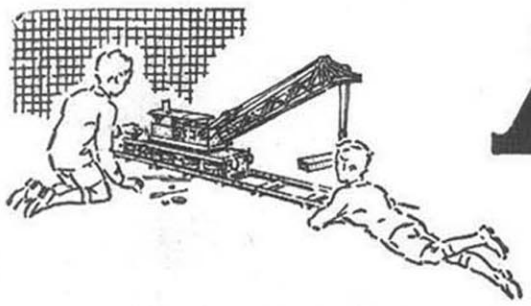
MECCANO

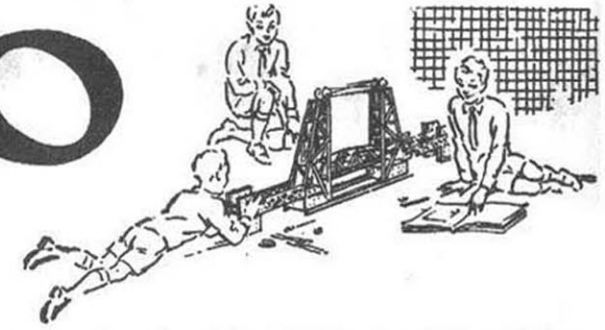
Prices
Great Britain 6d
Australia 1/-
New Zealand 10d
South Africa 1/-
Canada 20c

INSTRUCTIONS
FOR
No. 4 OUTFIT

No.
40.4



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, Aeroplanes, 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 11 different Outfits, ranging from No. O to No. 10. Each Outfit from No. 1 upwards can be converted into the one next 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 begin, you can build it up by degrees until you have 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.

Special Note.—The Meccano Plates (Flanged, Flat, Curved, etc.) are shown in the Manuals with diagonal white lines. In the new Meccano Outfits these parts are plain.

Several of the illustrations in this Manual show how miniature figures and various small articles can be introduced to add realism to the models. These are not included in the Outfit. Many of them are Meccano Dinky Toys that can be bought separately from your Meccano dealer.

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 and Shipping News. Other pages deal with Stamp Collecting, and Books of interest to boys ; and a feature of outstanding popularity is the section devoted to short articles from readers.

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 newsagent.

THE MECCANO GUILD

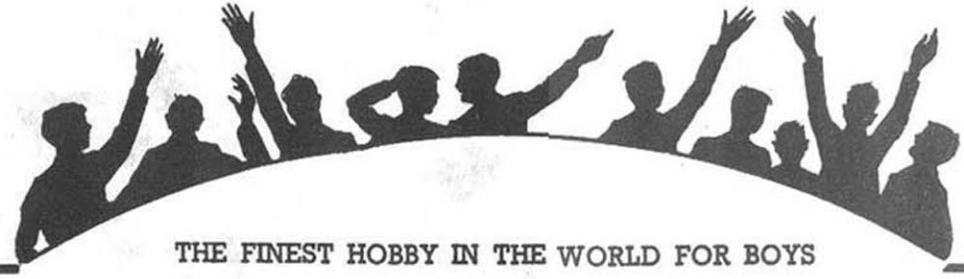
Every owner of a Meccano Outfit should join the Meccano Guild. This is a world-wide organisation, started at the request of Meccano boys. Its primary object is to bring boys together and to make them feel that they are all members of a great brotherhood, each trying to help others to get the very best 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. Each has 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.

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 hundreds of interesting letters from boys in all parts of the world, and each of these is answered personally by one of our staff of experienced experts.

Whatever your problem may be, write to us about it. Do not hesitate. We shall be delighted to help you in any way possible.



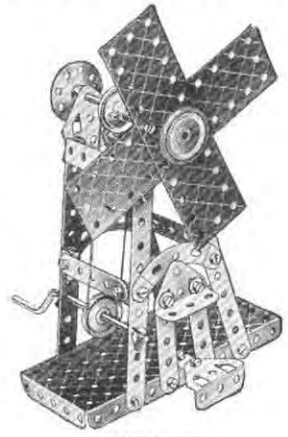
THE FINEST HOBBY IN THE WORLD FOR BOYS

HOW TO COMMENCE THE FUN

THE MOST FASCINATING OF ALL HOBBIES

Meccano model-building is the most fascinating of all hobbies, because it never becomes dull. There is always something new to be done. First of all there is the fun of building a new model, and watching it take shape as part after part is added. Then, when the model is complete, comes the thrill of setting it to work just like the real structure it represents, by means of a Meccano Motor. This wonderful process can be repeated indefinitely, for there is no end to the number of Meccano models that can be built. Another point is that models built with Meccano are real engineering structures in miniature, and the keen model-builder has wonderful opportunities for learning the working of machines and mechanisms of all kinds. So he acquires practical engineering knowledge without special study.

It is so simple to build Meccano models that operations can be started as soon as the first Outfit is opened. Different boys build in different ways, but in the end they all reach the same splendid results. The following hints are given with the object of showing boys who are just commencing the wonderful Meccano hobby how to obtain the greatest possible fun.



Windmill

THE IMPORTANCE OF "LOCK-NUTTING"

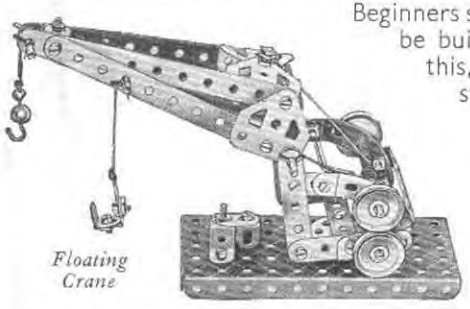
In building models in which Rods revolve in the holes of other parts it is important to make sure that such holes are exactly in line with one another. This can be done very easily by pushing through the holes a long Rod before the Bolts holding the various parts are tightened up.

In some models it is necessary to join certain parts together, so that, although they cannot come apart, they are free to pivot or move in relation to one another. To do this the parts are bolted together as usual, but the Nut is not screwed up tightly, so that the parts are not gripped. Then, to prevent the Nut from unscrewing, a second Nut is screwed up tightly against it, the first, meanwhile, being held with a spanner. This method of using a second Nut is known as lock-nutting, and it is employed in a large number of Meccano models.

During the construction of a model it is best to screw up the Nuts with the fingers, followed by just a light turn with the screwdriver, leaving the final tightening with spanner and screwdriver until all the parts are connected up.

A FEW USEFUL HINTS

It will be noticed that with each model shown in this Manual of Instructions is given a list of the parts required to build it. For the first few models it is a good plan to lay out on the table all the parts required for the one it is proposed to build, and put the remainder of the Outfit on one side. To help you to pick out the correct parts for your model a complete list of Meccano parts is given at the back of this Manual, and all the principal parts are illustrated. In the list the parts are all numbered, and in most cases their measurements are given. There is no need, however, to measure the parts to find out which is which, as the size is easily found from the number of holes. All Meccano holes are spaced $\frac{1}{2}$" apart, so that by counting two holes to the inch the size of a part can be found at once. For instance, Part No. 2 is listed as a $5\frac{1}{2}$" Perforated Strip, so you look in your Outfit for a Strip with eleven holes. Similarly No. 192 is a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, so you look for a Flexible Plate eleven holes in length and five holes in width. By the time a few models have been built the names of the parts will have become familiar.



Floating Crane

Beginners sometimes wonder which section of a model should be built first. There cannot be any definite rule for this, as it depends on the design of the model. In stationary models the base usually should be built first. In most of the smaller models a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate forms an important part of the structure, and often the best plan is to start building by bolting parts to this Plate. For other models a good general rule is that the sections that form supports for a number of other parts should be built first.

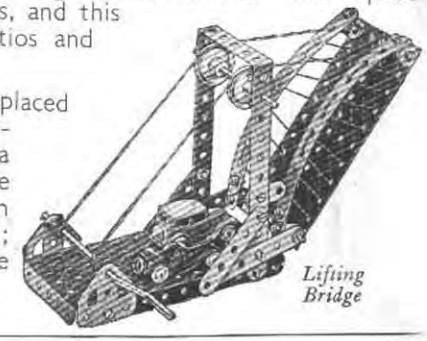
MOTORS AND GEARING

Models can be operated by means of either Meccano Clockwork or Electric Motors.

The Clockwork Motors have the advantage of being self-contained and extremely simple. If only a small amount of power is needed, the model may be driven direct from the driving spindle of the Motor or through a belt running over two pulleys of the same size, giving what is described as a 1:1 (one-to-one) ratio. Greater power can be obtained by a reduction in the speed of the drive, which can be produced in a simple manner by connecting a small pulley on the Motor to a larger pulley by means of a belt. Thus if a 1" Pulley is made to drive a 3" Pulley, a reduction ratio of approximately 1:3 is obtained. This means that the driven shaft will take about three times the load that the driving shaft would handle, but will rotate at only one-third of the speed. Rubber bands are better than Cord for driving belts for most purposes.

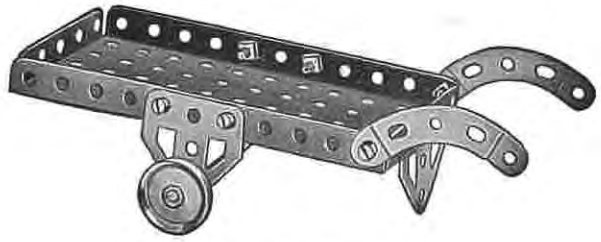
The Electric Motors have the advantage of giving long continuous runs. Their speed is much higher than that of the Clockwork Motors, and this makes it possible to employ higher reduction ratios and thus obtain greater power.

With the larger Outfits, belt drive can be replaced with advantage by gearing. To operate a slow-moving model demanding great power, such as a traction engine, gears that will provide a considerable reduction must be used. For example, a Worm meshed with a $\frac{1}{2}$" Pinion will give a 1:19 reduction; while a Worm meshed with a 57-teeth Gear will give a 1:57 reduction.



Lifting Bridge

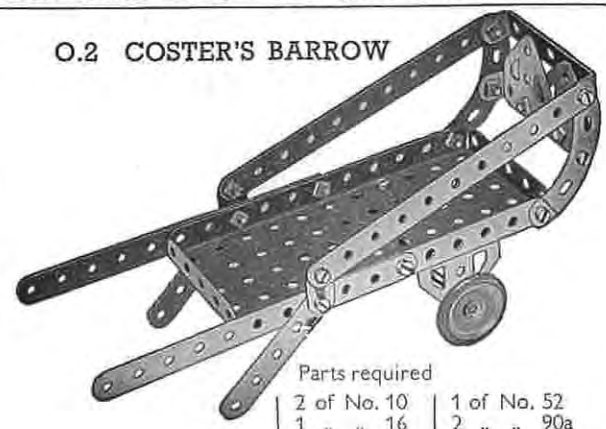
O.1 HAND CART



Parts required

1 of No. 16	1 of No. 52	2 of No. 126a
2 „ „ 22	2 „ „ 90a	2 „ „ 155a
8 „ „ 37	1 „ „ 126	

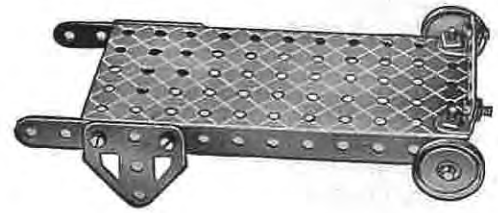
O.2 COSTER'S BARROW



Parts required

	2 of No. 10	1 of No. 52
	1 „ „ 16	2 „ „ 90a
	2 „ „ 22	2 „ „ 126
4 of No. 2	16 „ „ 37	2 „ „ 126a
2 „ „ 5	2 „ „ 48a	2 „ „ 155a

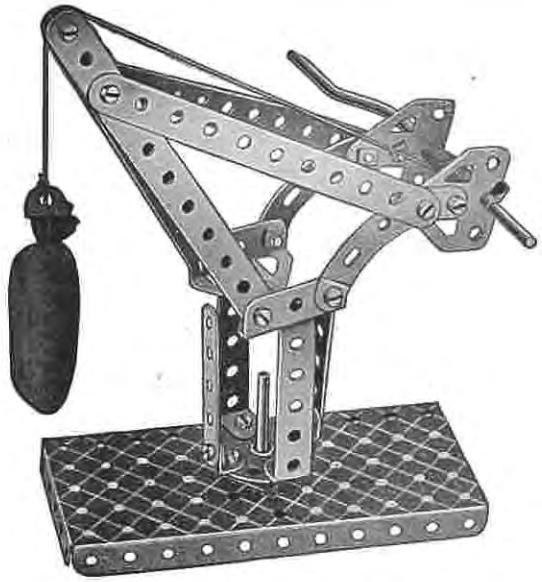
O.3 FLAT TRUCK



Parts required

2 of No. 5	2 of No. 22	1 of No. 90a
2 „ „ 12	8 „ „ 37	2 „ „ 126a
1 „ „ 16	1 „ „ 52	2 „ „ 155a

O.4 DOCKSIDE CRANE



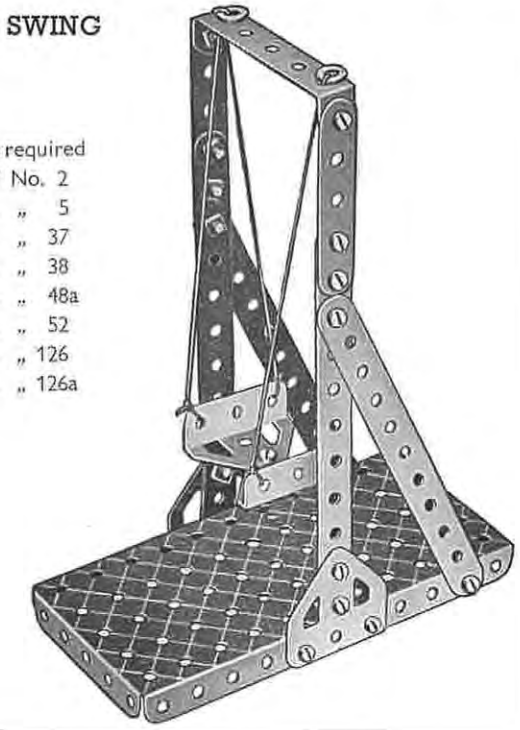
Parts required

4 of No.	2
2 „ „	5
3 „ „	12
1 „ „	17
1 „ „	19s
1 „ „	22
1 „ „	24
2 „ „	35
18 „ „	37
2 „ „	37a
2 „ „	38
2 „ „	48a
1 „ „	52
2 „ „	90a
2 „ „	111c
2 „ „	126
2 „ „	126a

O.5 SWING

Parts required

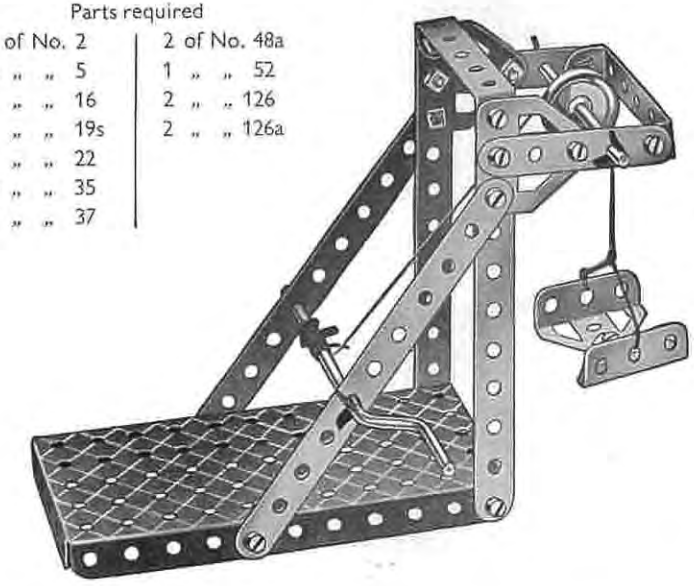
4 of No.	2
2 „ „	5
18 „ „	37
2 „ „	38
1 „ „	48a
1 „ „	52
2 „ „	126
2 „ „	126a



O.6 ELEVATOR

Parts required

4 of No.	2
2 „ „	5
1 „ „	16
1 „ „	19s
1 „ „	22
4 „ „	35
15 „ „	37
2 of No.	48a
1 „ „	52
2 „ „	126
2 „ „	126a

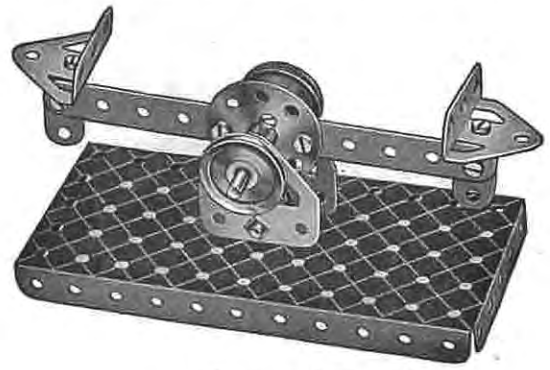


O.7 GARDEN SEAT

Parts required

4	of No.	2
2	„ „	5
10	„ „	37
2	„ „	48a
1	„ „	52

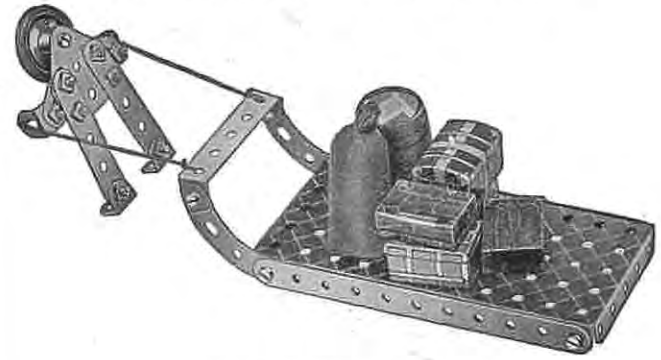
O.8 COUNTER SCALES



Parts required

1	of No. 2	
2	„ „ 10	
4	„ „ 12	
1	„ „ 17	
2	of No. 22	
1	„ „ 24	
9	„ „ 37	
2	„ „ 38	
1	of No. 52	
2	„ „ 126	
2	„ „ 126a	

O.9 ESKIMO BOY AND SLEDGE



Parts required

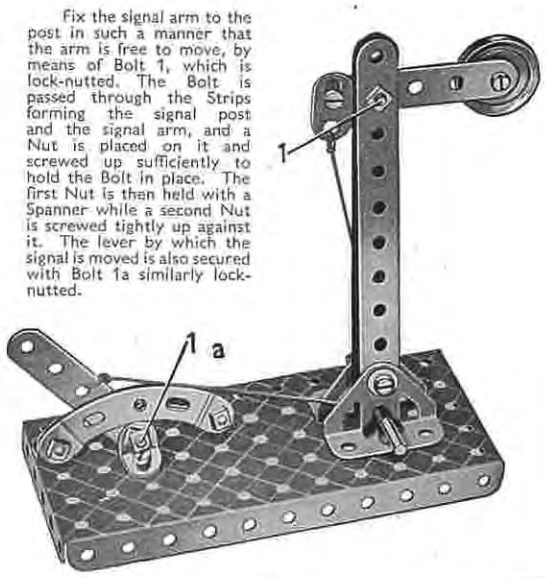
2	of No. 2	
2	„ „ 5	
2	„ „ 10	
4	„ „ 12	
1	of No. 22	
14	„ „ 37	
1	„ „ 48a	
1	„ „ 52	
2	of No. 90a	
1	„ „ 111c	
1	„ „ 126a	
1	„ „ 155a	

O.10 SIGNAL

Parts required

2	of No. 2	
2	„ „ 5	
1	„ „ 10	
3	„ „ 12	
1	„ „ 17	
1	„ „ 22	
2	„ „ 35	
11	„ „ 37	
3	„ „ 37a	
2	„ „ 38	
1	„ „ 52	
2	„ „ 90a	
2	„ „ 111c	
2	„ „ 126	

Fix the signal arm to the post in such a manner that the arm is free to move, by means of Bolt 1, which is lock-nutted. The Bolt is passed through the Strips forming the signal post and the signal arm, and a Nut is placed on it and screwed up sufficiently to hold the Bolt in place. The first Nut is then held with a Spanner while a second Nut is screwed tightly up against it. The lever by which the signal is moved is also secured with Bolt 1a similarly lock-nutted.

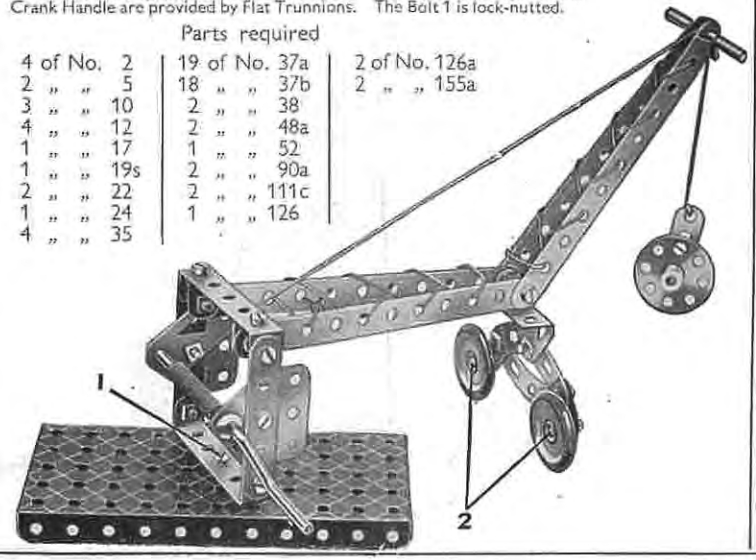


O.11 RADIAL CRANE

The wheeled bogie that carries the boom and jib is formed from two Curved Strips and two Flat Brackets. The ½" Bolts 2 pass through the Flat Brackets and are gripped in the bosses of the 1" Pulleys. Bearings for the Crank Handle are provided by Flat Trunnions. The Bolt 1 is lock-nutted.

Parts required

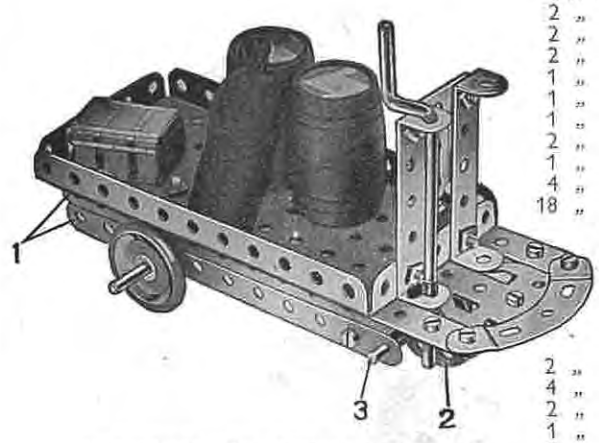
4	of No. 2	
2	„ „ 5	
3	„ „ 10	
4	„ „ 12	
1	„ „ 17	
1	„ „ 19s	
2	„ „ 22	
1	„ „ 24	
4	„ „ 35	
19	of No. 37a	
18	„ „ 37b	
2	„ „ 38	
2	„ „ 48a	
1	„ „ 52	
2	„ „ 90a	
2	„ „ 111c	
1	„ „ 126	
2	of No. 126a	
2	„ „ 155a	



O.12 ELECTRIC TRUCK

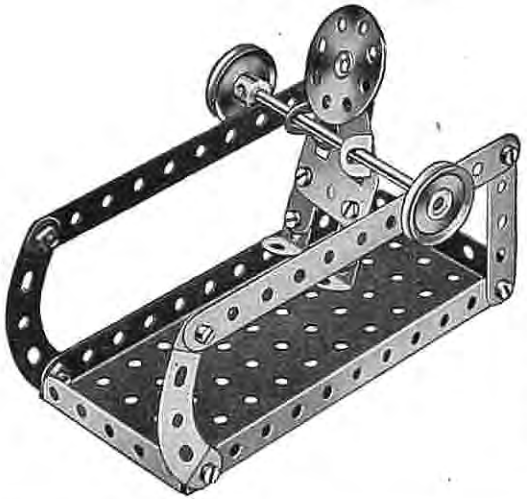
Parts required

4	of No. 2	
2	„ „ 5	
2	„ „ 10	
2	„ „ 12	
1	„ „ 16	
1	„ „ 17	
1	„ „ 19s	
2	„ „ 22	
1	„ „ 24	
4	„ „ 35	
18	„ „ 37	
2	„ „ 37a	
4	„ „ 38	
2	„ „ 48a	
1	„ „ 52	
2	„ „ 90a	
2	„ „ 111c	
2	„ „ 126	
2	„ „ 126a	
2	„ „ 155a	



The two 5½" Strips 1 are fastened to the Flanged Plate by two Trunnions secured to the Plate on the underneath side. A Bush Wheel 2 is fixed on the Axle Rod 3, which passes through the end holes of the 5½" Strips that form the sides of the truck frame.

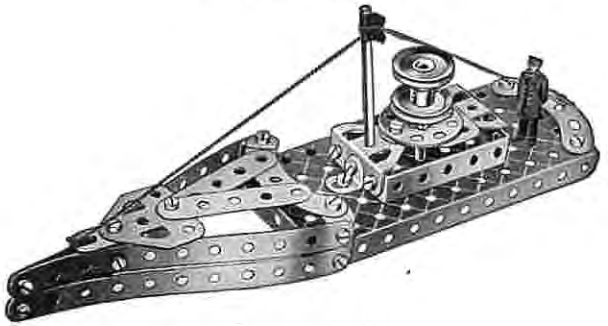
O.13 ACROBAT



Parts required

2	of No.	2
2	„ „	5
3	„ „	10
4	„ „	12
1	„ „	16
2	„ „	22
1	„ „	24
15	„ „	37
1	„ „	52
2	„ „	90a
1	„ „	111c
1	„ „	126a

O.14 BATTLESHIP



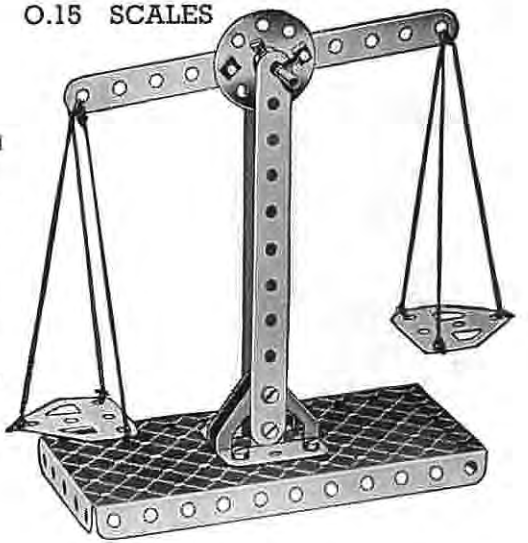
Parts required

4	of No.	2
2	„ „	5
3	„ „	10
4	„ „	12
1	„ „	16
1	„ „	17
2	of No.	22
1	„ „	24
3	„ „	35
18	„ „	37
1	„ „	37a
2	„ „	48a
1	of No.	52
2	„ „	90a
1	„ „	111c
2	„ „	126
2	„ „	126a

O.15 SCALES

Parts required

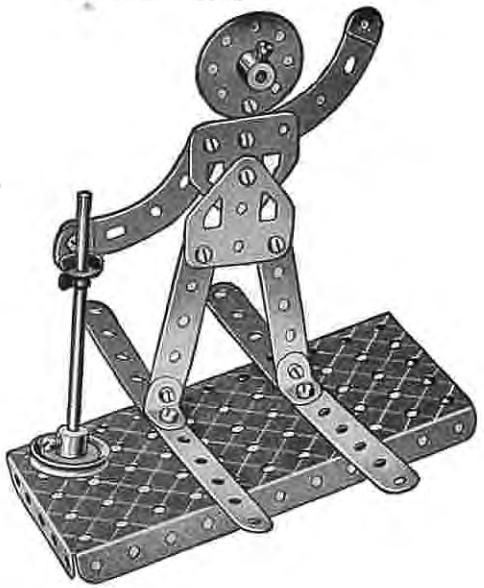
3	of No.	2
1	„ „	17
1	„ „	24
2	„ „	35
10	„ „	37
1	„ „	52
2	„ „	126
2	„ „	126a



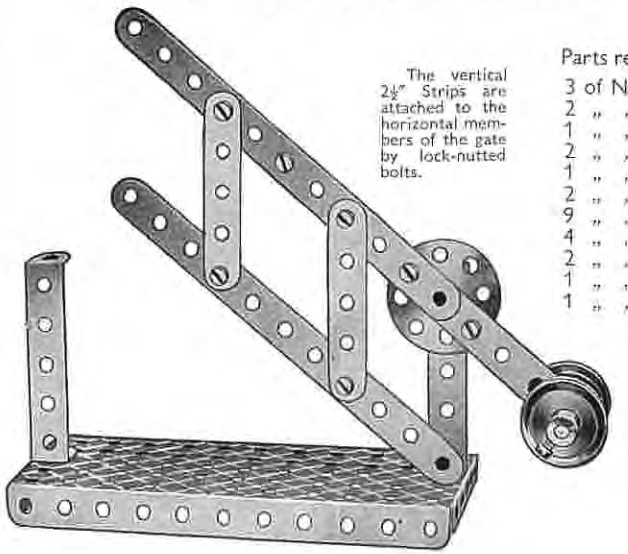
O.16 SKIER

Parts required

2	of No.	2
2	„ „	5
1	„ „	10
3	„ „	12
1	„ „	16
1	„ „	22
1	„ „	24
2	„ „	35
11	„ „	37
1	„ „	52
2	„ „	90a
2	„ „	126a



O.17 LEVEL CROSSING BARRIER

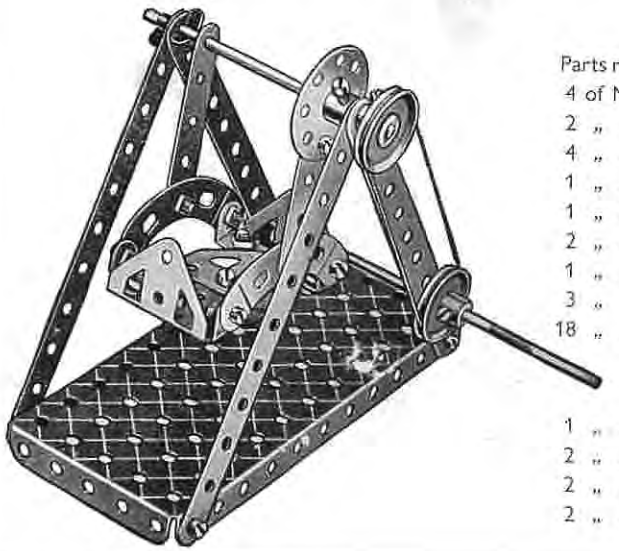


The vertical 2½" Strips are attached to the horizontal members of the gate by lock-nutted bolts.

Parts required

3	of No.	2
2	„ „	5
1	„ „	17
2	„ „	22
1	„ „	24
2	„ „	35
9	„ „	37
4	„ „	37a
2	„ „	48a
1	„ „	52
1	„ „	111c

O.18 SWING BOAT

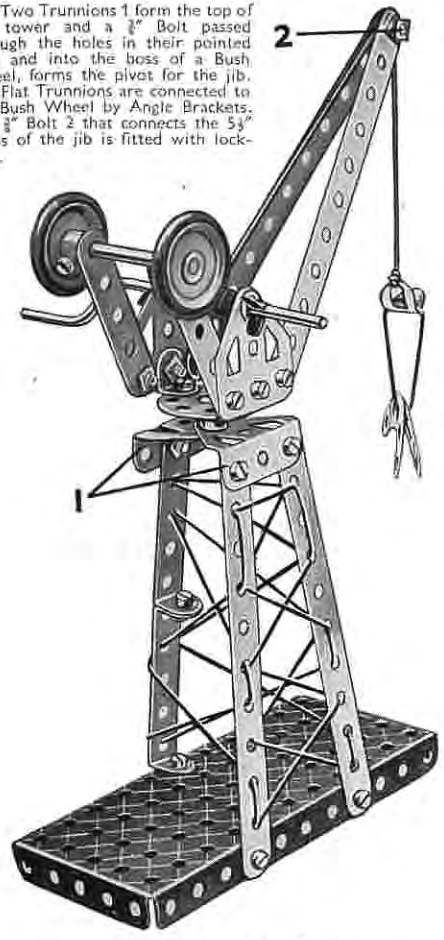


Parts required

4	of No.	2
2	„ „	5
4	„ „	12
1	„ „	16
1	„ „	19s
2	„ „	22
1	„ „	24
3	„ „	35
18	„ „	37
1	„ „	52
2	„ „	90a
2	„ „	126
2	„ „	126a

O.19 DOCKSIDE CRANE

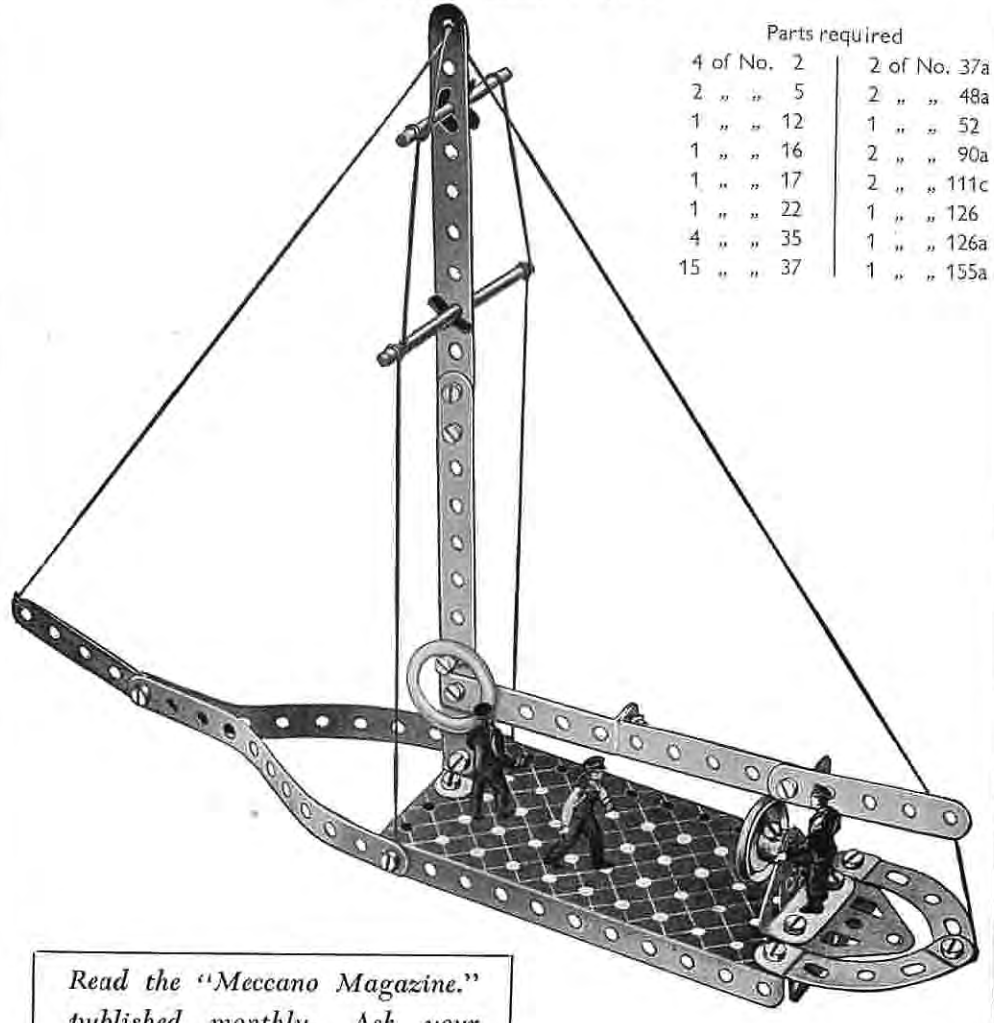
Two Trunnions 1 form the top of the tower and a ⅜" Bolt passed through the holes in their pointed ends and into the boss of a Bush Wheel, forms the pivot for the jib. The Flat Trunnions are connected to the Bush Wheel by Angle Brackets. The ⅜" Bolt 2 that connects the 5½" strips of the jib is fitted with lock-nuts.



Parts required

4 of No.	2	1 of No.	24	1 of No.	52
2 „	5	2 „	35	2 „	90a
3 „	12	17 „	37a	2 „	111c
1 „	17	15 „	37b	2 „	126
1 „	19s	2 „	38	**2** „	**126a**
2 „	22	2 „	48a	**2** „	**155a**

O.20 SAILING BOAT



Parts required

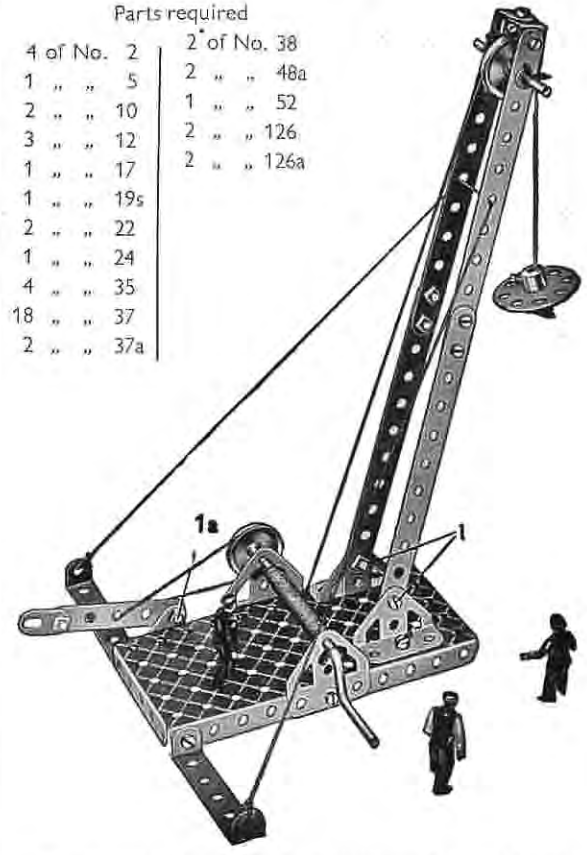
4 of No.	2	2 of No.	37a
2 „	5	2 „	48a
1 „	12	1 „	52
1 „	16	2 „	90a
1 „	17	2 „	111c
1 „	22	1 „	126
4 „	35	1 „	126a
15 „	37	1 „	155a

Read the "Meccano Magazine." published monthly. Ask your dealer for full particulars.

O.21 DERRICK CRANE

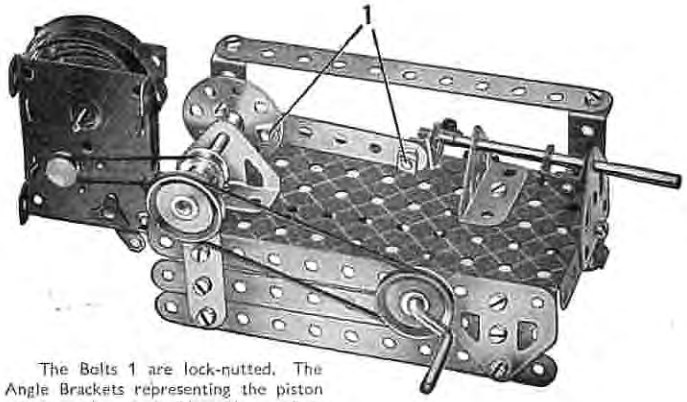
Parts required

4 of No.	2	2 of No.	38
1 „	5	2 „	48a
2 „	10	1 „	52
3 „	12	2 „	126
1 „	17	2 „	126a
1 „	19s		
2 „	22		
1 „	24		
4 „	35		
18 „	37		
2 „	37a		



The construction of the model is commenced by bolting the Trunnions and Flat Trunnions that support the jib and Crank Handle respectively, to the 5½"×2½" Flanged Plate that forms the base of the model. The jib is then assembled and fastened to the Trunnions by means of the lock-nutted Bolts 1. The brake lever is a 2½" Strip extended by a Flat Bracket, and is fastened to a second Flat Bracket bolted to the Flanged Plate by means of a Bolt 1a the nut of which is left sufficiently loose to allow the Strip to move. A length of Cord is fastened to the lever and then passed round the 1" Pulley on the Crank Handle.

O.22 STATIONARY STEAM ENGINE



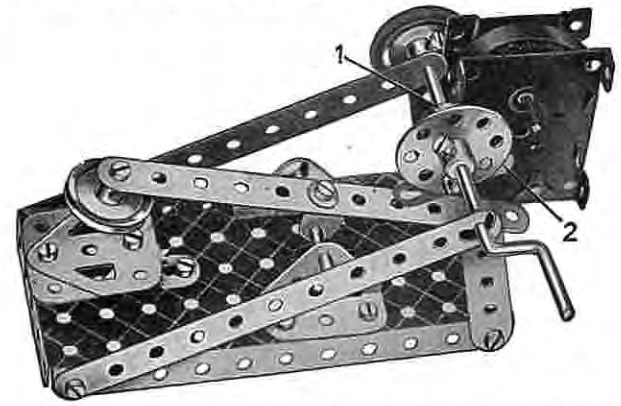
The Bolts 1 are lock-nutted. The Angle Brackets representing the piston are clamped to the Rod by a Nut and Bolt fastened in their elongated holes.

Parts required
4 of No. 2
2 „ „ 5
3 „ „ 12
1 „ „ 16
1 „ „ 17
1 „ „ 19s
2 „ „ 22
1 „ „ 24
3 „ „ 35
18 „ „ 37
2 „ „ 37a
1 „ „ 38
2 „ „ 48a
1 „ „ 52
2 of No. 126
2 „ „ 126a
Magic Motor

THE MECCANO *MAGIC* MOTOR

The greatest thrill in Meccano model-building is experienced when a model is set to work by means of a Meccano *Magic* Motor. The illustrations on this page show how the *Magic* Motor can be fitted without any difficulty to No. O Outfit models of various types. Fit the model you have just built with one of these wonderful Motors, and enjoy the fun of watching it work just like the real thing!

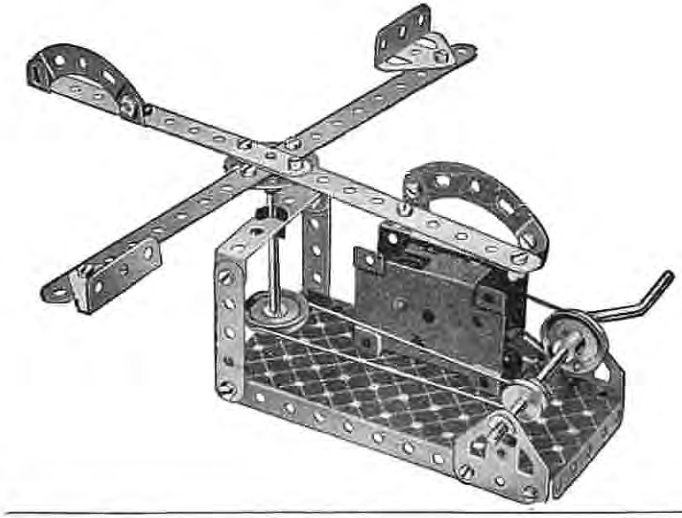
O.23 MECHANICAL HAMMER



The ½" fast Pulley 1 is driven from the pulley 2 on the *Magic* Motor by the Driving Band supplied with the Motor.

Parts required
3 of No. 2
2 „ „ 5
1 „ „ 10
4 of No. 12
1 „ „ 17
1 „ „ 19s
2 „ „ 22
1 „ „ 24
3 „ „ 35
15 „ „ 37
1 „ „ 38
1 „ „ 52
1 „ „ 111c
2 „ „ 126
2 „ „ 126a
1 „ „ 155a
Magic Motor

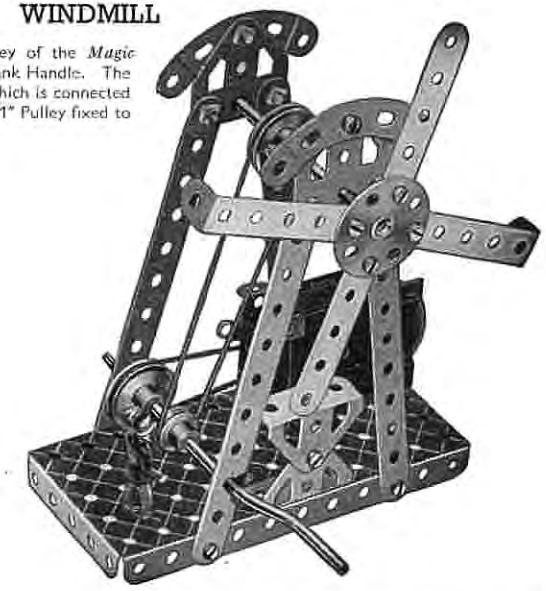
O.24 MERRY-GO-ROUND



Parts required
4 of No. 2
2 „ „ 5
4 „ „ 12
1 „ „ 16
1 „ „ 19s
2 „ „ 22
1 „ „ 24
4 „ „ 35
18 „ „ 37
2 „ „ 37a
2 „ „ 38
1 „ „ 48a
1 „ „ 52
2 „ „ 90a
2 of No. 111c
2 „ „ 126
2 „ „ 126a
Magic Motor

O.25 WINDMILL

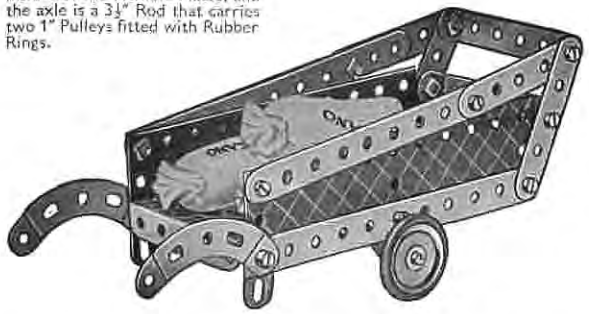
A Driving Band connects the pulley of the *Magic* Motor to a 1" Pulley fastened on the Crank Handle. The Crank Handle carries also a ½" Pulley, which is connected by a second Driving Band with a further 1" Pulley fixed to the Rod on which the sails are mounted.



Parts required
4 of No. 2
2 „ „ 5
1 „ „ 16
1 „ „ 19s
2 „ „ 22
1 „ „ 24
3 „ „ 35
18 „ „ 37
2 „ „ 38
2 „ „ 48a
Magic Motor
1 of No. 52
2 „ „ 90a
2 „ „ 126
2 „ „ 126a

1.1 PORTER'S TRUCK

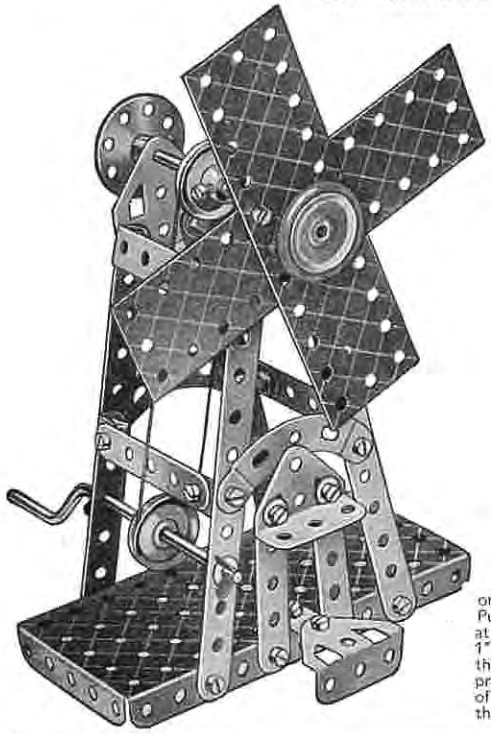
The bearings for the axle are Flat Trunnions fastened on the insides of the Flexible Plates, and the axle is a 3½" Rod that carries two 1" Pulleys fitted with Rubber Rings.



Parts required

4	of No. 2
4	„ „ 5
2	„ „ 10
1	„ „ 16
2	„ „ 22
14	„ „ 37
2	„ „ 38
2	„ „ 48a
1	„ „ 52
2	„ „ 90a
2	„ „ 126a
2	„ „ 155a
2	„ „ 189

1.3 WINDMILL

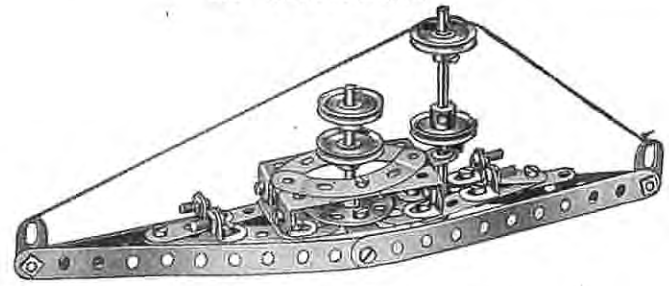


Parts required

4	of No. 2
4	„ „ 5
1	„ „ 10
4	„ „ 12
1	„ „ 16
1	„ „ 19s
4	„ „ 22
1	„ „ 24
3	„ „ 35
24	„ „ 37
4	„ „ 38
1	„ „ 40
2	„ „ 48a
1	„ „ 52
2	„ „ 90a
2	„ „ 126
2	„ „ 126a
1	„ „ 155a
2	„ „ 189

The sails are gripped on the 3½" Rod by the 1" Pulley (with Rubber Ring) at the front and another 1" Pulley at the back of the sails. The Pulleys are pressed against the faces of the sails and locked on the Rod.

