Gear on $3\frac{1}{2}$ " Rod 8. Rod 8 is held in its bearings by two Collars and is fitted at each end with a Face Plate (Fig. 8.26c).

The Face Plates form cranks, which operate the arms and legs of the model. A Pivot Bolt 13 is locked in one of the inner holes of each Face Plate, the latter parts being so arranged on their shafts that the Pivot Bolts are at 180° to each other.

(Continued on next page)

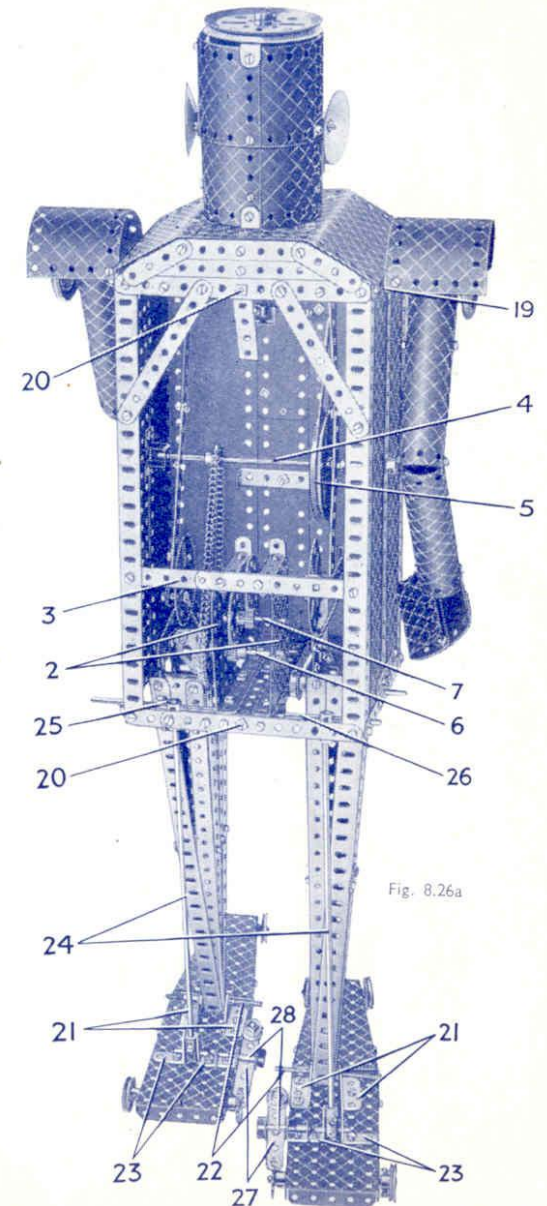
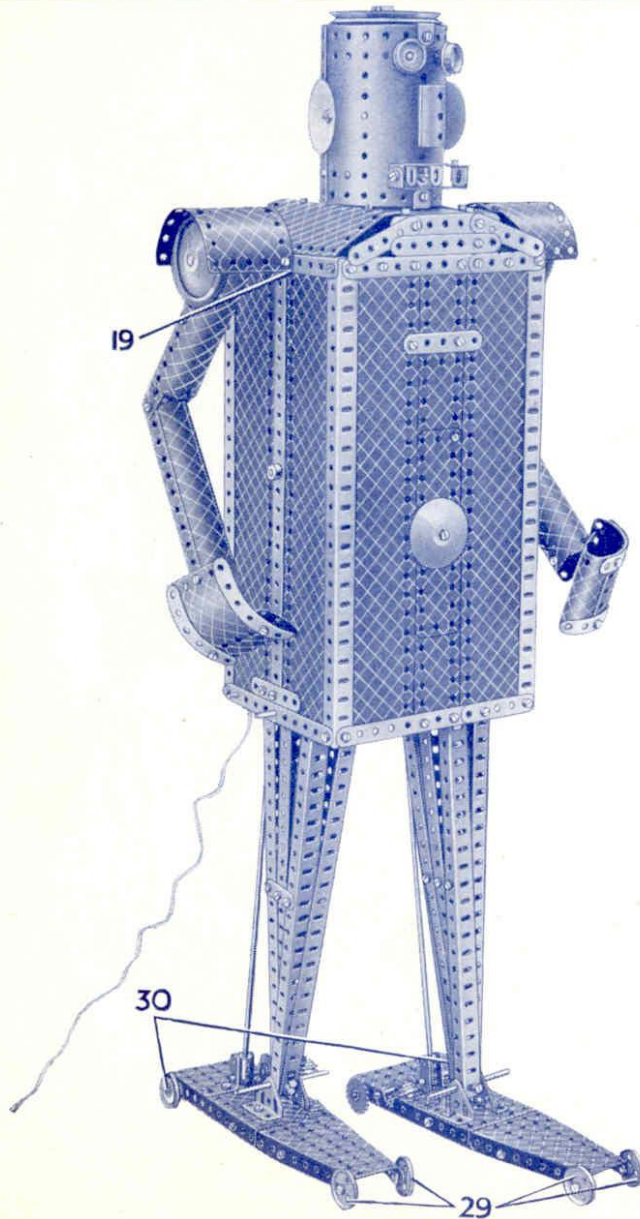


Fig. 8.26a

This Model can be built with MECCANO No. 8 Outfit

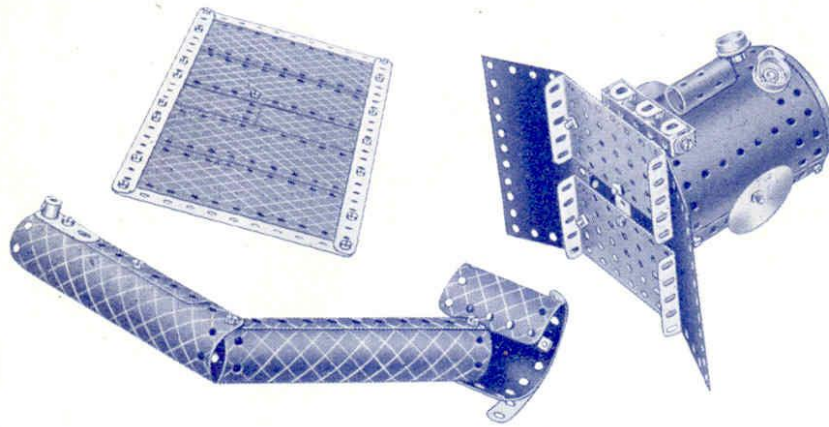


Fig. 8.26b

8.26 MECHANICAL MAN—Continued.

The legs are each constructed from three $12\frac{1}{2}$ " Angle Girders and a fourth girder built up from two $12\frac{1}{2}$ " Strips, and they are connected at their upper ends by $2\frac{1}{2}$ " Strips and Flat Trunnions. They are pivoted on Rods 9, which pass through the $12\frac{1}{2}$ " Strips 10 (Fig. 8.26c) bent to shape and arranged as shown. A Collar and a $\frac{1}{2}$ " Flanged Wheel prevent the legs from moving sideways on the Rods. The Strips 10 are pivotally connected to a 3" Strip 12 by $\frac{1}{2}$ " Bolt 11, which passes through the third hole from one end of the Strip. The other end of Strip 12 is pivoted on the Pivot Bolt 13, a Spring Clip being used to prevent side play in the Strip. The inner ends of Rods 9 are journaled in the centre holes of $5\frac{1}{2}$ " Angle Girders 1, and their outer ends in the centre holes of the $5\frac{1}{2}$ " Strips at the bottom of the body.

