

# MECCANO



(TRADE MARK REG. U.S. PAT. OFF.)

EASIEST MODEL BUILDING.—YOU JUST COUNT THE HOLES

## INSTRUCTIONS

FOR OUTFITS

50 to 70

Price 50 Cents

**MECCANO COMPANY**  
INCORPORATED

AMERICAN EDITION

MECCANO INSTRUCTIONS  
ARE PRINTED IN 16  
LANGUAGES

ELIZABETH,

NEW JERSEY



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# VERY IMPORTANT!

## CHANGES IN THIS MANUAL

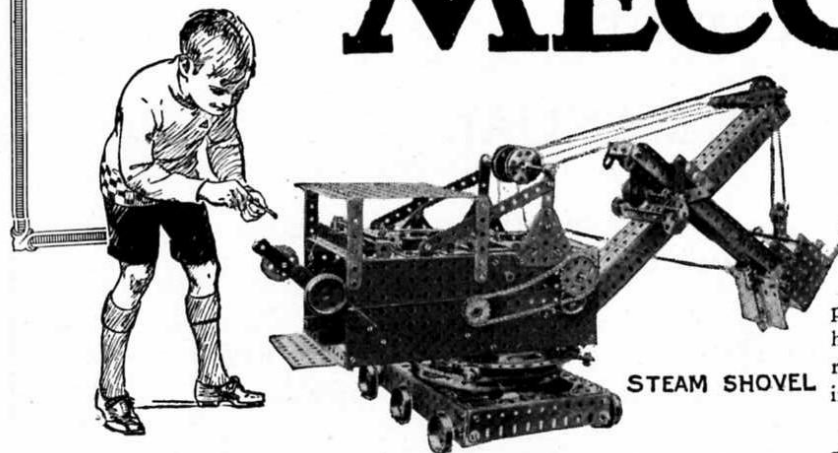
The new 1929 Meccano Outfits, including many new and better parts and equipped to build many more models than ever before, necessitate changes and additions to this Instruction Manual.

You are advised, therefore, to disregard the old classification of models with Outfits as shown by the notation at the top of each model page. Instead, the following grouping of models should be used.

- No. 0. Meccano Outfit builds Models 00.1 to 00.473.
- No. 10. Meccano Outfit builds Models 00.1 to 1.266.  
(excepting "X" Models.)
- No. 20. Meccano Outfit builds Models 00.1 to 1.267.  
(including "X" Models.)
- No. 5. Spec. Meccano Outfit builds Models 00.1 to 00.496.
- No. 30. Meccano Outfit builds Models 00.1 to 2.60.
- No. 40. Meccano Outfit builds Models 00.1 to 3.52.
- No. 50. Meccano Outfit builds Models 00.1 to 4.58.
- No. 60. Meccano Outfit builds Models 00.1 to 5.43.
- No. 70. Meccano Outfit builds Models 00.1 to 6.47.

# MECCANO

THE TOY THAT MADE  
ENGINEERING FAMOUS



Meccano was invented more than 30 years ago by Frank Hornby, the great pioneer in constructional toys. The idea was a big one, but even he didn't know how big it was destined to become. *He had discovered the only way to build reproductions of all engineering and mechanical wonders in a true engineering way.*

For every one boy who plays with any other constructional toy, over 1,000 play with Meccano. Altogether many millions of boys are playing with Meccano

while you are reading this, and they speak all languages and live in every clime and country.

This Instruction Manual you are reading now is published for no less than 20 different countries, and in each case is printed in the particular language that is spoken in these countries. In addition to the English language, there are Manuals for the Argentine, Spain, France, Belgium, Luxemburg, Switzerland, Germany, Holland, Norway, Sweden, Denmark, Italy, Brazil, Portugal, and last but not least, China.

If a copy in any of these languages interests you, send 50 cents along to us and you shall have it. Over 250 tons of paper are required every year to print one edition only and if one year's edition of Manuals was placed end to end they would extend for 125 miles; placed one on top of the other they would form a gigantic pile over 2 miles in height—over 14 times as high as the Woolworth Building.

## If in Doubt Write to Meccano Company, Inc.

We invite you to make full use of the Meccano service. When you want to know something more about engineering than is now shown in our books, when you strike a tough problem of any kind, write to us. We receive from boys over 200 letters every day all the year round. Some write to us because they are in difficulty, others because they want advice on their work or pleasures, or about their choice of a career. Others, again, write to us just because they like to—and we are glad to know that they regard us as their friends.

Although all kinds of queries are put up to us on all manner of subjects, the main interest is, of course, engineering. On this subject we claim to be supreme, and no one has such a wonderful knowledge of engineering matters as is possessed by our staff of experts. This vast store of knowledge gained only by many years of hard-earned experience, is at your service. Our experts will help you all they can, and be glad to do it!

The Meccano boy of today will be the famous engineer of tomorrow. There never was a time when there were so many opportunities for clever engineers, and never until now have boys had this marvelous opportunity of learning engineering secrets so quickly.



Front Cover of  
Meccano Manual  
in Chinese



## How to Begin

Make the simple models first—there's loads of fun in them—and then try your hand at improving them. Every model can be made in a dozen different ways, and you may be the lucky one and discover a thirteenth! Screw up all the nuts and bolts tightly to ensure that your models will be strong and firm when they are completed.

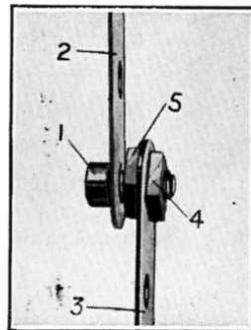
All the models shown in this Manual are numbered and for reference purposes the first page of this Manual indicates the models which may be built with each outfit.

## Meccano Standard Mechanisms

There are a number of Meccano movements that have to a certain extent become standardized, that is to say they may be applied to more than one model, in most cases without any alteration, but in some few instances with only slight alterations to the original movement. These have been collected and classified, and may be obtained in the form of a Manual entitled "Meccano Standard Mechanisms." It will be observed that many of these Standard Mechanisms are referred to in the instructions for building the more intricate models in this book.

You may obtain a copy of the "Standard Mechanism Manual" from your dealer, price 50 cents, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, New Jersey, price 50 cents postpaid.

## Simple Meccano Pivots



S. M. 262

In building Meccano models it is frequently required to attach two parts together so that one or both are quite free to swivel. A simple way to do this is shown under detail number 262 in the Meccano Standard Mechanisms Manual, and for the benefit of those readers who are unable to consult the special Manual, we have reproduced this detail below. As will be seen, it consists of a simple type of pivot or swivel bearing formed by a bolt and two nuts. The bolt is secured rigidly to a Strip or Plate, etc., by means of the nuts, which are screwed tightly against opposite sides of the Strip, sufficient space being left beneath the head of the bolt to permit another Strip to turn freely about its shank.

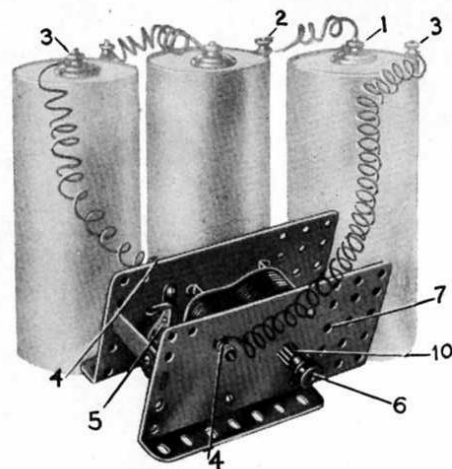
A somewhat similar form of swivel-joint, also widely used, consists of a bolt and lock-nuts (S.M. 263). The two Strips to be connected pivotally are placed on the bolt and held in position by two nuts locked together on the shank. The Strips must be allowed a certain amount of play so that they can pivot independently about the bolt. These pivoting devices will be found equally valuable in the simplest and the most elaborate models.



## How to Use the Meccano Electric Motor

This is the correct Electric Motor for all model builders. Not only has it got forward and reverse movements, but the sides and flanges form a perfect gear box. You thus dispense with a clumsy separate gear box, with its loss of power, and you get over 100 gear combinations on the motor itself; and with the Meccano precision gears you can increase or decrease your speed in a big variety of ratios. It has the standardized holes in the sides and flanges, and it fits perfectly into all models.

It has been specially designed for running Meccano Models and may be operated efficiently



by good dry cells or a storage battery giving approximately 4 volts. If two or three dry cells are used, they should be connected together as illustrated above, the central or positive terminal (1) of the first being connected to the outside or negative terminal (2) of the next, etc. The two remaining terminals (3) should be connected to the motor terminals (4). The connecting of the second motor terminal to the battery sets the one-way motor in motion. Insulated copper bell

wire is recommended for making the connections and can be obtained at any electrical supply store.

The reversing motor has a control lever (5). When this lever is in the central position, as illustrated, the current is off and the motor is "dead." To start the motor move the lever to the right or left according to the motion desired, either forward or reverse.

A little light oil should be applied occasionally to the bearings of the motor.

### The Meccano Transformer

When alternating electric current of 110 volts, 60 cycles is available it can be used to operate the motor through a Meccano transformer. This transformer is well made and is very efficient; it delivers just the right voltage for Meccano Motors.

### Attaching the Motor to Meccano Model

The sides and flanged base of the motor are pierced with the Meccano standardized holes, so it is a simple matter to build the motor right into the model. The illustration shows the motor attached to Model No. 122—Drop Stamp. The motor is bolted to the Flanged Plate and a cord is run around the motor Pulley (6) and the Pulley Wheel (8) on the Crank Handle.

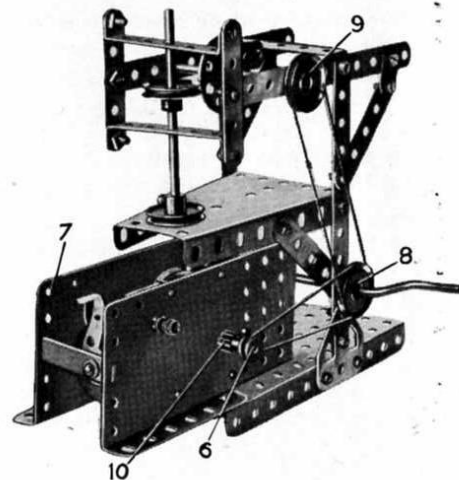
Thus the model can be operated either by hand or by motor, as desired. The Crank Handle and Pulley (8) could also be removed and the motor fixed directly under the table. The cord could then be connected from the motor Pulley (6) to the Pulley (9) on the upper arm of the model. This would make a more compact and neater model.

When connecting the cord between two Pulleys do not make it too tight nor too loose—a little experimenting will be necessary to get the proper tension. Meccano Spring Cord (part No. 58) is ideal for use with pulleys as it automatically adjusts itself to the proper tension. It can be purchased separately at any time.

Be sure that the model operates freely before attempting to drive it with the motor.

### Gears for Meccano Motors

To the driving shaft of the motor is secured a pinion (10) which is used when a positive shaft drive is required instead of a belt drive. A 57-toothed Gear Wheel (Meccano part No. 27a), secured to a Rod passed through hole 7, will mesh with the Pinion on the driving shaft, and this Gear Wheel will rotate much slower than the Pinion be-



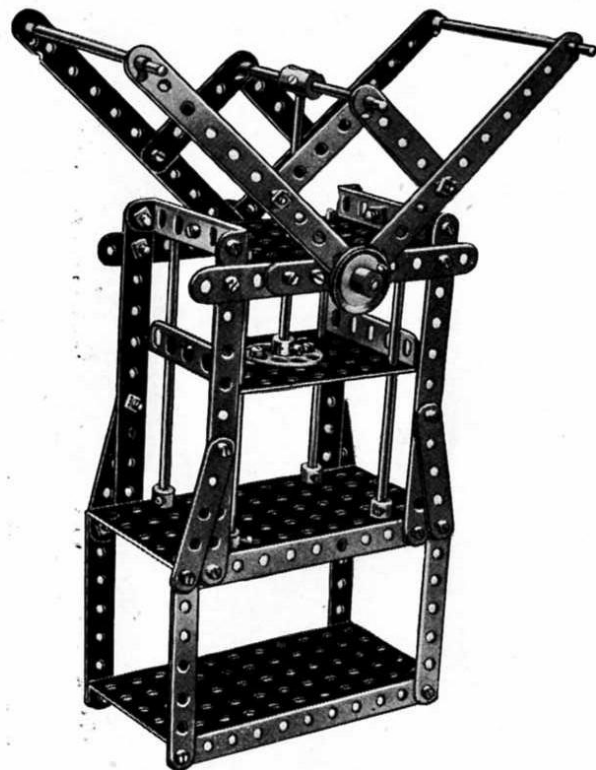
cause it is a great deal larger. However, although the speed of the second shaft is only about 1/5th the speed of the first shaft, it has about five times the power.

This is known as gear reduction and the procedure may be repeated by using a Meccano Pinion on the other end of the rod which goes through hole 7. This Pinion can be made to mesh with a Gear Wheel in the model.



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

### Model No. 4.1 Bale Press



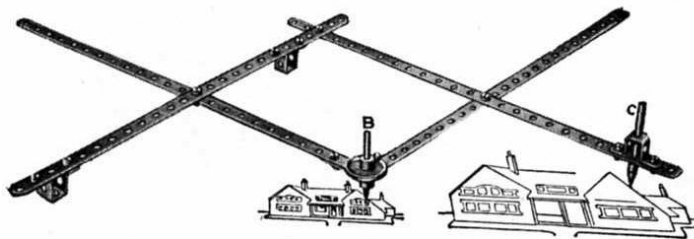
Parts required:

10 of No.	2	1 of No.	24	2 of No.	52
4 " "	3	8 " "	35	2 " "	53
8 " "	5	44 " "	37	4 " "	59
4 " "	15	14 " "	37A	1 " "	63
1 " "	15A	2 " "	38	2 " "	111
2 " "	17	2 " "	48A		

### Model No. 4.2 Pantograph

Most boys have heard of the Pantograph but not many have had an opportunity of seeing its principles demonstrated. It is an instrument for copying plans, etc., on the same or on a reduced or enlarged scale.

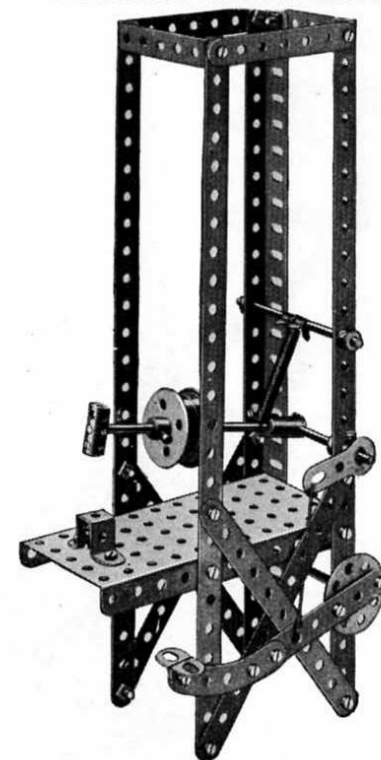
The apparatus is fixed at the point A. If an enlarged sketch is to be made, the point B is traced round the outlines, the writing point C reproducing the sketch on a larger scale. When a reduced drawing is to be made, the point C traces the outline, whilst the point B reproduces the sketch on a smaller scale. The degree of enlargement or reduction varies according to the position in which point C is fixed on the perforated arm.



