

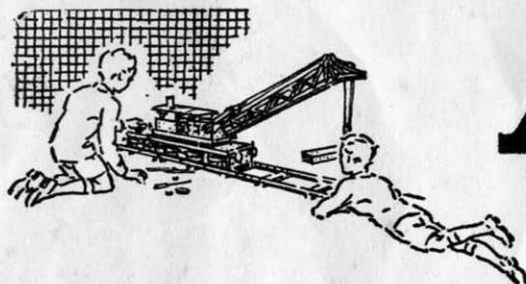
MECCANO

INSTRUCTIONS FOR
No. 2 OUTFIT

No.
47.2



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MECCANO

Real Engineering in Miniature



MODEL-BUILDING WITH MECCANO

There is no limit to the number of models that can be built with Meccano—Cranes, Clocks, Motor Cars, 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. 0 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 BEGIN THE FUN

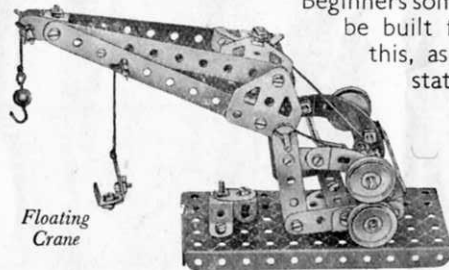
THE MOST FASCINATING OF ALL HOBBIES

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 starting the wonderful Meccano hobby how to get the greatest possible fun.

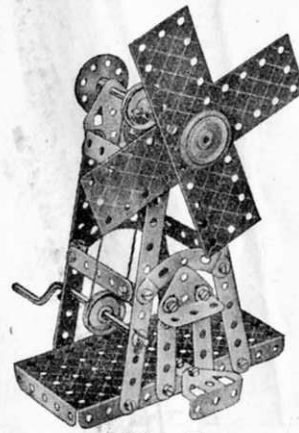
A FEW USEFUL HINTS

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.



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 Drift, Part No. 36c, 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 nut being held with a spanner. This method of using a second nut is known as lock-nutting.

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.

MOTORS AND GEARING

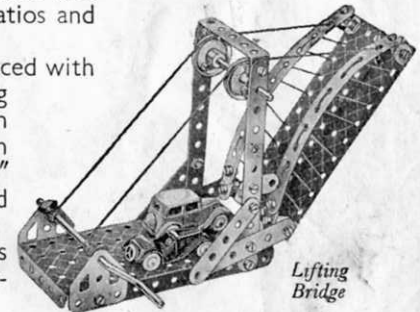
Models can be operated by means of either clockwork or electric motors.

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.

Electric motors have the advantage of giving long continuous runs. Their speed is much higher than that of 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 1:19 reduction; while a Worm meshed with a 57-teeth Gear will give a 1:57 reduction.

Certain Meccano Clockwork and Electric Motors will be available soon. Ask your dealer for particulars.

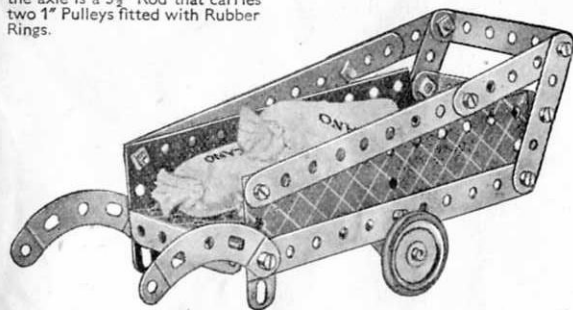


Lifting
Bridge

These Models can be built with MECCANO No. O Outfit

1.1 PORTER'S TRUCK

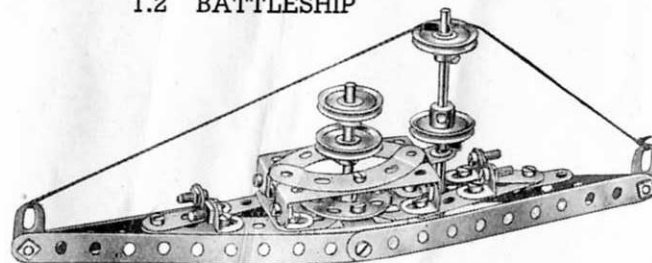
The bearings for the axle are Flat Trunnions fastened on the insides of the Flexible Plates, and the axle is a $3\frac{1}{2}$ " Rod that carries two 1" Pulleys fitted with Rubber Rings.



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 "	155
2 "	189

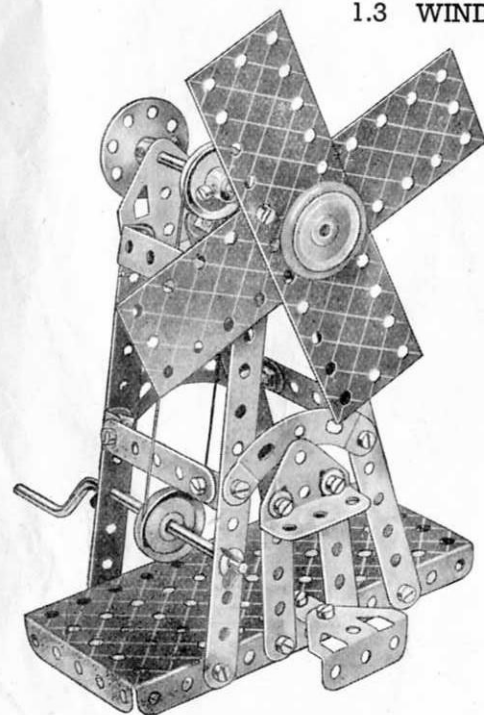
1.2 BATTLESHIP



Parts required

4 of No.	2	1 of No.	17	4 of No.	37a	4 of No.	111c
4 "	5	4 "	22	2 "	38	1 "	125
4 "	10	1 "	24	1 "	40	2 "	126
8 "	12	3 "	35	2 "	48a	2 "	126a
1 "	16	24 "	37	2 "	90a		

1.3 WINDMILL

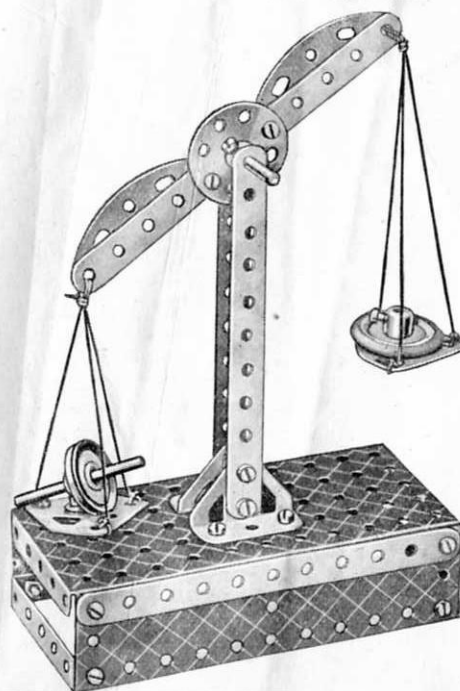


Parts required

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 "	155
2 "	189

The sails are gripped on the $3\frac{1}{2}$ " 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.

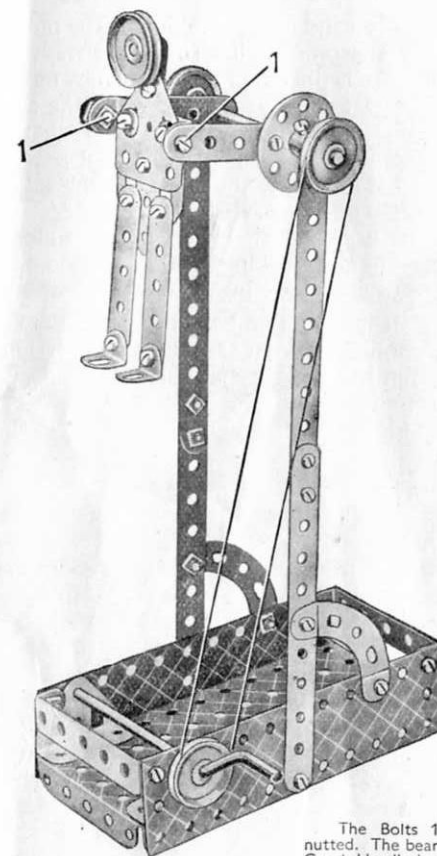
1.4 SCALES



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 "	155
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		

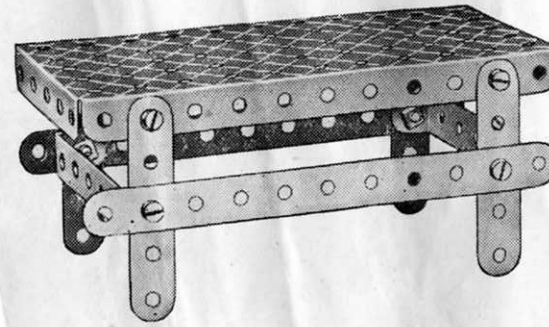
1.6 LETTER BALANCE

The Bolts 1 are lock-nutted. The $\frac{1}{2}$ " bolt 2 is passed through the hole of the Angle Bracket and then held by the grub screw 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 " " 155
4 " " 10	1 " " 90a	2 " " 126	2 " " 189
2 " " 12			
1 " " 16			
2 " " 17			
4 " " 22			
1 " " 24			
4 " " 35			
28 " " 37			
24 " " 37a			
4 " " 38			
2 " " 48a			

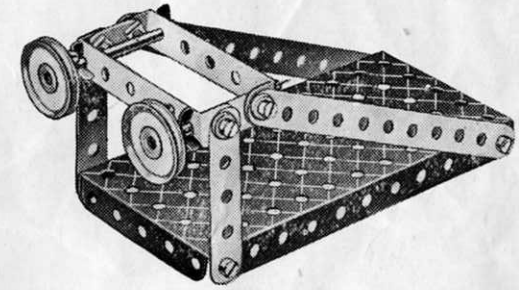
1.7 TABLE



Parts required

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

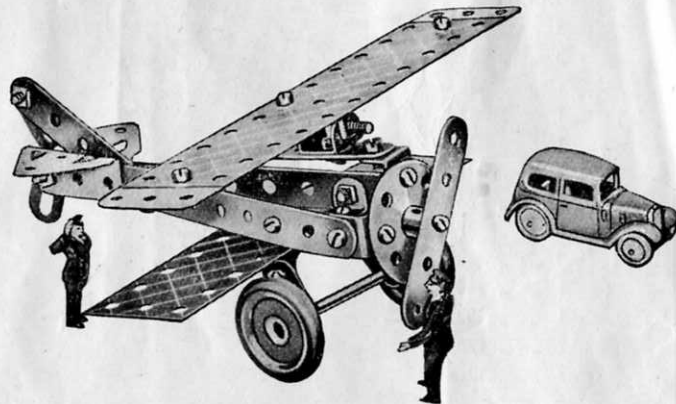
1.8 BUFFER STOPS



Parts required

2 of No. 2	2 of No. 17	8 of No. 37
2 " " 5	2 " " 22	4 " " 38
2 " " 10	4 " " 35	2 " " 48a
		1 " " 52