The lower ends of the legs are fitted with 3" Screwed Rods 22, on which the feet are pivoted. These consist of a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate connected to a Flanged Sector Plate by $5\frac{1}{2}$ " Strips. Trunnions 21 bolted to the Flanged Plates connect the feet to the legs, and behind them are fixed $1\frac{1}{2}$ " \times $1\frac{1}{2}$ " Angle Brackets 23. Between the latter are 1" Rods, to which are fixed Couplings that are connected by $11\frac{1}{2}$ " Rods 24 to further Couplings on Rods 25 and 26 (Fig. 8.26a). The Rods 24, which must be adjusted correctly, keep the body of the mechanical man vertical while he is walking. If the model tends to fall forward the Rods should be shortened by sliding them further into the Couplings, but if the tendency is to fall backward the Rods should be moved out of the Couplings.

The feet are fitted with wheels, the front pair of which are 1" loose Pulleys 29 carried on lock-nutted $\frac{3}{8}$ " Bolts. The rear wheels are 1" Pulleys 30 and 1" Sprocket Wheels. The Sprocket Wheels are fitted with pawls made from $2\frac{1}{2}$ " Strips 27 weighted at one end with $\frac{1}{2}$ " loose Pulleys. The Strips are fitted at their centres with Double Brackets, which are pivoted on $1\frac{1}{2}$ " Rods 28. The latter are journaled in further Double Brackets bolted to the feet. The purpose of these ratchets is to prevent the feet of the model from moving backward at the end of each forward step. On a very smooth surface the feet may slip and slide backward, but this can be prevented by fitting 1" Rubber Rings on the 1" Pulleys 30.

The arms of the man should now be assembled. They are constructed from three $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates and one $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate, which are rolled into U-section and bolted together in the manner shown in Fig. 8.26b. The hands are $1\frac{1}{8}$ " radius Curved Plates and U-Section Curved Plates. Cranks are bolted to the upper ends of the arms, which are then locked on Rods 16 and 17, and a Road Wheel is fastened on the end of each Rod.

Rods 16 and 17 are journaled in bearings provided by the $5\frac{1}{2}$ " Angle Girders at the sides of the body and the $5\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips 18 bolted inside. Rod 16 carries a Bush Wheel and Rod 17 carries a $1\frac{1}{2}$ " Pulley, and across each of these parts is bolted a $2\frac{1}{2}$ " Strip 15. The ends of the Strips point in opposite directions, and they are connected to the Pivot Bolts 13 on the Face Plates by compound strips 14, each consisting of two $5\frac{1}{2}$ " Strips overlapped four holes.

The $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips 19 are bolted to the $5\frac{1}{2}$ " Angle Girders previously mentioned, and $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates are bolted between their turned-up ends. The back of the body is closed by the panel shown in Fig. 8.26b. In fitting this panel it is placed over the shanks of the Bolts 20 (Fig. 8.26a) and Nuts are screwed on to hold it in place.

The head of the model can be seen in the various illustrations. It consists of a Boiler opened out and the ends joined by four $1\frac{1}{8}$ " radius Curved Plates. Eyes are represented by $\frac{3}{4}$ " Flanged Wheels, a nose by a Sleeve Piece, and a mouth by two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips and Angle Brackets. Ears are represented by Wheel Discs, which are attached to the head by Flat Brackets. Two $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips are bolted across the top and bottom of the head, which is then attached to the two $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates that form the top of the body. The head is capped by a 3" Pulley.

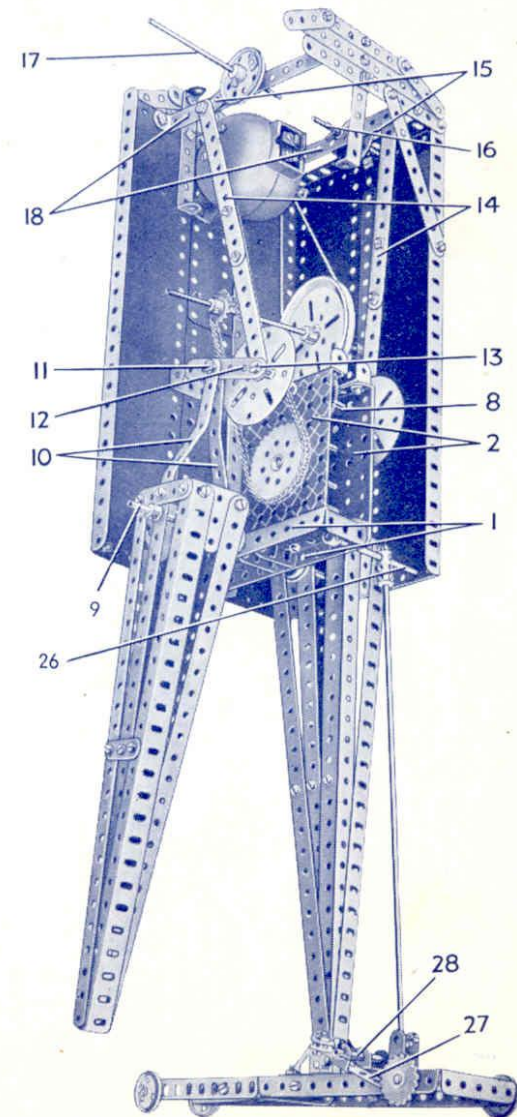


Fig. 8.26c

This Model can be built with MECCANO No. 8 Outfit

8.27 BOXERS

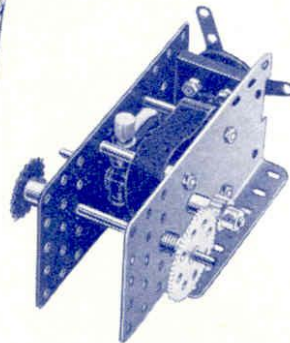
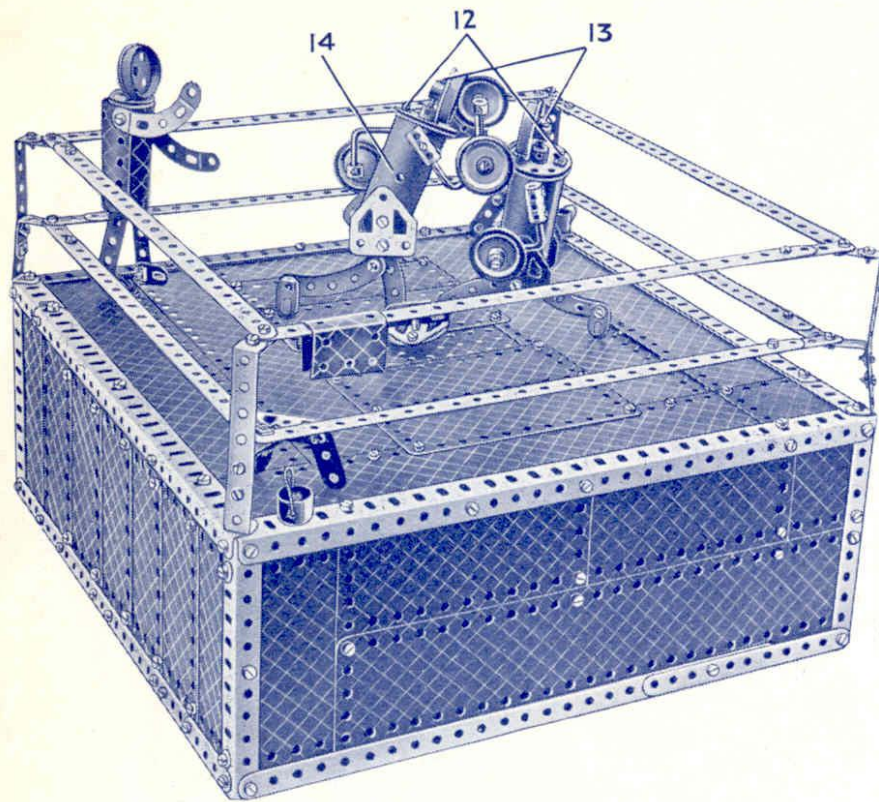


