

MECCANO

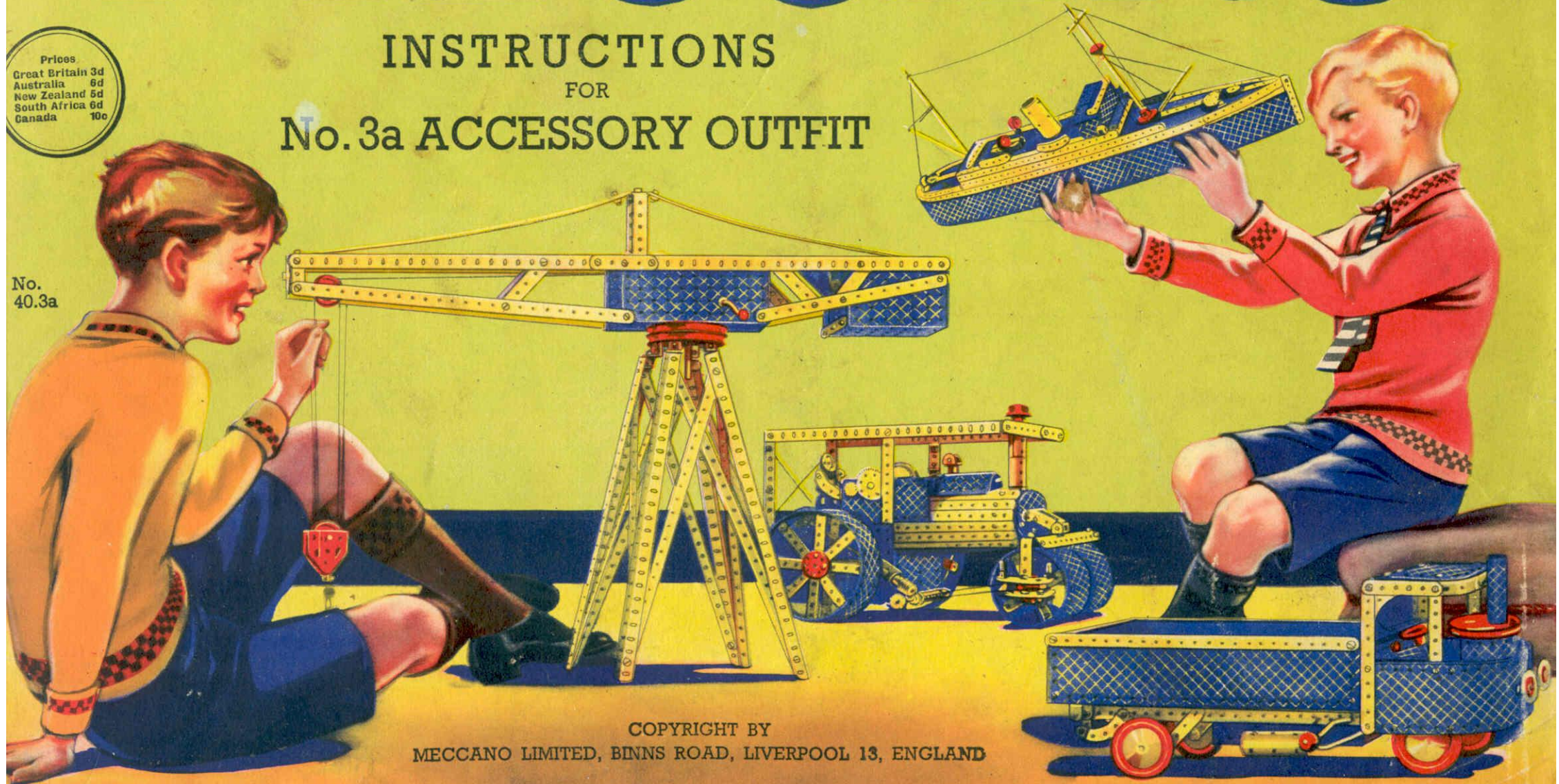
INSTRUCTIONS

FOR

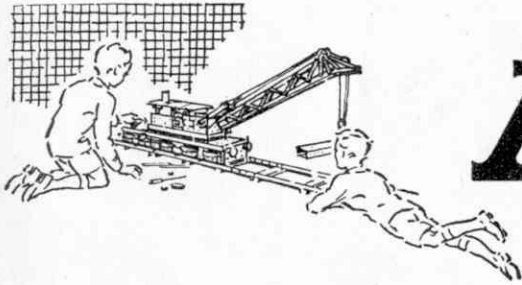
No. 3a ACCESSORY OUTFIT

Prices
Great Britain 3d
Australia 6d
New Zealand 5d
South Africa 6d
Canada 10c

No.
40.3a

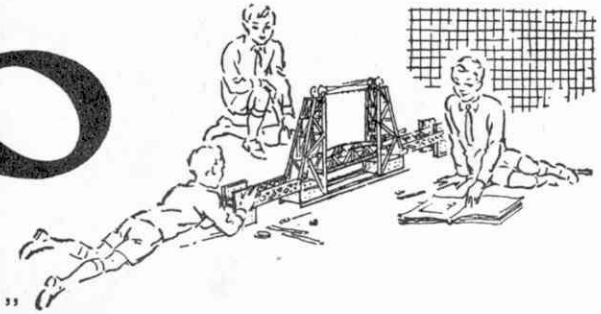


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MECCANO

Real Engineering in Miniature



MODEL-BUILDING WITH MECCANO

There is no limit to the number of models that can be built with Meccano—Cranes, Clocks, Motor Cars, Ship Coalers, Machine Tools, Locomotives—in fact everything that interests boys. A screwdriver and a spanner, both of which are provided in each Outfit, are the only tools necessary.

When you have built all the models illustrated in the Manuals of Instruction the fun is not over, but is just beginning. Now comes the chance to make use of your own ideas. First of all, re-build some of the models with small changes in construction that may occur to you; then try building models entirely of your own design. In doing this you will feel the real thrill of the engineer and the inventor.

HOW TO BUILD UP YOUR OUTFIT

Meccano is sold in eleven different Outfits, ranging from No. 0 to No. 10. Each Outfit from No. 1 upwards can be converted into the next one larger by the purchase of an Accessory Outfit. Thus, Meccano No. 1 Outfit can be converted into No. 2 Outfit by adding to it a No. 1a Accessory Outfit. No. 2a Outfit would then convert it into a No. 3 and so on. In this way, no matter with which Outfit you commence, you can build it up by degrees until you possess a No. 10 Outfit.

All Meccano parts are of the same high quality and finish, but the larger Outfits contain a greater quantity and variety, making possible the construction of more elaborate models.

As shown in the illustrations, the realism of many models can be increased by the inclusion of the figures, motor vehicles and other items from the Dinky Toys Series; pilots and drivers from the Aeroplane and Motor Car Constructor Outfits; trees and hedges from the Hornby Railway Series; Meccano sacks, cable drums, etc. These items are not included in any of the Outfits. A Clockwork Motor is included in Outfits 7a, 8, 9 and 10 only, and an Electric Motor in Outfits 9a and 10 only.

ELECTRIC LIGHTING OF MECCANO MODELS

It is great fun to illuminate your Meccano models by electric light, and a special Meccano Lighting Set can be obtained from your dealer for this purpose. This consists of two spot lights with plain and coloured imitation glass discs, one stand lamp, two special brackets, and two pea lamps, operated from a 4-volt flash-lamp battery (not included in the Set). The stand lamp is used for decorative purposes, and the spot lights can be used as headlamps, floodlights on cranes, and in countless other ways.

THE "MECCANO MAGAZINE"

The "Meccano Magazine" is published specially for Meccano boys. Every month it describes and illustrates new Meccano models for Outfits of all sizes, and deals with suggestions from readers for new Meccano parts and for new methods of using the existing parts. There are model-building competitions specially planned to give an equal chance to the owners of small and large Outfits. In addition, there are splendid articles on such subjects as Railways, Famous Engineers and Inventors, Electricity, Chemistry, Bridges, Cranes and Aeroplanes, and special sections dealing with the latest Engineering, Aviation, Shipping and Road and Track News. Other pages deal with Stamp Collecting, and Books of interest to boys; and a feature of outstanding interest is the section devoted to short articles from readers.

The "Meccano Magazine" is the finest of all papers for boys who are interested in the wonderful things going on in the world around them. It is published on the first of each month. If you are not already a reader write to the Editor for full particulars, or order a copy from your Meccano dealer, or from any news-agent.

THE MECCANO GUILD

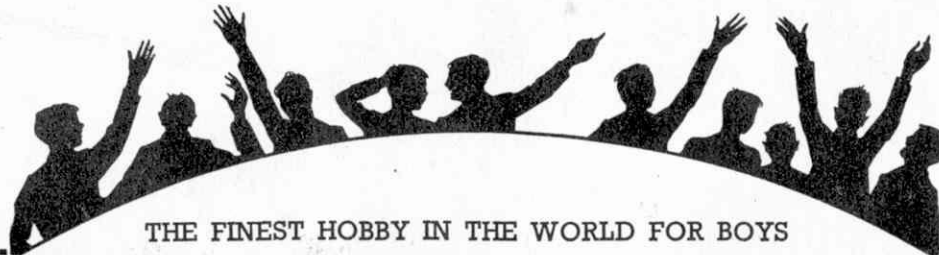
Every owner of a Meccano Outfit should join the Meccano Guild. This is a world-wide organisation, started at the request of Meccano boys. Its primary object is to bring boys together and to make them feel that they are all members of a great brotherhood, each trying to help others to get the very best out of life. Its members are in constant touch with Headquarters, giving news of their activities and being guided in their hobbies and interests. Write for full particulars and an application form to the Secretary, Meccano Guild, Binns Road, Liverpool 13.

Clubs founded and established under the guidance of the Guild Secretary provide Meccano boys with opportunities of enjoying to the utmost the fun of model-building. There are nearly 200 active clubs in Great Britain, and nearly 100 in countries overseas, each with its Leader, Secretary, Treasurer and other officials. With the exception of the Leader, all the officials are boys, and as far as possible the proceedings of the clubs are conducted by boys.

Recruiting Medallions are awarded to members who are successful in securing recruits for the Guild, and good work on behalf of Meccano clubs, or of the Guild generally, is recognised by the presentation of special Merit Medallions. Full particulars of both these awards will be sent post free on request.

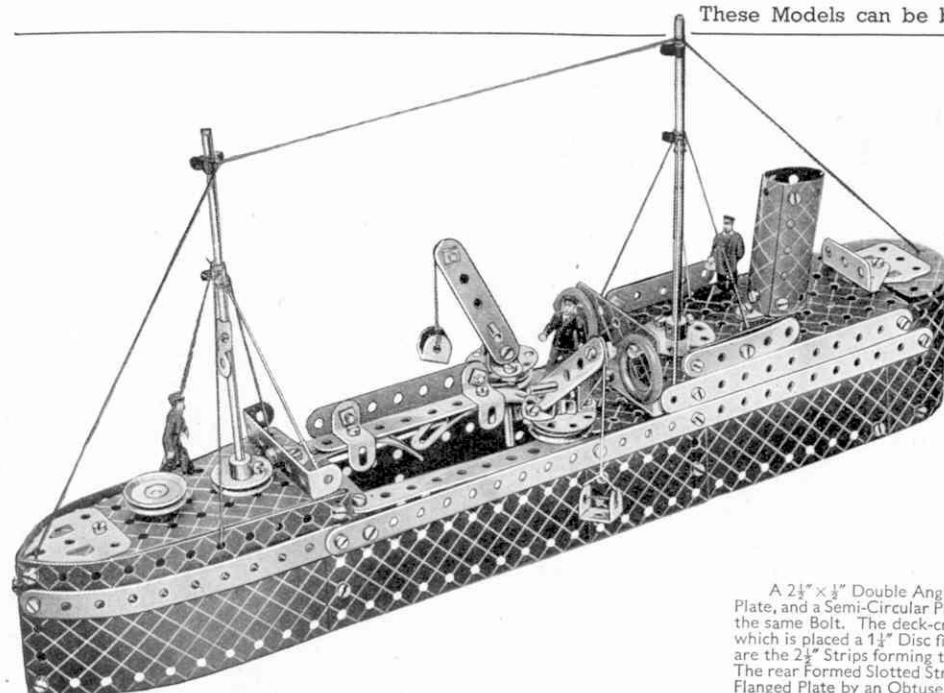
MECCANO SERVICE

The service of Meccano does not end with selling an Outfit and an Instruction Manual. If ever you are in any difficulty with your models, or if you want advice on anything connected with this great hobby, write to us. We receive every day hundreds of letters from boys in all parts of the world, and each of these is answered personally by one of our staff of experts. Whatever your problem may be, write to us about it.



THE FINEST HOBBY IN THE WORLD FOR BOYS

These Models can be built with MECCANO No. 4 Outfit (or No. 3 and No. 3a Outfits)



4.1 DREDGER

Parts required

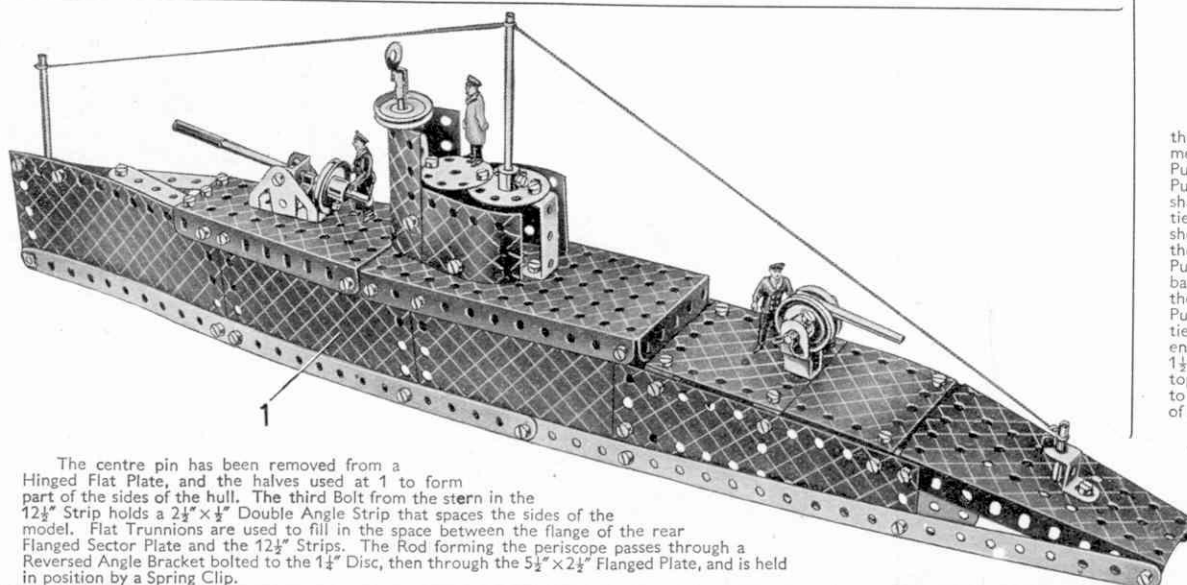
2 of No. 1	1 of No. 51
6 " " 2	1 " " 52
2 " " 3	1 " " 54a
9 " " 5	5 " " 111c
4 " " 10	2 " " 125
2 " " 11	1 " " 126
8 " " 12	2 " " 126a
2 " " 12c	2 " " 155a
4 " " 16	2 " " 188
2 " " 17	2 " " 189
2 " " 18a	2 " " 190
4 " " 22	2 " " 191
1 " " 24	2 " " 192
8 " " 35	2 " " 199
70 " " 37	2 " " 200
6 " " 37a	1 " " 212
4 " " 38	1 " " 213
1 " " 40	2 " " 214
3 " " 48a	2 " " 215
	2 " " 217a

A $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip is bolted to the front flange of the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate, and a Semi-Circular Plate is held between the flange and the Double Angle Strip by the same Bolt. The deck-crane is held between the flange and the Double Angle Strip by which is placed a $1\frac{1}{2}"$ Disc fitted with Angle Brackets. Bolted to these, and lock-nutted, are the $2\frac{1}{2}"$ Strips forming the jib. The complete units are held in place by Spring Clips. The rear Formed Slotted Strip of the hopper bridge is fastened to the front of the $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate by an Obtuse Angle Bracket.

4.2 SUBMARINE

Parts required

4 of No. 1	4 of No. 48a
3 " " 5	1 " " 52
1 " " 11	2 " " 54a
2 " " 12	2 " " 125
1 " " 15b	2 " " 126
3 " " 16	2 " " 126a
1 " " 17	2 " " 188
1 " " 18a	2 " " 189
1 " " 18b	2 " " 190
4 " " 22	2 " " 191
1 " " 24	2 " " 192
5 " " 35	1 " " 198
64 " " 37	1 " " 199
1 " " 40	1 " " 212
1 " " 44	1 " " 213
1 " " 48	1 " " 217a

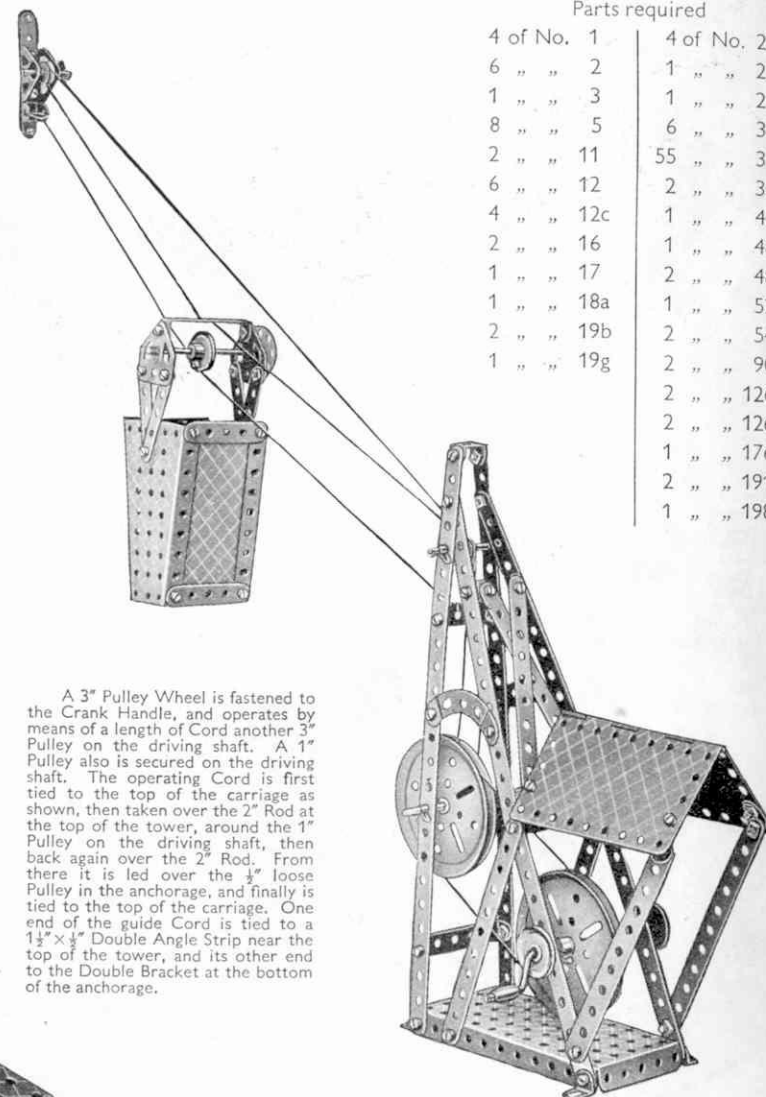


The centre pin has been removed from a Hinged Flat Plate, and the halves used at 1 to form part of the sides of the hull. The third Bolt from the stern in the $12\frac{1}{2}"$ Strip holds a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip that spaces the sides of the model. Flat Trunnions are used to fill in the space between the flange of the rear Flanged Sector Plate and the $12\frac{1}{2}"$ Strips. The Rod forming the periscope passes through a Reversed Angle Bracket bolted to the $1\frac{1}{2}"$ Disc, then through the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate, and is held in position by a Spring Clip.