Parts required:

4 of No.	1	10 of No.	37
2 " "	17	3 " "	45
1 " "	22	2 " "	62

### Model No. 4.3 Treadle Hammer

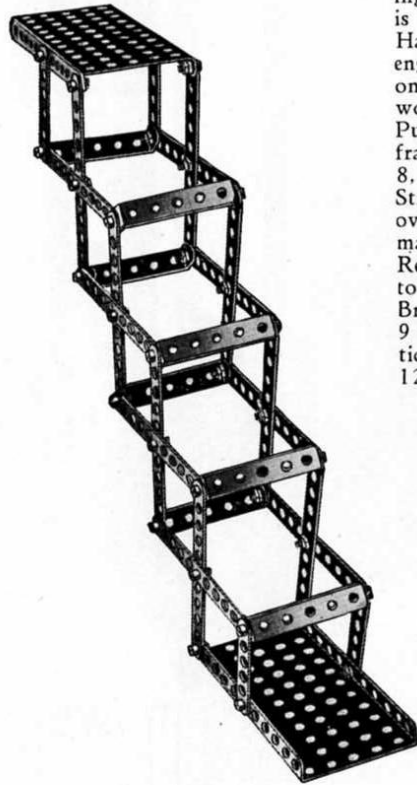


Parts required:

2 of No.	1	23 of No.	37
4 " "	2	2 " "	38
3 " "	3	1 " "	43
1 " "	5	1 " "	45
2 " "	8	1 " "	48A
2 " "	12	1 " "	52
1 " "	15A	5 " "	59
3 " "	16	1 " "	62
2 " "	20B	2 " "	63
1 " "	24	1 " "	90
2 " "	35		

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

### Model No. 4.4 Periscope

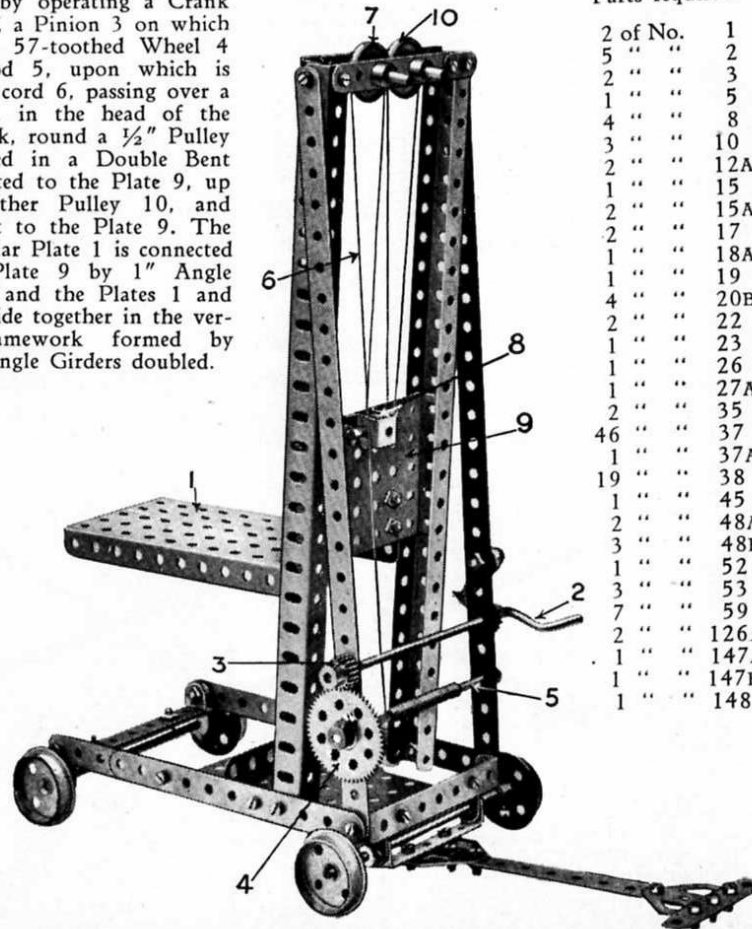


#### Parts required:

16 of No.	2	Small pieces of
4 " "	4	looking glass should
32 " "	37	be inserted in the
8 " "	48A	top and bottom
2 " "	52	Plates.

### Model No. 4.5 Bale-lifter

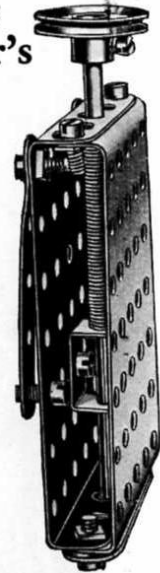
The bale platform 1, consisting of a large Rectangular Plate, is raised by operating a Crank Handle 2, a Pinion 3 on which engages a 57-toothed Wheel 4 on a Rod 5, upon which is wound a cord 6, passing over a Pulley 7, in the head of the framework, round a  $\frac{1}{2}$ " Pulley 8, pivoted in a Double Bent Strip bolted to the Plate 9, up over another Pulley 10, and made fast to the Plate 9. The Rectangular Plate 1 is connected to the Plate 9 by 1" Angle Brackets, and the Plates 1 and 9 thus slide together in the vertical framework formed by 12  $\frac{1}{2}$ " Angle Girders doubled.



#### Parts required:

2 of No.	1
5 " "	2
2 " "	3
1 " "	5
4 " "	8
3 " "	10
2 " "	12A
1 " "	15
2 " "	15A
2 " "	17
1 " "	18A
1 " "	19
4 " "	20B
2 " "	22
1 " "	23
1 " "	26
1 " "	27A
2 " "	35
46 " "	37
1 " "	37A
19 " "	38
1 " "	45
2 " "	48A
3 " "	48B
1 " "	52
3 " "	53
7 " "	59
2 " "	126A
1 " "	147A
1 " "	147B
1 " "	148

### Model No. 4.6 Conductor's Punch



This is just the thing for your younger brother! He only needs a strap with which to hang it over his shoulder to make him into a conductor. The  $2\frac{1}{2}$ " Strip at the bottom is spaced by two Washers away from the body of the punch to allow the ticket to pass in to be punched. The punch Rod is passed completely through the Spring. The lower end of the latter presses against the Double Bracket and the upper end against a Collar secured to the Rod.

#### Parts required:

3 of No.	5	9 of No.	37
1 " "	11	2 " "	38
1 " "	15A	1 " "	43
1 " "	22	2 " "	53
		1 " "	59



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

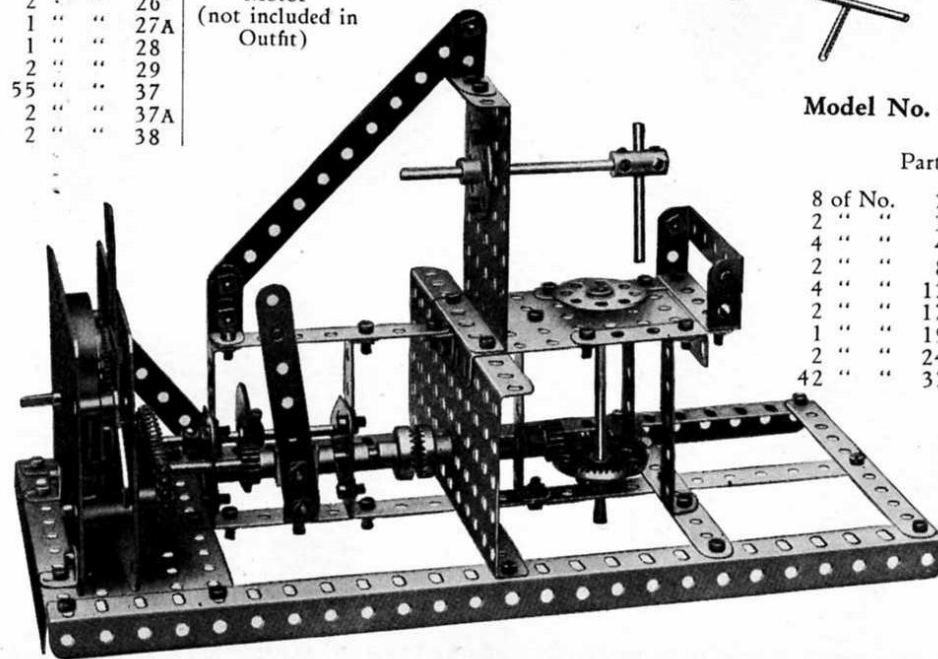
### Model No. 4.7

## Clay Modelling Machine

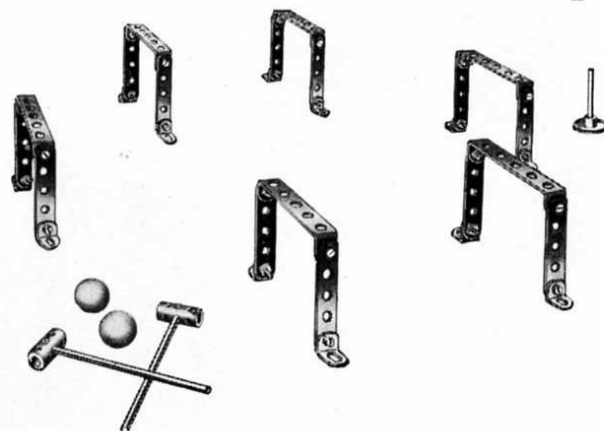
Parts required:

5 of No.	2	1 of No.	46
2 " "	3	6 " "	48A
3 " "	5	2 " "	52
2 " "	8	2 " "	53
1 " "	10	4 " "	59
1 " "	11	1 " "	63
7 " "	12	6 " "	94
1 " "	12A	2 " "	96
4 " "	16	2 " "	126A
2 " "	17		
2 " "	24		
2 " "	26		
1 " "	27A		
1 " "	28		
2 " "	29		
55 " "	37		
2 " "	37A		
2 " "	38		

Clockwork  
Motor  
(not included in  
Outfit)



### Model No. 4.8 Table Croquet



A most diverting game. Colored marbles may be used for the balls. Full instructions for playing croquet may be obtained from any sports or games dealer.

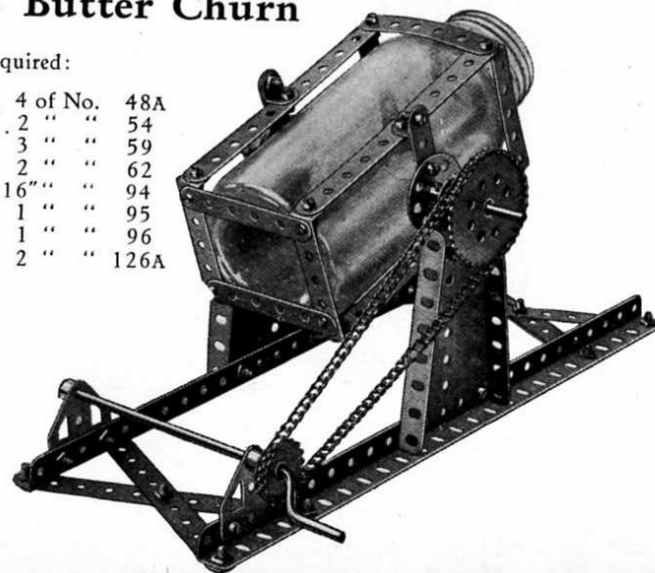
Parts required:

12 of No.	5	2 of No.	22
12 " "	12	24 " "	37
2 " "	16	2 " "	63
2 " "	17		

### Model No. 4.9 Butter Churn

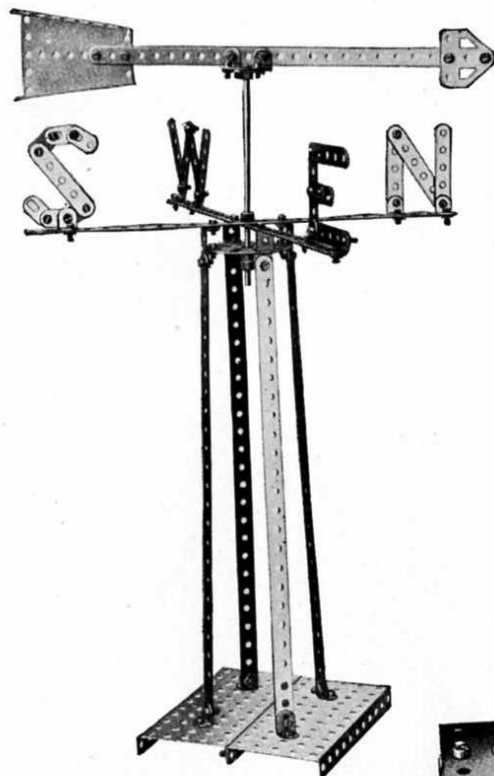
Parts required:

8 of No.	2	4 of No.	48A
2 " "	3	2 " "	54
4 " "	4	3 " "	59
2 " "	8	2 " "	62
4 " "	12	16 " "	94
2 " "	17	1 " "	95
1 " "	19	1 " "	96
2 " "	24	2 " "	126A
42 " "	37		



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

### Model No. 4.10 Weather Vane



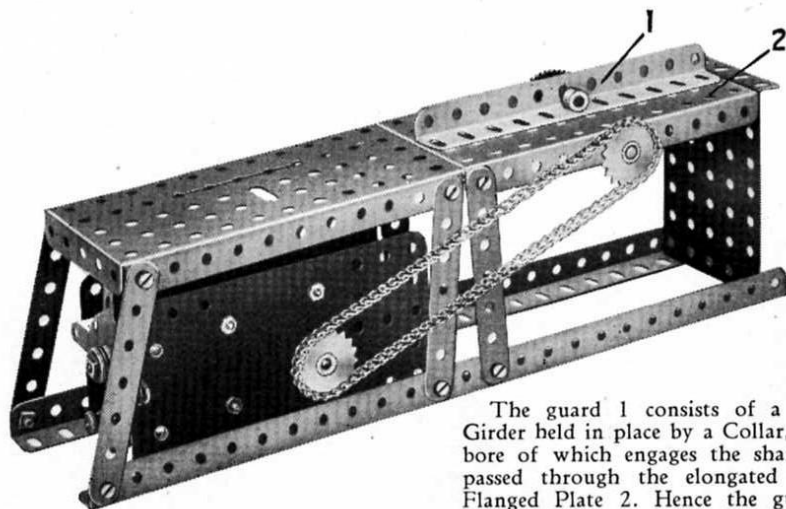
Parts required:

6 of No.	3
2 " "	8
1 " "	9
1 " "	16
22 " "	37
2 " "	52
1 " "	53
1 " "	59
12 " "	94
2 " "	96
1 " "	111C
1 " "	159
1 " "	160
Electric Motor	

Parts required:

7 of No.	1	54 of No.	37
11 " "	5	2 " "	38
8 " "	10	2 " "	52
4 " "	11	1 " "	54
17 " "	12	2 " "	59
1 " "	14	1 " "	109
1 " "	24	1 " "	126A

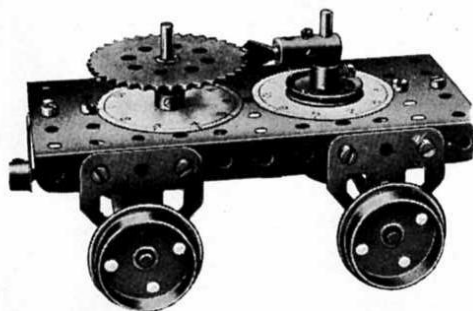
### Model No. 4.11 Saw Bench



The guard 1 consists of a  $5\frac{1}{2}$ " Angle Girder held in place by a Collar, the threaded bore of which engages the shank of a bolt passed through the elongated hole in the Flanged Plate 2. Hence the guard may be moved nearer or further from the Circular Saw as required to allow for different thicknesses of material.

### Model No. 4.12

### Distance Indicator



Parts required:

1 of No.	4	1 of No.	37A
4 " "	10	3 " "	38
2 " "	12	1 " "	52
1 " "	15	3 " "	59
2 " "	16	2 " "	62
2 " "	17	1 " "	63
4 " "	20B	1 " "	65
2 " "	26	1 " "	95
1 " "	28	1 " "	96
1 " "	32	4 " "	126A
16 " "	37		

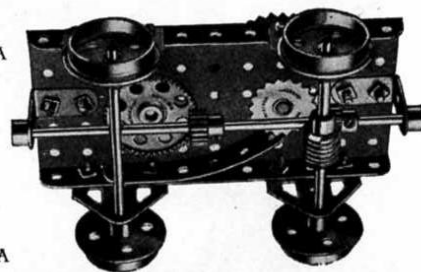


Fig. 4.12a

(The indicator discs are not supplied with the Outfit; they may be cut out of cardboard.)