1.2 BATTLESIHP

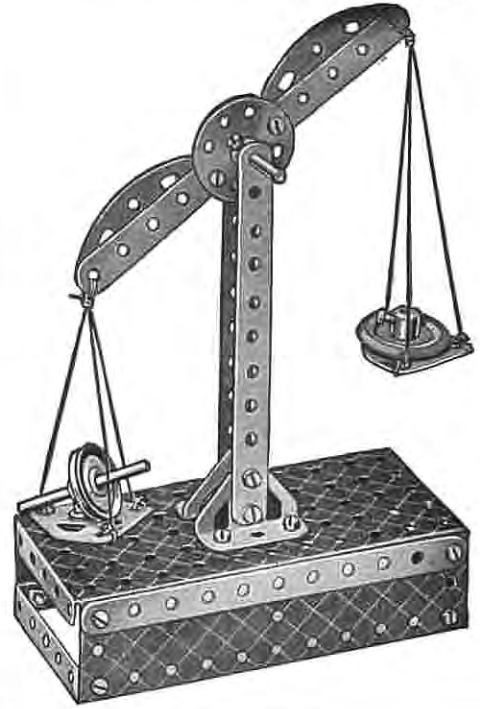


Parts required

4 of No. 2	1 of No. 17	4 of No. 37a
4 „ „ 5	4 „ „ 22	2 „ „ 38
4 „ „ 10	1 „ „ 24	1 „ „ 40
8 „ „ 12	3 „ „ 35	2 „ „ 48a
1 „ „ 16	24 „ „ 37	2 „ „ 90a

4 of No. 111c
1 „ „ 125
2 „ „ 126
2 „ „ 126a

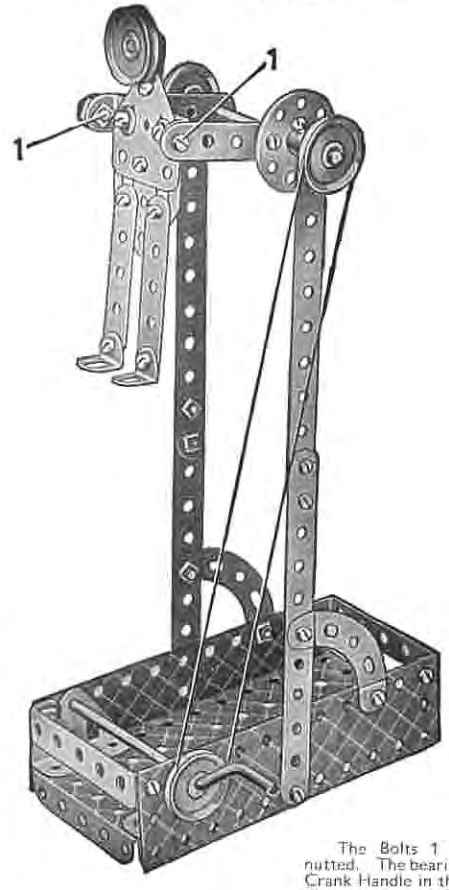
1.4 SCALES



Parts required

4	of No. 2
2	„ „ 5
2	„ „ 17
2	„ „ 22
1	„ „ 24
19	„ „ 37
1	„ „ 38
1	„ „ 40
2	„ „ 48a
1	„ „ 52
2	„ „ 90a
1	„ „ 111c
2	„ „ 126
2	„ „ 126a
1	„ „ 155a
2	„ „ 189

1.5 GYMNAST

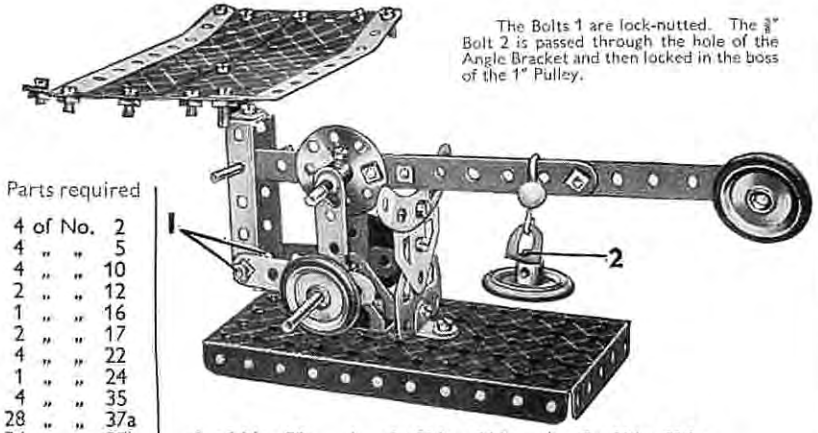


The Bolts 1 are lock-nutted. The bearings for the Crank Handle in the Flexible Plates are reinforced by Trunnions bolted to the Flanged Plate.

Parts required

4 of No. 2	1 of No. 24	1 of No. 52
4 „ „ 5	2 „ „ 35	2 „ „ 90a
1 „ „ 10	24 „ „ 37	4 „ „ 111c
4 „ „ 12	5 „ „ 37a	2 „ „ 126
1 „ „ 16	4 „ „ 38	2 „ „ 126a
1 „ „ 19s	1 „ „ 40	2 „ „ 189
4 „ „ 22	2 „ „ 48a	

1.6 LETTER BALANCE

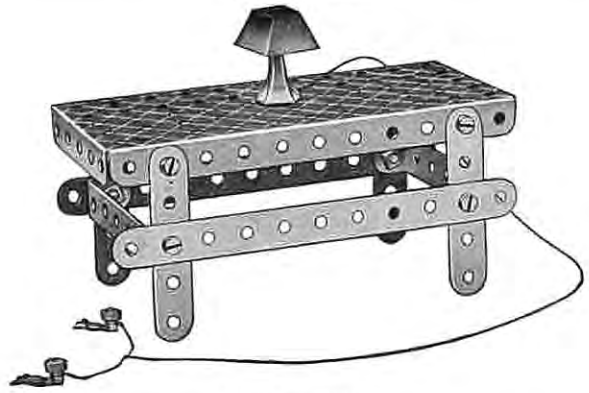


The Bolts 1 are lock-nutted. The ¾" Bolt 2 is passed through the hole of the Angle Bracket and then locked in the boss of the 1" Pulley.

Parts required

4 of No.	2	1 of No.	52	4 of No.	111c	2 of No.	126a
4 „ „	5	1 „ „	57c	1 „ „	125	4 „ „	155a
4 „ „	10	1 „ „	90a	2 „ „	126	2 „ „	189
2 „ „	12						
1 „ „	16						
2 „ „	17						
4 „ „	22						
1 „ „	24						
4 „ „	35						
28 „ „	37a						
24 „ „	37b						
4 „ „	38						
2 „ „	48a						

1.7 TABLE

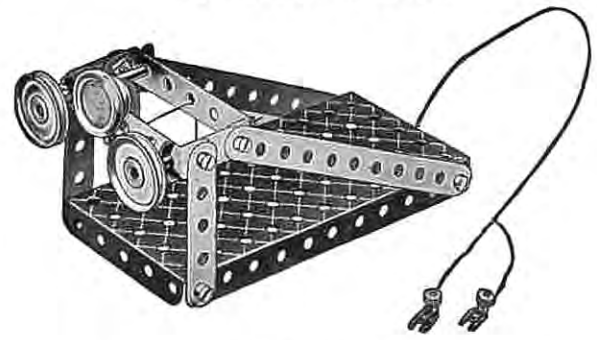


Parts required

2 of No. 2	8 of No. 37	1 of No. 52
4 „ „ 5	2 „ „ 48a	

The model is shown with a Stand Lamp from a Meccano Lighting Set.

1.8 BUFFER STOPS

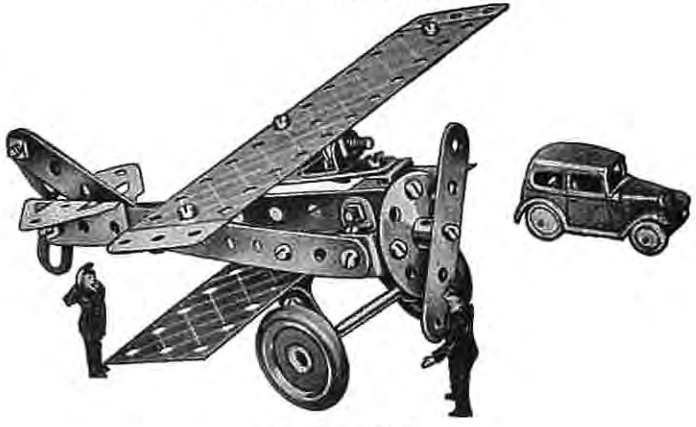


Parts required

2 of No. 2	2 of No. 17	9 of No. 37
2 „ „ 5	2 „ „ 22	2 „ „ 48a
3 „ „ 10	4 „ „ 35	1 „ „ 52

The model is fitted with a Spot light from a Meccano Lighting Set.

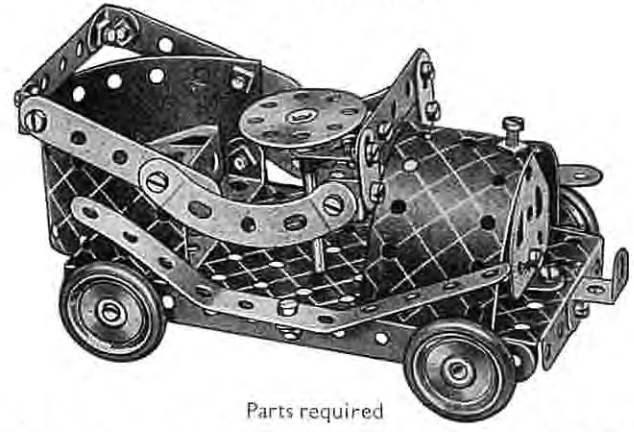
1.9 AEROPLANE



Parts required

2 of No. 2	1 of No. 17	2 of No. 37a	2 of No. 126
3 „ „ 5	2 „ „ 22	1 „ „ 38	2 „ „ 126a
4 „ „ 10	1 „ „ 24	3 „ „ 111c	2 „ „ 155a
8 „ „ 12	17 „ „ 37	1 „ „ 125	2 „ „ 189

1.10 "KIDDIE KAR"



Parts required

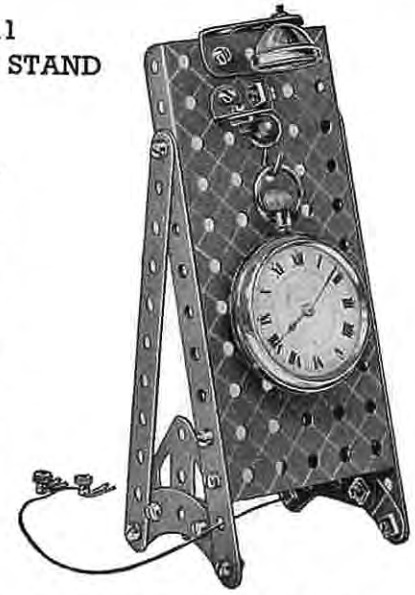
4 of No. 2	1 of No. 17	3 of No. 37a	1 of No. 125
4 „ „ 5	4 „ „ 22	2 „ „ 48a	2 „ „ 126
3 „ „ 10	1 „ „ 24	1 „ „ 52	1 „ „ 126a
7 „ „ 12	1 „ „ 35	2 „ „ 90a	4 „ „ 155a
2 „ „ 16	24 „ „ 37	2 „ „ 111c	2 „ „ 189

Two Trunnions overlapped one hole, and fastened to the Flanged Plate by an Angle Bracket, form the seat.

1.11 WATCH STAND

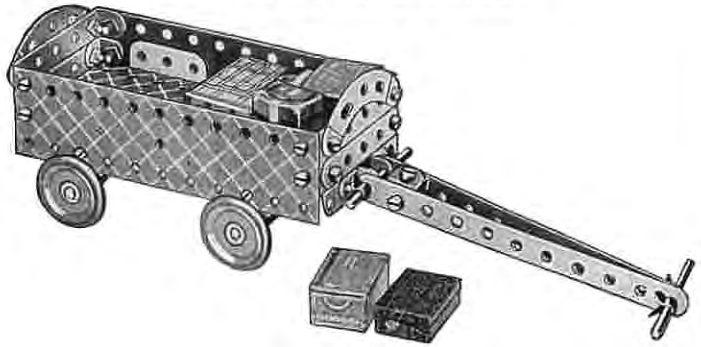
Parts required

4 of No.	2
2 „ „	12
19 „ „	37
1 „ „	38
1 „ „	52
1 „ „	57c
2 „ „	90a
1 „ „	126
2 „ „	126a



A good example of the use of the Meccano Lighting Set.

1.12 BAGGAGE TRUCK

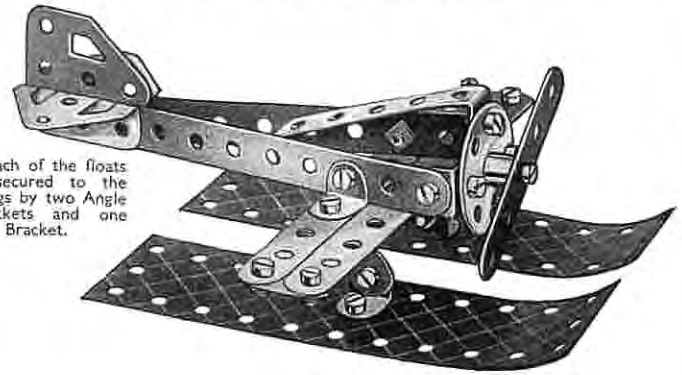


Parts required

2 of No. 2	4 of No. 35	2 of No. 90a
2 „ „ 5	24 „ „ 37	1 „ „ 111c
8 „ „ 12	1 „ „ 37a	2 „ „ 126
2 „ „ 16	2 „ „ 38	2 „ „ 126a
2 „ „ 17	2 „ „ 48a	4 „ „ 155a
4 „ „ 22	1 „ „ 52	2 „ „ 189

1.13 RACING SEAPLANE

Each of the floats is secured to the wings by two Angle Brackets and one Flat Bracket.

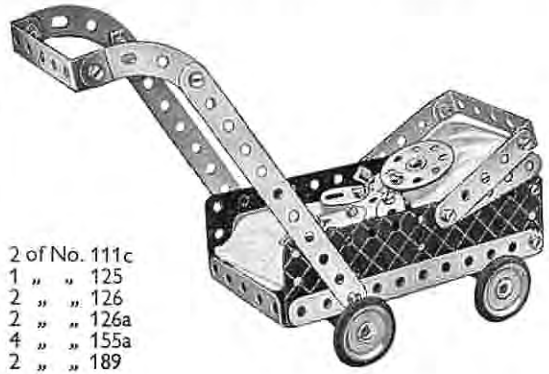


Parts required

3 of No. 2	1 of No. 24	2 of No.111c
3 „ „ 5	19 „ „ 37	2 „ „ 126
4 „ „ 10	1 „ „ 37a	1 „ „ 126a
8 „ „ 12	1 „ „ 48a	2 „ „ 189

1.14 CHILD'S PRAM

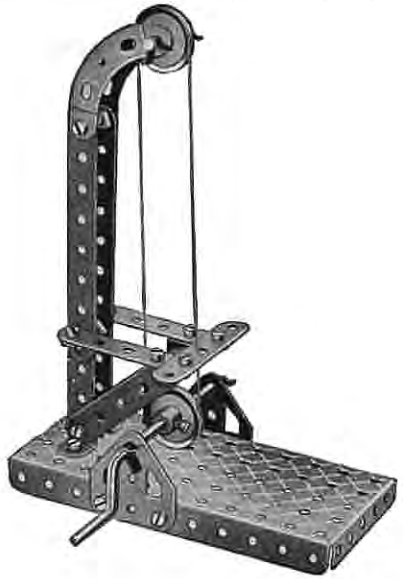
Flat Trunnions bolted between the Flexible Plates and the Flanged Plate provide bearings for the rear axle. Angle Brackets bolted under the Flanged Plate form the bearings for the front axle. The body of the "baby" consists of two Trunnions, and its arms and legs are Flat Brackets. Its head is fixed in place by a Reversed Angle Bracket.



Parts required

4 of No. 2	2 of No. 111c
4 „ „ 5	1 „ „ 125
4 „ „ 10	2 „ „ 126
4 „ „ 12	2 „ „ 126a
2 „ „ 16	4 „ „ 155a
4 „ „ 22	2 „ „ 189
1 „ „ 24	
24 „ „ 37a	
22 „ „ 37b	
4 „ „ 38	
2 „ „ 48a	
1 „ „ 52	
2 „ „ 90a	

1.15 BAND SAW



Parts required

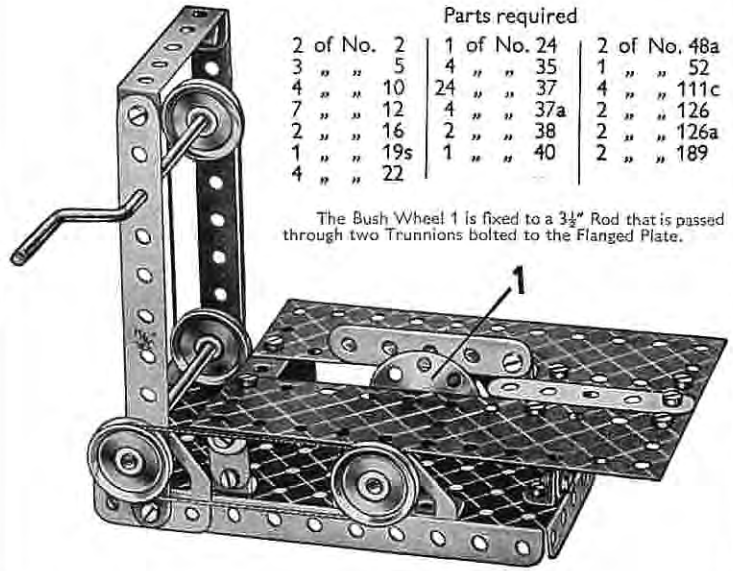
2 of No. 2
4 „ „ 5
6 „ „ 12
1 „ „ 17
1 „ „ 19s
2 „ „ 22
4 „ „ 35
19 „ „ 37
1 „ „ 40
1 „ „ 52
2 „ „ 90a
2 „ „ 126a

1.16 CIRCULAR SAW

Parts required

2 of No. 2	1 of No. 24	2 of No. 48a
3 „ „ 5	4 „ „ 35	1 „ „ 52
4 „ „ 10	24 „ „ 37	4 „ „ 111c
7 „ „ 12	4 „ „ 37a	2 „ „ 126
2 „ „ 16	2 „ „ 38	2 „ „ 126a
1 „ „ 19s	1 „ „ 40	2 „ „ 189
4 „ „ 22		

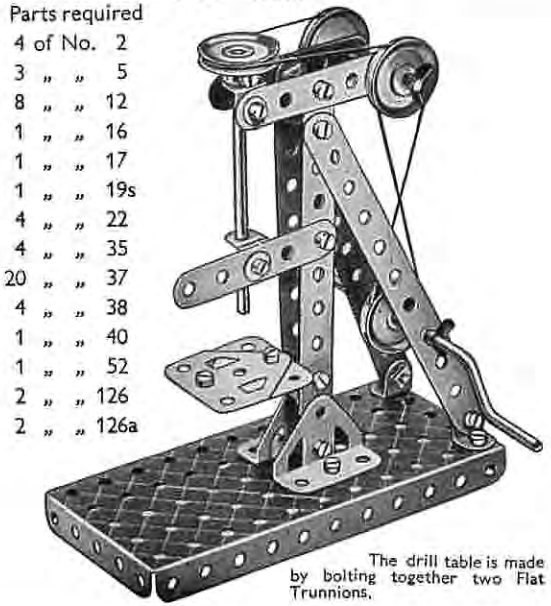
The Bush Wheel 1 is fixed to a 3½" Rod that is passed through two Trunnions bolted to the Flanged Plate.



1.17 DRILL

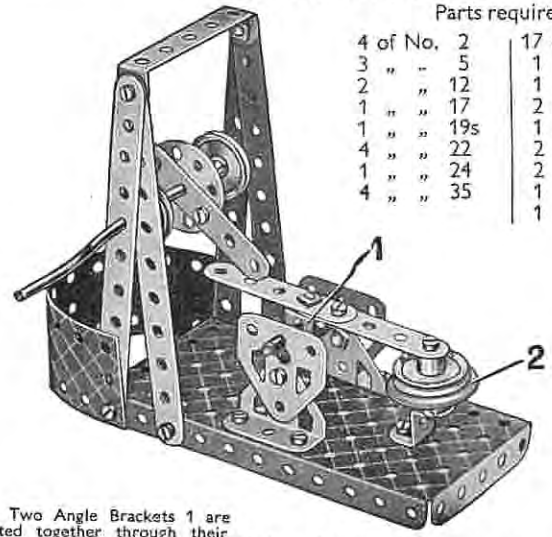
Parts required

4 of No. 2
3 „ „ 5
8 „ „ 12
1 „ „ 16
1 „ „ 17
1 „ „ 19s
4 „ „ 22
4 „ „ 35
20 „ „ 37
4 „ „ 38
1 „ „ 40
1 „ „ 52
2 „ „ 126
2 „ „ 126a



The drill table is made by bolting together two Flat Trunnions.

1.18 TRIP HAMMER



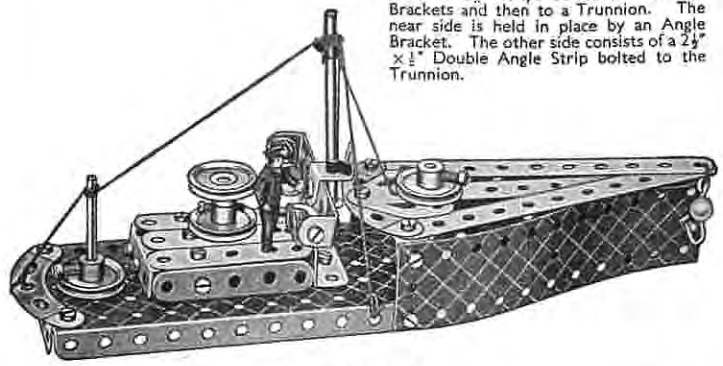
Parts required

4 of No.	2	17 of No.	37
3 „ „	5	1 „ „	48a
2 „ „	12	1 „ „	52
1 „ „	17	2 „ „	111c
1 „ „	19s	1 „ „	125
4 „ „	22	2 „ „	126
1 „ „	24	2 „ „	126a
4 „ „	35	1 „ „	155a
		1 „ „	189

Two Angle Brackets 1 are bolted together through their holes and also are bolted to two 2½" Strips to form a double bracket. The 1" fast Pulley 2 is fitted with a 1" Rubber Ring.

1.19 STEAM LAUNCH

The top of the deck-house consists of three 2½" Strips bolted first to Flat Brackets and then to a Trunnion. The near side is held in place by an Angle Bracket. The other side consists of a 2½" × ½" Double Angle Strip bolted to the Trunnion.

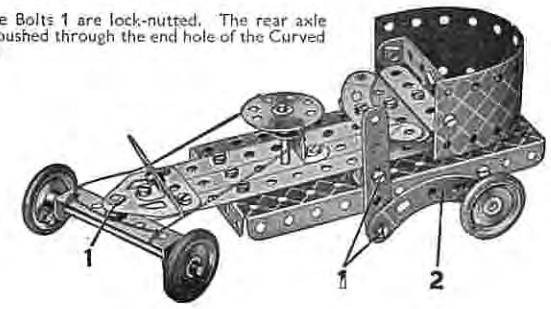


Parts required

3 of No.	2	4 of No.	22	1 of No.	52	2 of No.	126a
4 „ „	5	4 „ „	35	1 „ „	57c	2 „ „	189
3 „ „	10	23 „ „	37	2 „ „	90a		
8 „ „	12	4 „ „	38	2 „ „	111c		
1 „ „	16	1 „ „	40	1 „ „	125		
2 „ „	17	2 „ „	48a	2 „ „	126		

1.20 COASTER

The Bolts 1 are lock-nutted. The rear axle Rod is pushed through the end hole of the Curved Strip 2.

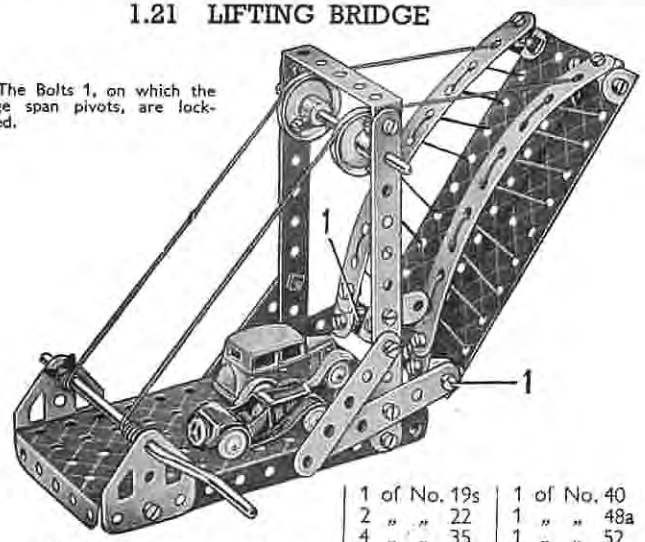


Parts required

3 of No.	2	1 of No.	35	2 of No.	90a
4 „ „	5	20 „ „	37	2 „ „	111c
5 „ „	12	4 „ „	37a	1 „ „	125
2 „ „	16	4 „ „	38	2 „ „	126
1 „ „	17	1 „ „	40	2 „ „	126a
4 „ „	22	2 „ „	48a	4 „ „	155a
1 „ „	24	1 „ „	52	1 „ „	189

1.21 LIFTING BRIDGE

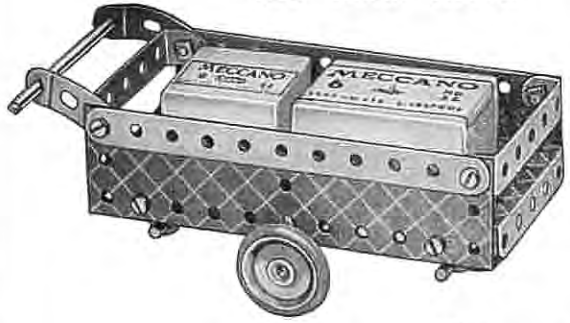
The Bolts 1, on which the bridge span pivots, are lock-nutted.



Parts required

4 of No.	2	3 of No.	10	1 of No.	19s	1 of No.	40
4 „ „	5	8 „ „	12	2 „ „	22	1 „ „	48a
		2 „ „	16	4 „ „	35	1 „ „	52
				24 „ „	37	3 „ „	111c
				5 „ „	37a	2 „ „	126a
				4 „ „	38	2 „ „	189

1.22 HAND TRUCK



Parts required

2 of No.	2	2 „ „	90a
2 „ „	10	2 „ „	155a
8 „ „	12	2 „ „	189
2 „ „	16		
2 „ „	17		
4 „ „	22		
3 „ „	35		
14 „ „	37		
2 „ „	48a		
1 „ „	52		

The bearings for the 3½" Rod are Flat Brackets, and the front and rear axle bearings are reversed angle brackets built up from Angle Brackets. The right-hand 1" Pulley on the 3½" Rod is loose on the Rod, but is retained in place by a Spring Clip. The front and rear 1" Pulleys are fixed on their respective 2" Rods.

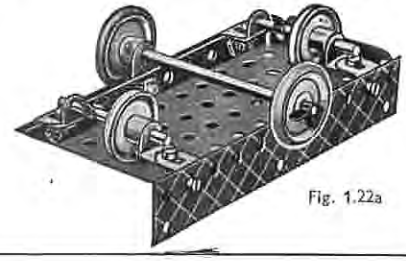
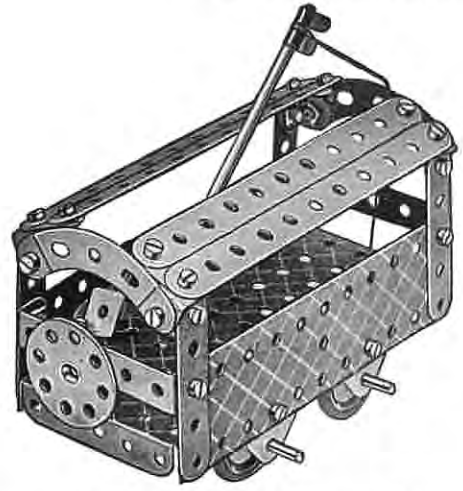


Fig. 1.22a

1.23 TROLLEY BUS

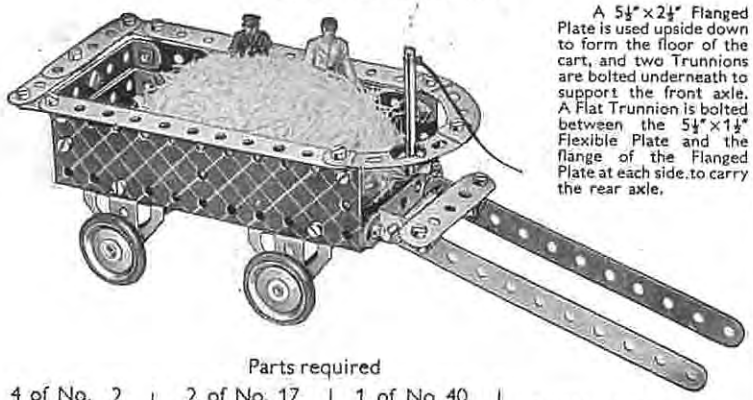


Parts required

4 of No.	2	2 „ „	90a
4 „ „	5	2 „ „	111c
4 „ „	10	1 „ „	125
8 „ „	12	2 „ „	126
2 „ „	16	2 „ „	126a
1 „ „	19s	4 „ „	155a
4 „ „	22	2 „ „	189
1 „ „	24		
4 „ „	35		
24 „ „	37		
1 „ „	37a		
4 „ „	38		
1 „ „	40		
2 „ „	48a		
1 „ „	52		

The Reversed Angle Bracket that holds the trolley is fixed in position by a Bolt passed through the slot in the Bracket, then through two Washers, and into the boss of the Bush Wheel.

1.24 HAY CART

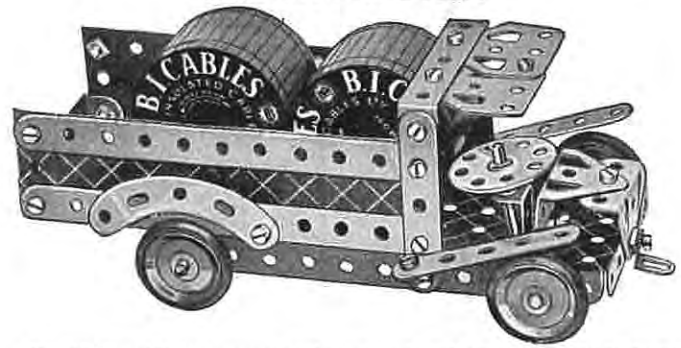


A 5½" × 2½" Flanged Plate is used upside down to form the floor of the cart, and two Trunnions are bolted underneath to support the front axle. A Flat Trunnion is bolted between the 5½" × 1½" Flexible Plate and the flange of the Flanged Plate at each side to carry the rear axle.

Parts required

4 of No. 2	2 of No. 17	1 of No. 40	2 of No. 126
3 „ „ 5	4 „ „ 22	2 „ „ 48a	2 „ „ 126a
2 „ „ 10	4 „ „ 35	1 „ „ 52	4 „ „ 155a
7 „ „ 12	24 „ „ 37	2 „ „ 90a	2 „ „ 189
2 „ „ 16	1 „ „ 37a	1 „ „ 111c	

1.25 MOTOR LORRY



The 2½" Curved Strips representing the rear mudguards are each fastened to the sides by a ⅜" Bolt and Nut, with a Spring Clip between the mudguards and the 5½" Strip to form a distance piece.

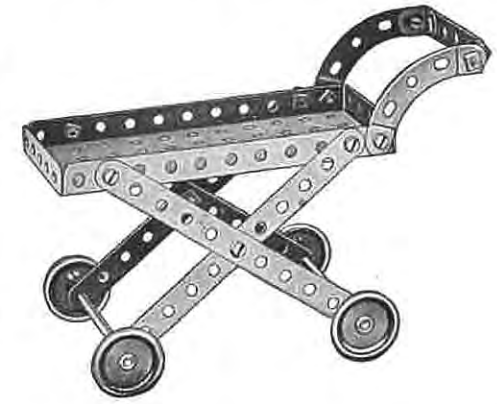
Parts required

4 of No. 2	1 of No. 17	19 of No. 37	2 of No. 90a	2 of No. 126a
4 „ „ 5	4 „ „ 22	4 „ „ 37a	3 „ „ 111c	4 „ „ 155a
3 „ „ 12	1 „ „ 24	2 „ „ 48a	1 „ „ 125	2 „ „ 189
2 „ „ 16	2 „ „ 35	1 „ „ 52	2 „ „ 126	

1.26 HOSPITAL TROLLEY

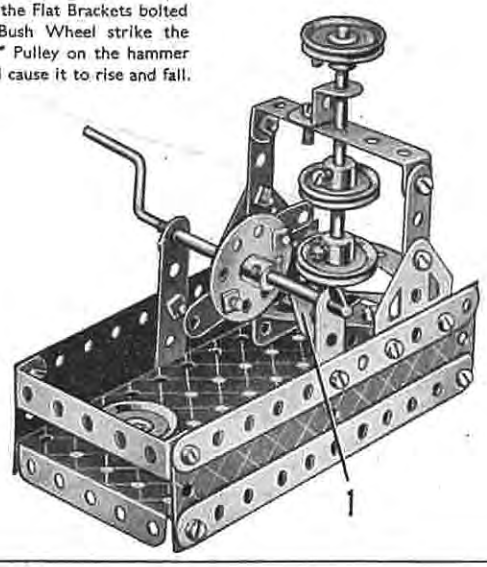
Parts required

4 of No.	2
1 „ „	5
2 „ „	12
2 „ „	16
4 „ „	22
12 „ „	37
1 „ „	52
2 „ „	90a
4 „ „	155a



1.27 STAMPING MILL

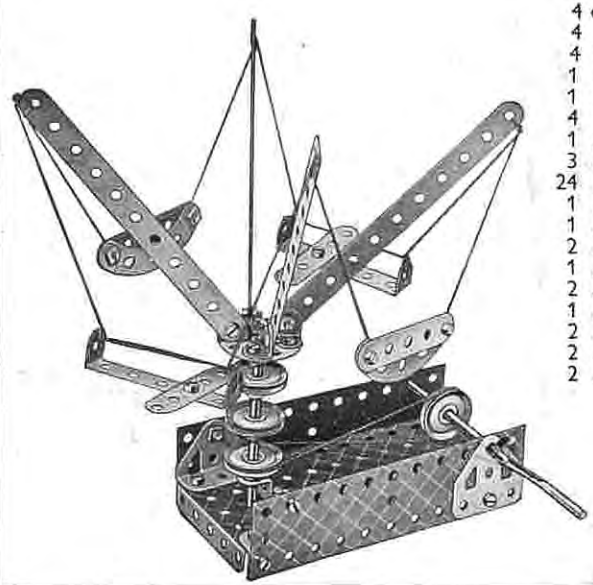
The anvil 1 is made up of two Trunnions bolted together. When the Crank Handle is rotated, the Flat Brackets bolted to the Bush Wheel strike the centre 1" Pulley on the hammer shaft and cause it to rise and fall.



Parts required

4 of No.	2
4 „ „	5
4 „ „	10
5 „ „	12
1 „ „	16
1 „ „	19s
4 „ „	22
1 „ „	24
2 „ „	35
24 „ „	37
3 „ „	37a
2 „ „	48a
1 „ „	52
1 „ „	90a
4 „ „	111c
1 „ „	125
2 „ „	126
2 „ „	126a
2 „ „	189

1.28 FLYING BOATS



Parts required

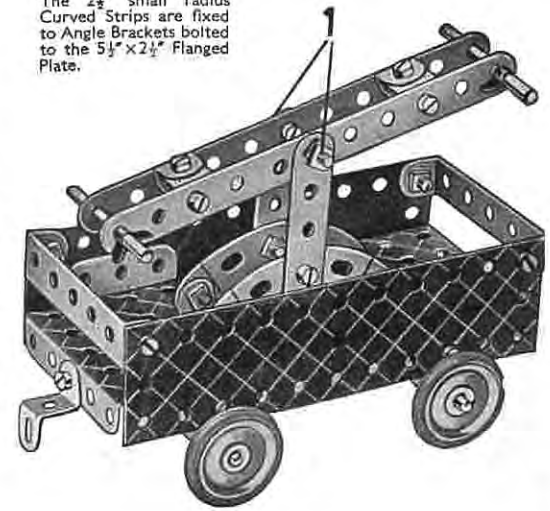
4 of No.	2
4 „ „	5
4 „ „	12
1 „ „	16
1 „ „	19s
4 „ „	22
1 „ „	24
3 „ „	35
24 „ „	37
1 „ „	38
1 „ „	40
2 „ „	48a
1 „ „	52
2 „ „	90a
1 „ „	125
2 „ „	126
2 „ „	126a
2 „ „	189

1.29 HAND CAR

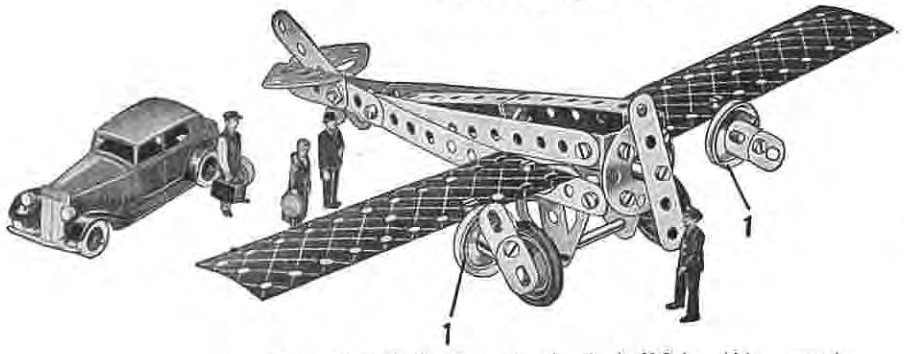
The Bolts 1, on which the 5½" Strips are pivoted, are lock-nutted. The 2½" small radius Curved Strips are fixed to Angle Brackets bolted to the 5½" × 2½" Flanged Plate.

Parts required

2 of No.	2
2 „ „	5
8 „ „	12
2 „ „	16
2 „ „	17
4 „ „	22
4 „ „	35
23 „ „	37
4 „ „	37a
4 „ „	38
2 „ „	48a
1 „ „	52
2 „ „	90a
2 „ „	111c
1 „ „	125
2 „ „	126
2 „ „	126a
4 „ „	155a
2 „ „	189



1.30 MONOPLANE



The fast Pulleys 1 are fixed to Angle Brackets fastened to the wing by ⅜" Bolts, which are passed through the Angle Brackets, and held in the bosses of the Pulleys. The set screws of the Pulleys hold also a second Bolt on which the propellers are mounted.

Parts required

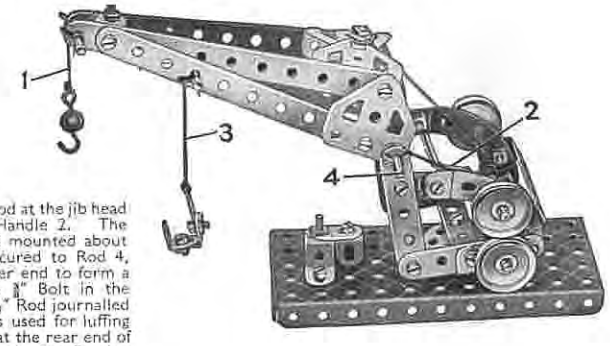
4	of No.	2
4	„ „	5
4	„ „	10
8	„ „	12
1	„ „	16
4	„ „	22
1	„ „	24
2	„ „	35
20	„ „	37
3	„ „	37a
2	„ „	48a
1	„ „	57c
4	„ „	111c
2	„ „	126
2	„ „	126a
2	„ „	155a
2	„ „	189

1.31 FLOATING CRANE

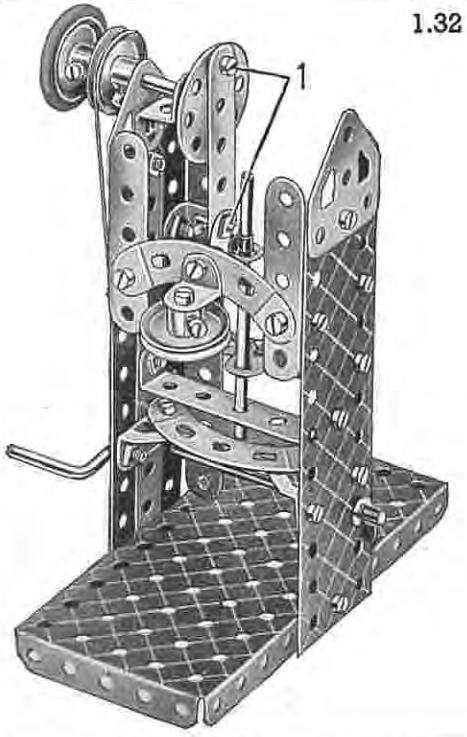
Parts required

4	of No.	2
4	„ „	5
4	„ „	10
7	„ „	12
2	„ „	16
2	„ „	17
1	„ „	19s
4	„ „	22
1	„ „	24
4	„ „	35
24	„ „	37
4	„ „	37a
4	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
1	„ „	57c
2	of No.	90a
3	„ „	111c
1	„ „	125
2	„ „	126
2	„ „	126a

The Cord 1 passes over the Rod at the jib head and is fastened to the Crank Handle 2. The other Cord 3 passes over a Rod mounted about halfway along the jib, and is secured to Rod 4, which has a 1" Pulley at the other end to form a handle. The Cord tied to the ⅜" Bolt in the Trunnions is taken around the 3½" Rod journalled above the Crank Handle, and is used for luffing the jib by turning the 1" Pulley at the rear end of the Rod. Two Angle Brackets and a Flat Bracket form the hook on Cord 3.



1.32 POWER PRESS



Parts required

4	of No.	2
4	„ „	5
1	„ „	10
6	„ „	12
1	„ „	16
1	„ „	17
1	„ „	19s
4	„ „	22
1	„ „	24
3	„ „	35
24	„ „	37
5	„ „	37a
1	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
2	„ „	90a
4	„ „	111c
1	„ „	125
2	„ „	126
2	„ „	126a
1	„ „	155a
2	„ „	189

The Bolts 1 are lock-nutted, and the Angle Bracket at the lower end of the 2½" Strip has a 4½" Rod in its elongated hole, where it is held by means of two Spring Clips.

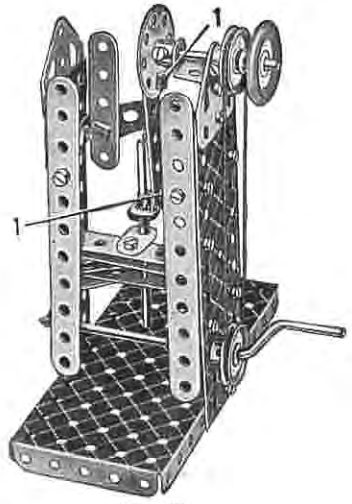
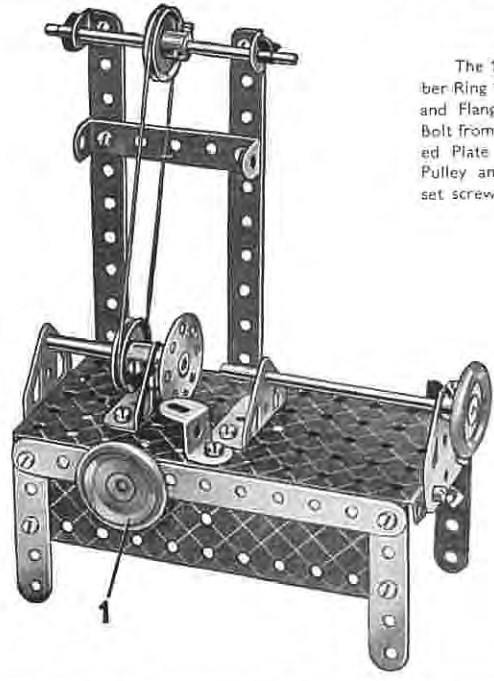


Fig. 1.32a

1.33 LATHE

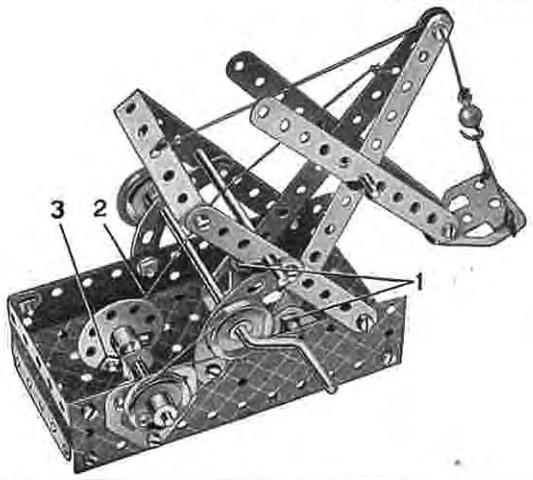


The 1" fast Pulley with Rubber Ring 1 is secured to the Strip and Flanged Plate by passing a Bolt from the inside of the Flanged Plate into the boss of the Pulley and then tightening the set screw.

Parts required

4	of No.	2
4	„ „	5
2	„ „	12
2	„ „	16
1	„ „	17
4	„ „	22
1	„ „	24
3	„ „	35
22	„ „	37
1	„ „	40
1	„ „	48a
1	„ „	52
1	„ „	111c
1	„ „	125
2	„ „	126
2	„ „	126a
2	„ „	155a
2	„ „	189

1.34 MECHANICAL SHOVEL



The Bolts 1, on which the jib pivots, are lock-nutted. The shovel arm is pivoted on a 2" Rod and the shovel is supported by a Cord that passes over the ⅜" Bolt at the jib head and is fastened to a 2½" × ½" Double Angle Strip as shown. The Cord 2 is fastened to the jib and then passes over a 3½" Rod journalled in the holes above the 2½" Curved Strips, and is attached to a Flat Bracket fastened by the lock-nutted Bolt 3 to the Bush Wheel.

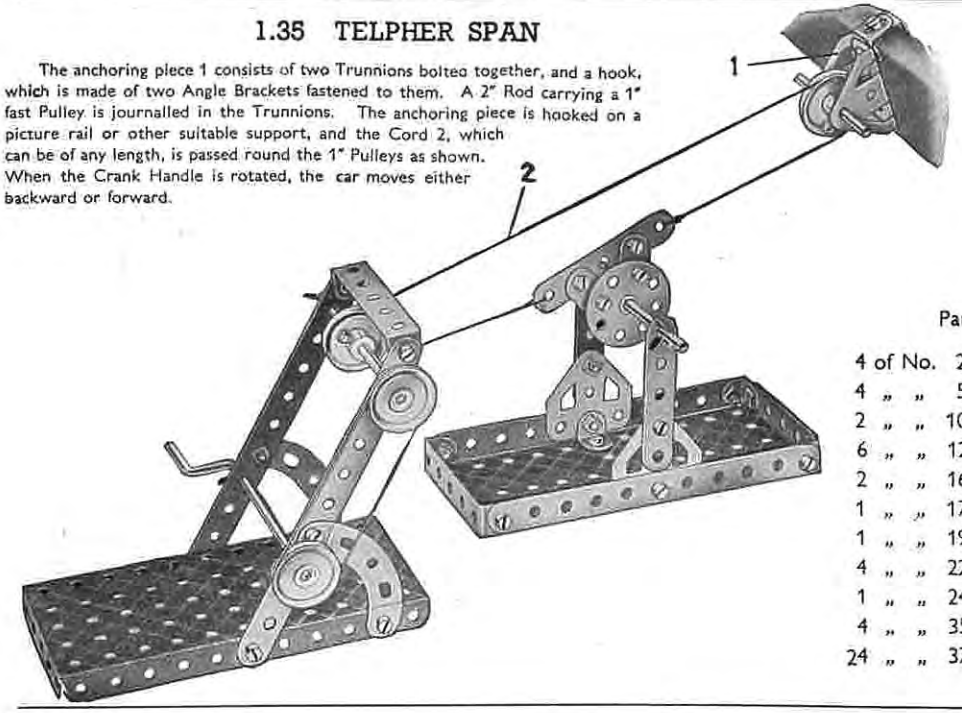
When the Crank Handle is rotated, the Bush Wheel imparts a digging motion to the jib and shovel arm.

Parts required

4	of No.	2
4	„ „	5
1	„ „	10
2	„ „	12
1	„ „	16
2	„ „	17
1	„ „	19s
3	„ „	22
1	„ „	24
4	„ „	35
24	„ „	37
4	„ „	37a
4	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
1	„ „	57c
2	„ „	90a
4	„ „	111c
1	„ „	125
2	„ „	126
2	„ „	126a
1	„ „	155a
2	„ „	189

1.35 TELPHER SPAN

The anchoring piece 1 consists of two Trunnions bolted together, and a hook, which is made of two Angle Brackets fastened to them. A 2" Rod carrying a 1" fast Pulley is journalled in the Trunnions. The anchoring piece is hooked on a picture rail or other suitable support, and the Cord 2, which can be of any length, is passed round the 1" Pulleys as shown. When the Crank Handle is rotated, the car moves either backward or forward.

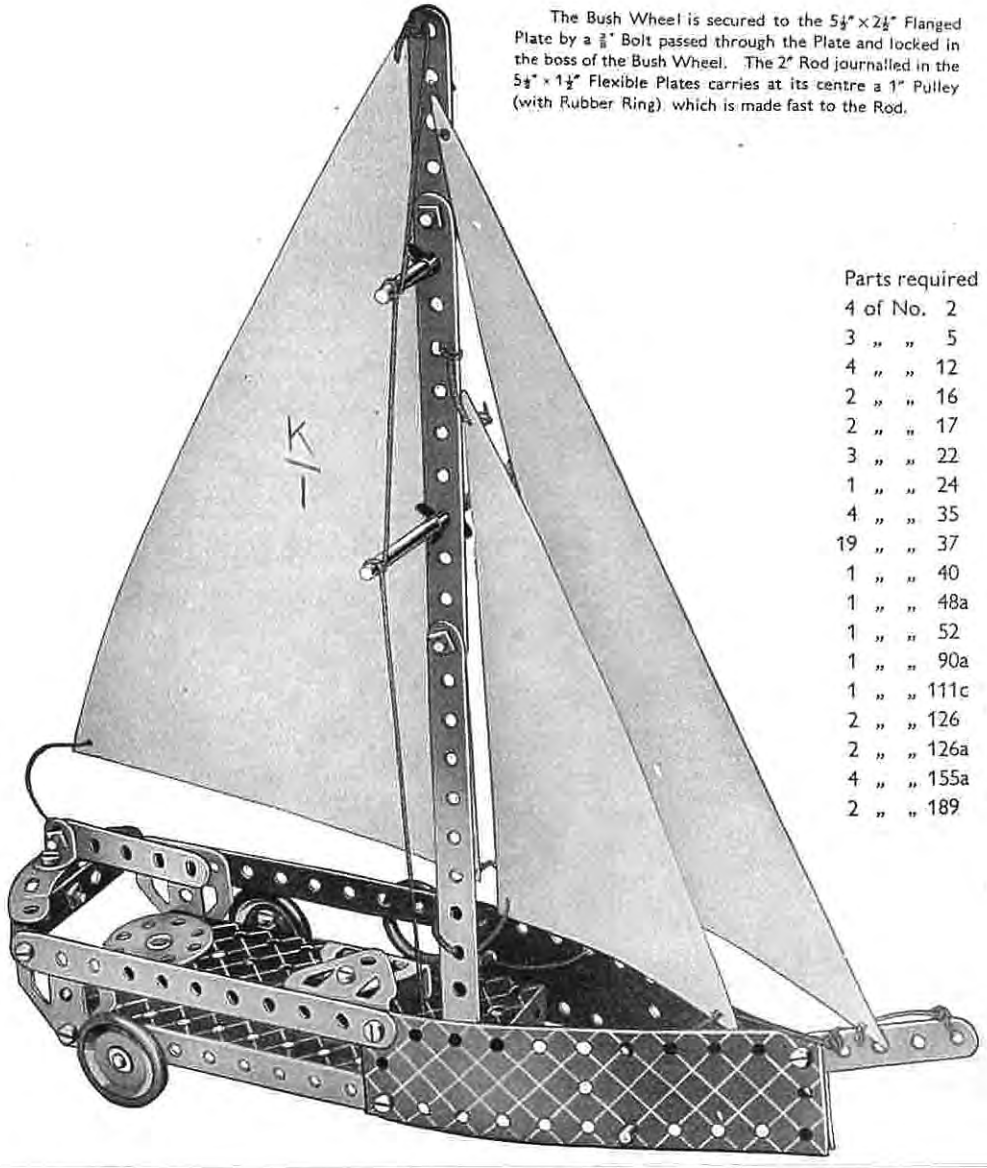


Parts required

4	of No.	2
4	„ „	5
2	„ „	10
6	„ „	12
2	„ „	16
1	„ „	17
1	„ „	19s
4	„ „	22
1	„ „	24
4	„ „	35
24	„ „	37
4	„ „	37a
4	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
2	„ „	90a
4	„ „	111c
2	„ „	126
2	„ „	126a
2	„ „	189

1.36 LAND YACHT

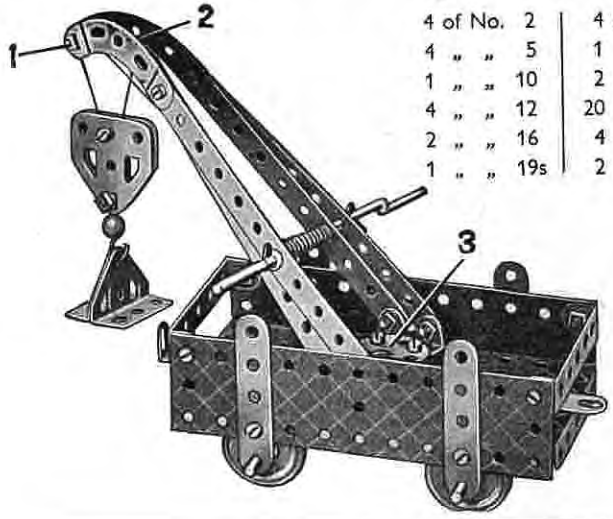
The Bush Wheel is secured to the 5½" × 2½" Flanged Plate by a ⅜" Bolt passed through the Plate and locked in the boss of the Bush Wheel. The 2" Rod journalled in the 5½" × 1½" Flexible Plates carries at its centre a 1" Pulley (with Rubber Ring), which is made fast to the Rod.