4.3 TELPHER SPAN

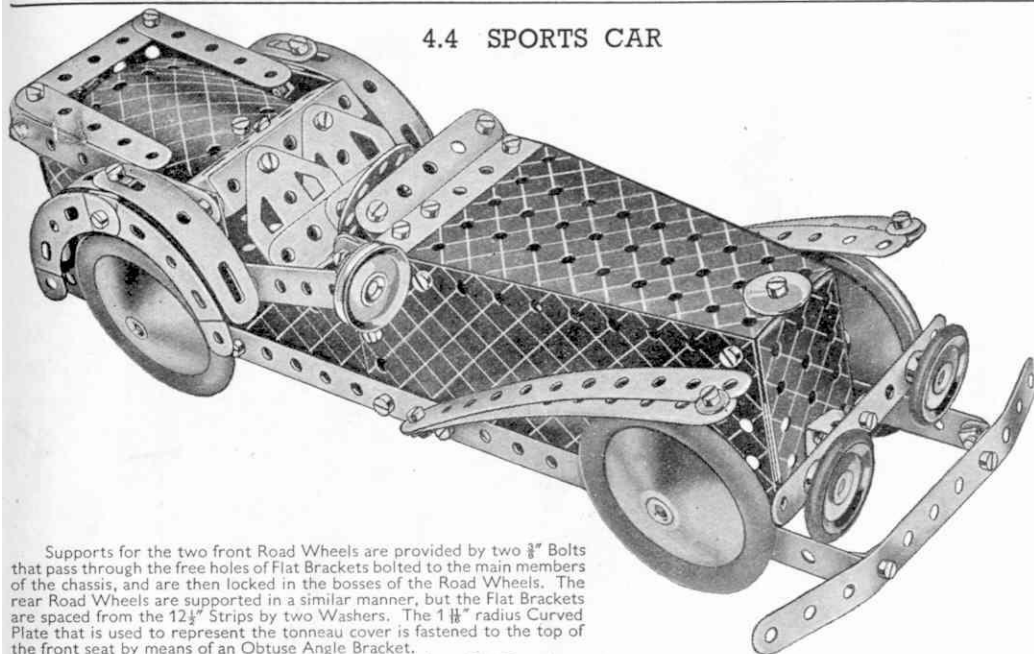
Parts required

4 of No. 1	4 of No. 22
6 " " 2	1 " " 23
1 " " 3	1 " " 24
8 " " 5	6 " " 35
2 " " 11	55 " " 37
6 " " 12	2 " " 38
4 " " 12c	1 " " 40
2 " " 16	1 " " 48
1 " " 17	2 " " 48a
1 " " 18a	1 " " 52
2 " " 19b	2 " " 54a
1 " " 19g	2 " " 90a
	2 " " 126
	2 " " 126a
	1 " " 176
	2 " " 191
	1 " " 198



A 3" Pulley Wheel is fastened to the Crank Handle, and operates by means of a length of Cord another 3" Pulley on the driving shaft. A 1" Pulley also is secured on the driving shaft. The operating Cord is first tied to the top of the carriage as shown, then taken over the 2" Rod at the top of the tower, around the 1" Pulley on the driving shaft, then back again over the 2" Rod. From there it is led over the $\frac{1}{2}"$ loose Pulley in the anchorage, and finally is tied to the top of the carriage. One end of the guide Cord is tied to a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip near the top of the tower, and its other end to the Double Bracket at the bottom of the anchorage.

4.4 SPORTS CAR



Supports for the two front Road Wheels are provided by two $\frac{3}{8}$ " Bolts that pass through the free holes of Flat Brackets bolted to the main members of the chassis, and are then locked in the bosses of the Road Wheels. The rear Road Wheels are supported in a similar manner, but the Flat Brackets are spaced from the $12\frac{1}{2}$ " Strips by two Washers. The $1\frac{1}{4}$ " radius Curved Plate that is used to represent the tonneau cover is fastened to the top of the front seat by means of an Obtuse Angle Bracket.

The driving seat is composed of two Trunnions and two Flat Trunnions, and these are bolted to the $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip supported by the sides of the car.

The steering wheel is a Bush Wheel fastened to a 1" Rod that is secured by two Spring Clips in an Angle Bracket bolted under the scuttle.

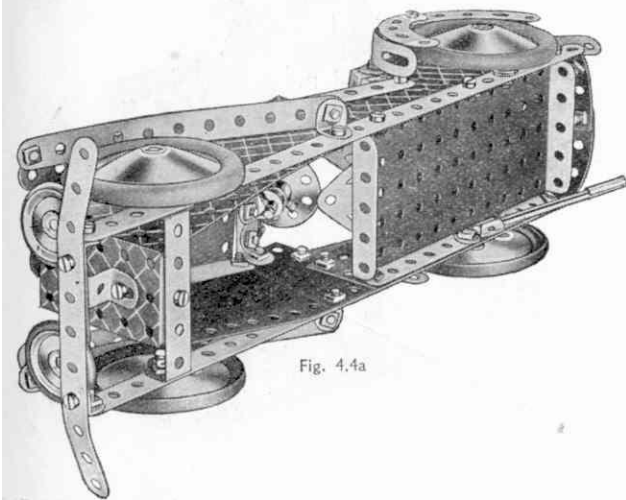


Fig. 4.4a

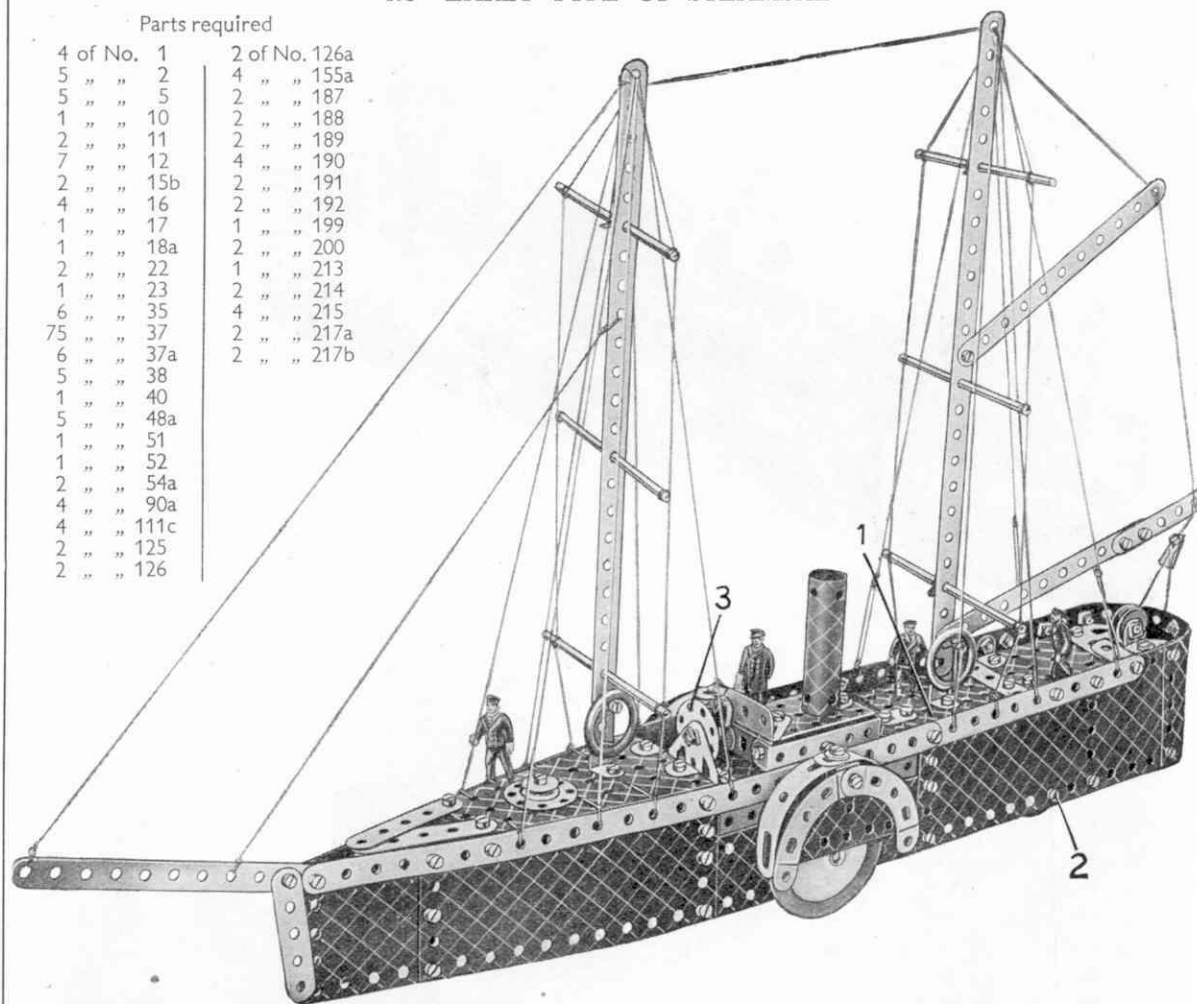
Parts required

2 of No. 1	1 of No. 52
5 " " 2	1 " " 54a
1 " " 3	4 " " 90a
9 " " 5	6 " " 111c
4 " " 10	2 " " 125
2 " " 11	2 " " 126
6 " " 12	2 " " 126a
3 " " 12c	2 " " 155a
1 " " 16	4 " " 187
1 " " 18b	2 " " 188
3 " " 22	2 " " 190
1 " " 24	2 " " 192
2 " " 35	2 " " 199
66 " " 37	1 " " 200
7 " " 38	1 " " 212
1 " " 44	1 " " 213
6 " " 48a	4 " " 215
1 " " 51	2 " " 217a

4.5 EARLY TYPE OF STEAMSHIP

Parts required

4 of No. 1	2 of No. 126a
5 " " 2	4 " " 155a
5 " " 5	2 " " 187
1 " " 10	2 " " 188
2 " " 11	2 " " 189
7 " " 12	4 " " 190
2 " " 15b	2 " " 191
4 " " 16	2 " " 192
1 " " 17	1 " " 199
1 " " 18a	2 " " 200
2 " " 22	1 " " 213
1 " " 23	2 " " 214
6 " " 35	4 " " 215
75 " " 37	2 " " 217a
6 " " 37a	2 " " 217b
5 " " 38	
1 " " 40	
5 " " 48a	
1 " " 51	
1 " " 52	
2 " " 54a	
4 " " 90a	
4 " " 111c	
2 " " 125	
2 " " 126	



The foredeck consists of a Flanged Sector Plate bolted to the $12\frac{1}{2}$ " Strips that are placed along the sides of the deck. A $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate is used for the central portion of the deck and to the rear end of this a Flanged Sector Plate 1 is fastened by a Flat Bracket. A $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip is bolted across the Flanged Sector Plate and to the sides of the vessel. Two $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates, overlapped one hole, are bolted to the rear end of the Flanged Sector Plate.

The vessel runs on Road Wheels mounted on a compound rod consisting of a $1\frac{1}{2}$ " and a 2" Rod joined by a Rod Connector, which is journaled in the sides of the hull as shown, and also on 1" Pulleys fitted with Rubber Rings supported inside the hull on $\frac{1}{2}$ " Bolts 2. The Bolts 2 pass through holes in the Flexible Plates forming the sides of the ship and are locked in the bosses of the Pulleys. A $1\frac{1}{4}$ " Disc 3 is lock-nutted to a Trunnion to form the wheel.

4.6 DRILLING MACHINE

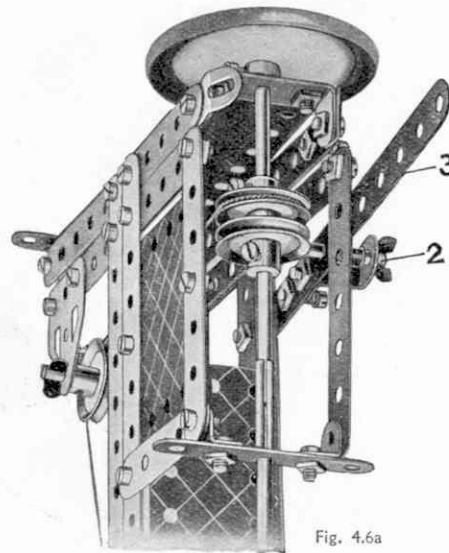
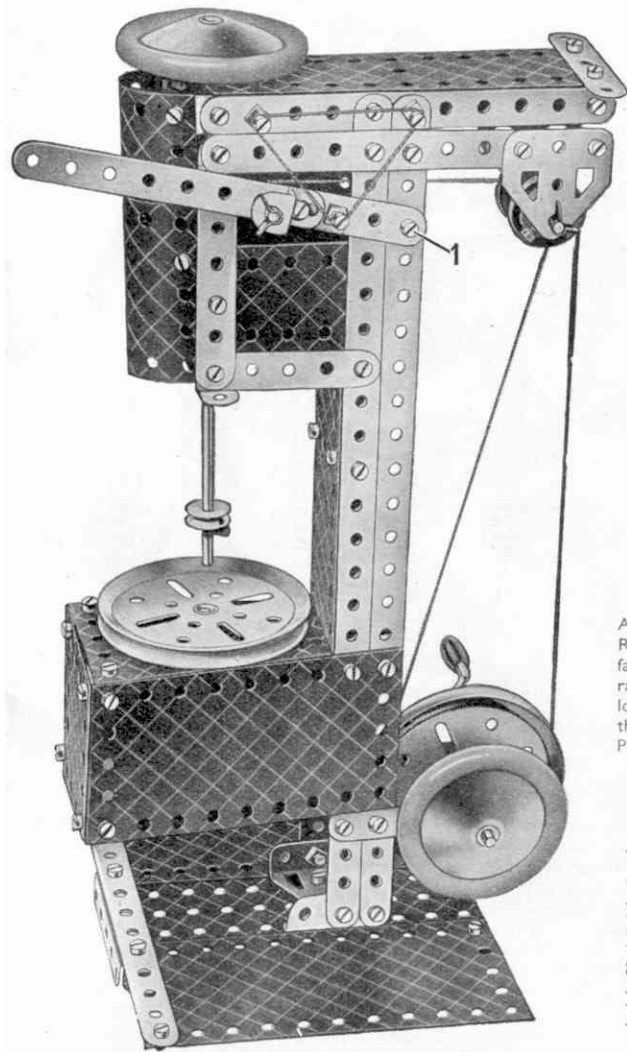


Fig. 4.6a

The height of the drill is controlled by the lever 3 (Fig. 4.6a). A 2" Rod 2, passed through a hole in the Strip 3 and through a hole in a Reversed Angle Bracket bolted to the Strip, engages between two 1" fast Pulleys on the shaft of the drill. A Driving Band, which is arranged as shown, holds the lever at its maximum height. The Bolt 1 is lock-nutted. The drill table is held in position by a $\frac{3}{8}$ " Bolt, that passes through the Flanged Sector Plate and is then locked in the boss of the Pulley.

Parts required		
4 of No. 1	4 of No. 22	2 of No. 126
6 " " 2	1 " " 23	2 " " 126a
2 " " 3	6 " " 35	2 " " 187
7 " " 5	71 " " 37	1 " " 188
8 " " 12	7 " " 37a	2 " " 189
2 " " 12c	1 " " 48	2 " " 190
1 " " 15b	1 " " 48a	2 " " 191
1 " " 16	1 " " 52	2 " " 192
2 " " 17	1 " " 54a	2 " " 199
2 " " 19b	4 " " 111c	1 " " 213
1 " " 19g	1 " " 125	

4.7 GIANT EXCAVATOR

The Cord 1 is fastened to a Crank Handle journalled in holes in the sides of the cab, and after passing round the $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip above the cabin is tied to the jib at 2. This Cord controls the luffing movement of the jib. The Cord 3 is tied to the bucket and is passed over the 1" Pulley Wheel 5 and then wound round Rod 6. By turning the handle 7 on the Bush Wheel 7 the bucket is raised or lowered.

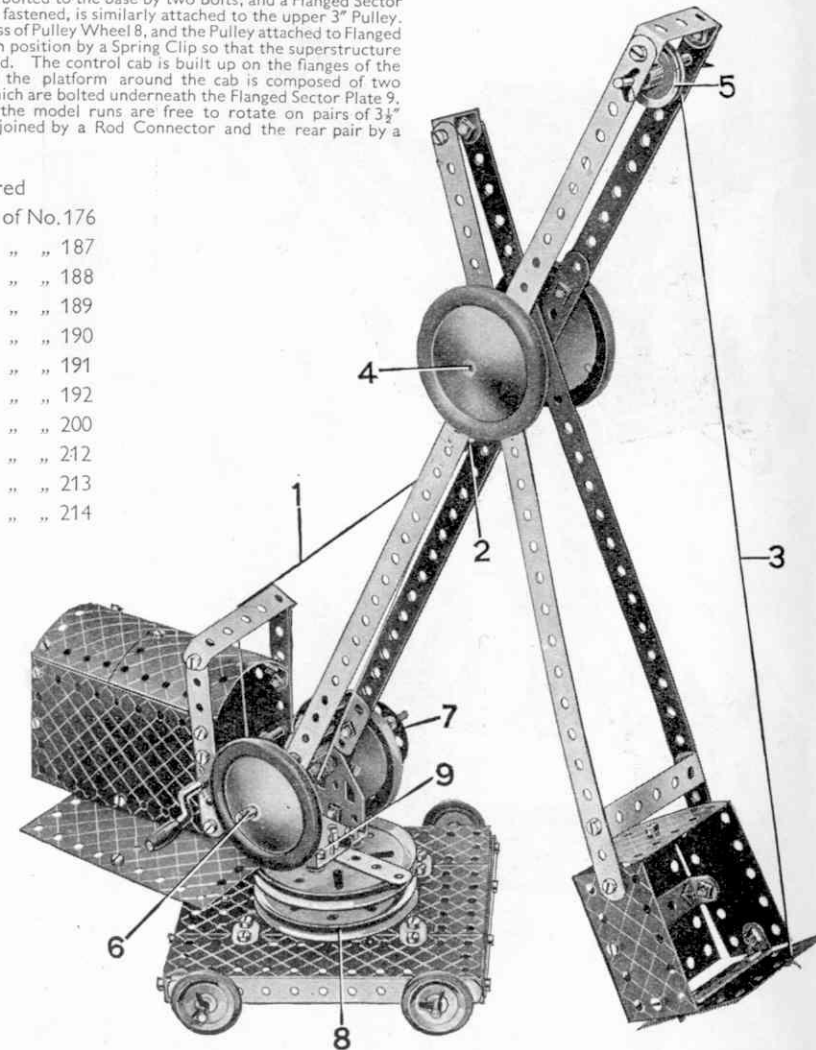
The bucket arm is pivoted on Rod 4, which passes through holes in the $12\frac{1}{2}$ " Strips forming the jib and the bucket arm. Road Wheels fastened at each end of Rod 4 retain it in position.