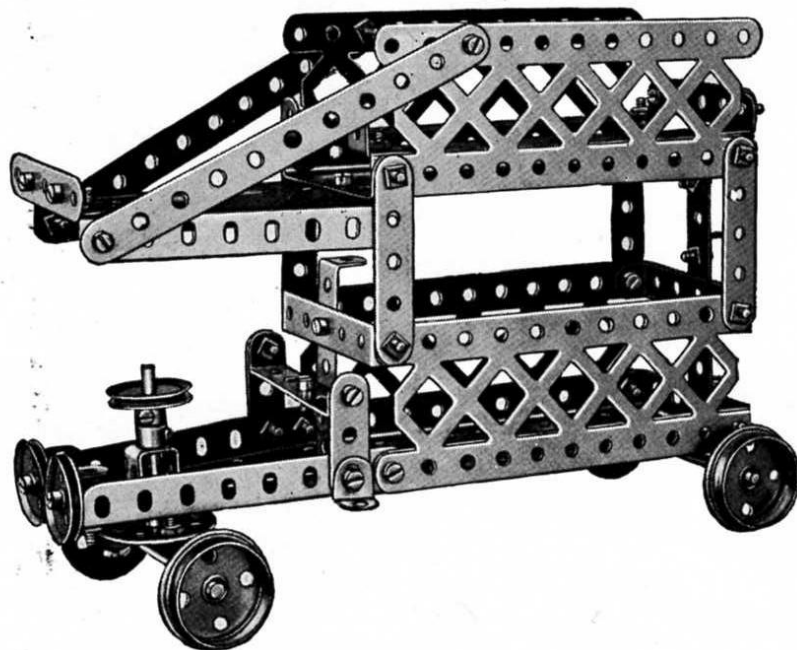


These Models can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)

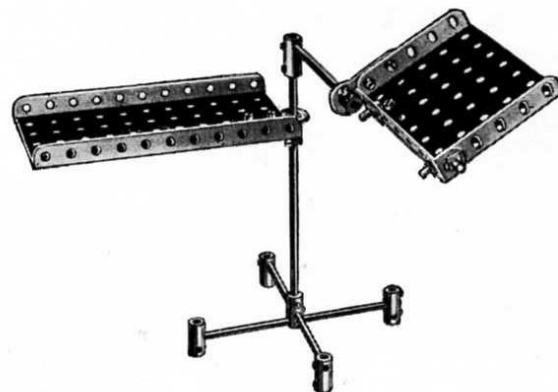
### Model No. 4.13 Motor Bus

Parts required:

2 of No.	2	12 of No.	12	2 of No.	22A	2 of No.	52
1 " "	3	2 " "	16	1 " "	24	1 " "	54
6 " "	5	1 " "	17	48 " "	37	1 " "	59
2 " "	6A	4 " "	20B	1 " "	45	4 " "	100
3 " "	11	1 " "	22	7 " "	48A		



### Model No. 4.14 Bed Table



Parts required:

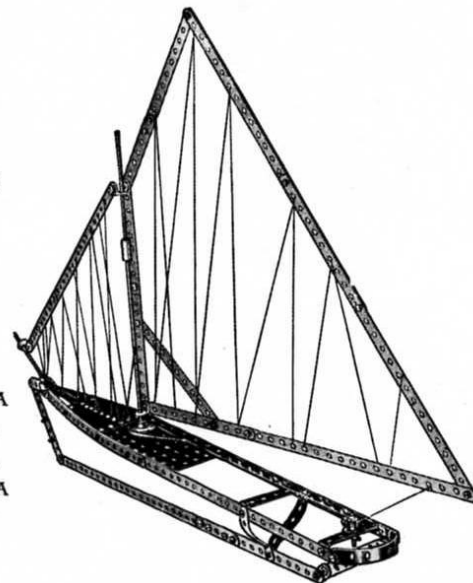
1 of No.	3
1 " "	12
1 " "	14
2 " "	15A
1 " "	16
8 " "	37
1 " "	52
1 " "	53
2 " "	62
6 " "	63

### Model No. 4.15

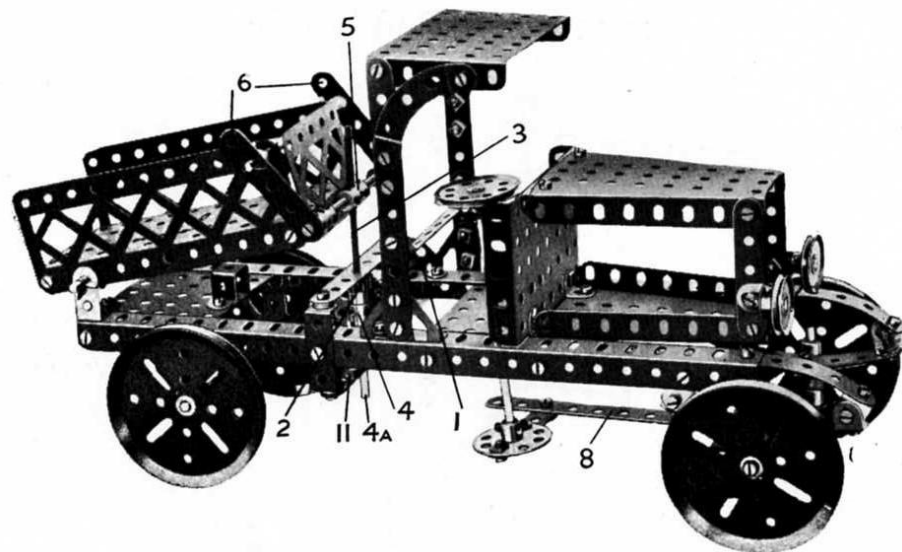
### Yacht

Parts required:

9 of No.	1	2 of No.	18A
7 " "	2	1 " "	22
4 " "	3	51 " "	37
2 " "	4	1 " "	44
2 " "	5	2 " "	48A
1 " "	10	1 " "	52
5 " "	12	1 " "	54
1 " "	13A	1 " "	63
2 " "	15		



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

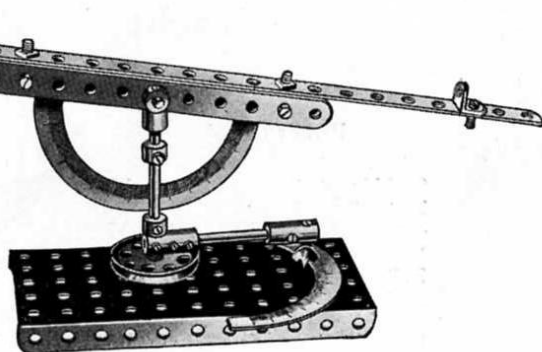


Model No. 4.17 Sextant and Theodolite

Parts required:

1 of No.	1	1 of No.	21
2 " "	2	1 " "	22
2 " "	11	8 " "	37
2 " "	12	1 " "	52
1 " "	16	4 " "	59
1 " "	17	3 " "	63
2 " "	18A	1 " "	65

(The Indicators are not supplied; they may be made from cardboard.)



Model No. 4.16 Tipping Motor Truck

Parts required:

2 of No.	2	1 of No.	52	4 of No.	63	4 of No.	111C
2 " "	2A	2 " "	53	1 " "	80A	1 " "	115
6 " "	3	2 " "	54	2 " "	90A	2 " "	125
12 " "	5	10 " "	59	1 " "	98	2 " "	126
2 " "	6A	2 " "	62	2 " "	100	2 " "	126A
2 " "	8						
5 " "	10						
15 " "	12						
2 " "	12A						
4 " "	15A						
1 " "	17						
5 " "	18A						
4 " "	19B						
1 " "	21						
2 " "	22						
2 " "	24						
1 " "	26						
1 " "	28						
8 " "	35						
89 " "	37						
4 " "	37A						
14 " "	38						
2 " "	45						
2 " "	48						
1 " "	48B						

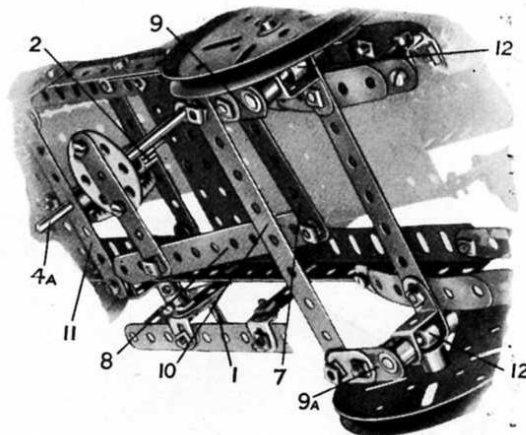


Fig. 4.16a

The tipping mechanism is operated by the hand wheel 1, the shaft of which carries a  $1\frac{1}{2}$ " Contrate Wheel that engages with the  $\frac{1}{2}$ " Pinion 2. The  $3\frac{1}{2}$ " Threaded Rod 3, to which the Pinion 2 is secured, is journaled in one end of a Coupling 4 and passes through the central threaded bore of a second Coupling 5, which is mounted between the ends of two short Rods that are free to turn on bolts passed through  $2\frac{1}{2}$ " Strips 6. These Strips 6 are attached pivotally to the body of the truck. The short Rod 4a passes through the  $3\frac{1}{2}$ " Strip 11 and is secured in the lower end of the Coupling 4, the centre transverse hole of which forms a bearing for the Rod of the hand wheel 1.

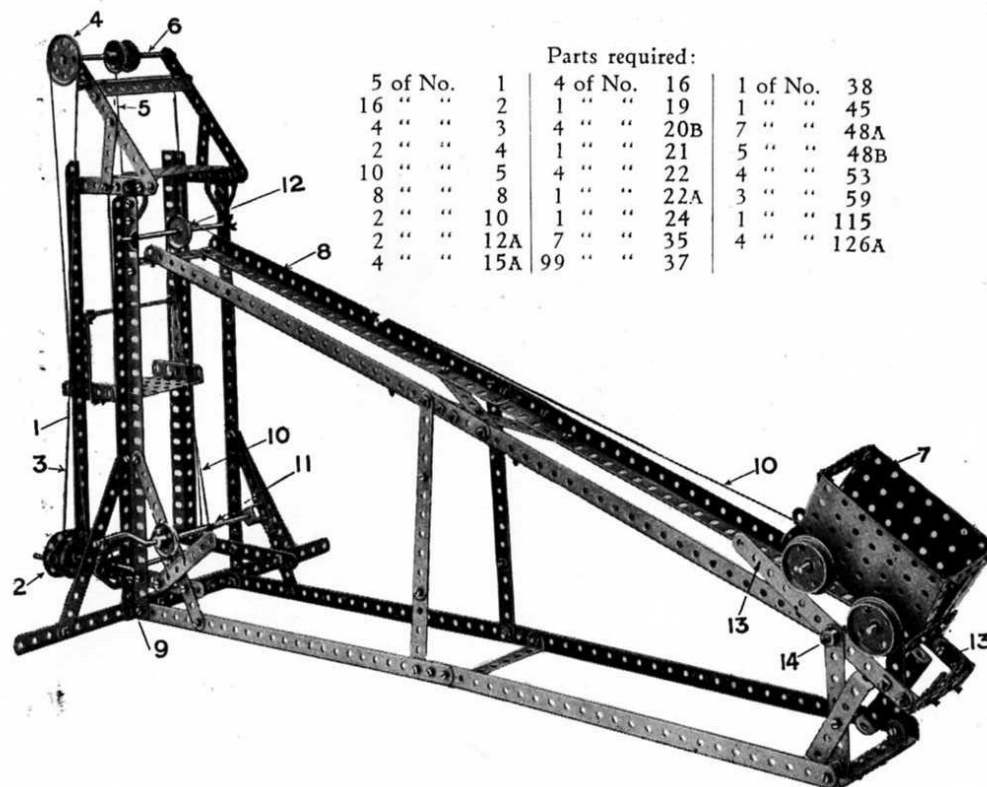
The steering gear is shown in Fig. 4.16a. The  $2\frac{1}{2}$ " Strip 7 is pivoted to the Strip 8, but is secured rigidly at right angles to the Crank 9. The Crank 9a is made to move simultaneously with the Crank 9 by means of the tie-rod 10. The front road wheels are mounted on  $\frac{3}{4}$ " Bolts secured in Collars 12.

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

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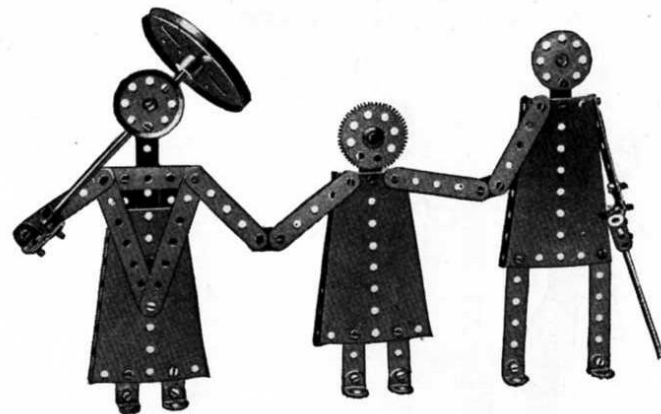
## Model No. 4.18 Inclined Delivery Chute

The cage 1 is raised from the hand-wheel 2 by means of an endless cord 3 which passes over the upper  $1\frac{1}{2}$ " Pulley 4. A cord 5 winding on Rod 6 between two 1" fast Pulleys raises or lowers the cage. The truck 7 is raised or lowered along the inclined rails 8 by a Crank Handle 9, a cord 10 being wound on the Rod 11, passing over a Pulley 12, and connected to the truck 7. When the truck reaches the end of the inclined rails 10 it rests upon two  $5\frac{1}{2}$ " Strips 13 pivoted at 14, the weight of the truck depressing these pivoted Strips and tipping the load.