Fig. 8.27a

Parts required

14 of No. 1	5 of No. 17	215 of No. 37a	4 of No. 90	2 of No. 164
15 " " 2	2 " " 18b	204 " " 37b	2 " " 90a	2 " " 188
16 " " 5	3 " " 20	22 " " 38	1 " " 94	6 " " 190
5 " " 6a	3 " " 20a	2 " " 48a	2 " " 96	6 " " 191
10 " " 8	2 " " 21	4 " " 48b	3 " " 111	12 " " 192
4 " " 9	4 " " 22	1 " " 51	4 " " 111a	6 " " 197
19 " " 10	1 " " 22a	1 " " 52	4 " " 111c	1 " " 198
10 " " 12	1 " " 24	10 " " 59	4 " " 126	2 " " 199
4 " " 12a	1 " " 26	6 " " 63	4 " " 126a	2 " " 216
1 " " 13	1 " " 27a	1 " " 80a	2 " " 142a	2 " " 217a
3 " " 16	1 " " 32	2 " " 80c	4 " " 155a	1 E20B Electric Motor

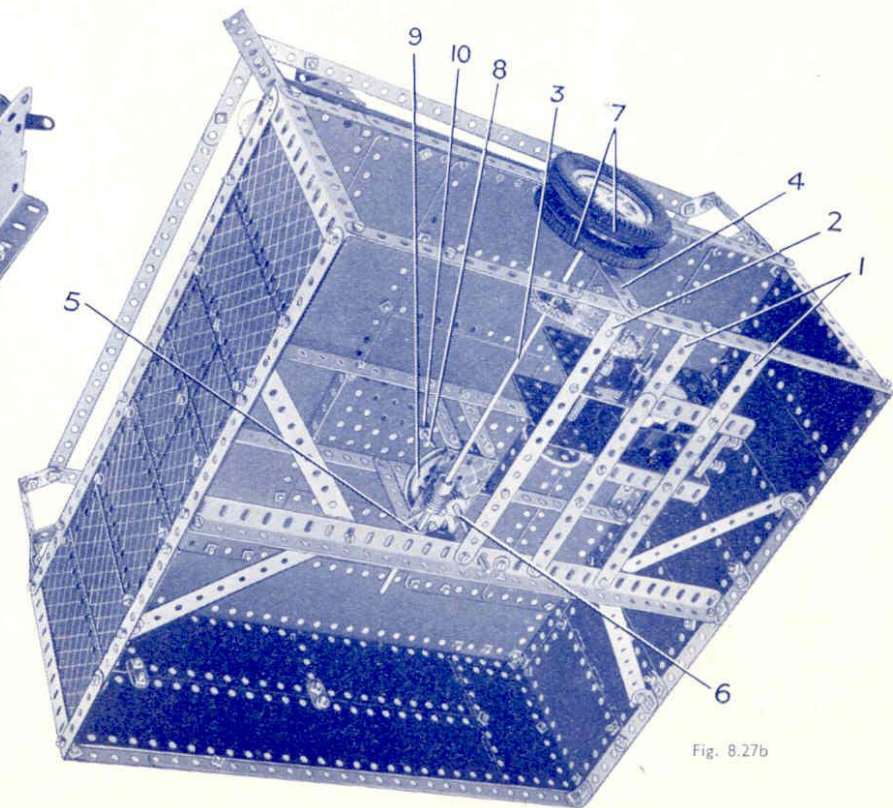


Fig. 8.27b

The construction of the framework and panels of the base will be clear from the illustrations.

The Electric Motor, complete with gearing fitted as shown in Fig. 8.27a, is bolted across the two compound $7\frac{1}{2}$ " Strips 1, the other $7\frac{1}{2}$ " Strip 2 is for strengthening purposes.

The $11\frac{1}{2}$ " Rod 3 is journalled at one end in the sixth hole from the lower end of the $5\frac{1}{2}$ " Strip 4, and its other end rotates in the end hole of Trunnion 5. The Trunnion is bolted to the $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flanged Plate that is attached to the flanges of the $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate by four $2\frac{1}{2}$ " Strips. The $11\frac{1}{2}$ " Rod is driven from the 1" Sprocket Wheel on the Motor, through a length of Sprocket Chain that passes around the 1" Sprocket Wheel locked on the $11\frac{1}{2}$ " Rod. The Worm on Rod 11 meshes with the $\frac{1}{2}$ " Pinion on $3\frac{1}{2}$ " Rod 6, which carries also a 2" Pulley 9. Bearings for Rod 6 are provided by the $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flanged Plate and the Angle Girders that stiffen the base. A $3\frac{1}{2}$ " Rod 8 is passed through the centre hole of the $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate and is fitted with a Collar at its lower end, so that about a $\frac{1}{4}$ " of the Rod projects through one of the triangular holes in the 2" Pulley 9. Collar 10 prevents the end of Rod 8 from lifting clear of Pulley 9.

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This Model can be built with MECCANO No. 8 Outfit

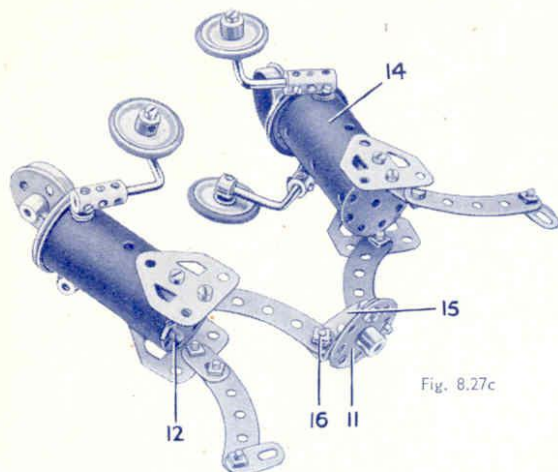


Fig. 8.27c

8.27 BOXERS—Continued

The bodies of the boxers are constructed from $2\frac{1}{2}$ " Cylinders, the ends of which are closed by a $1\frac{1}{2}$ " Pulley at the top and a $1\frac{1}{2}$ " Disc at the bottom. The Pulleys and Discs are held in place by 3 " Screwed Rods 12. The four arms are made from 2 " Rods bent at right angles half-way along their length.