A 3" Pulley Wheel 8 is bolted to the base by two Bolts, and a Flanged Sector Plate 9, to which the cab is fastened, is similarly attached to the upper 3" Pulley. A $1\frac{1}{2}$ " Rod is held in the boss of Pulley Wheel 8, and the Pulley attached to Flanged Sector Plate 9 is retained in position by a Spring Clip so that the superstructure is free to swivel on the Rod. The control cab is built up on the flanges of the Flanged Sector Plate, and the platform around the cab is composed of two $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates, which are bolted underneath the Flanged Sector Plate 9.

The wheels on which the model runs are free to rotate on pairs of $3\frac{1}{2}$ " Rods. The front pair are joined by a Rod Connector and the rear pair by a Rod and Strip Connector.

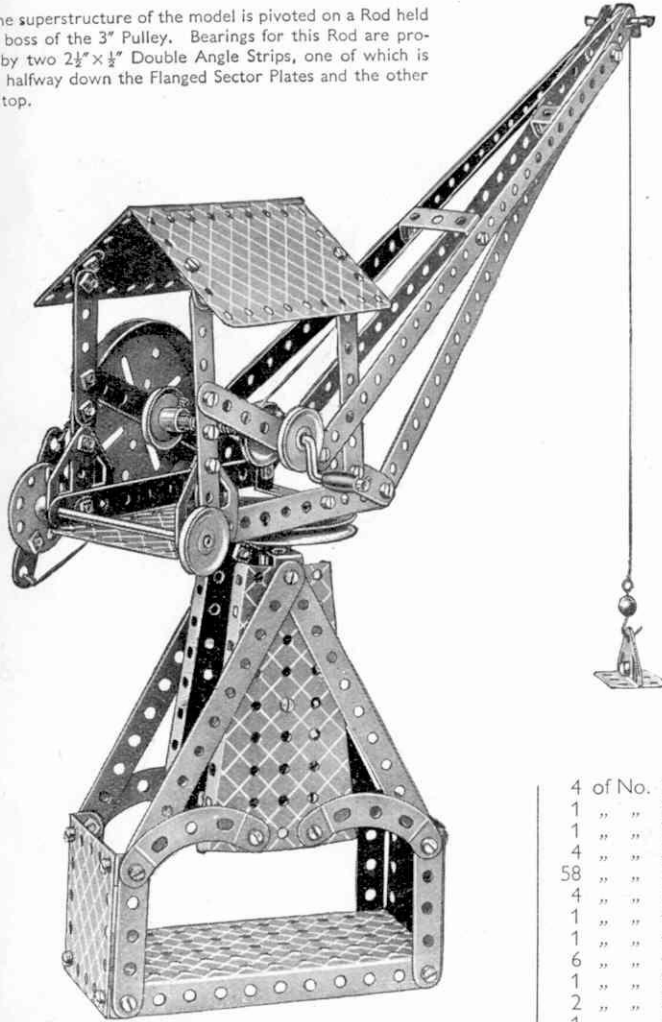
Parts required

4 of No. 1	1 of No. 176
6 " " 2	4 " " 187
5 " " 5	2 " " 188
4 " " 10	2 " " 189
1 " " 11	4 " " 190
6 " " 12	2 " " 191
4 " " 12c	2 " " 192
1 " " 15b	2 " " 200
4 " " 16	1 " " 212
2 " " 17	1 " " 213
1 " " 18a	1 " " 214
2 " " 19b	
1 " " 19g	
5 " " 22	
1 " " 24	
8 " " 35	
73 " " 37	
5 " " 37a	
4 " " 38	
1 " " 40	
1 " " 48	
6 " " 48a	
1 " " 52	
1 " " 54a	
5 " " 111c	
2 " " 126	
2 " " 126a	
4 " " 155a	



4.8 ELEVATED JIB CRANE

The superstructure of the model is pivoted on a Rod held in the boss of the 3" Pulley. Bearings for this Rod are provided by two $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips, one of which is bolted halfway down the Flanged Sector Plates and the other at the top.



Parts required

4 of No. 1	2 of No. 12
8 " " 2	3 " " 12c
1 " " 3	2 " " 16
9 " " 5	1 " " 18a
1 " " 11	2 " " 19b
	1 " " 19g

Parts required

4 of No. 1	8 of No. 38
6 " " 2	1 " " 40
9 " " 5	1 " " 44
1 " " 10	1 " " 48
1 " " 11	4 " " 48a
6 " " 12	1 " " 51
4 " " 12c	1 " " 52
1 " " 15b	2 " " 54a
3 " " 16	1 " " 57c
1 " " 18a	4 " " 90a
1 " " 18b	4 " " 111c
2 " " 19b	2 " " 126a
1 " " 19g	3 " " 187
5 " " 22	1 " " 188
1 " " 23	2 " " 189
1 " " 24	4 " " 190
8 " " 35	2 " " 200
64 " " 37	1 " " 212
6 " " 37a	2 " " 217a

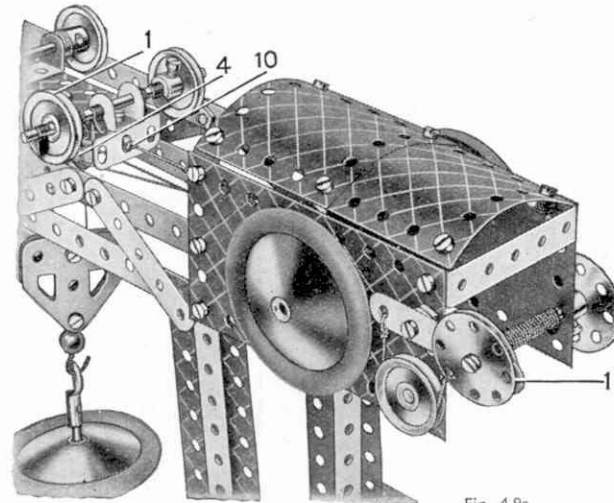
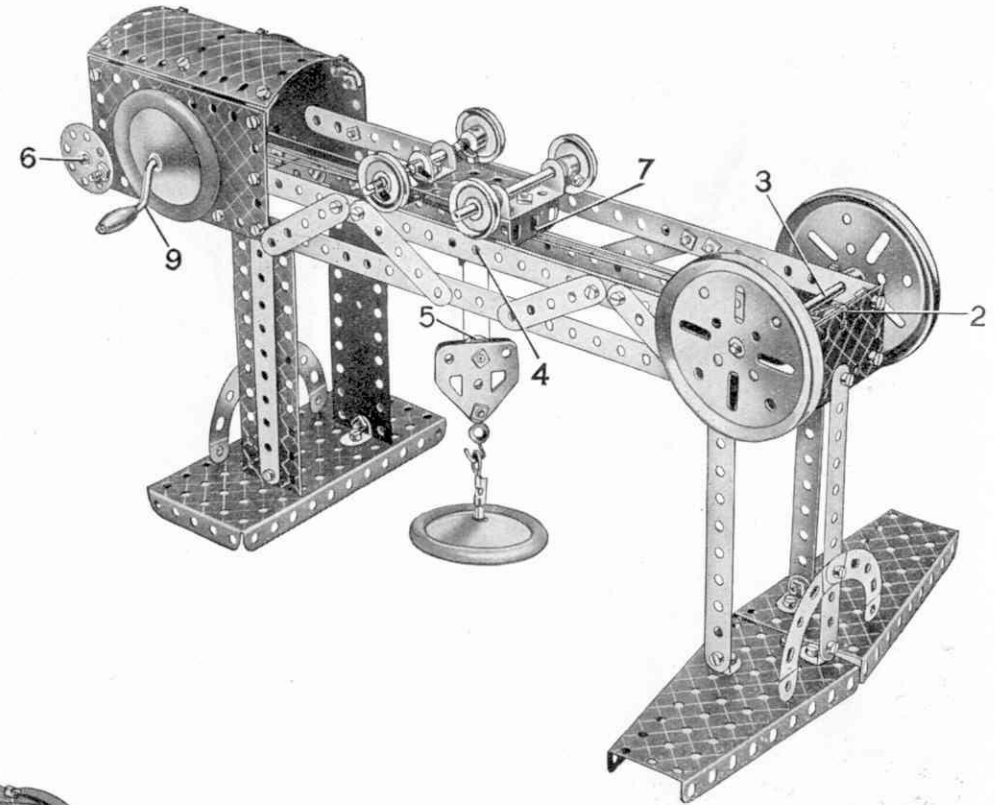


Fig. 4.9a

4.9 GANTRY CRANE



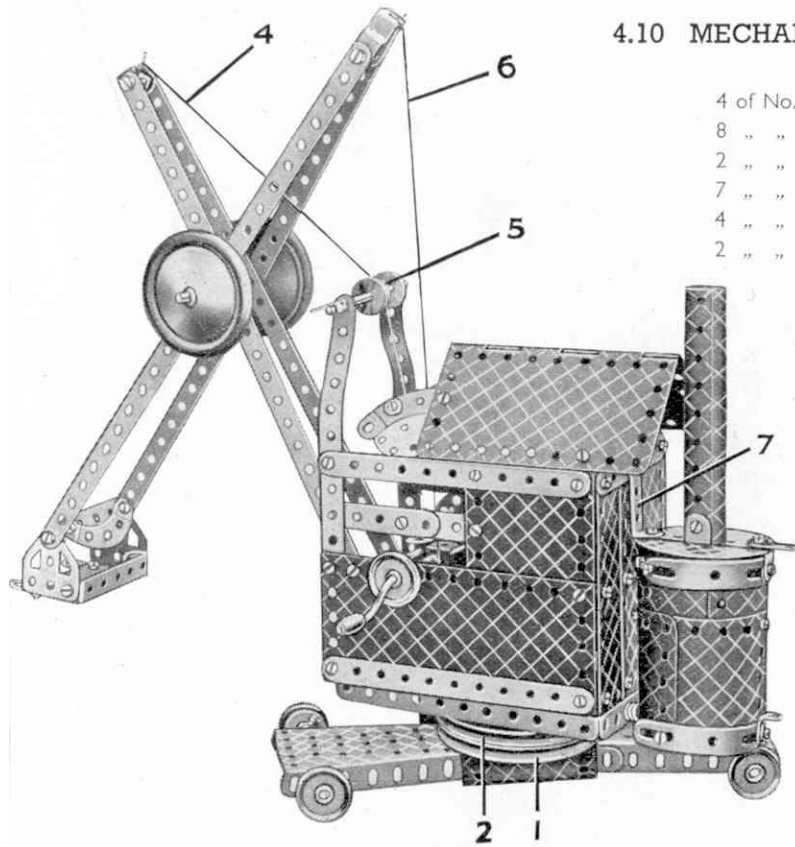
The sides of the cabin each consist of two $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates overlapped one hole. The top of the cabin, which consists of two $1\frac{1}{8}"$ radius Curved Plates, is attached to the sides by means of Obtuse Angle Brackets at each corner as shown.

The hoisting carriage is a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate 7. Bearings for one of the $3\frac{1}{2}"$ Rods carrying the 1" Pulley Wheels are provided by the holes in the turned up ends of a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip, and for the other Rod by the holes in a Double Bracket. The Bolt 1 (Fig. 4.9a) secures a Cranked Bent Strip 4 vertically to the underside of the Flanged Plate 7. A 1" Rod passes through the lower holes of the Cranked Bent Strip and is held in position by Spring Clips.

Two Flat Trunnions form the pulley block. They are fastened together at their wide ends by a $\frac{3}{8}"$ Bolt, which carries a $\frac{1}{2}"$ loose Pulley 5 on its shank between the two Flat Trunnions.

The Cord that operates the hoisting carriage 7 is tied at 10. It is then passed round Rod 3, which carries the two 3" Pulleys, and is taken to the Crank Handle 9. The Cord is wound round the Crank Handle several times to enable it to grip the shaft, and finally is tied to the rear end of the carriage. The hoisting cord is tied to Rod 6 fitted with a Bush Wheel, and wound round it several times. It is then taken over the 1" Rod held in the Cranked Bent Strip 4, round Pulley 5, back over the 1" Rod, and tied at 2. Strip 11 is the lever of a band brake, the cord of which passes around a 1 Pulley on Rod 6.

4.10 MECHANICAL DIGGER



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

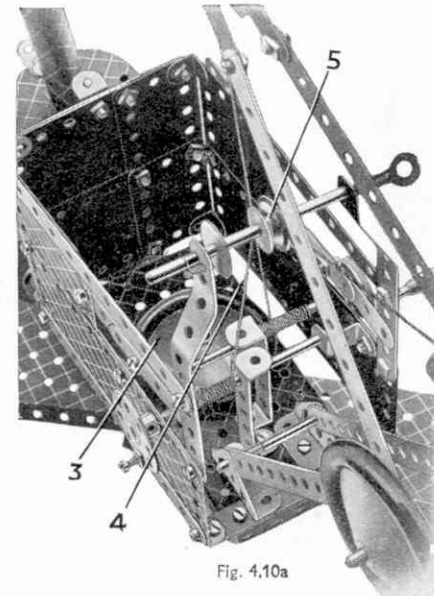


Fig. 4.10a

The bogie is constructed from two Flanged Sector Plates, the flanges of which are connected by two $2\frac{1}{2}$ " Strips. A gap of $\frac{1}{8}$ " is left between the ends of the Plates. A 3" Pulley 1 is then bolted boss downwards, to the Flanged Sector Plates by two $\frac{3}{8}$ " Bolts.

A 2" Rod is locked in the boss of Pulley 1, and on it is placed Pulley 2, boss downward. The base of the cab (Fig. 4.10a) is a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " 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 $1\frac{1}{8}$ " radius Curved Plates, a $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate, and two $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " 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 $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip. The Chimney is a $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " 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 $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip 7 at the top, and by a $\frac{3}{8}$ " Bolt at the bottom, where it is spaced from the cab by three Washers.

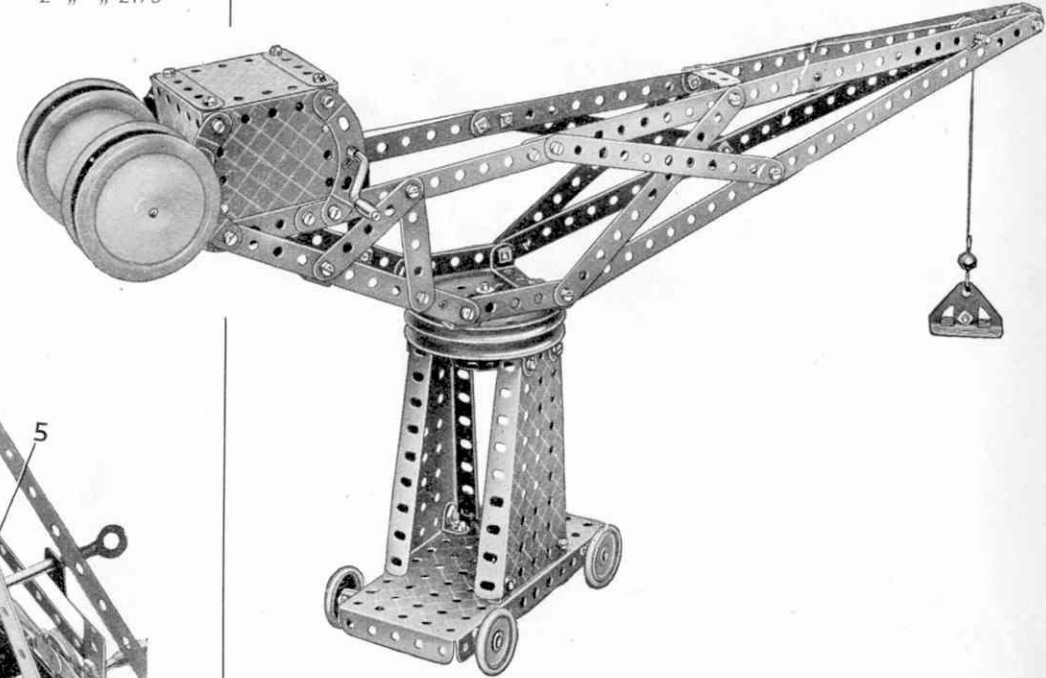
The Cord 4 is taken over the $\frac{1}{2}$ " Pulley 5 and tied to the Double Bracket at the top of the jib. This $\frac{1}{2}$ " Pulley 5 is clamped loosely between the two $\frac{3}{4}$ " Discs by two Spring Clips to form a deep-grooved pulley.

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

4.11 HAMMERHEAD CRANE

The jib of the crane is bolted to the upper 3" Pulley, and the lower 3" Pulley is bolted to two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips fastened to the narrow ends of the Flanged Sector Plates. A $1\frac{1}{2}$ " Rod is secured in the boss of the upper Pulley, but is free to rotate in the boss of the lower Pulley. A Bush Wheel fastened to the lower end of the Rod retains the jib in place.

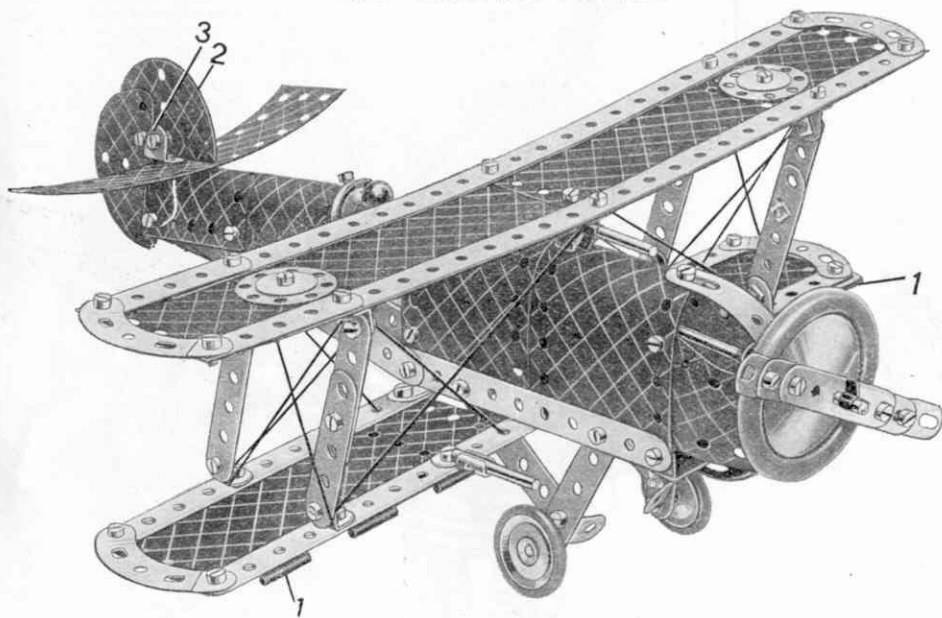
The four Road Wheels are fastened to a 4" Rod that passes through the holes of two Flat Trunnions bolted to the $2\frac{1}{2}$ " small radius Curved Strips.