Parts required:			Parts required:		
5 of No.	1	4 of No.	16	1 of No.	38
16 "	2	1 "	19	1 "	45
4 "	3	4 "	20B	7 "	48A
2 "	4	1 "	21	5 "	48B
10 "	5	4 "	22	4 "	53
8 "	8	1 "	22A	3 "	59
2 "	10	1 "	24	1 "	115
2 "	12A	7 "	35	4 "	126A
4 "	15A	99 "	37		

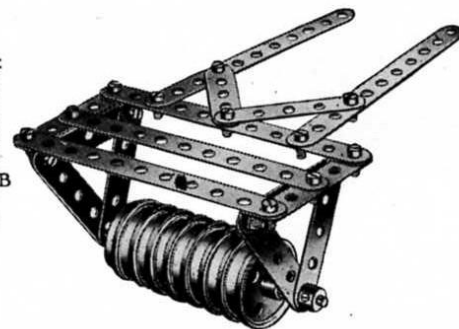
## Model No. 4.19 The Meccano Family



Parts required:			Parts required:		
1 of No.	2	1 of No.	15	1 of No.	24
2 "	3	1 "	15A	1 "	27A
2 "	4	1 "	18A	3 "	35
12 "	5	1 "	19B	36 "	37
7 "	10	1 "	21	3 "	54
9 "	12	1 "		1 "	63

## Model No. 4.20 Field Roller

Parts required:	
5 of No.	2
10 "	5
4 "	12
1 "	15
8 "	20B
15 "	37
4 "	59

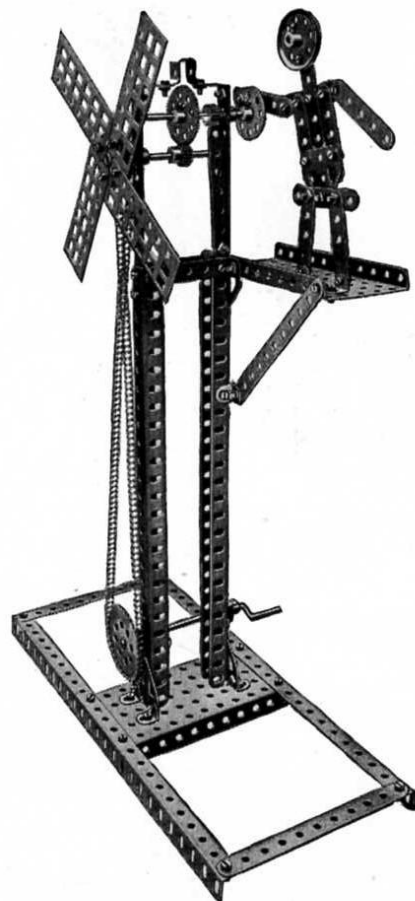




These Models can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)

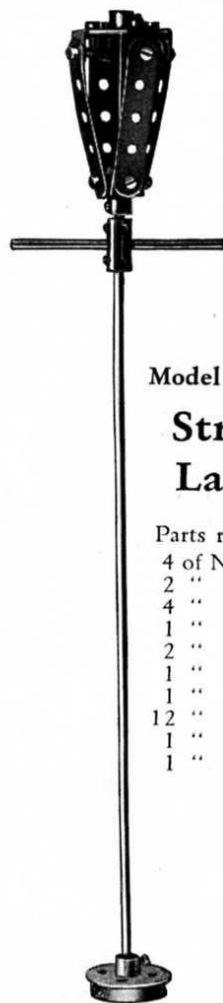
Model No. 4.21

## Windmill Scare



### Parts required:

5 of No.	2
1 " "	3
11 " "	5
6 " "	8
8 " "	12
2 " "	12A
2 " "	16
1 " "	19
1 " "	21
2 " "	24
2 " "	26
1 " "	27A
61 " "	37
2 " "	37A
3 " "	38
1 " "	45
2 " "	52
4 " "	59
20 " "	94
1 " "	95
1 " "	96
1 " "	115
2 " "	125
3 " "	126A



Model No. 4.22

## Street Lamp

### Parts required:

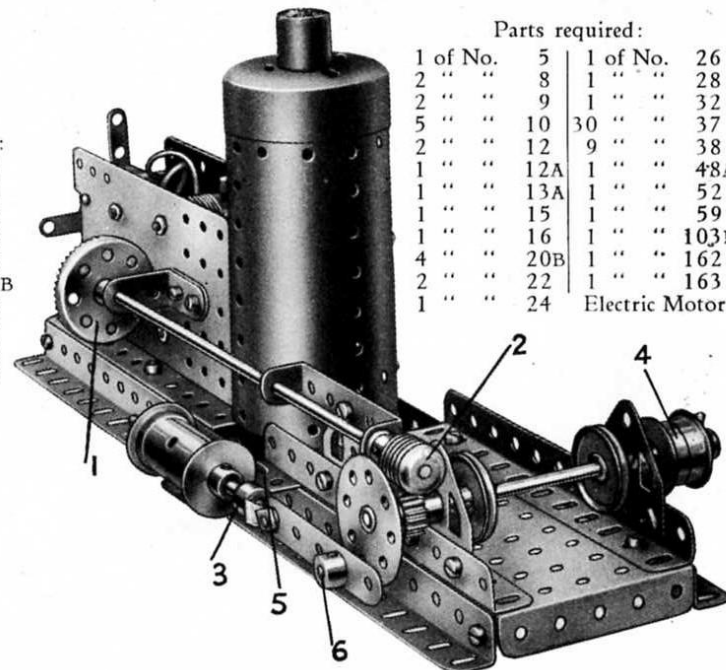
4 of No.	5
2 " "	11
4 " "	12
1 " "	13
2 " "	16
1 " "	20B
1 " "	24
12 " "	37
1 " "	59
1 " "	63

Model No. 4.23 Steam Winch

A  $\frac{1}{2}$ " Pinion secured to the armature of the Electric Motor turns a  $1\frac{1}{2}$ " Contrate Wheel 1 mounted on an 8" Axle Rod, to the opposite end of which is secured a Worm Wheel 2. The drum 4 of the winch consists of two  $\frac{3}{4}$ " Flanged Wheels and is secured to the end of a  $3\frac{1}{2}$ " Rod, which carries a  $\frac{1}{2}$ " Pinion that is driven by the Worm 2. The cylinder is composed of a Sleeve Piece, secured by two nuts and bolts to the end of a  $2\frac{1}{2}$ " Flat Girder 5, and two  $\frac{3}{4}$ " Flanged Wheels. The piston rod is attached pivotally to the connecting rod by means of an End Bearing 3, and the crank pin 6 is formed by a Threaded Pin secured to the Bush Wheel. The Boiler is secured in place by two Angle Brackets bolted to its base and to the  $5\frac{1}{2}$ "x $2\frac{1}{2}$ " Flanged Plates forming part of the engine bed. It will be noted that the 1"x1" Angle Bracket supporting one end of the 8" Rod is spaced away from the Motor by a Flat Bracket, in order to obtain proper clearance for the Contrate Wheel 1.

### Parts required:

1 of No.	5	1 of No.	26
2 " "	8	1 " "	28
2 " "	9	1 " "	32
5 " "	10	30 " "	37
2 " "	12	9 " "	38
1 " "	12A	1 " "	48A
1 " "	13A	1 " "	52
1 " "	15	1 " "	59
1 " "	16	1 " "	103F
4 " "	20B	1 " "	162
2 " "	22	1 " "	163
1 " "	24		Electric Motor



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

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## Model No. 4.24 Travelling Swivel Crane

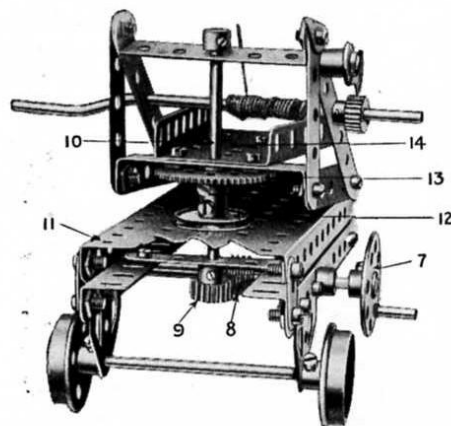
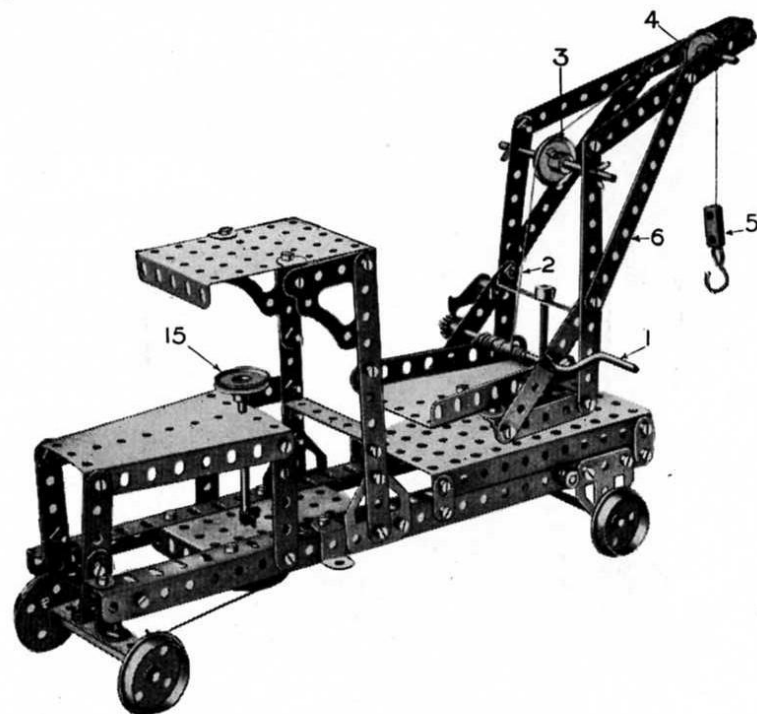


Fig. 4.24a

Parts required:

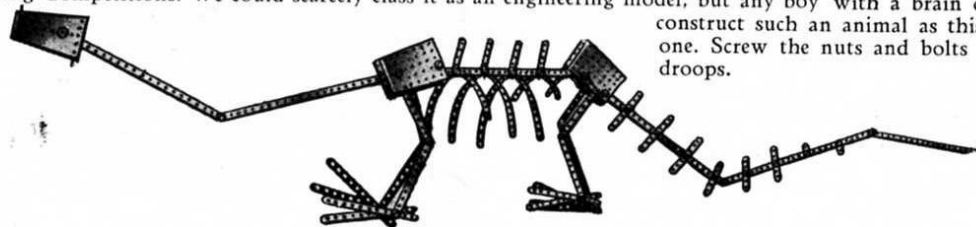
8 of No.	2	6 of No.	35
2 " "	3	69 " "	37
9 " "	5	3 " "	37A
2 " "	8	1 " "	45
4 " "	10	5 " "	48A
1 " "	11	1 " "	52
8 " "	12	2 " "	53
2 " "	15A	2 " "	54
4 " "	16	1 " "	57
1 " "	17	3 " "	59
1 " "	19	1 " "	63
4 " "	20B	2 " "	108
1 " "	21	1 " "	115
4 " "	22	1 " "	125
1 " "	24	4 " "	126A
2 " "	26	1 " "	147A
1 " "	27A	1 " "	147B
1 " "	32	1 " "	148



The load is raised from the Crank Handle 1, a cord 2 winding on which passes over the 1" Pulleys 3 and 4 to the block 5. The jib 6 is swivelled from the hand-wheel 7 on the Rod of which is a Worm 8 engaging a Pinion 9 bolted to a vertical Rod 10, to which is secured beneath the platform 11 a 1" Pulley Wheel 12 and a 57-toothed Wheel 13 which carries the swivel platform 14. The steering of the crane is effected from the 1" Pulley Wheel 15.

## Model No. 4.25 Diplodocus

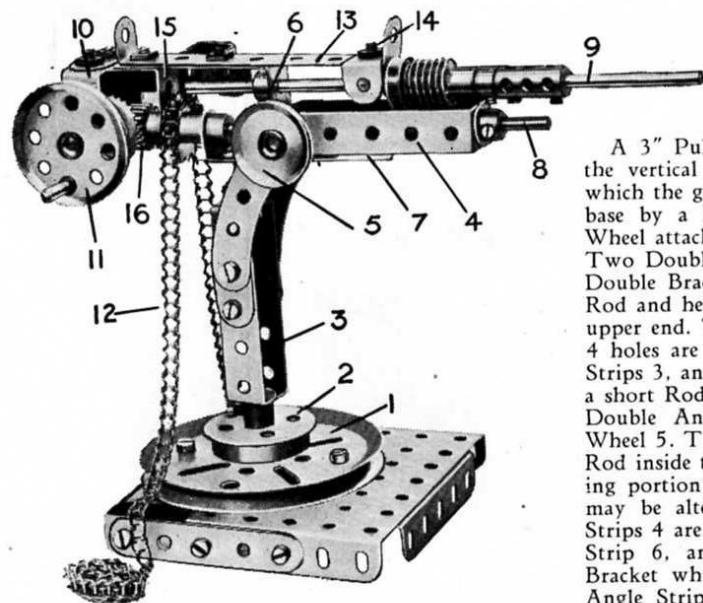
This representation of a prehistoric animal is a most extraordinary effort sent in by a young French boy to compete in one of the big Meccano Model Building Competitions. We could scarcely class it as an engineering model, but any boy with a brain clever enough and an imagination lively enough to conceive and construct such an animal as this from Meccano parts deserved a good prize, so we awarded him one. Screw the nuts and bolts up tightly because the Diplodocus looks most dejected when he droops.



Parts required:

1 of No.	1	1 of No.	8	40 of No.	37
7 " "	2	4 " "	10	4 " "	53
4 " "	3	1 " "	16	2 " "	54
8 " "	5	4 " "	17	8 " "	59
		2 " "	22		

## Model No. 4.26 Naval Quick-firing Gun



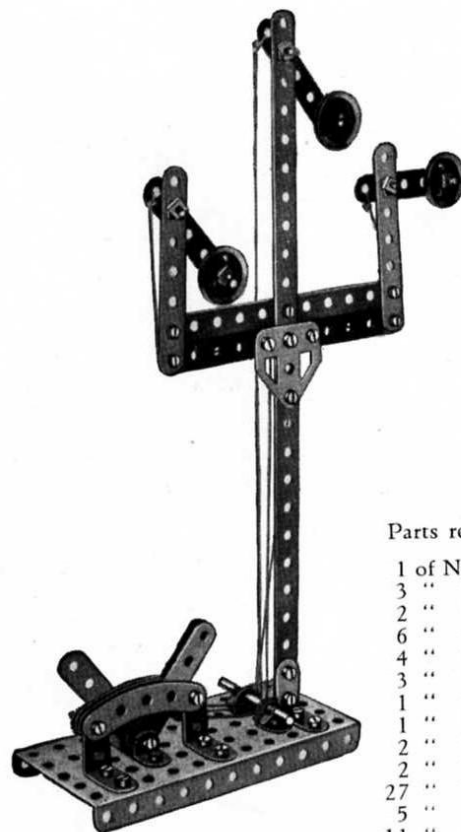
## Parts required:

2 of No.	5	1 of No.	21	5 of No.	48A
1 " "	10	2 " "	22	2 " "	48B
2 " "	11	1 " "	23A	2 " "	53
1 " "	12	1 " "	26	8 " "	59
3 " "	12A	1 " "	29	1 " "	63
1 " "	14	1 " "	32	4 " "	90
1 " "	15A	2 " "	35	1 " "	94
3 " "	17	24 " "	37	1 " "	96A
1 " "	18B	2 " "	38	2 " "	111A
1 " "	19B	1 " "	45	1 " "	115
1 " "	20B	1 " "	46	1 " "	125

A 3" Pulley Wheel 1 provides a bearing for the vertical 4 1/2" Rod forming the axis about which the gun pivots. The Rod is secured to the base by a Flanged Wheel 2 and a 1" Pulley Wheel attached to it beneath the larger Wheel 1. Two Double Angle Strips 3, spaced apart by a Double Bracket, are mounted upon this vertical Rod and held in place by a Collar secured to its upper end. Two 2 1/2" Curved Strips overlapped 4 holes are bolted to each of the Double Angle Strips 3, and their upper holes form bearings for a short Rod passing through the ends of further Double Angle Strips 4 and carrying a hand Wheel 5. Two Spring Clips are mounted on this Rod inside the Strips 4 to secure it to the pivoting portion of the gun, the elevation of which may be altered on turning the Wheel 5. The Strips 4 are bolted to the end of a Double Angle Strip 6, and the same bolt secures an Angle Bracket which in turn is bolted to the Double Angle Strip 7. The Rod 8 passes through the end holes of the Strips 4 and 7 and is held in place by two Collars. On the top of the Strip 6 is bolted a 3 1/2" Double Angle Strip 13, the up-turned ends of which form the sighting apertures. The bolt 14 secures a Double Bracket and an Angle Bracket, the latter together with one of the holes in the Strip 6 forming bearings for the barrel 9. A 1" Angle Bracket 15, bolted beneath the Strip 6, and the end of the Strip 7 provide bearings for the short rod carrying a 3/4" Sprocket Wheel and 1/2" Pinion 16. Two 1"x1" Angle Brackets 10 form bearings for a 2" Rod carrying the hand Wheel 11. This Rod is fitted with a 3/4" Contrate Wheel which engages with the Pinion 16. On rotation of the Wheel 11, the small Sprocket Wheel actuates the Sprocket Chain 12 which represents the cartridge belt.