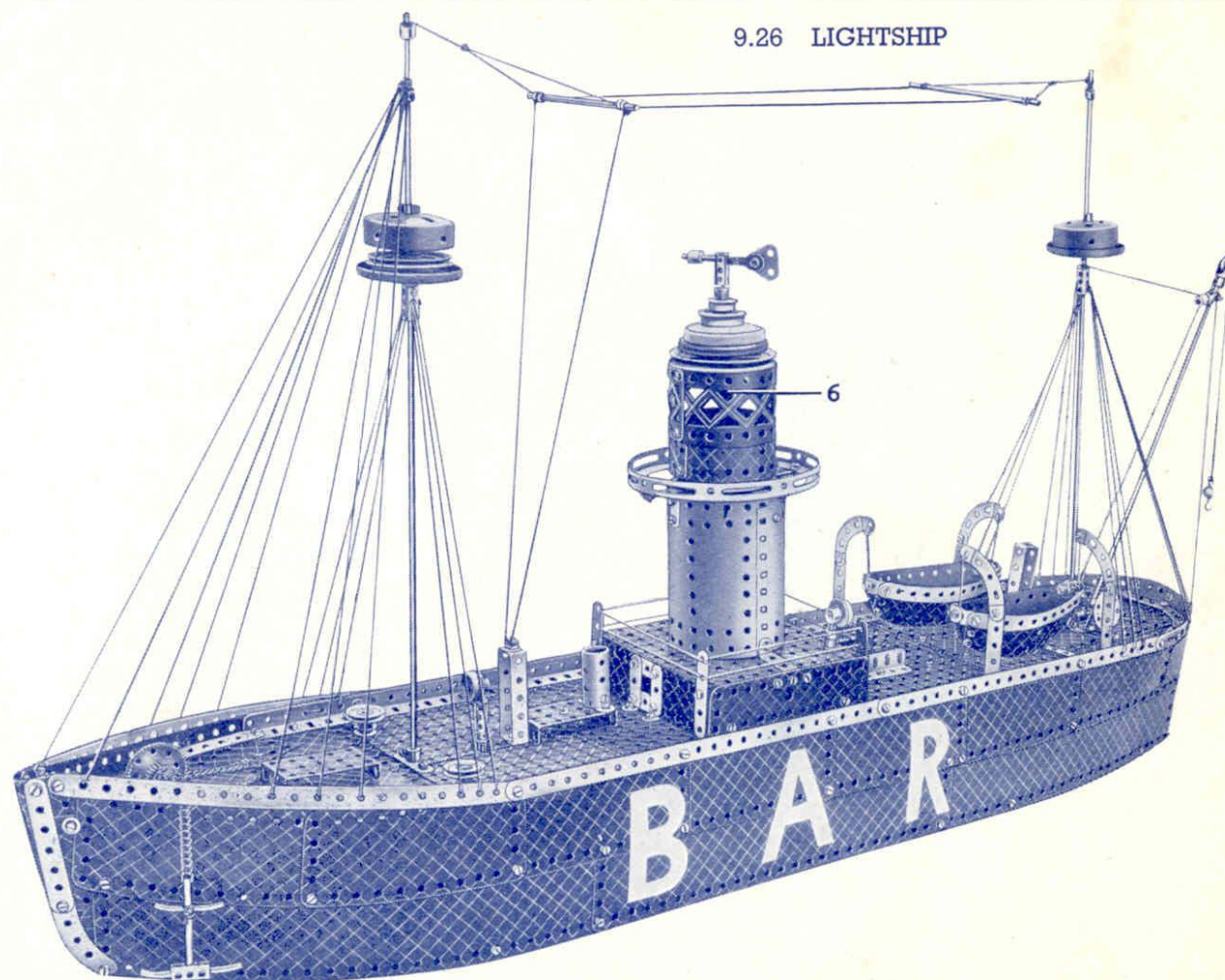
The arms are fixed to Rods passed through the Cylinders. In one of the boxers a 2 " Rod is used, and in the other two 1 " Rods joined by a Coupling. The Couplings carrying the arms should be locked to these Rods, the Couplings being placed at an angle of 135° to each other. Two Washers are used to space each Coupling from the Cylinder, but it is advisable to leave about $\frac{1}{16}$ " side play in the Rods connecting the arms in order to ensure free movement.

The $\frac{3}{8}$ " Bolts 13 are screwed through the tapped holes in the bosses of $1\frac{1}{2}$ " Flanged Wheels forming the boxers' heads, and their shanks are gripped in the bosses of the $1\frac{1}{2}$ " Pulleys. The leg of boxer 14 is fastened securely to the Trunnion 15, and the other boxer is pivotally mounted on a lock-nutted Bolt 16. Trunnion 15 is then bolted to Bush Wheel 11, which is fastened on the end of Rod 8 that projects above the $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate. The boss of the Bush Wheel should not touch the Plate. It will be seen that when Rod 8 is rotated the boxers travel in a circular path, sway from side to side, and move to and fro as though they were engaged in a really vigorous bout!

It is important to see that all Nuts and Bolts are securely tightened up, and it is as well to duplicate the set screws and grub screws in the bosses of the Gears, Sprocket Wheels, Bush Wheel 11 and Pulley 9.

This Model can be built with MECCANO No. 9 Outfit

9.26 LIGHTSHIP



The sides of the hull are identical in construction. They are strengthened along their lower edges by $18\frac{1}{2}$ " Angle Girders 1, which are connected at each end by $7\frac{1}{2}$ " Angle Girders. The sides are also connected by $7\frac{1}{2}$ " compound girders made from $5\frac{1}{2}$ " Angle Girders and fixed in the positions shown.

The construction of the deck is seen in Figs. 9.26a and 9.26b. The top of the deck-house is constructed from two $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates 2 spaced $\frac{1}{2}$ " in. apart and connected by $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates bolted to their short flanges. The deck-house is attached to the deck by Angle Brackets and $5\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips.

(Continued on next page)

This Model can be built with MECCANO No. 9 Outfit

9.26 LIGHTSHIP—Continued

The light tower comprises two Boilers opened out slightly and overlapped two holes at each side. Two $5\frac{1}{2}$ " Braced Girders and two $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates, bent to circular shape and overlapped two holes at their ends, represent the lantern. They are attached to 3" Pulley 4 by two $1" \times \frac{1}{2}"$ Angle Brackets. The complete unit is attached to the deck-house by the two 1" Reversed Angle Brackets 3, which also fill in the gap between the Flanged Plates.

The two $5\frac{1}{2}"$ Strips 5 are bolted at right-angles across the Circular Girder representing the balcony. Two of the Bolts holding these Strips hold also $1" \times 1"$ Angle Brackets that connect the balcony to the light tower. A $6\frac{1}{2}"$ Rod is pushed about $\frac{1}{2}$ in. through the centre holes of the $5\frac{1}{2}"$ Strips 5 and a Collar is fixed to it. The lantern housing is then placed on this Rod, and a Worm 6 and a Collar are then locked on the Rod to represent the lamp. A 3" Pulley 7 is placed on the Rod and fixed so that it clamps the housing securely in position. A Road Wheel, a Wheel Flange, a Wheel Disc, a $1\frac{1}{4}"$ Flanged Wheel, a $\frac{3}{4}"$ Flanged Wheel and finally the Coupling of the weather vane also are fastened on the Rod.

The arrow of the weather vane is made from a 2" Rod with a Rod and Strip Connector and a 1" Triangular Plate at one end, and a Rod Socket at the other end to represent the pointer.