Parts required

4 of No. 1	2 of No. 18a	55 of No. 37	4 of No. 90a
8 " " 2	2 " " 19b	1 " " 40	2 " " 126
9 " " 5	1 " " 19g	1 " " 48	2 " " 126a
1 " " 11	4 " " 22	6 " " 48a	4 " " 155a
8 " " 12	1 " " 23	1 " " 52	1 " " 176
1 " " 15b	1 " " 24	2 " " 54a	4 " " 187
2 " " 16	4 " " 35	1 " " 57c	4 " " 190

4.12 FIGHTING BIPLANE



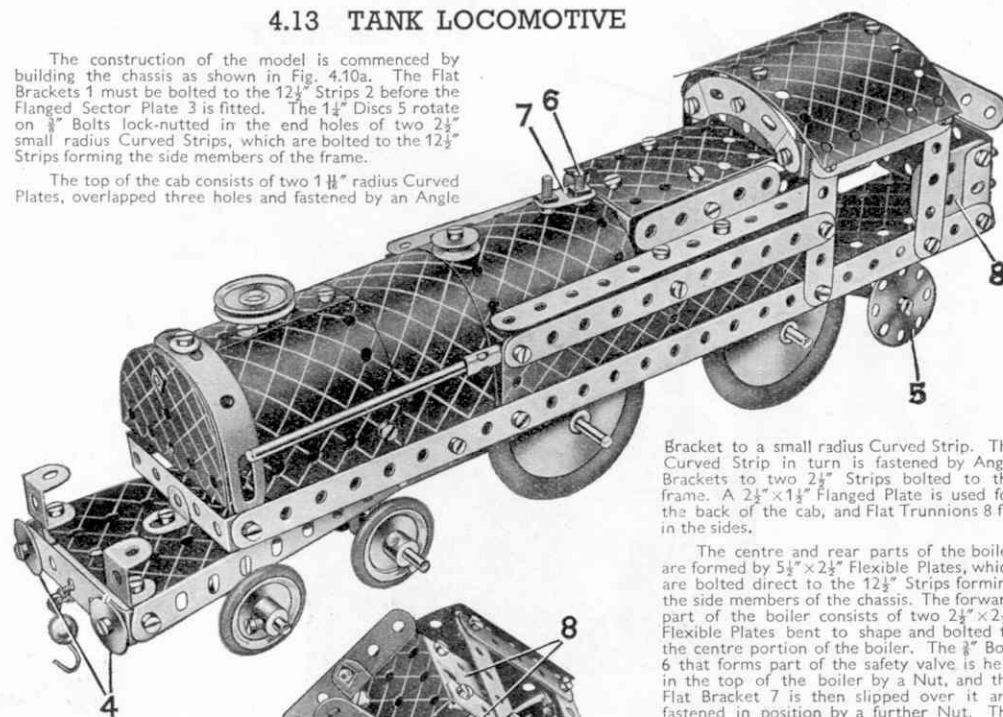
Parts required				
4 of No. 1	1 of No. 16	1 of No. 40	1 of No. 187	1 of No. 212
6 " " 2	2 " " 17	1 " " 48	2 " " 188	2 " " 214
2 " " 3	1 " " 18a	4 " " 48a	1 " " 189	2 " " 215
9 " " 5	4 " " 22	4 " " 90a	4 " " 190	2 " " 217a
4 " " 10	6 " " 35	5 " " 111c	2 " " 191	2 " " 217b
2 " " 11	74 " " 37	2 " " 125	2 " " 192	
8 " " 12	1 " " 37a	2 " " 126a	1 " " 198	
3 " " 12c	5 " " 38	2 " " 155a	2 " " 199	

The two 3" Formed Slotted Strips that can be seen in the illustration, one forming the top and one the underside of the nose of the plane, are joined end to end by a Bolt through their slotted holes. The Bolt holds also a Reversed Angle Bracket inside the nose, and an Obtuse Angle Bracket, which is outside the nose. The 3½" Rod that forms the propeller shaft passes through the free hole of the Obtuse Angle Bracket, through the unoccupied part of the slots in the 3" Formed Slotted Strips, and through the hole of the Reversed Angle Bracket. The Rod is held in position by Spring Clips. The centre pin of a Hinged Flat Plate has been withdrawn, and the two parts used as flat plates 1, to form part of the lower wing. The Semi-Circular Plate 2 is fastened to the fuselage by means of a Double Bracket 3, and is spaced from the inside of the Bracket by three Washers. Flat Trunnions are used for the sides of the cockpit. The 1" fast Pulleys forming the front and the back of the cockpit are each fastened by a Bolt passing through the top of the U-Section Curved Plates and into the tapped hole of the boss.

4.13 TANK LOCOMOTIVE

The construction of the model is commenced by building the chassis as shown in Fig. 4.10a. The Flat Brackets 1 must be bolted to the 12½" Strips 2 before the Flanged Sector Plate 3 is fitted. The 1½" Discs 5 rotate on ½" Bolts lock-nutted in the end holes of two 2½" small radius Curved Strips, which are bolted to the 12½" Strips forming the side members of the frame.

The top of the cab consists of two 1½" radius Curved Plates, overlapped three holes and fastened by an Angle



Bracket to a small radius Curved Strip. The Curved Strip in turn is fastened by Angle Brackets to two 2½" Strips bolted to the frame. A 2½"×1½" Flanged Plate is used for the back of the cab, and Flat Trunnions 8 fill in the sides.

The centre and rear parts of the boiler are formed by 5½"×2½" Flexible Plates, which are bolted direct to the 12½" Strips forming the side members of the chassis. The forward part of the boiler consists of two 2½"×2½" Flexible Plates bent to shape and bolted to the centre portion of the boiler. The ½" Bolt 6 that forms part of the safety valve is held in the top of the boiler by a Nut, and the Flat Bracket 7 is then slipped over it and fastened in position by a further Nut. The buffers 4 are lock-nutted to a 2½"×½" Double Angle Strip bolted to the flanges of the Flanged Sector Plate 3.

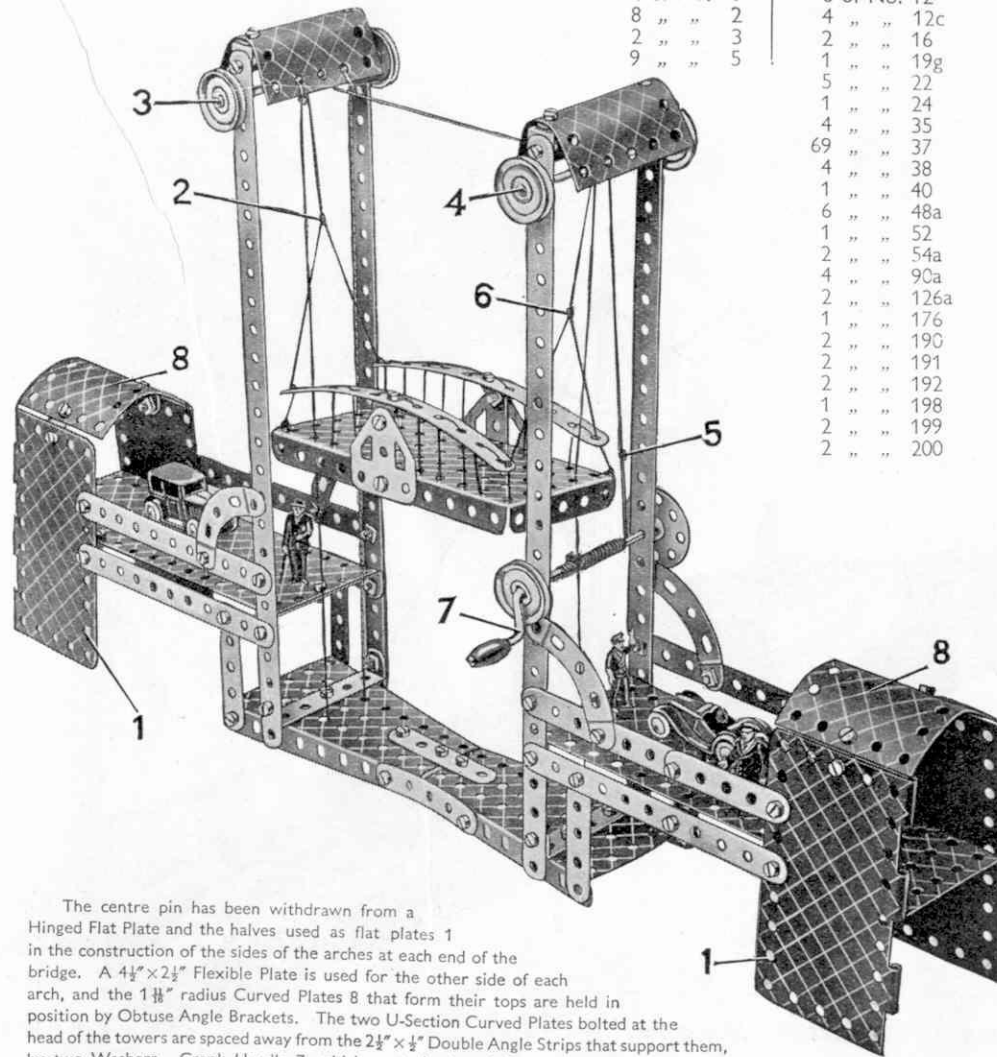
Parts required				
4 of No. 1	1 of No. 44	4 of No. 187	1 of No. 214	
5 " " 2	1 " " 48	2 " " 188	2 " " 215	
9 " " 5	4 " " 48a	2 " " 189	2 " " 217a	
5 " " 10	1 " " 51	2 " " 190	2 " " 217b	
2 " " 11	1 " " 54a	2 " " 192		
6 " " 12	1 " " 57c	2 " " 200		
4 " " 12c	3 " " 90a	1 " " 212		
1 " " 15b	5 " " 111c			
4 " " 16	2 " " 125			
5 " " 22	2 " " 126			
1 " " 23	2 " " 126a			
4 " " 35	2 " " 155a			
70 " " 37				
9 " " 37a				
7 " " 38				

Fig. 4.10a

4.14 LIFTING BRIDGE

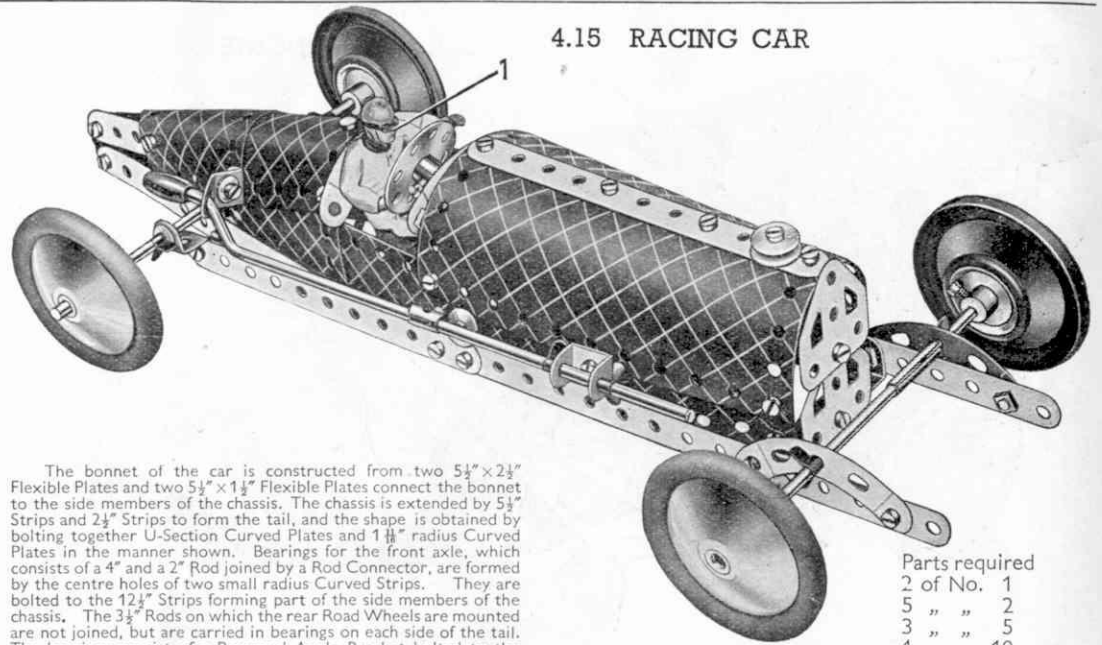
Parts required

4 of No. 1	6 of No. 12
8 " " 2	4 " " 12c
2 " " 3	2 " " 16
9 " " 5	1 " " 19g
	5 " " 22
	1 " " 24
	4 " " 35
	69 " " 37
	4 " " 38
	1 " " 40
	6 " " 48a
	1 " " 52
	2 " " 54a
	4 " " 90a
	2 " " 126a
	1 " " 176
	2 " " 190
	2 " " 191
	2 " " 192
	1 " " 198
	2 " " 199
	2 " " 200



The centre pin has been withdrawn from a Hinged Flat Plate and the halves used as flat plates 1 in the construction of the sides of the arches at each end of the bridge. A $4\frac{1}{2} \times 2\frac{1}{2}$ Flexible Plate is used for the other side of each arch, and the $1\frac{1}{2}$ radius Curved Plates 8 that form their tops are held in position by Obtuse Angle Brackets. The two U-Section Curved Plates bolted at the head of the towers are spaced away from the $2\frac{1}{2} \times \frac{1}{2}$ Double Angle Strips that support them, by two Washers. Crank Handle 7, which controls the raising and lowering of the bridge, is retained in position in the sides of the right hand tower by a Bush Wheel and a 1" Pulley. Cord is wound round the shaft of Crank Handle 7, and at 5 a second length of Cord is knotted to it, and both are led over the Rod 4. One of the Cords is led downward and is tied at 6 to the Cords supporting the span; while the other is passed over Rod 3 and is tied at 2 to the other supporting Cords. Guide Cords are tied to Rods 3 and 4, and after passing through holes in the $5\frac{1}{2} \times 2\frac{1}{2}$ Flanged Plate are fastened to the two Flanged Sector Plates forming the base.

4.15 RACING CAR



The bonnet of the car is constructed from two $5\frac{1}{2} \times 2\frac{1}{2}$ Flexible Plates and two $5\frac{1}{2} \times 1\frac{1}{2}$ Flexible Plates connect the bonnet to the side members of the chassis. The chassis is extended by $5\frac{1}{2}$ Strips and $2\frac{1}{2}$ Strips to form the tail, and the shape is obtained by bolting together U-Section Curved Plates and $1\frac{1}{2}$ radius Curved Plates in the manner shown. Bearings for the front axle, which consists of a 4" and a 2" Rod joined by a Rod Connector, are formed by the centre holes of two small radius Curved Strips. They are bolted to the $12\frac{1}{2}$ Strips forming part of the side members of the chassis. The $3\frac{1}{2}$ Rods on which the rear Road Wheels are mounted are not joined, but are carried in bearings on each side of the tail. The bearings consist of a Reversed Angle Bracket bolted to the chassis and a Flat Bracket fastened to the side of the car. The Rods are held in position by Spring Clips. The Driver 1 (Motor Car Constructor Part No. A1100) is not included in the Outfit, but can be purchased separately if required.

Parts required

2 of No. 1	5 " " 2
3 " " 5	4 " " 10
1 " " 11	4 " " 12
1 " " 12c	2 " " 15b
2 " " 16	2 " " 17
1 " " 19g	1 " " 22
4 " " 23	1 " " 24
1 " " 35	8 " " 37
42 " " 37a	2 " " 38
7 " " 48	1 " " 48a
2 " " 48a	4 " " 90a
4 " " 111c	2 " " 125
2 " " 126	2 " " 126a
2 " " 155a	4 " " 187
4 " " 188	2 " " 189
2 " " 192	2 " " 199
1 " " 213	

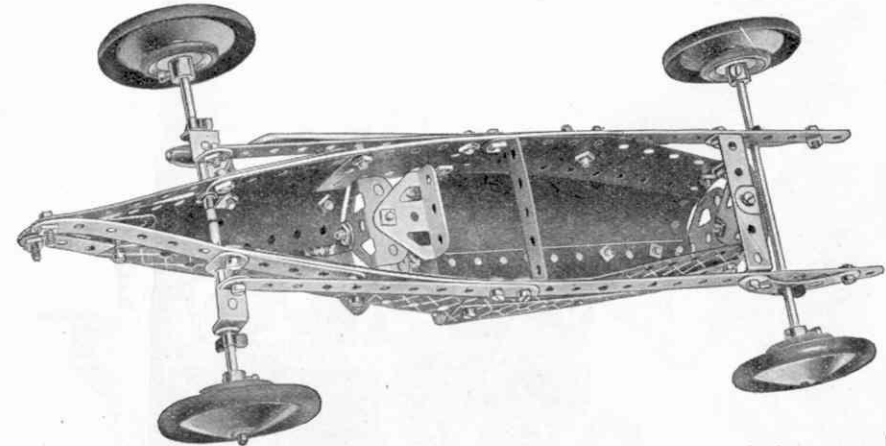
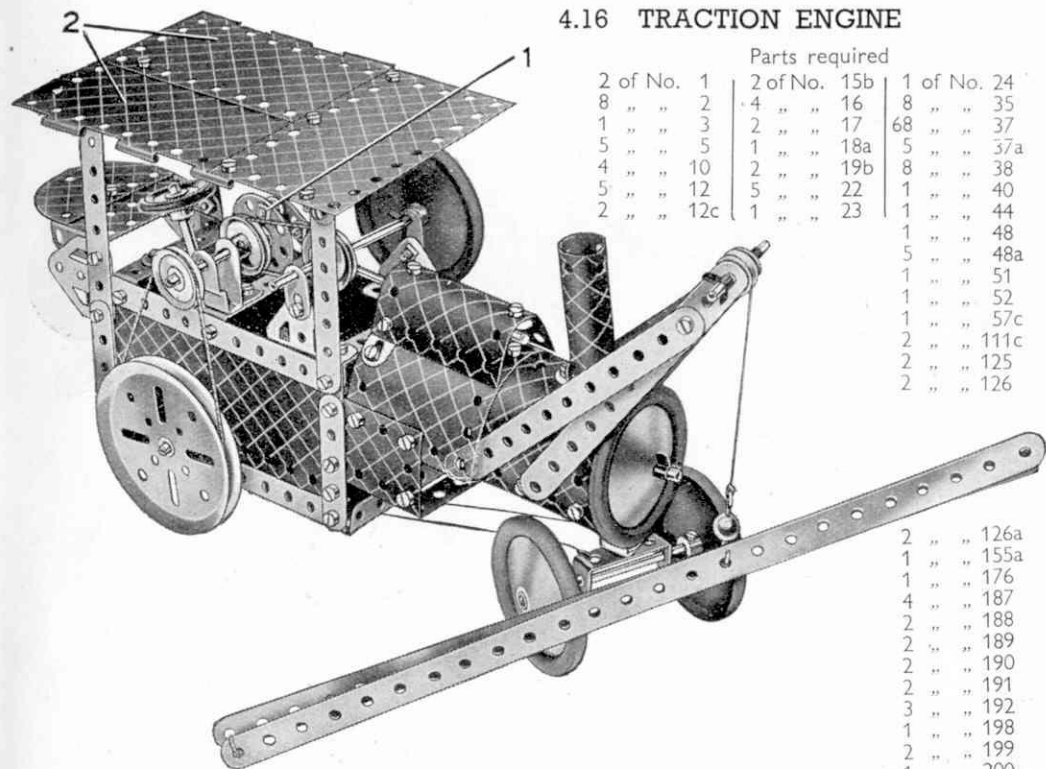


Fig. 4.15a

2 of No. 200
1 " " 212
1 " " 213

4.16 TRACTION ENGINE



Parts required		
2 of No. 1	2 of No. 15b	1 of No. 24
8 " " 2	4 " " 16	8 " " 35
1 " " 3	2 " " 17	68 " " 37
5 " " 5	1 " " 18a	5 " " 37a
4 " " 10	2 " " 19b	8 " " 38
5 " " 12	5 " " 22	1 " " 40
2 " " 12c	1 " " 23	1 " " 44
		1 " " 48
		5 " " 48a
		1 " " 51
		1 " " 52
		1 " " 57c
		2 " " 111c
		2 " " 125
		2 " " 126

2 " " 126a
1 " " 155a
1 " " 176
4 " " 187
2 " " 188
2 " " 189
2 " " 190
2 " " 191
3 " " 192
1 " " 198
2 " " 199
1 " " 200
1 " " 212
1 " " 213
1 " " 214
2 " " 215
1 " " 217b

The cylinder consists of a U-Section Curved Plate, fastened to the boiler by Obtuse Angle Brackets. Bearings for the piston rod are formed by the holes of two Angle Brackets, which are held in place by the Bolts that can be seen at the top of the cylinder. The Bolts 1, which pass through a connecting rod consisting of two Flat Brackets, are lock-nutted. A U-Section Curved Plate, bent so that its ends overlap one hole, is used for the chimney. The centre pin of a Hinged Flat Plate has been removed and the two parts used as flat plates 2 in the construction of the roof of the cab.