## Model No. 4.27

## Three-arm Signal



## Parts required:

1 of No.	1
3 " "	2
2 " "	3
6 " "	5
4 " "	12
3 " "	12A
1 " "	17
1 " "	22
2 " "	22A
2 " "	35
27 " "	37
5 " "	37A
11 " "	38
1 " "	52
4 " "	90
3 " "	111
1 " "	126A



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

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## Model No. 4.28 Speed Indicator

Parts required:

2 of No. 3	32 of No. 37
2 " " 4	2 " " 38
4 " " 5	1 " " 45
2 " " 8	3 " " 48A
4 " " 12	1 " " 52
1 " " 13A	2 " " 53
2 " " 16	5 " " 59
2 " " 17	1 " " 63
2 " " 18A	
5 " " 20B	
1 " " 21	
2 " " 24	
1 " " 26	
1 " " 29	

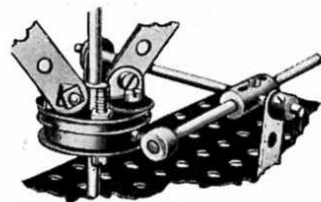
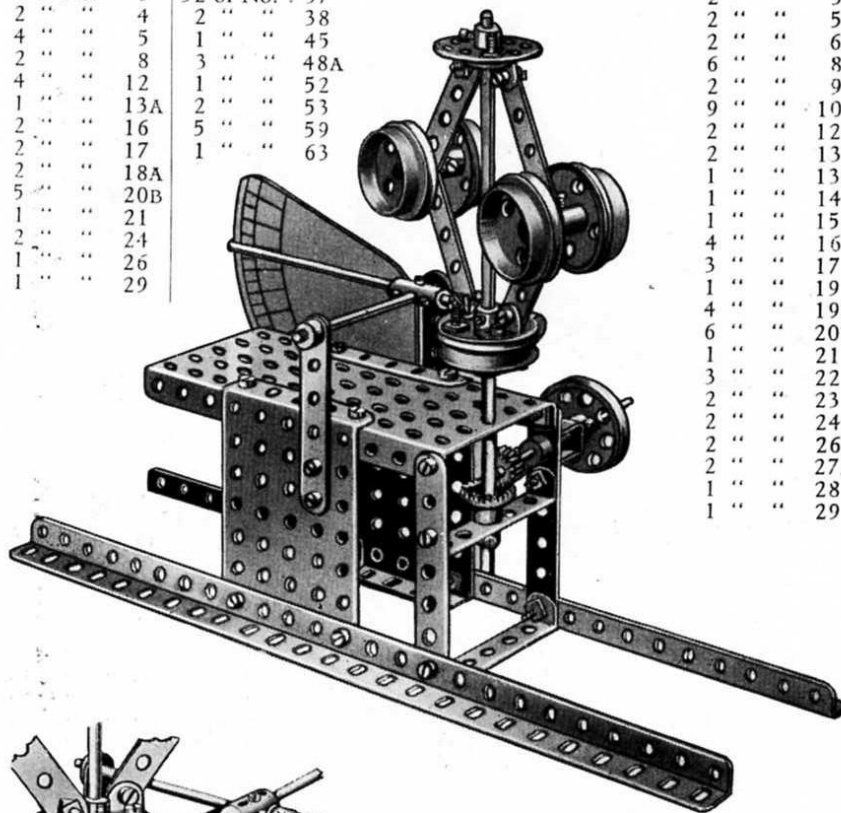


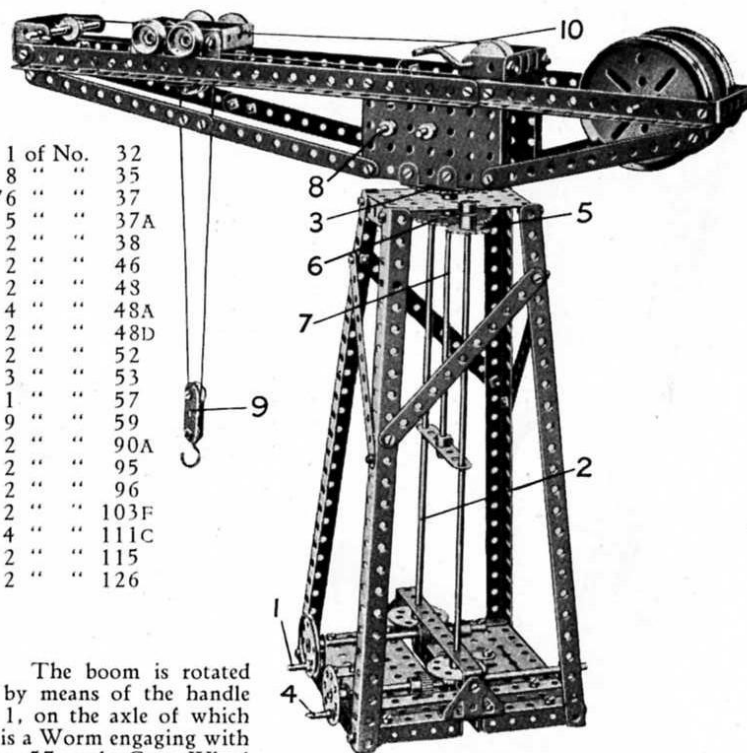
Fig. 4.28a

(The Indicator is not supplied; it may be made from cardboard.)

Parts required:

12 of No. 2	
2 " " 3	
2 " " 5	
2 " " 6A	
6 " " 8	
2 " " 9	
9 " " 10	
2 " " 12A	
2 " " 13	
1 " " 13A	
1 " " 14	
1 " " 15A	
4 " " 16	
3 " " 17	
1 " " 19	
4 " " 19B	
6 " " 20B	
1 " " 21	
3 " " 22	
2 " " 23	
2 " " 24	
2 " " 26	
2 " " 27A	
1 " " 28	
1 " " 29	

## Model No. 4.29 Girder Crane



The boom is rotated by means of the handle 1, on the axle of which is a Worm engaging with a 57-teeth Gear Wheel secured to an 11½" Rod 2. At the upper end of the Rod 2 is a 1" Sprocket Wheel that meshes with a 2" Sprocket Wheel 3 bolted to the boom of the crane.

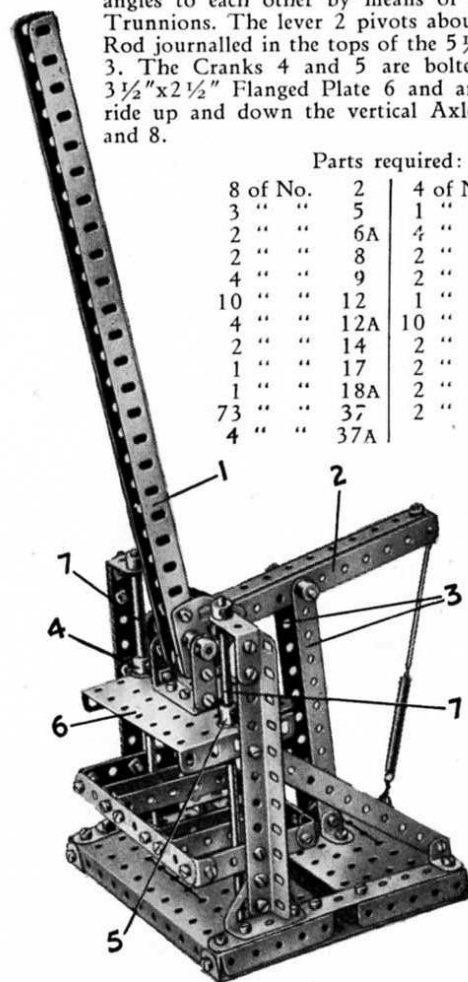
The handle 4 is connected by means of a ½" Pinion, 1½" Contrate Wheel, and a 1" Sprocket Wheel 5 to the 2" Sprocket Wheel 6. The Rod 7, to which the latter is secured, is free to rotate in the boss of the Sprocket Wheel 3, and carries at its upper end a ¾" Contrate Wheel which, by means of a ½" Pinion and a 57-teeth Gear Wheel, rotates the Rod 8. A cord wound on the latter Rod raises the pulley block 9. The handle 10 controls the traversing movement of the trolley by an endless rope drive similar to Standard Mechanism No. 169.

### Model No. 4.30 Potato Chopper

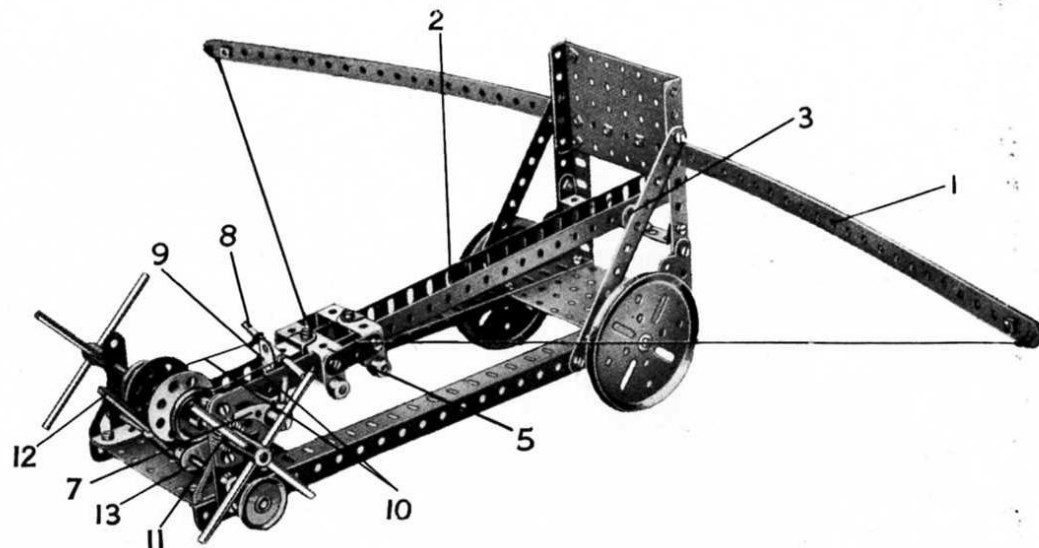
The levers 1 and 2 are secured at right angles to each other by means of two Flat Trunnions. The lever 2 pivots about a short Rod journalled in the tops of the  $5\frac{1}{2}$ " Strips 3. The Cranks 4 and 5 are bolted to the  $3\frac{1}{2}$ "x $2\frac{1}{2}$ " Flanged Plate 6 and are free to ride up and down the vertical Axle Rods 7 and 8.

#### Parts required:

8 of No.	2	4 of No.	38
3 " "	5	1 " "	43
2 " "	6A	4 " "	48A
2 " "	8	2 " "	48D
4 " "	9	2 " "	52
10 " "	12	1 " "	53
4 " "	12A	10 " "	59
2 " "	14	2 " "	62
1 " "	17	2 " "	111C
1 " "	18A	2 " "	126
73 " "	37	2 " "	126A
4 " "	37A		



### Model No. 4.31 Mechanical Cross Bow



#### Parts required:

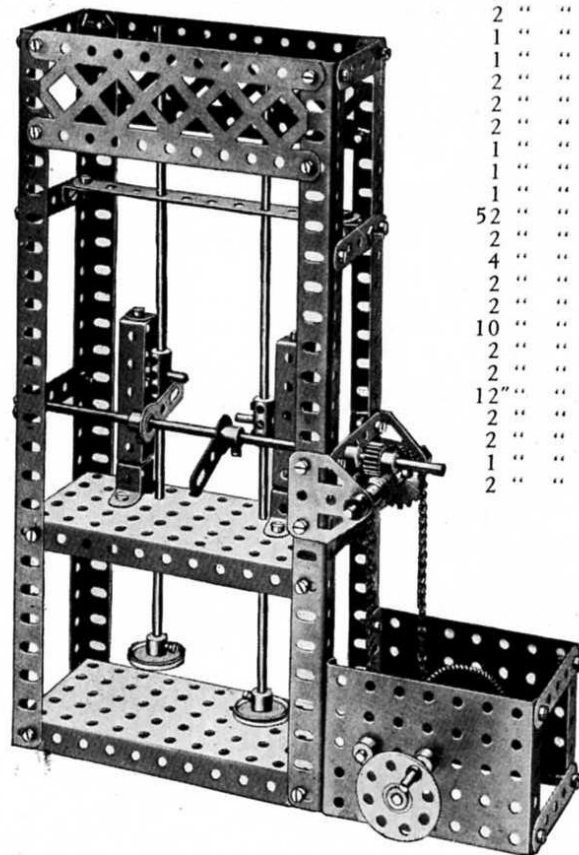
6 of No.	1	53 of No.	37
7 " "	5	2 " "	37A
2 " "	6A	5 " "	38
4 " "	8	1 " "	45
2 " "	9	1 " "	48
1 " "	10	1 " "	48B
1 " "	11	3 " "	53
4 " "	12	4 " "	59
4 " "	12A	2 " "	62
1 " "	15	3 " "	63
3 " "	15A	2 " "	108
4 " "	16	2 " "	111
4 " "	17	1 " "	115
2 " "	19B	2 " "	126
4 " "	22	1 " "	126A
2 " "	24	1 " "	147A
1 " "	26	1 " "	147B

This model represents a large military weapon of the type used before the invention of gunpowder. It is built on the principle of the cross-bow. Each side of the bow 1 is composed of three  $12\frac{1}{2}$ " Strips bolted together, the centre being strengthened by three  $2\frac{1}{2}$ " Strips. The trough 2, which is formed from two  $12\frac{1}{2}$ " Angle Girders, is held loosely between a pair of Angle Brackets 3, and its rear end is secured to a Double Bent Strip bolted to the  $3\frac{1}{2}$ "x $2\frac{1}{2}$ " Flanged Plate. The carriage 5 is composed of four 1"x1" Angle Brackets joined by a pair of  $1\frac{1}{2}$ " Strips and guided by two  $\frac{1}{2}$ "x $\frac{1}{2}$ " Angle Brackets. A Double Bracket is bolted to one of the latter, and carries in its turn a Flat Bracket 9. When the handles are turned in an anti-clockwise direction, the cords 10 draw the carriage back, and are prevented from unwinding by the Pawl 7 engaging a  $\frac{1}{2}$ " Pinion Wheel 11. When the lever 12 is depressed, the ends of a pair of  $2\frac{1}{2}$ " Strips bolted to Cranks 13 lift the 2" Rod 8 off the Flat Bracket 9. This releases the carriage, and the projectile (a marble) is shot out of the trough 2 with considerable force.