Parts required

4	of No.	2
3	„ „	5
4	„ „	12
2	„ „	16
2	„ „	17
3	„ „	22
1	„ „	24
4	„ „	35
19	„ „	37
1	„ „	40
1	„ „	48a
1	„ „	52
1	„ „	90a
1	„ „	111c
2	„ „	126
2	„ „	126a
4	„ „	155a
2	„ „	189

1.37 RAILWAY BREAKDOWN CRANE

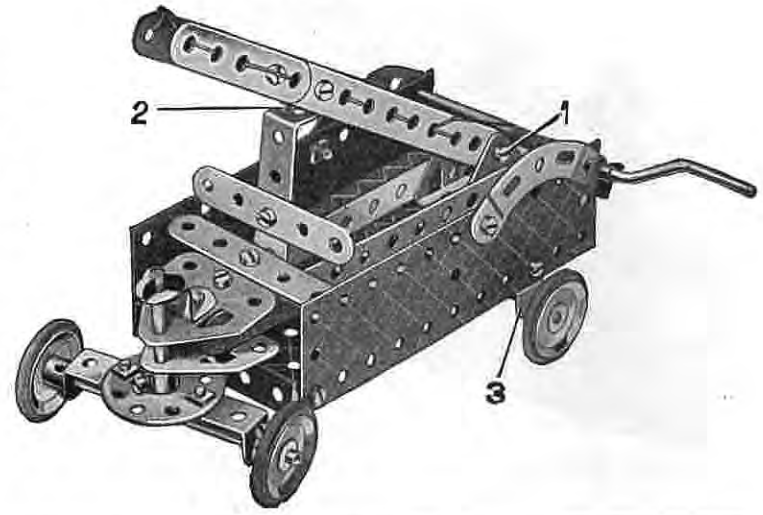


Parts required

4 of No.	2	4 of No.	22	1 of No.	40	1 of No.	125
4 „ „	5	1 „ „	24	2 „ „	48a	2 „ „	126
1 „ „	10	2 „ „	35	1 „ „	52	2 „ „	126a
4 „ „	12	20 „ „	37	1 „ „	57c	4 „ „	155a
2 „ „	16	4 „ „	37a	2 „ „	90a	2 „ „	189
1 „ „	19s	2 „ „	38	4 „ „	111c		

The hoisting cord is secured to the Crank Handle, and then led over the ½" Bolt 1. It is then passed through the pulley block and fastened to the jib at 2. The jib is attached to the Bush Wheel 3 by means of Angle Brackets and the complete unit is pivoted as follows. A ½" Bolt is passed through the 5½" × 2½" Flanged Plate, and is secured in the boss of the Bush Wheel by its set screw.

1.38 FIRE ENGINE

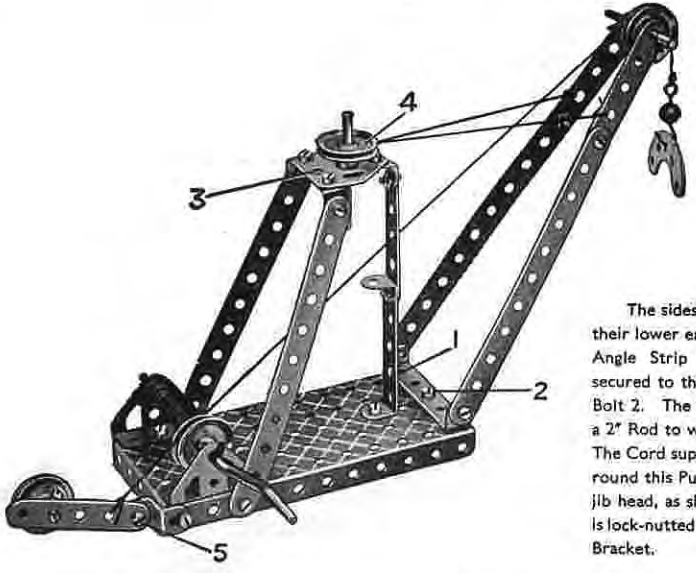


Parts required

4 of No.	2	2 of No.	38
4 „ „	5	1 „ „	40
3 „ „	10	2 „ „	48a
5 „ „	12	1 „ „	52
2 „ „	16	2 „ „	90a
1 „ „	17	2 „ „	111c
1 „ „	19s	1 „ „	125
4 „ „	22	2 „ „	126
1 „ „	24	2 „ „	126a
4 „ „	35	4 „ „	155a
24 „ „	37	2 „ „	189
4 „ „	37a		

Bolts 1 are lock-nutted. The sides of the ladder are held together by two Angle Brackets 2, which are bolted together to form a double bracket. The rear axle bearings 3 are Flat Brackets bolted inside the flange of the Flanged Plate. The Cord from the Crank Handle is tied in the fourth hole up the ladder so that when the Handle is turned it causes the ladder to lift.

1.39 DERRICK CRANE

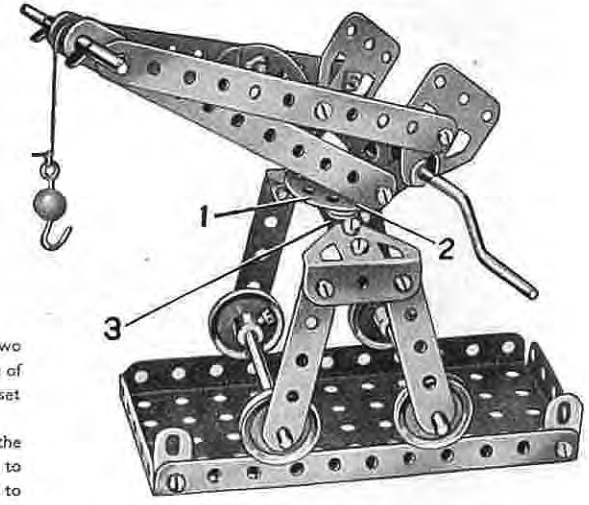


Parts required

4 of No.	2
4 „ „	5
3 „ „	12
2 „ „	17
1 „ „	19s
4 „ „	22
4 „ „	35
19 „ „	37
4 „ „	37a
1 „ „	40
2 „ „	48a
1 „ „	52
1 „ „	57c
2 „ „	90a
1 „ „	111c
1 „ „	125
2 „ „	126
1 „ „	126a

The sides of the jib are bolted at their lower ends to a 2½" × ½" Double Angle Strip 1, which is pivotally secured to the base by a lock-nutted Bolt 2. The Flat Trunnion 3 carries a 2" Rod to which is fitted a Pulley 4. The Cord supporting the jib is passed round this Pulley and attached to the jib head, as shown. The band brake is lock-nutted at 5 to a Reversed Angle Bracket.

1.40 TRAVELLING CRANE



Parts required

4 of No.	2	20 of No.	37
4 „ „	5	4 „ „	38
4 „ „	10	1 „ „	40
2 „ „	12	1 „ „	48a
2 „ „	16	1 „ „	52
1 „ „	17	1 „ „	57c
1 „ „	19s	2 „ „	90a
4 „ „	22	1 „ „	111c
1 „ „	24	2 „ „	126
4 „ „	35	2 „ „	126a

The sides of the jib are secured to the Bush Wheel 1 by two Angle Brackets 2. A ⅜" Bolt is passed from the underneath side of Double Angle Strip 3 into the boss of the Bush Wheel 1 and the set screw is then tightened.

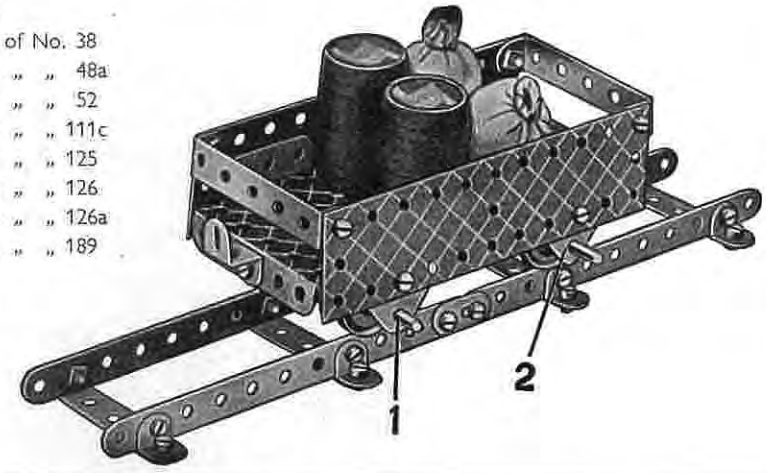
The Flat Trunnions at the lower end of the jib support the Crank Handle, which also passes through Flat Brackets bolted to the Angle Brackets 2 on the Bush Wheel 1. The Cord is fastened to the Crank Handle, and passes over the 2" Rod at the jib head.

1.41 RAILWAY TRUCK

Parts required

4 of No.	2	4 of No.	38
4 „ „	5	2 „ „	48a
2 „ „	10	1 „ „	52
8 „ „	12	4 „ „	111c
2 „ „	16	1 „ „	125
4 „ „	22	2 „ „	126
24 „ „	37	2 „ „	126a
4 „ „	37a	2 „ „	189

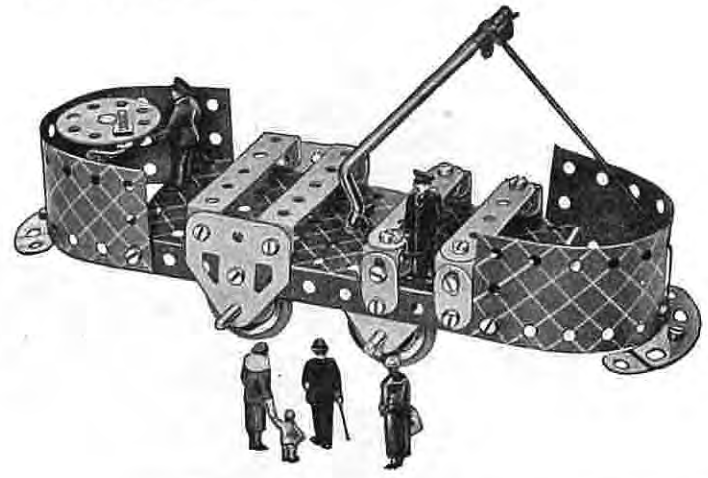
The axle bearings 1 are Flat Trunnions and Trunnions are used for the bearings 2, which fit underneath the Flanged Plate in the manner shown in the underneath view of the model Side Tipping Wagon (1.46).

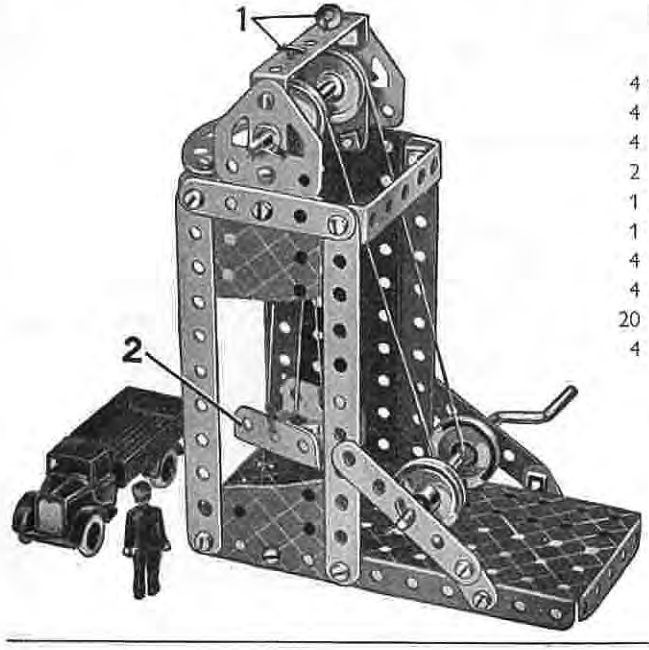


1.42 OPEN TRAMCAR

Parts required

2 of No.	5	1 of No.	40
4 „ „	10	2 „ „	48a
7 „ „	12	1 „ „	52
2 „ „	16	2 „ „	90a
1 „ „	19s	4 „ „	111c
4 „ „	22	1 „ „	125
1 „ „	24	2 „ „	126
4 „ „	35	2 „ „	126a
24 „ „	37	4 „ „	155a
3 „ „	37a	2 „ „	189





1.43 PITHEAD GEAR

Parts required

4 of No.	2	4 of No.	38
4 „ „	5	1 „ „	40
4 „ „	10	2 „ „	48a
2 „ „	12	1 „ „	52
1 „ „	16	1 „ „	90a
1 „ „	19s	4 „ „	111c
4 „ „	22	2 „ „	126
4 „ „	35	2 „ „	126a
20 „ „	37	2 „ „	189
4 „ „	37a		

A Cord is taken from each side of the lift cage over the 1" Pulleys and secured to each end of the Crank Handle. The Cords must both be the same length otherwise the lift will tilt.

The two guides for the lift consist of two pieces of Cord fastened to the Washers 1. The Cords are then passed through holes in the Double Angle Strip, through two corresponding holes in the lift cage 2, and then through the two corresponding holes in the Flanged Plate. Two more Washers are tied to the Cords beneath the Flanged Plate to keep the Cords tight. The lift cage 2 is made up of two Trunnions.

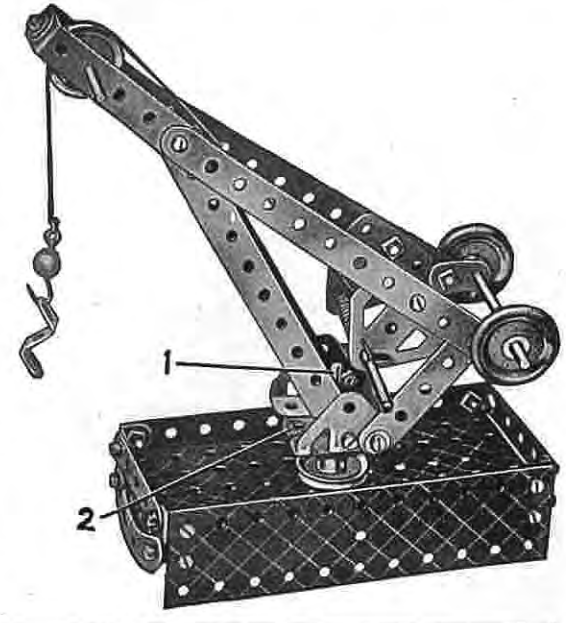
1.44 DOCKSIDE CRANE

Parts required

4 of No.	2	4 of No.	38
4 „ „	5	1 „ „	40
2 „ „	10	2 „ „	48a
4 „ „	12	1 „ „	52
1 „ „	16	1 „ „	57c
2 „ „	17	2 „ „	90a
1 „ „	19s	4 „ „	111c
4 „ „	22	1 „ „	125
1 „ „	24	2 „ „	126
4 „ „	35	2 „ „	126a
24 „ „	37	2 „ „	155a
4 „ „	37a	2 „ „	189

The Rod 1 passes through the bosses of the Bush Wheel 2 and the 1" Pulley, and is held in position by a Spring Clip underneath the Flanged Plate. The set screw of the Bush Wheel 2 is tightened on the Rod.

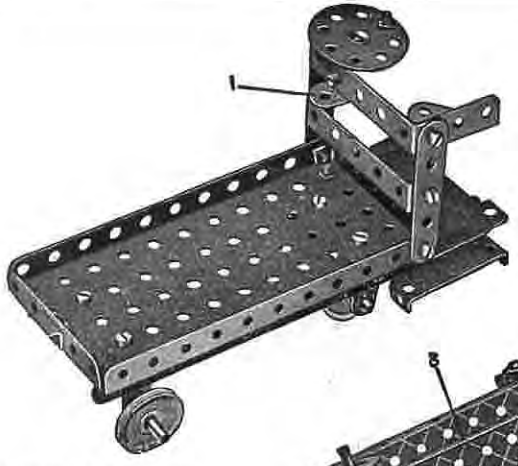
The 5½" Strips that form the jib are extended at the head by 2½" × ½" Double Angle Strips, in which a 2" Rod is journalled.



1.45 ELECTRIC TRUCK

Parts required

2 of No.	2	4 of No.	22
2 „ „	5	1 „ „	24
4 „ „	10	18 „ „	37
4 „ „	12	2 „ „	48a
1 „ „	16	1 „ „	52
1 „ „	17	1 „ „	111c
		1 „ „	125
		1 „ „	126
		1 *Magic* Motor	



The steering wheel, a Bush Wheel, is secured to the Reversed Angle Bracket 1 by means of a ⅜" Bolt. Fig. 1.45a shows how the *Magic* Motor is mounted to drive the front wheels. The front wheel axle is journalled in two Flat Brackets bolted to the 5½" Strips 2 and 3.

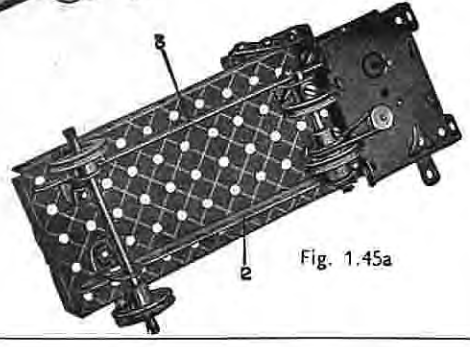
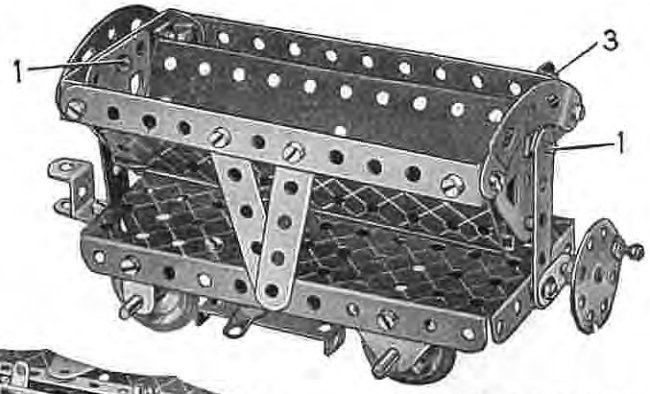


Fig. 1.45a

1.46 SIDE TIPPING WAGON

Parts required

3 of No.	2	2 of No.	90a
4 „ „	5	4 „ „	111c
4 „ „	10	1 „ „	125
7 „ „	12	2 „ „	126
2 „ „	16	2 „ „	126a
1 „ „	17	4 „ „	155a
4 „ „	22	2 „ „	189
1 „ „	24	1 *Magic* Motor	
24 „ „	37		
4 „ „	37a		
3 „ „	38		
2 „ „	48a		
1 „ „	52		



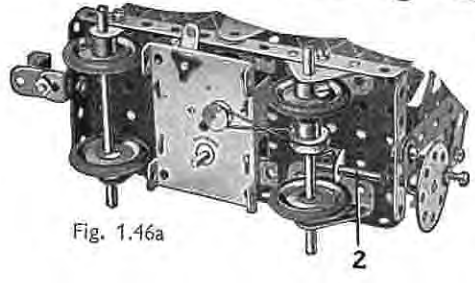
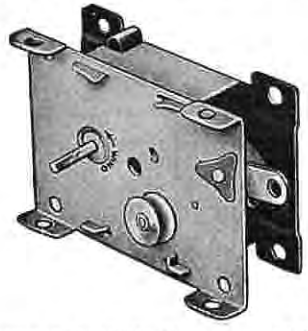


Fig. 1.46a

Each of the Bolts 1 is lock-nutted. A piece of Cord is fastened to the Rod 2 (Fig. 1.46a) wrapped round it two or three times, and then is taken through the hole in the Flanged Plate above the Rod and secured to the Angle Bracket 3.

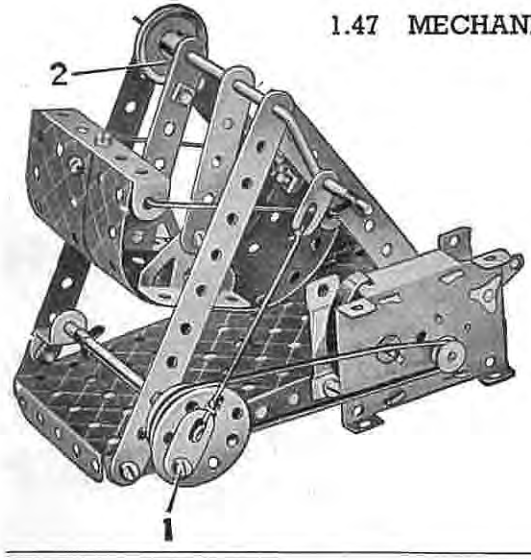
By turning the Bush Wheel the container is tipped sideways.

THE MECCANO *MAGIC* MOTOR



The greatest thrill in Meccano model-building is experienced when a model is set to work by means of a Meccano *Magic* Motor. The illustrations on this page show how the *Magic* Motor can be fitted without any difficulty to No. 1 Outfit models of various types. Fit the model you have just built with one of these wonderful Motors, and enjoy the fun of watching it work just like the real thing!

1.47 MECHANICAL SWING



Parts required

4 of No.	2	1 „ „	40
2 „ „	5	2 „ „	48a
2 „ „	10	1 „ „	52
3 „ „	12	1 „ „	111c
1 „ „	16	1 „ „	125
1 „ „	19s	2 „ „	126
2 „ „	22	2 „ „	189
1 „ „	24	1 *Magic* Motor	
4 „ „	35		
15 „ „	37		
2 „ „	37a		
4 „ „	38		

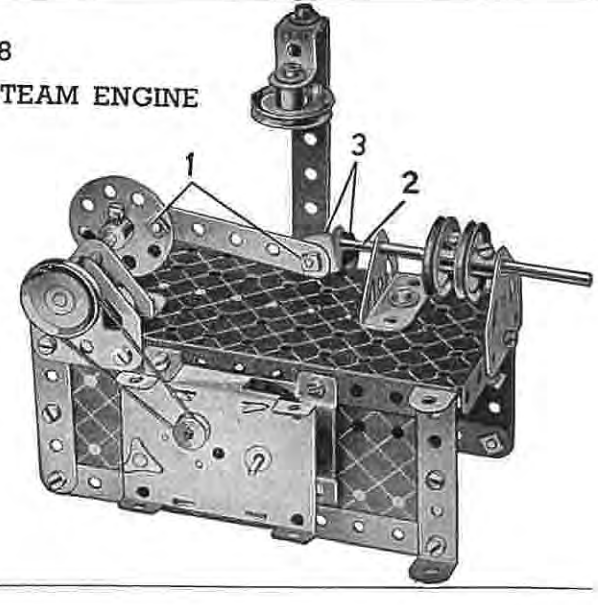
The left-hand 2½" Strip that supports the swing is connected to the Crank Handle by passing the set screw of the 1" Pulley Wheel 2 through the hole in an Angle Bracket bolted to the Strip and then into the boss of the Pulley. Bolt 1 on the Bush Wheel is fitted with lock-nuts.

The Bolts 1 are lock-nutted. The Rod 2 is secured to an Angle Bracket by means of two Spring Clips 3. The model is driven by a *Magic* Motor bolted to the 5½" × 2½" Flanged Plate. The pulley of the Motor is connected to a 1in. fast Pulley on the crankshaft of the engine by a Driving Band.

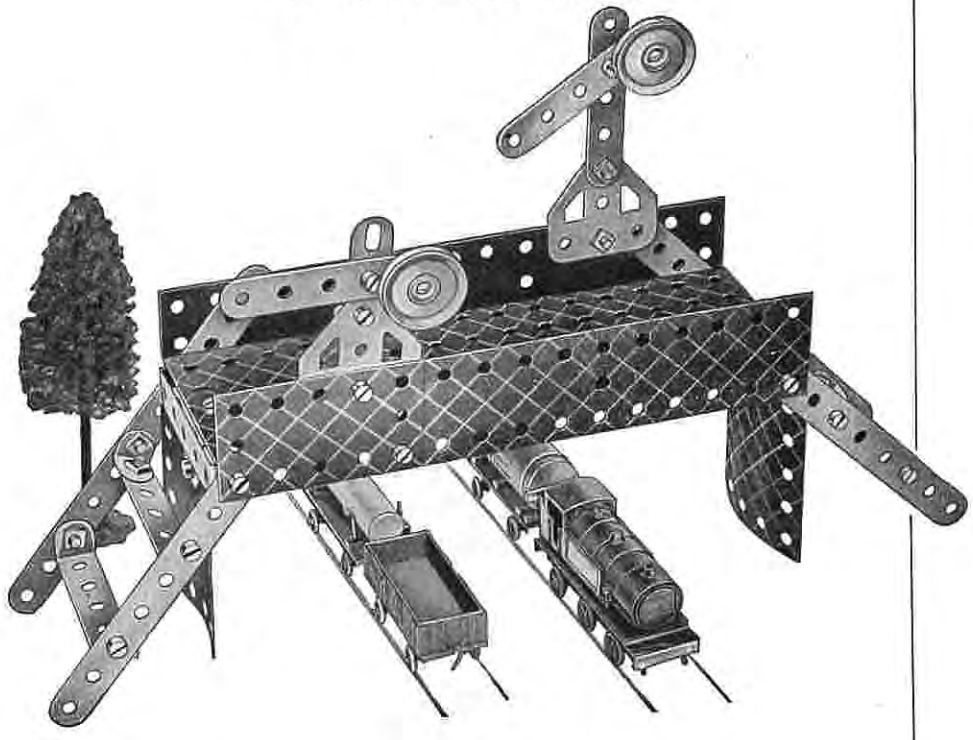
1.48 HORIZONTAL STEAM ENGINE

Parts required

3 of No.	2	1 „ „	111c
4 „ „	5	1 „ „	125
2 „ „	12	2 „ „	126
1 „ „	16	2 „ „	126a
1 „ „	17	2 „ „	189
4 „ „	22	1 *Magic* Motor	
1 „ „	24		
4 „ „	35		
24 „ „	37		
2 „ „	37a		
3 „ „	38		
1 „ „	38a		
1 „ „	52		



2.1 RAILWAY FOOTBRIDGE



Parts required

4 of No. 2	2 of No. 22	1 of No. 52	2 of No. 188
6 „ „ 5	32 „ „ 37	2 „ „ 111c	2 „ „ 189
2 „ „ 10	2 „ „ 37a	2 „ „ 126	1 „ „ 190
6 „ „ 12	2 „ „ 48a	2 „ „ 126a	2 „ „ 200

The span of the bridge is a 5½" × 2½" Flanged Plate, extended by a 2½" × 2½" Flexible Plate. Trunnions are bolted to each end of the span, and have 1 ⅛" radius Curved Plates fastened to them. The sides of the approach stairways are 5½" Strips. They are joined across by 2½" × ½" Double Angle Strips and 2½" Strips fitted with Angle Brackets at each end.

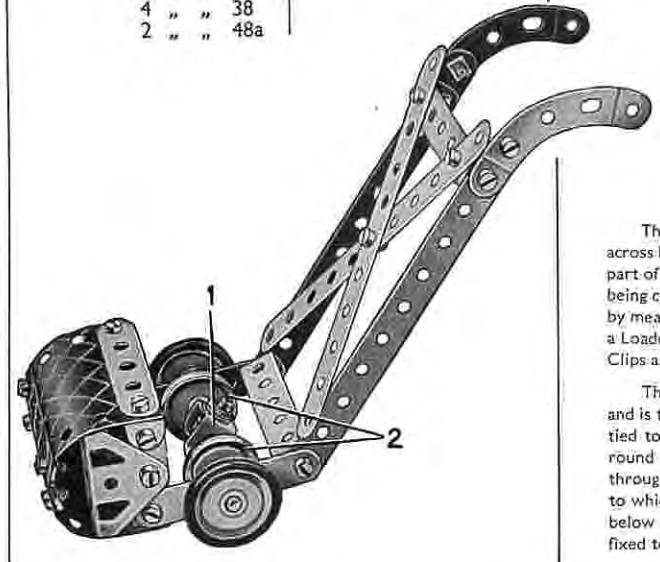
The signals are supported on Flat Trunnions bolted to the sides of the bridge. The smaller of the two signal posts is formed by two Flat Brackets, and the larger one is a 2½" Strip. The signal arms are 2½" Strips bolted to the posts in the second holes from one end. They are fitted at their shorter ends with 1" Pulleys, representing the spectacles, which are held in place by ⅜" Bolts passed through the Strips and inserted in their bosses.

2.2 LAWN MOWER

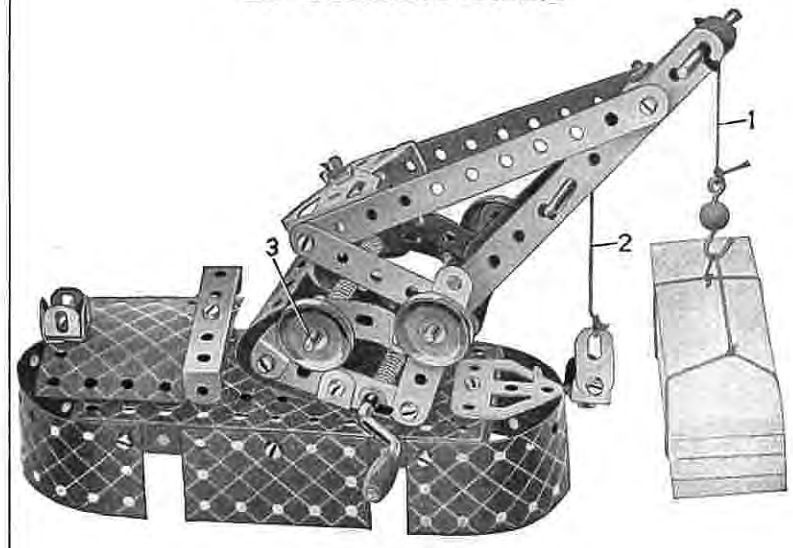
The "cutter" is made by bolting an Angle Bracket at each end of a Reversed Angle Bracket 1 and then sliding an Axle Rod through the free holes of the Brackets. The two Pulleys 2 are fixed to the Rod and pushed tightly against the "cutter" to make it rotate with the Rod as the wheels revolve. The wheels are 1" Pulleys fitted with Rubber Rings.

Parts required

4 of No. 2	2 of No. 90a
4 „ „ 5	1 „ „ 125
4 „ „ 10	2 „ „ 126
6 „ „ 12	2 „ „ 155a
1 „ „ 16	2 „ „ 200
4 „ „ 22	
25 „ „ 37	
4 „ „ 38	
2 „ „ 48a	



2.3 FLOATING CRANE



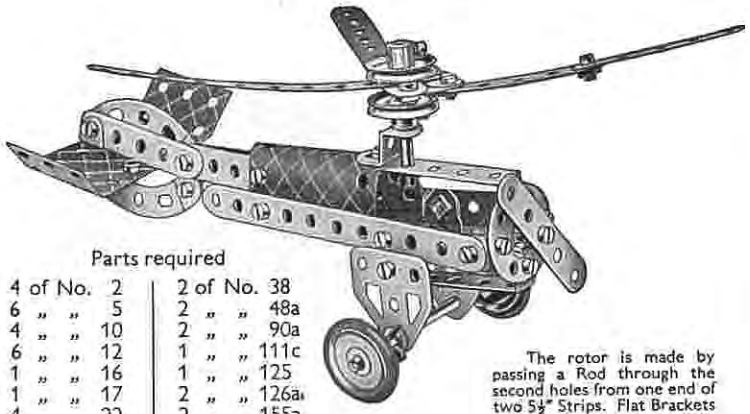
Parts required

4 of No. 2	4 of No. 22	2 of No. 48a	1 of No. 126a
6 „ „ 5	1 „ „ 24	1 „ „ 52	1 „ „ 176
3 „ „ 10	4 „ „ 35	1 „ „ 57c	2 „ „ 188
8 „ „ 12	29 „ „ 37	2 „ „ 90a	2 „ „ 189
2 „ „ 16	3 „ „ 37a	4 „ „ 111c	1 „ „ 199
2 „ „ 17	4 „ „ 38	1 „ „ 125	1 „ „ 200
1 „ „ 19g	1 „ „ 40	2 „ „ 126	

The jib consists of 5½" Strips and 2½" Strips. At its upper end these are joined across by Angle Brackets, and at its lower end by Trunnions. Each side of the lower part of the crane consists of 2½" Strips and small radius Curved Strips, the two sides being connected by 2½" × ½" Double Angle Strips. The jib is pivoted to this structure by means of a 3½" Rod, which carries at each end a 1" Pulley. The Cord 1 fitted with a Loaded Hook, is passed over a 2" Rod held in place in the jib by means of Spring Clips and is then wound around the Crank Handle.

The Cord 2 passes over a Rod held in place in the jib by an Anchoring Spring, and is then wound around the Rod that forms the pivot for the jib. A third Cord is tied to a Bolt fastened in the two Trunnions at the base of the jib, and is wound round Rod 3. This Cord controls the luffing motion of the crane. A ⅜" Bolt passes through the Flanged Plate and is held by a set screw in the boss of the Bush Wheel to which the jib is fastened. The Bush Wheel is bolted to the Double Angle Strip below the Rod 3. The roof of the cabin is bolted to a ½" Reversed Angle Bracket fixed to the Flanged Plate.

2.4 AUTOGIRO



Parts required

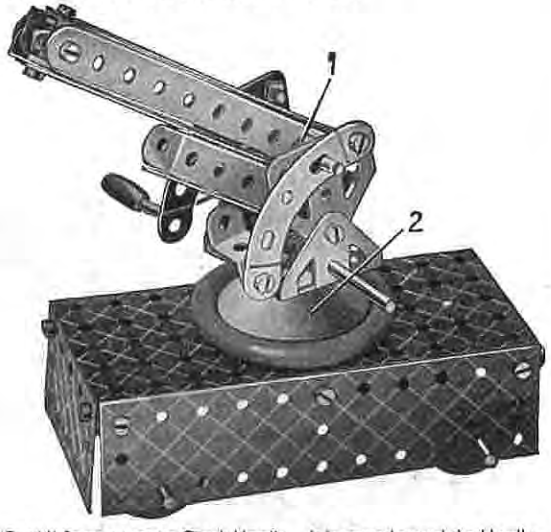
4	of No.	2	2	of No.	38
6	„ „	5	2	„ „	48a
4	„ „	10	2	„ „	90a
6	„ „	12	1	„ „	111c
1	„ „	16	1	„ „	125
1	„ „	17	2	„ „	126a
4	„ „	22	2	„ „	155a
1	„ „	24	2	„ „	188
3	„ „	35	1	„ „	199
25	„ „	37			

The rotor is made by passing a Rod through the second holes from one end of two 5½" Strips. Flat Brackets are bolted to the short ends of the Strips and the third blade of the rotor is fixed to them as shown.

2.5 ANTI-AIRCRAFT GUN

Parts required

4	of No.	2
1	„ „	5
6	„ „	12
2	„ „	16
2	„ „	17
1	„ „	19g
4	„ „	22
1	„ „	24
3	„ „	35
26	„ „	37
4	„ „	38
2	„ „	48a
1	„ „	52
2	„ „	90a
1	„ „	125
2	„ „	126
2	„ „	126a
4	„ „	155a
1	„ „	176
1	„ „	187
2	„ „	188
2	„ „	189

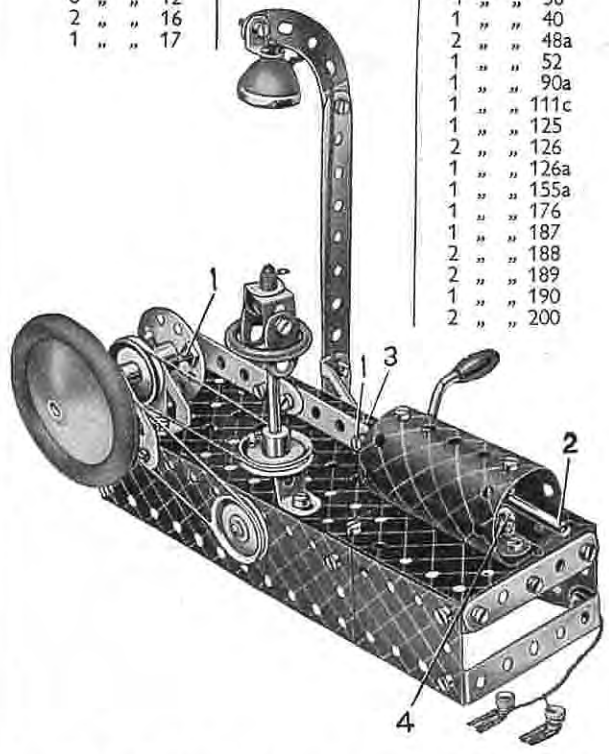


One end of a piece of Cord is fastened to the Crank Handle. It is wound round the Handle a few times and its other end is then fastened to the end of the gun. The two Trunnions are bolted to a Bush Wheel fixed on a 2" Rod that passes through the Road Wheel 2 and the Flanged Plate and is held in place by an Anchoring Spring. The Spring Clips at 1 space the gun barrel from the Flat Trunnions.

2.6 GAS ENGINE

Parts required

1	of No.	2	1	of No.	19g	4	of No.	35
3	„ „	5	4	„ „	22	39	„ „	37
4	„ „	10	1	„ „	24	3	„ „	37a
8	„ „	12				4	„ „	38
2	„ „	16				1	„ „	40
1	„ „	17				2	„ „	48a
						1	„ „	52
						1	„ „	90a
						1	„ „	111c
						1	„ „	125
						2	„ „	126
						1	„ „	126a
						1	„ „	155a
						1	„ „	176
						1	„ „	187
						2	„ „	188
						2	„ „	189
						1	„ „	190
						2	„ „	200



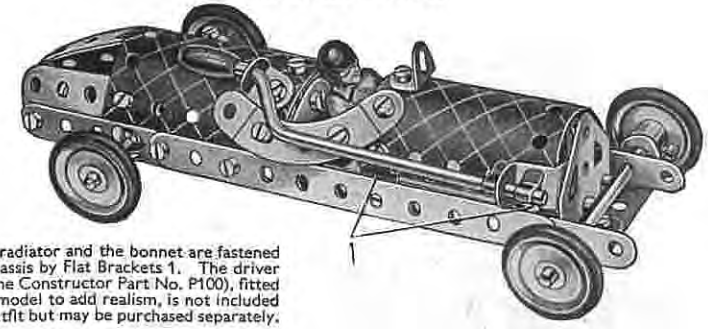
The bearings for the Rod representing the crankshaft are a Flat Trunnion and a Trunnion. The crankshaft carries a Road Wheel and a 1" Pulley at one end, a second 1" Pulley between the bearings, and a Bush Wheel at its other end.

The connecting rod is fastened to the Bush Wheel and to an Angle Bracket 3 by a lock-nutted Bolt 1. The Rod 2 is held in the Angle Bracket 3 by means of Spring Clips, one on each side. An Angle Bracket 4, carrying a Flat Bracket, is bolted inside the cylinder, and a similar arrangement is fitted at the other end. These form bearings for the Rod 2.

The model is operated by the Crank Handle, which carries also a 1" Pulley connected to one of the 1" Pulleys on the crankshaft by a belt of Cord. A second Cord drives the governor, which is mounted on a 3½" Rod journalled in the 5½ × 2½" Flanged Plate and a Reversed Angle Bracket.

The model is fitted with a Spotlight from the Meccano Lighting Set, current being supplied by a 4.5-volt pocket-lamp battery housed in the base of the model.

2.7 RACING CAR



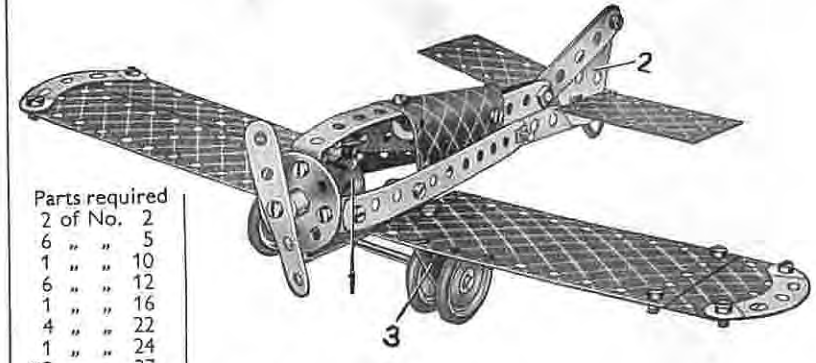
The radiator and the bonnet are fastened to the chassis by Flat Brackets 1. The driver (Aeroplane Constructor Part No. P100), fitted into the model to add realism, is not included in the Outfit but may be purchased separately.

Parts required

4	of No.	2	1	of No.	19g	7	of No.	38
5	„ „	5	4	„ „	22	1	„ „	48a
4	„ „	10	4	„ „	35	2	„ „	90a
8	„ „	12	30	„ „	37	1	„ „	125
2	„ „	16	1	„ „	37a	1	„ „	126

1	of No.	126a	4	of No.	155a
4	„ „	155a	1	„ „	199
1	„ „	199	1	„ „	200

2.8 LOW WING MONOPLANE



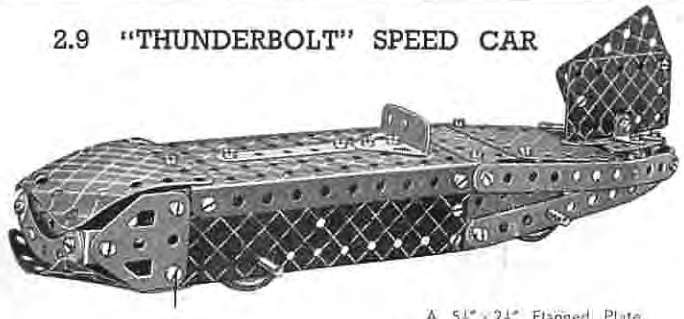
Parts required

2	of No.	2
6	„ „	5
1	„ „	10
6	„ „	12
1	„ „	16
4	„ „	22
1	„ „	24
23	„ „	37
2	„ „	37a
2	„ „	38
2	„ „	48a
2	„ „	90a
3	„ „	111c

2	of No.	126	2	of No.	189
1	„ „	126a	1	„ „	190
4	„ „	155a	1	„ „	191
2	„ „	188	1	„ „	199

The pilot 1 (Aeroplane Constructor Part No. P100) is not included in the Outfit, but may be bought separately. The fin 2 is a Flat Trunnion, and it is clamped between the two 2½" Strips. The bearings 3 for the axle of the landing wheels are Trunnions, bolted to the wings. The wings are attached to the fuselage by Angle Brackets.

2.9 "THUNDERBOLT" SPEED CAR

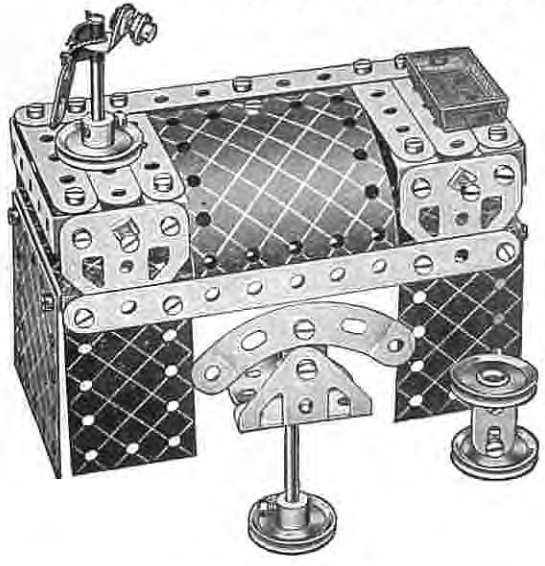


Parts required

4 of No.	2	1 of No.	52
6 " "	5	2 " "	90a
2 " "	10	1 " "	126
4 " "	12	2 " "	126a
2 " "	16	4 " "	155a
4 " "	22	2 " "	188
39 " "	37a	2 " "	189
39 " "	37b	2 " "	190
4 " "	38	2 " "	200
2 " "	48a		

A 5½" × 2½" Flanged Plate, extended at the front by a 1 ⅜" radius Curved Plate and at the rear by two 2½" × 2½" Flexible Plates, forms the top of the car. The rear part of each side is formed by two 5½" Strips and a 2½" Strip, the former being connected together at the tail by Angle Brackets. Bolts 1 hold a 2½" × ½" Double Angle Strip that carries the 1 ⅜" radius Curved Plate forming the underside of the front cowling.

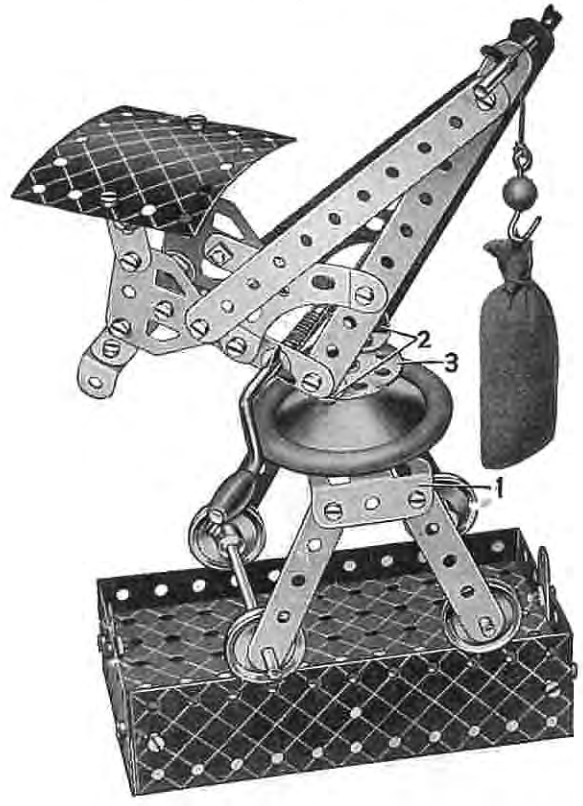
2.10 ROLL TOP DESK



Parts required

2 of No.	2
6 " "	5
4 " "	10
7 " "	12
2 " "	17
4 " "	22
1 " "	24
3 " "	35
38 " "	37
5 " "	37a
1 " "	38
2 " "	48a
1 " "	52
1 " "	90a
3 " "	111c
1 " "	126
2 " "	126a
2 " "	188
1 " "	189
2 " "	190
1 " "	200

2.11 TRAVELLING CRANE



Parts required

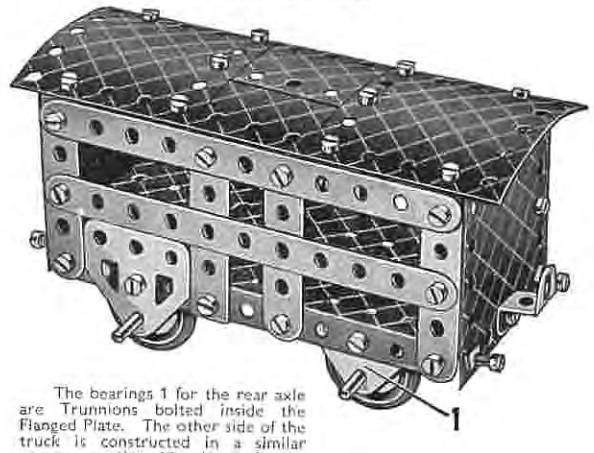
4 of No.	2	1 of No.	19g	3 of No.	38	2 of No.	111c
6 " "	5	4 " "	22	1 " "	40	2 " "	126
4 " "	10	1 " "	24	2 " "	48a	2 " "	126a
6 " "	12	4 " "	35	1 " "	52	1 " "	176
2 " "	16	38 " "	37	1 " "	57c	1 " "	187
2 " "	17	2 " "	37a	2 " "	90a	2 " "	188
2 of No. 189				1 of No. 200			

A 2" Rod is secured in the boss of the Bush Wheel 3. It then passes through the Road Wheel and through the centre of a 2½" × ½" Double Angle Strip bolted between the two Trunnions 1. A Washer and a Cord Anchoring Spring are pushed on to the Rod to hold it in position. The crane jib is attached to the Bush Wheel by the Angle Brackets 2.