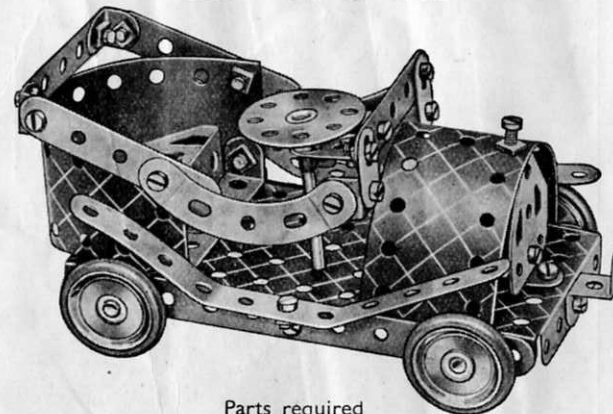
1.9 AEROPLANE



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 " " 155
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 " " 155
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

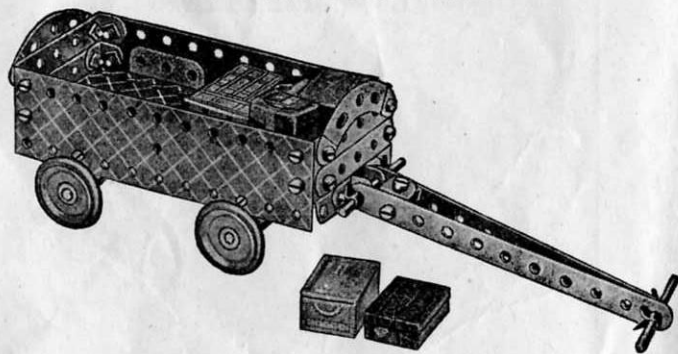
Parts required

4 of No. 2
2 " " 12
17 " " 37
1 " " 38
1 " " 52
1 " " 57c
2 " " 90a
2 " " 126a



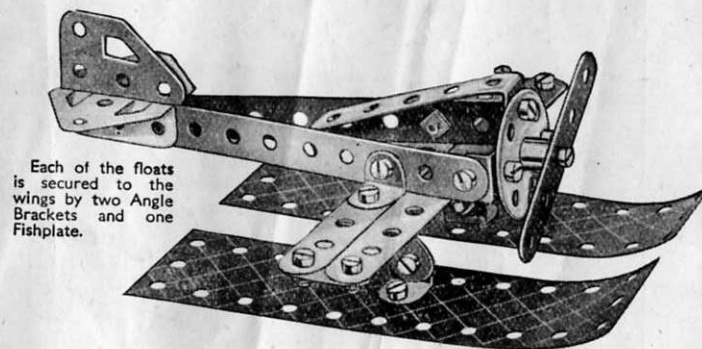
These Models can be built with MECCANO No. 1 Outfit

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 " " 155
4 " " 22	1 " " 52	2 " " 189

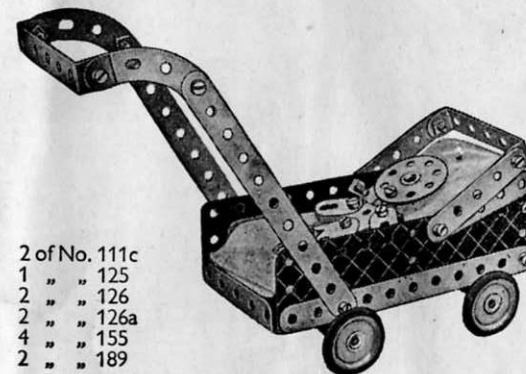
1.13 RACING SEAPLANE



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

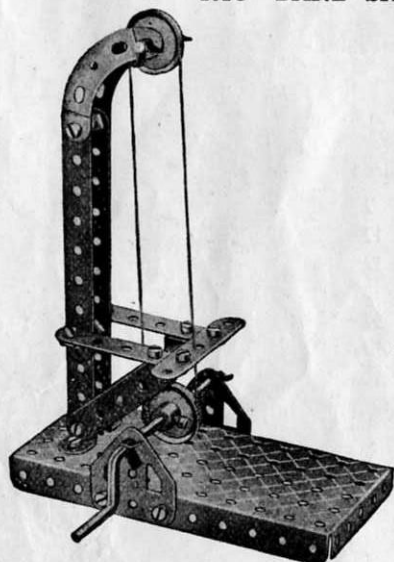
1.14 CHILD'S PRAM

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 Fishplates. Its head is fixed in place by a Reversed Angle Bracket.



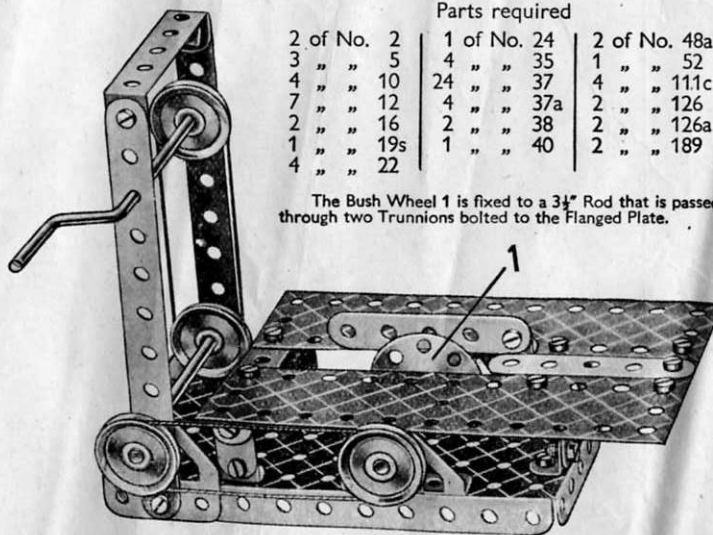
Parts required			
4 of No. 2	5	2 of No. 111c	
4 " " 5	10	1 " " 125	
4 " " 10	12	2 " " 126	
2 " " 16	16	2 " " 126a	
4 " " 22	24	4 " " 155	
1 " " 24	37	2 " " 189	
24 " " 37	37a		
2 " " 38	48a		
2 " " 48a	52		
1 " " 52	90a		
2 " " 90a			

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

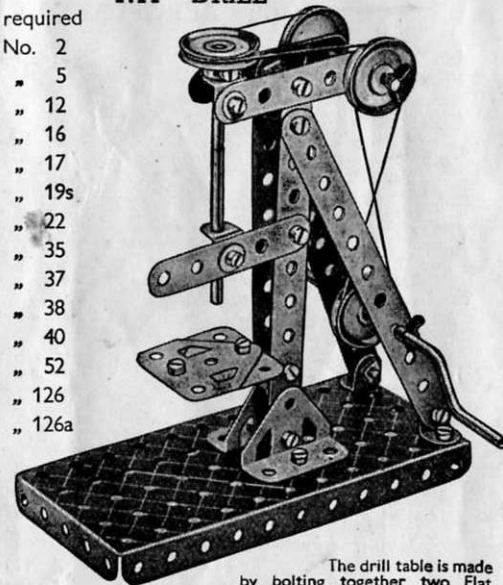


Parts required		
2 of No. 2	1 of No. 24	2 of No. 48a
3 " " 5	4 " " 35	1 " " 52
4 " " 10	24 " " 37	4 " " 111c
7 " " 12	4 " " 37a	2 " " 126
2 " " 16	2 " " 38	2 " " 126a
1 " " 19s	1 " " 40	2 " " 189
4 " " 22		

The Bush Wheel 1 is fixed to a 3 1/4" Rod that is passed through two Trunnions bolted to the Flanged Plate.

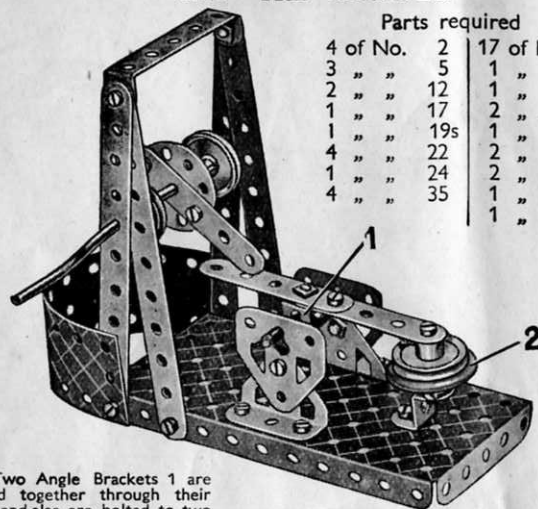
1.17 DRILL

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

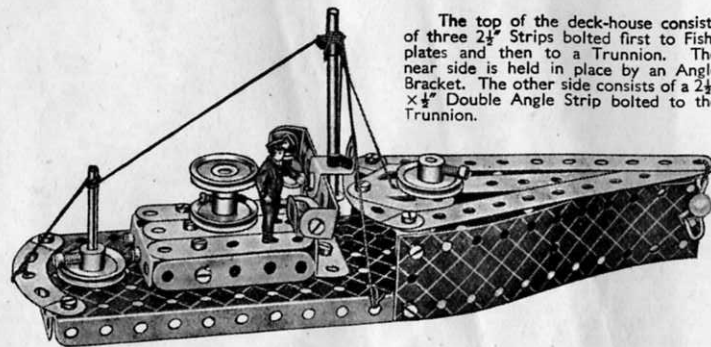


Parts required

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 " "	155
		1 " "	189

Two Angle Brackets 1 are bolted together through their holes and also are bolted to two $2\frac{1}{2}$ " Strips to form a "U" shaped bracket. The 1" fast Pulley 2 is fitted with a 1" Rubber Ring.

1.19 STEAM LAUNCH



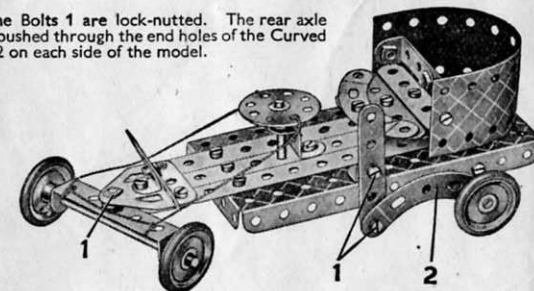
The top of the deck-house consists of three $2\frac{1}{2}$ " Strips bolted first to Fishplates and then to a Trunnion. The near side is held in place by an Angle Bracket. The other side consists of a $2\frac{1}{2}$ " x $\frac{1}{2}$ " Double Angle Strip bolted to the Trunnion.

Parts required

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

1.20 COASTER

The Bolts 1 are lock-nutted. The rear axle Rod is pushed through the end holes of the Curved Strips 2 on each side of the model.