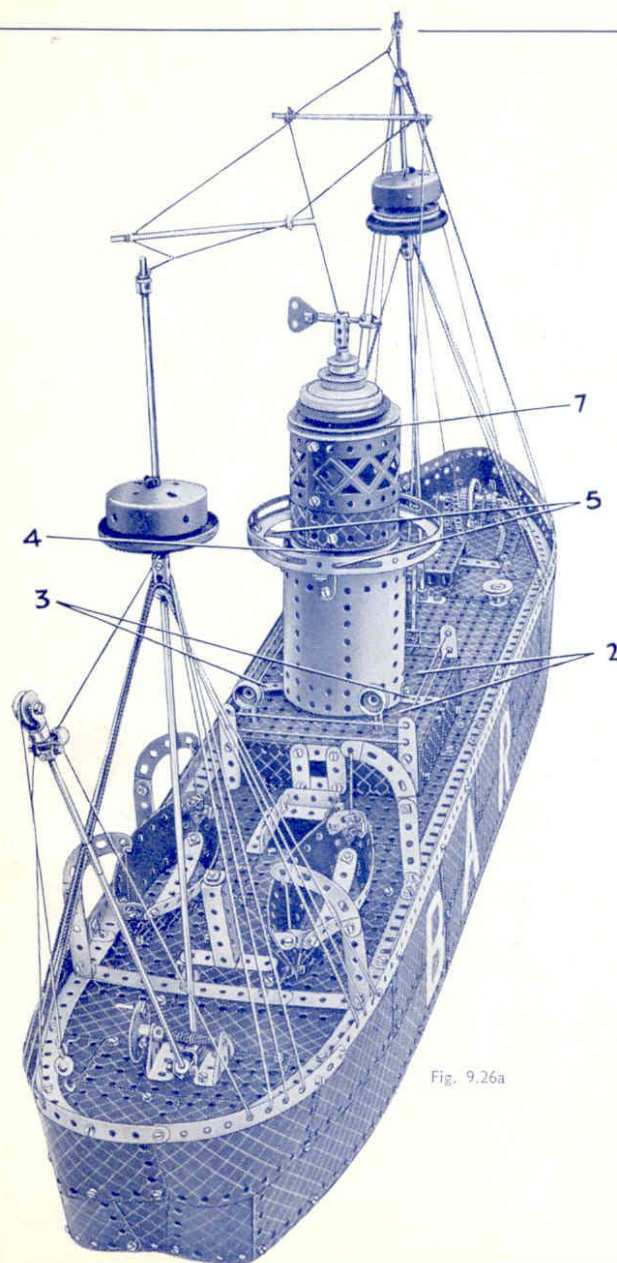


Fig. 9.26a

Parts required

10 of No. 1	6 of No. 10	2 of No. 18b	253 of No. 37a	11 of No. 59	6 of No. 111c	10 of No. 188
1 " " 1b	2 " " 11	2 " " 19b	238 " " 37b	2 " " 62b	1 " " 115	10 " " 189
13 " " 2	24 " " 12	1 " " 20	20 " " 38	5 " " 63	1 " " 116a	2 " " 190
2 " " 2a	2 " " 12a	2 " " 20a	3 " " 40	2 " " 70	2 " " 124	1 " " 191
2 " " 3	2 " " 12b	4 " " 20b	1 " " 48	1 " " 77	4 " " 126	18 " " 192
2 " " 4	8 " " 12c	2 " " 22	4 " " 48a	1 " " 80a	1 " " 137	6 " " 197
18 " " 5	2 " " 13	3 " " 23	3 " " 48d	2 " " 80c	1 " " 143	1 " " 198
2 " " 6	1 " " 13a	1 " " 24	2 " " 51	4 " " 89	2 " " 162a	1 " " 199
5 " " 6a	3 " " 14	1 " " 25	2 " " 52	4 " " 90	2 " " 162b	2 " " 200
2 " " 7a	2 " " 15a	1 " " 26	4 " " 52a	4 " " 90a	1 " " 163	1 " " 212
4 " " 8	1 " " 15b	1 " " 28	5 " " 53	1 " " 94	2 " " 165	1 " " 213
2 " " 8b	2 " " 16a	1 " " 30a	2 " " 53a	2 " " 100	1 " " 176	2 " " 214
4 " " 9	1 " " 17	1 " " 32	1 " " 54a	2 " " 111	1 " " 179	1 " " 219
2 " " 9d	4 " " 18a	6 " " 35	1 " " 57c	2 " " 111a	3 " " 187	

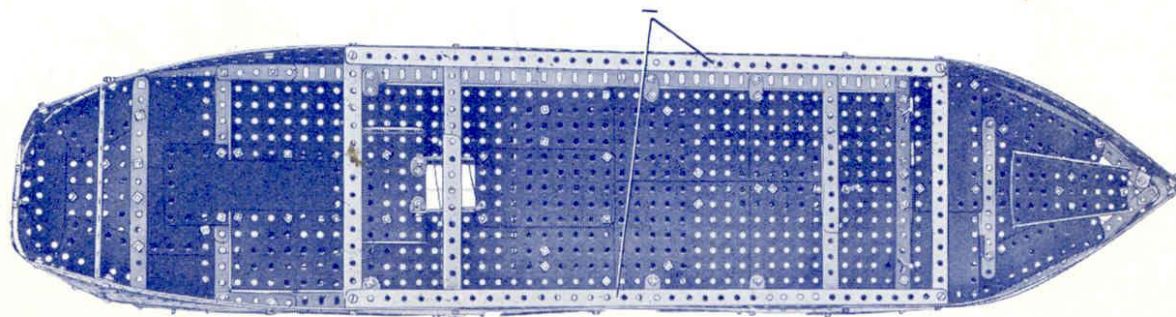
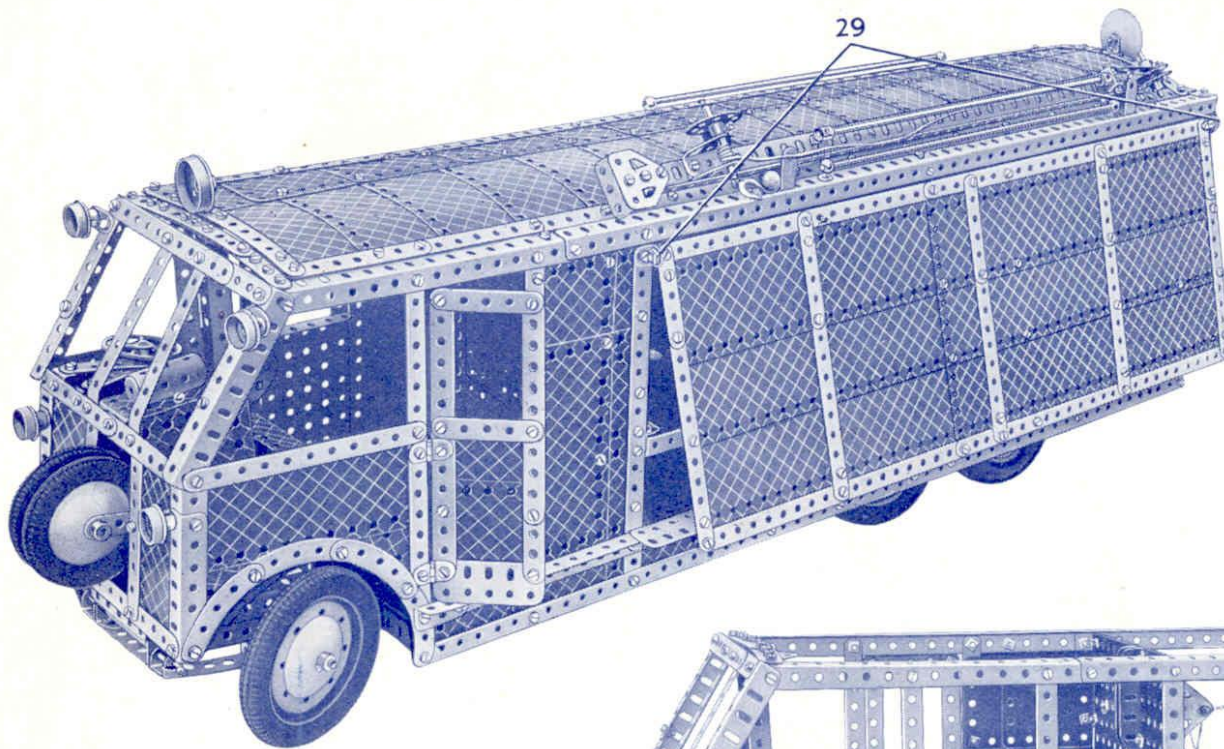


Fig. 9.26b

This Model can be built with MECCANO No. 10 Outfit

10.21 MOBILE WORKSHOP



The channel section members of the chassis (Fig. 10.21d) are built up from Angle Girders connected by Flat Girders. The rear axle unit is made from two $5\frac{1}{2}$ " Angle Girders bolted together to form a U-section girder. Duplicated $5\frac{1}{2}$ " Strips form the leaf springs, which are bolted to each end of the girder. The Bolts 1 carry Angle Brackets that keep the springs at right-angles to the axle beam. The axle 2 is a $6\frac{1}{2}$ " Rod, at each end of which is locked a 3" Pulley fitted with a Rubber Tyre. The "differential" is housed in a frame consisting of two $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Double Angle Strips which are held in position

by two Collars 3, but otherwise are free on the Rod 5. A Bevel Gear 4 is fixed on this Rod, but the other Bevel Gear 6 is free and is kept from sliding out of mesh with a similar Gear fixed on Rod 18 by the Collar 7. The Bevel Wheel 6 therefore does not actually drive its shaft but serves only to maintain the centre Bevel Gear in alignment.