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

Model No. 4.32

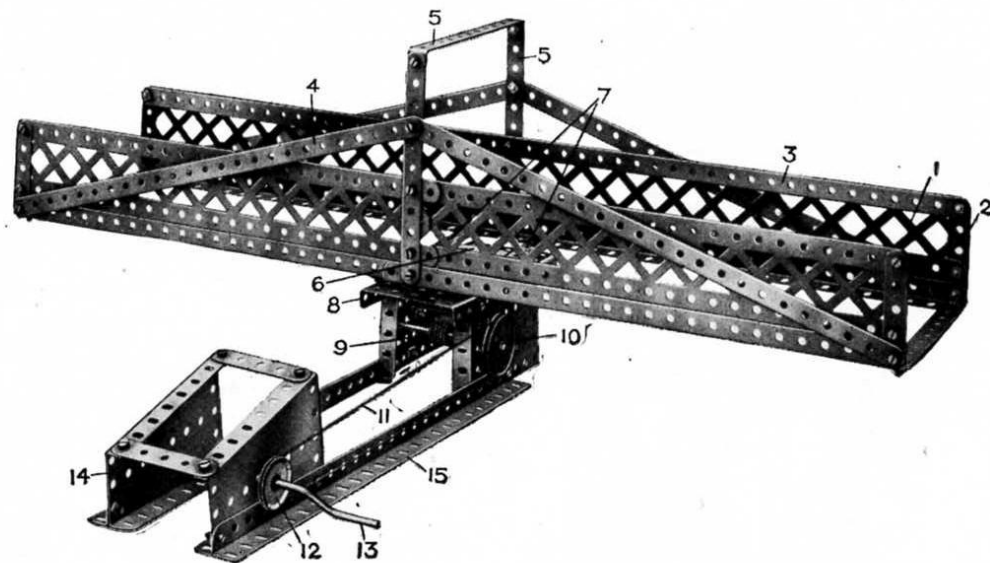
## Trip Hammer



Parts required:

1 of No.	2
8 " "	5
4 " "	8
2 " "	12
2 " "	13
1 " "	13A
1 " "	15A
2 " "	16
2 " "	18A
2 " "	22
1 " "	24
1 " "	27A
1 " "	32
52 " "	37
2 " "	45
4 " "	48A
2 " "	52
2 " "	53
10 " "	59
2 " "	62
2 " "	63
12 " "	94
2 " "	96
2 " "	100
1 " "	115
2 " "	126A

Model No. 4.33 Swing Bridge



Parts required:

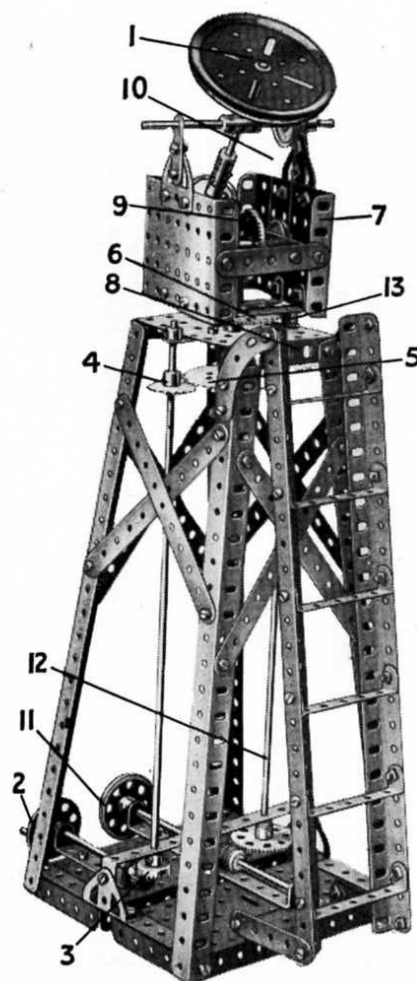
8 of No.	1	1 of No.	17	1 of No.	27A	1 of No.	52
6 " "	2	1 " "	19	1 " "	32	2 " "	53
6 " "	5	1 " "	19B	50 " "	37	2 " "	54
6 " "	8	1 " "	21	1 " "	48A	2 " "	59
1 " "	16	1 " "	22	1 " "	48D	4 " "	99

The sides of this model, as shown in the illustration, are made of the Braced Girders 1 secured to the upright Strips 2 and reinforced by the inner Strips 3. Other diagonal Strips 4 brace the side Girders to the top structure 5 forming a stay for the sides 1. The swing base of the bridge is composed of a 3" Pulley Wheel 6 which is bolted to two cross 5½" Strips 7 which in turn are secured to the main base side Girders. The bridge swings on the Perforated Plate 8 on a short Rod, on the lower end of which is secured a Gear Wheel engaged and driven by a Worm 9 on the spindle of which is the Grooved Pulley 10 driven by the cord 11 which is operated from the smaller Grooved Pulley 12 on the Crank Handle 13. The Crank Handle is journaled in two Sector Plates 14 secured to the base Angle Girder 15.



### Model No. 4.34 Searchlight

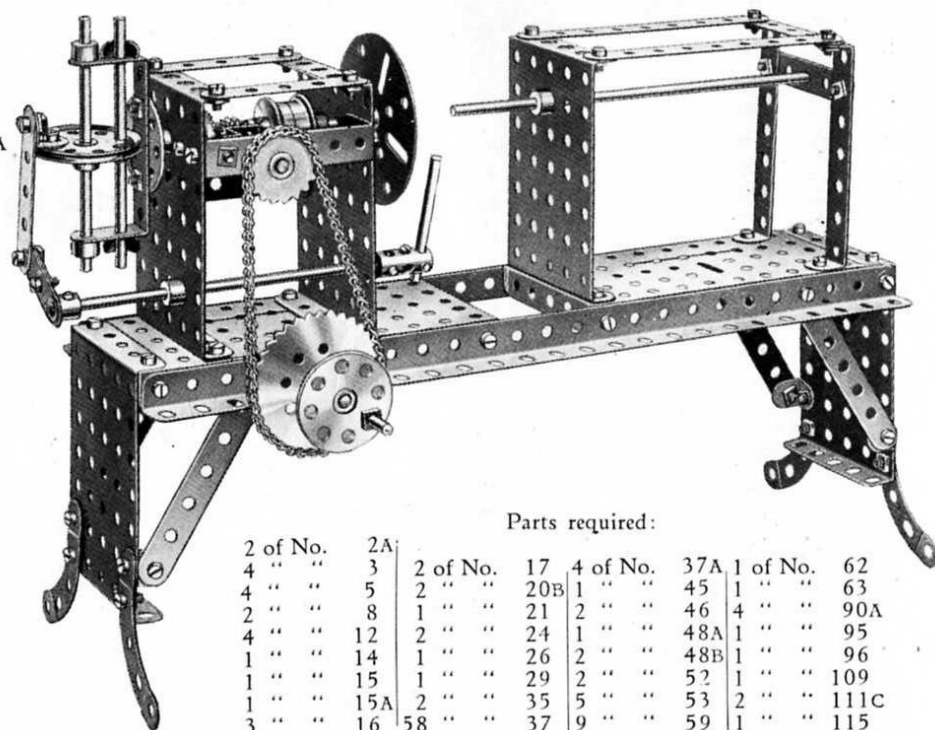
The elevation of the searchlight 1 is controlled by the hand wheel 2, the motion of which is transmitted by means of a  $\frac{1}{2}$ " Pinion and  $\frac{3}{4}$ " Contrate Wheel 3, and 1" Sprocket Wheel 4 to a 2" Sprocket Wheel 5. The latter is secured to a vertical Rod that is free to revolve the boss of a second 2" Sprocket Wheel 6 bolted to two  $2\frac{1}{2}$ "x $\frac{1}{2}$ " Double Angle Strips, which, in turn, are secured in the base of the rotating frame 7. This vertical Rod is journaled in a Double Bent Strip that is bolted beneath the Plate 8 to form an additional support, and it carries at its upper end a  $\frac{1}{2}$ " Pinion that engages with the  $1\frac{1}{2}$ " Contrate Wheel 9. The motion of the Contrate 9 is transmitted to the pivotal Rod of the searchlight by means of the Pulleys and belt 10. The searchlight is rotated by the second hand wheel 11, the drive from which is transmitted through Worm gearing to the vertical Rod 12, the upper end of which carries a 1" Sprocket Wheel 13, that engages with the 2" Sprocket Wheel 6.



#### Parts required:

10 of No.	2	2 of No.	96
1 " "	3	2 " "	115
4 " "	5	2 " "	126
2 " "	6A	2 " "	126A
6 " "	8		
2 " "	12		
2 " "	13		
1 " "	14		
3 " "	16		
2 " "	17		
1 " "	19B		
1 " "	21		
3 " "	22		
2 " "	24		
2 " "	26		
1 " "	27A		
1 " "	28		
1 " "	29		
1 " "	32		
86 " "	37		
7 " "	38		
1 " "	45		
9 " "	48A		
1 " "	48B		
2 " "	48D		
2 " "	52		
3 " "	53		
4 " "	59		
2 " "	63		
2 " "	95		

### Model No. 4.35 Elliptic Lathe



#### Parts required:

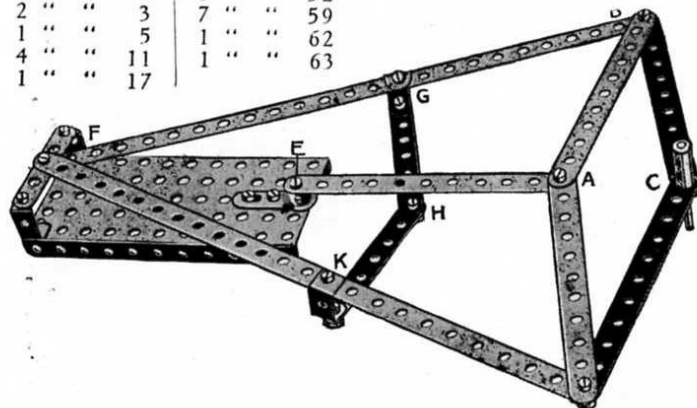
2 of No.	2A	2 of No.	17	4 of No.	37A	1 of No.	62
4 " "	3	2 " "	20B	1 " "	45	1 " "	63
4 " "	5	2 " "	21	2 " "	46	4 " "	90A
2 " "	8	1 " "	24	1 " "	48A	1 " "	95
4 " "	12	2 " "	26	2 " "	48B	1 " "	96
1 " "	14	1 " "	29	2 " "	52	1 " "	109
1 " "	15	2 " "	35	5 " "	53	2 " "	111C
1 " "	15A	58 " "	37	9 " "	59	1 " "	115
3 " "	16						

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

## Model No. 4.36 Geometrical Apparatus

Parts required:

2 of No.	1	16 of No.	37
5 " "	2	1 " "	52
2 " "	3	7 " "	59
1 " "	5	1 " "	62
4 " "	11	1 " "	63
1 " "	17		



This most ingenious model for transforming a circular movement into a rectilinear movement was designed by M. Pierre-Th. Dufour, who used it in his Thesis (presented to the Faculty of Science in Paris) to obtain his degree of Doctor of the University of Paris. He required an instrument which would transform a circular movement into a movement rigorously rectilinear and he states in his published work that he was able to do this "with the aid of Meccano parts, which permit of making experiments so easily in mechanisms of the most varied types."

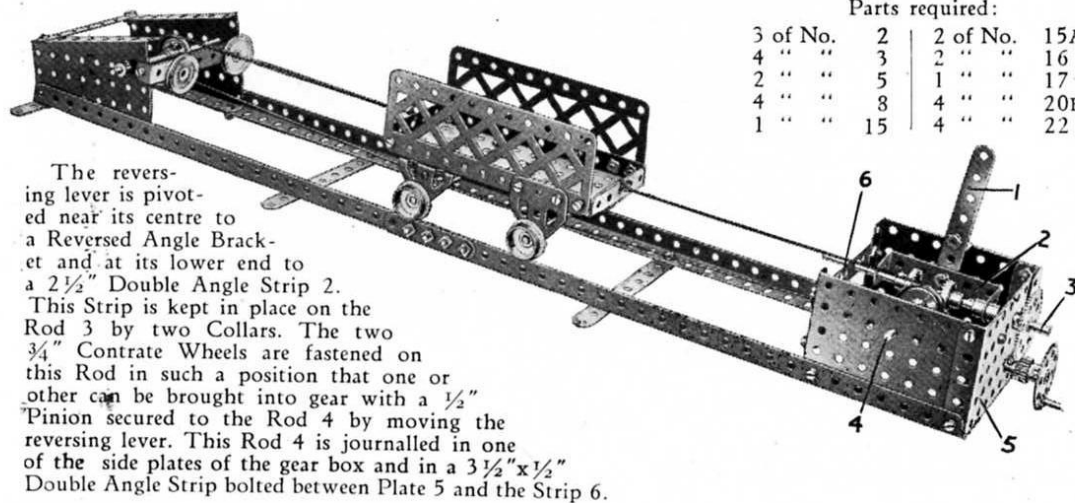
The point F is fixed, and is situated at a distance from the fixed point E, equal to AE, the two arms FB and FD being together equal to the four sides of the lozenge ABCD. The trajectory of the point C is then at right angles to EF. It will be found that whilst the point C is moving in a straight line at right angles to EF, the point A is describing a circle round the fixed point E.

Every Meccano Boy should make up this very interesting model and experiment with it.

## Model No. 4.38 Cable Railway

Parts required:

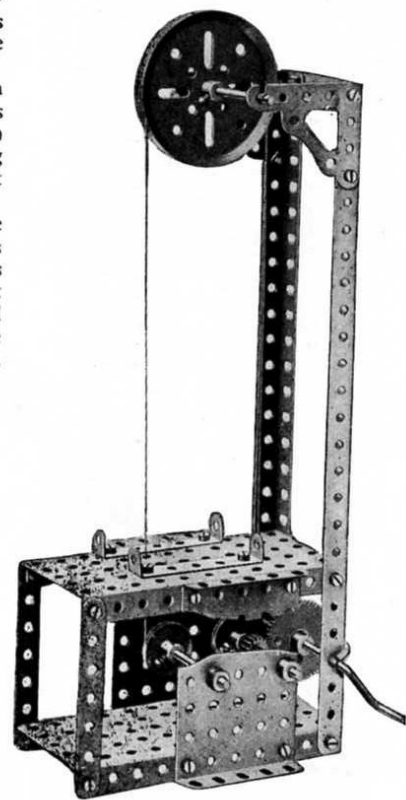
3 of No.	2	2 of No.	15A	1 of No.	24
4 " "	3	2 " "	16	2 " "	26
2 " "	5	1 " "	17	1 " "	27A
4 " "	8	4 " "	20B	2 " "	29
1 " "	15	4 " "	22	45 " "	37
				4 " "	37A
				3 " "	38
				1 " "	46
				2 " "	48A
				2 " "	48B
				1 " "	52
				2 " "	53
				2 " "	54
				6 " "	59
				24 " "	100
				4 " "	111C
				1 " "	115
				1 " "	125
				2 " "	126
				2 " "	126A



The reversing lever is pivoted near its centre to a Reversed Angle Bracket and at its lower end to a  $2\frac{1}{2}$ " Double Angle Strip 2.

This Strip is kept in place on the Rod 3 by two Collars. The two  $\frac{3}{4}$ " Contrate Wheels are fastened on this Rod in such a position that one or other can be brought into gear with a  $\frac{1}{2}$ " Pinion secured to the Rod 4 by moving the reversing lever. This Rod 4 is journaled in one of the side plates of the gear box and in a  $3\frac{1}{2}$ "x $\frac{1}{2}$ " Double Angle Strip bolted between Plate 5 and the Strip 6.