The $1\frac{1}{2} \times \frac{1}{2}$ Double Angle Strip that supports the front axle is pivotally attached by a lock-nutted Bolt, to the centre hole of a double bent strip, which consists of two Reversed Angle Brackets. The Cord controlling the steering is wound twice around the lower end of the steering column.

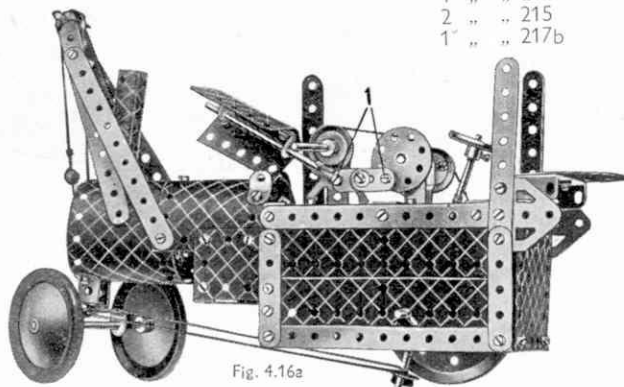


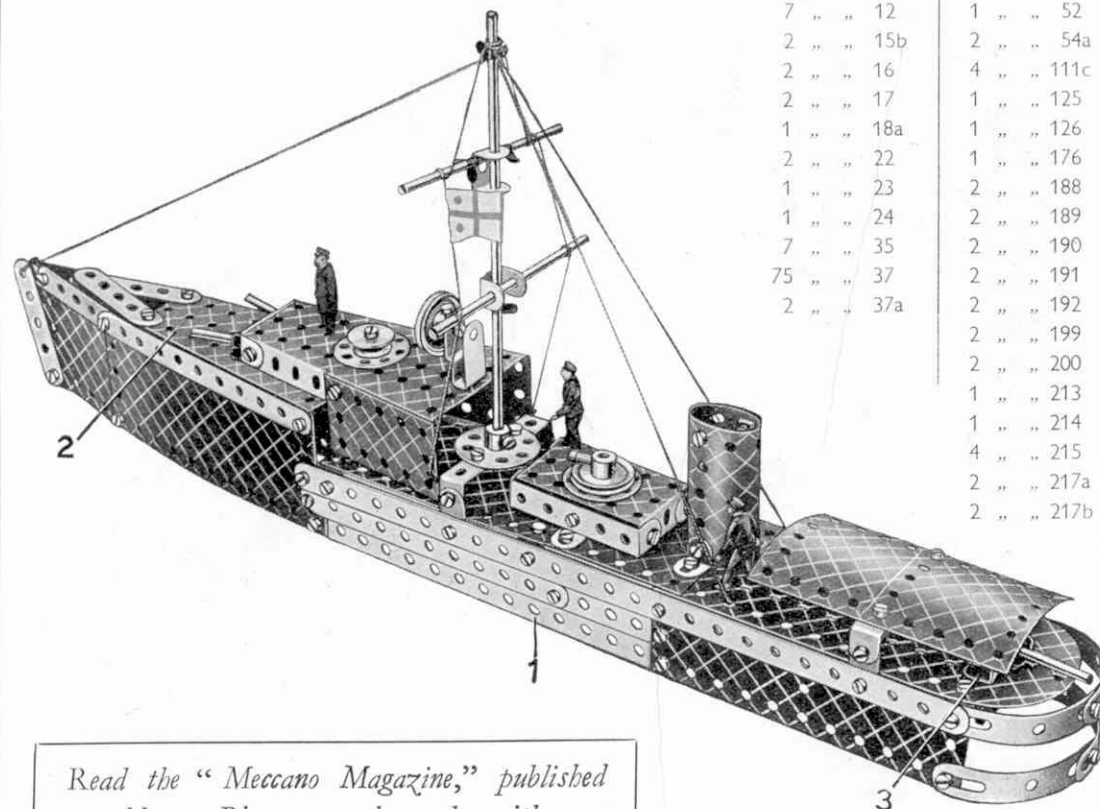
Fig. 4.16a

4.17 RIVER GUN-BOAT

Each side of the forward part of the ship consists of a $2\frac{1}{2} \times 2\frac{1}{2}$ and a $5\frac{1}{2} \times 2\frac{1}{2}$ Flexible Plate. These are bolted to the $12\frac{1}{2}$ Strip 1 and to the Flanged Sector Plate 2. The funnel is represented by two U-Section Curved Plates bent so that their ends overlap two holes at each side, and it is fastened to the deck by two Angle Brackets. The forward gun turret, also a Flanged Sector Plate, is fastened to the raised portion of the deck by means of an $\frac{1}{2} \times \frac{1}{2}$ Angle Bracket. The guns are represented by two 2" Rods, held by Spring Clips in the holes of a $1\frac{1}{2} \times \frac{1}{2}$ Double Angle Strip bolted to the narrow end of the Flanged Sector Plate 2. A $1\frac{1}{2}$ Rod, held by a Spring Clip and a Cord Anchoring Spring in a Trunnion 3, forms the rear gun. The gun in front of the funnel is held in place by a $\frac{3}{8}$ Bolt passed through the centre hole of the Flanged Plate and locked in the boss of the Pulley by the $\frac{3}{8}$ Bolt representing the gun barrel.

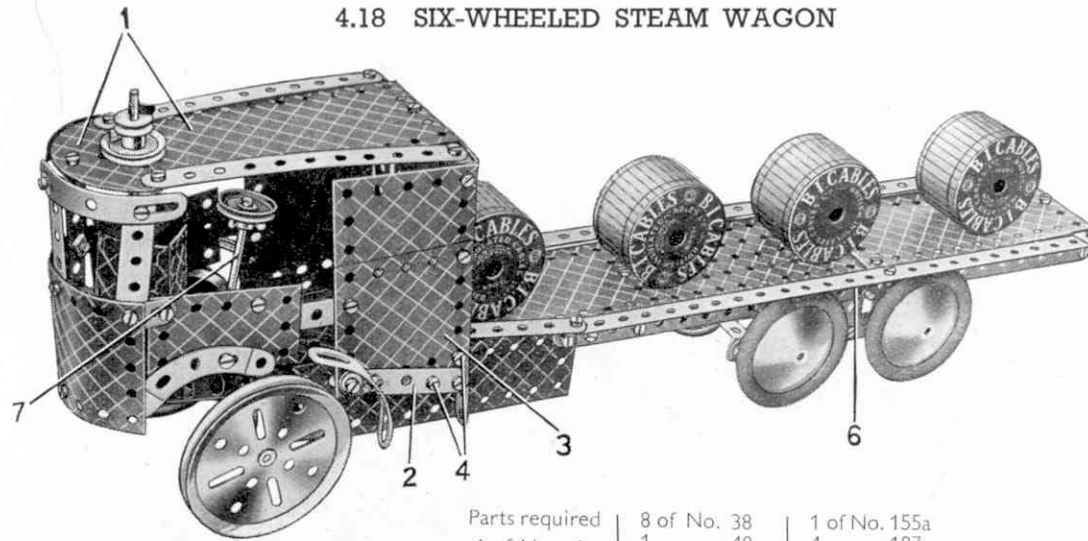
Parts required

4 of No. 1	1 of No. 40
4 " " 2	1 " " 44
8 " " 5	1 " " 48
4 " " 10	5 " " 48a
2 " " 11	1 " " 51
7 " " 12	1 " " 52
2 " " 15b	2 " " 54a
2 " " 16	4 " " 111c
2 " " 17	1 " " 125
1 " " 18a	1 " " 126
2 " " 22	1 " " 176
1 " " 23	2 " " 188
1 " " 24	2 " " 189
7 " " 35	2 " " 190
75 " " 37	2 " " 191
2 " " 37a	2 " " 192
	2 " " 199
	2 " " 200
	1 " " 213
	1 " " 214
	4 " " 215
	2 " " 217a
	2 " " 217b



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4.18 SIX-WHEELED STEAM WAGON



Parts required

4 of No. 1
8 " " 2
2 " " 3
6 " " 5
4 " " 10
2 " " 11
8 " " 12
2 " " 12c
2 " " 15b
4 " " 16
2 " " 19b
5 " " 22
1 " " 23
1 " " 24
8 " " 35
75 " " 37
2 " " 37a

8 of No. 38
1 " " 48
6 " " 48a
1 " " 51
1 " " 52
1 " " 54a
4 " " 90a
2 " " 111c
2 " " 125
1 " " 126
2 " " 126a

1 of No. 155a
4 " " 187
2 " " 188
2 " " 189
4 " " 190
2 " " 191
2 " " 192
2 " " 199
2 " " 200
1 " " 214
4 " " 215

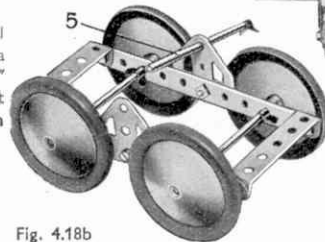


Fig. 4.18b

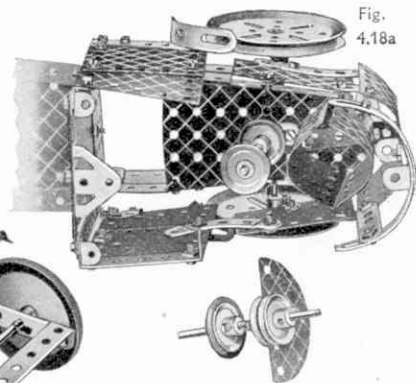
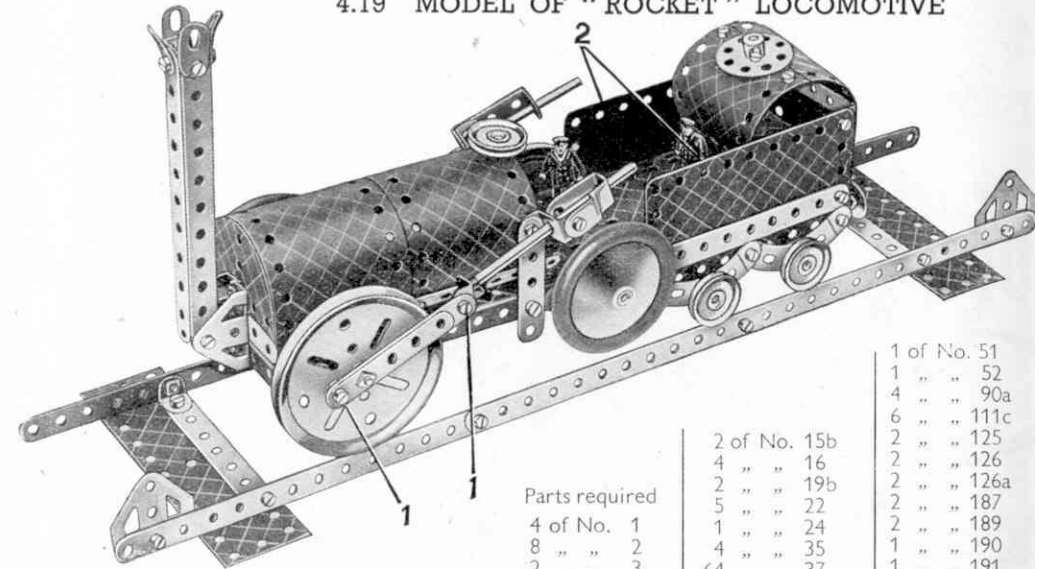


Fig. 4.18c

4.19 MODEL OF "ROCKET" LOCOMOTIVE



Parts required

4 of No. 1
8 " " 2
2 " " 3
9 " " 5
4 " " 10
1 " " 11
8 " " 12
4 " " 12c

2 of No. 15b
4 " " 16
2 " " 19b
5 " " 22
1 " " 24
4 " " 35
64 " " 37
12 " " 37a
8 " " 38
1 " " 44
1 " " 48
2 " " 48a

1 of No. 51
1 " " 52
4 " " 90a
6 " " 111c
2 " " 125
2 " " 126
2 " " 126a
2 " " 187
2 " " 189
1 " " 190
1 " " 191
2 " " 192
1 " " 198
2 " " 200
2 " " 214
2 " " 217b

The pin has been removed from a Hinged Flat Plate and the halves used as flat plates 2, to form the sides of the tender. The chassis of the engine consists of a $5\frac{1}{2}" \times 2\frac{1}{2}"$ and a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate, fastened together by two $2\frac{1}{2}"$ Strips. Two $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates bolted to $5\frac{1}{2}"$ Strips form the boiler, and are fastened to the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate by Obtuse Angle Brackets, two of which can be seen in Fig. 4.19a. Semi-Circular Plates form the ends of the boiler.

The four $5\frac{1}{2}"$ Strips that represent the chimney are joined together at the top by a Double Bracket and an Angle Bracket. The Chimney is bolted to two Trunnions, secured to the chassis and to the boiler front. Bearings for the piston rods are formed on one side by a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip and a Reversed Angle Bracket, and on the other side by a Cranked Bent Strip and a Reversed Angle Bracket. The Bolts 1 on the connecting rods are lock-nutted, and the piston rods are retained in position by Spring Clips placed on each side of the Angle Brackets. The $\frac{3}{4}"$ Discs representing buffers are fastened against the heads of the $\frac{3}{4}"$ Bolts, which are lock-nutted to the Flexible Plate forming the back of the tender.

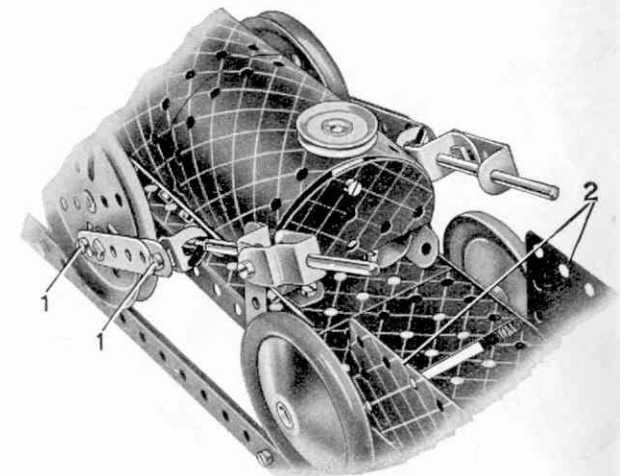
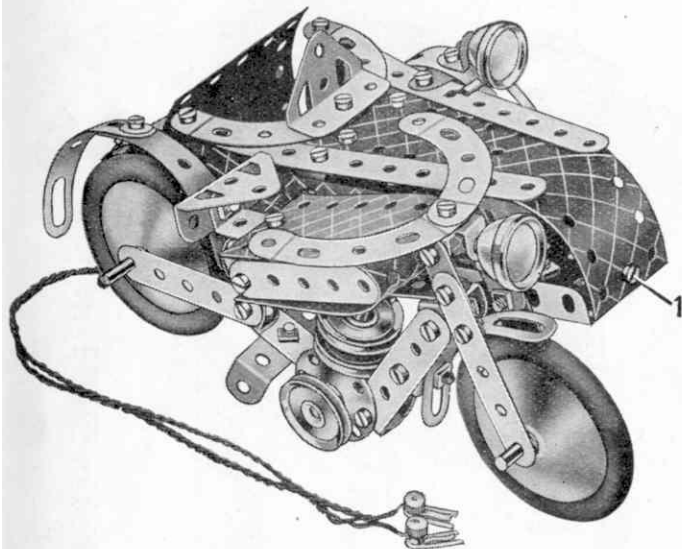


Fig. 4.19a

4.20 MOTOR CYCLE AND SIDECAR



The $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate that forms the front of the sidecar is bolted at 1 to a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip, which is fastened by Bolt 2 to the $4\frac{1}{2}''$ Flanged Sector Plate forming the bottom of the sidecar. The Bolts 3 pass through the Flexible Plates and also through a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip.

The engine cylinder consists of two 1" Pulleys mounted on a 2" Rod, one end of which is journaled in the Strip 4 that forms the top of the frame. The other end of the Rod is held between the two Bolts that fasten the $1\frac{1}{2}''$ Discs to the frame.

The model is fitted with two Spotlights taken from a Meccano Lighting Set. These are fastened by the Angle Brackets supplied with the Lighting Set, to the handlebars and sidecar mudguard. The battery for supplying current for the Spotlights can be concealed in the sidecar.