2.12 CATTLE TRUCK

Parts required

4 of No.	2
6 " "	5
4 " "	10
5 " "	12
2 " "	16
4 " "	22
38 " "	37
8 " "	37a
4 " "	38
2 " "	48a
1 " "	52
4 " "	111c
1 " "	125
2 " "	126
2 " "	126a
4 " "	155a
2 " "	188
2 " "	190
2 " "	200



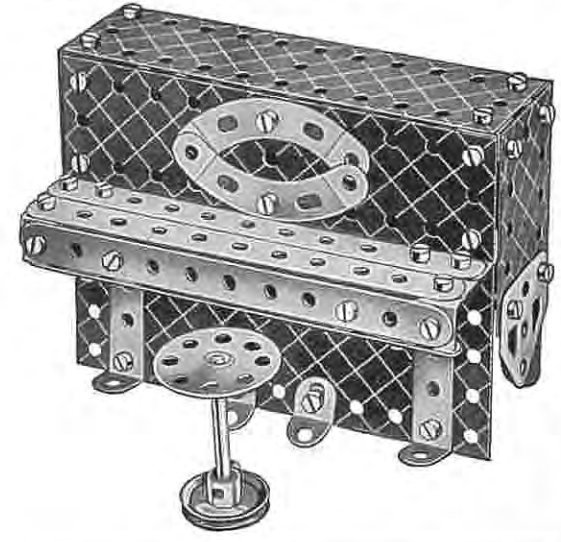
The bearings 1 for the rear axle are Trunnions bolted inside the Flanged Plate. The other side of the truck is constructed in a similar manner to the side shown in the illustration.

2.13 PIANO

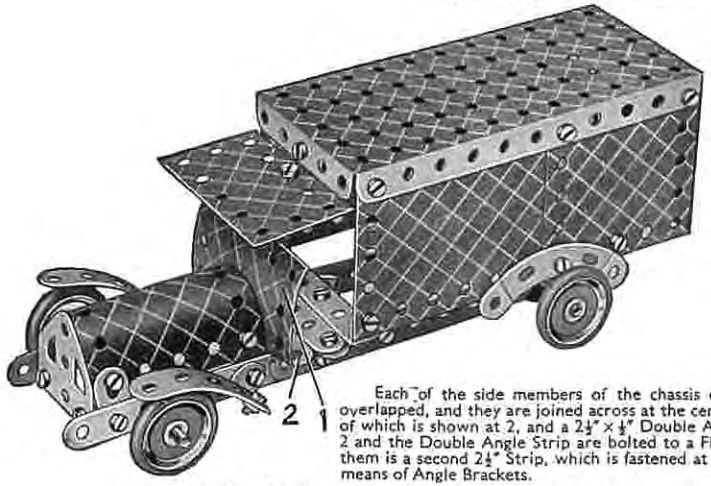
A 5½" × 2½" Flanged Plate is used for the upper part of the back and to each end of this a 2½" Strip is bolted to form the rear legs.

Parts required

4 of No.	2
4 " "	5
4 " "	10
8 " "	12
1 " "	17
1 " "	22
1 " "	24
38 " "	37
4 " "	38
2 " "	48a
1 " "	52
2 " "	90a
2 " "	126
2 " "	126a
2 " "	188
2 " "	189
1 " "	190
1 " "	191



2.14 MOTOR VAN



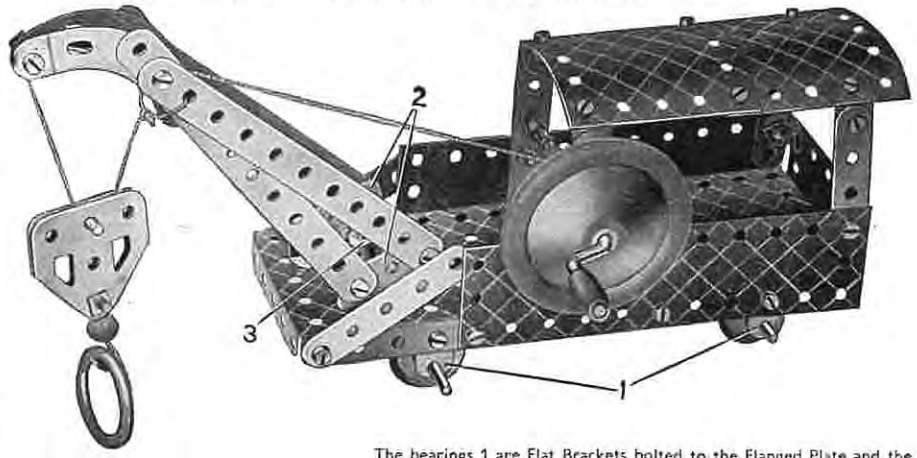
Each of the side members of the chassis consists of two 5½" Strips overlapped, and they are joined across at the centre by two 2½" Strips, one of which is shown at 2, and a 2½" × ½" Double Angle Strip. The 2½" Strip 2 and the Double Angle Strip are bolted to a Flat Trunnion and between them is a second 2½" Strip, which is fastened at each end to the chassis by means of Angle Brackets.

The Plate 1 is fastened to an Angle Bracket that is bolted to Strip 2. The body is fixed to the chassis by a Double Angle Strip and an Angle Bracket.

Parts required
4 of No. 2
4 „ „ 5
4 „ „ 10
8 „ „ 12
2 „ „ 16
4 „ „ 22
4 „ „ 35
40 „ „ 37
4 „ „ 38
2 „ „ 48a
1 „ „ 52
2 „ „ 90a
1 „ „ 126
2 „ „ 126a
4 „ „ 155a
2 „ „ 188
2 „ „ 189
2 „ „ 190
1 „ „ 191
1 „ „ 199

2.15 RAILWAY BREAKDOWN CRANE

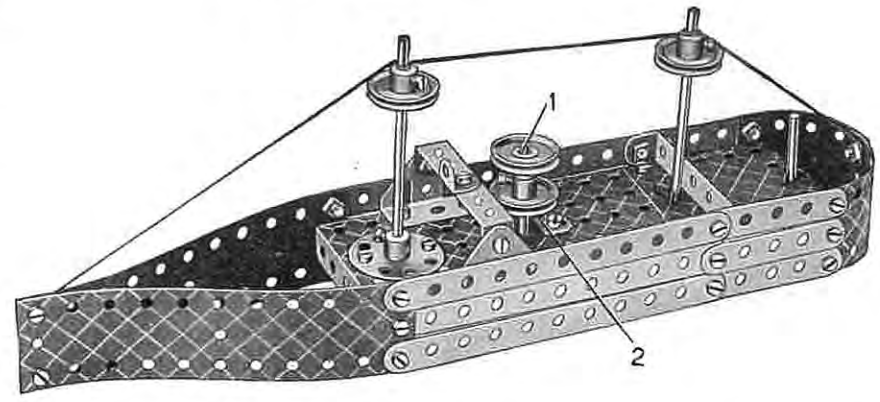
Parts required
4 of No. 2
6 „ „ 5
4 „ „ 10
3 „ „ 12
2 „ „ 16
1 „ „ 17
1 „ „ 19g
4 „ „ 22
1 „ „ 24
2 „ „ 35
39 „ „ 37
3 „ „ 37a
3 „ „ 38
1 „ „ 40
2 „ „ 48a
1 „ „ 52
1 „ „ 57c
2 „ „ 90a
3 „ „ 111c
2 „ „ 126
2 „ „ 126a
1 „ „ 155a
1 „ „ 176
1 „ „ 187
1 of No. 188
2 „ „ 189
1 „ „ 190
2 „ „ 200



The bearings 1 are Flat Brackets bolted to the Flanged Plate and the Flexible Plates respectively. The jib is fastened to two Trunnions 2, which are bolted to the Bush Wheel 3. A 2" Rod is secured in the boss of the Bush Wheel 3. It then passes through a hole in the Flanged Plate, and is held in position by a Spring Clip underneath the Plate.

2.16 STEAMSHIP

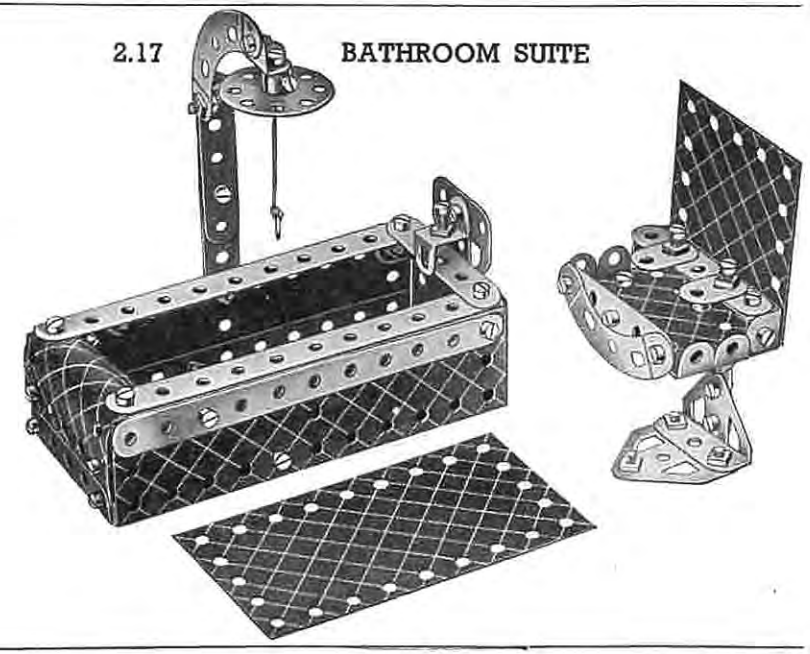
Parts required
4 of No. 2
6 „ „ 5
1 „ „ 12
2 „ „ 16
2 „ „ 17
4 „ „ 22
1 „ „ 24
4 „ „ 35
34 „ „ 37
1 „ „ 40
2 „ „ 48a
1 „ „ 52
1 „ „ 125
2 „ „ 126
2 „ „ 188
2 „ „ 189
1 „ „ 190



The deck of the model is a 5½" × 2½" Flanged Plate extended by a 2½" × 2½" Flexible Plate. A 2½" × ½" Double Angle Strip fitted with an Angle Bracket represents the bridge, and it is supported by two Trunnions bolted to the deck. The funnel consists of a Rod 1 fitted with two 1" fast Pulleys. The Rod passes through the hole in a Reversed Angle Bracket 2 and then through the Flanged Plate.

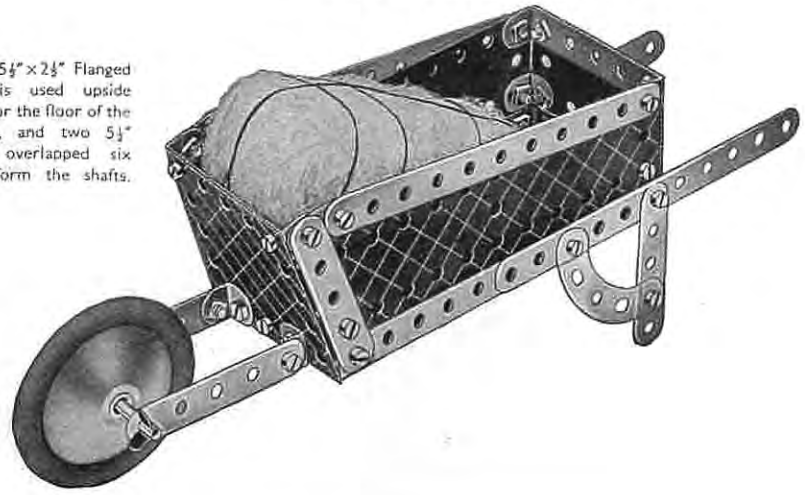
2.17 BATHROOM SUITE

Parts required
4 of No. 2
6 „ „ 5
4 „ „ 10
8 „ „ 12
1 „ „ 24
40 „ „ 37
6 „ „ 37a
2 „ „ 38
2 „ „ 48a
1 „ „ 52
2 „ „ 90a
4 „ „ 111c
1 „ „ 125
2 „ „ 126
2 „ „ 126a
2 „ „ 188
2 „ „ 189
1 „ „ 190
1 „ „ 191
1 „ „ 199
1 „ „ 200



2.18 WHEELBARROW

A 5½" × 2½" Flanged Plate is used upside down for the floor of the barrow, and two 5½" Strips overlapped six holes form the shafts.



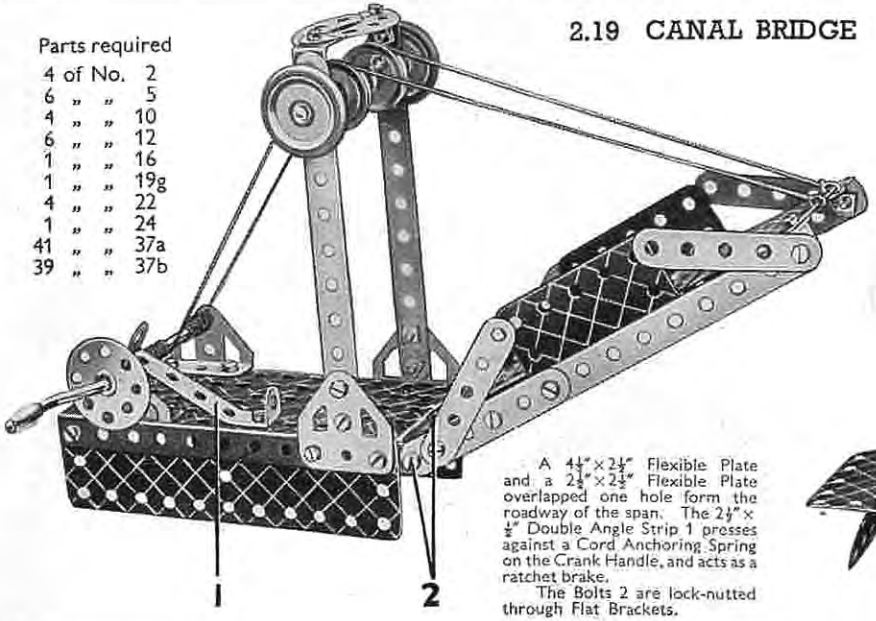
Parts required

4	of No.	2
6	„ „	5
2	„ „	10
4	„ „	12
1	„ „	17
2	„ „	35
29	„ „	37
2	„ „	48a
1	„ „	52
2	„ „	90a
1	„ „	187
1	„ „	188
2	„ „	189
1	„ „	190

2.19 CANAL BRIDGE

Parts required

4	of No.	2
6	„ „	5
4	„ „	10
6	„ „	12
1	„ „	16
1	„ „	19g
4	„ „	22
1	„ „	24
41	„ „	37a
39	„ „	37b



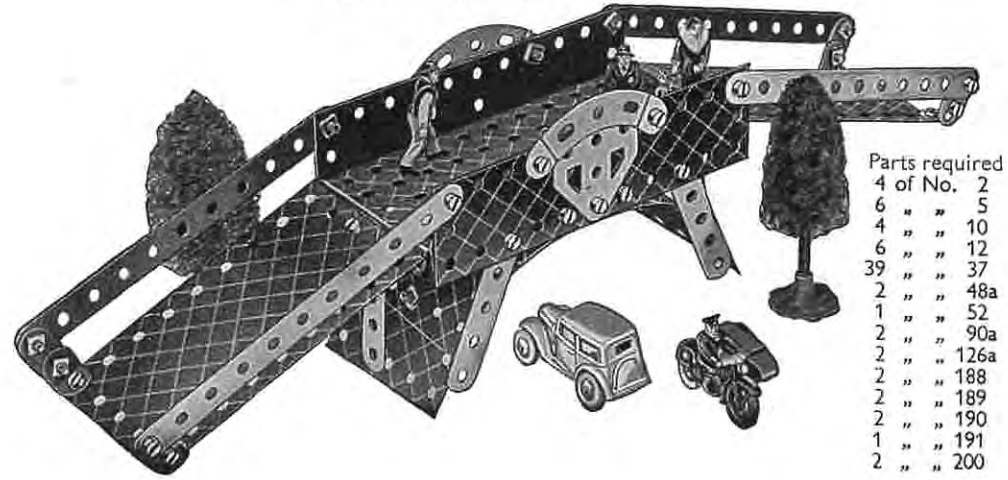
Parts required (continued)

2	of No.	38
2	„ „	48a
1	„ „	52
2	„ „	90a
2	„ „	126
2	„ „	126a
2	„ „	155a
1	„ „	176
2	„ „	188
2	„ „	189
2	„ „	190
1	„ „	191
1	„ „	199
1	„ „	200

A 4½" × 2½" Flexible Plate and a 2½" × 2½" Flexible Plate overlapped one hole form the roadway of the span. The 2½" × ½" Double Angle Strip 1 presses against a Cord Anchoring Spring on the Crank Handle, and acts as a ratchet brake.

The Bolts 2 are lock-nutted through Flat Brackets.

2.20 ROAD BRIDGE



Parts required

4	of No.	2
6	„ „	5
4	„ „	10
6	„ „	12
39	„ „	37
2	„ „	48a
1	„ „	52
2	„ „	90a
2	„ „	126a
2	„ „	188
2	„ „	189
2	„ „	190
1	„ „	191
2	„ „	200

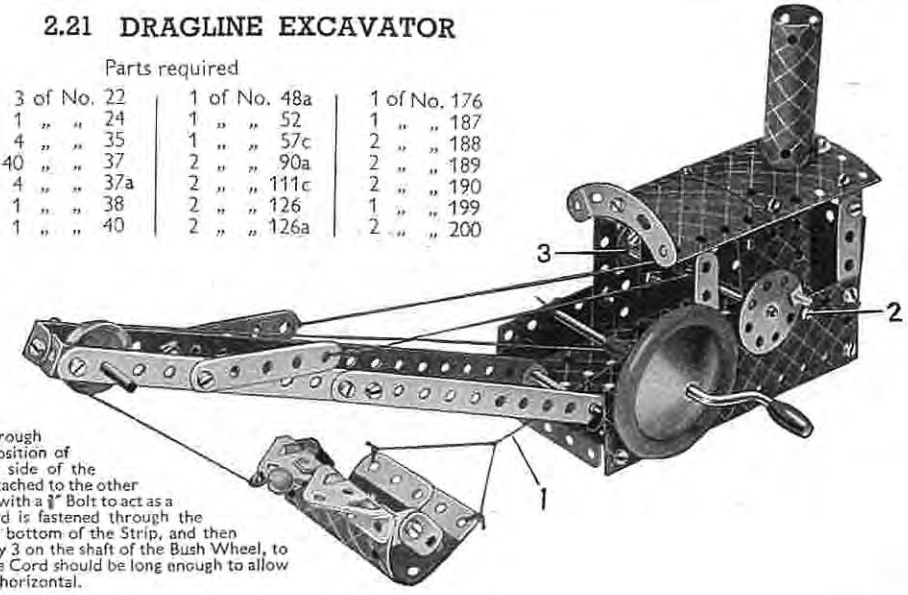
2.21 DRAGLINE EXCAVATOR

Parts required

4	of No. 2	
6	„ „ 5	
2	„ „ 10	
8	„ „ 12	
1	„ „ 16	
2	„ „ 17	
1	„ „ 19g	
3	of No. 22	
1	„ „ 24	
4	„ „ 35	
40	„ „ 37	
4	„ „ 37a	
1	„ „ 38	
1	„ „ 40	
1	of No. 48a	
1	„ „ 52	
1	„ „ 57c	
2	„ „ 90a	
2	„ „ 111c	
2	„ „ 126	
2	„ „ 126a	
1	of No. 176	
1	„ „ 187	
2	„ „ 188	
2	„ „ 189	
2	„ „ 190	
1	„ „ 199	
2	„ „ 200	

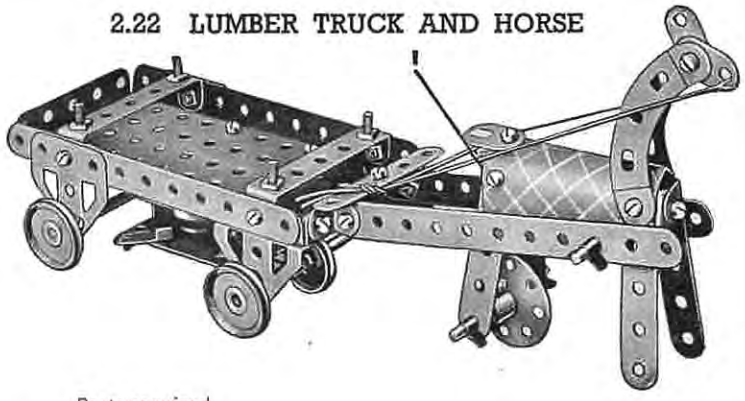
The Cord 1 is wound round the Crank Handle about 12 times then one end of it is fastened to a small Loaded Hook and the other end to the Cord on the bucket.

A Curved Strip is pivoted by a ⅜" Bolt through one of its ends in the position of Bolt 2 but on the rear side of the model. A 1" Pulley is attached to the other end of the Curved Strip, with a ⅜" Bolt to act as a weight. A loop of Cord is fastened through the slotted hole next to the bottom of the Strip, and then passes round the 1" Pulley 3 on the shaft of the Bush Wheel, to act as a brake band. The Cord should be long enough to allow the Strip to lie nearly horizontal.



The greatest thrill in Meccano model-building is experienced when a model is set to work by means of a Meccano Motor. The illustrations below show how the Meccano *Magic* Motor can be fitted without any difficulty to No. 2 Outfit models of various types. Fit the model you have just built with one of these wonderful Motors, and enjoy the fun of watching it work just like the real thing.

2.22 LUMBER TRUCK AND HORSE

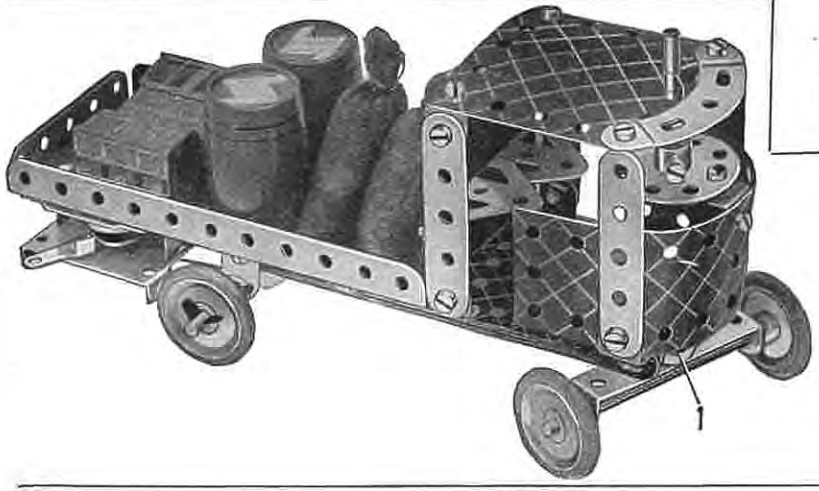


Parts required

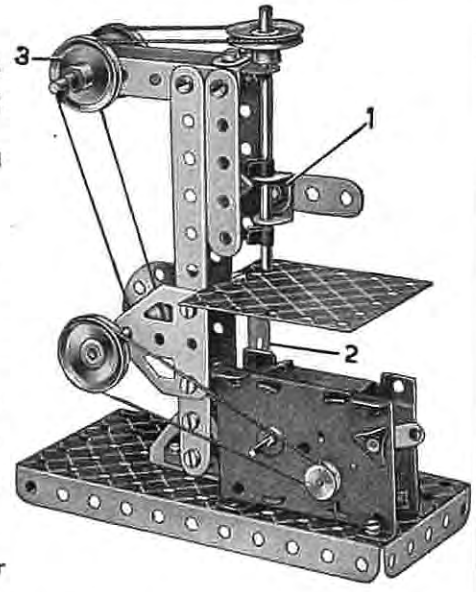
4 of	No. 2	4 of	No. 37a
5 „	„ 5	2 „	„ 48a
3 „	„ 10	1 „	„ 52
5 „	„ 12	2 „	„ 90a
2 „	„ 16	4 „	„ 111c
2 „	„ 17	2 „	„ 126
4 „	„ 22	2 „	„ 126a
1 „	„ 24	4 „	„ 155a
4 „	„ 35	1 „	„ 199
23 „	„ 37	1 *Magic* Motor	

A *Magic* Motor is mounted beneath the cart and the Driving Band is taken from the pulley on the Motor to a ½" fast Pulley (supplied with the Motor) fastened on the 3½" Rod that forms the front axle.

The forelegs of the horse are held together by means of two Angle Brackets bolted in the positions shown. This construction is duplicated at 1 for the hind-legs. The forelegs of the horse are held clear of the ground by means of the reins.



2.23 DRILLING MACHINE



Parts required

2 of	No. 2
5 „	„ 5
1 „	„ 10
5 „	„ 12
1 „	„ 16
2 „	„ 17
4 „	„ 22
1 „	„ 24
4 „	„ 35
22 „	„ 37
2 „	„ 37a
1 „	„ 40
1 „	„ 48a
1 „	„ 52
1 „	„ 111c
2 „	„ 126
2 „	„ 126a
1 „	„ 190
1 *Magic* Motor	

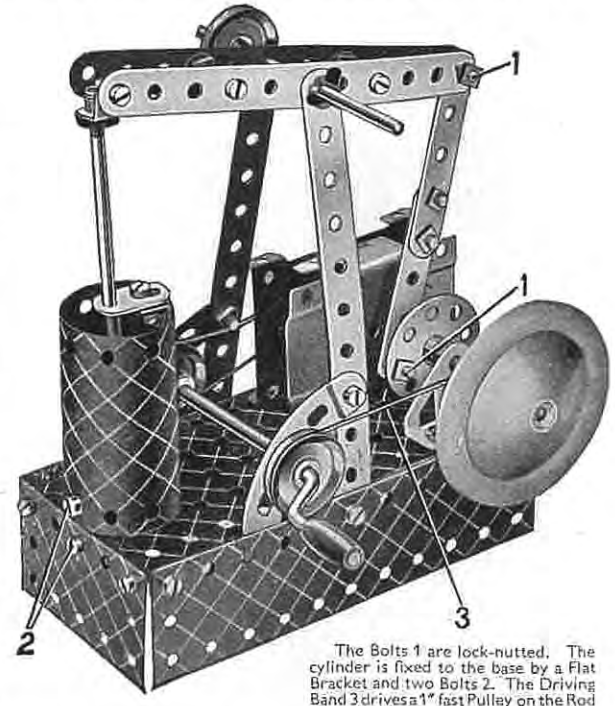
The horizontal 2½" Strips at the top of the drill are joined together, and also to the vertical 2½" Strips, by means of Angle Brackets. The lower bearings 1 are two Angle Brackets bolted to a 2½" Strip and the Rod forming the drill is journalled in these, and in a Flat Bracket at its upper end. A 2½" × 2½" Flexible Plate is supported by a Double Angle Strip 2, and represents the table.

The drive is taken from the Motor to the 1" Pulley on the lower shaft. A second Driving Band passes round the ½" fast Pulley supplied with the Motor, round the two Pulleys at 3, and finally round the 1" Pulley fastened on the vertical drill shaft.

2.24 BEAM ENGINE

Parts required

4 of	No. 2
2 „	„ 5
2 „	„ 10
6 „	„ 12
2 „	„ 16
1 „	„ 17
1 „	„ 19g
4 „	„ 22
1 „	„ 24
4 „	„ 35
31 „	„ 37
4 „	„ 37a
4 „	„ 38
1 „	„ 52
2 „	„ 90a
2 „	„ 111c
1 „	„ 126
1 „	„ 126a
1 „	„ 176
1 „	„ 187
2 „	„ 188
2 „	„ 189
1 „	„ 191
1 *Magic* Motor	



The Bolts 1 are lock-nutted. The cylinder is fixed to the base by a Flat Bracket and two Bolts 2. The Driving Band 3 drives a 1" fast Pulley on the Rod on which the Road Wheel is fastened.

2.25 STEAM WAGON

Parts required

2 of	No. 2	4 of	No. 35	2 of	No. 126
6 „	„ 5	31 „	„ 37	4 „	„ 155a
2 „	„ 10	1 „	„ 37a	1 „	„ 188
8 „	„ 12	4 „	„ 38	1 „	„ 189
2 „	„ 16	2 „	„ 48a	1 „	„ 190
1 „	„ 17	1 „	„ 52	1 „	„ 200
4 „	„ 22	1 „	„ 90a	1 *Magic* Motor	
1 „	„ 24	1 „	„ 125		

The front axle is carried in a 2½" × ½" Double Angle Strip that is pivoted to a Reversed Angle Bracket fastened to a 2½" Strip below the cab by means of the lock-nutted Bolt 1, which is tightened up sufficiently to hold the two front wheels in position when running along. The rear axle is a 3½" Rod and it carries a ½" fast Pulley supplied with the *Magic* Motor

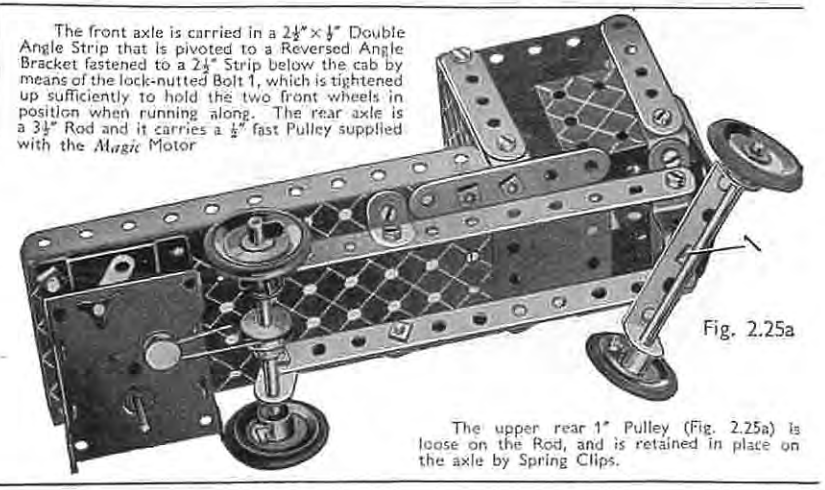
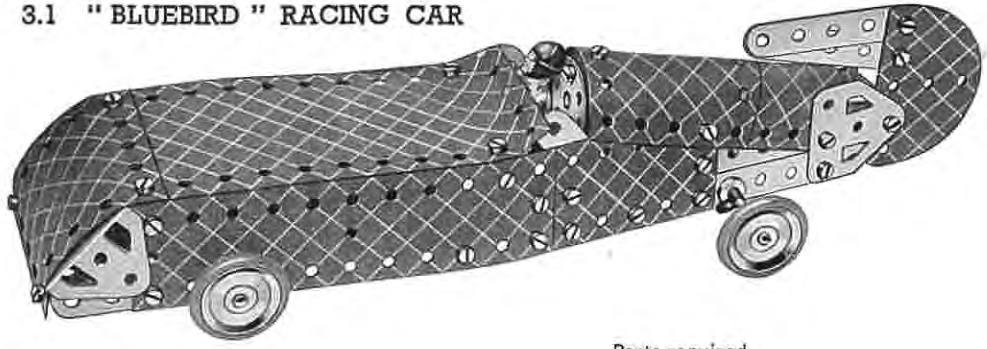


Fig. 2.25a

The upper rear 1" Pulley (Fig. 2.25a) is loose on the Rod, and is retained in place on the axle by Spring Clips.

3.1 " BLUEBIRD " RACING CAR



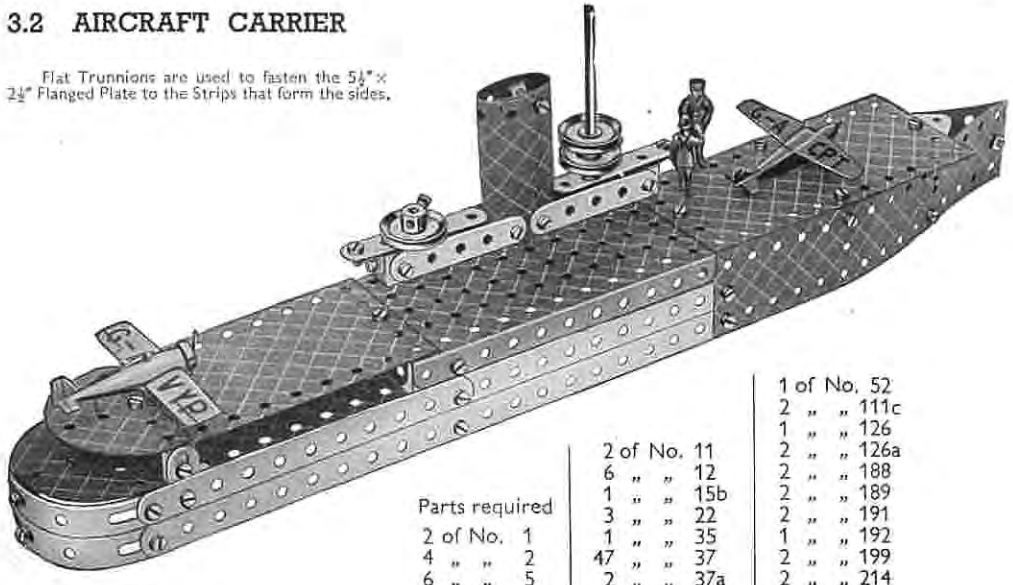
The $5\frac{1}{2}$"×$2\frac{1}{2}$" Flanged Plate is used for the front end of the chassis, and the two $5\frac{1}{2}$"×$1\frac{1}{2}$" Flexible Plates are bolted on each side in the third hole from the front end of the chassis. The two $5\frac{1}{2}$" Strips forming the rear end of the chassis overlap the $5\frac{1}{2}$"×$1\frac{1}{2}$" Flexible Plates one hole.

Parts required

2 of No.	2	2 of No.	35	2 of No.	126	1 of No.	192
6 „ „	5	39 „ „	37	2 „ „	126a	2 „ „	199
2 „ „	10	4 „ „	38	4 „ „	155a	1 „ „	200
3 „ „	12	1 „ „	48a	2 „ „	188	2 „ „	214
2 „ „	16	1 „ „	52	2 „ „	189	1 „ „	217a
4 „ „	22						

3.2 AIRCRAFT CARRIER

Flat Trunnions are used to fasten the $5\frac{1}{2}$"×$2\frac{1}{2}$" Flanged Plate to the Strips that form the sides.



Parts required

2 of No.	1	2 of No.	11	1 of No.	52
4 „ „	2	6 „ „	12	2 „ „	111c
6 „ „	5	1 „ „	15b	1 „ „	126
4 „ „	10	3 „ „	22	2 „ „	126a
		1 „ „	35	2 „ „	188
		47 „ „	37	2 „ „	189
		2 „ „	37a	2 „ „	191
		1 „ „	48a	1 „ „	192
				2 „ „	199
				2 „ „	214
				4 „ „	215

3.3 MARINE ENGINE

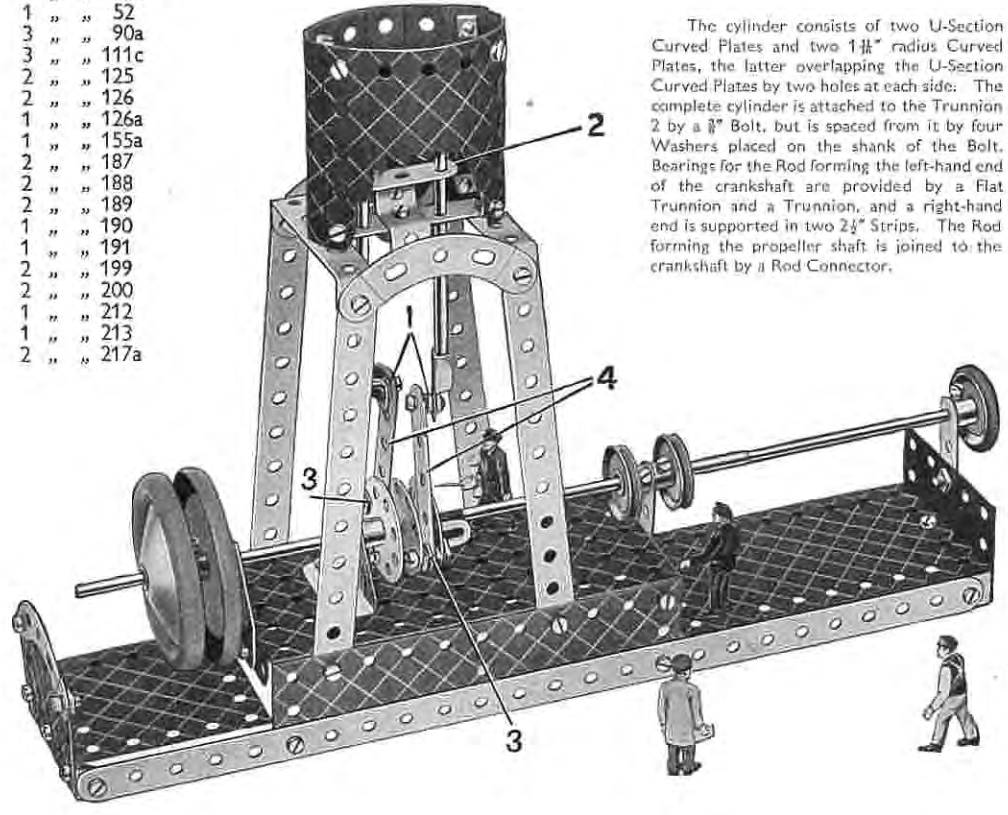
Parts required

2 of No.	1
4 „ „	2
5 „ „	5
8 „ „	12
2 „ „	15b
3 „ „	16
3 „ „	22
1 „ „	24
4 „ „	35
47 „ „	37
9 „ „	37a
6 „ „	38
2 „ „	48a
1 „ „	52
3 „ „	90a
3 „ „	111c
2 „ „	125
2 „ „	126
1 „ „	126a
1 „ „	155a
2 „ „	187
2 „ „	188
2 „ „	189
1 „ „	190
1 „ „	191
2 „ „	199
2 „ „	200
1 „ „	212
1 „ „	213
2 „ „	217a

Bolts 1 are lock-nutted. The Bolts 3 are $\frac{3}{4}$" long and are lock-nutted twice as shown. The $2\frac{1}{2}$" Strips 4 must be quite free to move when the crankshaft is rotated.

The left-hand piston rod is held by two Spring Clips, one at each side of the Angle Bracket pivotally fastened by the Bolts 1. Inside the cylinder the Rods slide through holes in a $2\frac{1}{2}$" Strip and a Trunnion 2. In order to show the construction clearly part of the cylinder has been cut away in the illustration.

The Rod carrying two 1" Pulleys passes through the centre hole in the outer $1\frac{1}{2}$" Disc. A $\frac{1}{2}$"×$\frac{1}{2}$" Angle Bracket is bolted to the Disc in such a position that when the Disc is turned the Angle Bracket engages with a Spring Clip on the Rod. It is important that all nuts and bolts are made quite secure with the Spanner and Screwdriver.



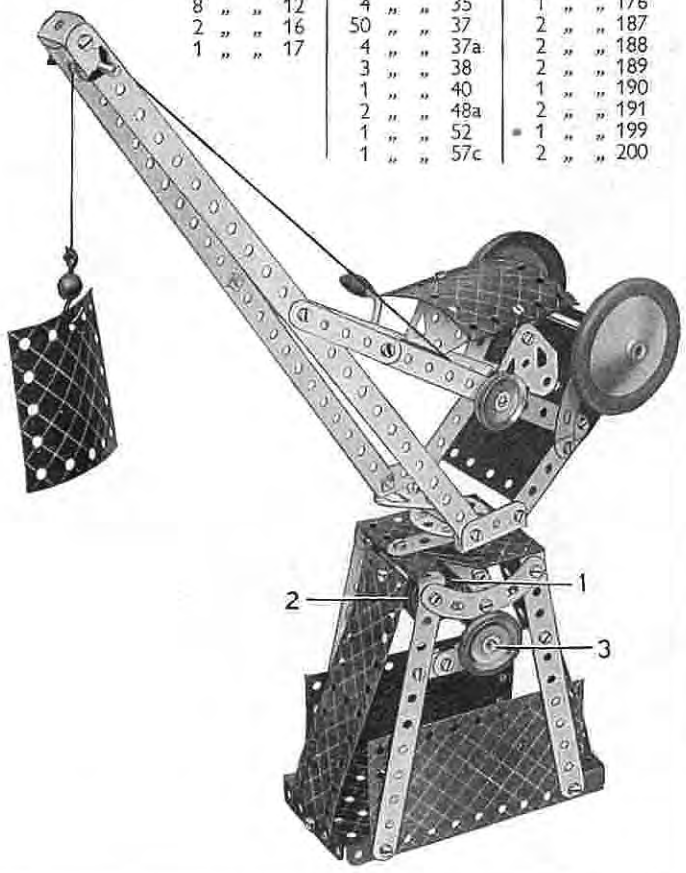
The cylinder consists of two U-Section Curved Plates and two $1\frac{1}{16}$" radius Curved Plates, the latter overlapping the U-Section Curved Plates by two holes at each side. The complete cylinder is attached to the Trunnion 2 by a $\frac{3}{4}$" Bolt, but is spaced from it by four Washers placed on the shank of the Bolt. Bearings for the Rod forming the left-hand end of the crankshaft are provided by a Flat Trunnion and a Trunnion, and a right-hand end is supported in two $2\frac{1}{2}$" Strips. The Rod forming the propeller shaft is joined to the crankshaft by a Rod Connector.

3.4 SWIVELLING JIB CRANE

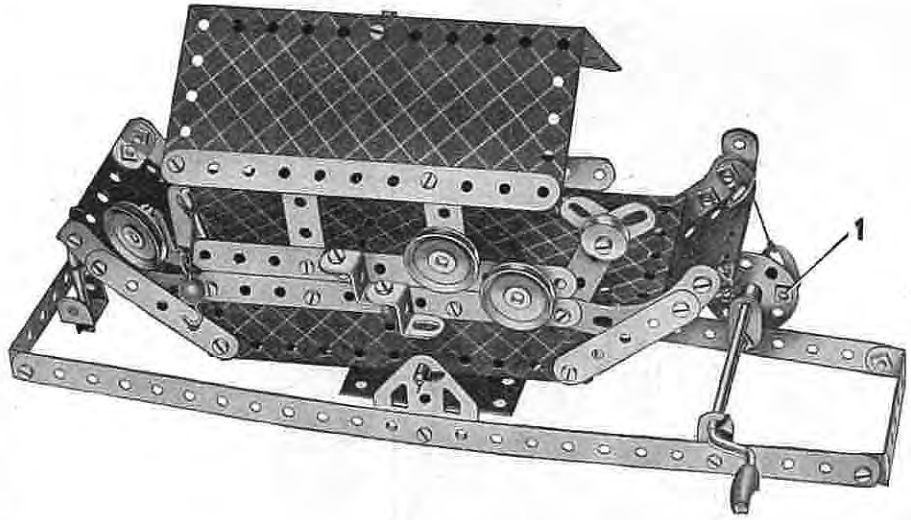
A 1" fast Pulley 1 is fastened to the lower end of a 2" Rod, which passes into and is held in the boss of the Bush Wheel. The Pulley rests on the tyre of Pulley Wheel 2, which is fastened on Rod 3. When the Rod 3 is rotated the jib is caused to swivel. Bearings for Rod 3 are formed by Flat Brackets, which are bolted through their elongated holes to the 2½" Strips shown in the illustration. The roof of the cab is fastened by means of Angle Brackets to two Flat Trunnions, and these in turn are bolted to the compound Strips bracing the jib.

Parts required

2	of No.	1	1	of No. 18a	4	of No. 90a	
6	„ „	2	1	„ „ 19g	4	„ „ 111c	
9	„ „	5	4	„ „ 22	2	„ „ 126	
4	„ „	10	1	„ „ 23	2	„ „ 126a	
1	„ „	11	1	„ „ 24	2	„ „ 155a	
8	„ „	12	4	„ „ 35	1	„ „ 176	
2	„ „	16	50	„ „ 37	2	„ „ 187	
1	„ „	17	4	„ „ 37a	2	„ „ 188	
			3	„ „ 38	2	„ „ 189	
			1	„ „ 40	1	„ „ 190	
			2	„ „ 48a	2	„ „ 191	
			1	„ „ 52	1	„ „ 199	
			1	„ „ 57c	2	„ „ 200	



3.5 NOAH'S ARK



Parts required

2	of No.	1	1	of No. 18a	1	of No. 40	2 of No. 126
6	„ „	2	1	„ „ 19g	1	„ „ 44	2 „ „ 126a
9	„ „	5	3	„ „ 22	2	„ „ 48a	1 „ „ 176
5	„ „	10	1	„ „ 23	1	„ „ 52	2 „ „ 188
2	„ „	11	1	„ „ 24	1	„ „ 57c	2 „ „ 189
8	„ „	12	6	„ „ 35	4	„ „ 90a	2 „ „ 190
1	„ „	16	50	„ „ 37	5	„ „ 111c	2 „ „ 191
1	„ „	17	3	„ „ 37a	2	„ „ 125	2 „ „ 192

A 5½" × 2½" Flanged Plate is used for the bottom of the ark and 5½" × 2½" Flexible Plates and 5½" Strips form the sides. The deck is fastened to the sides by ½" × ½" Angle Brackets.

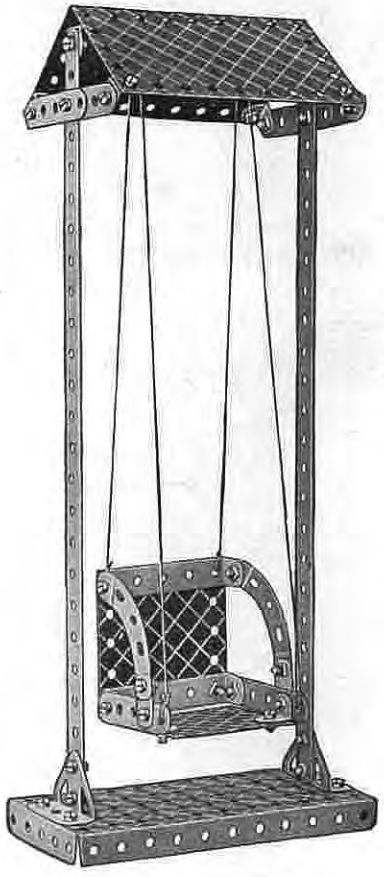
The ark is pivoted on a 3½" Rod journalled in Flat Trunnions, the Rod passing through the flanges of the baseplate at the fifth holes from the end near the Crank Handle. The Crank Handle carries a Bush Wheel, and to this a Flat Bracket is lock-nutted at 1. A length of Cord is attached to the free hole of the Flat Bracket and is then tied to a Double Bracket bolted to the side of the ark. When the Crank Handle is rotated, the downward motion of the Flat Bracket causes one end of the ark to be pulled down, but as the Flat Bracket rises again, the ark returns to its original position.

3.6 SWING

Two 2½" Strips overlapped one hole are bolted to the tops of the 12½" Strips by ½" × ½" Angle Brackets.

Parts required

2	of No.	1	2	of No. 48a		
6	„ „	5	1	„ „ 52		
2	„ „	10	2	„ „ 90a		
8	„ „	12	2	„ „ 126		
34	„ „	37	2	„ „ 190		
1	„ „	40	2	„ „ 191		



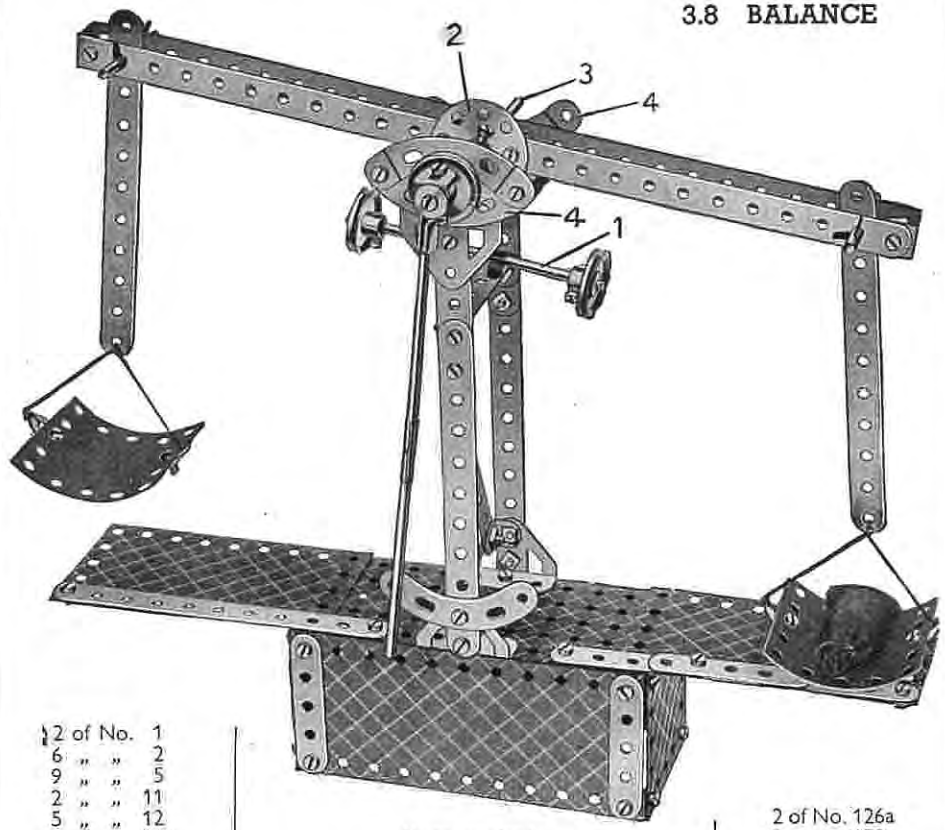
3.7 DENTIST'S CHAIR

Parts required

4	of No. 2	1	of No. 52
8	„ „ 5	3	„ „ 90a
2	„ „ 10	1	„ „ 190
4	„ „ 12	1	„ „ 191
1	„ „ 24	1	„ „ 200
38	„ „ 37	Lighting Set	
1	„ „ 37a	(Not included in Outfit)	
1	„ „ 48a		

This model is fitted with a Spotlight from the Meccano Lighting Set.

3.8 BALANCE



Parts required

12	of No. 1	4	of No. 37a	1	of No. 52
6	„ „ 2	5	„ „ 38	4	„ „ 90a
9	„ „ 5	1	„ „ 40	4	„ „ 111c
2	„ „ 11	1	„ „ 44	1	„ „ 125
5	„ „ 12	2	„ „ 48a	2	„ „ 126
2	„ „ 15b			2	of No. 126a
2	„ „ 16			2	„ „ 190
2	„ „ 17			2	„ „ 191
4	„ „ 22			2	„ „ 192
1	„ „ 24			2	„ „ 200
6	„ „ 35			1	„ „ 212
50	„ „ 37			1	„ „ 213
				2	„ „ 215

One of the 12½" Strips that form the beam of the balance is bolted across a Bush Wheel 2. The 3½" Rod 3 that is locked in the boss of the Bush Wheel rests on the two Curved Strips 4.