The back axle unit is slid on to the 2" Rods 19, each of which is fitted with two Compression Springs that act as transverse springs for the rear axle unit. The axle unit is pivotally mounted on the 3" Rod 20, which passes through the end holes of the $2\frac{1}{2}$ " \times 1" Double Angle Strip and through holes of the axle beam in line with the shaft 17. This Rod is kept in position by a Cord Anchoring Spring and a $\frac{1}{2}$ " Bevel Gear.

The Motor 8 (Fig. 10.21f) has a Worm locked on its driving shaft and this meshes with the $\frac{3}{4}$ " Pinion 9 on the 5" Rod 10. Rod 10 is free to slide endways about $\frac{1}{4}$ in. in its bearing, and is so adjusted that the $\frac{1}{2}$ " Pinion 11 may be engaged either with the $\frac{3}{4}$ " Pinion on Rod 13 or the 57-teeth Gear on Rod 12. A $2\frac{1}{2}$ " Strip is overlapped two holes with $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double

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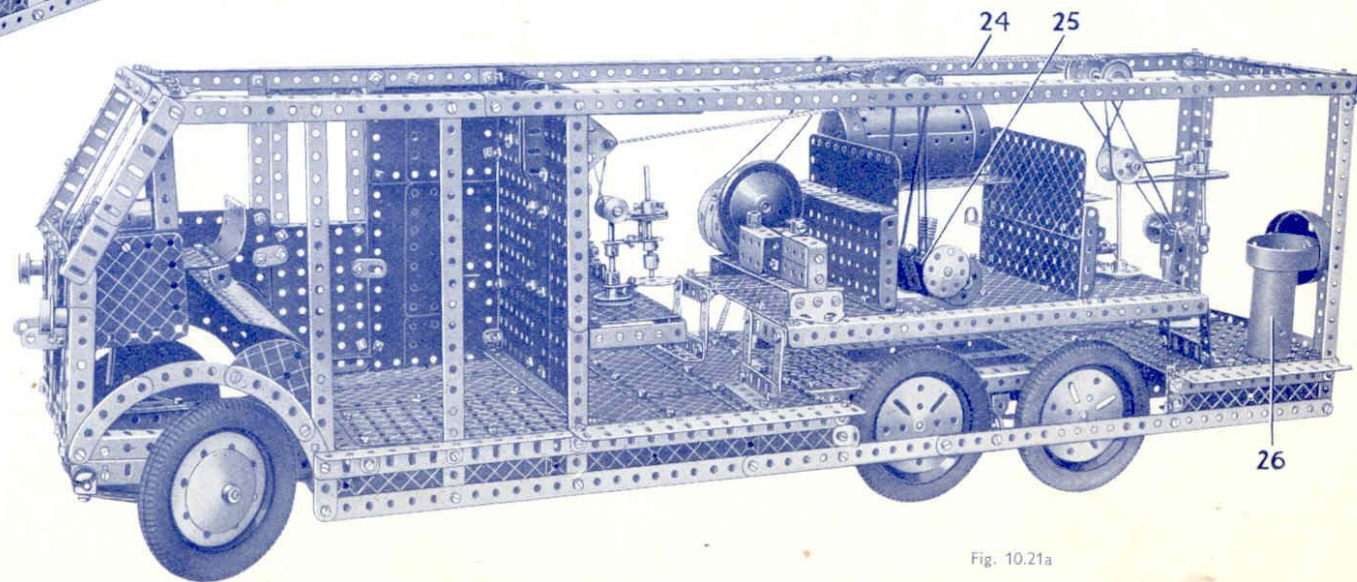


Fig. 10.21a

10.21 MOBILE WORKSHOP—*Continued*

Angle Strip 14. The lever thus formed is then pivoted on a Bolt 15, which is lock-nutted to an Angle Bracket bolted to the side plate of the Motor. The turned-up end of the Double Angle Strip engages between the $\frac{3}{4}$ " Pinion 9 and the $\frac{1}{2}$ " Pinion 16. The latter does not mesh with any gear.

The other end of the gear-change lever is clamped between two $2\frac{1}{2}$ " Strips 30, which retain it in any position in which it is placed. The Rod 12 transmits the drive through a Universal Coupling to Rod 17, which has at one end a $\frac{1}{2}$ " Pinion that engages with the 57-teeth Gear on $2\frac{1}{2}$ " Rod 18.

The other Rod 13 transmits the drive to the various machines in the workshop through the Rubber Driving Band, which passes around the $\frac{1}{2}$ " Pulley fixed to its rear end.

The front axle unit also is shown in Fig. 10.21d. It comprises two 5" Rods fixed to the front springs by Couplings held in place by Bolts 21. The ends of these Rods are connected by further Couplings, through the centre transverse bores of which are passed a 1" and a $1\frac{1}{2}$ " Rod 22. The $1\frac{1}{2}$ " Rod carries a Crank, a Coupling and a 50-teeth Gear, and the 1" Rod carries a Crank and a Coupling. These two Cranks are connected by a 5" compound strip made from two $2\frac{1}{2}$ " Strips and a $4\frac{1}{2}$ " Strip. The Bolts 23 are lock-nutted. The steering mechanism can be seen in Fig. 10.21e and does not need description.

The framework of the body and the parts used for panelling it, also are shown in the illustrations. The side members of the roof are each made from a $24\frac{1}{2}$ " and a $12\frac{1}{2}$ " Angle Girder overlapped 11 holes. A $12\frac{1}{2}$ " Angle

Girder 24 (Fig. 10.21a) under the right-hand side member provides bearings for the shafting, which consists of two 8" Rods.

The centre platform is $12\frac{1}{2}$ " long and $7\frac{1}{2}$ " wide. Two $12\frac{1}{2}$ " Angle Girders form the main side members, and the centre is filled in with two $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates, one $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate, two $5\frac{1}{2}$ " \times $3\frac{1}{2}$ " and one $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flat Plate, in the manner shown.

The air compressor storage cylinder 25 is made from a $2\frac{1}{2}$ " Cylinder, and a Single Bent Strip is opened out slightly and bolted to one of its centre holes. A Collar bolted between the arms of the Single Bent Strip forms a bearing for one end of a $2\frac{1}{2}$ " Rod. Two Washers are used under the head of the Bolt to prevent its shank extending into the bore of the Collar. A Flat Bracket bolted to the $1\frac{1}{2}$ " Flanged Wheel by its slotted hole acts as a bearing for the other end of the Rod. A Worm is fastened to the top of the Cylinder by a $\frac{3}{4}$ " Bolt passed up through a hole in the Single Bent Strip and then locked in the Worm by a grub screw. This Worm represents the pump cylinder.