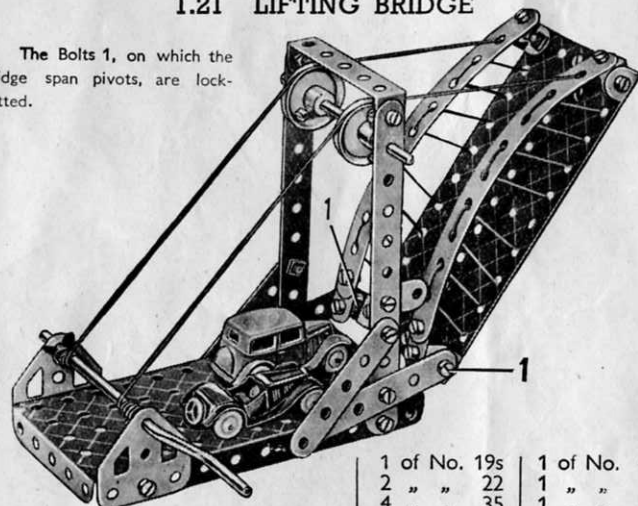



Parts required

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 " "	155
1 " "	24	1 " "	52	1 " "	189

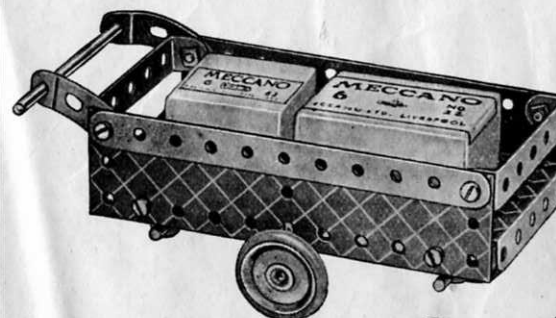
1.21 LIFTING BRIDGE

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



		1 of No. 19s	1 of No. 40
Parts required	3 of No. 10	2 30 30 22	1 30 30 48a
4 of No. 2	8 30 30 12	4 30 30 35	1 30 30 52
4 30 30 5	1 30 30 16	24 30 30 37	3 30 30 111c
		5 30 30 37a	2 30 30 126a
		4 30 30 38	2 30 30 189

1.22 HAND TRUCK



Parts required

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

The bearings for the $3\frac{1}{2}$ " Rod are Fishplates, and the front and rear axle bearings are reversed angle brackets built up from Angle Brackets. The right-hand 1" Pulley on the $3\frac{1}{2}$ " 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.

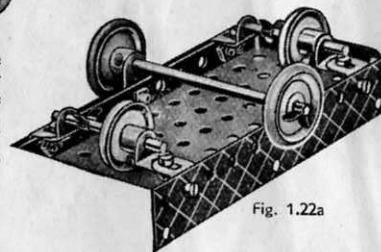
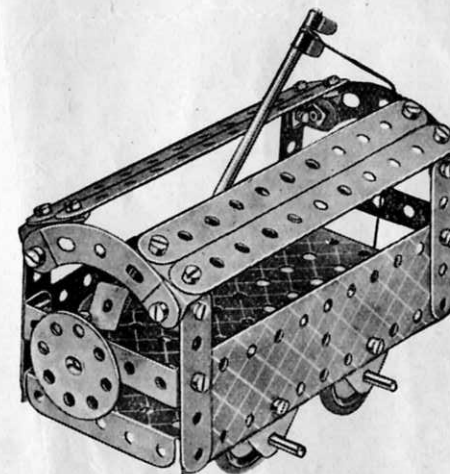


Fig. 1.22a

1.23 TRAMCAR



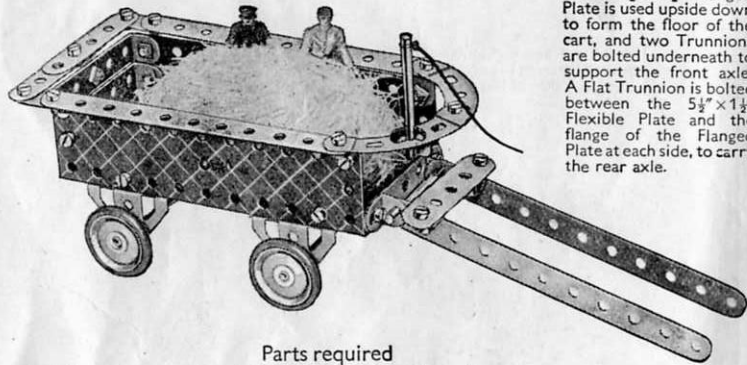
Parts required

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

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.

These Models can be built with MECCANO No. 1 Outfit

1.24 HAY CART



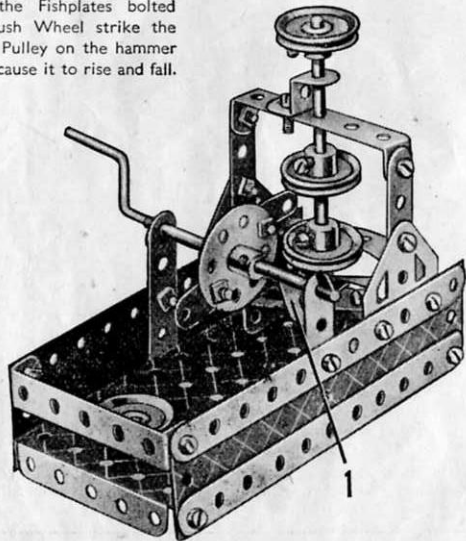
A $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate is used upside down to form the floor of the cart, and two Trunnions are bolted underneath to support the front axle. A Flat Trunnion is bolted between the $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate and the flange of the Flanged Plate at each side, to carry the rear axle.

Parts required

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

1.27 STAMPING MILL

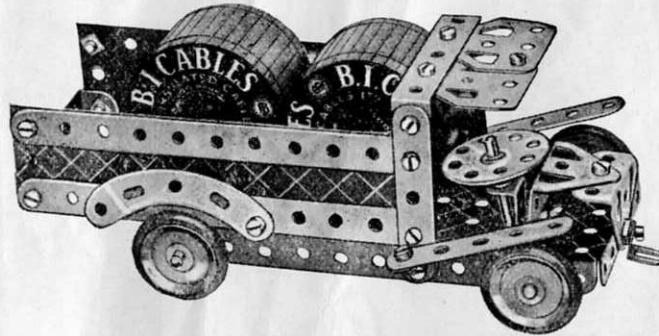
The anvil 1 is made up of two Trunnions bolted together. When the Crank Handle is rotated, the Fishplates bolted to the Bush Wheel strike the centre 1" Pulley on the hammer shaft and cause it to rise and fall.



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	

1.25 MOTOR LORRY

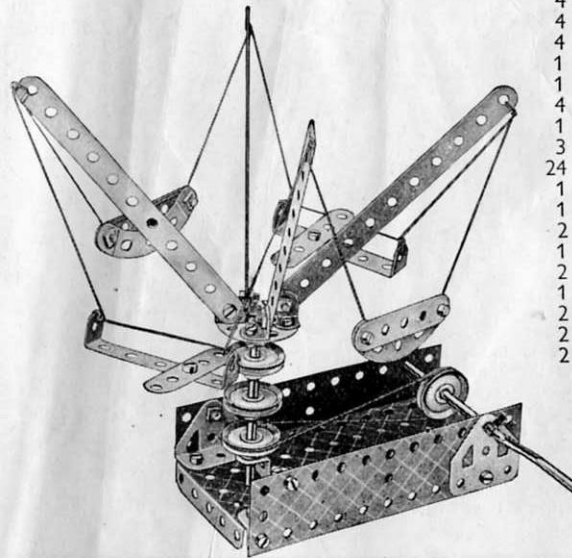


The $2\frac{1}{2}''$ Curved Strips representing the rear mudguards are each fastened to the sides by a $\frac{1}{8}''$ Bolt and nut, with a Spring Clip between the mudguards and the $5\frac{1}{2}''$ Strip to form a distance piece.

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 " " 155
3 " " 12	1 " " 24	2 " " 48a	1 " " 125	2 " " 189
2 " " 16	2 " " 35	1 " " 52	2 " " 126	

1.28 FLYING BOATS



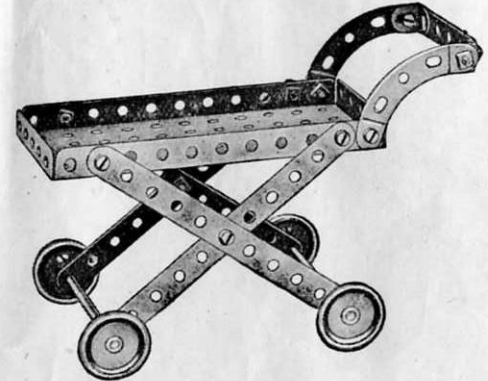
Parts required

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	

1.26 HOSPITAL TROLLEY

Parts required

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

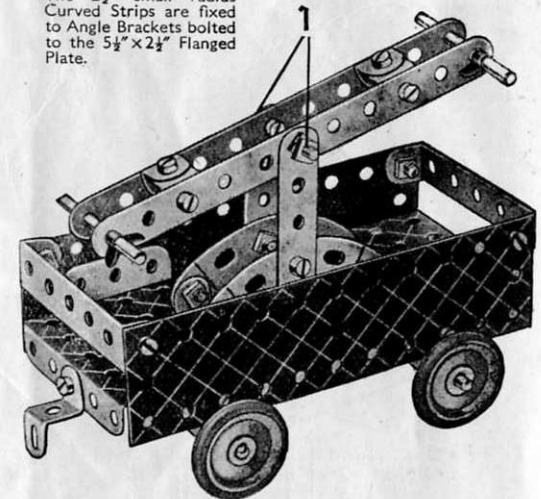


1.29 HAND CAR

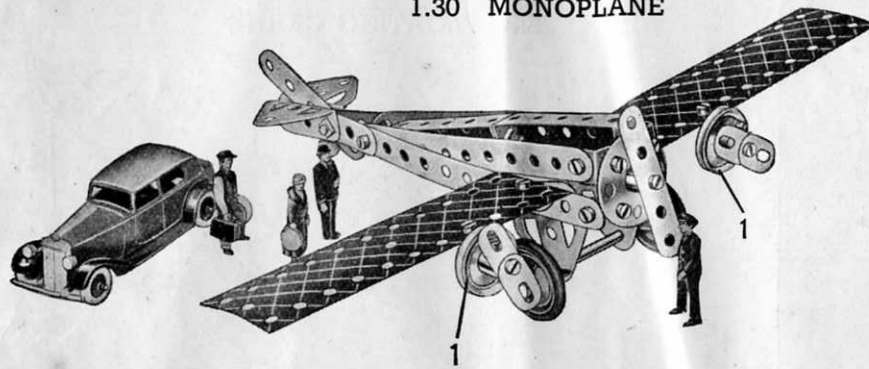
The Bolts 1 on which the $5\frac{1}{2}''$ Strips are pivoted, are lock-nutted. The $2\frac{1}{2}''$ small radius Curved Strips are fixed to Angle Brackets bolted to the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate.

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 " " 155	
2 " " 189	



1.30 MONOPLANE



The fast Pulleys 1 are fixed to Angle Brackets fastened to the wing by $\frac{3}{8}$ " 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

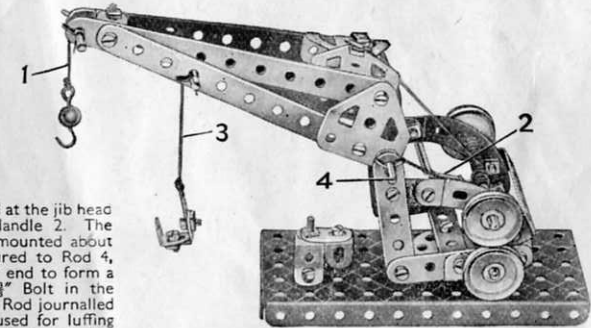
4 of No.	2
4 "	5
4 "	10
8 "	12
1 "	16
4 "	22
1 "	24
2 "	35
20 "	37
3 "	37a
2 "	48a
1 "	57c
4 "	111c
2 "	126
2 "	126a
2 "	155
2 "	189

1.31 FLOATING CRANE

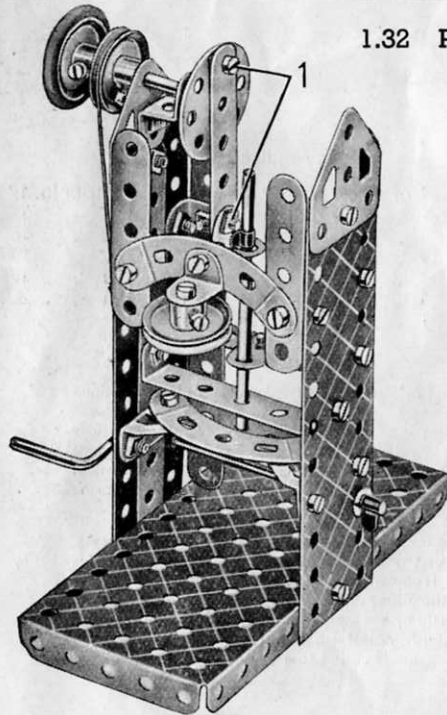
Parts required

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

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 $\frac{3}{8}$ " Bolt in the Trunnions is taken around the $3\frac{1}{2}$ " 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 Fishplate 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 "	155
2 "	189

The Bolts 1 are lock-nutted, and the Angle Bracket at the lower end of the $2\frac{1}{2}$ " Strip has a $3\frac{1}{2}$ " Rod in its elongated hole, where it is held by means of two Spring Clips.