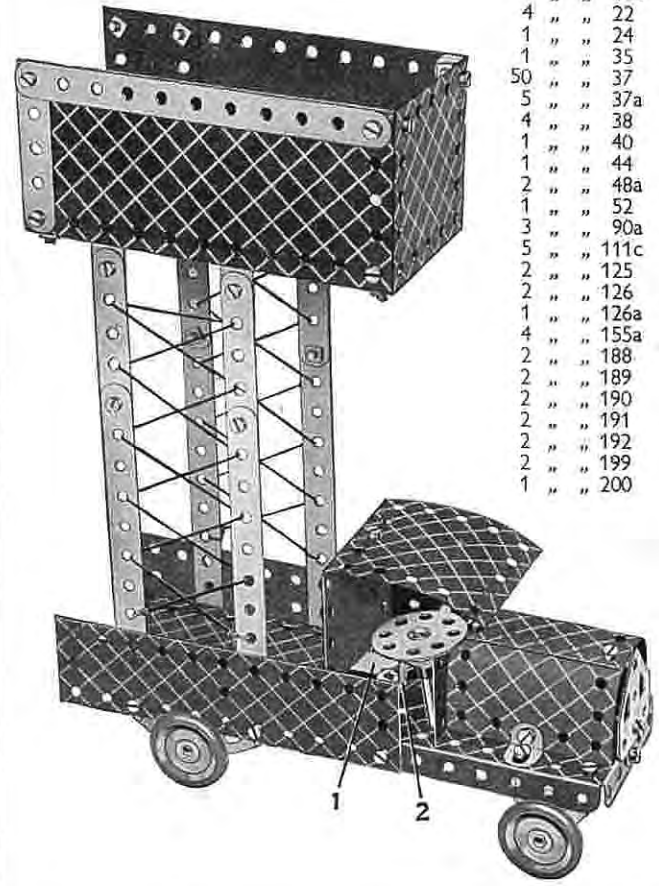
The Rod 1, by which the balance is adjusted, is pushed through the two holes of a Cranked Bent Strip fastened to the Bush Wheel 2 by a Reversed Angle Bracket. The 5½" Strips from which the scale pans are suspended are pivoted at their upper ends on 2" Rods, which are passed through holes in the 12½" Strips of the beam.

3.9 TOWER WAGON

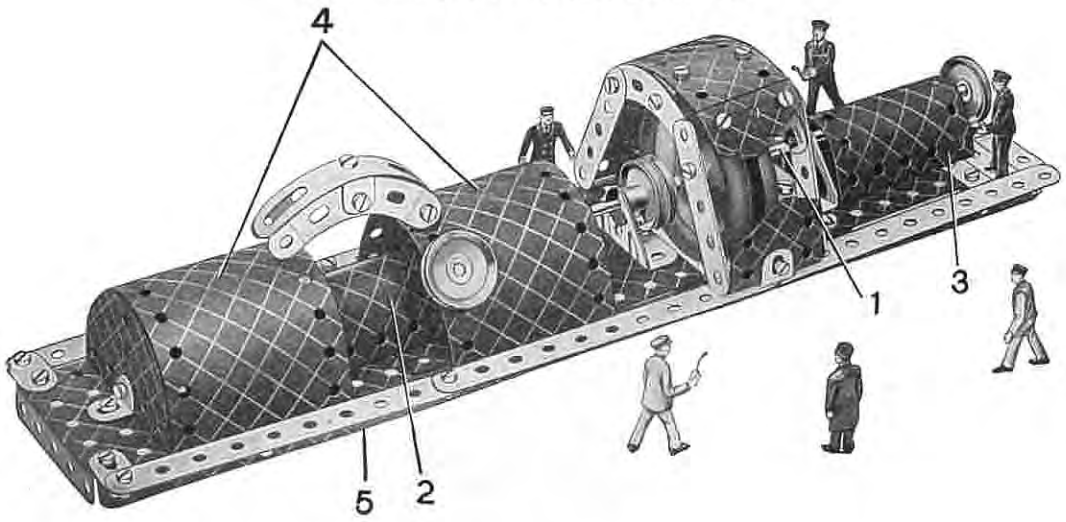
A Cranked Bent Strip 1 is bolted in a horizontal position in the centre of the Flanged Plate, and a 2½" Curved Strip is bolted on top of it by the centre hole to form a seat. A Reversed Angle Bracket 2 is then bolted in one of the elongated holes of the Curved Strip to form a bearing for the Rod carrying the Bush Wheel.

Parts required

6	of No. 2	1	„ „ 200
6	„ „ 5	1	„ „ 212
1	„ „ 10	1	„ „ 213
2	„ „ 11	2	„ „ 215
8	„ „ 12		
2	„ „ 16		
1	„ „ 18a		
4	„ „ 22		
1	„ „ 24		
1	„ „ 35		
50	„ „ 37		
5	„ „ 37a		
4	„ „ 38		
1	„ „ 40		
1	„ „ 44		
2	„ „ 48a		
1	„ „ 52		
3	„ „ 90a		
5	„ „ 111c		
2	„ „ 125		
2	„ „ 126		
1	„ „ 126a		
4	„ „ 155a		
2	„ „ 188		
2	„ „ 189		
2	„ „ 190		
2	„ „ 191		
2	„ „ 192		
2	„ „ 199		



3.10 ELECTRIC GENERATING SET



The base is constructed by bolting two 12½" Strips to the flanges of a 5½" × 2½" Flanged Plate 5, and joining them at their free ends by a 2½" × ½" Double Angle Strip. The space between the 12½" Strips is then filled in by Flexible Plates and 2½" Strips. The Rods that form the shaft of the machine are joined together at 1 by a Rod Connector. The bearings for the shaft are formed by two Trunnions. In the illustration part of the Flexible Plate has been cut away to show the structure of the armature and the commutator. The commutator consists of two 1" Pulleys and the armature of two Road Wheels, the bosses of which are placed in contact with each other.

The connecting pipe is formed from two 2½" Curved Strips and one 3" Formed Slotted Strip joined together at their centre holes by a Double Bracket, and is fastened to the turbine by means of an Angle Bracket. The U-Section Curved Plate 2 is held by a Spring Clip slipped on the upper end of a 2" Rod. One end of the Rod is passed through the middle hole in the top of the Plate, and its other end is then pushed through the Flexible Plate forming the base. The Rod is held by a Spring Clip underneath the Plate. The U-Section Curved Plate 3 is fixed to the base by an Angle Bracket on the rear side of the model. The two Flexible Plates 4 are bolted to the flanges of the 5½" × 2½" Flanged Plate 5. The 1" Pulley representing the steam control is held by a ⅜" Bolt, which passes through a hole in one of the Flexible Plates 4, and is locked in the boss of the Pulley.

Parts required

2 of No. 1	1 of No. 16	1 of No. 52	1 of No. 189
6 „ „ 2	1 „ „ 18a	4 „ „ 90a	1 „ „ 190
8 „ „ 5	4 „ „ 22	1 „ „ 111c	1 „ „ 191
3 „ „ 10	4 „ „ 35	2 „ „ 125	2 „ „ 192
2 „ „ 11	50 „ „ 37	2 „ „ 126	2 „ „ 199
8 „ „ 12	1 „ „ 38	2 „ „ 187	1 „ „ 213
1 „ „ 15b	2 „ „ 48a	1 „ „ 188	2 „ „ 214

1 of No. 215

3.11 TROTTING CAR

The seat of the car consists of two 2½" × 1½" Flexible Plates, overlapped two holes, and it carries at each end a Trunnion. The 3" Formed Slotted Strips that form the mudguards are supported by Reversed Angle Brackets 2, which are spaced from the Flexible Plate by three Washers. The axle consists of two 2" Rods joined by a Rod Connector, and is journalled in the Trunnions.

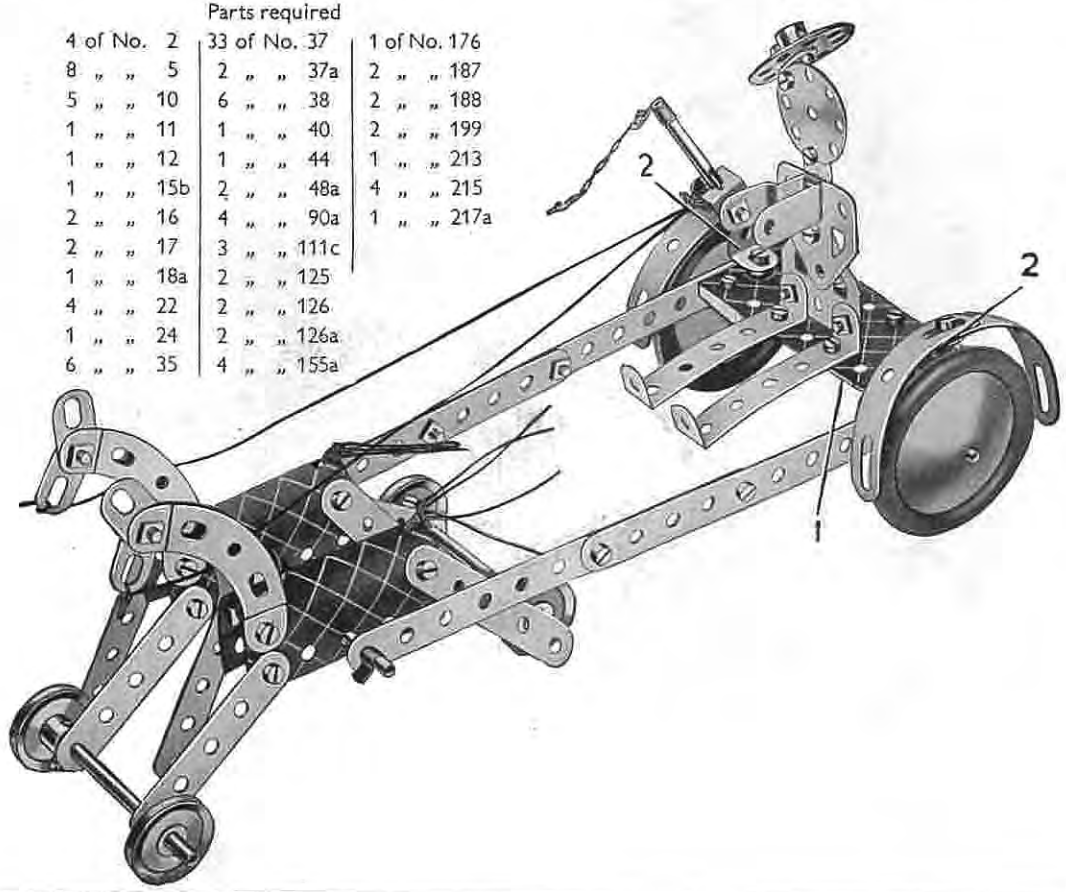
Each of the horses is built up as follows. Four 2½" Strips are bolted to a U-Section Curved Plate in the positions shown to form the legs, and two 2½" small radius Curved Strips represent the neck. A Rod is pushed through the centre holes of the U-Section Curved Plates and is supported in the end holes of the shafts. Two 3½" Rods carrying 1" Pulleys at each of their ends are journalled in the end holes of two of the forelegs, and two of the hind-legs of the horses, as shown.

The driver's body is made with two Flat Trunnions, which are bolted together and then fitted with 2½" × ½" Double Angle Strips to represent legs. The Bolt that fixes the Cranked Bent Strip to the body holds also a Flat Bracket that supports a 1¼" Disc representing the head. An Angle Bracket bolted to the Disc secures a Bush Wheel that has a ⅜" Bolt fixed in its boss by the set-screw.

The whip is a 2" Rod held by Spring Clips in a Double Bracket, and the lash is attached to it by a Cord Anchoring Spring. The reins are fastened to the Flat Brackets that form the horses' heads, and also to the Double Bracket to which the whip is fixed. Short lengths of Cord fastened to the U-Section Curved Plates represent the horses' tails.

Parts required

4 of No. 2	33 of No. 37	1 of No. 176
8 „ „ 5	2 „ „ 37a	2 „ „ 187
5 „ „ 10	6 „ „ 38	2 „ „ 188
1 „ „ 11	1 „ „ 40	2 „ „ 199
1 „ „ 12	1 „ „ 44	1 „ „ 213
1 „ „ 15b	2 „ „ 48a	4 „ „ 215
2 „ „ 16	4 „ „ 90a	1 „ „ 217a
2 „ „ 17	3 „ „ 111c	
1 „ „ 18a	2 „ „ 125	
4 „ „ 22	2 „ „ 126	
1 „ „ 24	2 „ „ 126a	
6 „ „ 35	4 „ „ 155a	



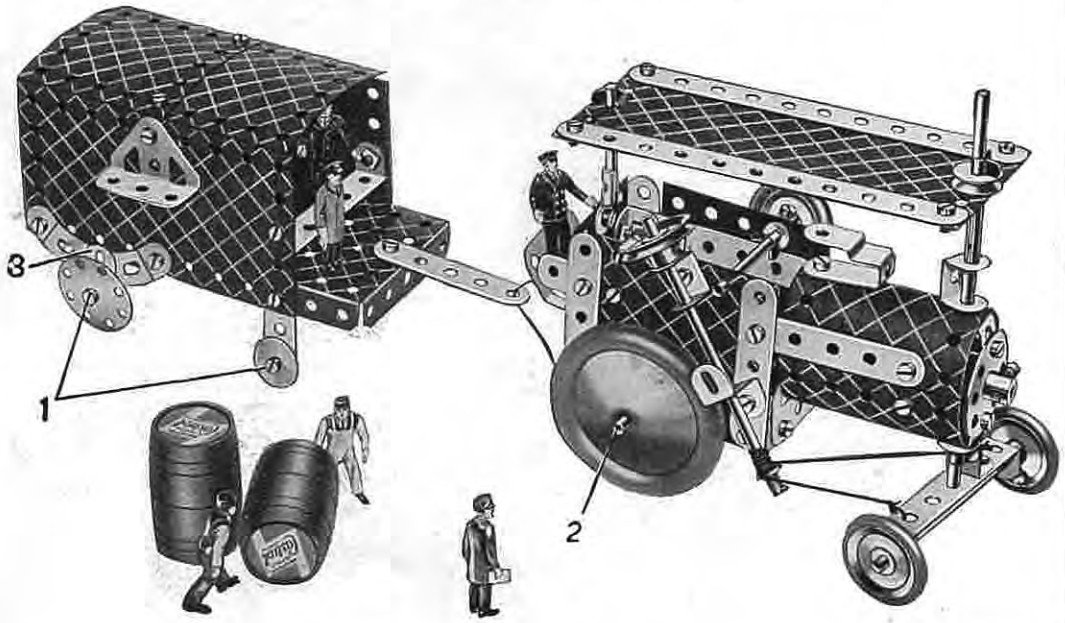
3.12 STEAM TRACTOR AND TRAILER

The steering column, a 3½" Rod, is supported in the holes of a Double Bracket and a Reversed Angle Bracket bolted to the side of the cab. Cord is wound round the lower part of the Rod and its ends are tied to the 2½" × ½" Double Angle Strip that carries the front axle. Care must be taken that the Cord is wound tightly round the Rod, or it will slip when the steering wheel is rotated. The Rod 2 is supported in holes in the Flexible Plates that form the sides of the cab.

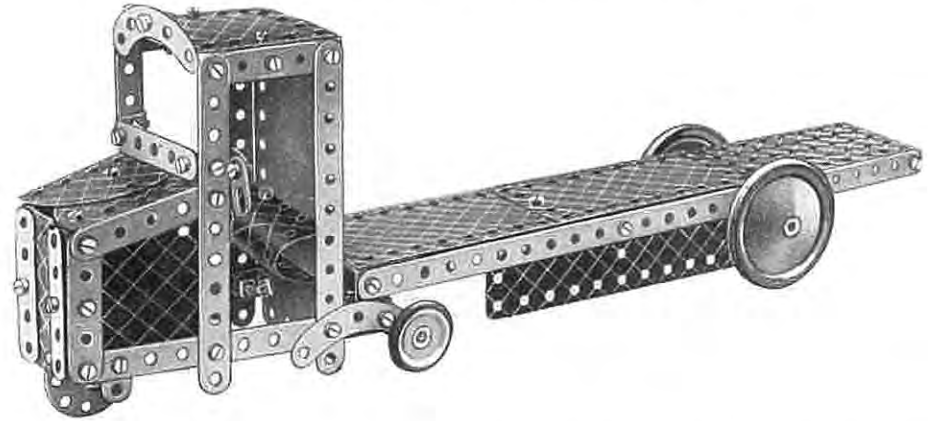
The Bush Wheel that forms the front of the boiler has two Angle Brackets bolted to it and a Rod passes through the free holes of these Brackets to hold the Bush Wheel in position. This Rod is joined by a Rod Connector to a 2" Rod that forms the chimney. The roof of the cab consists of a 5½" × 2½" Flexible Plate, and is held in position by Spring Clips placed on the two Rods that pass through it. The Flat Brackets 3 are bolted in the centre holes of the 2½" Curved Strips. The Bolts 1 are lock-nutted in position and the wheels turn freely on them.

Parts required

4 of No. 2	1 of No. 23	2 of No. 90a	2 of No. 191
9 „ „ 5	1 „ „ 24	4 „ „ 111c	1 „ „ 192
5 „ „ 10	4 „ „ 35	2 „ „ 125	2 „ „ 199
2 „ „ 11	43 „ „ 37	2 „ „ 126	2 „ „ 200
8 „ „ 12	8 „ „ 37a	2 „ „ 126a	1 „ „ 212
2 „ „ 15b	6 „ „ 38	3 „ „ 155a	1 „ „ 213
2 „ „ 16	1 „ „ 40	1 „ „ 176	1 „ „ 214
2 „ „ 17	1 „ „ 44	2 „ „ 187	2 „ „ 217a
1 „ „ 18a	2 „ „ 48a	2 „ „ 188	2 „ „ 217b
4 „ „ 22	1 „ „ 52	2 „ „ 190	



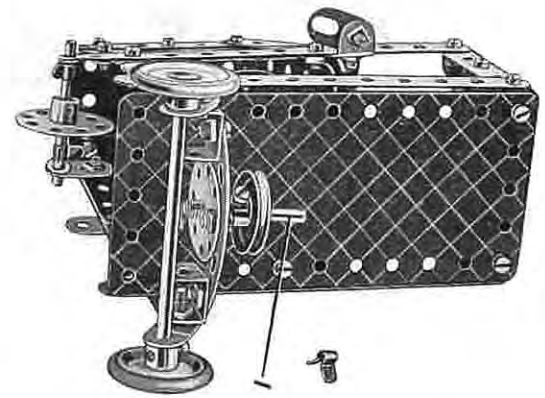
3.13 MECHANICAL HORSE AND TRAILER



Parts required

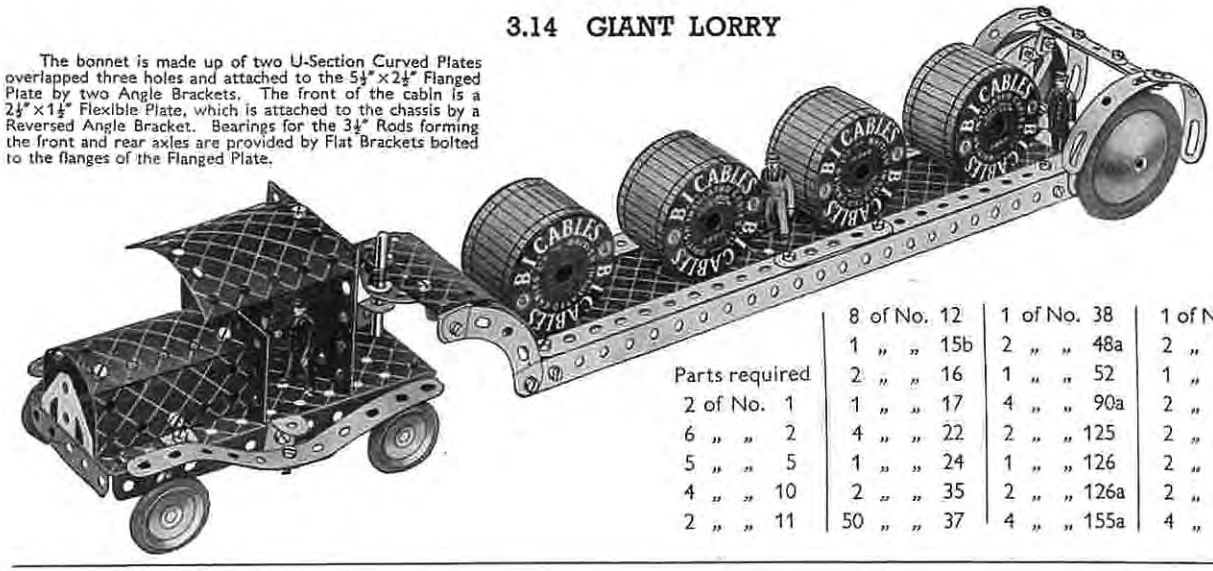
2 of No. 1	4 of No. 90a
6 „ „ 2	6 „ „ 111c
9 „ „ 5	2 „ „ 125
4 „ „ 10	2 „ „ 126
2 „ „ 11	2 „ „ 126a
8 „ „ 12	2 „ „ 155a
2 „ „ 16	1 „ „ 176
1 „ „ 17	2 „ „ 187
1 „ „ 18a	1 „ „ 188
3 „ „ 22	2 „ „ 189
1 „ „ 24	2 „ „ 190
4 „ „ 35	2 „ „ 191
56 „ „ 37a	1 „ „ 192
50 „ „ 37b	1 „ „ 199
2 „ „ 38	1 „ „ 200
2 „ „ 48a	2 „ „ 214
1 „ „ 52	1 „ „ 217a

The chassis of the mechanical horse is built up on two 5½" Strips, extended at the rear by 2½" Curved Strips that provide bearings for the rear axle. The method of building up the bonnet and cab is clear from the illustration. The rear ends of the 5½" Strips are joined by a Curved Strip and two Double Brackets. At the centre of the Curved Strip is bolted a 1½" Disc through which passes a 1½" Rod 1. This Rod engages in the centre hole of the Plate at the front of the trailer, and is retained in place by a Spring Clip and a Cord Anchoring Spring. A 1" Pulley and two Washers space the end of the trailer from the 1½" Disc. Bearings for the rear axle are provided by Flat Trunnions.



3.14 GIANT LORRY

The bonnet is made up of two U-Section Curved Plates overlapped three holes and attached to the 5½" × 2½" Flanged Plate by two Angle Brackets. The front of the cabin is a 2½" × 1½" Flexible Plate, which is attached to the chassis by a Reversed Angle Bracket. Bearings for the 3½" Rods forming the front and rear axles are provided by Flat Brackets bolted to the flanges of the Flanged Plate.



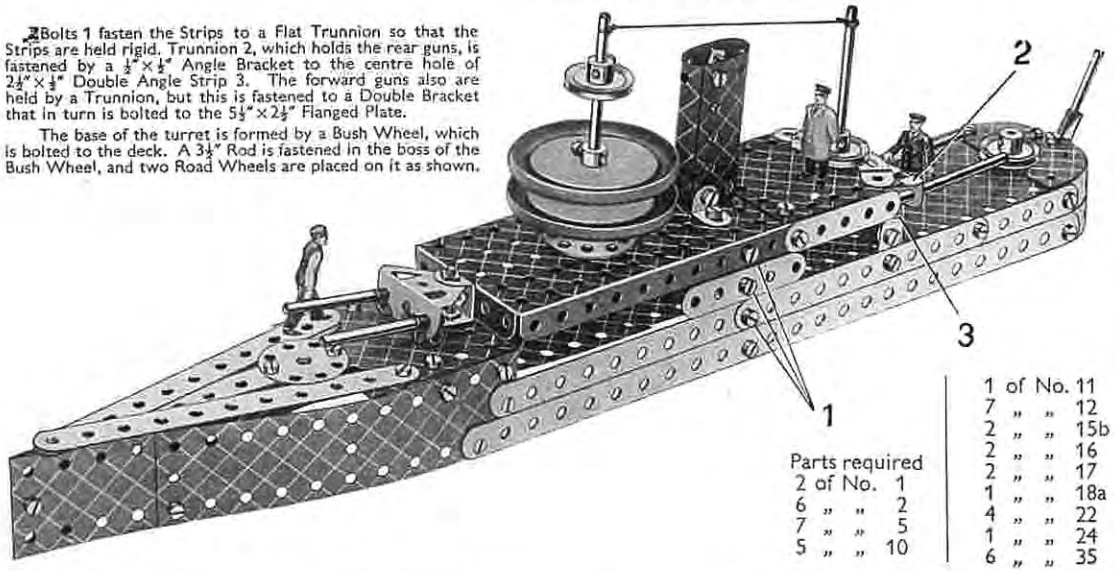
Parts required

2 of No.	1	8 of No.	12	1 of No.	38	1 of No.	176
6 „ „	2	1 „ „	15b	2 „ „	48a	2 „ „	187
5 „ „	5	2 „ „	16	1 „ „	52	1 „ „	188
4 „ „	10	1 „ „	17	4 „ „	90a	2 „ „	190
2 „ „	11	4 „ „	22	2 „ „	125	2 „ „	192
		1 „ „	24	1 „ „	126	2 „ „	199
		2 „ „	35	2 „ „	126a	2 „ „	200
		50 „ „	37	4 „ „	155a	4 „ „	215

3.15 BATTLE CRUISER

Bolts 1 fasten the Strips to a Flat Trunnion so that the Strips are held rigid. Trunnion 2, which holds the rear guns, is fastened by a ½" × ½" Angle Bracket to the centre hole of 2½" × ½" Double Angle Strip 3. The forward guns also are held by a Trunnion, but this is fastened to a Double Bracket that in turn is bolted to the 5½" × 2½" Flanged Plate.

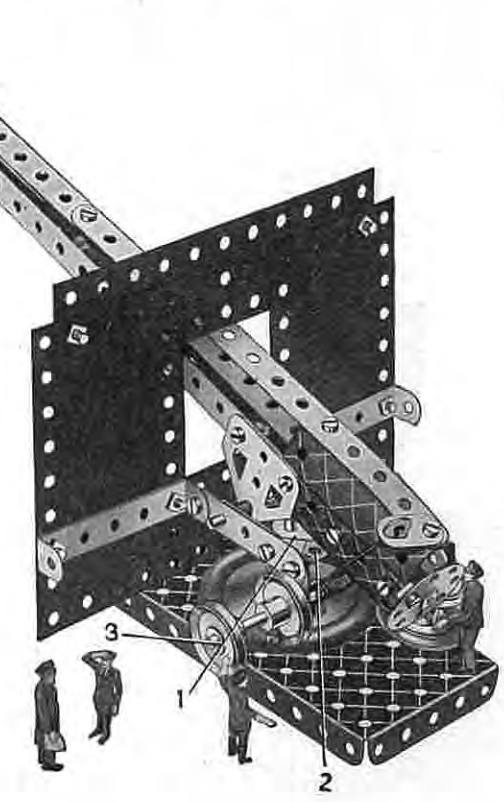
The base of the turret is formed by a Bush Wheel, which is bolted to the deck. A 3½" Rod is fastened in the boss of the Bush Wheel, and two Road Wheels are placed on it as shown.



Parts required

2 of No.	1	1 of No.	11	50 of No.	37	1 of No.	191
6 „ „	2	7 „ „	12	6 „ „	37a	1 „ „	192
7 „ „	5	2 „ „	15b	1 „ „	40	1 „ „	199
5 „ „	10	2 „ „	16	2 „ „	48a	2 „ „	200
		2 „ „	17	1 „ „	52	1 „ „	212
		1 „ „	18a	1 „ „	90a	1 „ „	214
		4 „ „	22	6 „ „	111c	4 „ „	215
		1 „ „	24	2 „ „	126	1 „ „	217a
		6 „ „	35	2 „ „	126a	1 „ „	217b
				1 „ „	176		
				2 „ „	187		
				2 „ „	188		
				2 „ „	189		
				2 „ „	190		

3.16 NAVAL GUN



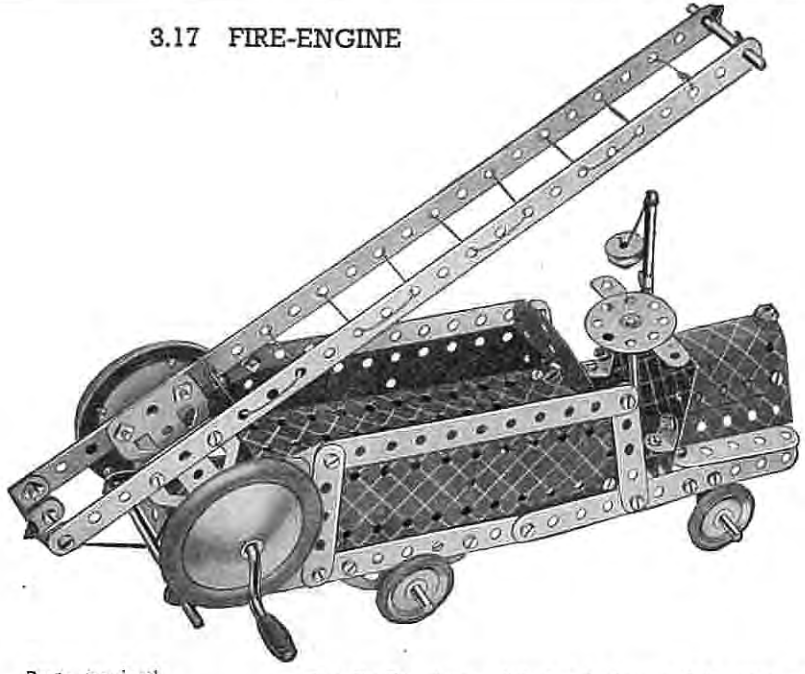
Parts required

2 of No.	1	1 of No.	111c
5 „ „	2	2 „ „	126
3 „ „	5	2 „ „	126a
3 „ „	10	1 „ „	155a
2 „ „	11	1 „ „	176
2 „ „	12	1 „ „	187
1 „ „	16	1 „ „	188
2 „ „	17	1 „ „	189
4 „ „	22	2 „ „	191
1 „ „	24	2 „ „	199
4 „ „	35	1 „ „	217a
28 „ „	37		
2 „ „	37a		
5 „ „	38		
1 „ „	40		
2 „ „	48a		
1 „ „	52		

The Flexible Plates forming the gun shield are fastened by means of Double Angle Strips and 2½" Strips to two Trunnions 1. The Trunnions are bolted to Bush Wheel 2. A 2" Rod held in the boss of the Bush Wheel passes through a Road Wheel and the centre hole of the 5½" × 2½" Flanged Plates. The Rod is fastened underneath the Flanged Plate by a Cord Anchoring Spring so that the gun is free to swivel.

The elevation of the gun is controlled by Rod 3. Cord is wound round the Rod, then passed through the hole of a Flat Bracket fastened at the rear end of the gun, and knotted to a Washer as shown. The 1¼" Disc at the end of the gun is fastened by an Angle Bracket to the U-Section Curved Plates representing the breech.

3.17 FIRE-ENGINE



Parts required

2	of No.	1	2	of No.	125
6	„ „	2	2	„ „	126
8	„ „	5	2	„ „	126a
5	„ „	10	4	„ „	155a
2	„ „	11	1	„ „	176
7	„ „	12	2	„ „	187
2	„ „	15b	2	„ „	188
2	„ „	16	2	„ „	189
1	„ „	17	2	„ „	190
1	„ „	19g	1	„ „	192
4	„ „	22	1	„ „	199
1	„ „	23	1	„ „	212
1	„ „	24	1	„ „	214
6	„ „	35			
50	„ „	37			
6	„ „	37a			
5	„ „	38			
1	„ „	40			
2	„ „	48a			
1	„ „	52			
4	„ „	90a			
6	„ „	111c			

Two Flat Trunnions are bolted to the bottom of the ladder, and the shaft of the Crank Handle shown in Fig. 3.17a passes through the holes at their narrow ends. The bonnet, which is formed from a U-Section Curved Plate and two 2½" × 1½" Flexible Plates, is fastened to the frame by Reversed Angle Brackets. These latter also support the 2½" Strips at the side of the bonnet.

The 3½" Rod representing the steering column passes through the free hole of a Flat Bracket bolted to the dashboard, then through a hole in the Flexible Plate at the bottom of the cab. It is fastened in position by a Cord Anchoring Spring.

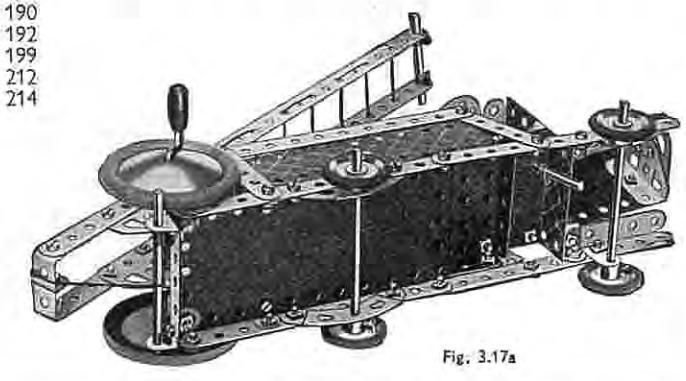
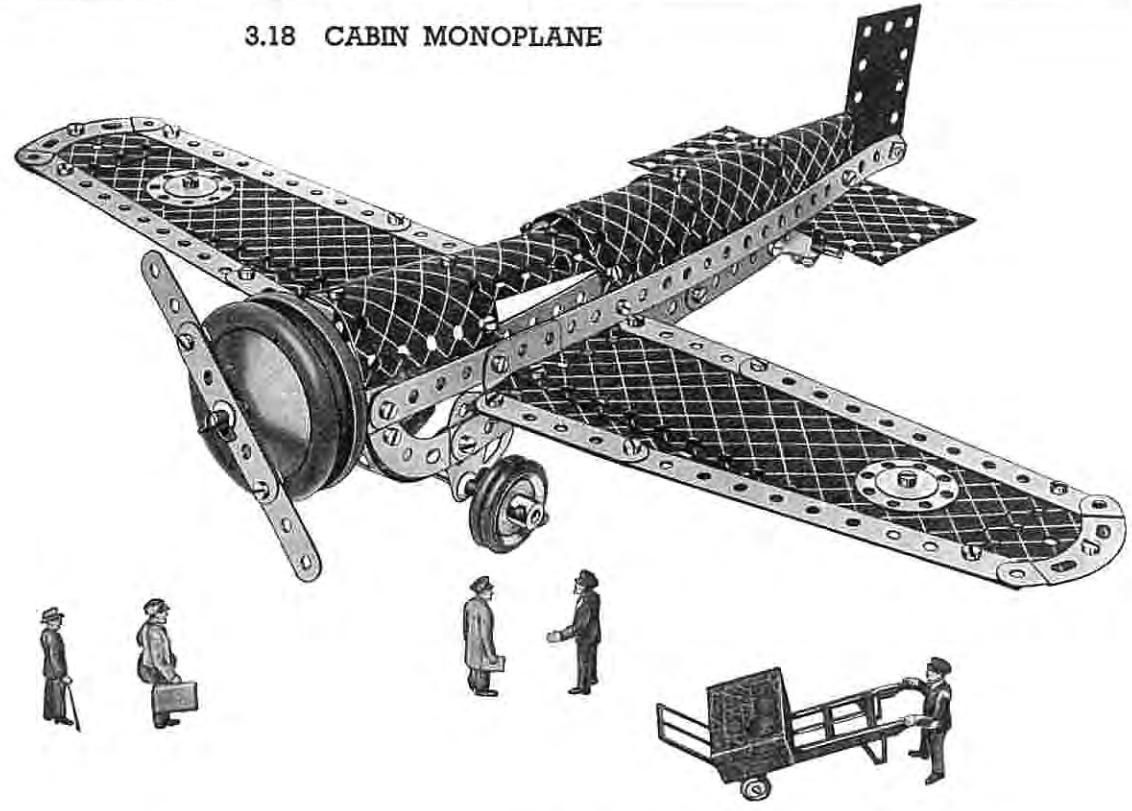


Fig. 3.17a

3.18 CABIN MONOPLANE



Parts required

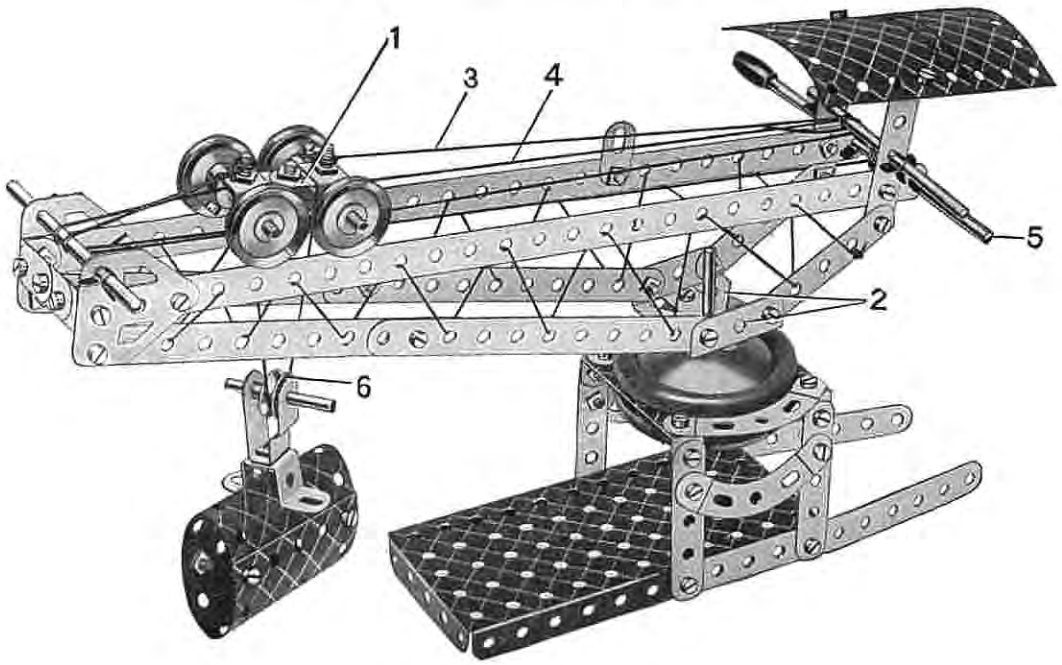
2	of No.	1	4	of No.	22	4	of No.	90a	2	of No.	190
6	„ „	2	1	„ „	23	6	„ „	111c	1	„ „	191
9	„ „	5	1	„ „	24	2	„ „	125	2	„ „	192
5	„ „	10	5	„ „	35	2	„ „	126	2	„ „	199
1	„ „	11	50	„ „	37	2	„ „	126a	2	„ „	200
8	„ „	12	6	„ „	37a	4	„ „	155a	2	„ „	214
1	„ „	16	5	„ „	38	2	„ „	187	2	„ „	215
1	„ „	17	1	„ „	44	2	„ „	188	2	„ „	217a
1	„ „	18a	2	„ „	48a	2	„ „	189	2	„ „	217b

The engine and propeller are attached by fastening a Bush Wheel to the nose of the fuselage by two Angle Brackets. A 2" Rod is locked in the boss of the Bush Wheel and forms the support for the Road Wheels and the compound strip representing the propeller.

The wings are attached to the fuselage by ½" × ½" Angle Brackets and Trunnions. The tail wheel is supported on a 1½" Rod journalled in the holes of a Cranked Bent Strip fastened to the fuselage by a Double Bracket.

The Rod on which the double landing wheels are mounted passes through the holes in the narrow ends of two Flat Trunnions bolted to the fuselage.

3.19 BLOCK-SETTING CRANE



Parts required

2	of No.	1	
6	„ „	2	
8	„ „	5	
5	„ „	10	
2	„ „	11	
4	„ „	12	
1	„ „	15b	
2	„ „	16	
2	„ „	17	
1	„ „	18a	
1	„ „	19g	
4	„ „	22	
1	„ „	23	
1	„ „	24	
6	„ „	35	
50	„ „	37	
4	of No.	37a	
6	„ „	38	
1	„ „	40	
1	„ „	44	
2	„ „	48a	
1	„ „	52	
4	„ „	90a	
4	„ „	111c	
2	„ „	125	
2	„ „	126	
2	„ „	126a	
1	„ „	176	
2	„ „	187	
2	„ „	188	
2	„ „	199	
2	„ „	200	

The travelling bogie 1 consists of two Flat Brackets bolted together by their elongated holes, and at each end of it Double Brackets are fastened by ⅜" Bolts. Two 2" Rods are pushed through the Double Brackets and carry 1" fast Pulleys spaced so that their grooves fit on the two 12½" Strips that form the top of the jib. The Trunnions 2 at the base of the jib, are secured to a Bush Wheel mounted on a Rod held in the bosses of two Road Wheels. The Road Wheels are placed one above and one below the 2½"×1½" Flexible Plates, that form the top of the tower.

Cord 3 is first fastened to the ⅜" Bolt at the rear end of the travelling bogie, and then wound three times around the Crank Handle. It is then led around the Rod journalled in the Flat Trunnion at the front end of the jib, and brought back and tied to another ⅜" Bolt at the front of the bogie.

Cord 4 is first fastened to Rod 5, which is passed through the end holes of the 12½" Strips, and then over the rear axle of the bogie It is then passed around the ½" Pulley 6, led over the front axle of the bogie, around the Rod at the front end of the jib, and finally tied to the bogie. The ½" loose Pulley 6 and its Rod are held in the Cranked Bent Strip by a Cord Anchoring Spring.

Parts required

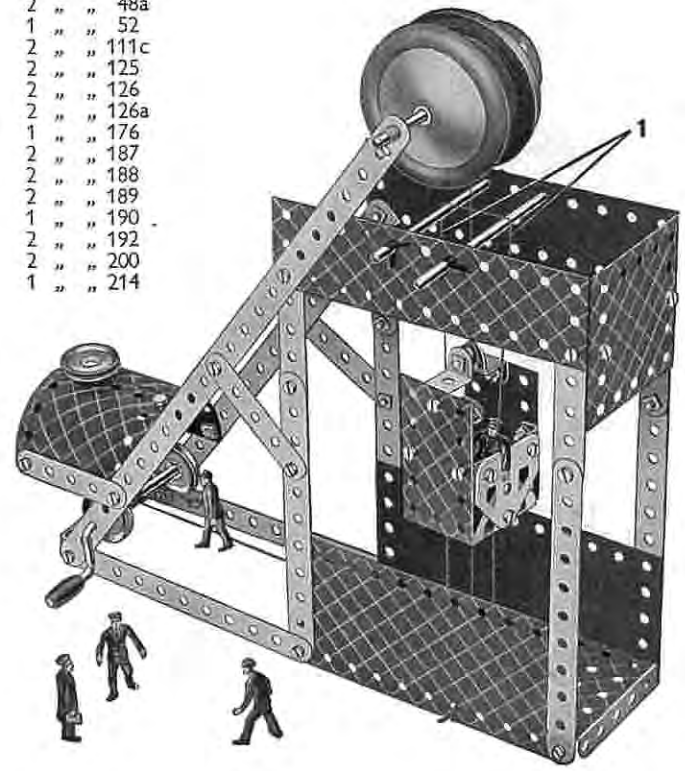
2	of No	1
6	„ „	2
8	„ „	5
1	„ „	10
1	„ „	11
7	„ „	12
1	„ „	15b
2	„ „	16
1	„ „	18a
1	„ „	19g
4	„ „	22
1	„ „	24
6	„ „	35
41	„ „	37
1	„ „	37a
6	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
2	„ „	111c
2	„ „	125
2	„ „	126
2	„ „	126a
1	„ „	176
2	„ „	187
2	„ „	188
2	„ „	189
1	„ „	190
2	„ „	192
2	„ „	200
1	„ „	214

3.20 PITHEAD GEAR

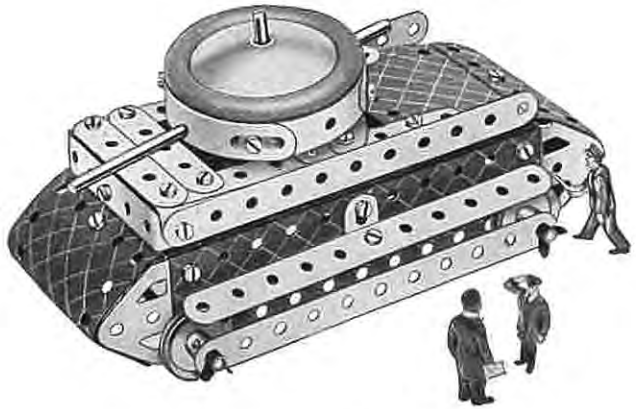
A 3½" Rod is journalled in the top holes of the 12½" Strips. Between the two Road Wheels on this Rod is a 1" fast Pulley, over which the cord controlling the cage passes. A Cord Anchoring Spring is pushed on one end of the Rod, and a Bush Wheel is fixed to the other end. The cage is built up from Trunnions and Flat Trunnions, and the 2½"×1½" Flexible Plates that form its sides are fastened to the Flat Trunnions by Angle Brackets.

A ⅜" Bolt is passed through the holes of Reversed Angle Brackets bolted to the top of the cage, and Washers are placed on its shank for spacing purposes.

The guides 1 for the cage consist of a piece of Cord, which is passed over two Rods as shown and then led downward and through two holes in the Flanged Plate that forms the base. Washers are tied to each end of the Cord underneath the Plate, to maintain it in tension.



3.21 TANK



Parts required

6	of No.	2
7	„ „	5
2	„ „	10
8	„ „	12
2	„ „	15b
2	„ „	16
1	„ „	17
4	„ „	22
1	„ „	24
6	„ „	35
40	„ „	37
1	„ „	38
1	„ „	48a
1	„ „	52
1	„ „	90a
1	„ „	125
2	„ „	126
2	„ „	126a
1	„ „	176
1	„ „	187
2	„ „	189
1	„ „	190
2	„ „	199
4	„ „	215
1	*Magic*	Motor

Construction of the gun turret is commenced by bolting a 2½" Strip across a Bush Wheel. Four 3" Formed Slotted Strips are bolted together to form a circle and fastened to the 2½" Strip by means of Angle Brackets. Next two Angle Brackets are bolted to the Bush Wheel in the positions shown in Fig. 3.21a. Two Rods are pushed through holes in the Formed Slotted Strips and through the free holes of the Angle Brackets, and are fastened in position by means of Spring Clips. The turret is held in place by a 3½" Rod that is locked in the boss of the Bush Wheel and then passed through the 5½"×2½" Flanged Plate and through a hole in a Reversed Angle Bracket. A Cord Anchoring Spring is then screwed on to it to hold it in position. To complete the turret a Road Wheel is fastened on the upper end of the 3½" Rod. The Reversed Angle Bracket is bolted to the 5½"×2½" Flanged Plate.

The *Magic* Motor is bolted to the Flanged Plate, and the drive is taken to the back axle by means of a Driving Band.

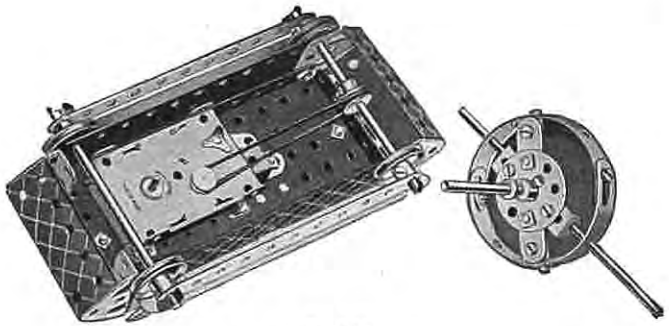
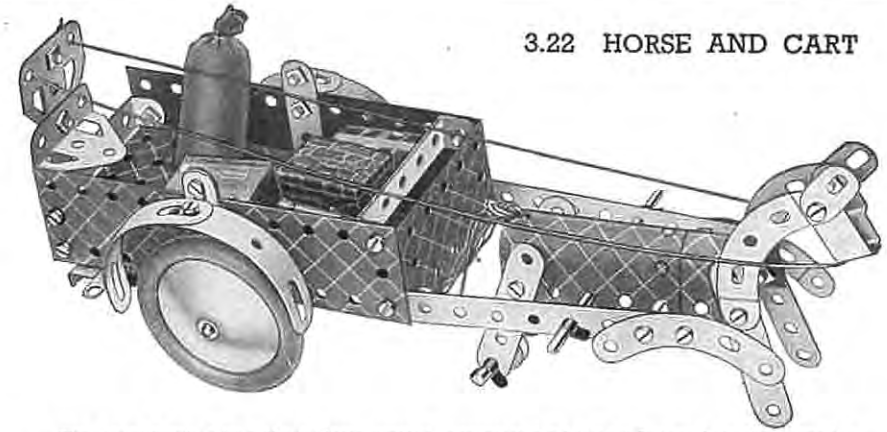


Fig. 3.21a

Parts required

2	of No.	2
7	„ „	5
2	„ „	10
2	„ „	12
2	„ „	16
1	„ „	17
1	„ „	23
4	„ „	35
35	„ „	37
2	„ „	38
1	„ „	40
1	„ „	44
2	of No.	48a
1	„ „	52
4	„ „	90a
1	„ „	125
1	„ „	126
1	„ „	126a
2	„ „	187
1	„ „	188
2	„ „	189
2	„ „	199
4	„ „	215
1	*Magic*	Motor

3.22 HORSE AND CART



The model is driven by a *Magic* Motor fastened underneath the 5½"×2½" Flanged Plate that forms the bottom of the cart. The drive is taken by a Driving Band from the pulley of the Motor to a ½" fast Pulley on the back axle. A ½" loose Pulley is fitted on a 2" Rod journalled in the bottom holes of the Strips forming the legs of the horse, so that the model will travel smoothly along the ground.

3.23 ROUNDABOUT

Parts required

2	of No.	1
6	„ „	2
8	„ „	5
4	„ „	10
2	„ „	11
8	„ „	12
1	„ „	16
1	„ „	17
1	„ „	18a
1	„ „	19g
4	„ „	22
1	„ „	24
6	„ „	35
50	„ „	37
4	of No.	37a
4	„ „	38
1	„ „	40
2	„ „	48a
1	„ „	52
4	„ „	90a
4	„ „	111c
2	„ „	125
2	„ „	126
2	„ „	126a
1	„ „	187
2	„ „	188
2	„ „	191
2	„ „	199

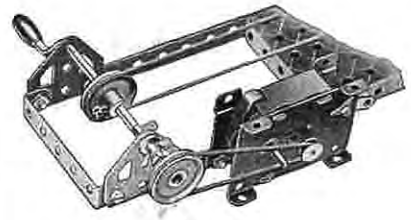


Fig. 3.23a

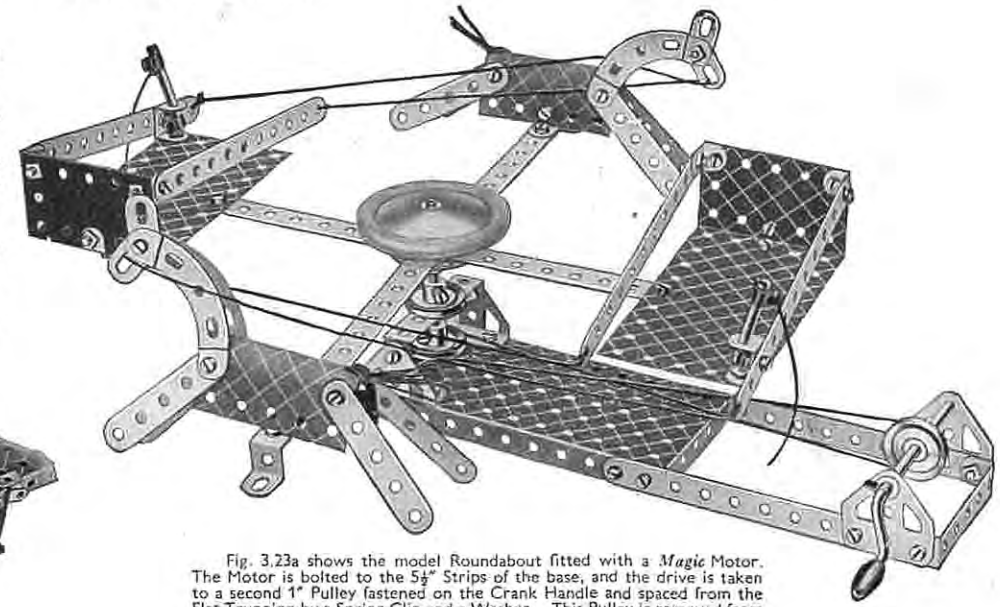


Fig. 3.23a shows the model Roundabout fitted with a *Magic* Motor. The Motor is bolted to the 5½" Strips of the base, and the drive is taken to a second 1" Pulley fastened on the Crank Handle and spaced from the Flat Trunnion by a Spring Clip and a Washer. This Pulley is removed from the end of the pivot rod of the roundabout underneath the 5½"×2½" Flanged Plate.