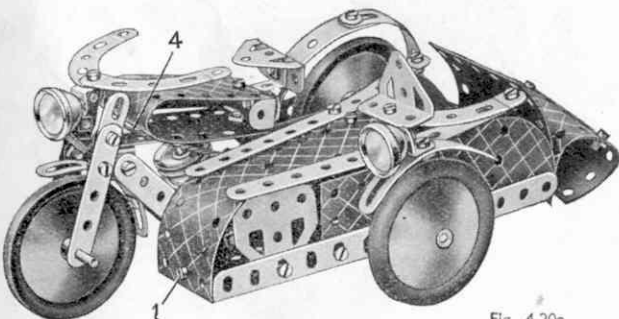


Fig. 4.20a

Parts required

5 of No. 2	1 of No. 54a
1 " " 3	4 " " 90a
8 " " 5	1 " " 111c
5 " " 10	1 " " 125
2 " " 11	2 " " 126
8 " " 12	2 " " 126a
1 " " 12c	3 " " 187
1 " " 16	2 " " 188
2 " " 17	2 " " 189
1 " " 18a	1 " " 190
3 " " 22	2 " " 199
1 " " 35	1 " " 200
51 " " 37	2 " " 214
2 " " 38	4 " " 215
1 " " 48	2 " " 217a
3 " " 48a	

Lighting Set
(Not included
in Outfit)

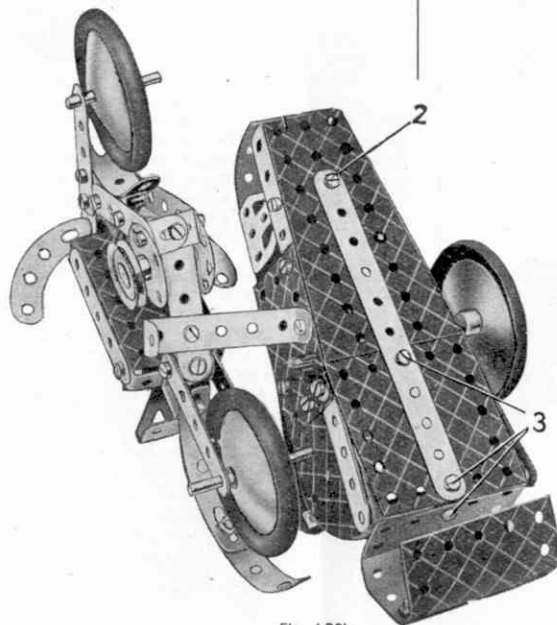
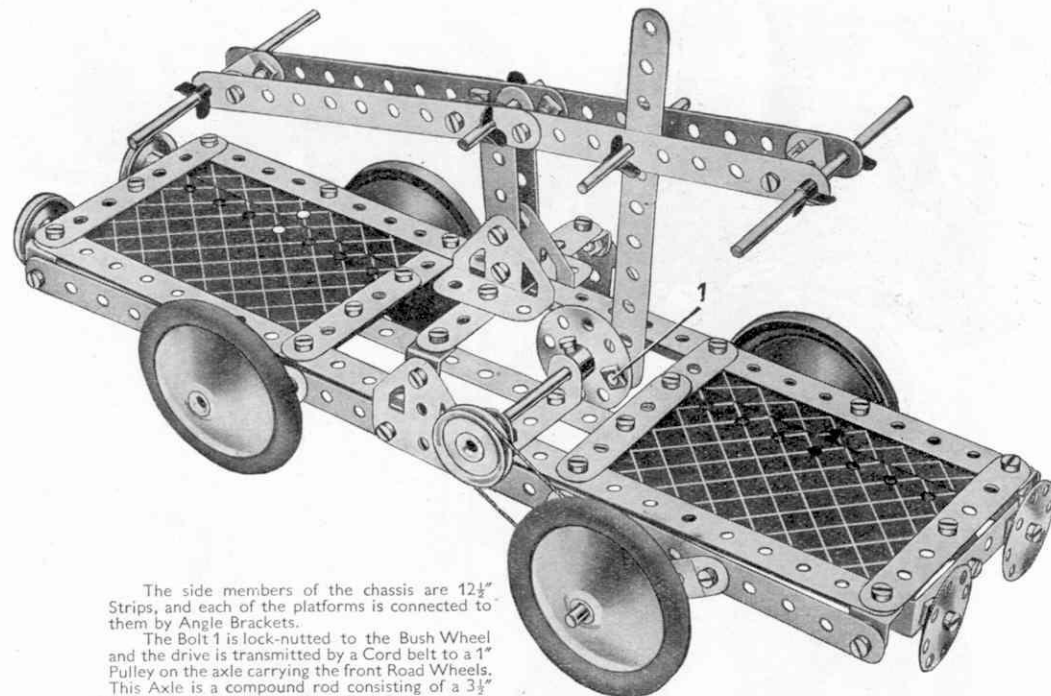


Fig. 4.20b

4.21 HAND TROLLEY CAR



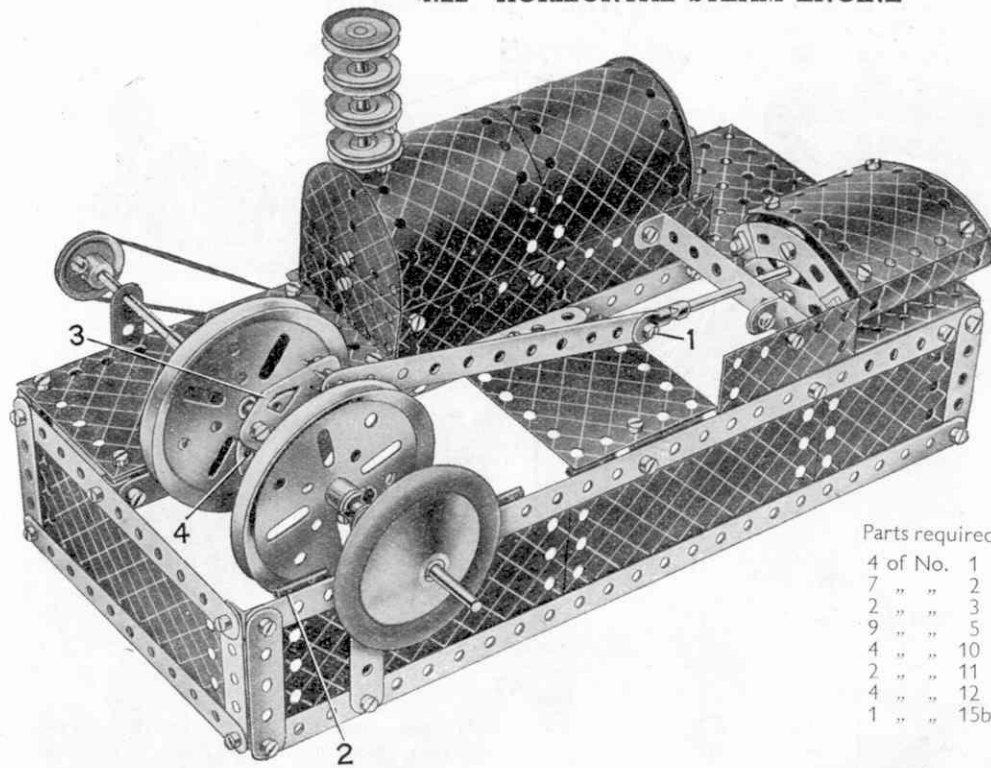
The side members of the chassis are $12\frac{1}{2}''$ Strips, and each of the platforms is connected to them by Angle Brackets.

The Bolt 1 is lock-nutted to the Bush Wheel and the drive is transmitted by a Cord belt to a 1" Pulley on the axle carrying the front Road Wheels. This Axle is a compound rod consisting of a $3\frac{1}{2}''$ Rod and a 2" Rod joined by a Rod Connector.

Parts required

4 of No. 1	2 of No. 18a	4 of No. 90a
6 " " 2	4 " " 22	4 " " 111c
2 " " 3	1 " " 24	2 " " 126
8 " " 5	8 " " 35	2 " " 126a
2 " " 11	54 " " 37	4 " " 187
8 " " 12	7 " " 37a	4 " " 190
1 " " 15b	2 " " 38	2 " " 191
3 " " 16	1 " " 48	1 " " 213
2 " " 17	2 " " 48a	2 " " 217a

4.22 HORIZONTAL STEAM ENGINE



The Bolt 1 is lock-nutted. The centre pin is withdrawn from a Hinged Flat Plate and the two halves used as flat plates at 2. The Flat Trunnion 3 is bolted to Bush Wheel 4 and forms one web of the crank. The Bush Wheel is fastened to a 2" Rod, which carries also a 3" Pulley, and a Rod Connector joins this Rod to a 3½" Rod that transmits the drive from the Magic Motor. The other web of the crank is made by bolting a 1½" Disc 5 to a Flat Trunnion 6, one of the bolts holding also a Reversed Angle Bracket 7. A Spring Clip 8 is fixed in position so that when the crankshaft is rotated the Rod on which the 3" Pulley and the Rod Wheel are fastened is rotated by the Reversed Angle Bracket 7. The cylinder is composed of two 1½" radius Curved Plates and two U-Section Curved Plates bolted together as shown, and the complete unit is fastened in position to the 5½" x 2½" Flanged Plate that forms the base.

The boiler consists of two 5½" x 2½" Flexible Plates bolted to 5½" x 1½" Flexible Plates, and its ends are closed by Semi-circular Plates and 2½" x 1½" Flexible Plates. The fire-box door is represented by a Trunnion. The chimney is a 4" Rod fitted with 1" Pulleys, and is held in place by a Cord Anchoring Spring. Fig. 4.22a shows the arrangement for driving the model with a Magic Motor.

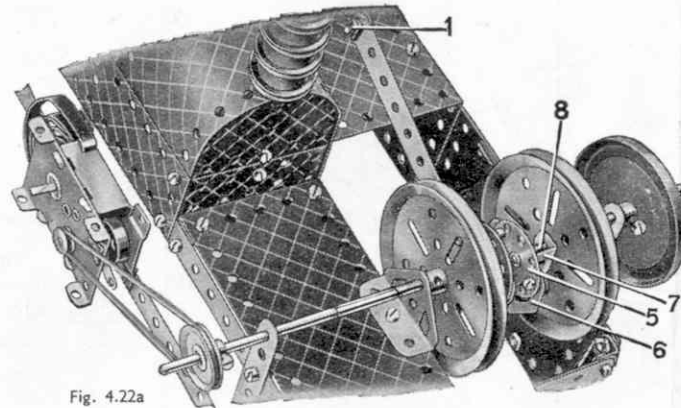


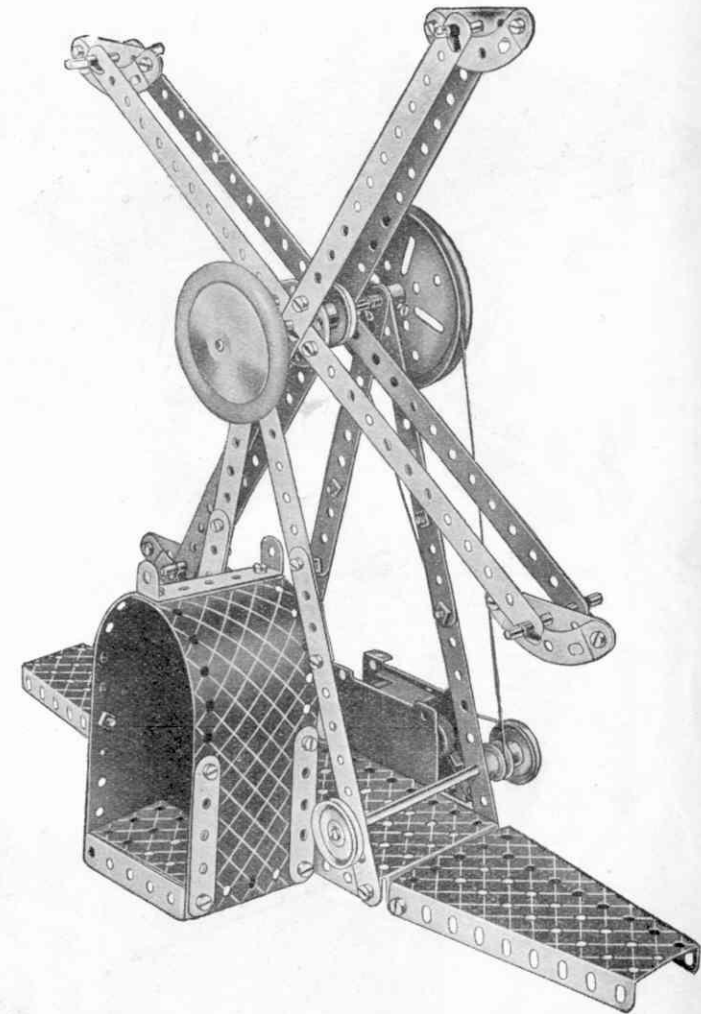
Fig. 4.22a

Parts required

4 of No.	1
7 "	2
2 "	3
9 "	5
4 "	10
2 "	11
4 "	12
1 "	15b

3 of No.	16
1 "	17
1 "	18b
2 "	19b
5 "	22
1 "	24
6 "	35
75 "	37
6 "	37a
3 "	38
6 "	48a
1 "	51
1 "	52
4 "	90a
6 "	111c
2 "	125
2 "	126
2 "	126a
1 "	176
1 "	187
2 "	188
2 "	189
4 "	190
2 "	191
2 "	192
1 "	198
2 "	199
2 "	200
1 "	212
1 "	213
2 "	214
1 "	217a
1 "	1 Magic Motor

4.23 FLYBOATS

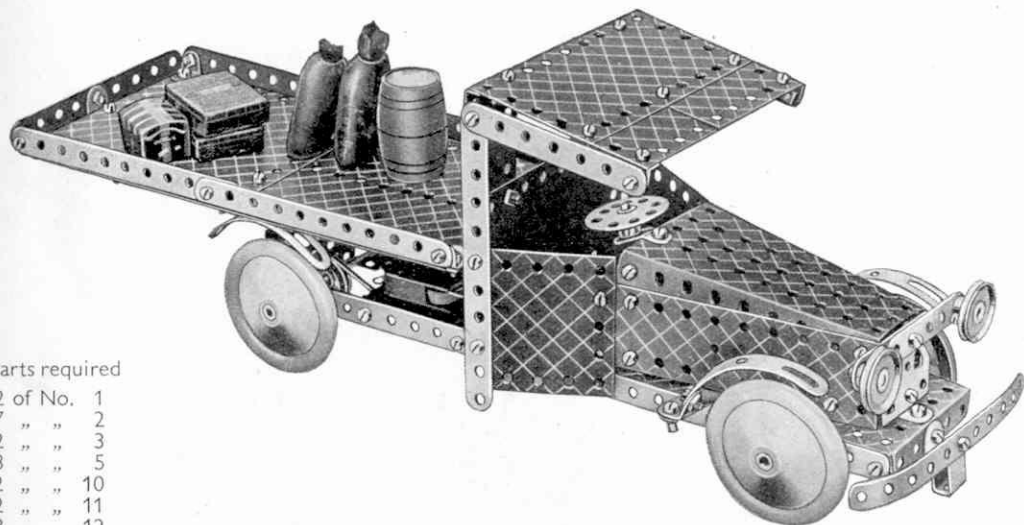


Parts required

4 of No.	1
8 "	2
8 "	5
2 "	15b
2 "	17
2 "	18a
1 "	19b
3 "	22
1 "	24
8 "	35
44 "	37
1 "	40
6 "	48a
1 "	51
1 "	52
2 "	54a
4 "	90a
1 "	176
1 "	187
2 "	192
1 "	1 Magic Motor

The Magic Motor is bolted to the flange of the 5½" x 2½" Flanged Plate, and the drive is taken from the pulley of the Motor to a 1" Pulley fastened on a Rod journaled in the 12½" Strips that support the main shaft. A ½" fast Pulley also is secured on this Rod, and drives through a belt of Cord a 3" Pulley on the main shaft. The arms that support the boats are bolted to a Bush Wheel fastened on the main shaft. Each of the boats consists of a 2½" Strip and a 2½" small radius Curved Strip bolted together.

4.24 MOTOR LORRY



Parts required

2 of No.	1
7 " "	2
2 " "	3
8 " "	5
2 " "	10
2 " "	11
8 " "	12
3 " "	12c
2 " "	15b
1 " "	16
3 " "	22
1 " "	24
5 " "	35
75 " "	37
2 " "	37a
5 " "	38
1 " "	44
1 " "	48
4 " "	48a
1 " "	52
2 " "	54a
4 " "	111c
2 " "	125
2 " "	126
1 " "	126a
4 " "	187
2 " "	188
2 " "	189
4 " "	190
2 " "	191
2 " "	192
1 " "	198
4 " "	215
1 Magic Motor	

The chassis of the model consists of two $12\frac{1}{2}$ " Strips bolted to a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate and secured at their free ends by a $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip. Both the front and rear axles are journaled directly in the chassis. The Magic Motor is attached by its flanges to one of the $12\frac{1}{2}$ " Strips, and the drive is taken through a Driving Band from the pulley of the Motor to a 1" fast Pulley fastened on the back axle of the lorry.

The platform is fixed to the end of the chassis by two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips, the ends of which can be seen in Fig. 4.24a and also to the back of the cab by a $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip. The front bumper consists of a $5\frac{1}{2}$ " Strip curved to shape and fastened by a Cranked Bent Strip to the $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate forming the front of the chassis. The head lamps, which are 1" Pulleys, are fixed in place by $\frac{3}{8}$ " Bolts pushed through the $2\frac{1}{2}$ " Strips into the bosses of the Pulleys and held by the setscrews.

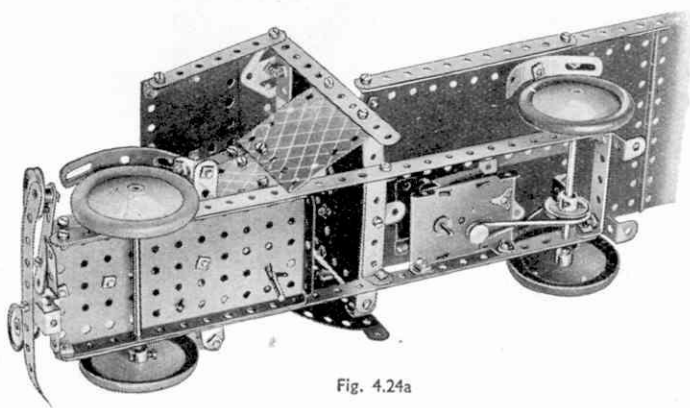
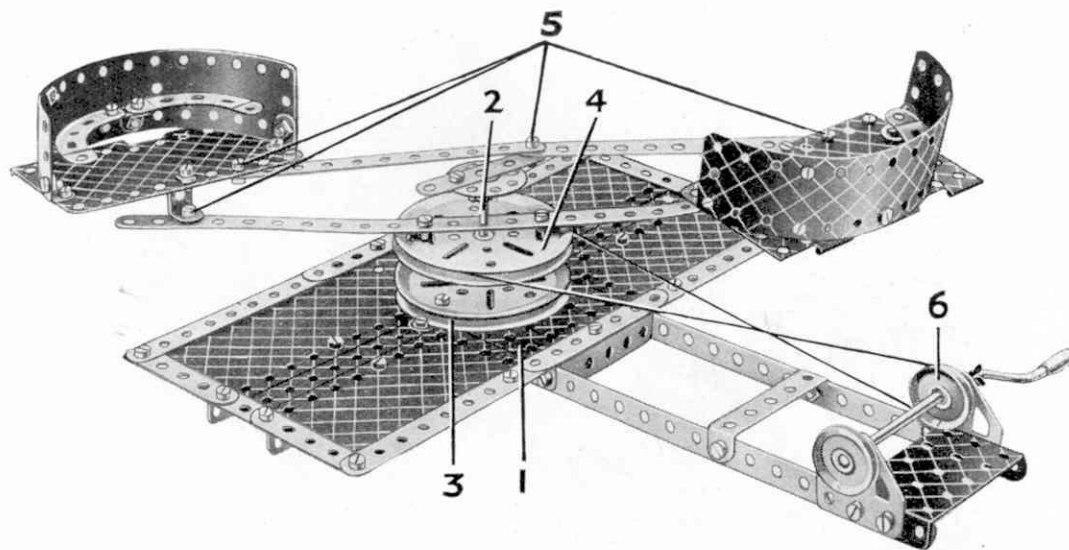


Fig. 4.24a

4.25 "WHIP" ROUNDABOUT



Parts required

3 of No.	1	52 of No.	37b
7 " "	2	8 " "	38
2 " "	3	1 " "	40
4 " "	5	1 " "	48a
4 " "	10	1 " "	51
2 " "	11	1 " "	52
6 " "	12	2 " "	54a
1 " "	17	4 " "	90a
2 " "	19b	6 " "	111c
1 " "	19g	2 " "	126a
2 " "	22	2 " "	188
1 " "	24	2 " "	189
4 " "	35	2 " "	191
65 " "	37a	2 " "	192

1 of No. 198

The base of the model is formed by a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate 1 extended on each side by a Flanged Sector Plate, a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " and a $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. The edges of the base are strengthened with Strips. Two $12\frac{1}{2}$ " Strips are bolted to the flanges of Plate 1 and their ends are connected by a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " 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 $12\frac{1}{2}$ " 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 $2\frac{1}{2}$ " Strip is secured on Rod 2 in the position shown, the end of the Strip being connected to the cars by $5\frac{1}{2}$ " 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.

MECCANO MOTORS FOR OPERATING MECCANO MODELS

If you want to obtain the fullest enjoyment from the Meccano hobby you should operate your models by means of one of the Meccano Motors described on this page. You push over the control lever of the clockwork or electric Motor and immediately your Crane,

Motor Car, Ship Coaler or Windmill commences to work in exactly the same manner as its prototype in real life.