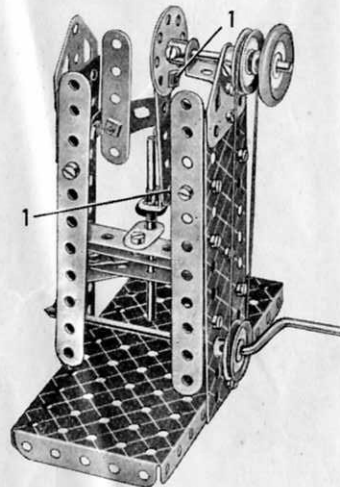
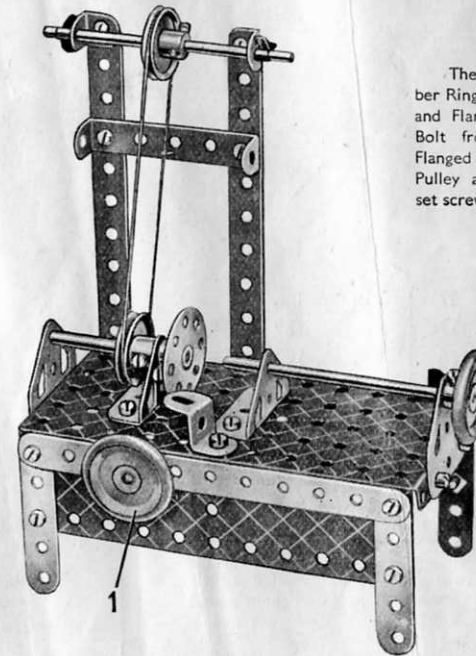


Fig. 1.32a

1.33 LATHE

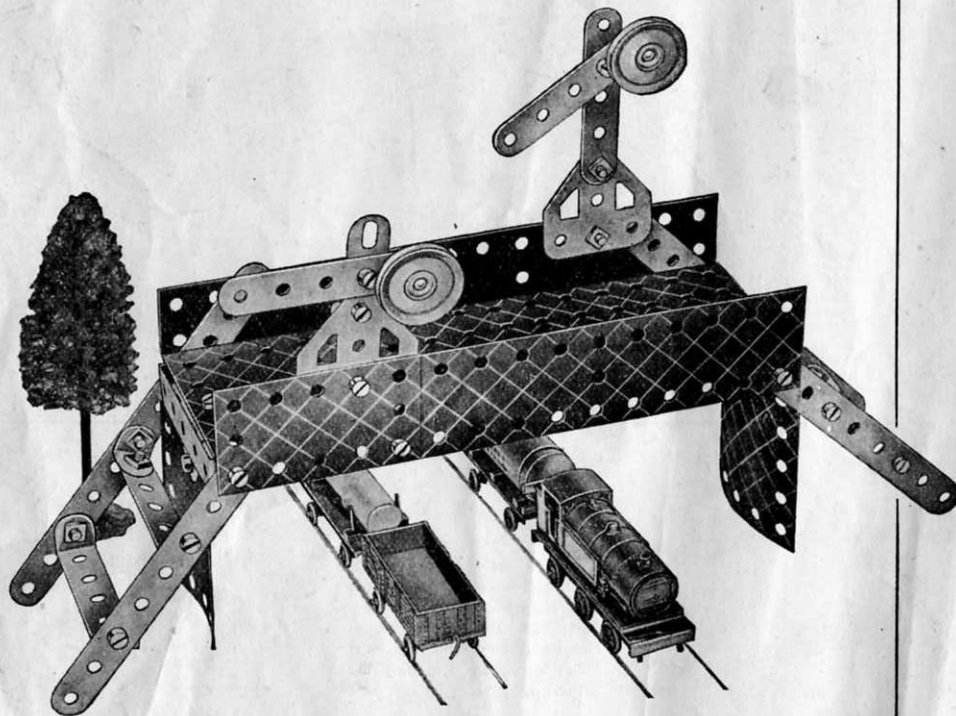


The 1" fast Pulley with Rubber Ring 1 is secured to the Strip and Flanged Plate by passing a Bolt from the inside of the Flanged Plate into the boss of the Pulley and then tightening the set screw.

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 "	155
2 "	189

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 $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate, extended by a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate. Trunnions are bolted to each end of the span, and have $1\frac{1}{8}"$ radius Curved Plates fastened to them. The sides of the approach stairways are $5\frac{1}{2}"$ Strips. They are joined across by $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips and $2\frac{1}{2}"$ Strips fitted with Angle Brackets at each end.

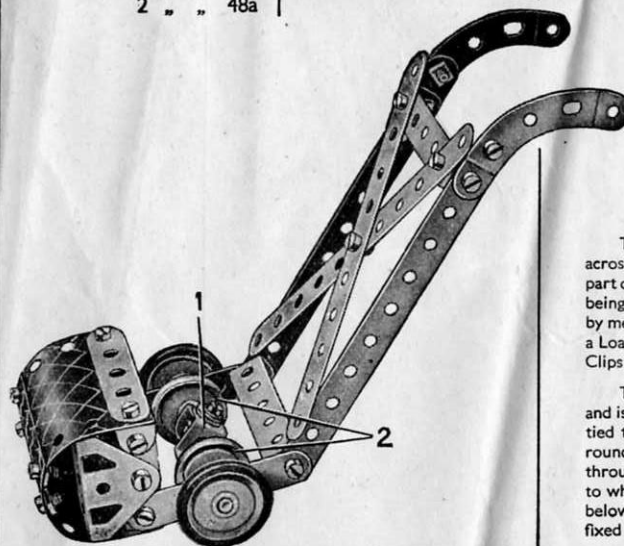
The signals are supported on Flat Trunnions bolted to the sides of the bridge. The smaller of the two signal posts is formed by two Fishplates, and the larger one is a $2\frac{1}{2}"$ Strip. The signal arms are $2\frac{1}{2}"$ Strips bolted to the posts in the second holes from one end. They are fitted at their shorter ends with $1"$ Pulleys, representing the spectacles, which are held in place by $\frac{3}{8}"$ Bolts passed through the Strips and inserted in their bosses.

2.2 LAWN MOWER

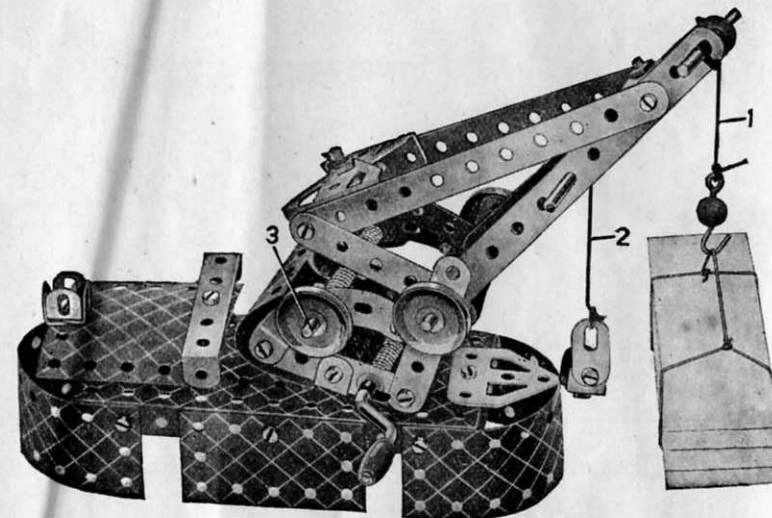
The "cutter" is made by bolting an Angle Bracket at each end of a Reversed Angle Bracket 1 and then sliding an Axle Rod through the free holes of the Brackets. The two Pulleys 2 are fixed to the Rod and pushed tightly against the "cutter" to make it rotate with the Rod as the wheels revolve. The wheels 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 " 155
1 " 16	2 " 200
4 " 22	
25 " 37	
4 " 38	
2 " 48a	



2.3 FLOATING CRANE



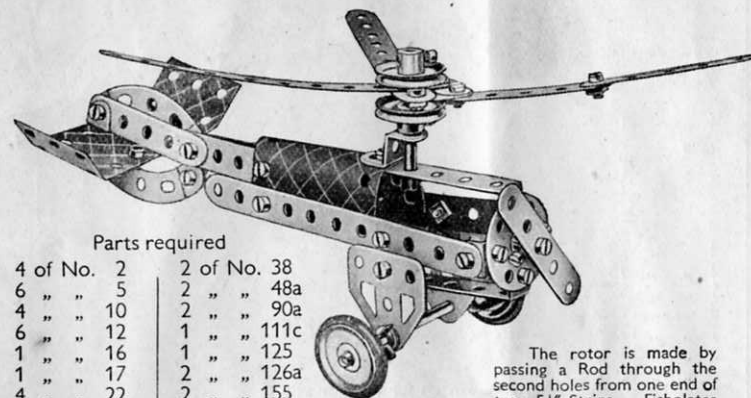
Parts required

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 $5\frac{1}{2}"$ Strips and $2\frac{1}{2}"$ 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 $2\frac{1}{2}"$ Strips and a small radius Curved Strip, the two sides being connected by a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip. The jib is pivoted to this structure by means of a $3\frac{1}{2}"$ 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 the jib by a Cord 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 $\frac{3}{8}"$ 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 $\frac{1}{2}"$ Reversed Angle Bracket fixed to the Flanged Plate.