3.24 WINDMILL PUMP

Up and down motion of the pumping shaft is obtained from a crank fastened to the end of the Crank Handle. The crank is formed by securing an Angle Bracket to the boss of a 1" Pulley, two Washers being used between the Bracket and the boss. A 2½" Strip is pivoted to the crank and to the pumping beam, the other end of which is pivotally attached to a Double Bracket on the pump rod. The Bolts 1 are lock-nutted. The 1" Pulley on the Crank Handle is connected by a belt of Cord to the shaft carrying the sails. The *Magic* Motor is bolted by its flanges to the baseplate, and the drive is taken from the pulley of the Motor to a ½" Pulley fixed on the shaft of the Crank Handle, if desired the Motor may be dispensed with and the model operated by hand.

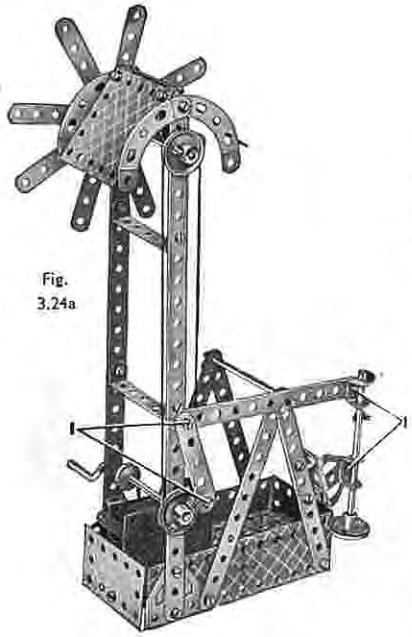
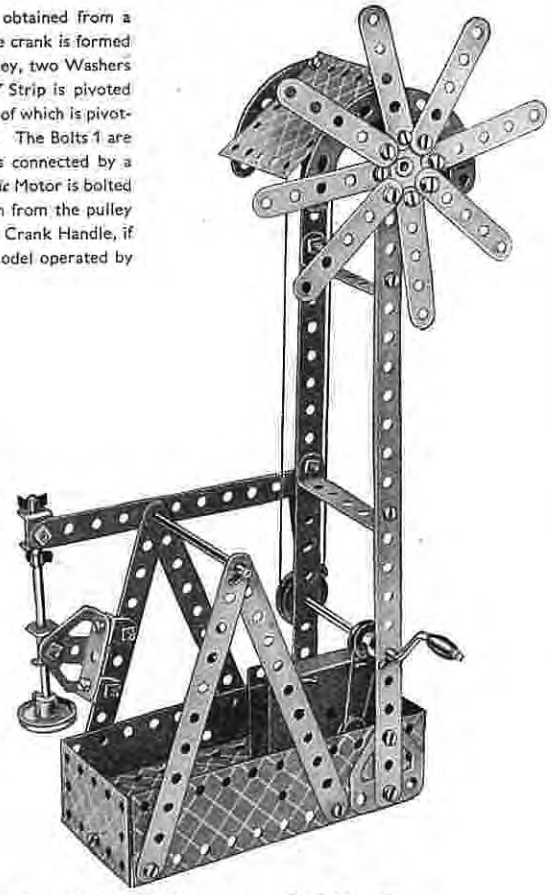


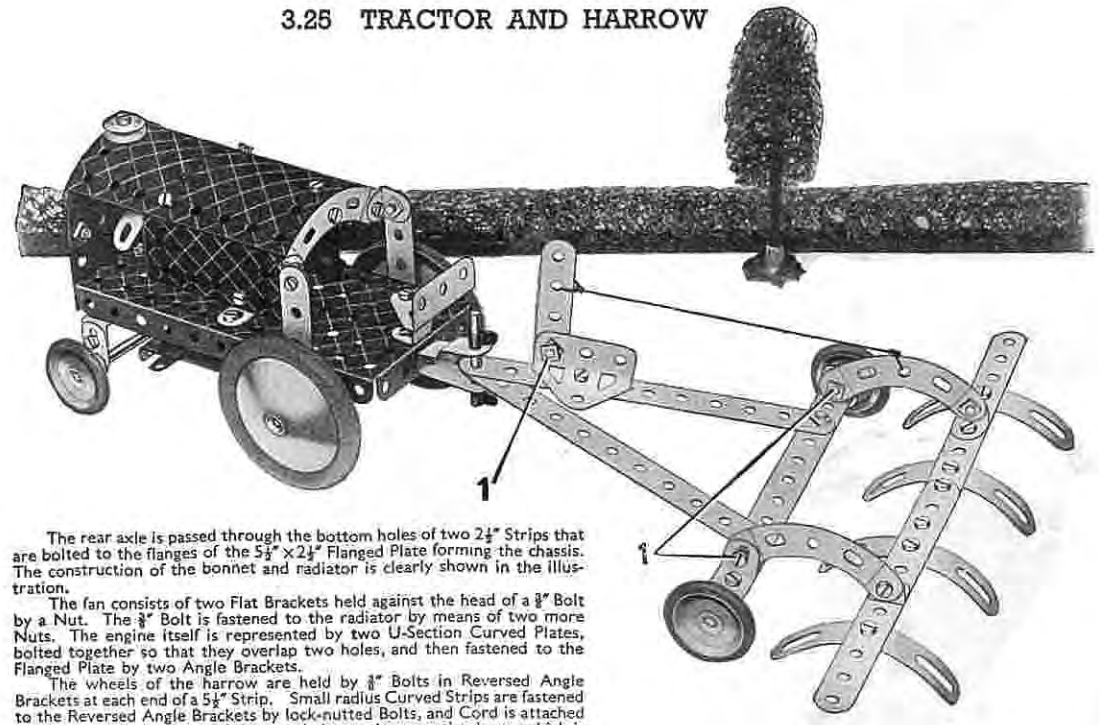
Fig. 3.24a



Parts required

2 of No.	1	2 of No.	11
5 „ „	2	7 „ „	12
9 „ „	5	1 „ „	15b
2 of No.	16	2 of No.	48a
1 „ „	19g	1 „ „	52
3 „ „	22	4 „ „	90a
1 „ „	24	1 „ „	126
4 „ „	35	2 „ „	126a
39 „ „	37	2 „ „	188
3 „ „	37a	2 „ „	189
2 „ „	38	2 „ „	190
1 „ „	40	1 *Magic* Motor	

3.25 TRACTOR AND HARROW



The rear axle is passed through the bottom holes of two 2½" Strips that are bolted to the flanges of the 5½" × 2½" Flanged Plate forming the chassis. The construction of the bonnet and radiator is clearly shown in the illustration.

The fan consists of two Flat Brackets held against the head of a ⅜" Bolt by a Nut. The ⅜" Bolt is fastened to the radiator by means of two more Nuts. The engine itself is represented by two U-Section Curved Plates, bolted together so that they overlap two holes, and then fastened to the Flanged Plate by two Angle Brackets.

The wheels of the harrow are held by ⅜" Bolts in Reversed Angle Brackets at each end of a 5½" Strip. Small radius Curved Strips are fastened to the Reversed Angle Brackets by lock-nutted Bolts, and Cord is attached to the centre hole of one of these and also to the operating lever, which is held by lock-nuts to a Trunnion. By moving the lever forward the harrow may be raised from the ground when not in use.

The Bolts 1 shown in both illustrations are lock-nutted.

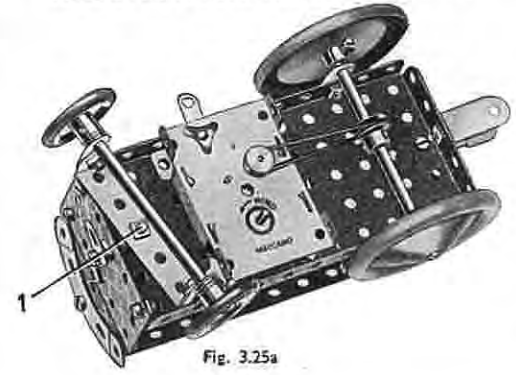
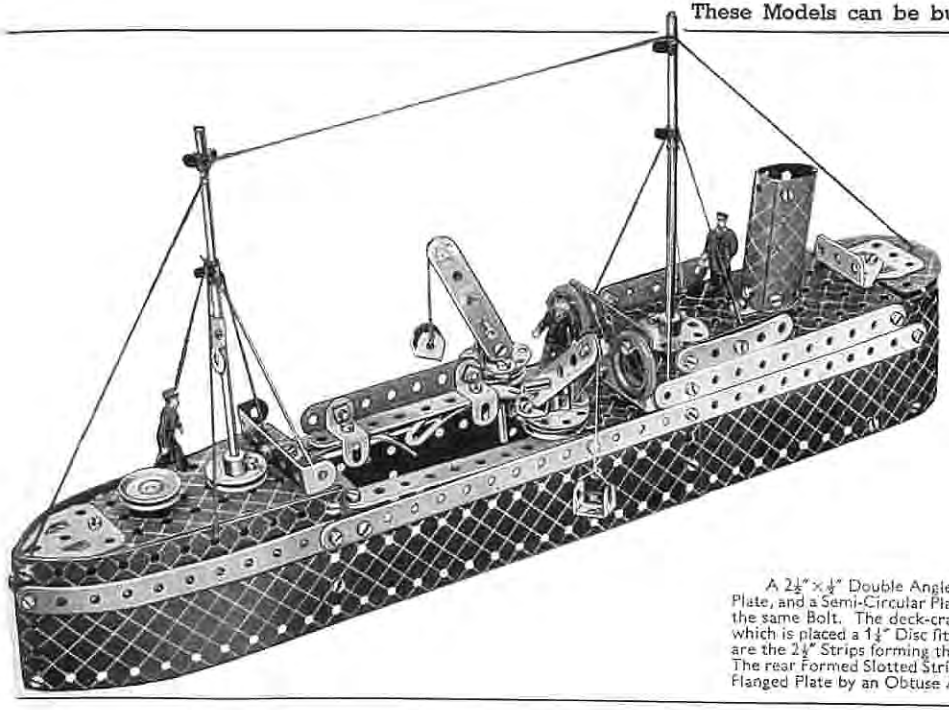


Fig. 3.25a

Parts required

5 of No.	2	4 of No.	22
3 „ „	5	1 „ „	23
5 „ „	10	2 „ „	35
2 „ „	11	46 „ „	37
8 „ „	12	10 „ „	37a
2 „ „	16	6 „ „	38
1 „ „	18a	1 „ „	44
		1 „ „	48a
		1 „ „	52
		4 „ „	90a
		5 „ „	111c
2 of No.	125		
2 „ „	126		
4 „ „	155a		
2 „ „	187		
1 „ „	188		
2 „ „	199		
2 „ „	200		
1 „ „	214		
4 „ „	215		
1 *Magic* Motor			



4.1 DREDGER

Parts required

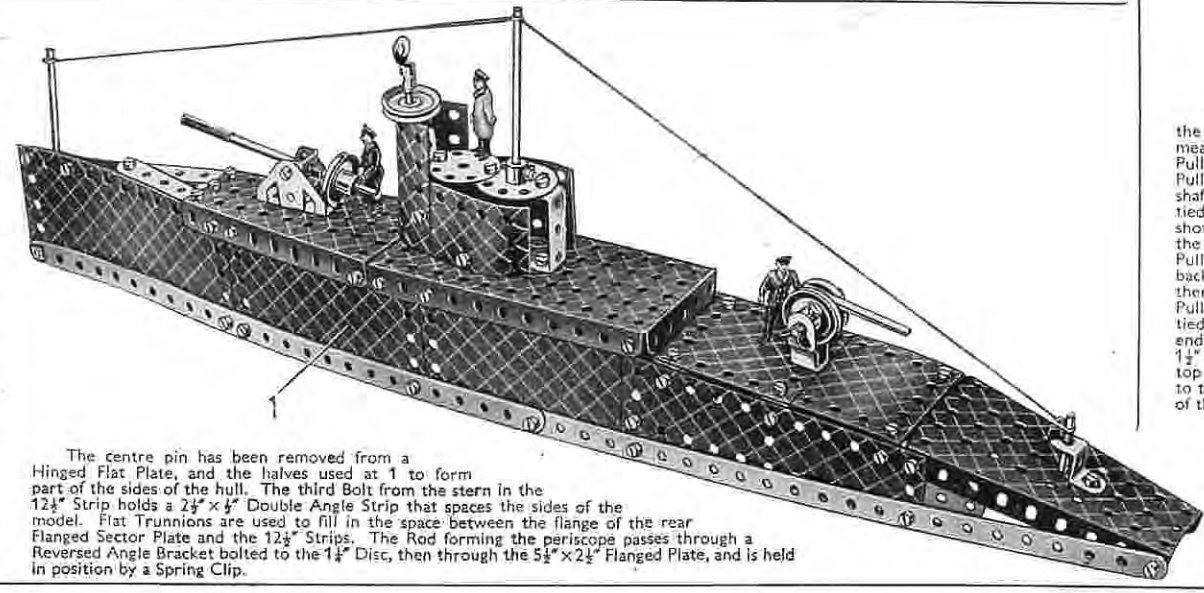
2	of No. 1	1	of No. 51
6	„ „ 2	1	„ „ 52
2	„ „ 3	1	„ „ 54a
9	„ „ 5	5	„ „ 111c
4	„ „ 10	2	„ „ 125
2	„ „ 11	1	„ „ 126
8	„ „ 12	2	„ „ 126a
2	„ „ 12c	2	„ „ 155a
4	„ „ 16	2	„ „ 188
2	„ „ 17	2	„ „ 189
2	„ „ 18a	2	„ „ 190
4	„ „ 22	2	„ „ 191
1	„ „ 24	2	„ „ 192
8	„ „ 35	2	„ „ 199
70	„ „ 37	2	„ „ 200
6	„ „ 37a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

A 2½" × ½" Double Angle Strip is bolted to the front flange of the 5½" × 2½" Flanged Plate, and a Semi-Circular Plate is held between the flange and the Double Angle Strip by the same Bolt. The deck-cranes each consist of a 1" Pulley fastened to a 2" Rod, above which is placed a 1½" Disc fitted with Angle Brackets. Bolted to these, and lock-nutted, are the 2½" 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 2½" × 1½" 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

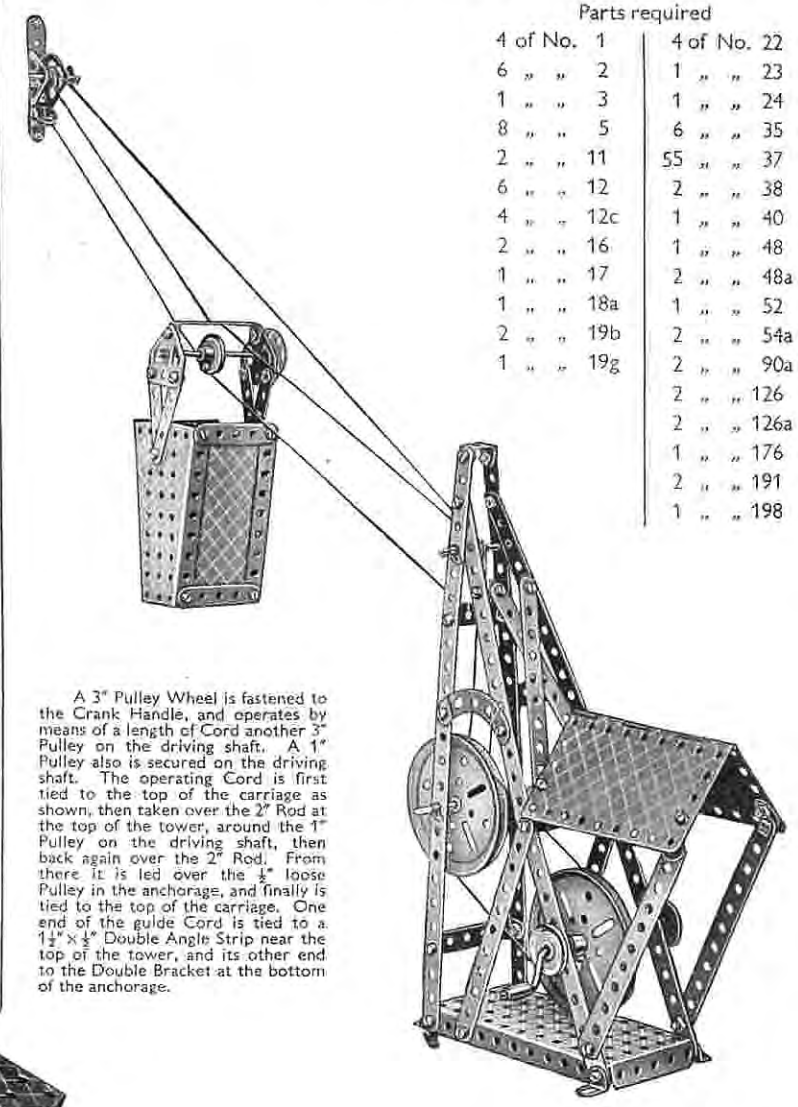


The centre pin has been removed from a Hinged Flat Plate, and the halves used at 1 to form part of the sides of the hull. The third Bolt from the stern in the 12½" Strip holds a 2½" × ½" Double Angle Strip that spaces the sides of the model. Flat Trunnions are used to fill in the space between the flange of the rear Flanged Sector Plate and the 12½" Strips. The Rod forming the periscope passes through a Reversed Angle Bracket bolted to the 1¼" Disc, then through the 5½" × 2½" Flanged Plate, and is held in position by a Spring Clip.

4.3 TELPHER SPAN

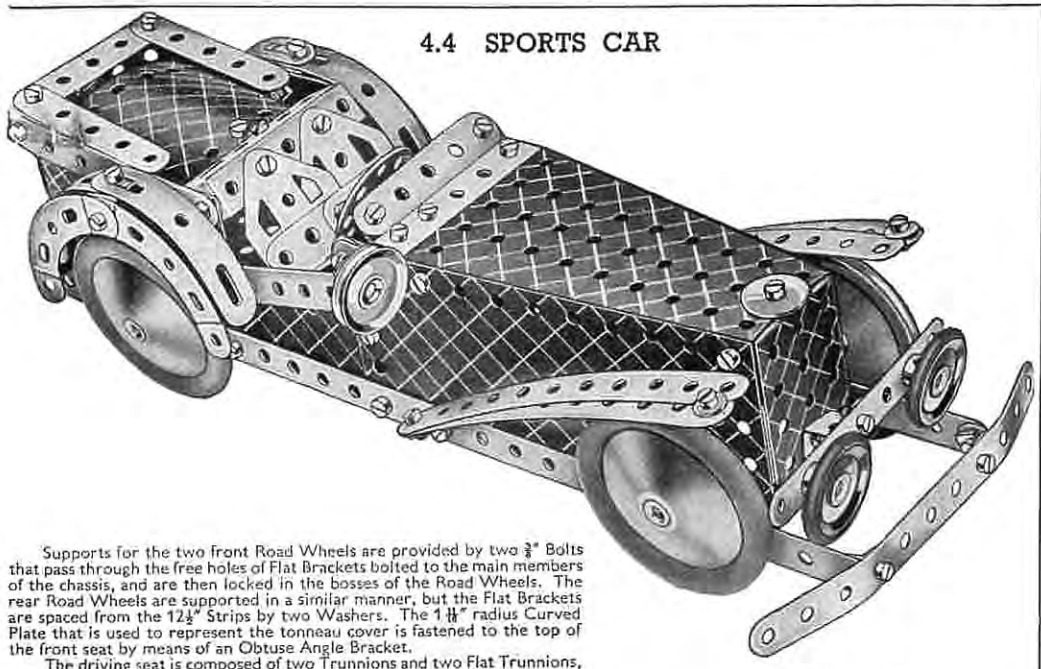
Parts required

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 ½" 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 1½" × ½" 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 ⅜" 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 12½" Strips by two Washers. The 1 ¼" 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 2½"×½" 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.

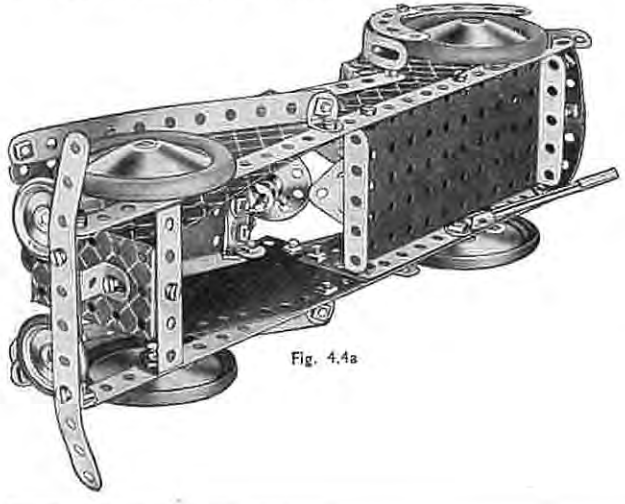


Fig. 4.4a

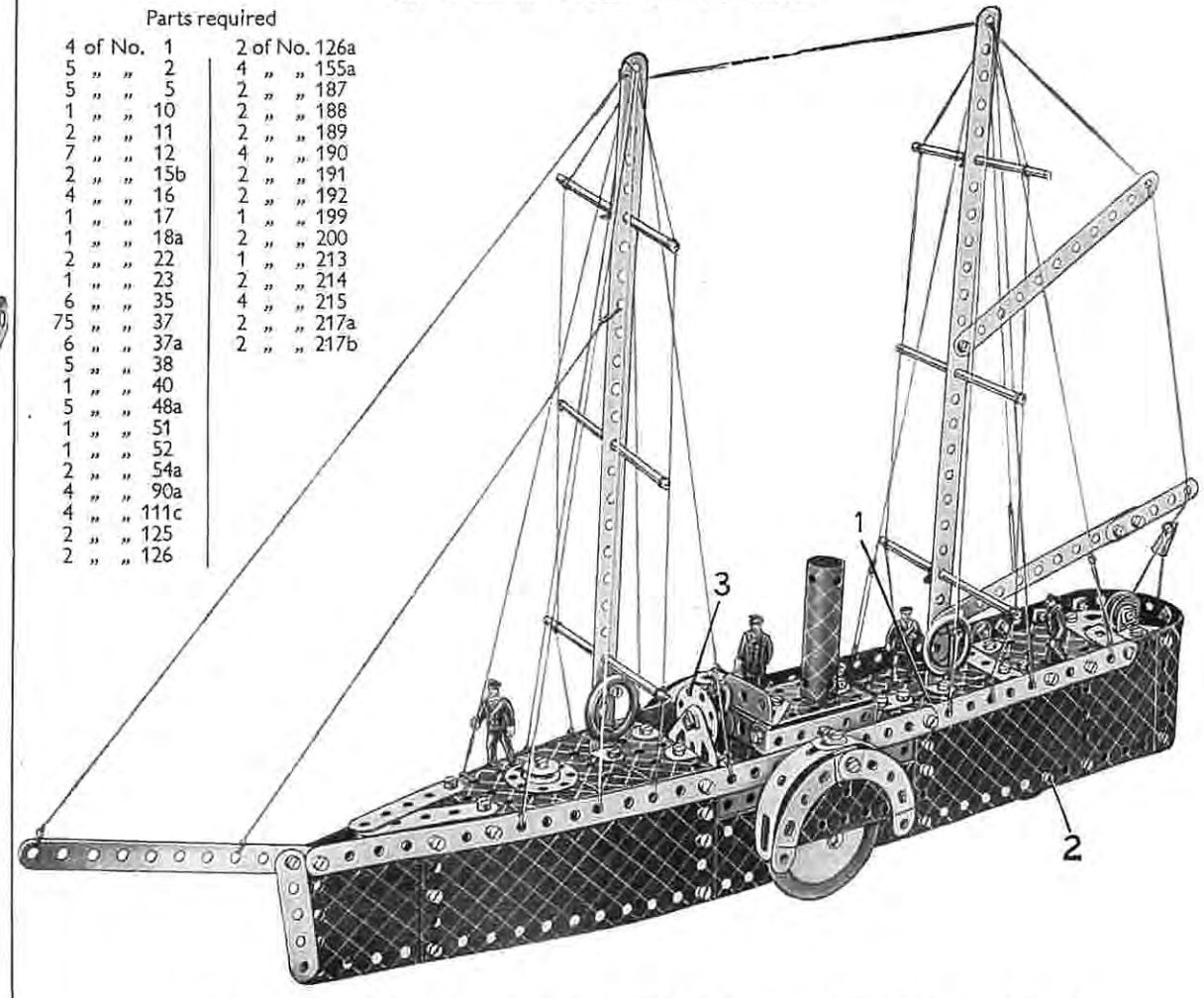
Parts required

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

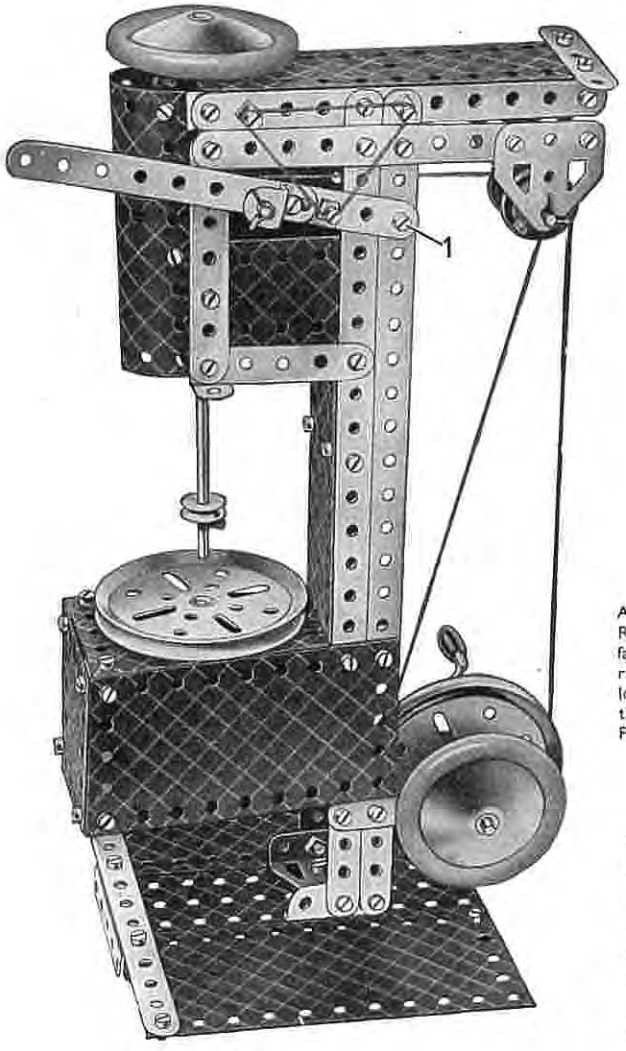
4 of No.	1	2 of No.	126a
5 „ „	2	4 „ „	155a
5 „ „	5	2 „ „	187
1 „ „	10	2 „ „	188
2 „ „	11	2 „ „	189
7 „ „	12	4 „ „	190
2 „ „	15b	2 „ „	191
4 „ „	16	2 „ „	192
1 „ „	17	1 „ „	199
1 „ „	18a	2 „ „	200
2 „ „	22	1 „ „	213
1 „ „	23	2 „ „	214
6 „ „	35	4 „ „	215
75 „ „	37	2 „ „	217a
6 „ „	37a	2 „ „	217b
5 „ „	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 12½" Strips that are placed along the sides of the deck. A 5½"×2½" 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 2½"×½" Double Angle Strip is bolted across the Flanged Sector Plate and to the sides of the vessel. Two 2½"×1½" 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 1½" and a 2" Rod joined by a Rod Connector, which is journalled in the sides of the hull as shown, and also on 1" Pulleys fitted with Rubber Rings supported inside the hull on ⅜" 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 1½" Disc 3 is lock-nutted to a Trunnion to form the wheel.

4.6 DRILLING MACHINE



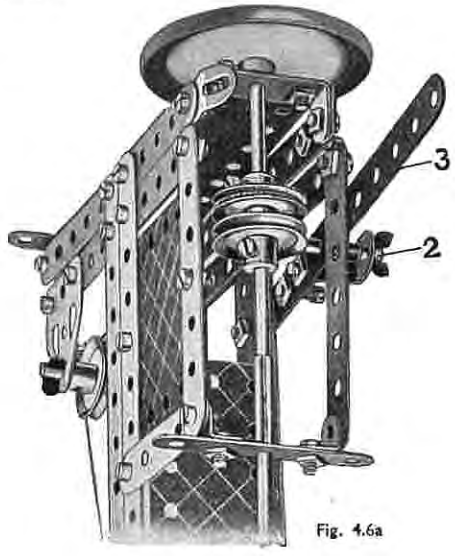


Fig. 4.6a

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 ¾" 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 2½" × ½" 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.

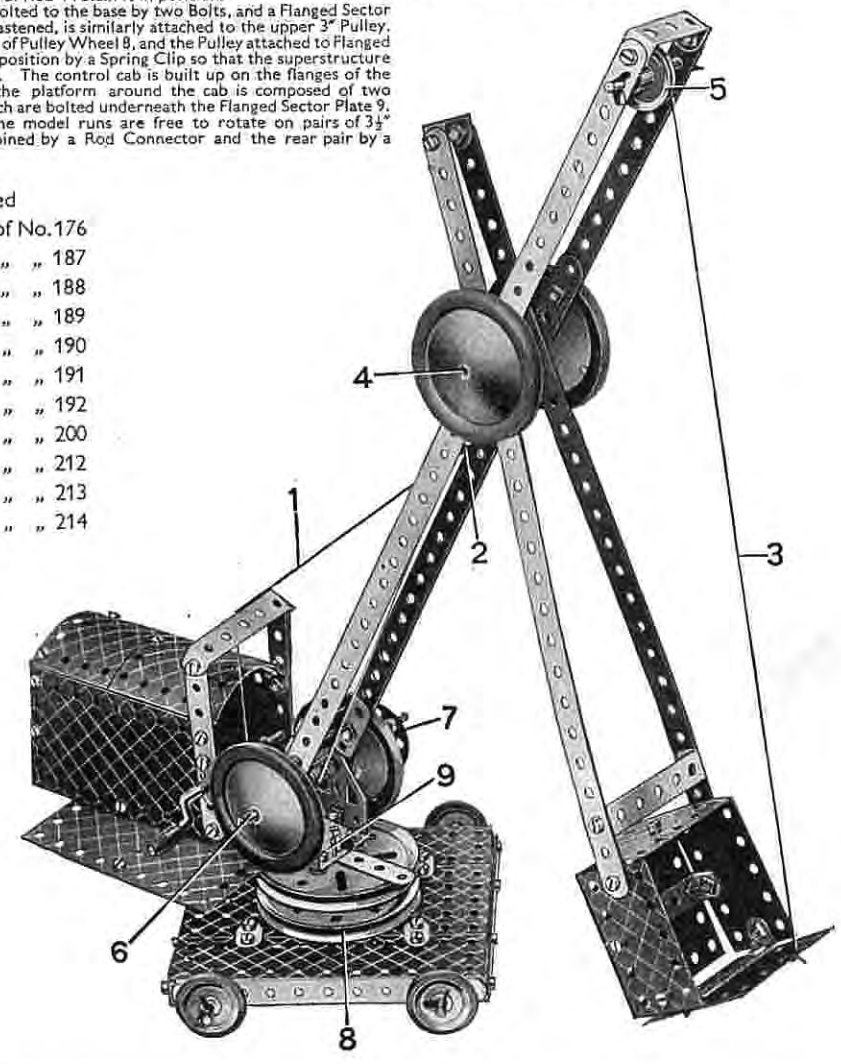
The bucket arm is pivoted on Rod 4, which passes through holes in the 12½" Strips forming the jib and the bucket arm. Road Wheels fastened at each end of Rod 4 retain it in position.

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 1½" 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 5½" × 2½" 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 3½" Rods. The front pair are joined by a Rod Connector and the rear pair by a Rod and Strip Connector.

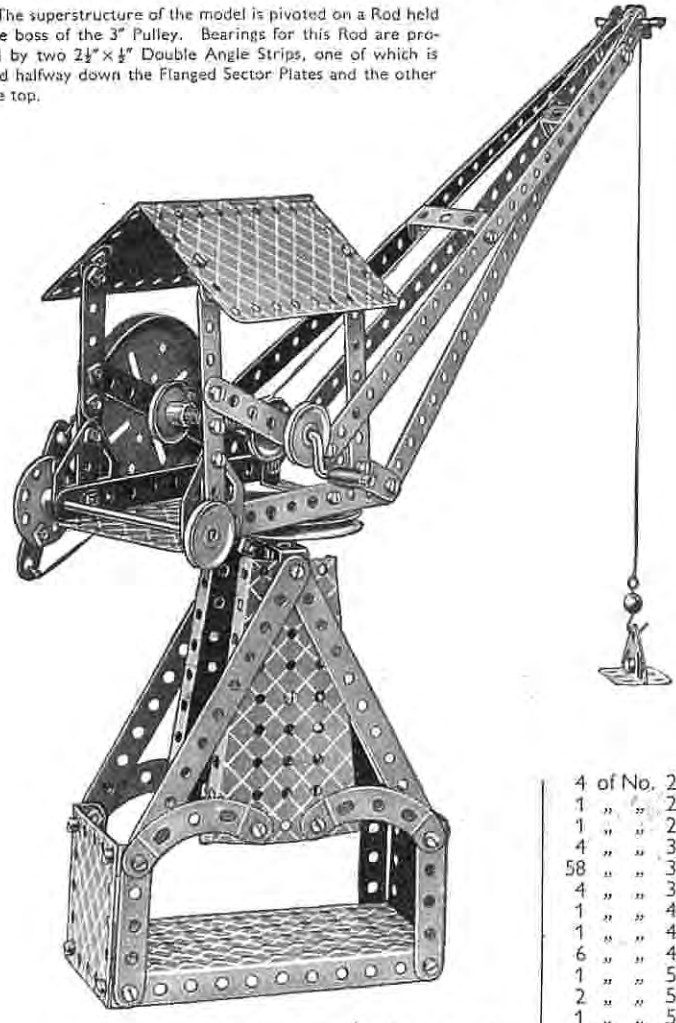
Parts required

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 2½" × ½" Double Angle Strips, one of which is bolted halfway down the Flanged Sector Plates and the other at the top.



Parts required

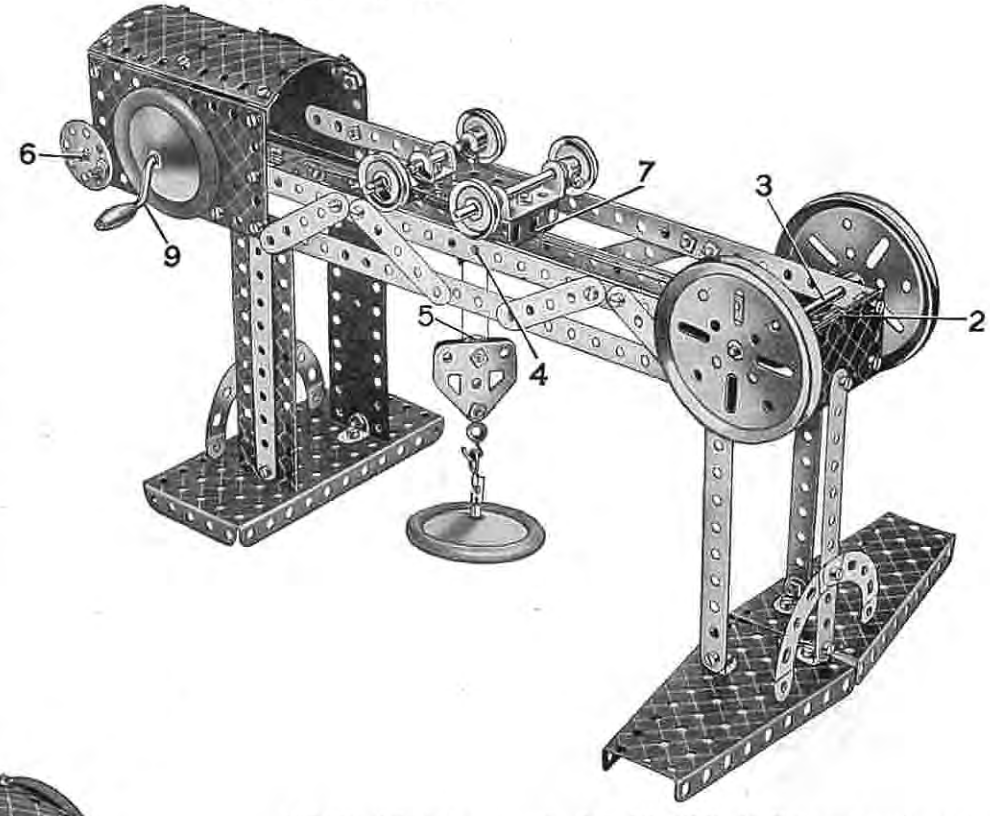
4	of No.	1	2	of No.	12
8	„ „	2	3	„ „	12c
1	„ „	3	2	„ „	16
9	„ „	5	1	„ „	18a
1	„ „	11	2	„ „	19b
			1	„ „	19g

4	of No.	22
1	„ „	23
1	„ „	24
4	„ „	35
58	„ „	37
4	„ „	38
1	„ „	40
1	„ „	48
6	„ „	48a
1	„ „	52
2	„ „	54a
1	„ „	57c
4	„ „	90a
2	„ „	126
2	„ „	126a
1	„ „	176
3	„ „	190
1	„ „	198

4.9 GANTRY CRANE

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



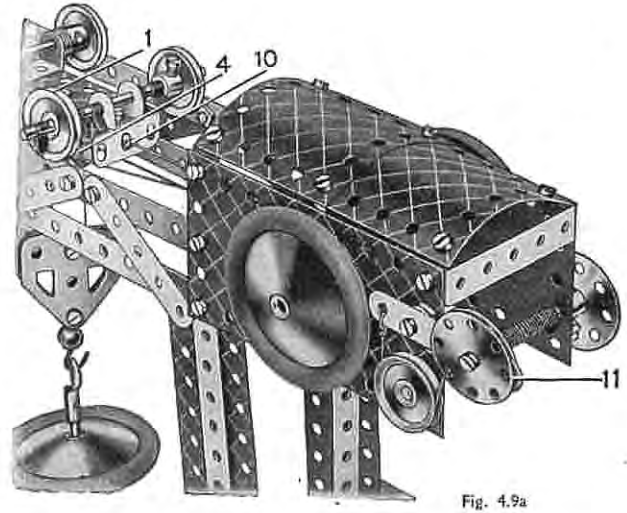


Fig. 4.9a

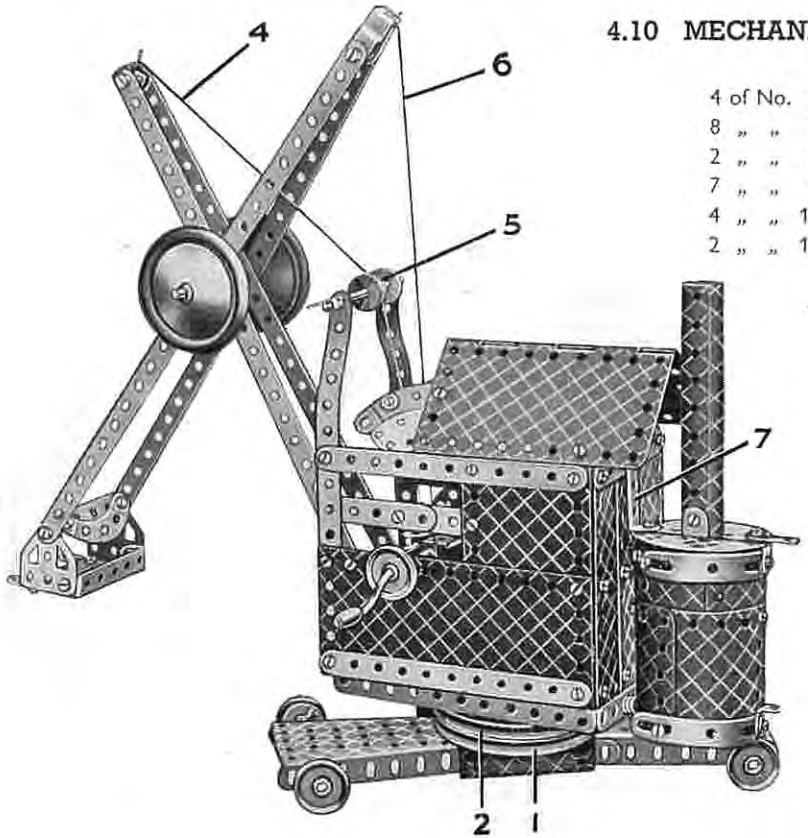
The sides of the cabin each consist of two 2½" × 2½" Flexible Plates overlapped one hole. The top of the cabin, which consists of two 1 11/16" radius Curved Plates, is attached to the sides by means of Obtuse Angle Brackets at each corner as shown.

The hoisting carriage is a 2½" × 1½" Flanged Plate 7. Bearings for one of the 3½" Rods carrying the 1" Pulley Wheels are provided by the holes in the turned up ends of a 1½" × ½" 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 ⅜" Bolt, which carries a ½" 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		

The bogie is constructed from two Flanged Sector Plates, the flanges of which are connected by two 2½" Strips. A gap of ½" 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 downward. The base of the cab (Fig. 4.10a) is a 5½"×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 1 11/16" radius Curved Plates, a 4½"×2½" Flexible Plate, and two 5½"×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"×½" Double Angle Strip. The Chimney is a 4½"×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"×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.

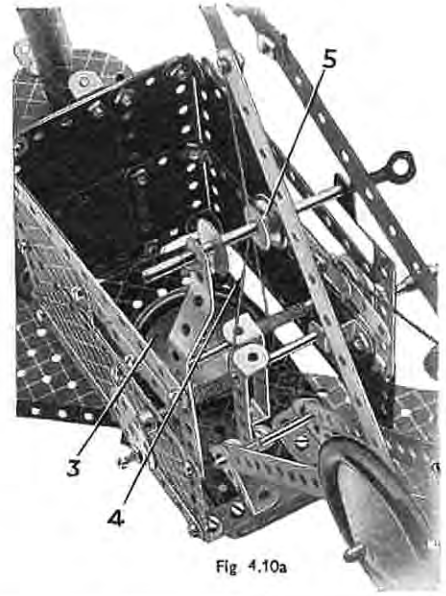
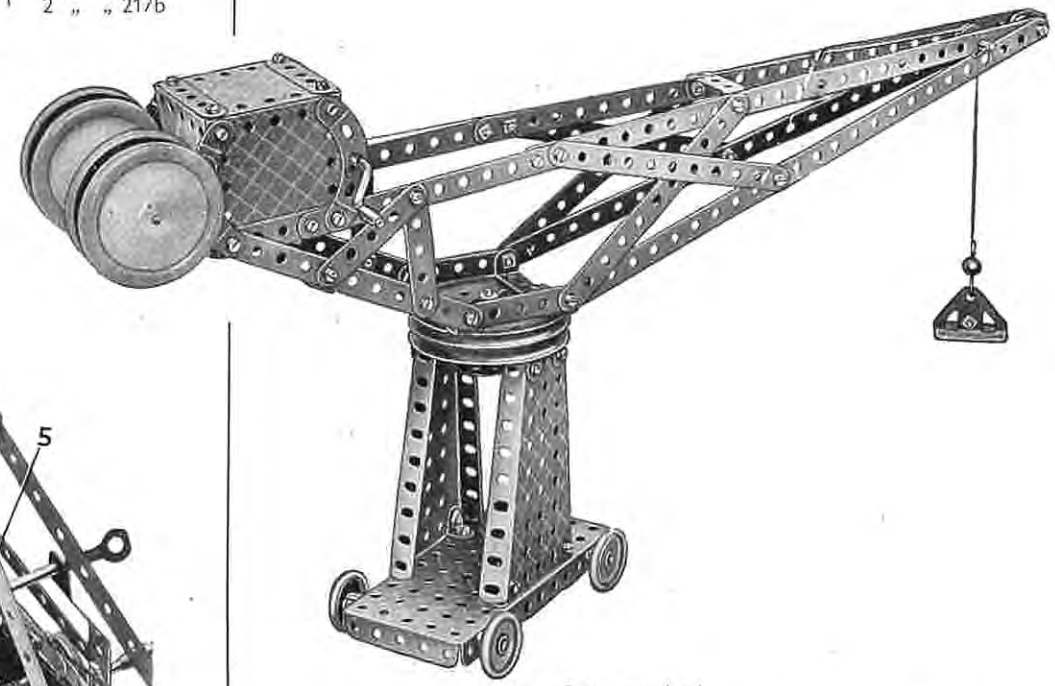


Fig 4.10a

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 2½"×½" Double Angle Strips fastened to the narrow ends of the Flanged Sector Plates. A 1½" 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.

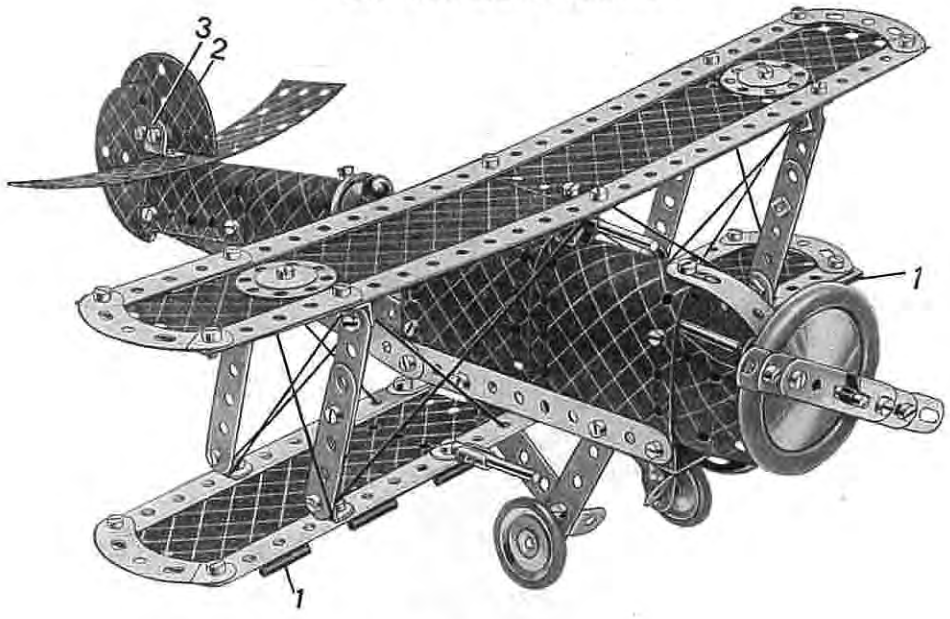
The four Road Wheels are fastened to a 4" Rod that passes through the holes of two Flat Trunnions bolted to the 2½" small radius Curved Strips.



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 ⅜" 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 1 ¼" 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 ⅜" 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.