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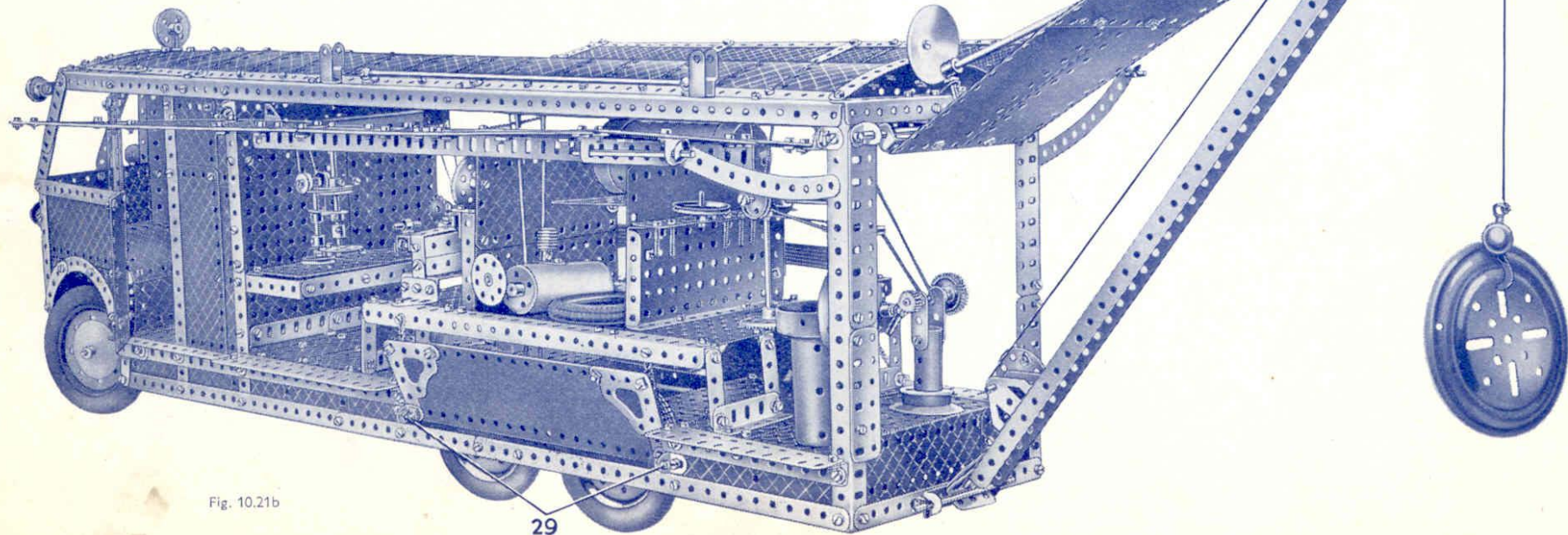


Fig. 10.21b

This Model can be built with MECCANO No. 10 Outfit

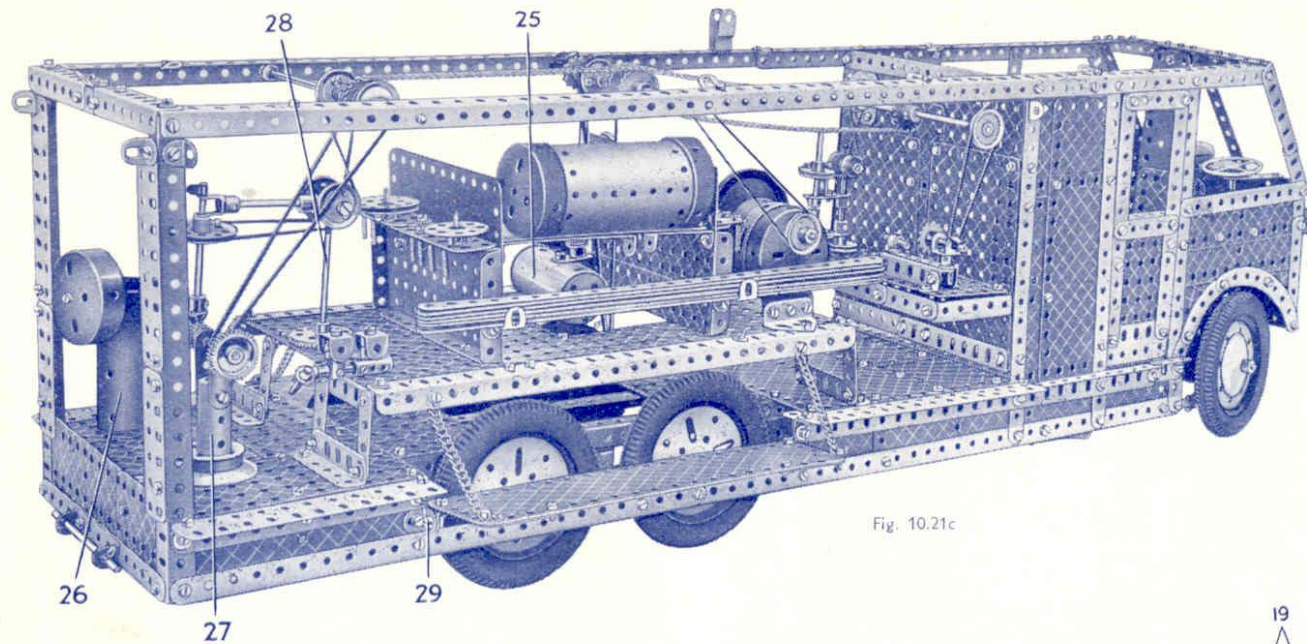


Fig. 10.21c

10.21 MOBILE WORKSHOP—Continued

The large bench lathe is made up from three $5\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips joined across at their ends by Trunnions. Four $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips bolted two at each side of a $2\frac{1}{2}" \times 1"$ Double Angle Strip represent the tailstock. Two Boiler Ends are bolted $\frac{1}{2}"$ in. apart and the space between them is filled in by two Formed Slotted Strips. This structure represents the headstock gear-changing housing.

The forge 26 is fastened to the floor of the workshop by a 3" Screwed Rod passed through the centre hole of a Boiler End.

The workshop includes also a grindstone machine 27, which can be seen on the left in Fig. 10.21c. This consists of a $\frac{1}{2}"$ Pinion and a 1" Gear mounted on a $1\frac{1}{2}"$ Rod, which is supported in the end holes of two $1\frac{1}{2}"$ Strips fixed to a Sleeve Piece fitted with a Chimney

Adaptor. This unit is then placed on a $1\frac{1}{2}"$ Flanged Wheel and a Wheel Disc as shown, and the whole is fixed in position by a 3" Screwed Rod, which passes through the centre of the Sleeve Piece and the Chimney Adaptor and is locked in place by a Nut below the floor.

The construction of the radial drilling machine 28 (Fig. 10.21c) is very simple. The horizontal arm that carries the drilling head is a $2\frac{1}{2}"$ Rod, which bears at each end a Small Fork Piece. The Fork Piece at the inner end is used to attach

(Continued on next page)