2.4 AUTOGIRO



Parts required

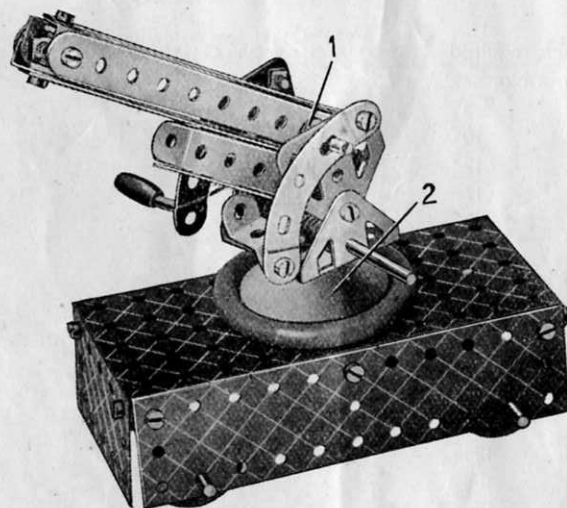
4 of No. 2	2 of No. 38
6 " " 5	2 " " 48a
4 " " 10	2 " " 90a
6 " " 12	1 " " 111c
1 " " 16	1 " " 125
1 " " 17	2 " " 126a
4 " " 22	2 " " 155
1 " " 24	2 " " 188
3 " " 35	1 " " 199
25 " " 37	

The rotor is made by passing a Rod through the second holes from one end of two 5 1/2" Strips. Fishplates 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 " " 155
1 " " 176
1 " " 187
2 " " 188
2 " " 189

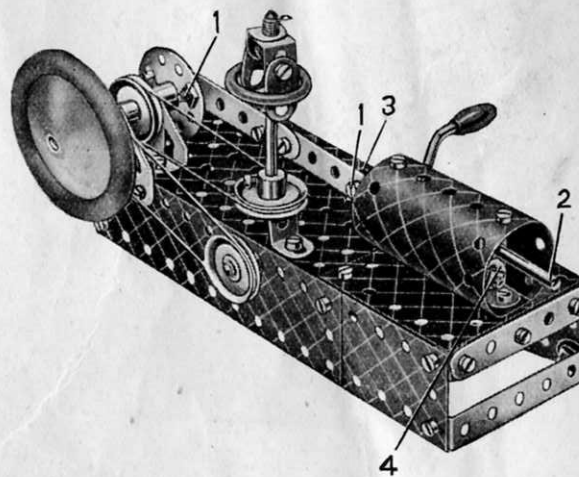


One end of a piece of Cord is fastened to the Crank Handle. It is wound round the Handle a few times and its other end is then fastened to the end of the gun. The two Trunnions are bolted to a Bush Wheel fixed on a 2" Rod that passes through the Road Wheel 2 and the Flanged Plate and is held in place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

2.6 GAS ENGINE

Parts required

3 of No. 5	33 of No. 37	1 of No. 126a
4 " " 10	3 " " 37a	1 " " 155
8 " " 12	4 " " 38	1 " " 176
2 " " 16	1 " " 40	1 " " 187
1 " " 17	2 " " 48a	2 " " 188
1 " " 19g	1 " " 52	2 " " 189
4 " " 22	1 " " 111c	1 " " 190
1 " " 24	1 " " 125	2 " " 200
4 " " 35	1 " " 126	

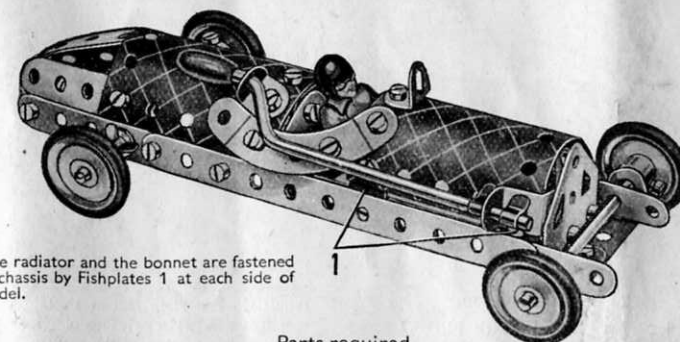


The bearings for the Rod representing the crankshaft are a Flat Trunnion and a Trunnion. The crankshaft carries a Road Wheel and a 1" Pulley at one end, a second 1" Pulley between the bearings, and a Bush Wheel at its other end.

The connecting rod is fastened to the Bush Wheel and to an Angle Bracket 3 by lock-nutted Bolts 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 Fishplate, 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 3 1/2" Rod journalled in the 5 1/2" X 2 1/2" Flanged Plate and a Reversed Angle Bracket.

2.7 RACING CAR

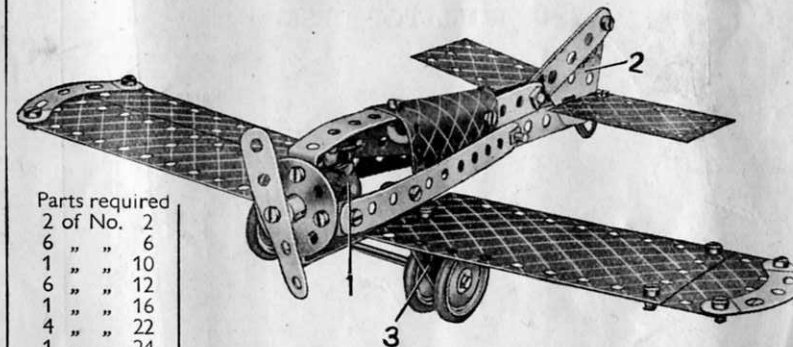


The radiator and the bonnet are fastened to the chassis by Fishplates 1 at each side of the model.

Parts required

4 of No. 2	1 of No. 19g	2 of No. 38	1 of No. 126a
5 " " 5	4 " " 22	1 " " 48a	4 " " 155
4 " " 10	4 " " 35	2 " " 90a	1 " " 199
8 " " 12	30 " " 37	1 " " 125	1 " " 200
2 " " 16	1 " " 37a	1 " " 126	

2.8 LOW WING MONOPLANE



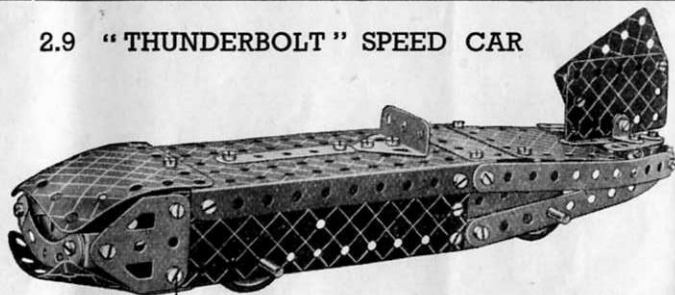
Parts required

2 of No. 2		
6 " " 6		
1 " " 10		
6 " " 12		
1 " " 16		
4 " " 22		
1 " " 24		
23 " " 37		
2 " " 37a		
2 " " 38	2 of No. 126	2 of No. 189
2 " " 48a	1 " " 126a	1 " " 190
2 " " 90a	4 " " 155	1 " " 191
3 " " 111c	2 " " 188	1 " " 199

The fin 2 is a Flat Trunnion, and it is clamped between the two 2 1/2" 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. A Trunnion 3 bolted to each wing forms a bearing for the axle of the landing wheels.

These Models can be built with MECCANO No. 2 Outfit (or No. 1 and No. 1a Outfits),

2.9 "THUNDERBOLT" SPEED CAR

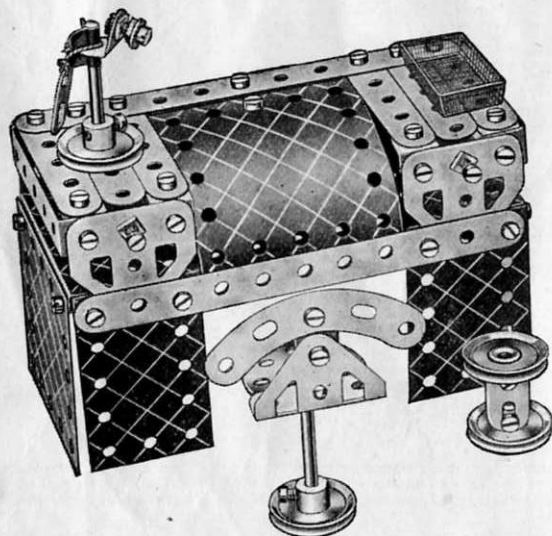


Parts required

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

A $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate, extended at the front by a $1\frac{1}{8}"$ radius Curved Plate and at the rear by two $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates, forms the top of the car. The rear part of each side is formed by two $5\frac{1}{2}"$ Strips and a $2\frac{1}{2}"$ Strip, the former being connected together at the tail by Angle Brackets. Bolts 1 on each side hold a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip that carries the $1\frac{1}{8}"$ radius Curved Plate forming the underside of the front cowl.

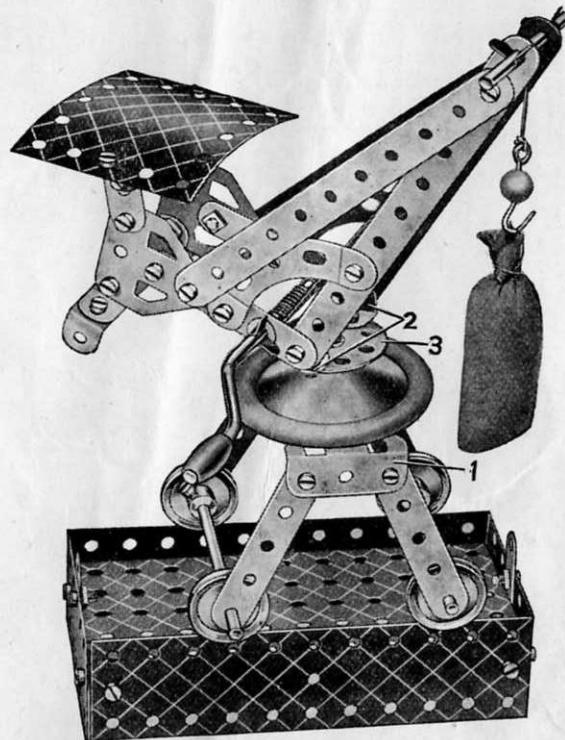
2.10 ROLL TOP DESK



Parts required

2 of No. 2	
6 " 5	
4 " 10	
2 " 12	
7 " 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

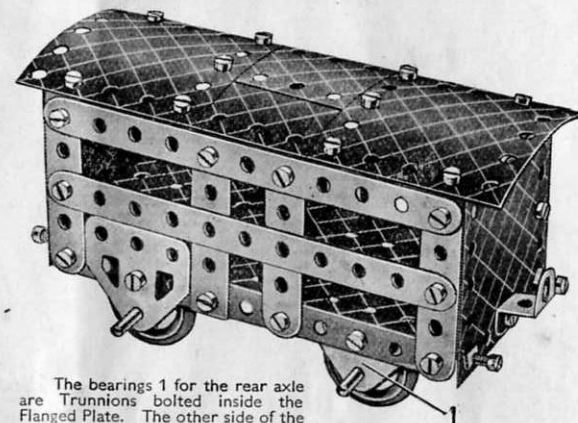
4 of No. 2	1 of No. 19g	3 of No. 38	2 of No. 111c
6 " 5	4 " 22	1 " 40	2 " 126
4 " 10	1 " 24	2 " 48a	2 " 126a
6 " 12	4 " 35	1 " 52	1 " 176
2 " 16	38 " 37	1 " 57c	1 " 187
2 " 17	2 " 37a	2 " 90a	2 " 188
	2 of No. 189		1 of No. 200

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 $2\frac{1}{2}" \times \frac{1}{2}"$ 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. The loaded sack on the crane hook is not included in the Outfit.

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 " 155	
2 " 188	
2 " 190	
2 " 200	



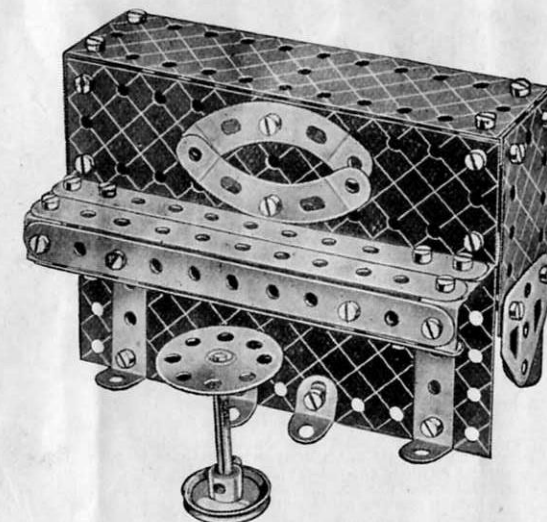
The bearings 1 for the rear axle are Trunnions bolted inside the Flanged Plate. The other side of the truck is constructed in a similar manner to the side shown in the illustration.