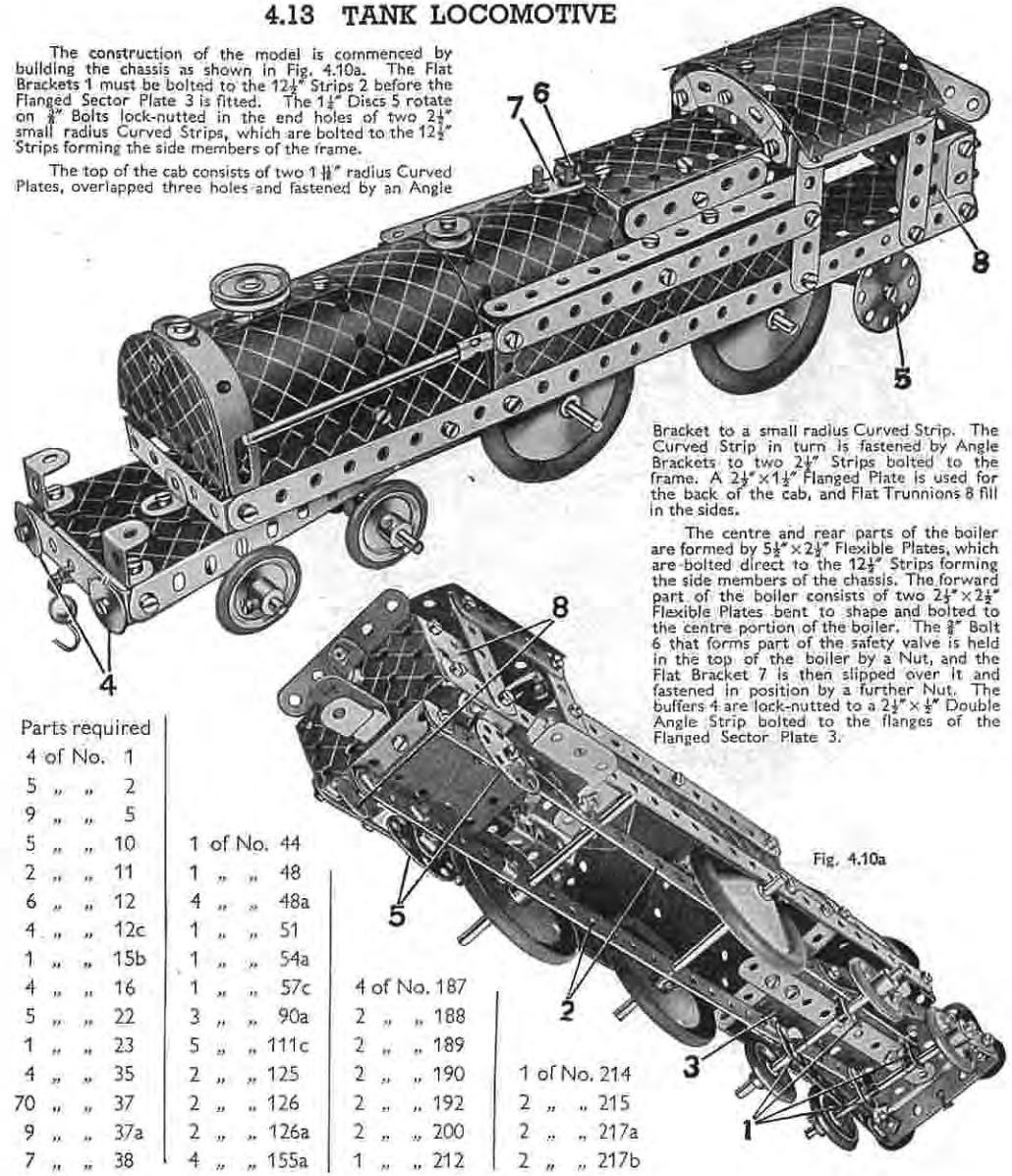


Fig. 4.10a

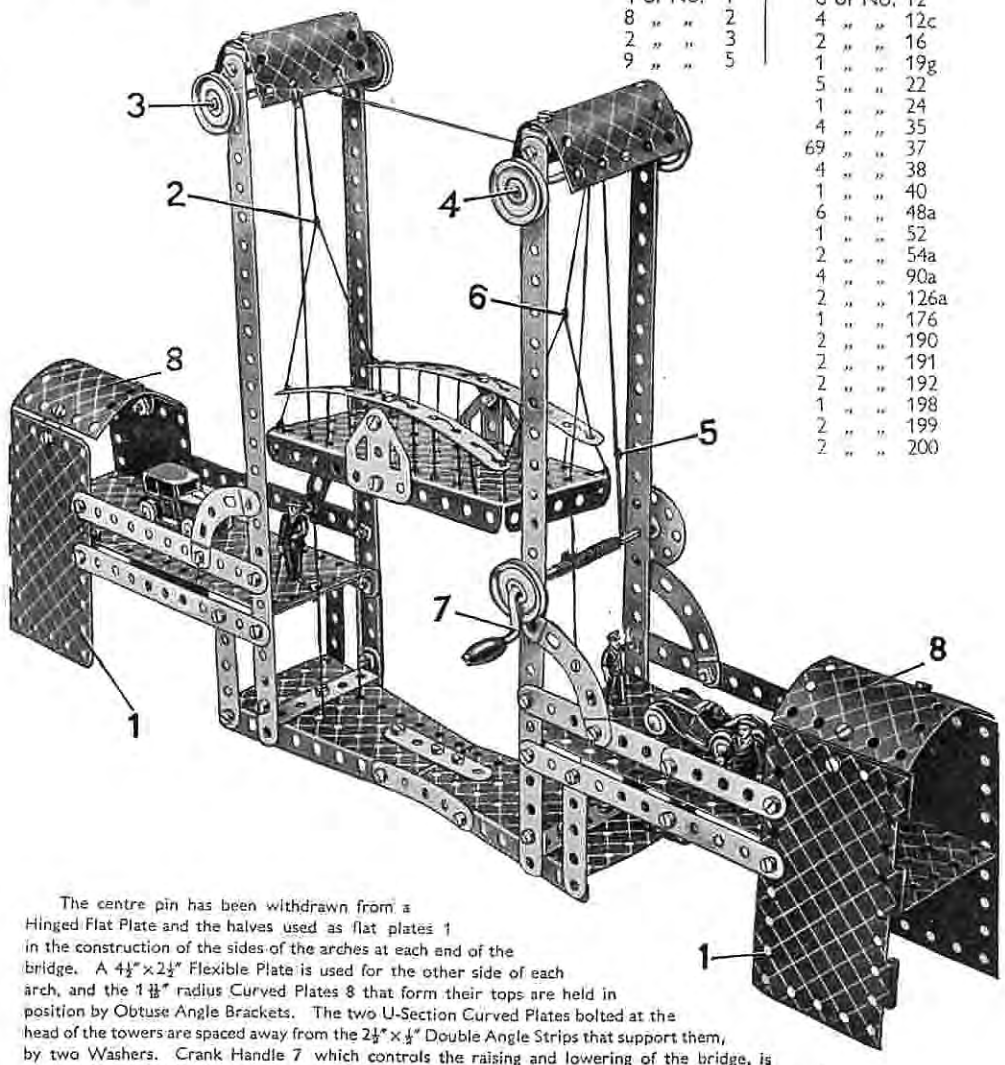
Parts required

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	4 „ „ 155a		
70 „ „ 37			
9 „ „ 37a			
7 „ „ 38			

4.14 LIFTING BRIDGE

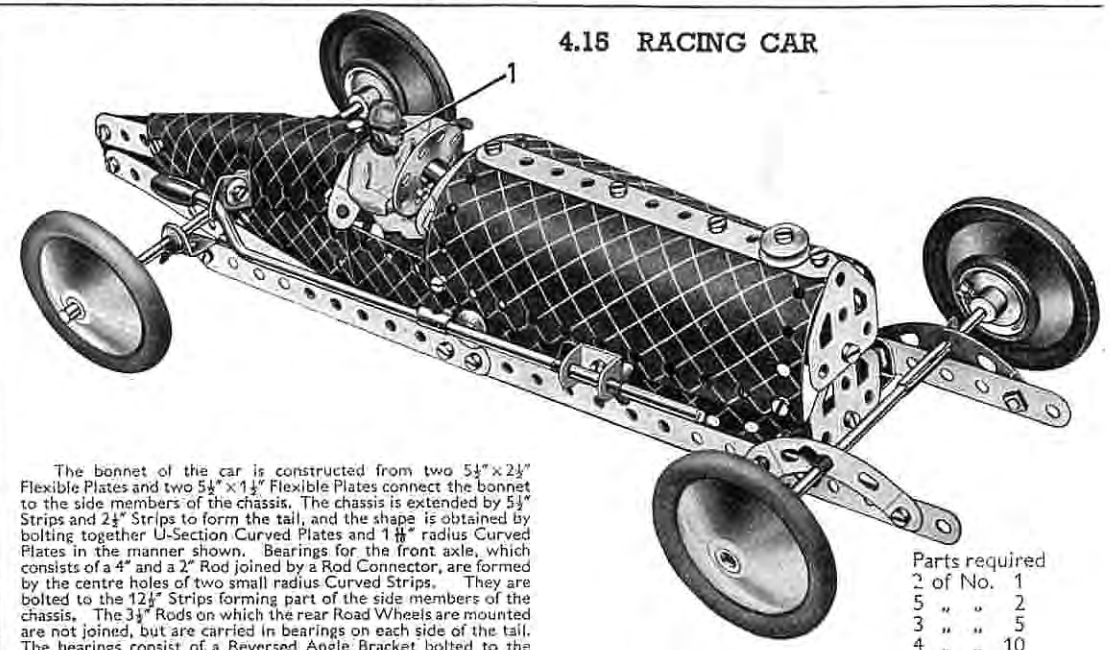
Parts required

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 4½" × 2½" Flexible Plate is used for the other side of each arch, and the 1 $\frac{11}{16}$" 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 2½" × ½" 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 5½" × 2½" 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 5½" × 2½" Flexible Plates and two 5½" × 1½" Flexible Plates connect the bonnet to the side members of the chassis. The chassis is extended by 5½" Strips and 2½" Strips to form the tail, and the shape is obtained by bolting together U-Section Curved Plates and 1 $\frac{11}{16}$" 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 12½" Strips forming part of the side members of the chassis. The 3½" 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.

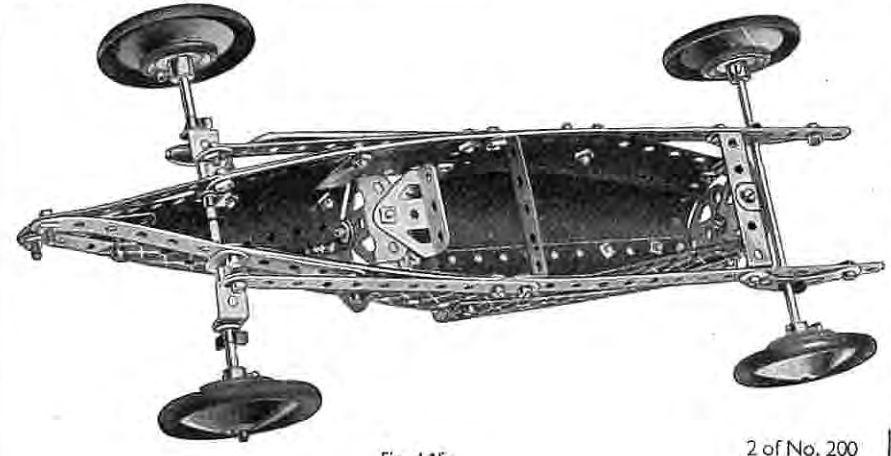
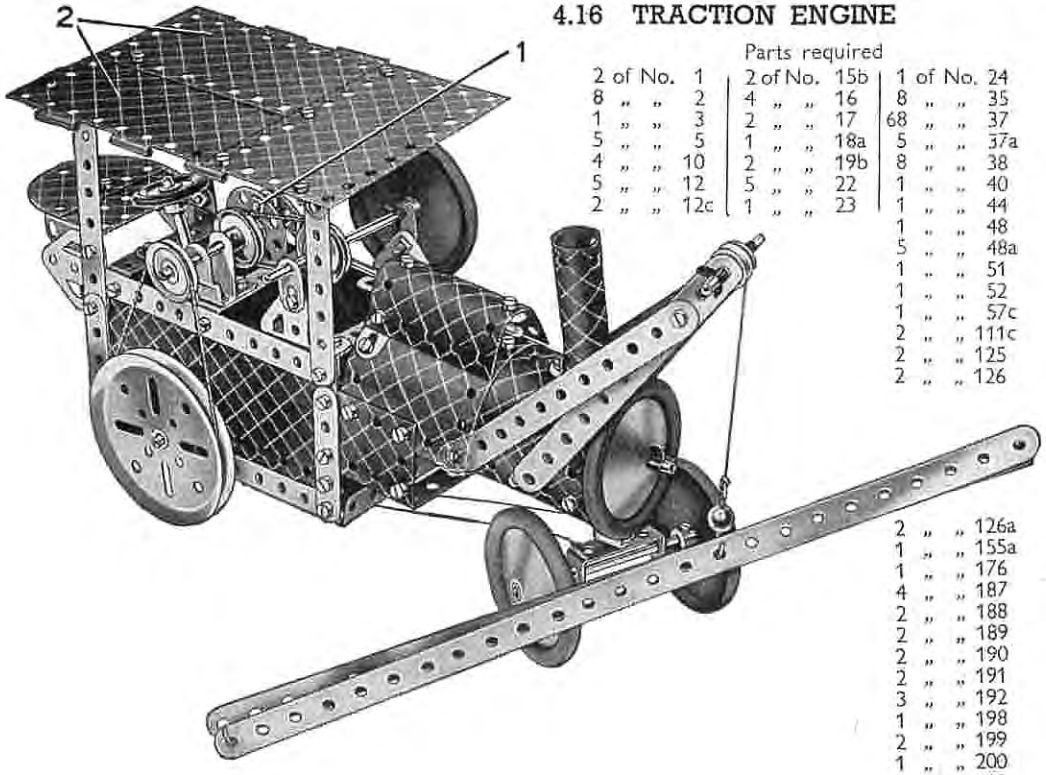


Fig. 4.15a

Parts required

2 of No.	1	2 of No.	200
5 „ „	2	1 „ „	212
3 „ „	5	1 „ „	213
4 „ „	10		
1 „ „	11		
4 „ „	12		
1 „ „	12c		
2 „ „	15b		
2 „ „	16		
1 „ „	17		
1 „ „	19g		
4 „ „	22		
1 „ „	23		
1 „ „	24		
8 „ „	35		
42 „ „	37		
2 „ „	37a		
7 „ „	38		
1 „ „	48		
2 „ „	48a		
4 „ „	90a		
4 „ „	111c		
2 „ „	125		
2 „ „	126		
2 „ „	126a		
4 „ „	155a		
4 „ „	187		
2 „ „	188		
2 „ „	189		
2 „ „	192		
2 „ „	199		

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 1½" × ½" 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.

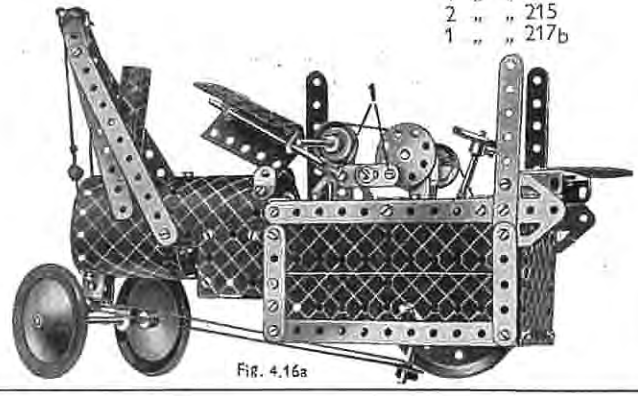


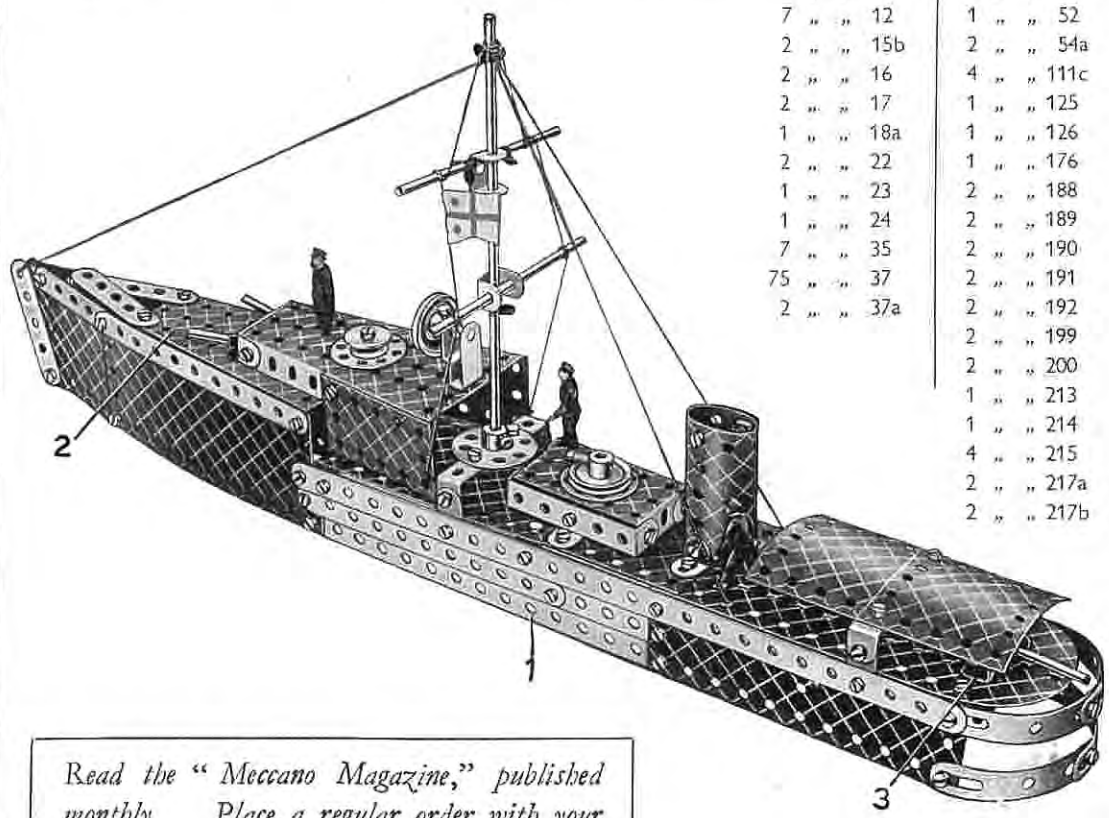
Fig. 4.16a

4.17 RIVER GUN-BOAT

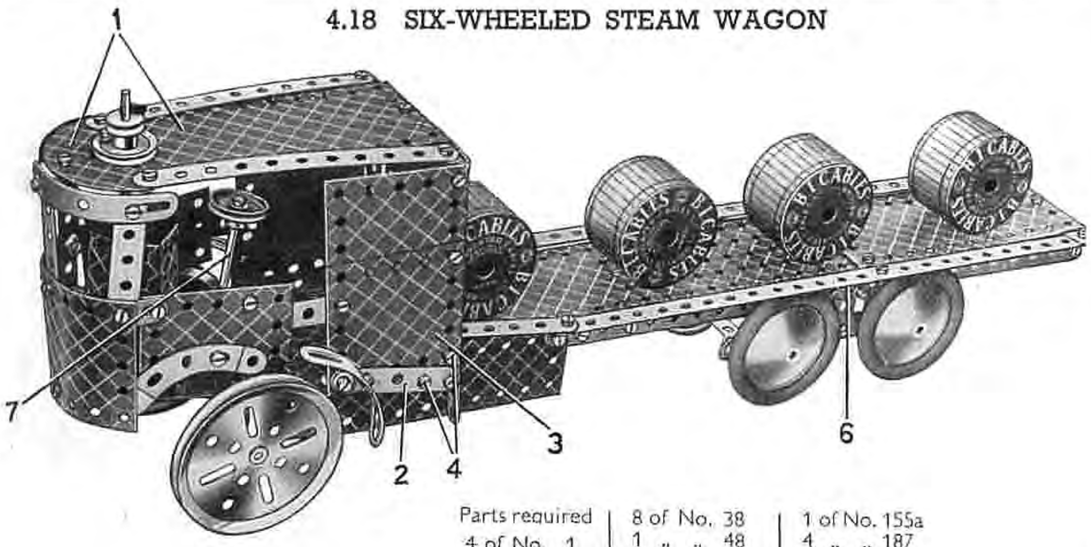
Each side of the forward part of the ship consists of a 2½" × 2½" and a 5½" × 2½" Flexible Plate. These are bolted to the 12½" Strip 1 and to the Flanged Sector Plate 2. The funnel is represented by two U-Section Curved Plates bent so that their ends overlap two holes at each side, and it is fastened 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 ½" × ½" Angle Bracket. The guns are represented by two 2" Rods, held by Spring Clips in the holes of a 1½" × ½" Double Angle Strip bolted to the narrow end of the Flanged Sector Plate 2. A 1½" 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 ⅜" Bolt passed through the centre hole of the Flanged Plate and locked in the boss of the Pulley by the ⅜" 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



4.18 SIX-WHEELED STEAM WAGON



Parts required		
4 of No. 1	8 of No. 38	1 of No. 155a
8 " " 2	1 " " 48	4 " " 187
2 " " 3	6 " " 48a	2 " " 188
6 " " 5	1 " " 51	2 " " 189
4 " " 10	1 " " 52	4 " " 190
2 " " 11	1 " " 54a	2 " " 191
8 " " 12	4 " " 90a	2 " " 192
2 " " 12c	2 " " 111c	2 " " 199
2 " " 15b	2 " " 125	2 " " 200
4 " " 16	1 " " 126	1 " " 214
2 " " 19b	2 " " 126a	4 " " 215
5 " " 22		
1 " " 23		
1 " " 24		
8 " " 35		
75 " " 37		
2 " " 37a		

In Fig. 4.18a the top of the cab has been removed to show the construction of the boiler and steering wheel. The boiler consists of two U-Section Curved Plates fastened by a 1½" × ½" Double Angle Strip to the Flanged Sector Plate forming the bottom of the cab. The two 1" Pulleys seen in Fig. 4.18a are fixed to the steering column 7, which passes through the bottom of the cab and is held in the boss of a Bush Wheel carrying a 2½" × ½" Double Angle Strip. The holes in the turned down ends of the Double Angle Strip support the 4" Rod that forms the front axle. The method of attaching the chimney to the two Plates 1 is shown in Fig. 4.18c. The Bolts 4 pass through a Flat Bracket behind Plate 3, thus securing the Strip 2 to the Plate. The 1" Pulley with Rubber Ring represents the top of the boiler.

Fig. 4.18b shows the construction of the rear wheel bogie. The bogie is attached to the wagon by a Rod 5, which passes through the holes in the 12½" Strips 6 and through the upper holes in the Flat Trunnions bolted to the bogie. The Rod is held in position by Spring Clips.

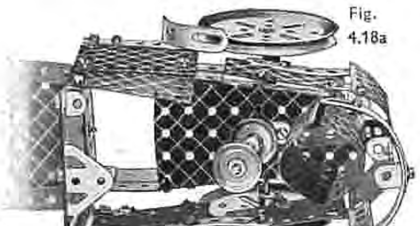


Fig. 4.18a

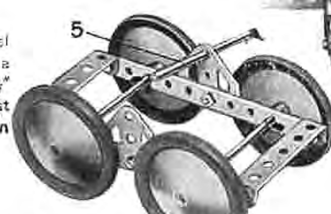
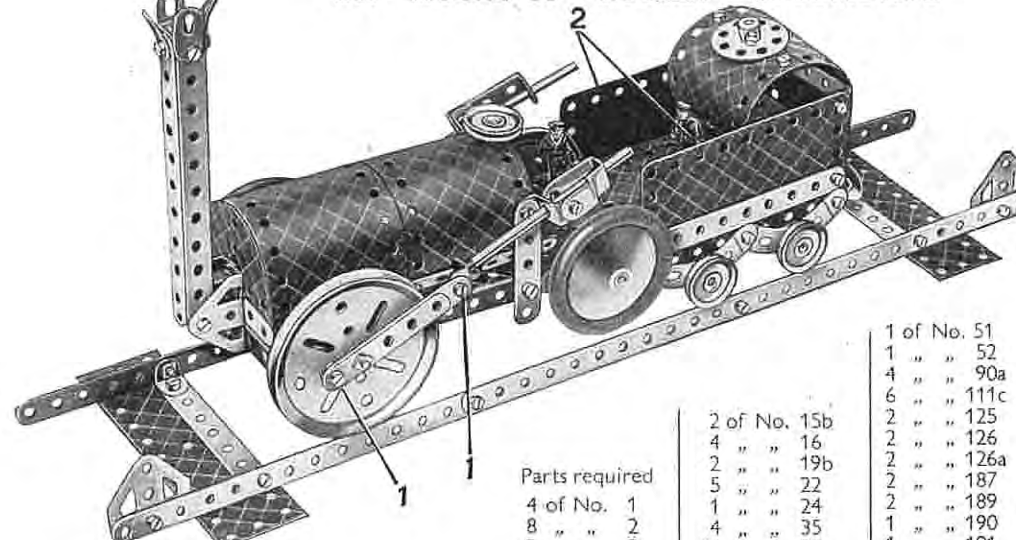


Fig. 4.18b

Fig. 4.18c

4.19 MODEL OF "ROCKET" LOCOMOTIVE



Parts required		
4 of No. 1	2 of No. 15b	1 of No. 51
8 " " 2	4 " " 16	1 " " 52
2 " " 3	2 " " 19b	4 " " 90a
9 " " 5	5 " " 22	6 " " 111c
4 " " 10	1 " " 24	2 " " 125
1 " " 11	4 " " 35	2 " " 126
8 " " 12	64 " " 37	2 " " 126a
4 " " 12c	12 " " 37a	2 " " 187
	8 " " 38	2 " " 189
	1 " " 44	1 " " 190
	1 " " 48	1 " " 191
	2 " " 48a	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 5½" × 2½" and a 2½" × 1½" Flanged Plate, fastened together by two 2½" Strips. Two 5½" × 2½" Flexible Plates bolted to 5½" Strips form the boiler, and are fastened to the 5½" × 2½" 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 5½" 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 1½" × ½" 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 ¾" Discs representing buffers are fastened against the heads of the ⅜" Bolts, which are lock-nutted to the Flexible Plate forming the back of the tender.

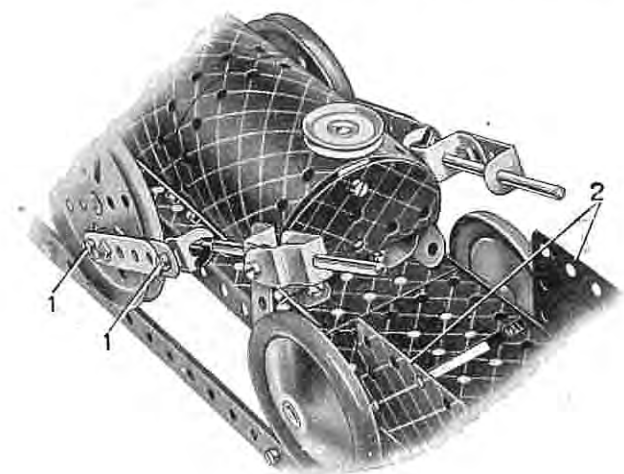
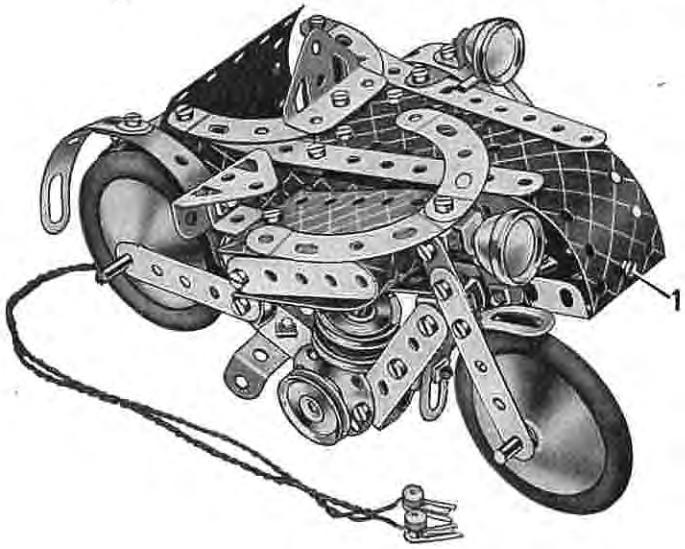


Fig. 4.19a

4.20 MOTOR CYCLE AND SIDECAR



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)		

The 5½" × 1½" Flexible Plate that forms the front of the sidecar is bolted at 1 to a 2½" × ½" Double Angle Strip, which is fastened by Bolt 2 to the 4½" Flanged Sector Plate forming the bottom of the sidecar. The Bolts 3 pass through the Flexible Plates and also through a 2½" × ½" Double Angle Strip.

The engine cylinder consists of two 1" Pulleys mounted on a 2" Rod, one end of which is journalled 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 1½" 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.

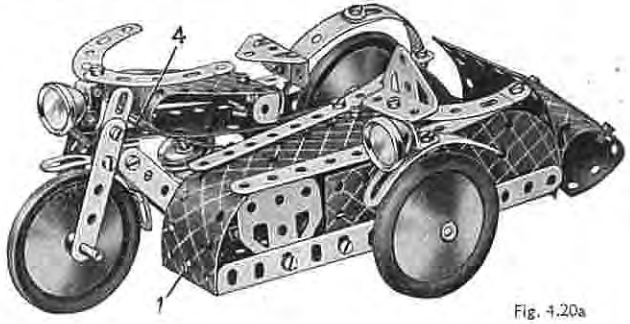


Fig. 4.20a

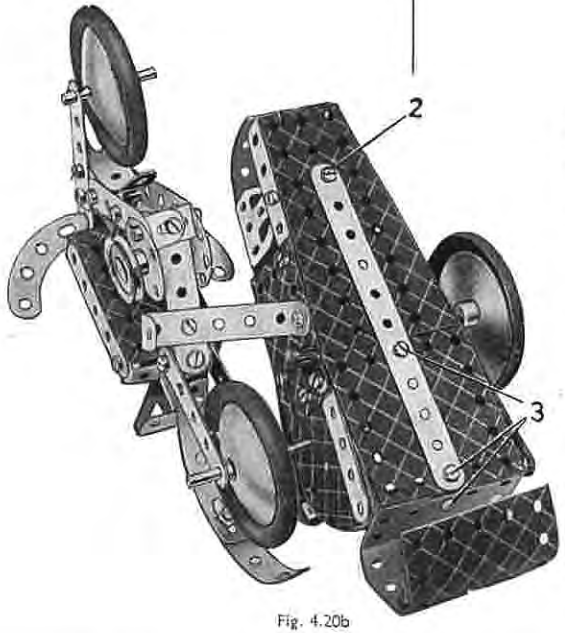
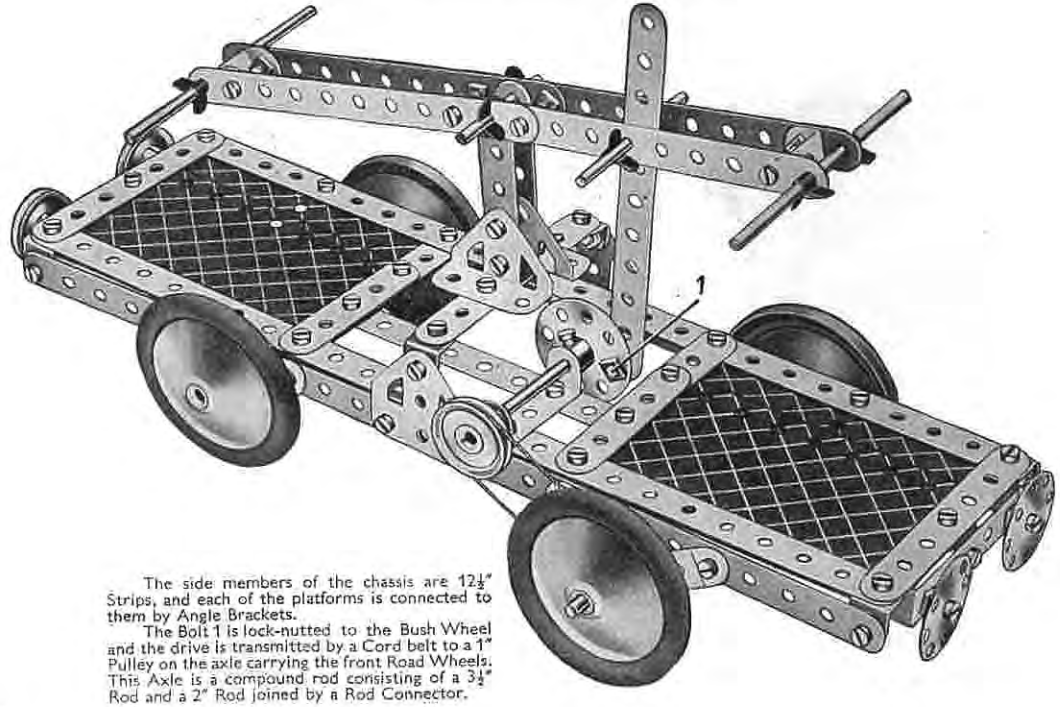


Fig. 4.20b

4.21 HAND TROLLEY CAR



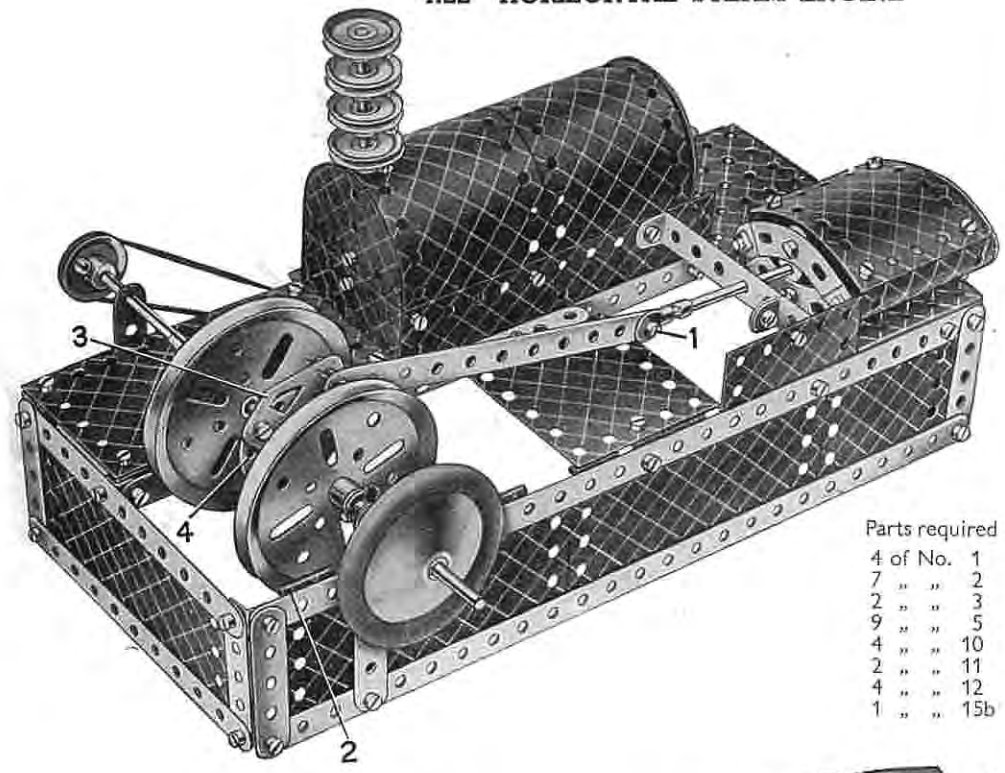
The side members of the chassis are 12½" Strips, and each of the platforms is connected to them by Angle Brackets.

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 3½" 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



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	*Magic*	Motor

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 1¼" 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 Road Wheel are fastened is rotated by the Reversed Angle Bracket 7. The cylinder is composed of two 1 1/16" radius Curved Plates and two U-Section Curved Plates bolted together as shown, and the complete unit is fastened in position to the 5½" × 2½" Flanged Plate that forms the base.

The boiler consists of two 5½" × 2½" Flexible Plates bolted to 5½" × 1½" Flexible Plates, and its ends are closed by Semi-circular Plates and 2½" × 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.

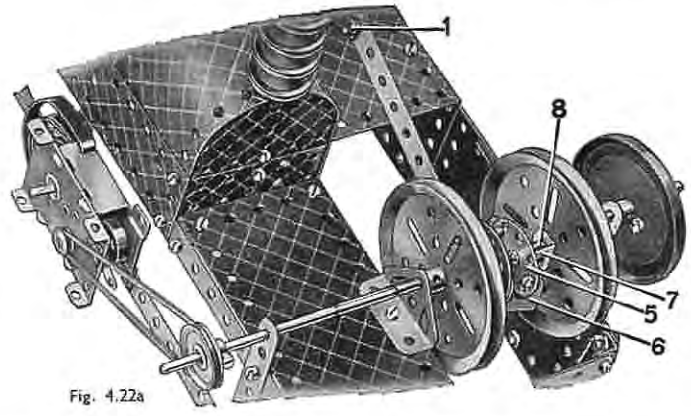
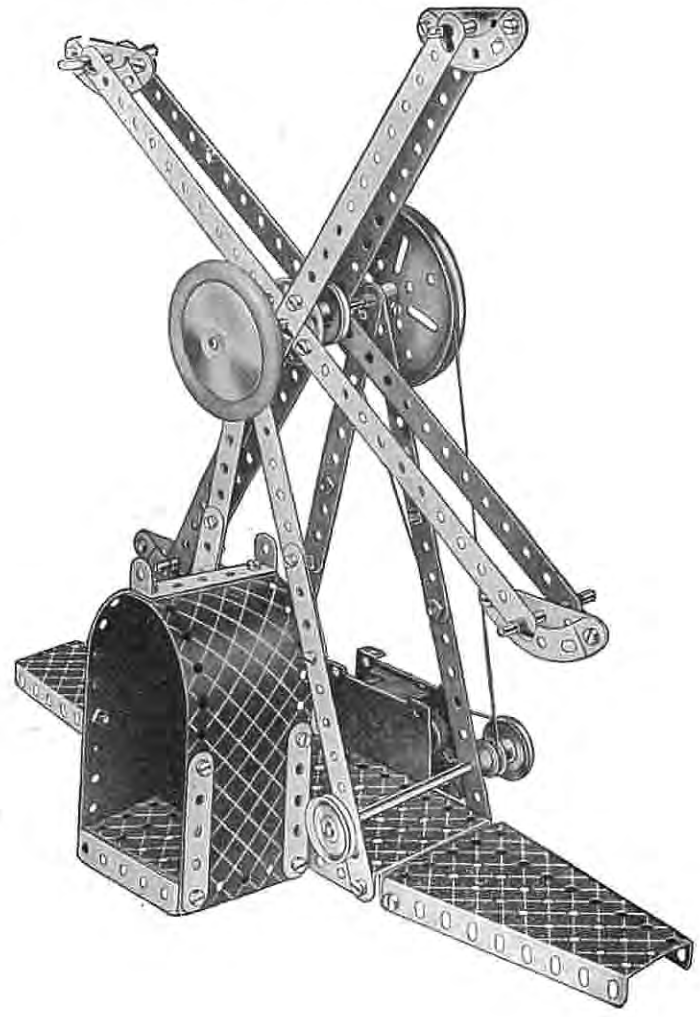


Fig. 4.22a

4.23 FLYBOATS

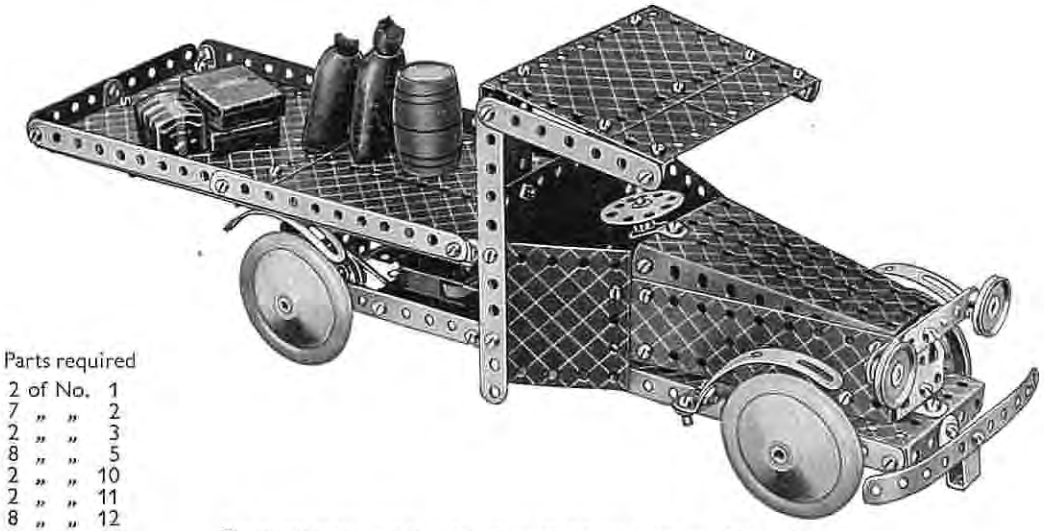
Parts required

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	*Magic*	Motor



The *Magic* Motor is bolted to the flange of the 5½" × 2½" Flanged Plate, and the drive is taken from the pulley of the Motor to a 1" Pulley fastened on a Rod journalled 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 12½" Strips bolted to a 5½"×2½" Flanged Plate and secured at their free ends by a 2½"×½" Double Angle Strip. Both the front and rear axles are journalled directly in the chassis. The *Magic* Motor is attached by its flanges to one of the 12½" 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 2½"×½" Double Angle Strips, the ends of which can be seen in Fig. 4.24a and also to the back of the cab by a 1½"×½" Double Angle Strip. The front bumper consists of a 5½" Strip curved to shape and fastened by a Cranked Bent Strip to the 5½"×2½" Flanged Plate forming the front of the chassis. The headlamps, which are 1" Pulleys, are fixed in place by ⅜" Bolts pushed through the 2½" Strips into the bosses of the Pulleys and held by the setscrews.

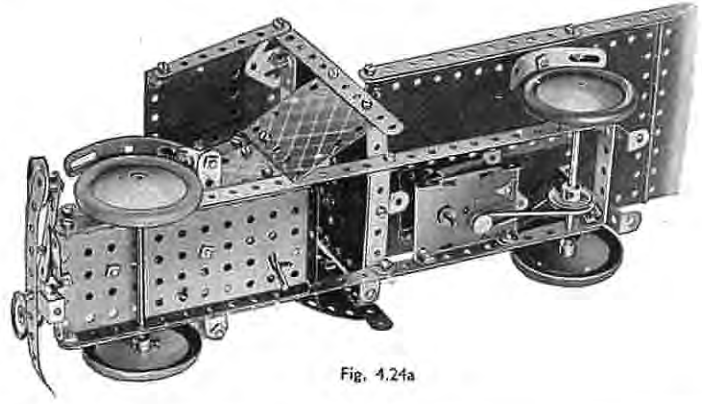
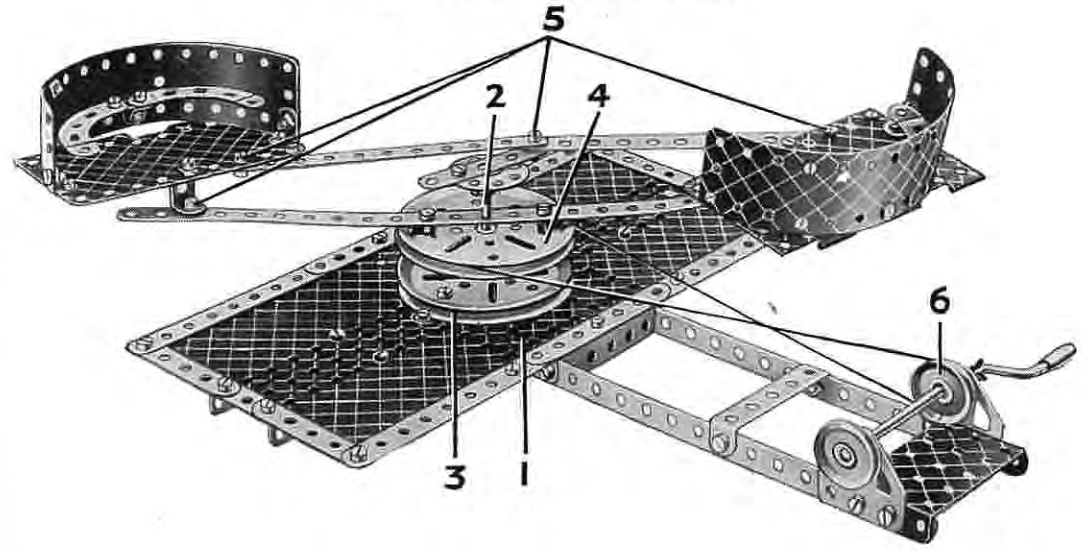


Fig. 4.24a

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 5½"×2½" Flanged Plate 1 extended on each side by a Flanged Sector Plate, a 5½"×2½" and a 4½"×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"×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.

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 ½" 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. O 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. 2 Clockwork Motor.

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

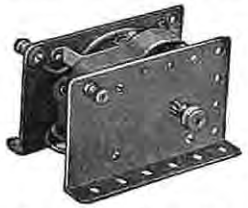
This Motor is more powerful than the No. 1 Motor and is fitted with reversing motion. It has brake and reverse levers.

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 (20 volt)

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)

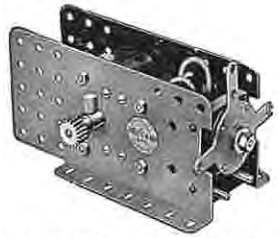
This fine Motor is fitted with reversing motion and provided with stopping and starting controls. It can be operated through a Meccano T6A, T6 or T6M Transformer from the mains (alternating current) or from a 6-volt accumulator.

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

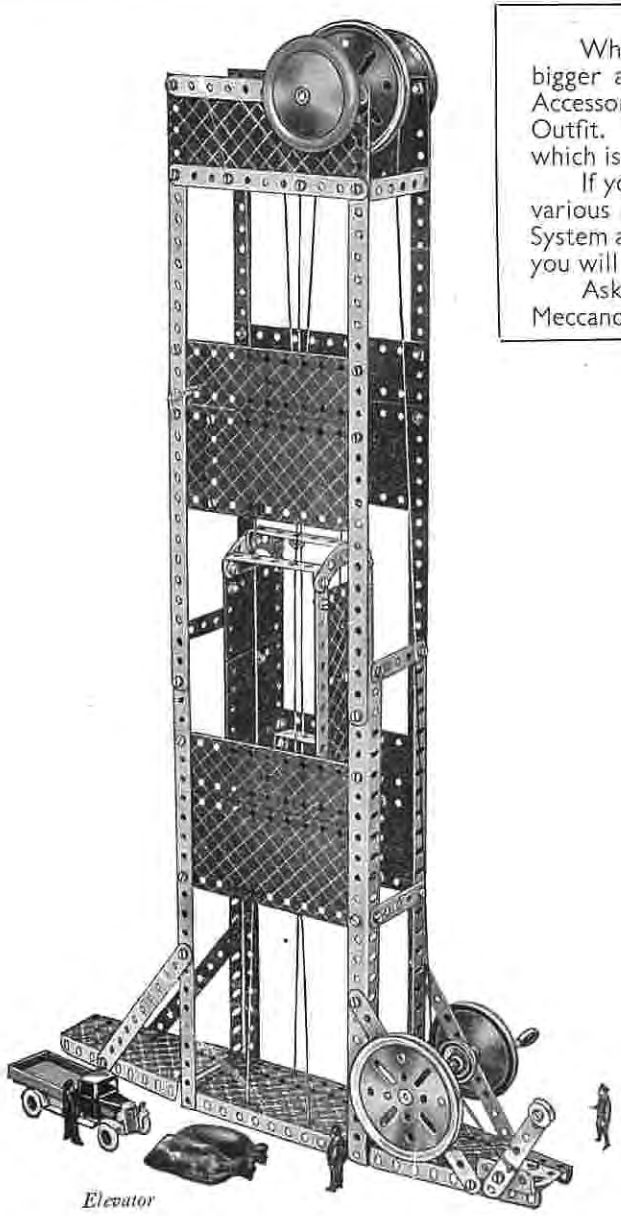
By means of these Controllers the speed of Meccano 6-volt and 20-volt Motors can be regulated exactly as desired.

BUILD BIGGER AND BETTER MODELS

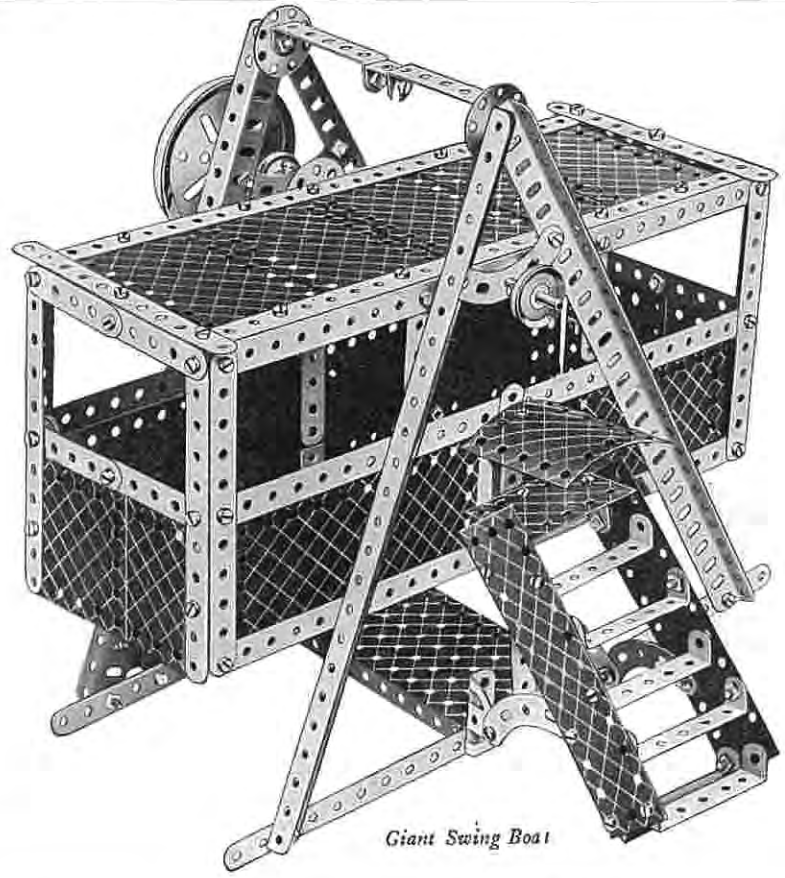
When you have built all the models shown in this Manual you will be keen to build bigger and more elaborate models. Your next step is to purchase a Meccano No. 4a Accessory Outfit containing all the parts required to convert your No. 4 into a No. 5 Outfit. You will then be able to build the full range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

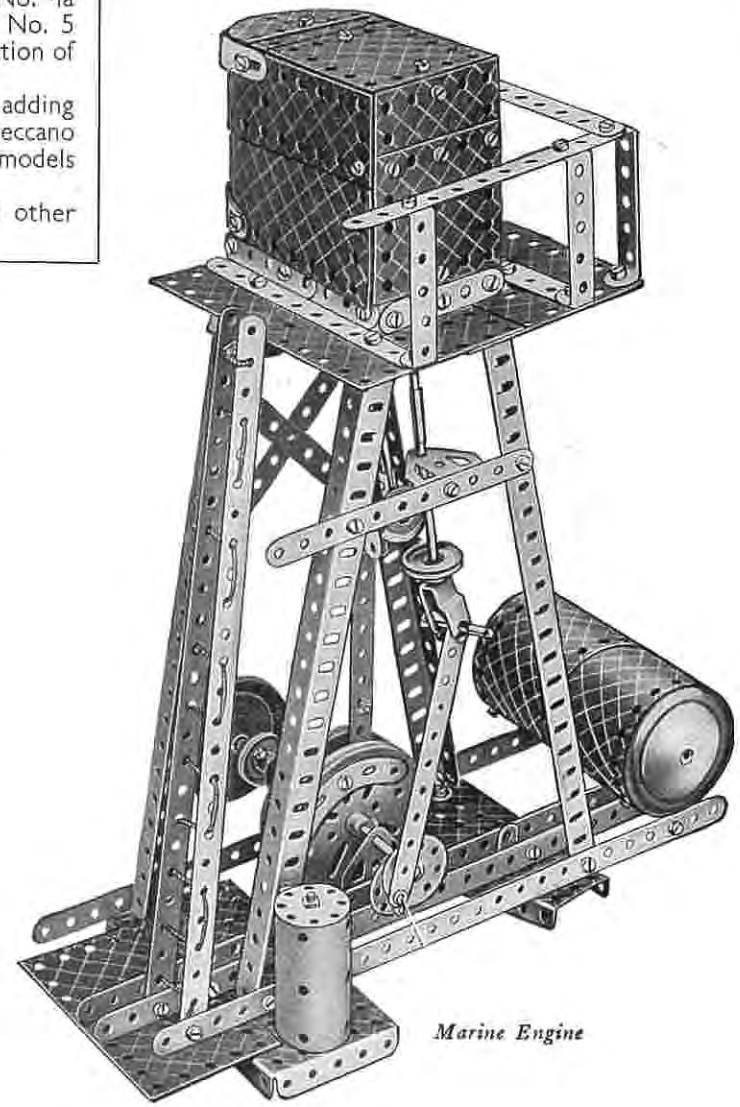
Ask your dealer to post to you regularly the latest Meccano parts lists and other Meccano literature.