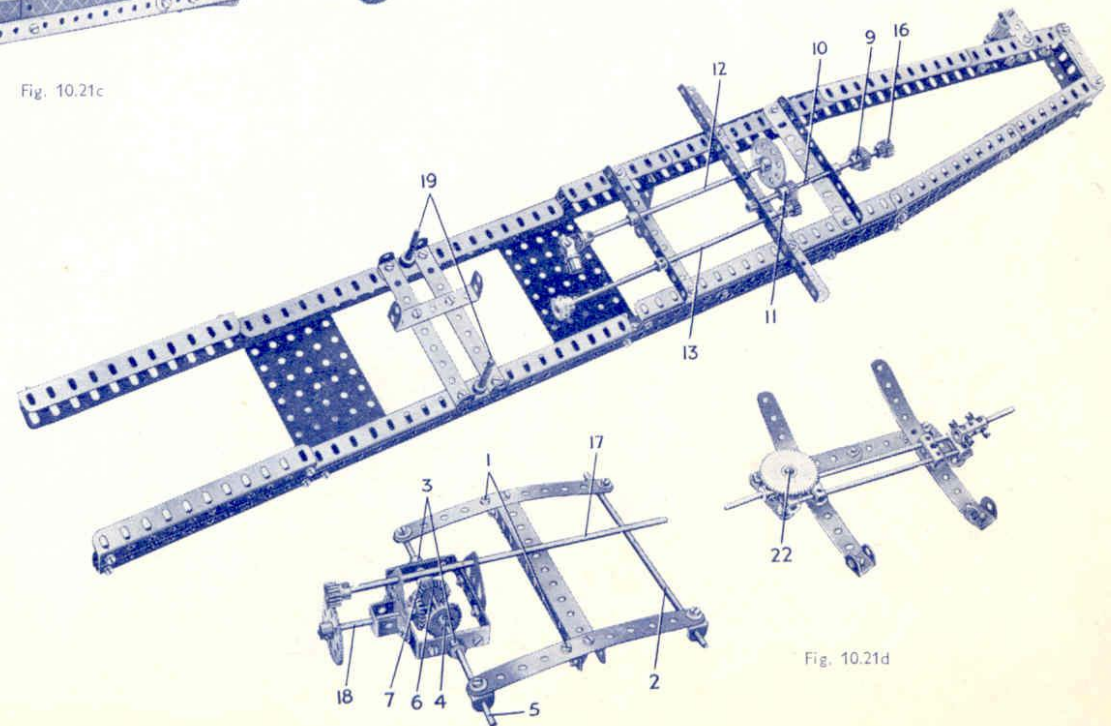


Fig. 10.21d

This Model can be built with MECCANO No. 10 Outfit

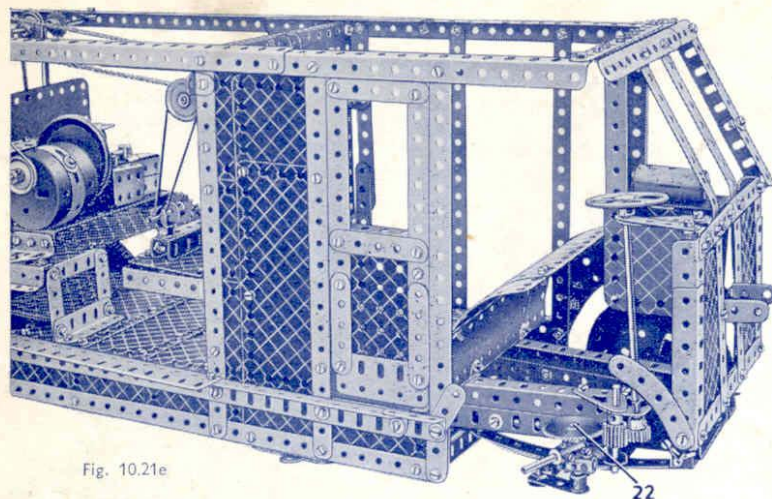


Fig. 10.21e

Parts required

24 of No. 1	2 of No. 13	1 of No. 28	1 of No. 57b	17 of No. 111	1 of No. 168a
5 " " 1a	4 " " 13a	1 " " 29	24 " " 59	11 " " 111a	2 " " 176
4 " " 1b	4 " " 14	3 " " 30	4 " " 62	24 " " 111c	2 " " 179
33 " " 2	4 " " 15	1 " " 30a	2 " " 62b	2 " " 114	1 " " 185
7 " " 2a	1 " " 15a	1 " " 30c	8 " " 63	2 " " 115	2 " " 186a
14 " " 3	1 " " 15b	1 " " 31	2 " " 64	1 " " 116	1 " " 186b
12 " " 4	5 " " 16	2 " " 32	6 " " 69c	2 " " 116a	1 " " 186c
20 " " 5	3 " " 16a	19 " " 35	4 " " 70	4 " " 120b	1 " " 186d
10 " " 6	4 " " 16b	648 " " 37a	2 " " 77	2 " " 124	1 " " 187
3 " " 6a	6 " " 17	600 " " 37b	1 " " 78	2 " " 125	4 " " 188
4 " " 7	6 " " 18a	73 " " 38	1 " " 80a	7 " " 126	12 " " 189
4 " " 7a	4 " " 18b	1 " " 40	1 " " 80c	3 " " 126a	12 " " 190
11 " " 8	6 " " 19b	2 " " 44	2 " " 89	1 " " 133	4 " " 190a
6 " " 8a	4 " " 20	1 " " 45	8 " " 90	4 " " 136	12 " " 191
4 " " 8b	2 " " 20a	2 " " 46	2 " " 94	1 " " 136a	27 " " 192
12 " " 9	4 " " 20b	2 " " 47	4 " " 96	1 " " 140	2 " " 196
8 " " 9a	2 " " 21	3 " " 48	2 " " 96a	3 " " 142a	12 " " 197
6 " " 9b	7 " " 22	10 " " 48a	1 " " 102	6 " " 142b	12 " " 200
4 " " 9c	2 " " 22a	4 " " 48b	4 " " 103	2 " " 147b	1 " " 213
8 " " 9d	3 " " 23	2 " " 48c	4 " " 103a	1 " " 160	4 " " 214
2 " " 9e	2 " " 23a	4 " " 48d	2 " " 103c	6 " " 162a	2 " " 215
4 " " 9f	4 " " 24	1 " " 50a	2 " " 103d	1 " " 162b	2 " " 216
7 " " 10	1 " " 25	1 " " 51	2 " " 103e	2 " " 163	3 " " 217a
9 " " 11	6 " " 26	3 " " 52	4 " " 103f	3 " " 164	6 " " 219
46 " " 12	1 " " 26a	6 " " 52a	1 " " 103h	1 " " 165	1 E120 Electric Motor
2 " " 12a	1 " " 27	5 " " 53	3 " " 103k	1 " " 166	
10 " " 12c	2 " " 27a	4 " " 53a	4 " " 108		

10.21 MOBILE WORKSHOP—Continued

the arm to a vertical $3\frac{1}{2}$ " Rod fixed in a $1\frac{1}{2}$ " Contrate Wheel as shown. The attachment is made by passing Pivot Bolts through the arms of the Small Fork Piece into a Collar and securing the arms in place by lock-nuts. This Collar is free to swivel on the $3\frac{1}{2}$ " Rod but is held between a Collar and Spring Clip.

The drive to each machine is taken from the overhead shafts by Driving Bands of suitable length.

The Bolts 29 that carry the hinged flaps enclosing the sides of the vehicle are lock-nutted.

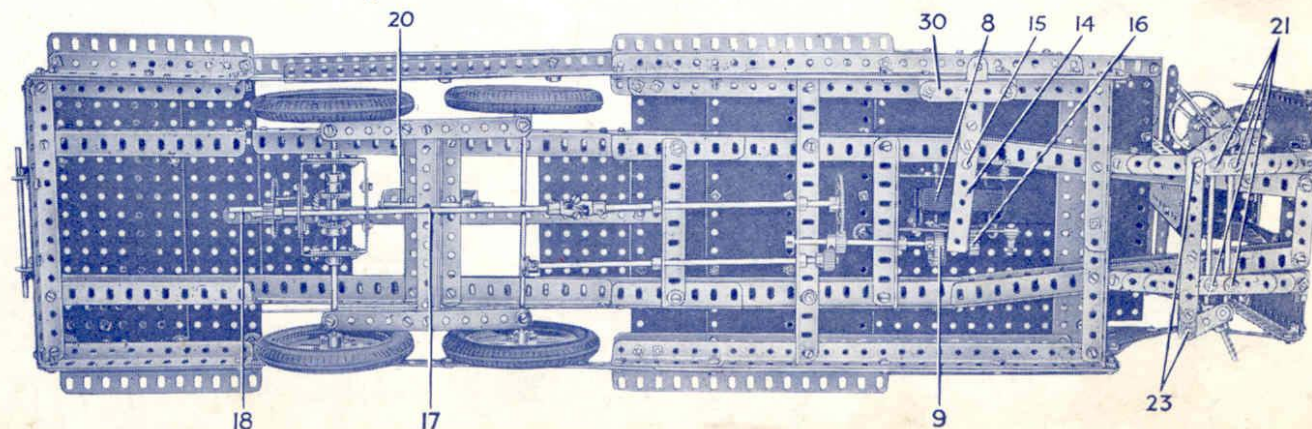


Fig. 10.21