2.13 PIANO

A $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate is used for the upper part of the back and to each end of this a $2\frac{1}{2}"$ Strip is bolted to form the rear legs.

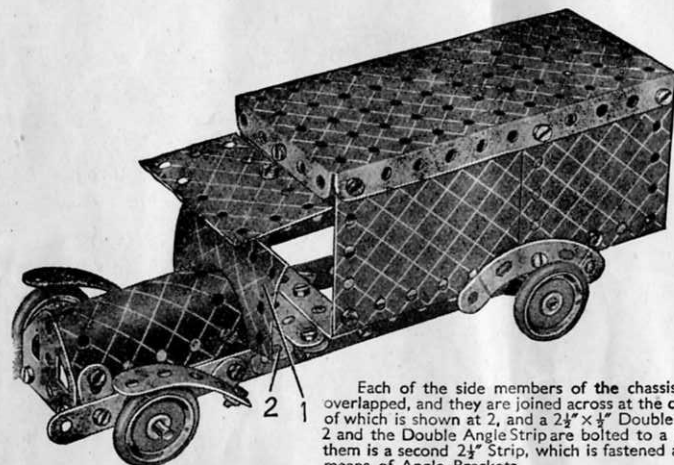
Parts required

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	



These Models can be built with MECCANO No. 2 Outfit (or No. 1 and No. 1a Outfits)

2.14 MOTOR VAN



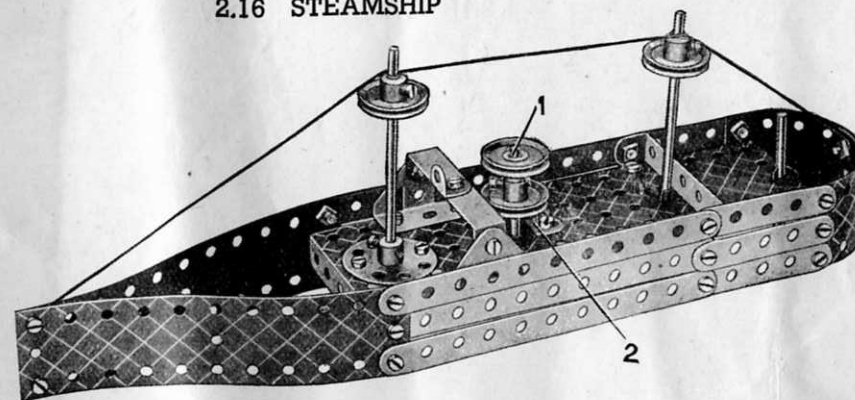
Each of the side members of the chassis consists of two 5 1/2" Strips overlapped, and they are joined across at the centre by two 2 1/2" Strips, one of which is shown at 2, and a 2 1/2" x 1/2" Double Angle Strip. The 2 1/2" Strip 2 and the Double Angle Strip are bolted to a Flat Trunnion, and between them is a second 2 1/2" 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 " " 155
2 " " 188
2 " " 189
2 " " 190
1 " " 191
1 " " 199

2.16 STEAMSHIP



The deck of the model is a 5 1/2" x 2 1/2" Flanged Plate extended by a 2 1/2" x 2 1/2" Flexible Plate. A 2 1/2" x 1/2" 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.

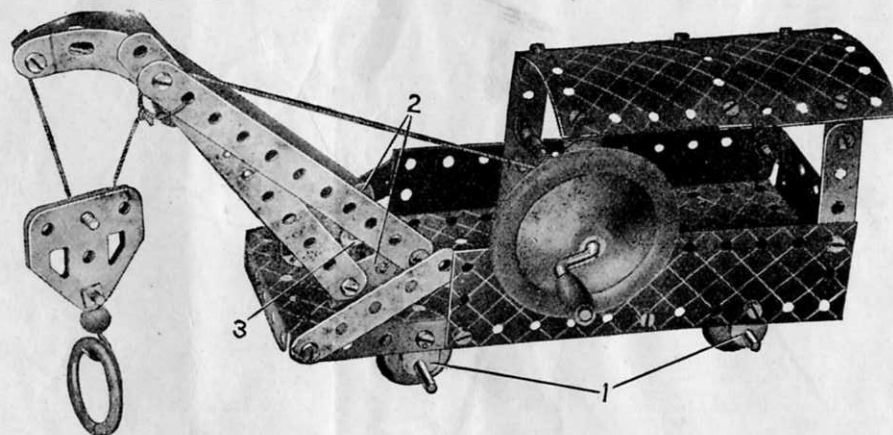
Parts required

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
1 " " 190

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 " " 155
1 " " 176
1 " " 187



The bearings 1 are Fishplates 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.

1 of No. 188
2 " " 189
1 " " 190
1 " " 199
2 " " 200

2.17

BATHROOM SUITE

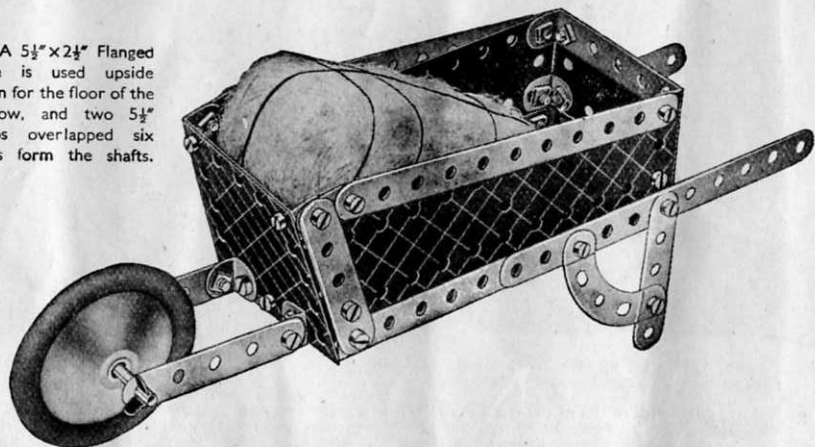
Parts required

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

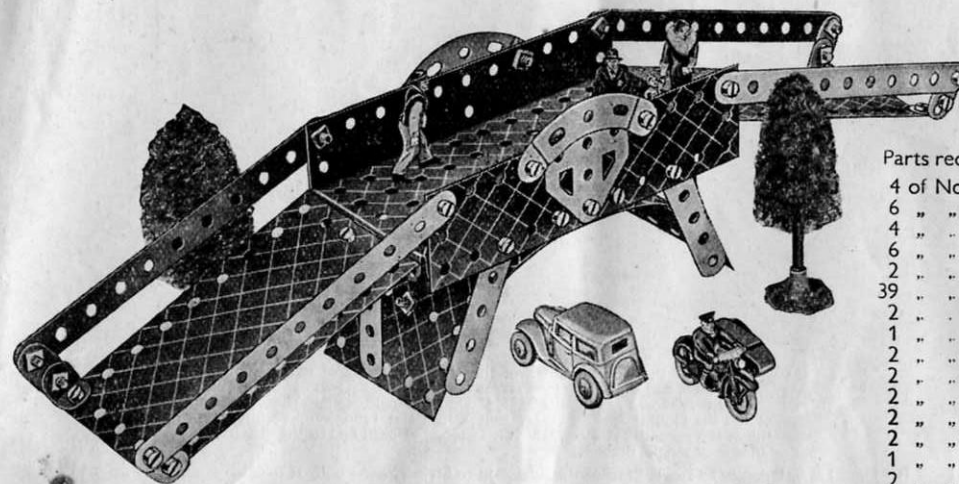
A $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate is used upside down for the floor of the barrow, and two $5\frac{1}{2}"$ Strips overlapped six holes form the shafts.



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

2.20 ROAD BRIDGE



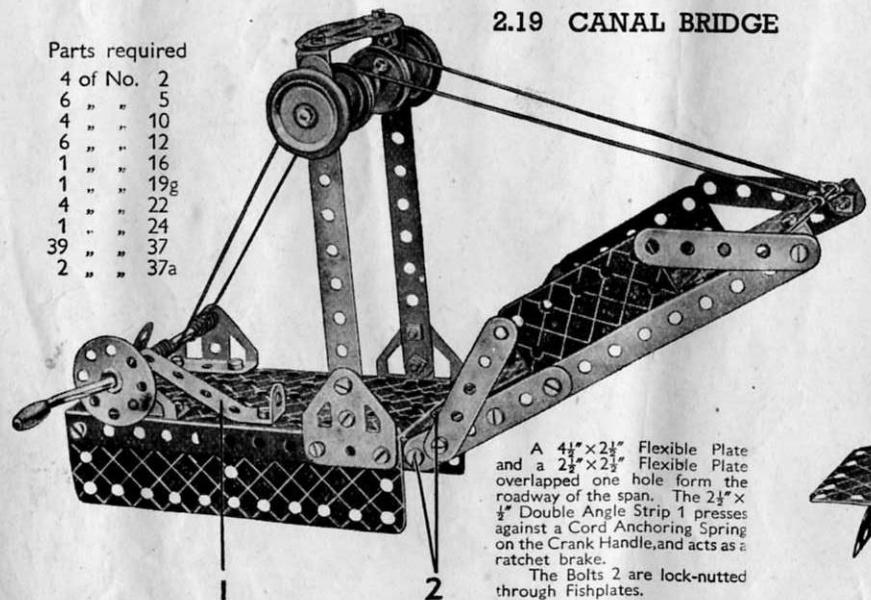
Parts required

4 of No. 2
6 " " 5
4 " " 10
6 " " 12
2 " " 16
39 " " 37
2 " " 48a
1 " " 52
2 " " 90a
2 " " 126a
2 " " 188
2 " " 189
2 " " 190
1 " " 191
2 " " 200

2.19 CANAL BRIDGE

Parts required

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



A $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate and a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate overlapped one hole form the roadway of the span. The $2\frac{1}{2}" \times \frac{1}{2}"$ 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 Fishplates.