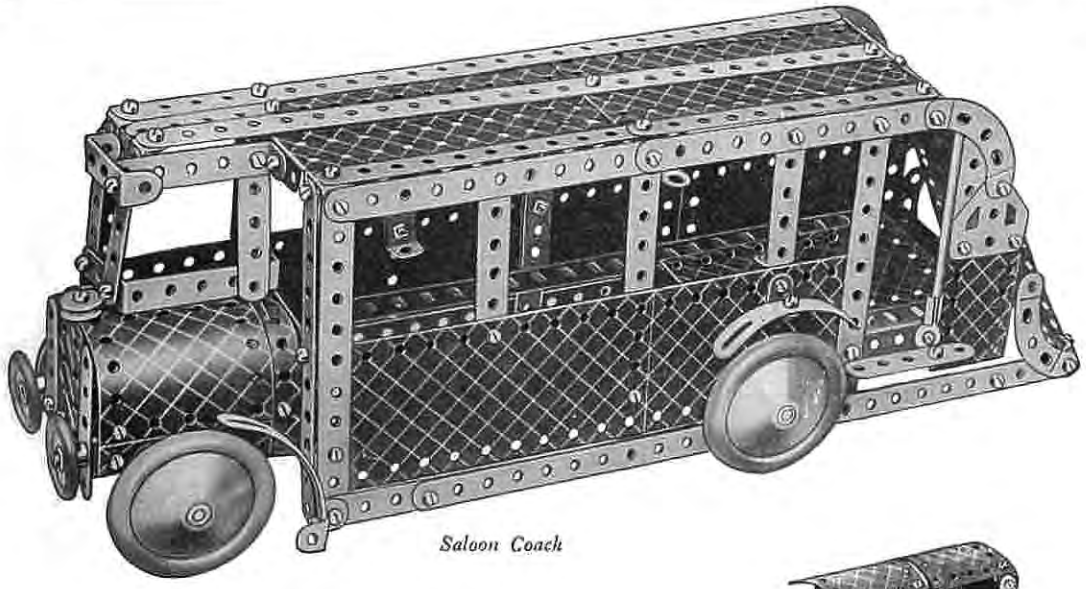
Elevator



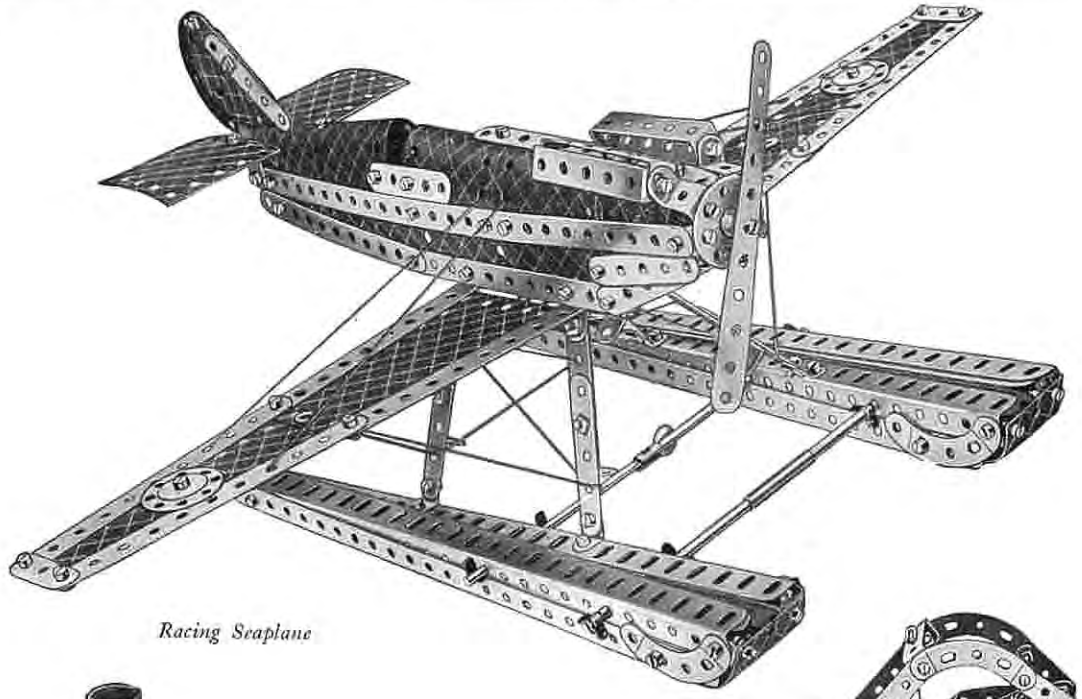
Giant Swing Boat



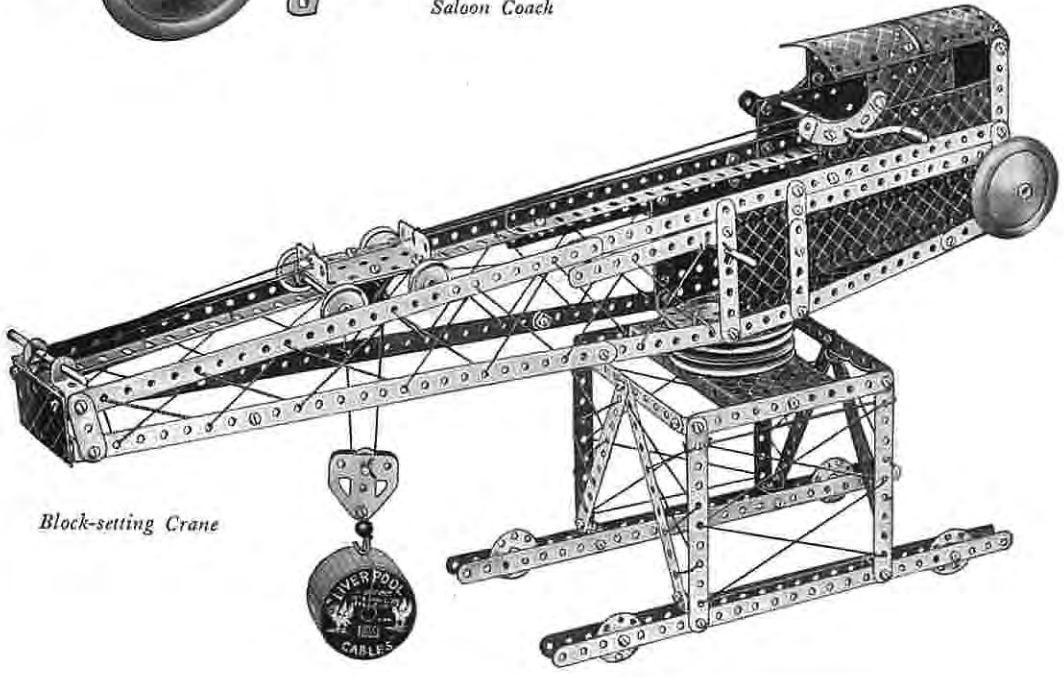
Marine Engine



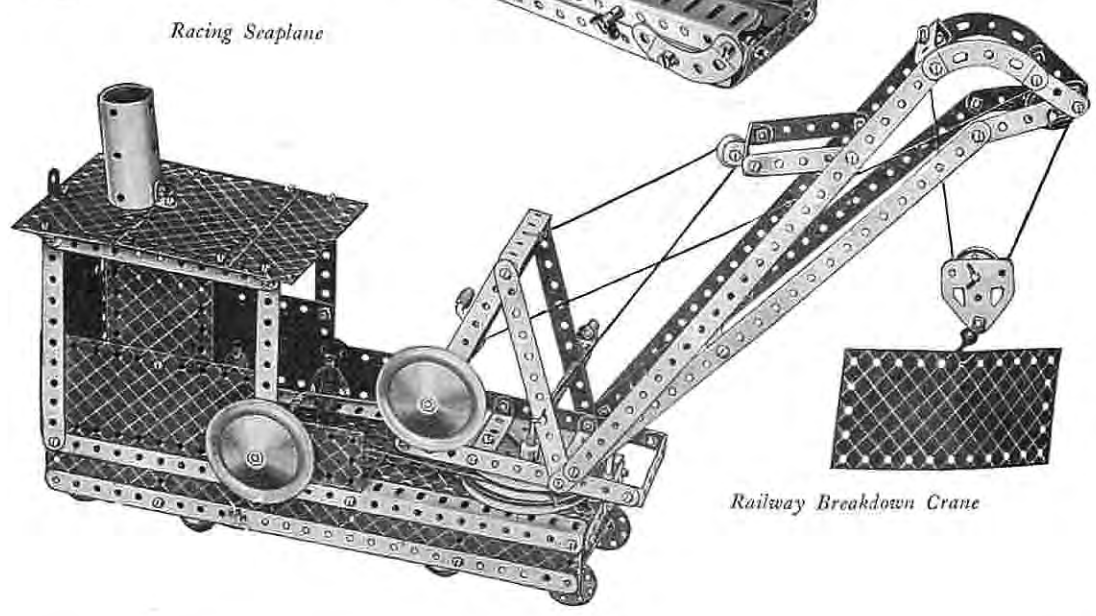
Saloon Coach



Racing Seaplane



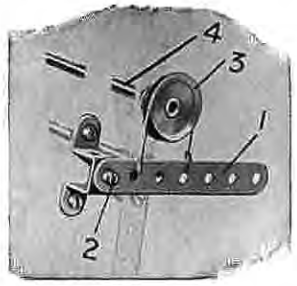
Block-setting Crane



Railway Breakdown Crane

Here are a few simple and interesting movements showing how easily real mechanisms can be reproduced with Meccano.

STRAP AND LEVER BRAKE

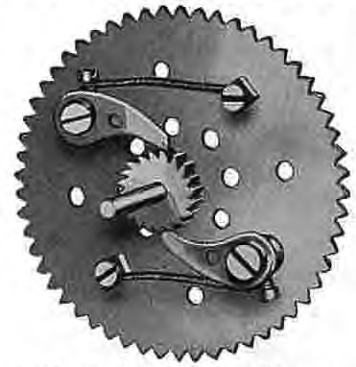


This device will be found very useful as a quick emergency hand-brake. Although it is the simplest of such devices, it is also one of the most valuable and can be used in a great variety of models.

INTERMITTENT ROTARY MOTION

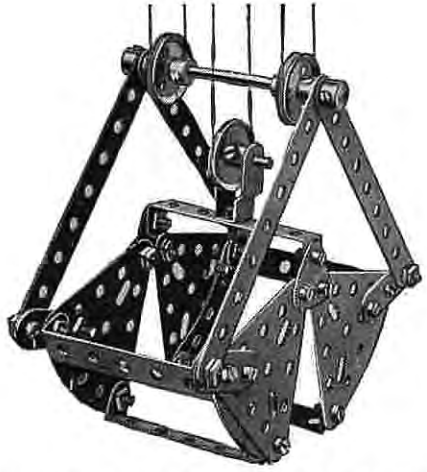
Intermittent rotary motion can be obtained by means of the above device. Such an arrangement is useful in revolution counters, measuring machines, etc. In addition to mechanisms that give true intermittent motion, different types of cams that convert a regular rotary motion into a constant or intermittent reciprocating motion can be constructed.

PAWL AND RATCHET MOVEMENT



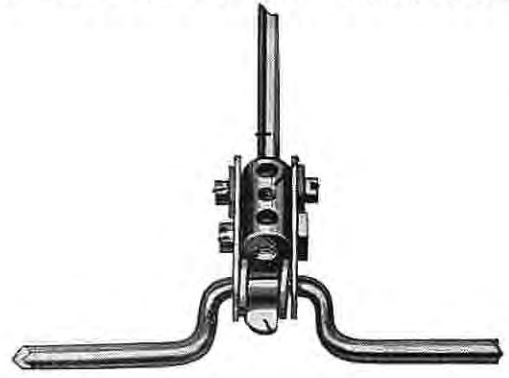
By means of this device it is possible to construct certain types of automatic brakes and free wheels.
The illustration shows the method of building up a free-wheel unit.

GRABS



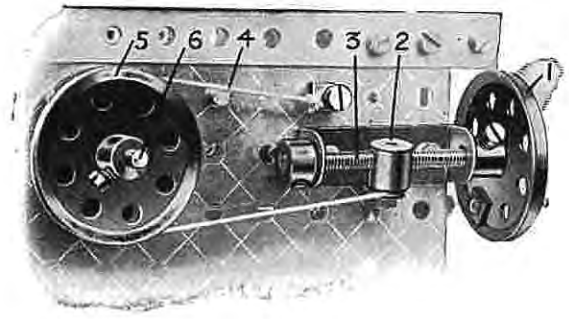
Here is a typical example of the many kinds of grab that can be constructed from Meccano. If the grab is fitted to a model crane or ship-coaler, all its movements can be controlled from an operating box built into the frame of the model. The outer sides of the jaws may be filled in with cardboard and the grab can then be used to pick up loads of sand, grain, marbles, etc.

BIG END FOR MECCANO CRANKSHAFT



A Spring Clip is first clipped on to the centre of the cranked portion of the Crankshaft, and on each side of this is carried a Washer. On the outside of each of the Washers is placed a 1½" Strip, and these are connected together by means of a Coupling. A ½" Bolt passes completely through the two 1½" Strips at their centre holes and also through the inner transverse tapped hole of the Coupling. The outer tapped holes are fitted with Set-Screws, under the heads of which a Washer is placed.

STRAP AND SCREW BRAKE



The type of brake shown above is used to apply a constant retarding effect to a rotating shaft. It can thus be utilised in a crane to prevent the load from falling back when the winding spindle is released. An advantage of the brake is that the speed of the shaft to which it is applied can be varied as required; the retarding action of the brake cannot vary once set unless the hand wheel is turned.

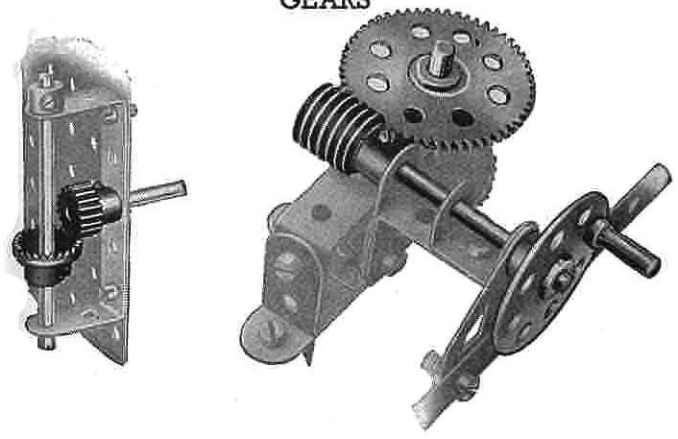
WORM AND PINION BEARING

The compact rear axle drive unit illustrated above is intended chiefly for use in small models of motor cars. Two Corner Angle Brackets are secured by Bolts passing through their elongated holes to a 1½" Strip, to which a Double Bent Strip also is secured. The Rod carrying the Worm is passed through the centre hole of the Strips and held in position by a Collar.

The driven Rod is journalled in the Corner Angle Brackets and carries a Pinion that engages with the Worm.

A feature of this bearing that should not be overlooked is that the useful gear ratio of 25:1 is provided by employing a ¾" Pinion.

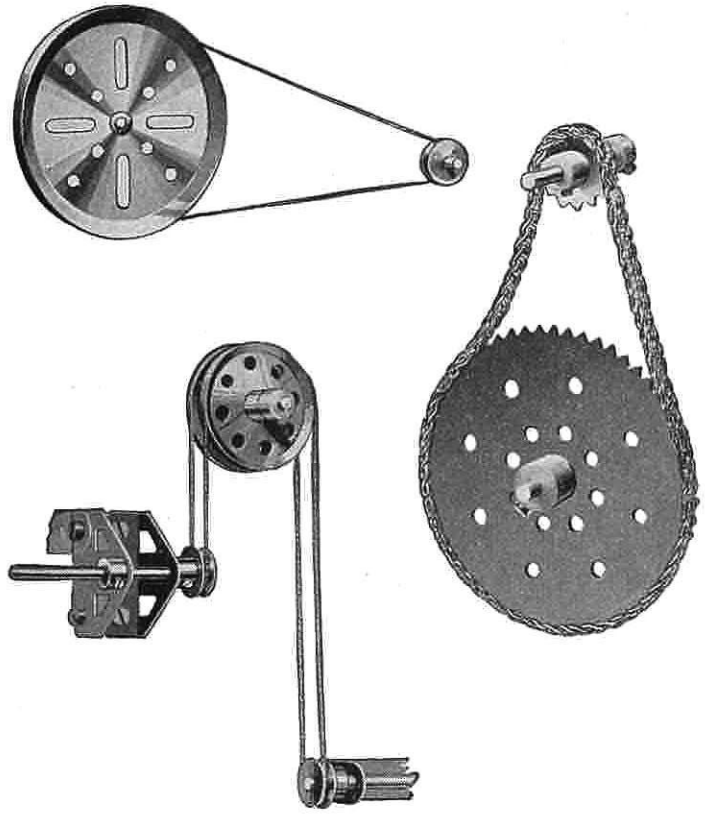
GEARS



The Meccano system includes a wide range of Gear Wheels, Bevel Gears, Pinion Wheels, Contrate Wheels and Worms in various sizes. All manner of interesting movements can be obtained by the use of these gears.

How a drive can be transmitted from a vertical to a horizontal shaft or vice versa, is shown on the left. On the right the Worm engaged with a Gear Wheel, gives a very great reduction in shaft speed.

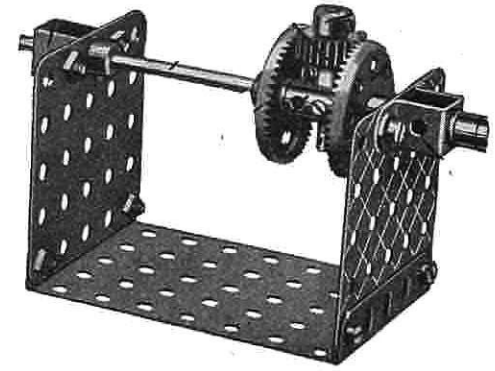
BELT AND CHAIN DRIVES



Above we show examples of belt and chain drive. The movements illustrated require no explanation excepting, perhaps, the lower belt drive, which shows a simple method for transmitting the drive from one shaft to another when the shafts are not in line.

Cords usually take the place of belts in Meccano models but miniature belting can be made from strips of canvas, indiarubber, etc., in which case Flanged Wheels should be used instead of grooved Pulleys.

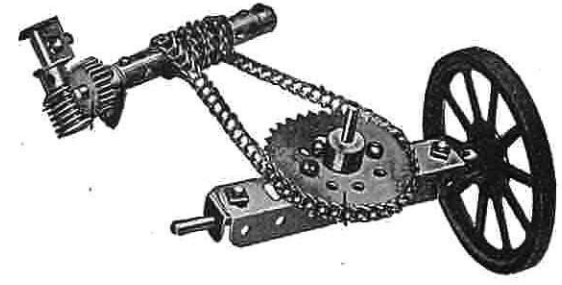
EPICYCLIC TRANSMISSION GEAR



Practically every type of mechanical power transmission gear can be reproduced with Meccano.

The device illustrated is designed to provide a gear ratio between two shafts mounted in direct line with one another. Its chief merit lies in the compactness of its construction and lack of external bearings.

STEERING GEARS



The various types of steering mechanism commonly in use on vehicles of all descriptions can readily be reproduced with Meccano.

In the example illustrated, the road wheels are controlled by an endless Sprocket Chain operated by a Worm and Pinion mechanism.

No.	Description	0	1	1a	2	2a	3	3a	4	4a	6	5	6	6a	7	7a	8	8a	9	9a	10
1	Perforated Strips, 12½"	—	—	—	—	2	2	2	4	6	10	2	12	—	12	2	14	—	14	10	24
1a	" " 9½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6
1b	" " 7½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	6
2	" " 5½"	4	4	—	4	2	6	2	8	6	14	—	14	4	18	3	21	3	24	12	36
2a	" " 4½"	—	—	—	—	—	—	—	2	—	2	2	4	2	6	6	6	—	6	2	8
3	" " 3½"	—	—	—	—	—	—	—	2	—	2	2	2	—	2	6	6	—	6	4	18
4	" " 3"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	6	2	8	4	12
5	" " 2½"	2	4	2	6	3	9	—	9	3	12	—	12	—	12	6	18	18	36	36	72
6	" " 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4	8	12
6a	" " 1½"	—	—	—	—	—	—	—	—	2	2	—	2	2	4	2	6	—	6	4	10
7	Angle Girders, 24½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	8
7a	" " 18½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	4	6
8	" " 12½"	—	—	—	—	—	—	—	—	4	4	—	4	4	8	2	10	—	10	6	16
8a	" " 9½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
8b	" " 7½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	—	—	4	8
9	" " 5½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	12
9a	" " 4½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	8
9b	" " 3½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6
9c	" " 2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	4	8
9d	" " 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
9e	" " 1½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
9f	Flat Brackets	4	4	—	4	1	5	—	5	3	8	—	8	4	12	8	20	3	23	1	24
10	Double Brackets	—	—	—	—	2	2	—	2	2	4	—	4	—	4	1	5	3	8	4	12
11	Angle Brackets, ½"×½"	4	8	—	8	—	8	—	8	4	12	4	16	2	18	16	34	2	36	14	50
12	" " 1"×1"	—	—	—	—	—	—	—	—	2	2	—	2	2	4	2	6	—	6	2	8
12a	" " 1"×½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	2	8
12b	Obtuse Angle Brackets, ½"×½"	—	—	—	—	—	—	4	4	—	4	2	6	—	6	2	8	—	8	4	12
12c	Axle Rods, 11½"	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2	—	2	—	2
13	" " 8"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	3	4
13a	" " 6½"	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2	—	3	1	4
14	" " 5½"	—	—	—	—	—	—	—	—	2	2	—	2	—	2	2	4	—	4	2	6
15	" " 4½"	—	—	—	—	—	—	—	—	1	1	—	1	2	3	2	5	2	5	1	6
15a	" " 4"	—	—	—	—	2	2	—	2	—	2	—	2	—	2	2	4	—	4	—	8
15b	" " 3½"	1	2	—	2	1	3	1	4	—	4	—	4	—	4	1	5	—	5	3	6
16	" " 3"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16a	" " 2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	3	4
16b	" " 2"	1	2	—	2	—	2	—	2	—	2	—	2	—	4	3	5	—	5	—	8
17	" " 1½"	—	—	—	—	1	1	1	2	2	4	—	4	—	4	—	5	—	5	2	6
18a	" " 1"	—	—	—	—	—	—	1	1	—	1	—	1	—	1	—	2	—	2	2	4
18b	Pulley Wheels, 3" with set screws ...	—	—	—	—	—	—	1	2	—	2	—	2	—	2	—	2	—	2	2	4
19b	Crank Handles, 3½" shaft with Erinoid grip ...	—	—	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	1	2
19g	" " 5" " " " " ...	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1	—	1	—	1
19h	Crank Handles, 3½" shaft without Erinoid grip	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19s	Flanged Wheels, 1½" diameter	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
20	Pulley Wheels, 2" with set screws	—	—	—	—	—	—	—	—	—	—	—	—	2	2	1	4	2	6	—	6
20a	Flanged Wheels, ¾" diameter	—	—	—	—	—	—	—	—	—	—	—	—	4	4	—	4	—	4	—	4
20b	Pulley Wheels, 1½" with set screws	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	—	2
21	" " 1" " " " " ...	2	4	—	4	—	4	1	5	—	5	—	5	—	5	2	5	—	5	3	8
22	" " 1" without " " " ...	—	—	—	—	—	—	—	—	2	2	—	2	—	2	—	4	—	4	2	6
22a	" " ¾" " " " " ...	—	—	—	—	1	1	—	1	—	1	—	1	—	1	2	3	—	3	1	4
23	" " ½" with " " " ...	—	—	—	—	—	—	—	—	—	—	1	1	—	1	2	3	—	3	2	5
23a	Bush Wheels	1	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	1	2
24	Pinion Wheels, ½" diam., ¼" wide	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	" " ½" " ½" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25a	" " ½" " ¼" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	" " ½" " ½" "	—	—	—	—	—	—	—	—	—	—	—	—	2	2	1	3	—	3	1	4
26a	" " ½" " ¼" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26b	" " ½" " ½" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	Gear Wheels, 50 teeth	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27a	" " 57 "	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	2	1	4
27b	" " 133 " 3½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27c	" " 95 " 2½" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
28	Contrate Wheels, 1½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	2
29	" " ¾" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	4
30	Bevel Gears, ½", 26 teeth	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
30a	" " ½", 16 "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
30c	" " 1½", 48 "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
31	Gear Wheels, 1", 38 teeth	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	Worms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
34	Spanners	1	2	—	2	—	2	—	2	—	2	—	2	1	2	1	2	—	2	—	2
34b	Box Spanners	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35	Spring Clips	4	4	—	4	2	6	2	8	6	14	—	14	4	18	1	19	1	21	1	22
36	Screwdrivers	1	1	—	1	—	1	—	1	—	1	—	1	—	1	1	1	—	1	—	1
36b	" (Special)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
37a	Nuts	22	30	16	46	10	56	25	81	10	91	20	111	51	162	76	238	60	298	352	650
37b	Bolts, ¾"	18	24	16	40	10	50	25	75	10	85	20	105	45	150	70	220	60	280	320	600
38	Washers	2	4	—	4	2	6	2	8	6	14	6	20	6	26	—	26	—	26	49	75
40	Hanks of Cords	—	1	—	1	—	1	—	1	—	1	1	2	1	3	—	3	3	6	—	6
41	Propeller Blades	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
43	Springs	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1	2	4
44	Cranks Bent Strips	—	—	—	—	1	1	—	1	—	1	—	1	1	2	—	2	—	2	1	4
45	Double Bent Strips	—	—	—	—	—	—	—	—	1	1	—	1	1	2	1	3	—	3	1	4
46	Double Angle Strips, 2½"×1"	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	2	—	2	—	2
47	" " " 2½"×1½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
47a	" " " 3"×1½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
48	" " " 1½"×½"	—	—	—	—	—	—	1	1	—	1	1	2	—	2	—	2	—	2	2	4
48a	" " " 2½"×½"	2	2	—	2	—	2	4	6	2	8	—	8	2	10	—	10	—	10	2	12
48b	" " " 3½"×½"	—	—	—	—	—	—	—	—	—	—	2	2	—	2	4	6	—	6	2	8
48c	" " " 4½"×½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	2	4
48d	" " " 5½"×½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4	1	4
50a	Eye Pieces with Boss	—	—	—	—	—	—	1	1	—	1	—	1	—	1	1	2	1	2	—	2
51	Perforated Flanged Plates, 2½"×1½" ...	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—	2	—	2	1	4
52	" " 5½"×2½" ...	1	1	—	1	—	1	—	1	—	1	—	1	—	1	1	2	—	4	2	6
52a	" Flat Plates, 5½"×3½" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
53	" Flanged Plates, 3½"×2½" ...	—	—	—	—	—	—	—	—	—	—	2	2	1	3	2	5	2	7	2	9
53a	" Flat Plates, 4½"×2½" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
54a	" Flanged Sector Plates, 4½" ...	—	—	—	—	—	—	2	2	—	2	—	2	—	2	—	2	1	3	1	4
55a	Perforated Strips, Slotted, 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
57b	Hooks, Loaded	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
57c	" " (Small)	—	1	—	1	—	1	—	1	—	1	—	1	—	1	1	1	—	1	—	1
59	Collars with Set Screws	—	—	—	—	—	—	—	—	—	—	4	4	2	6	4	10	2	12	12	24
62	Cranks	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	—	2	2	4
62a	" Threaded	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	4
62b	Double Arm Cranks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
63	Couplings	—	—	—	—	—	—	—	—	—	—	—	—	1	1	5	6	—	6	2	8
64	Threaded Bosses	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
65	Centre Forks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
69c	Grub Screws, ½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
70	Perforated Flat Plates, 5½"×2½" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	12
72	" " 2½"×2½" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
76	" Triangular Plates, 2½" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
77	" " 1" ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
78	Screwed Rods, 11½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	1
80a	" " 3½"	—	—	—	—	—	—	—	—	2	2	—	2	—	2	—	2	—	2	—	2
80c	" " 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
81	" " 1"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
82	Curved Strips, 5½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
89	" " 3" Cranked	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
89a	" " 4"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
89b	" " 2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
90	Curved Strips, 2½" Cranked	2	2	—	2	2	4	—	4	—	4	—	4	—	4	—	4	—	4	1	8
90a	Sprocket Chain, 40" lengths	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
94																					

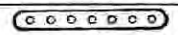
No.	Description	0	1	1a	2	2a	3	3a	4	4a	5	5a	6	6a	7	7a	8	8a	9	9a	10
95	Sprocket Wheels, 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	—	2
95a	" " 1½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
95b	" " 3/4"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
96	" " 1"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	2	4
96a	" " ¾"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
100	Braced Girders, 5½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2
102	Single Bent Strips	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	3	4
103	Flat Girders, 5½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
103a	" " 9½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
103b	" " 12½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
103c	" " 4½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
103d	" " 3½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
103e	" " 3"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
103f	" " 2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
103g	" " 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
103h	" " 1½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
103k	" " 7½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
108	Architraves	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	2	4
109	Face Plates, 2½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	2	4
110	Rack Strips, 3½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
111	Bolts, 3/8"	—	—	—	—	—	—	—	—	—	—	2	2	—	2	1	3	—	3	15	18
111a	" 1/2"	—	—	—	—	—	—	—	—	2	2	—	2	—	2	4	6	—	6	12	18
111c	" 3/4"	2	4	—	4	2	6	—	6	—	6	—	6	—	6	—	6	6	12	12	24
114	Hinges	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
115	Threaded Pins	—	—	—	—	—	—	—	—	1	1	—	1	1	2	—	2	—	2	2	4
116	Fork Pieces, Large	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1	1	2
116a	" " Small	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
117	Steel Balls, 3/8" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24	24	—	24
118	Hub Discs, 5½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
120b	Compression Springs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	3	4
124	Reversed Angle Brackets, 1"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
125	" " ½"	—	1	—	1	1	2	—	2	2	4	—	4	—	4	—	4	—	4	2	6
126	Trunnions	2	2	—	2	—	2	—	2	—	2	—	2	—	2	2	4	—	4	4	8
126a	Flat Trunnions	2	2	—	2	—	2	—	2	—	2	2	4	—	4	—	4	2	6	6	12
128	Boss Bell Cranks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
129	Rack Segments, 3" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
130	Triple Throw Eccentrics	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
132	Flywheels, 2½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
133	Corner Brackets, 1½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
133a	" " 1" "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2
134	Crank Shafts, 1" stroke	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
136	Handrail Supports	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2	4
136a	" Couplings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
137	Wheel Flanges	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	3	4
140	Universal Couplings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
142a	Motor Tyres, 2"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	2	6	—	6
142b	" " 3"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6
143	Circular Girders, 5½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
144	Dog Clutches	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2
145	Circular Strips, 7½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2
146	" Plates, 6" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
146a	" " 4" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
147a	Pawls	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
147b	Pivot Bolt with 2 Nuts	—	—	—	—	—	—	—	—	1	1	—	1	—	1	1	2	1	3	3	6
147c	Pawls without Boss	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
154a	Corner Angle Brackets, ½" R.H.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
154b	" " ½" L.H.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
155a	Rubber Rings, for 1" pulley	2	4	—	4	—	4	—	4	—	4	—	4	—	4	—	4	—	4	4	8
157	Fans, 2" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
160	Channel Bearings, 1½"×1"×½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
161	Girder Brackets, 2"×1"×½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2
162	Boiler with Ends, complete	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1	1	2
162a	Boiler Ends	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
162b	Boilers without Ends	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1
163	Sleeve Pieces	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	—	2	—	2
164	Chimney Adaptors	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	2	2	4
165	Swivel Bearings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2	—	2
166	End Bearings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	1	2
167b	Ring Frames for Rollers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
168	Ball Bearings, 4" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
169	Digger Buckets	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
170	Eccentrics, ½" Throw	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
171	Socket Couplings	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
175	Flexible Coupling Units	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
176	Anchoring Springs for Cord	—	—	1	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	3	4
179	Rod Socket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2
185	Steering Wheel, 1½" diam.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1
186	Driving Bands, 2½" Light	—	—	1	1	—	1	—	1	—	1	—	1	2	3	—	3	—	3	—	3
186a	" 6"	—	—	—	—	—	—	—	—	1	1	—	1	1	2	—	2	—	2	—	2
186b	" " 10"	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	2	—	2	—	2
186c	" " 10" Heavy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
186d	" " 15"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2
186e	" " 20"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	—	2
187	Road Wheels	—	—	1	1	1	2	2	4	—	4	—	4	—	4	—	4	—	4	—	4
188	Flexible Plates, 2½"×1½"	—	2	2	—	2	—	2	2	4	—	4	2	6	2	8	2	10	2	12
189	" " 5½"×1½"	2	—	2	—	2	—	2	2	4	—	4	2	6	2	8	2	10	2	12
190	" " 2½"×2½"	—	2	2	—	2	2	4	—	4	2	6	2	8	2	10	4	14	2	16
190a	" " 3½"×2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
191	" " 4½"×2½"	—	1	1	1	2	—	2	—	2	—	2	—	2	4	6	—	6	10	16
192	" " 5½"×2½"	—	—	—	2	2	—	2	2	4	—	4	2	6	6	12	6	18	12	30
196	Strip Plates 9½"×2½"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
197	" " 12½"×2½"	—	—	—	—	—	—	—	—	—	—	2	2	—	2	4	6	—	6	14	20
198	Hinged Flat Plates, 4½"×2½"	—	—	—	—	—	—	1	1	—	1	—	1	—	1	—	1	—	1	—	1
199	Curved Plates, U Section, 2½"×2½"×9/16" radius	—	1	1	1	2	—	2	—	2	—	2	—	2	—	2	—	2	10	12
200	Curved Plates, 2½"×2½"×1 1/16" radius	—	2	2	—	2	—	2	—	2	—	2	—	2	6	8	—	8	4	12
212	Rod and Strip Connectors	—	—	—	1	1	—	1	—	1	1	2	—	2	—	2	—	2	2	4
213	Rod Connectors	—	—	—	1	1	—	1	—	1	1	2	—	2	—	2	—	2	—	2
214	Semi-Circular Plates, 2½"	—	—	—	2	2	—	2	—	2	—	2	—	2	—	2	2	4	—	4
215	Formed Slotted Strips, 3"	—	—	—	4	4	—	4	—	4	—	4	4	8	—	8	—	8	4	12
216	Cylinder, 2½"	—	—	—	—	—	—	—	—	1	—	1	—	1	1	2	—	2	—	2
217a	Discs, 1½"	—	—	—	2	2	—	2	2	4	—	4	—	4	—	4	—	4	—	4
217b	" ¾"	—	—	—	2	2	—	2	—	2	—	2	—	2	—	2	—	2	2	4
219	Wheel Discs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4	2	6	—	6
A1083	Drifts	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1	—	1
P52	Aeroplane Collars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
	Clockwork Motor No. 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	1
	Electric Motor No. E120, 20-volts	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1

Full instructions for building a fine range of models are included with each Outfit.

REAL ENGINEERING PARTS IN MINIATURE

Meccano parts, an illustrated list of which is given in the following pages, combine to form a complete miniature engineering system with which practically any movement known in mechanics can be correctly reproduced. New parts are always being introduced in order to keep Meccano model-building in line with the most modern engineering requirements. The greatest care is taken in the designing of these parts to ensure that they function exactly as their counterparts in actual engineering practice. Ask your dealer for the latest complete illustrated price list and ask him also to keep you advised of all new parts that are added to the system.

MECCANO PARTS

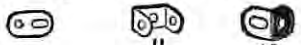


3
Perforated Strips

No.		No.	
1.	12½"	3.	3½"
1a.	9½"	4.	3"
1b.	7½"	5.	2½"
2.	5½"	6.	2"
2a.	4½"	6a.	1½"

9B
Angle Girders

7.	24½"	9a.	4½"
7a.	18½"	9b.	3½"
8.	12½"	9c.	3"
8a.	9½"	9d.	2½"
8b.	7½"	9e.	2"
9.	5½"	9f.	1½"

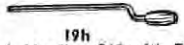


10 11 12

10. Flat Brackets
11. Double Brackets
12. Angle Brackets, ½" × ½"
12a. " " 1" × 1"
12b. " " 1" × ½"
12c. Obtuse Angle Brackets, ½" × ½"

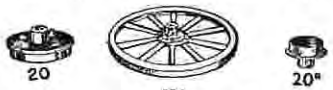
Axle Rods

13.	11½"	16.	3½"
13a.	8"	16a.	2½"
14.	6½"	16b.	3"
15.	5"	17.	2"
15a.	4½"	18a.	1½"
15b.	4"	18b.	1"



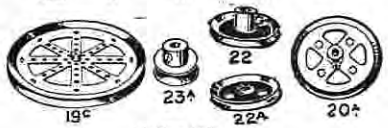
19H

19g. Crank Handles, 3½" with Erinoid grip
19h. " " 5" " "
19s. " " 3½" without "



20 19A 20B

19a. Wheels, 3" diam., with set-screws
20. Flanged Wheels, 1½" diam.
20b. " " ¾" "



19C 23A 22 22A 20A

Pulley Wheels
19b. 3" diam. with centre boss & set-screw
19c. 6" " " " "
20a. 2" " " " "
21. 1½" " " " "
22. 1" " " " "
23a. ½" " " " and grub-screw
22a. ½" " without " " "
23. ½" " " " "

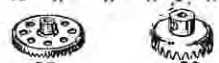
24. Bush Wheels

26B

No.
25. Pinion Wheels, ¾" diam., ½" face
25a. " " " " "
25b. " " " " "
26. " " " " "
26a. " " " " "
26b. " " " " "

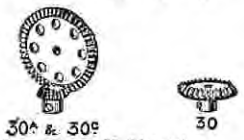
27 27A 27B

Gear Wheels
27. 50 teeth, to gear with ¾" pinion
27a. 57 " " " " "
27b. 133 " " " " " (3½" diam.)
27c. 95 " " " " " (2½" diam.)



28 29

28. Contrate Wheels, 1½" diam.
29. " " ¾" "



30A & 30C 30

30. Bevel Gears, ¾", 26 teeth
30a. " " ½", 16 " } Can only be
30c. " " 1½", 48 " } used together

31 32

31. Gear Wheels, 1", 38 teeth
32. Worms

34C

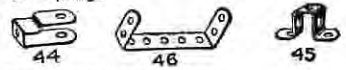
34. Spanners
34b. Box Spanners

35

35. Spring Clips ... ... box of 20
35s. " ... ... box of 60
36. Screwdrivers
36a. " Extra Long
36b. " Special
37. Nuts and Bolts, ¾" ... box of 12
37af. Nuts ... ... box of 50
37bf. Bolts, ¾" ... ... box of 50
37f. Nuts and Bolts, ½" ... box of 50
37g. " " ¾" ... box of 144
38. Washers ... ... pkt. of 20
38s. " ... ... box of 60
40. Hanks of Cord

41. Propeller Blades

No.
43. Springs



44 46 45

44. Cranked Bent Strips
45. Double " "
46. Double Angle Strips, 2½" × 1"
47. " " " 2½" × 1½"
47a. " " " 3" × 1½"
48. " " " 1½" × ½"
48a. " " " 2½" × ½"
48b. " " " 3½" × ½"
48c. " " " 4½" × ½"
48d. " " " 5½" × ½"

50A

50a. Eye Pieces, with boss

52 53

51. Flanged Plates, 2½" × 1½"
52. " " 5½" × 2½"
52a. Flat " 5½" × 3½"
53. Flanged Plates, 3½" × 2½"
53a. Flat Plates, 4½" × 2½"

54A

54a. Flanged Sector Plates, 4½" long

55. Perforated Strips, slotted, 5½" long
55a. " " " 2" long

57B 57A 57

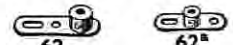
57. Hooks
57a. " Scientific
57b. " Loaded, Large
57c. " Loaded, Small

58 58B

58. Spring Cord, 40" Length
58a. Coupling Screws for Spring Cord
58b. Hooks for Spring Cord

59. Collars, with grub-screws

61. Windmill Sails



62 62A

No.
62. Cranks
62a. Threaded Cranks
62b. Double Arm Cranks

63 63A 63B 63C

63. Couplings
63a. Octagonal Couplings
63b. Strip Couplings
63c. Threaded Couplings

64 65

64. Threaded Bosses
65. Centre Forks

66 & 67

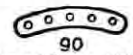
66. Weights, 50 grammes
67. " 25 "
68. Woodscrews, ½" "
69. Set Screws
69a. Grub Screws, ⅛"
69b. " " ¼"
69c. " " ⅜"

76 72 77

70. Flat Plates, 5½" × 2½"
72. " " 2½" × 2½"
73. " " 3" × 1½"
76. Triangular Plates, 2½"
77. " " 1"

80A
Screwed Rods

78.	11½"	80b.	4½"
79.	8"	80c.	3"
79a.	6"	81.	2"
80.	5"	82.	1"
80a.	3½"		



90

89. 5½" Curved Strips, 10" radius
89a. 3" " " cranked, 1¾" radius 4 to circle
89b. 4" Curved Strips, cranked, 4½" radius, 8 to circle
90. 2½" Curved Strips, 2¾" radius
90a. 2½" " " cranked, 1½" radius, 4 to circle

94

95B

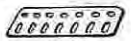
94. Sprocket Chain, per 40" length
95. " Wheels, 36 teeth, 2" diam.
95a. " " 28 " 1½" "
95b. " " 56 " 3" "
96. " " 18 " 1" "
96a. " " 14 " ¾" "

No. 99 No.
Braced Girders

97.	3½" long	99a.	9½" long
97a.	3" "	99b.	7½" "
98.	2½" "	100.	5½" "
99.	12½" "	100a.	4½" "

101 102

101. Heatds, for looms
102. Single Bent Strips

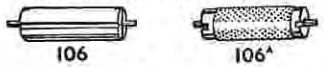


103D
Flat Girders

103.	5½" long	103e.	3" long
103a.	9½" "	103f.	2½" "
103b.	12½" "	103g.	2" "
103c.	4½" "	103h.	1½" "
103d.	3½" "	103k.	7½" "

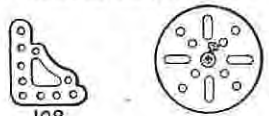
104

104. Shuttles, for looms
105. Reed Hooks, for looms



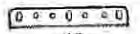
106 106A

106. Wood Rollers
106a. Sand Rollers
107. Tables for designing machines



108 109

108. Architraves
109. Face Plates, 2½" diam.



110

110. Rack Strips, 3½" long
110a. " 6½" "
111. Bolts, ¾" " 111c. Bolts, ¾"
111a. " ½" " 111d. " 1½"

113

113 Girder Frames

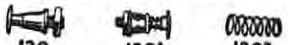
114 115 116A

114. Hinges
115. Threaded Pins
116. Fork Pieces, Large
116a. " Small
117. Steel Balls, ⅜" diam.

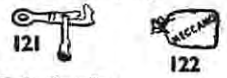
118. Hub Discs, 5½" diam.

Ask your dealer for a copy of the latest Meccano Parts price list.

MECCANO PARTS

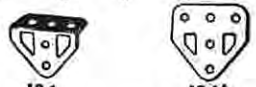


No.
120. Buffers 120a. Spring Buffers
120b. Compression Springs

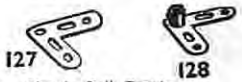


121. Train Couplings
122. Miniature Loaded Sacks

123. Cone Pulleys
124. Reversed Angle Brackets, 1"
125. " " " ½"

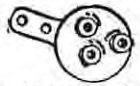


126. Trunnions 126a. Flat Trunnions



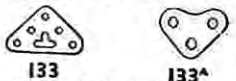
127. Simple Bell Cranks
128. Boss Bell Cranks

129. Rack Segments, 3" diam.



130. Eccentrics, Triple Throw

131. Dredger Buckets
132. Flywheels, 2½" diam.



133. Corner Brackets, 1½"
133a. " " 1"

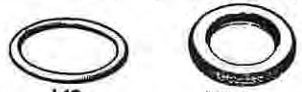
134. Crank Shafts, 1" stroke
135. Theodolite Protractors

136. Handrail Supports
136a. Handrail Couplings
137. Wheel Flanges

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

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

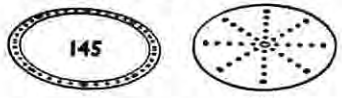
140. Universal Couplings
141. Wire Lines (for clock weights)



142. Rubber Rings (to fit 3" diam. rims)
142a. Motor Tyres (to fit 2" diam. rims)
142b. " " " 3" "
142c. " " " 1" "
142d. " " " 1½" "

143. Circular Girders, 5½" diam.

144. Dog Clutches



145. Circular Strips, 7½" diam. overall
146. " Plates, 6" "
146a. " " 4" "

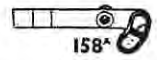
147. Pawls, with Pivot Bolt and Nuts
147a. Pawls
147b. Pivot Bolts with 2 Nuts
147c. Pawls without boss
148. Ratchet Wheels

149. Collecting Shoes for Electric Locos
150. Crane Grabs

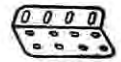
No.
151. Pulley Blocks, Single Sheave
152. " " Two "
153. " " Three "

154a. Corner Angle Brackets, ½" (right-hand)
154b. Corner Angle Brackets, ½" (left-hand)
155. Rubber Rings (for 1" Pulleys) Black
155a. " " " White

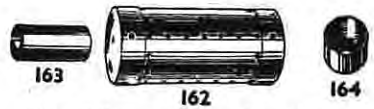
156. Pointers (with boss), 2½" overall



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

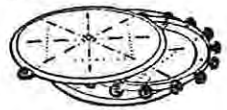


160. Channel Bearings, 1½"×1"×½"
161. Girder Brackets, 2"×1"×½"

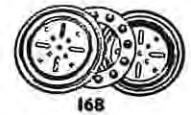


162. Boilers, complete, with ends
162a. " Ends
162b. " without ends
163. Sleeve Pieces
164. Chimney Adaptors

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

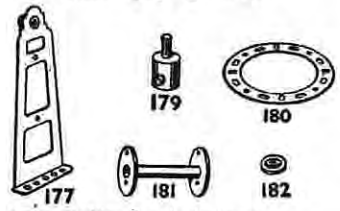
170. Eccentrics, ½" throw
171. Socket Couplings

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, 3½" diam.
181. Bobbins
182. Insulating Bushes
182a. Insulating Washers

183 Lamp Holders | 184c. 6-volt Lamps
184a. 2½-volt Lamps | 184d. 10 " "
184b. 3½ " " | 184e. 20 " "

No.
185. Steering Wheels, 1½" diam.
186. Driving Bands, 2½" (Light)
186a. " " 6" "
186b. " " 10" "
186c. " " 10" (Heavy)
186d. " " 15" "
186e. " " 20" "
187. Road Wheels

Flexible Plates.
188. 2½"×1½"
189. 5½"×1½"
190. 2½"×2½"
190a. 3½"×2½"
191. 4½"×2½"
192. 5½"×2½"
Strip Plates.
196. 9½"×2½"
197. 12½"×2½"

198. Hinged Flat Plates, 4½"×2½"
199. Curved Plates, U-Section 2½"×2½"×½"
200. " " 2½"×2½", 1 11/16" radius

201. Lamps with Flex (3½ 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 ½" } *Can only be*
211b. " " 1½" } *used together*

212. Rod and Strip Connectors
213. Rod Connectors

214. Semi-Circular Plates 2½"
215. Formed Slotted Strips 3"

216. Cylinders, 2½"

217a. Discs, 1½" | 217b. Discs ½"
219. Wheel Discs

† The series includes 26 Funnels in the correct designs and colours of leading shipping companies.

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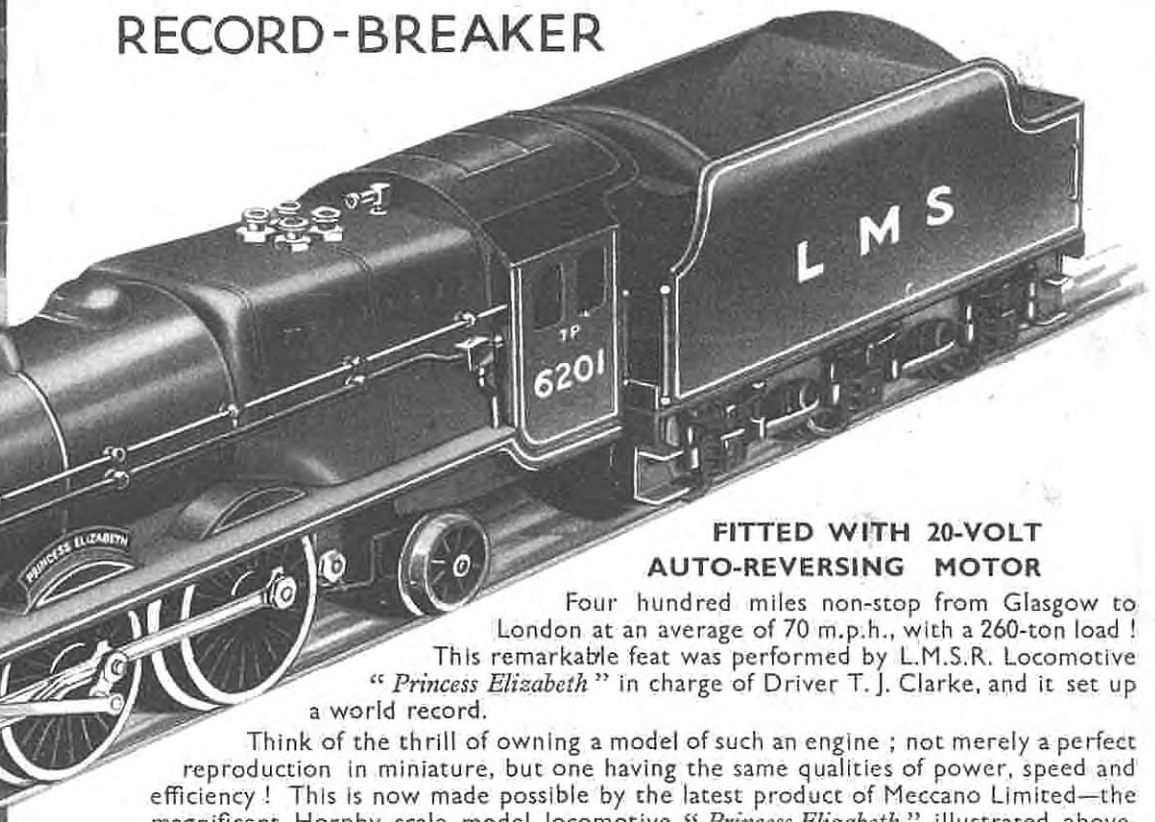
HORNBY SCALE MODEL OF "*Princess Elizabeth*" – MIGHTY L.M.S.R. WORLD RECORD-BREAKER



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