## Model No. 4.37 Band Saw



Parts required:

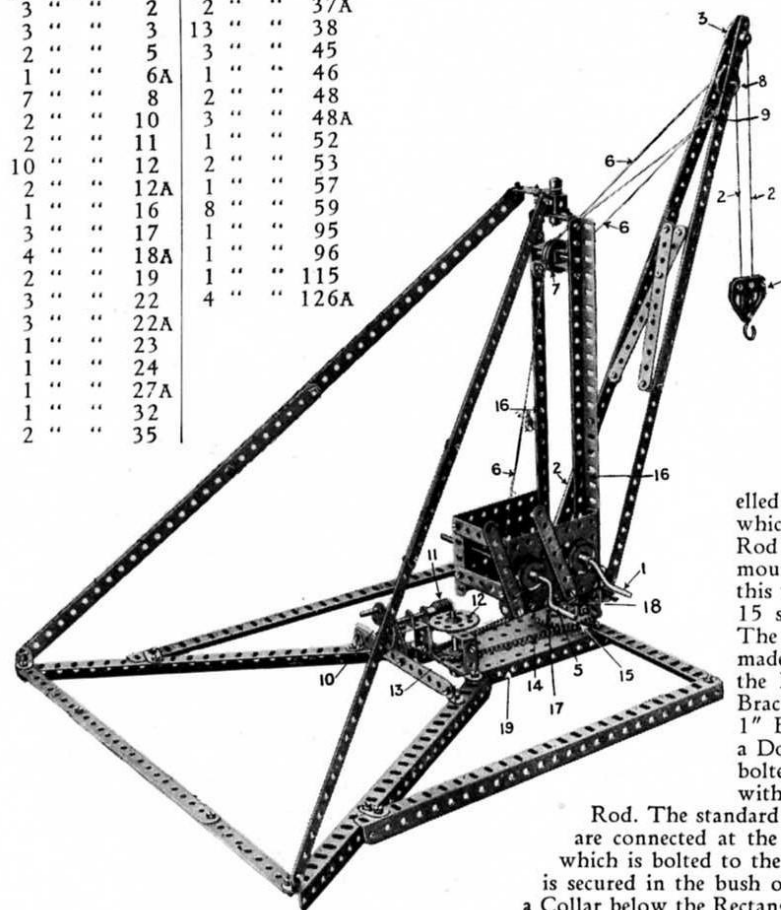
2 of No.	3	1 of No.	27A
1 " "	5	4 " "	35
2 " "	8	26 " "	37
3 " "	16	2 " "	48A
1 " "	19	2 " "	52
1 " "	19B	2 " "	53
2 " "	22	4 " "	59
1 " "	26	2 " "	108

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

## Model No. 4.39 Swivelling and Luffing Jib Crane

### Parts required:

10 of No.	1	80 of No.	37
3 " "	2	2 " "	37A
3 " "	3	13 " "	38
2 " "	5	3 " "	45
1 " "	6A	1 " "	46
7 " "	8	2 " "	48
2 " "	10	3 " "	48A
2 " "	11	1 " "	52
10 " "	12	2 " "	53
2 " "	12A	1 " "	57
1 " "	16	8 " "	59
3 " "	17	1 " "	95
4 " "	18A	1 " "	96
2 " "	19	1 " "	115
3 " "	22	4 " "	126A
3 " "	22A		
1 " "	23		
1 " "	24		
1 " "	27A		
1 " "	32		
2 " "	35		



In this model three separate actions are provided, for raising the load, raising the jib, and swivelling the jib. The load is raised by means of a Crank Handle 1 on which the cord 2 is wound and passes over the 1" Pulley 3, thence round the  $\frac{1}{2}$ " Pulley in the block 4 (spacing Washers being used to give clearance to the  $\frac{1}{2}$ " Pulley), the end of the cord 2 being made fast to the top of the jib. The jib itself is raised or lowered by the operation of the Crank Handle 5 on the Rod of which a cord is wound, and passes over one of two Pulleys 7 to and round another 1" Pulley 8 in the jib whence it returns to and passes round the other Pulley 7, being finally made fast to the Double Bracket 9 bolted to the jib.

As the handle 5 is turned the cord 6 is wound round the Pulleys and the angle of the jib varied. The jib is swivelled by the hand-wheel 10, a Worm 11 on which engages a 57-toothed Wheel 12 on the Rod of which a 1" Sprocket Wheel 13 is mounted. A Sprocket Chain 14 passes round this wheel 13 and round a 2" Sprocket Wheel 15 secured to the standard 16 of the crane. The bearing for the Rod of the Worm 11 is made by bolting a 1" Angle Bracket 20 to the Rectangular Plate 19, and to the Angle Bracket 20 is secured a  $1\frac{1}{2}$ " Strip 21 and a 1" Bracket 22. To the Bracket 22 is bolted a Double Bracket 23. A Flat Trunnion 24 is bolted to the  $5\frac{1}{2}$ " Strip 25 which forms with the Bracket 23 the front bearing for the

Rod. The standard is built up of 2  $12\frac{1}{2}$ " Girders 16 which are connected at the base by a  $1\frac{1}{2}$ " Double Angle Strip 17 which is bolted to the 2" Sprocket Wheel 15. The 1" Rod 18 is secured in the bush of the Sprocket Wheel 15 and fitted with a Collar below the Rectangular Plate 19, Fig. 4.39b.

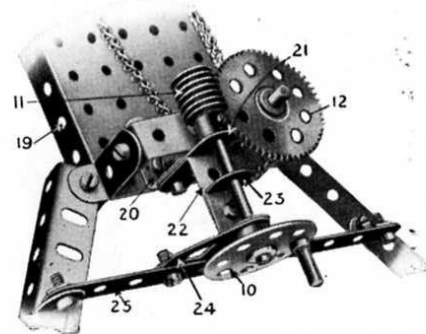


Fig. 4.39a

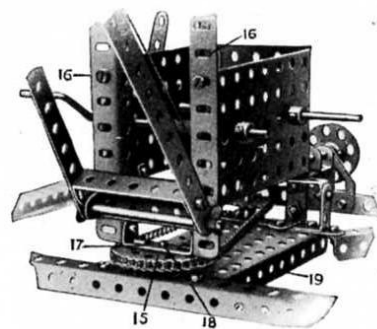
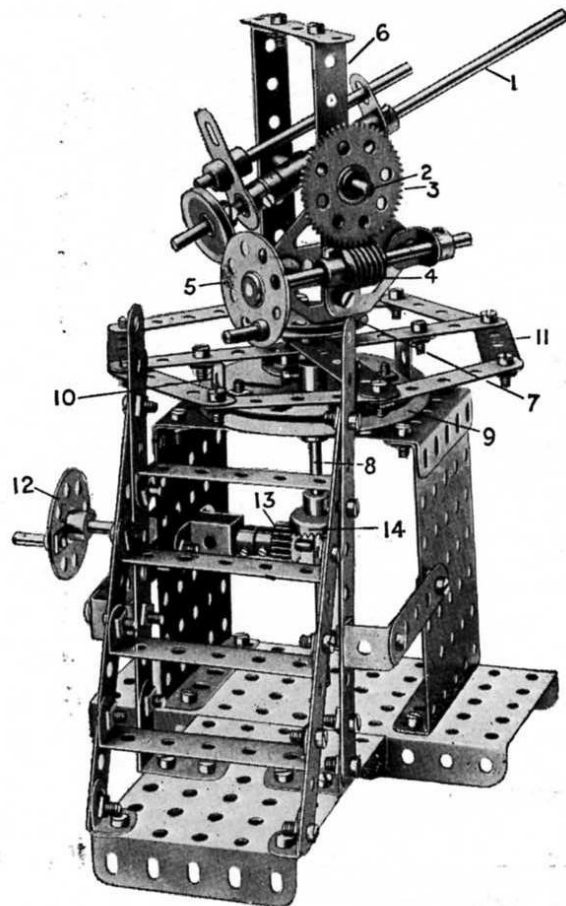


Fig. 4.39b



## Model No. 4.40 Anti-Aircraft Gun

The gun represented by the Rod 1 is pivoted upon a transverse Rod 2 which passes through a Coupling on the Rod 1. A 57-toothed Wheel 3 on the pivot Rod 2 is engaged by a Worm 4 operated from the hand-wheel 5. By turning this Wheel 5 the gun is lifted or lowered. The two vertical Strips forming the framework for the Pivot Rod 2 are bolted to a 1½" Pulley 7 which is secured on a vertical Rod 8. A 3" Pulley Wheel 9 is also bolted to a Rod 8 and from the Pulley Wheel is carried by Reversed Angle Brackets 10 to a framework 11. The Rod 8 with the framework is rotated from the hand-wheel 12 a Pinion 13 on the spindle of which engages a ¼" Contrate Wheel 14 on the Rod 8. By turning the Wheel 12 the gun is swivelled round.



### Parts required:

6 of No. 2	1 of No. 29
11 " " 5	1 " " 32
1 " " 10	54 " " 37
2 " " 11	12 " " 38
4 " " 12	2 " " 45
2 " " 12A	4 " " 48A
1 " " 15	2 " " 48B
1 " " 15A	1 " " 52
4 " " 16	4 " " 53
1 " " 17	8 " " 59
1 " " 19B	1 " " 62
1 " " 21	2 " " 63
2 " " 22	2 " " 115
2 " " 24	4 " " 125
1 " " 26	2 " " 126A
1 " " 27A	

2 of No. 35	2 of No. 90A
126 " " 37	2 " " 99
6 " " 37A	6 " " 100
1 " " 38	2 " " 108
1 " " 46	2 " " 111
5 " " 48A	4 " " 111C
1 " " 48D	1 " " 116
2 " " 52	2 " " 126A
1 " " 53	1 " " 160
6 " " 59	

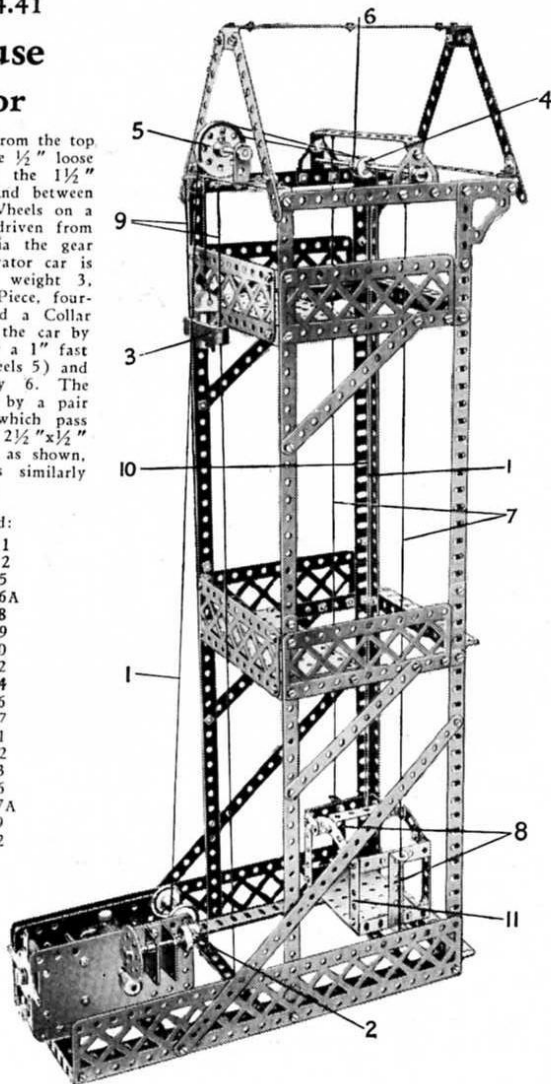
## Model No. 4.41 Warehouse Elevator

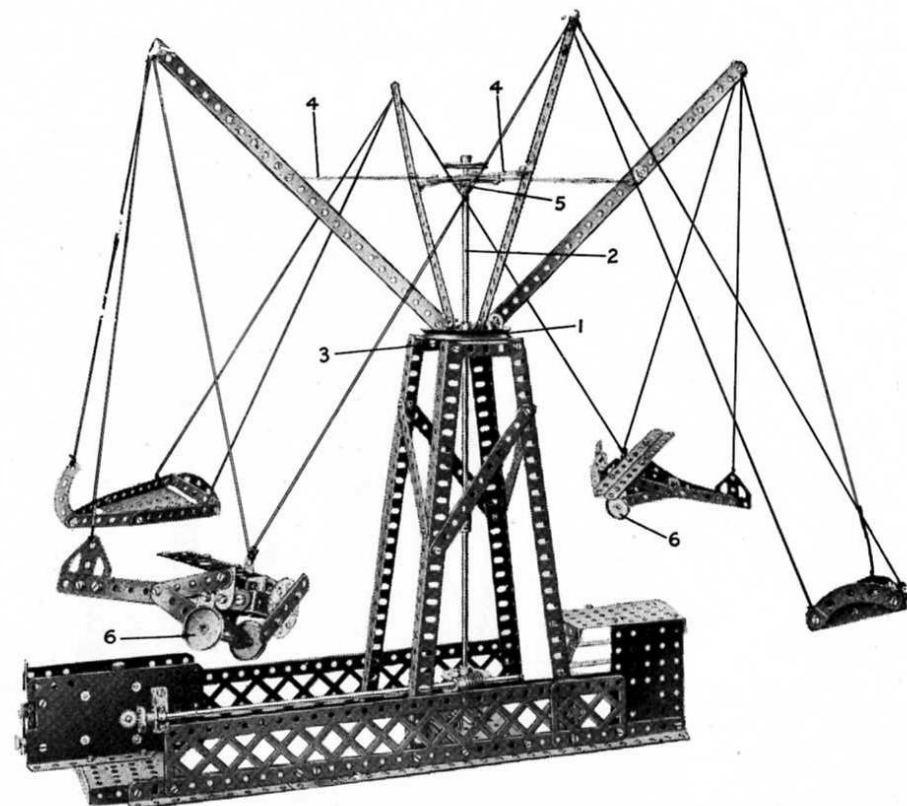
The cord 1 passes from the top of the car 11 over the ½" loose Pulley Wheel 4 and the 1½" Pulley 5, and is wound between two 1" fast Pulley Wheels on a 3" Rod 2, which is driven from the Electric Motor via the gear train shown. The elevator car is counterbalanced by a weight 3, consisting of a Fork Piece, fourteen 2½" Strips, and a Collar which is connected to the car by a cord 10 passing over a 1" fast Pulley (behind the Wheels 5) and the ½" loose Pulley 6. The elevator car is guided by a pair of vertical cords 7, which pass through holes in the 2½"x½" Double Angle Strips 8 as shown, and the weight 3 is similarly guided by the cords 9.

### Parts required:

6 of No. 1	1
19 " " 2	2
18 " " 5	5
2 " " 6A	6A
6 " " 8	8
4 " " 9	9
4 " " 10	10
16 " " 12	12
1 " " 14	14
2 " " 16	16
2 " " 17	17
1 " " 21	21
3 " " 22	22
2 " " 23	23
1 " " 26	26
1 " " 27A	27A
29 " " 29	29
1 " " 32	32

2 of No. 90A	2 of No. 90A
2 " " 99	2 " " 99
6 " " 100	6 " " 100
2 " " 108	2 " " 108
2 " " 111	2 " " 111
4 " " 111C	4 " " 111C
1 " " 116	1 " " 116
2 " " 126A	2 " " 126A
1 " " 160	1 " " 160
Electric Motor	





## Model No. 4.42 Flying Machine

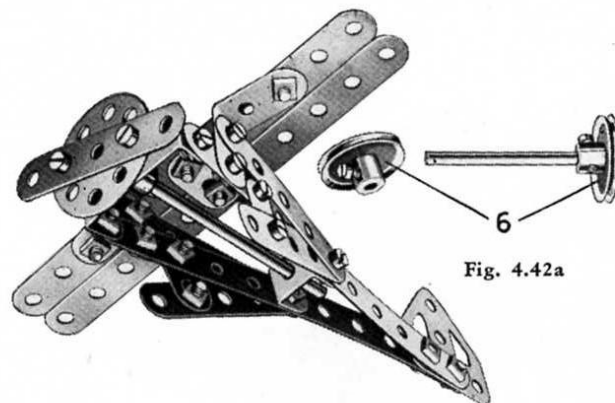


Fig. 4.42a

In Fig. 4.42 the model is shown equipped with a Meccano Electric Motor. Fig. 4.42b, which shows the base of the model only, indicates an alternative arrangement by which the model may be operated by hand if a Motor is not available. The revolving portion of the model consists of four  $12\frac{1}{2}$ " Strips bolted to the 3" Pulley Wheel 1 (Fig. 4.42), which is secured to the main vertical shaft 2 and rests directly on the  $2\frac{1}{2}$ "x $2\frac{1}{2}$ " Flanged Plate 3. The  $12\frac{1}{2}$ " Strips are supported by two further  $12\frac{1}{2}$ " Strips 4, crossed and bolted to a Face Plate 5 secured to the Rod 2. One of the aeroplanes attached to the model is shown in detail in Fig. 4.42a. The Wheels 6 are shown removed from their bearings.