Parts required (continued)

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



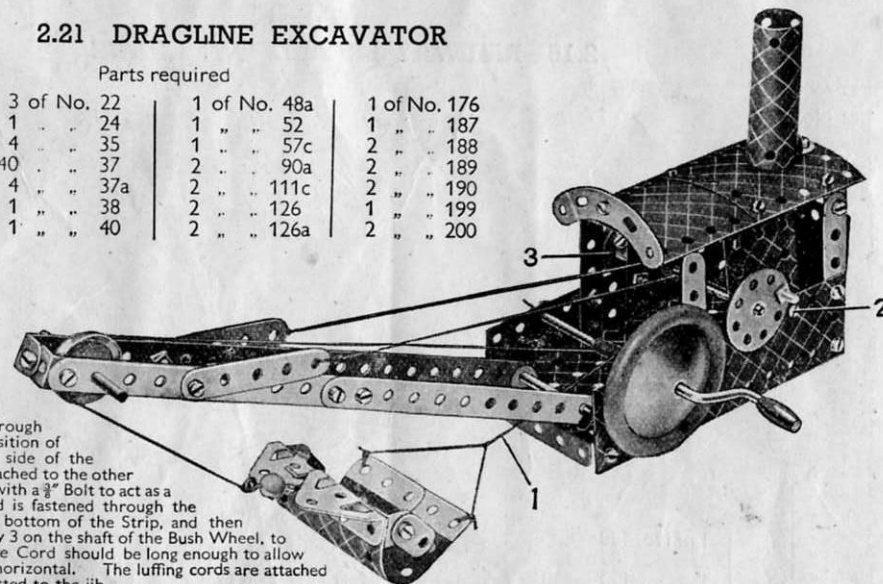
2.21 DRAGLINE EXCAVATOR

Parts required

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

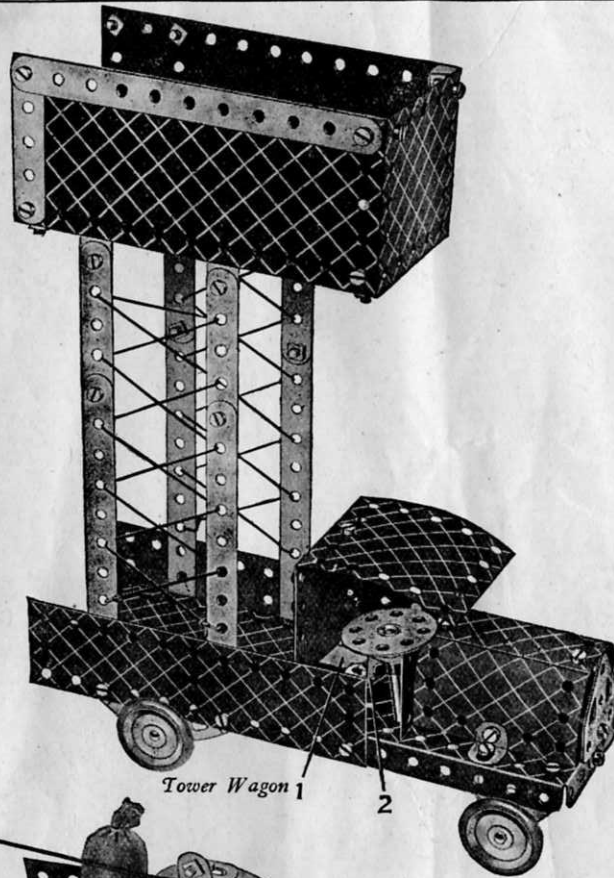
A Curved Strip is pivoted by a $\frac{3}{8}"$ Bolt through one of its ends in the position of Bolt 2 but on the rear side of the model. A $1"$ Pulley is attached to the other end of the Curved Strip, with a $\frac{3}{8}"$ Bolt to act as a weight. A loop of Cord is fastened through the slotted hole next 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 luffing cords are attached to two $2\frac{1}{2}"$ strips lock-nutted to the jib.



BUILD BIGGER AND BETTER MODELS

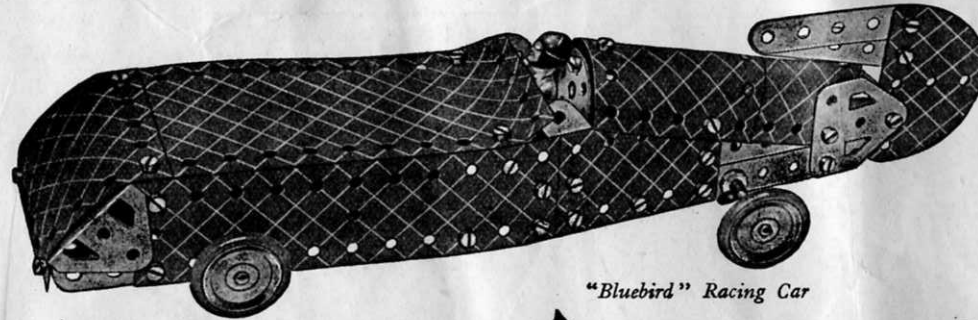
When you have built all the models shown in this Manual you will be keen to build bigger and more elaborate models. Your next step is to purchase a Meccano No. 2a Accessory Outfit containing all the parts required to convert your No. 2 into a No. 3 Outfit. You will then be able to build the full range of No. 3 Outfit models, a selection of which is illustrated on this and the following page.

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 unlimited, and the more Meccano parts you have the bigger and better the models you will be able to build.