Each Motor is specially designed for building into Meccano models.

MECCANO CLOCKWORK MOTORS

These are the finest clockwork motors obtainable for model driving. They have exceptional power and length of run and their gears are cut with such precision as to make them perfectly smooth and steady in operation.

Meccano Clockwork Motors are specially suitable for small models built with a limited range of parts. They are extremely simple to operate and have the advantage of being self contained.

THE MECCANO MAGIC MOTOR

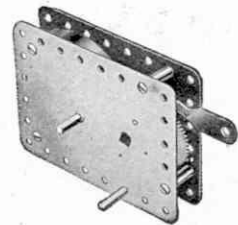
The Meccano *Magic* Motor is well designed and strongly constructed, and is fitted with a powerful spring giving a long and steady run. It is non-reversing. Each Motor is supplied with a separate $\frac{1}{2}$ " fast Pulley and three pairs of Driving Bands of different lengths.

A *Magic* Motor is the best power unit for driving small models built from Outfits Nos. 0 to 5. The larger Clockwork Motors, No. 1, No. 1a and No. 2, and the various Electric Motors, are more suitable for driving the heavier models built from Outfits 5 to 10.



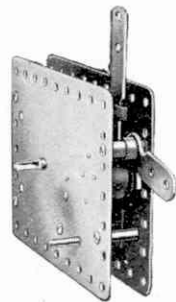
No. 1 Clockwork Motor

This strongly built and efficient Motor is fitted with a powerful spring that gives a long and steady run, and is exceptionally smooth in action. The Motor is provided with a conveniently-placed brake lever by means of which it can be started and stopped. The Motor is of the non-reversing type.



No. 1a Clockwork Motor

This Motor is more powerful than the No. 1 Motor and is fitted with reversing motion. It has brake and reverse levers.

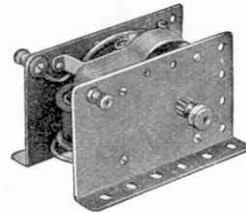


No. 2 Clockwork Motor

This is a Motor of super quality. Brake and reverse levers enable it to be started, stopped or reversed, as required.

MECCANO ELECTRIC MOTORS

The Meccano Electric Motors shown here have been designed specially to provide smooth-running power units for the operation of Meccano models.

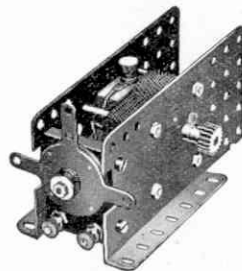


No. E1 Electric Motor (6 volt)

This Motor (non-reversing) will give excellent service. It is operated through a Meccano T6A, T6 or T6M Transformer from alternating current mains, or from a 6-volt accumulator.

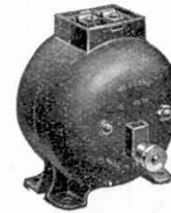
No. E120 Electric Motor (20volt)

The E120 Electric Motor is operated through a Meccano T20A, T20, or T20M Transformer from alternating current supply mains. Non-reversing.



No. E6 Electric Motor (6 volt)

This fine Motor is fitted with reversing motion and provided with stopping and starting controls. It can be operated through a Meccano T6A, T6 or T6M Transformer from the mains (alternating current) or from a 6-volt accumulator.

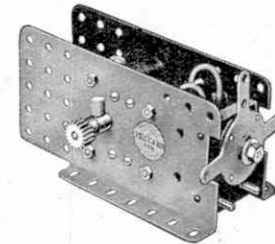


No. EO6 Electric Motor (6 volt)

This strongly-built non-reversing Motor of the all-enclosed type will drive all the models built from Outfits up to No. 5, and also some of the lighter models built from Outfits 6 to 8. It can be operated through a Meccano T6A, T6 or T6M Transformer from the mains, providing the supply is alternating current, or from a 6-volt accumulator.

No. EO20 Electric Motor (20 volt)

The EO20 is a powerful non-reversing Motor of similar construction to the EO6 Motor illustrated above. It is designed to work from alternating current mains supply through a Meccano T20A, T20 or T20M Transformer.



No. E20b Electric Motor (20 volt)

This 20-volt Electric Motor is an extremely efficient power unit fitted with reversing motion and provided with stopping and starting controls. It is operated through a Meccano T20A, T20 or T20M Transformer from alternating current supply mains.

MECCANO TRANSFORMERS

There are six Transformers in the series, as described below, all of which are available for the following A.C. supplies :—100/110 volts, 50 cycles ; 200/225 volts, 50 cycles ; 225/250 volts, 50 cycles. Any of the Transformers can be specially wound for supplies other than these at a small extra charge. When ordering a Transformer the voltage and frequency of the supply must always be stated.



No. T20A Transformer



No. T6 Transformer

FOR 20-volt ELECTRIC MOTORS

No. T20A TRANSFORMER (Output 35 VA at 20/3½ volts). Has two separate circuits at 20 volts, one of which is controlled by a 5-stud speed regulator and a third circuit at 3½ volts for lighting up to 14 lamps.

No. T20 TRANSFORMER (Output 20 VA at 20-volts). Has one 20-volt circuit controlled by a 5-stud speed regulator.

No. T20M TRANSFORMER (Output 20 VA at 20-volts). This Transformer is provided with one 20-volt circuit but is not fitted with speed regulator.

FOR 6-volt ELECTRIC MOTORS

No. T6A TRANSFORMER (Output 40 VA at 9/3½ volts). Has two separate circuits at 9-volts, one of which is controlled by a 5-stud speed regulator and a third circuit at 3½ volts for lighting up to 18 lamps.

No. T6 TRANSFORMER (Output 25 VA at 9 volts). Has one 9-volt circuit and is fitted with a 5-stud speed regulator.

No. T6M TRANSFORMER (Output 25 VA at 9 volts). Has one 9-volt circuit, but is not fitted with a speed regulator.

Resistance Controllers

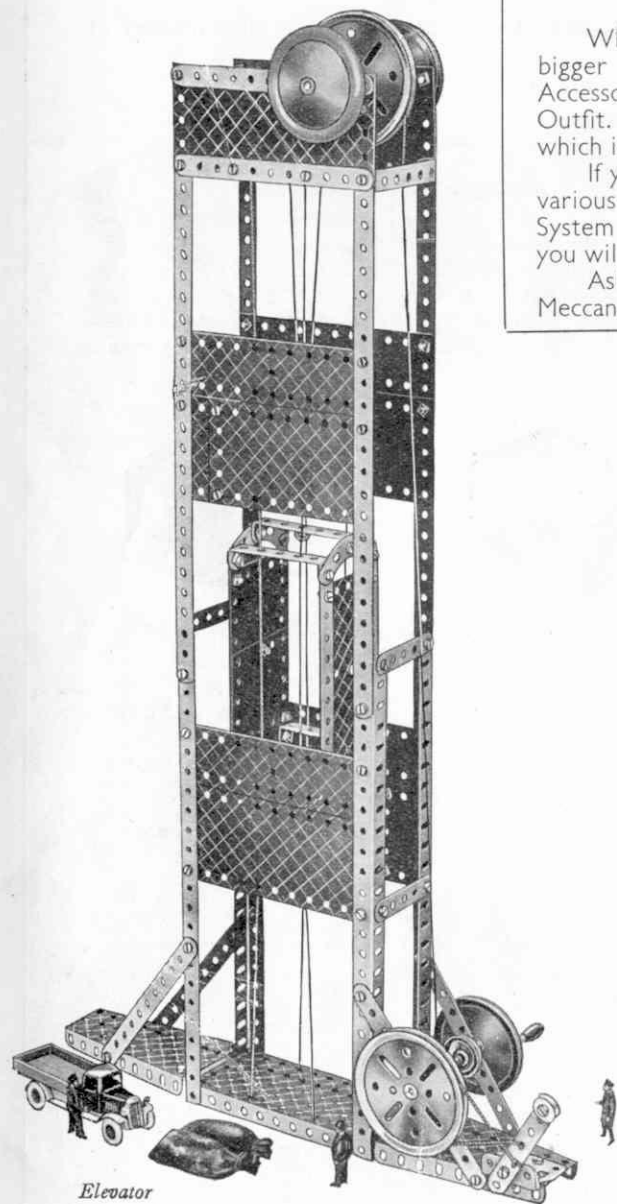
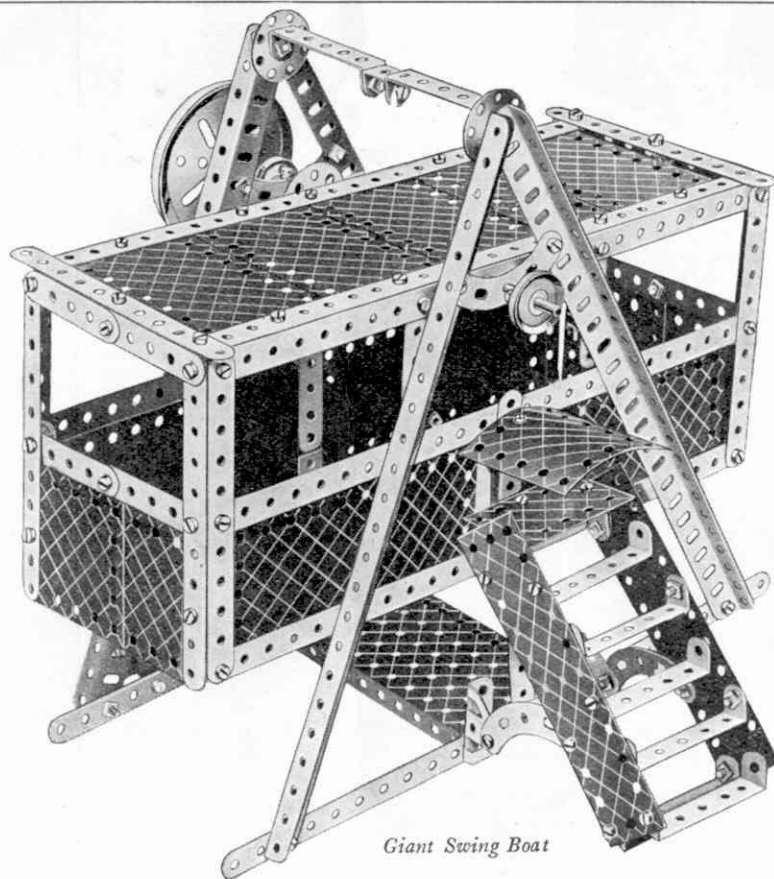
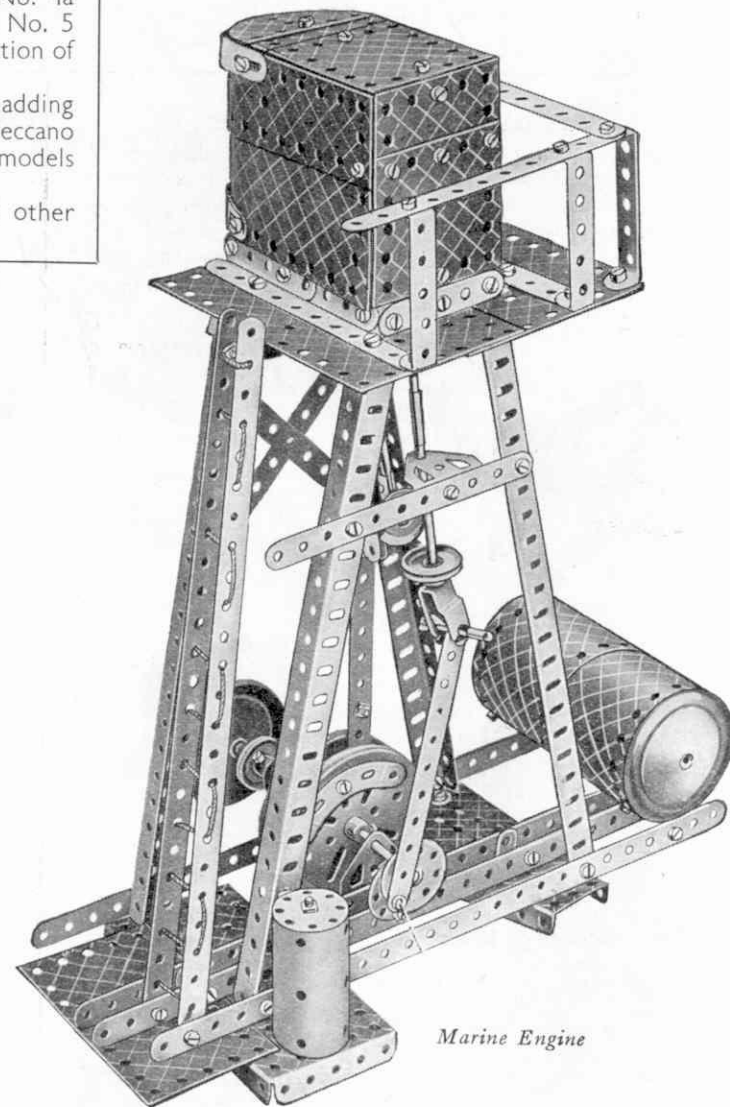
By means of these Controllers the speed of Meccano 6-volt and 20-volt Motors can be regulated exactly as desired.

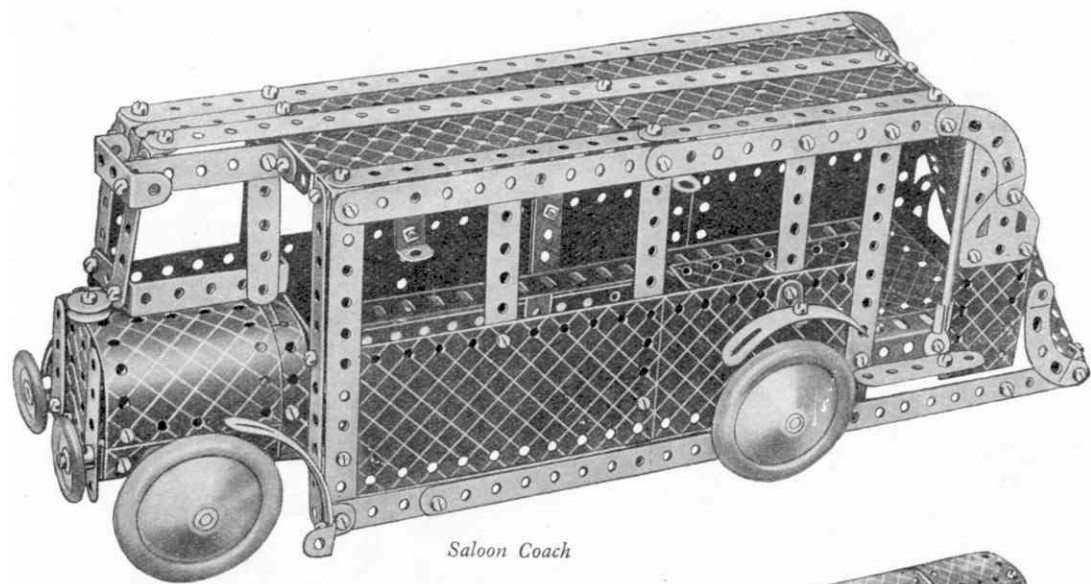
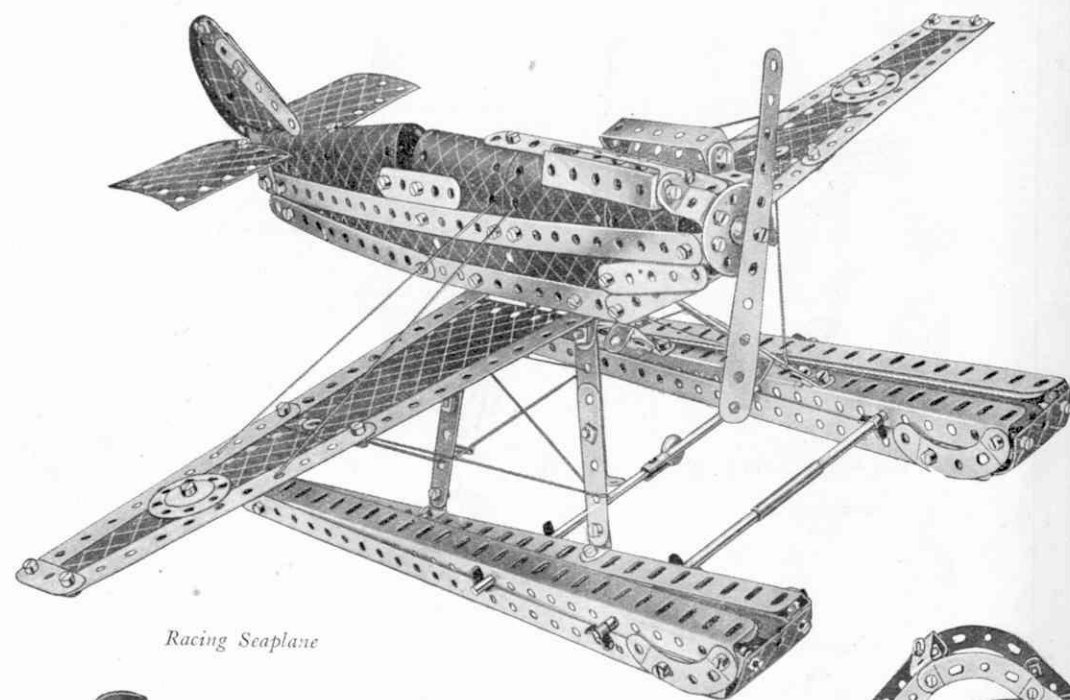
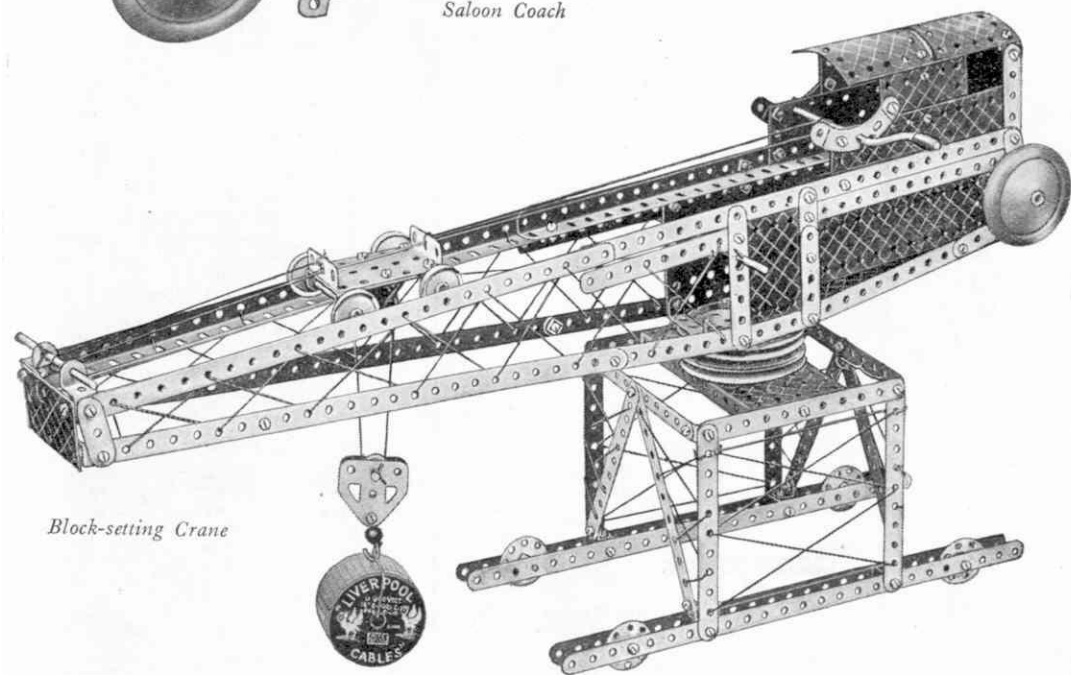
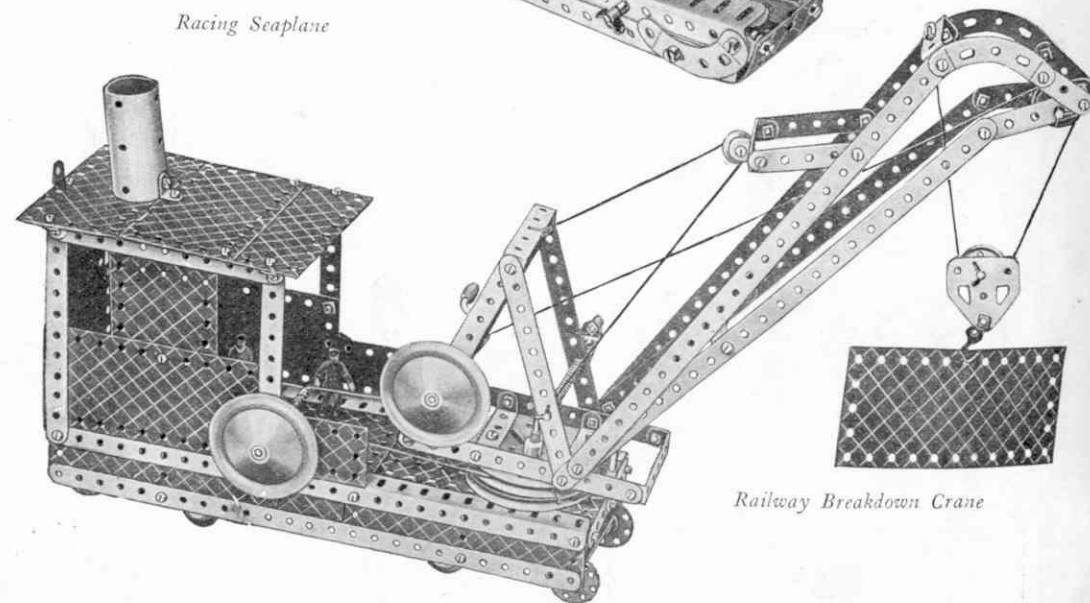
BUILD BIGGER AND BETTER MODELS

When you have built all the models shown in this Manual you will be keen to build bigger and more elaborate models. Your next step is to purchase a Meccano No. 4a Accessory Outfit, containing all the parts required to convert your No. 4 into a No. 5 Outfit. You will then be able to build the full range of No. 5 Outfit Models, a selection of which is illustrated on this page and opposite.