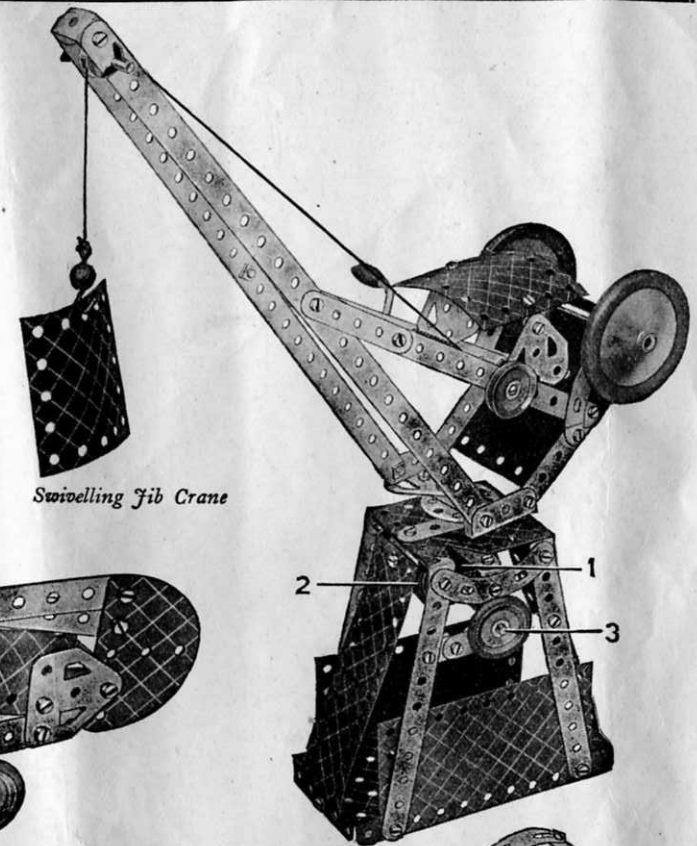


Tower Wagon 1

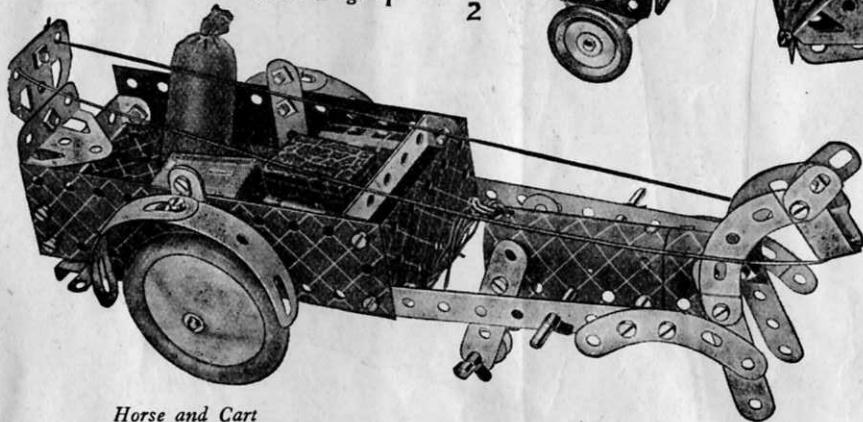
2



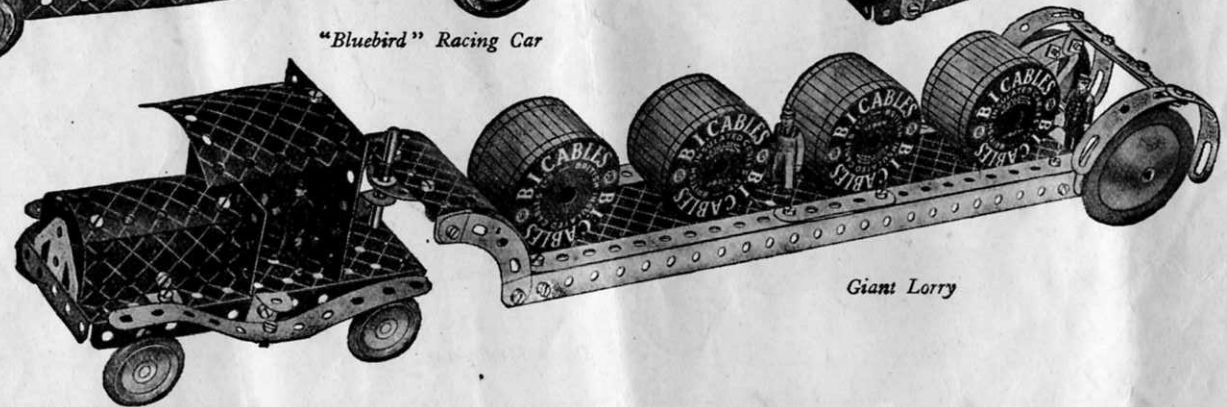
"Bluebird" Racing Car



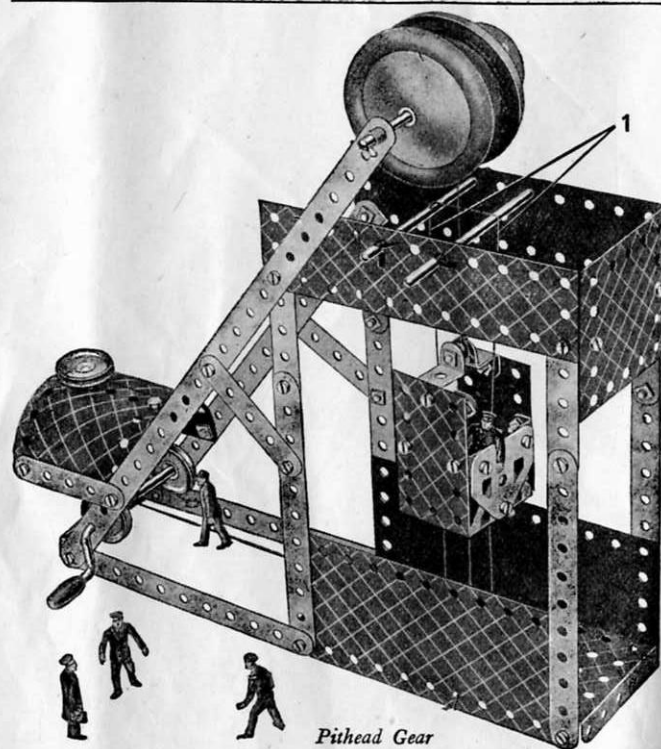
Swivelling Jib Crane



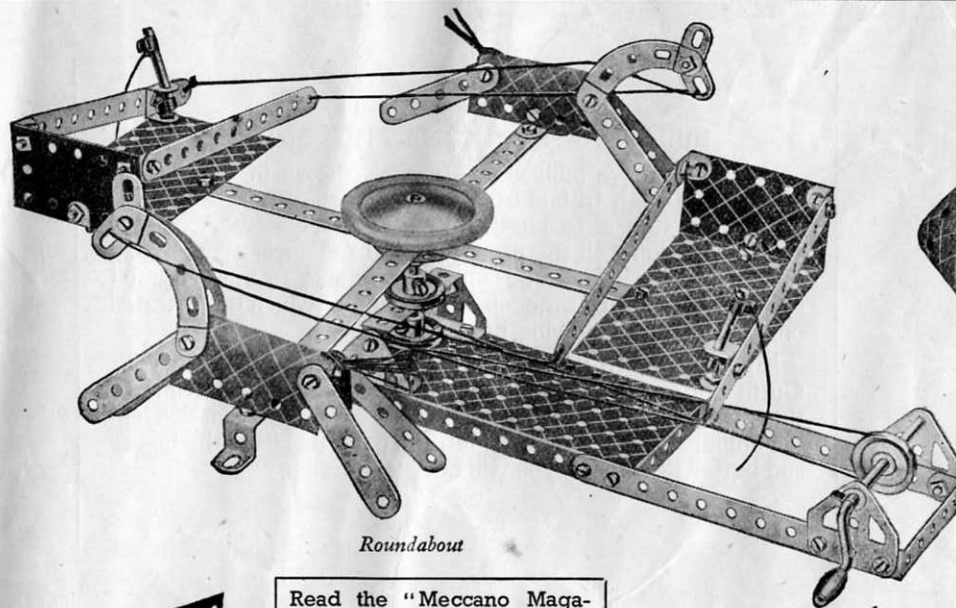
Horse and Cart



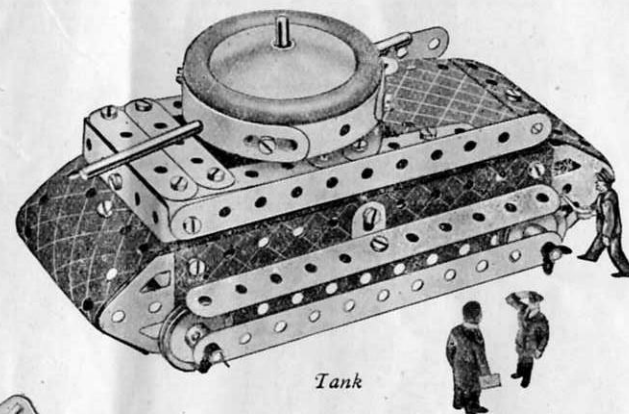
Giant Lorry



Pithead Gear

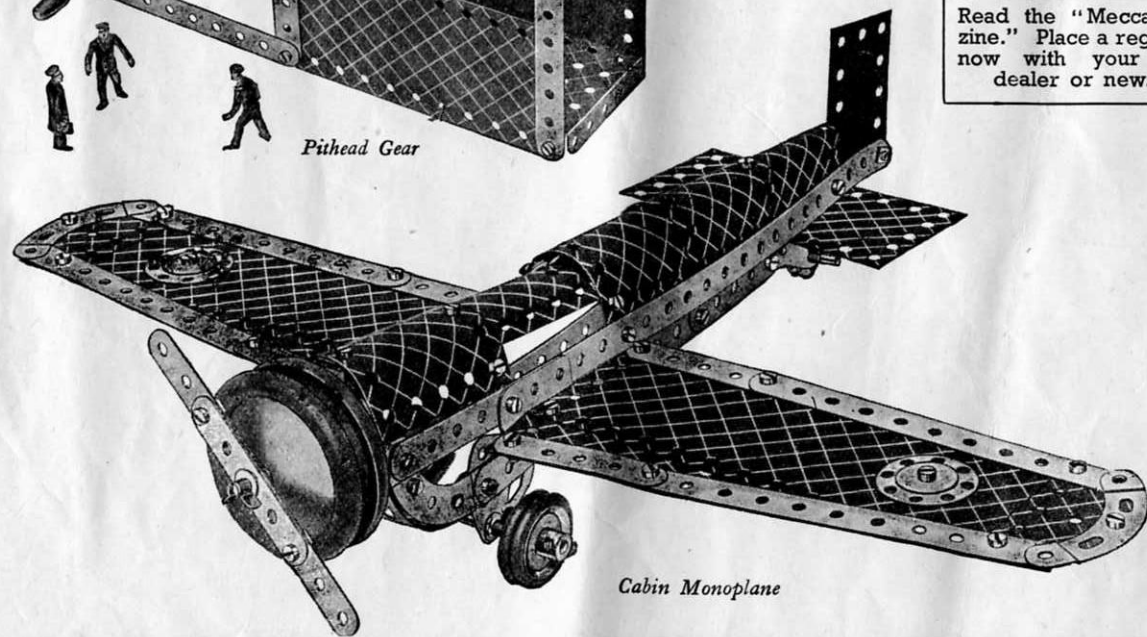


Roundabout

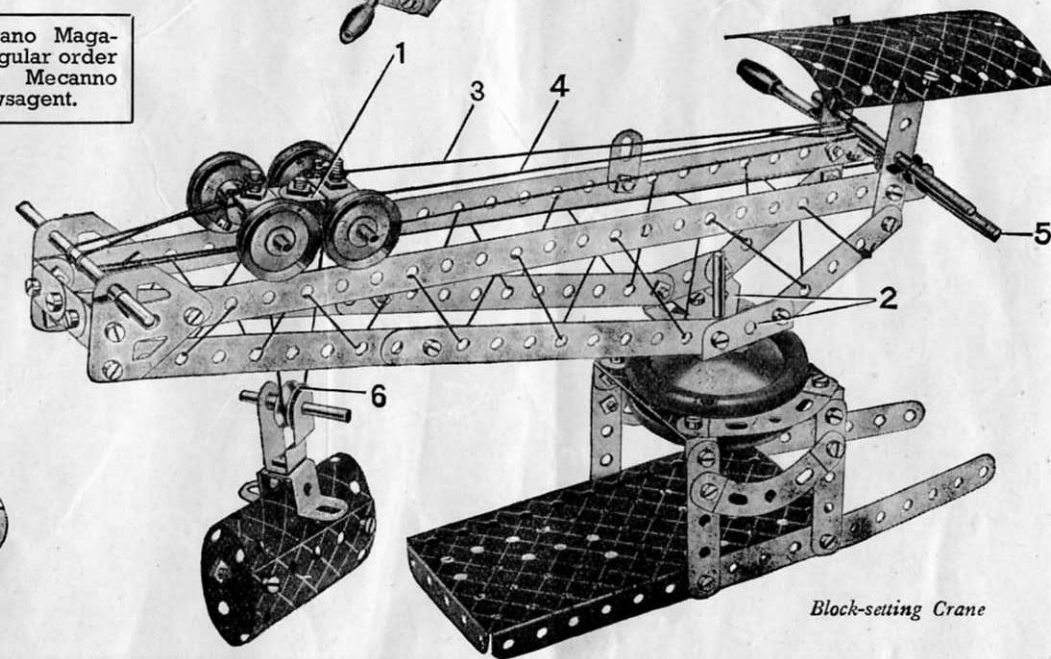


Tank

Read the "Meccano Magazine." Place a regular order now with your Meccano dealer or newsagent.



Cabin Monoplane



Block-setting Crane

CONTENTS OF MECCANO OUTFITS

[illegible]

(Continued on following page)

MECCANO PARTS

No. 120b. Compression Springs, $\frac{1}{4}$ " long



122. Miniature Loaded Sacks



123. Cone Pulleys, $1\frac{1}{2}$ ", 1" and $\frac{3}{4}$ " diam.



124. Reversed Angle Brackets, $1\frac{1}{2}$ "



126. Trunnions



126a. Flat Trunnions



127. Bell Cranks



128. Bell Cranks, with Boss



129. Toothed Segments, $1\frac{1}{2}$ " radius



130. Eccentrics, Triple Throw, $\frac{1}{2}$ ", $\frac{3}{4}$ " and $1\frac{1}{2}$ "



130a. Eccentrics, Single Throw, $\frac{1}{2}$ "



131. Dredger Buckets



132. Flywheels, $2\frac{1}{2}$ " diam.



133. Corner Brackets, $1\frac{1}{2}$ "



133a. " " " " "



No. 134. Crank Shafts, 1" stroke



136. Handrail Supports



136a. Handrail Couplings



137. Wheel Flanges



138a. Ships' Funnels



139. Flanged Brackets (right)

139a. " " (left)



140. Universal Couplings



142. Rubber Rings (to fit 3" diam. rims)



142a. Motor Tyres (to fit 2" diam. rims)

142b. " " " 3" " "

142c. " " " 1" " "

142d. " " " 1 1/2" " "



143. Circular Girders, $5\frac{1}{2}$ " diam.



No. 144. Dog Clutches



145. Circular Strips, $7\frac{1}{2}$ " 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



151. Pulley Blocks, Single Sheave

152. " " Two " "

153. " " Three " "



154a. Corner Angle Brackets, $\frac{1}{2}$ " (right-hand)

154b. Corner Angle Brackets, $\frac{1}{2}$ " (left-hand)

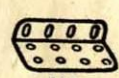
155. Rubber Rings (for 1" Pulleys)



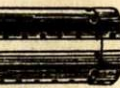
157. Fans, 2" diam.



160. Channel Bearings, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{2}$ "



161. Girder Brackets, $2\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{2}$ "



No. 162. Boilers, complete, 5" long x $2\frac{1}{2}$ " diam.
162a. " Ends, $2\frac{1}{2}$ " diam. x $\frac{1}{2}$ " in.
162b. " without ends, $4\frac{1}{2}$ " long x $2\frac{1}{2}$ " diam.
163. Sleeve Pieces, $1\frac{1}{2}$ " long x $\frac{1}{2}$ " diam.
164. Chimney Adaptors, $\frac{1}{2}$ " diam. x $\frac{1}{2}$ " high



165. Swivel Bearings



167b. Flanged Ring, 9 1/2" diam



168. Ball Bearings, 4" diam.
168a. " Races, flanged discs, $3\frac{1}{2}$ " diam.
168b. " " toothed " 4" diam.
168c. " Cages, $3\frac{1}{2}$ " diam., complete with balls.



171. Socket Couplings



175. Flexible Coupling Units



176. Anchoring Springs for Cord



179. Rod Sockets



180. Gear Rings, $3\frac{1}{2}$ " diam. (133 ext. teeth, 95 int.)



No. 185. Steering Wheels, $1\frac{1}{2}$ " diam.
186. Driving Bands, $2\frac{1}{2}$ " (Light)
186a. " " 6" " "
186b. " " 10" " "
186c. " " 10" (Heavy)
186d. " " 15" " "
186e. " " 20" " "
187. Road Wheels, $2\frac{1}{2}$ " diam.
187a. Conical Disc, $1\frac{1}{2}$ " diam.



187



192. Flexible Plates.

188. $2\frac{1}{2}$ " x $1\frac{1}{2}$ "

189. $5\frac{1}{2}$ " x $1\frac{1}{2}$ "

190. $2\frac{1}{2}$ " x $2\frac{1}{2}$ "

190a. $3\frac{1}{2}$ " x $2\frac{1}{2}$ "



191. $4\frac{1}{2}$ " x $2\frac{1}{2}$ "

192. $5\frac{1}{2}$ " x $2\frac{1}{2}$ "

Strip Plates.

196. $9\frac{1}{2}$ " x $2\frac{1}{2}$ "

197. $12\frac{1}{2}$ " x $2\frac{1}{2}$ "



198. Hinged Flat Plates, $4\frac{1}{2}$ " x $2\frac{1}{2}$ "



199. Curved Plates, U-Section

$2\frac{1}{2}$ " x $2\frac{1}{2}$ " x $\frac{1}{8}$ " radius

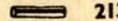
200. " " $2\frac{1}{2}$ " x $2\frac{1}{2}$ " x $1\frac{1}{8}$ " radius



211a. Helical Gear $\frac{1}{2}$ " { Can only be
211b. " " 1 1/2" { used together



212. Rod and Strip Connectors



213. Rod Connectors



214. Semi-Circular Plates $2\frac{1}{2}$ "



215. Formed Slotted Strips 3"



216. Cylinders, $2\frac{1}{2}$ " long, $1\frac{1}{2}$ " diam.