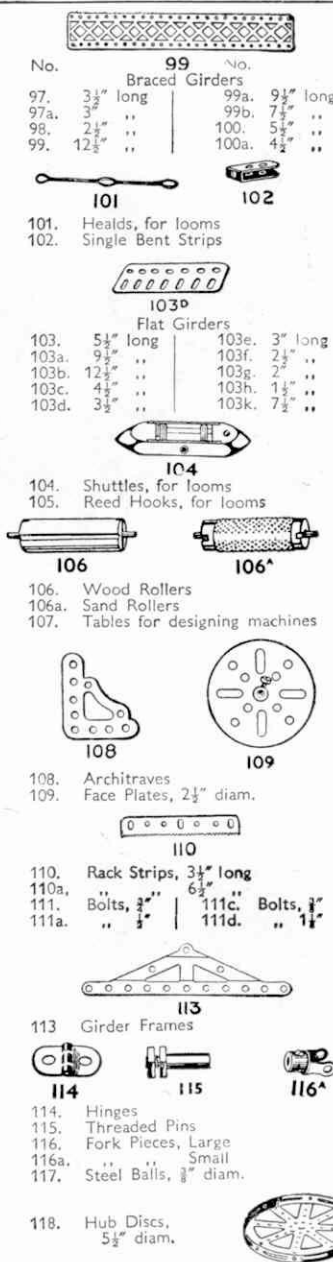
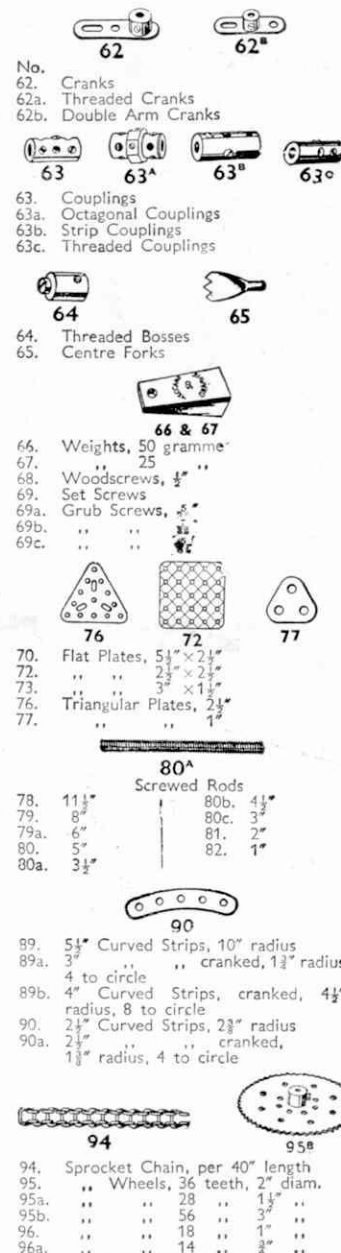
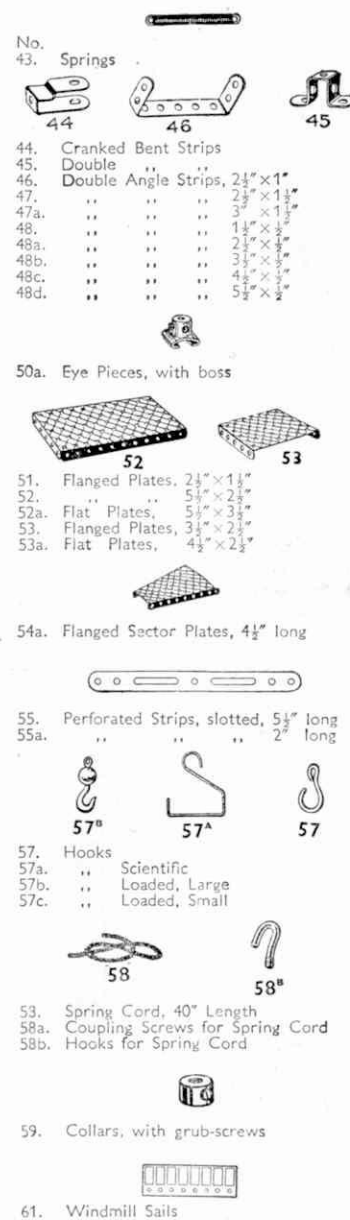
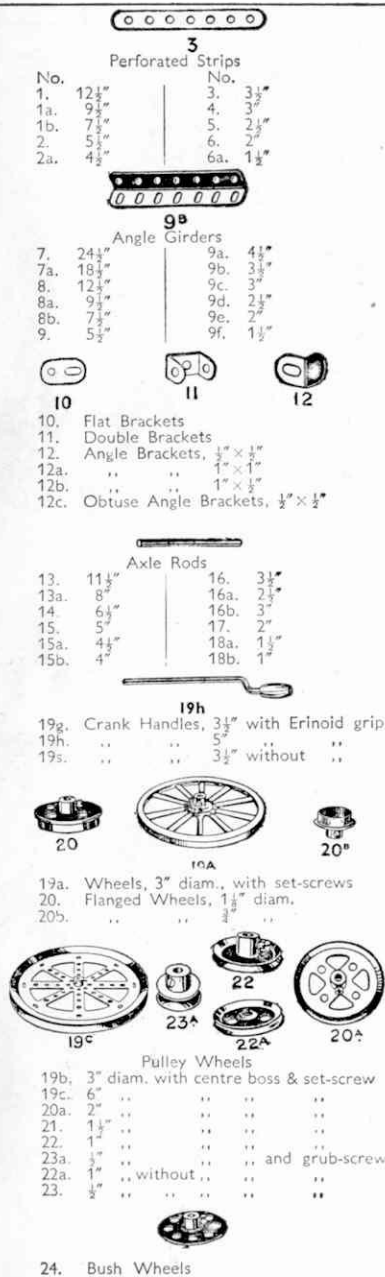
If you prefer to do so, you can build up and develop your Outfit quite easily by adding various parts to it from time to time. The model-building possibilities of the Meccano System are limitless, and the more Meccano parts you have the bigger and better the models you will be able to build.

Ask your dealer to post to you regularly the latest Meccano parts lists and other Meccano literature.

*Elevator**Giant Swing Boat**Marine Engine*

*Saloon Coach**Racing Seaplane**Block-setting Crane**Railway Breakdown Crane*

MECCANO PARTS



MECCANO PARTS

- No. 120. Buffers 120a. Spring Buffers
120b. Compression Springs



121. Train Couplings
122. Miniature Loaded Sacks



123. Cone Pulleys
124. Reversed Angle Brackets, 1"
125. " " " "



126. Trunnions 126a. Flat Trunnions



127. Simple Bell Cranks
128. Boss Bell Cranks



129. Rack Segments, 3" diam.



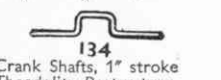
130. Eccentrics, Triple Throw



131. Dredger Buckets
132. Flywheels, 2 1/2" diam.



133. Corner Brackets, 1 1/2"
133a. " " " "



134. Crank Shafts, 1" stroke
135. Theodolite Protractors



136. Handrail Supports
136a. Handrail Couplings

137. Wheel Flanges



- No. 138. Ships' Funnels
138a-z. " " Raked



139. Flanged Brackets (right)
139a. " " (left)



140. Universal Couplings
141. Wire Lines (for clock weights)



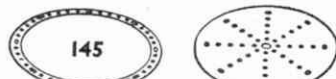
142. Rubber Rings (to fit 3" diam. rims)
142a. Motor Tyres (to fit 2" diam. rims)
142b. " " " 3" " "
142c. " " " 1" " "
142d. " " " 1 1/2" " "



143. Circular Girders, 5 1/2" diam.



144. Dog Clutches



145. Circular Strips, 7 1/2" diam. overall
146. " " Plates, 6" " "
146a. " " " 4" " "



- 147 & 148. Pawls, with Pivot Bolt and Nuts
147a. Pawls
147b. Pivot Bolts with 2 Nuts
147c. Pawls without boss
148. Ratchet Wheels



149. Collecting Shoes for Electric Locos
150. Crane Grabs



- No. 151. Pulley Blocks, Single Sheave
152. " " Two " "
153. " " Three " "



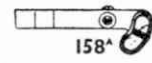
- 154a. Corner Angle Brackets, 1/2" (right-hand)
154b. Corner Angle Brackets, 1/2" (left-hand)
155. Rubber Rings (for 1" Pulleys) Black
155a. " " " " White



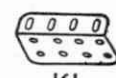
156. Pointers (with boss), 2 1/2" overall



157. Fans, 2" diam.
158a. Signal Arms, Home
158b. " " Distant



160. Channel Bearings, 1 1/2" x 1" x 1/2"
161. Girder Brackets, 2" x 1" x 1/2"



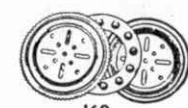
162. Boilers, complete, with ends
162a. " " without ends
163. Sleeve Pieces
164. Chimney Adaptors



165. Swivel Bearings
166. End " "



167. Geared Roller Bearings
167a. Roller Races, geared, 192 teeth
167b. Ring Frames for Rollers
167c. Pinions for Roller Bearings (16 teeth)



- No. 168. Ball Bearings, 4" diam.
168a. " Races, flanged discs
168b. " " toothed
168c. " Casings, complete with balls



169. Digger Buckets



170. Eccentrics, 1/2" throw
171. Socket Couplings



172. Pendulum Connections
173. Rail Adaptors



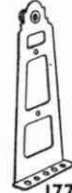
174. Grease Cups



175. Flexible Coupling Units



176. Anchoring Springs for Cord



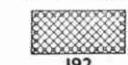
177. Shafting Standards, Large
178. " " Small
179. Rod Sockets
180. Toothed Gear Rings, 3 1/2" diam.
181. Bobbins
182. Insulating Bushes
182a. Insulating Washers



183. Lamp Holders
184a. 2 1/2-volt Lamps
184b. 3 1/2 " " "
184c. 6-volt Lamps
184d. 10 " " "
184e. 20 " " "



- No. 185. Steering Wheels, 1 1/2" diam.
186. Driving Bands, 2 1/2" (Light)
186a. " " 6" " "
186b. " " 10" " "
186c. " " 10" (Heavy)
186d. " " 15" " "
186e. " " 20" " "
187. Road Wheels



192. Flexible Plates.

188. 2 1/2" x 1 1/2"
189. 5 1/2" x 1 1/2"
190. 2 1/2" x 2 1/2"
190a. 3 1/2" x 2 1/2"



191. 4 1/2" x 2 1/2"
192. 5 1/2" x 2 1/2"
Strip Plates.
196. 9 1/2" x 2 1/2"
197. 12 1/2" x 2 1/2"



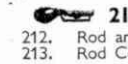
198. Hinged Flat Plates, 4 1/2" x 2 1/2"
199. Curved Plates, U-Section 2 1/2" x 2 1/2" x 1/8"
200. " " 2 1/2" x 2 1/2", 1 1/8" radius



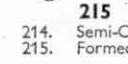
201. Lamps with Flex (3 1/2 volts)
202. Angle Brackets (for Headlamps)
203. Headlamps
203a. Headlamp Rims
203b. " Bodies
204. " Nuts
205. " Glasses
206. Lampshades
207. Lamp Bases
207a. Lamp with Standard and Flex
208. Battery Tags and Studs
208a. Washers for Battery Studs
210. Nuts for Battery Studs



- 211a. Helical Gear 1/2" { Can only be
211b. " " 1 1/2" used together



212. Rod and Strip Connectors
213. Rod Connectors



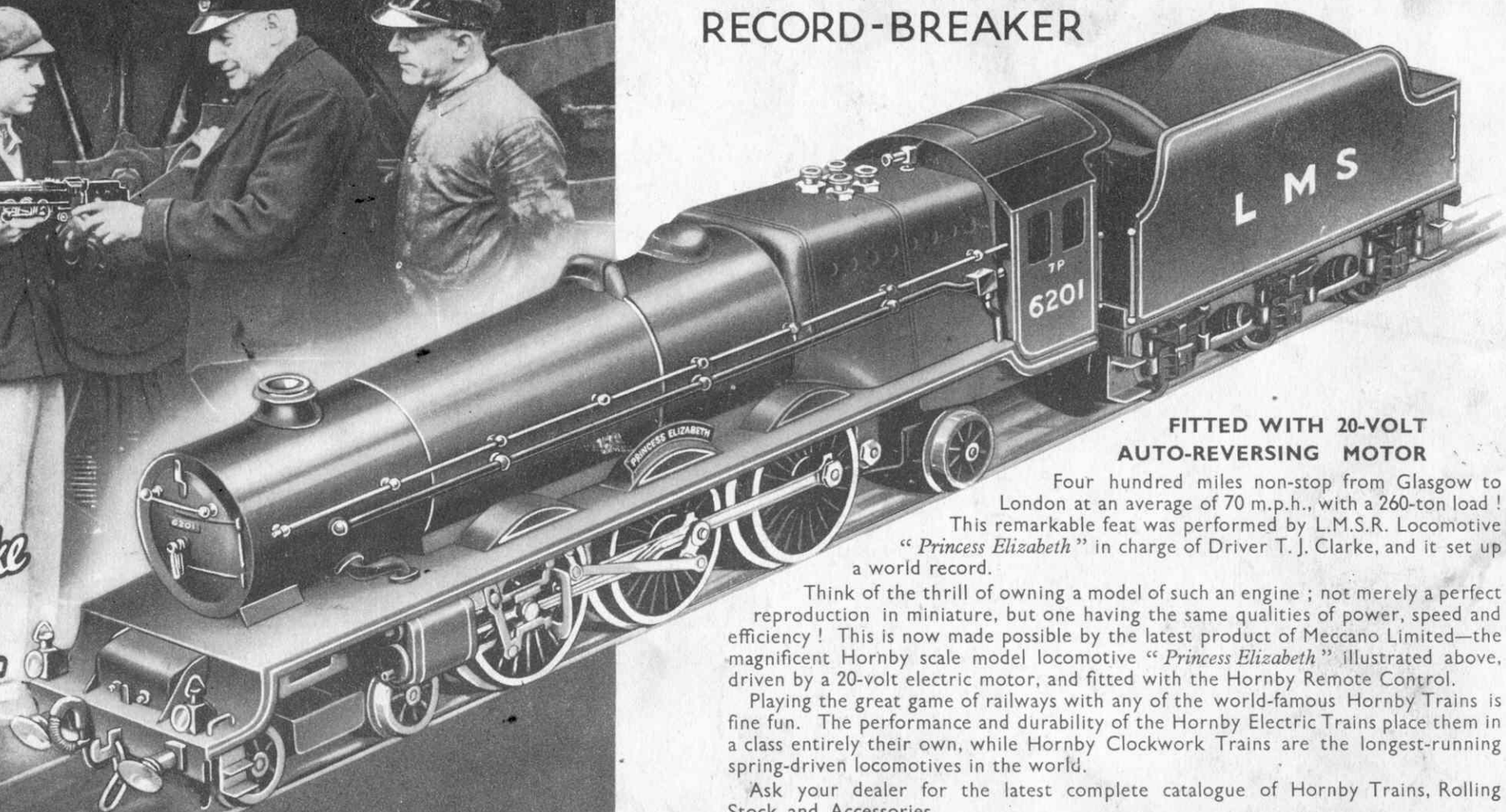
214. Semi-Circular Plates 2 1/2"
215. Formed Slotted Strips 3"



216. Cylinders, 2 1/2"
217A. Discs, 1 1/2" | 217B. Discs 3/4"
217a. Wheel Discs
219. " "

PRINCESS ELIZABETH

HORNBY SCALE MODEL OF "Princess Elizabeth"— MIGHTY L.M.S.R. WORLD RECORD-BREAKER



FITTED WITH 20-VOLT AUTO-REVERSING MOTOR

Four hundred miles non-stop from Glasgow to London at an average of 70 m.p.h., with a 260-ton load!

This remarkable feat was performed by L.M.S.R. Locomotive "Princess Elizabeth" in charge of Driver T. J. Clarke, and it set up a world record.

Think of the thrill of owning a model of such an engine; not merely a perfect reproduction in miniature, but one having the same qualities of power, speed and efficiency! This is now made possible by the latest product of Meccano Limited—the magnificent Hornby scale model locomotive "Princess Elizabeth" illustrated above, driven by a 20-volt electric motor, and fitted with the Hornby Remote Control.

Playing the great game of railways with any of the world-famous Hornby Trains is fine fun. The performance and durability of the Hornby Electric Trains place them in a class entirely their own, while Hornby Clockwork Trains are the longest-running spring-driven locomotives in the world.

Ask your dealer for the latest complete catalogue of Hornby Trains, Rolling Stock and Accessories.

MANUFACTURED BY MECCANO LTD., LIVERPOOL.

Driver Clarke
says
"It's fine!"

HORNBY TRAINS