### Parts required:

6 of No.	1	4 of No.	12A	1 of No.	27A	2 of No.	54
16 "	2	2 "	13	1 "	29	3 "	59
2 "	2A	1 "	14	1 "	32	1 "	63
11 "	5	2 "	16	122 "	37	4 "	90A
1 "	6A	2 "	17	2 "	37A	2 "	98
6 "	8	1 "	19B	1 "	46	2 "	99
3 "	9	1 "	21	2 "	48	1 "	109
6 "	10	4 "	22	6 "	48A	2 "	111C
3 "	11	2 "	24	2 "	52	2 "	126
2 "	12	1 "	26	3 "	53	2 "	126A

Electric Motor

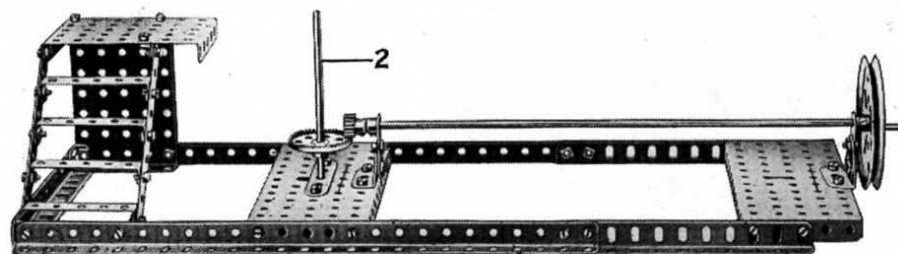
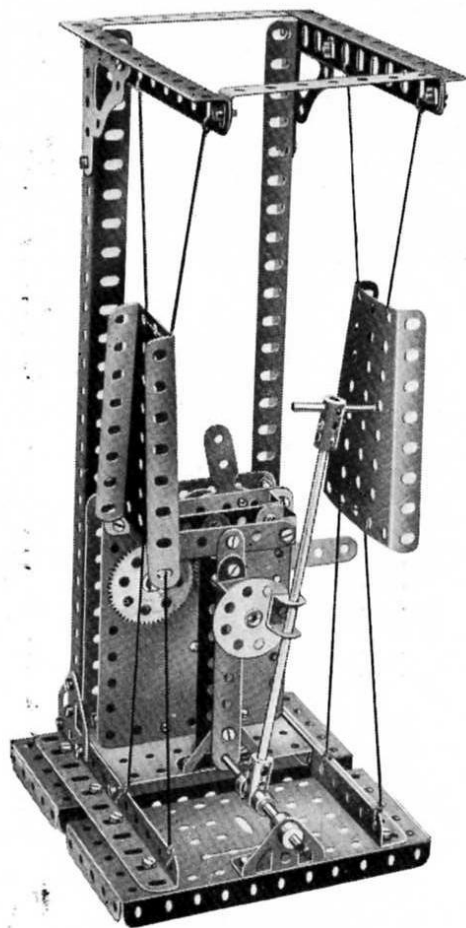


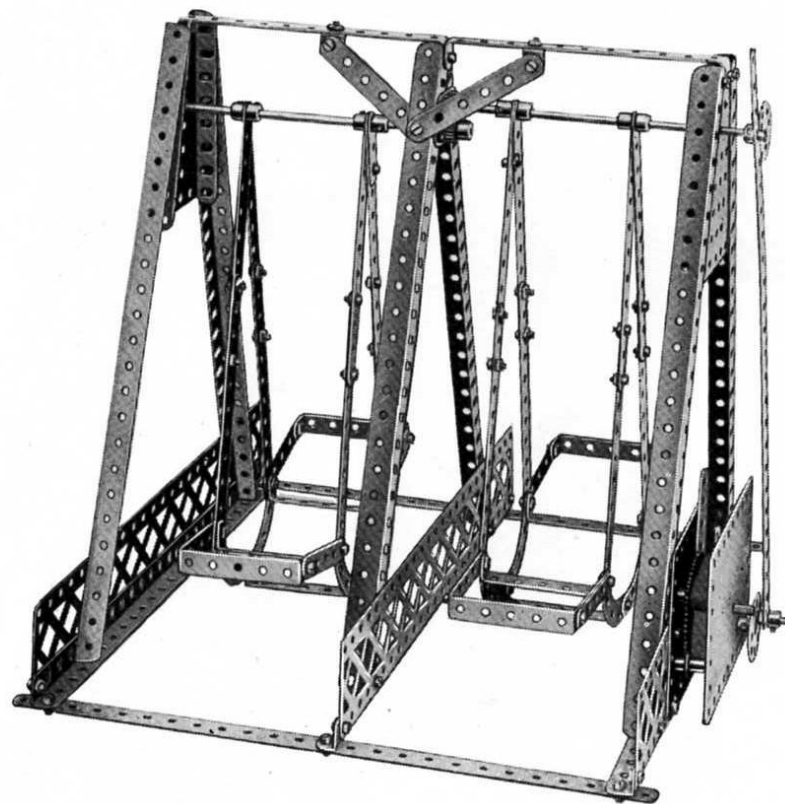
Fig. 4.42b

Model No. 4.43 **Automatic Gong**

## Parts required:

2 of No.	2A
2 " "	5
2 " "	8
4 " "	9
3 " "	11
1 " "	12
1 " "	14
1 " "	16
1 " "	17
1 " "	18A
1 " "	24
1 " "	26
1 " "	27A
45 " "	37
2 " "	37A
2 " "	38
1 " "	45
2 " "	48B
2 " "	52
1 " "	53
2 " "	54
4 " "	59
2 " "	63
2 " "	108
1 " "	111C
2 " "	125
2 " "	126
2 " "	126A

Clockwork  
Motor  
(Not included in  
Outfit)

Model No. 4.44 **Alternating Swing**

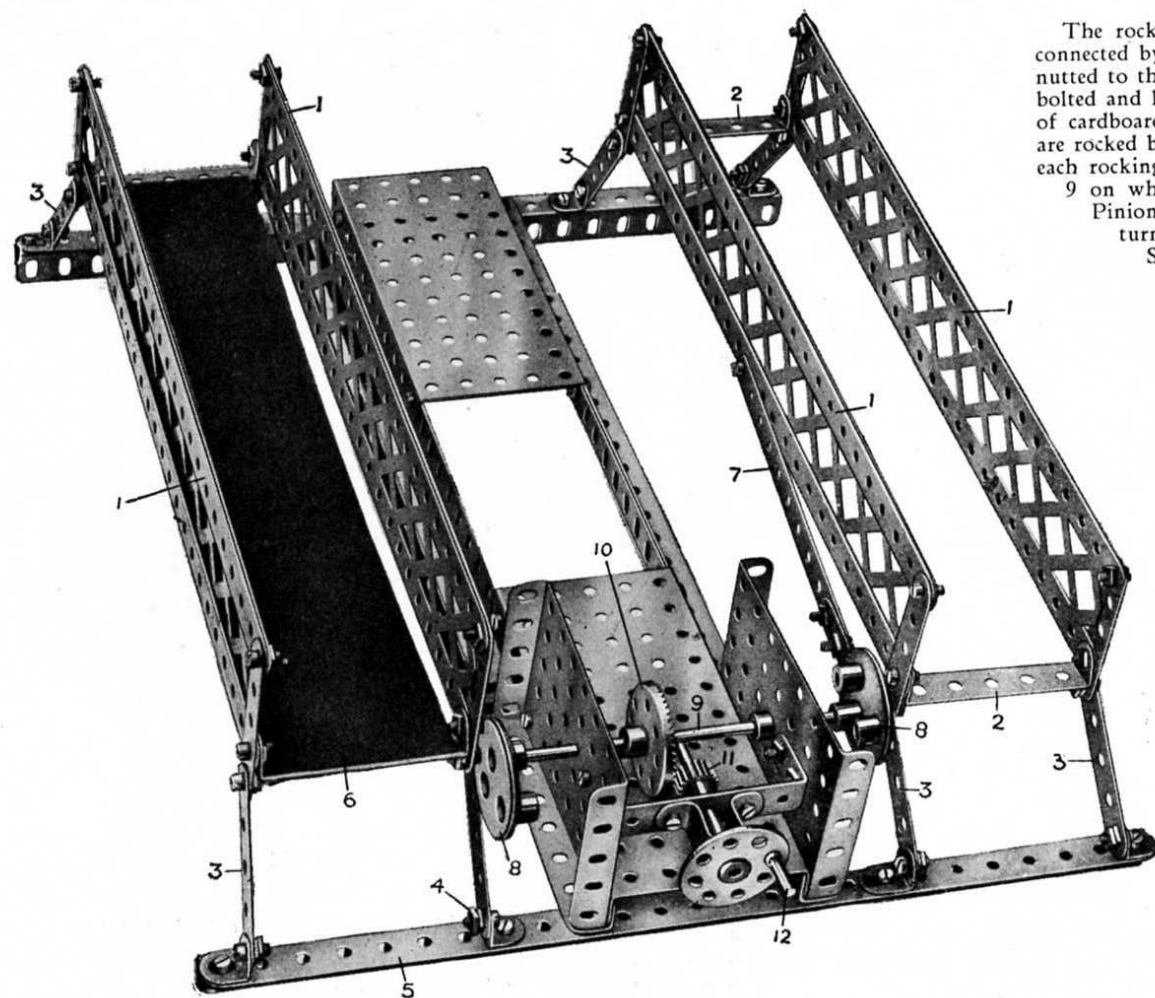
## Parts required:

3 of No.	1	2 of No.	14	2 of No.	54
8 " "	2	2 " "	24	9 " "	59
2 " "	4	2 " "	26	2 " "	62
9 " "	5	72 " "	37	8 " "	90A
2 " "	6A	3 " "	37A	3 " "	99
8 " "	8	10 " "	48A	1 " "	111C
4 " "	12	2 " "	48D	1 " "	115

Clockwork  
Motor  
(Not included in  
Outfit)

This Model can be built with MECCANO Outfit No. 4x (or No. 3x and No. 3A)

## Model No. 4.45 Cake Walk



The rocking platforms are built up of Braced Girders 1 connected by the end Strips 2 and pivotally bolted and lock-nutted to the Strips 3 forming rocking links. These latter are bolted and lock-nutted at 4 to the Angle Girders 5. Strips 6 of cardboard are secured to the end Strips 2. The platforms are rocked by means of Strips 7 one of which is connected to each rocking platform and to Eccentrics 8 fixed on the Rod 9 on which is secured a Contrate Wheel 10 driven by a Pinion 11 from the handle 12. As the handle 12 is turned the platforms are rocked to and fro on the Strips 3. The Eccentrics 8 should be so arranged that the platforms rock in opposite directions.

### Parts required:

8 of No	1	66 of No.	37
2 " "	2	1 " "	38
16 " "	5	1 " "	45
6 " "	8	1 " "	46
8 " "	12	4 " "	48A
1 " "	15	2 " "	52
1 " "	17	2 " "	53
1 " "	24	2 " "	59
1 " "	26	4 " "	99
1 " "	28	1 " "	115
		2 " "	130



# Model No. 4.46 Elevated Jib Crane

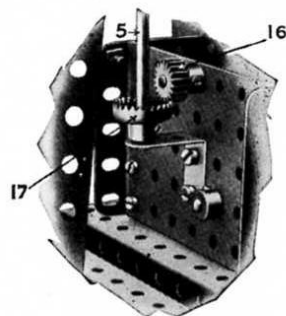


Fig. 4.46a

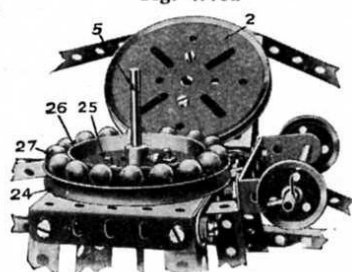


Fig. 4.46b

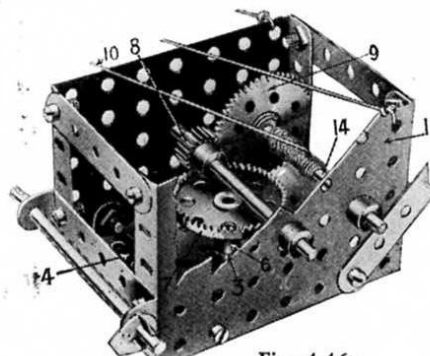


Fig. 4.46c

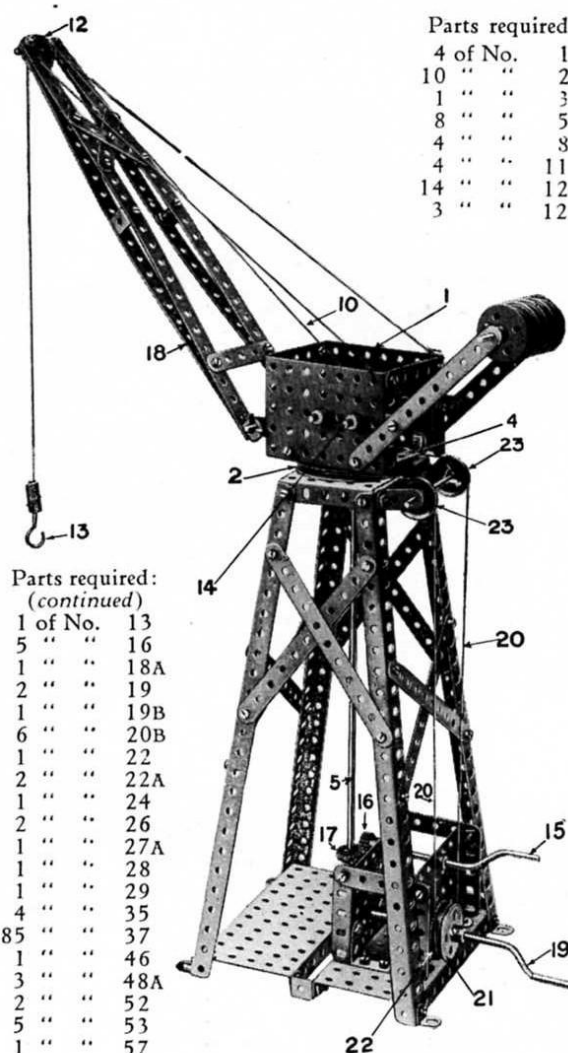
The gear-box 1 is secured to a 3" Pulley Wheel 2 (the boss 3 of which stands up), by means of two  $2\frac{1}{2}$ "x $\frac{1}{2}$ " Double Angle Strips 4. The  $11\frac{1}{2}$ " Rod 5 passes up through the boss 3, a Collar 6 being positioned on top of the boss within, the contrate wheel 7 being secured to the top of the Rod 5. A  $\frac{1}{2}$ " Pinion 8 engages the Contrate Wheel 7 and also a 57-toothed Wheel 9 on the Rod 14 on which latter the hoisting cord 10 is wound, passing over the 1" Pulley 12 to the Hook 13. The Rod 5 is actuated from the Crank Handle 15 by the Pinion 16 engaging a  $\frac{3}{4}$ " Contrate Wheel 17 and through the Gear Wheels 7, 8, and 9, and operates the cord 10 to raise or lower the load. The jib 18 is swivelled from the Crank Handle 19, a continuous cord 20 being wound twice round the Flange Wheel 21, against which is butted a Bush Wheel 22 to make it into a Double Flange Pulley. A cord 20 passes round 1" guide Pulleys 23 round the 3" Pulley Wheel 2. By turning the handle 19 the jib is swivelled.

*Alternative Construction.* In order to make the jib swivel more freely, a ball-race, Fig. 4.46b, may be fitted. This is made by bolting to the top of the frame a 3" Pulley Wheel 24 by bolts 25 which also secure in the Pulley Wheel 24 a Wheel Flange 26. This provides a circular groove for the reception of the ball bearings 27. The Pulley Wheel 2 which is bolted to the gear-box 1 is then placed over the Rod 5 and rests on the ball bearings 27 to form a race.

(N.B.—The Wheel Flange and the balls for the bearing are not provided in this Outfit but can be bought separately. See parts list page).

## Parts required:

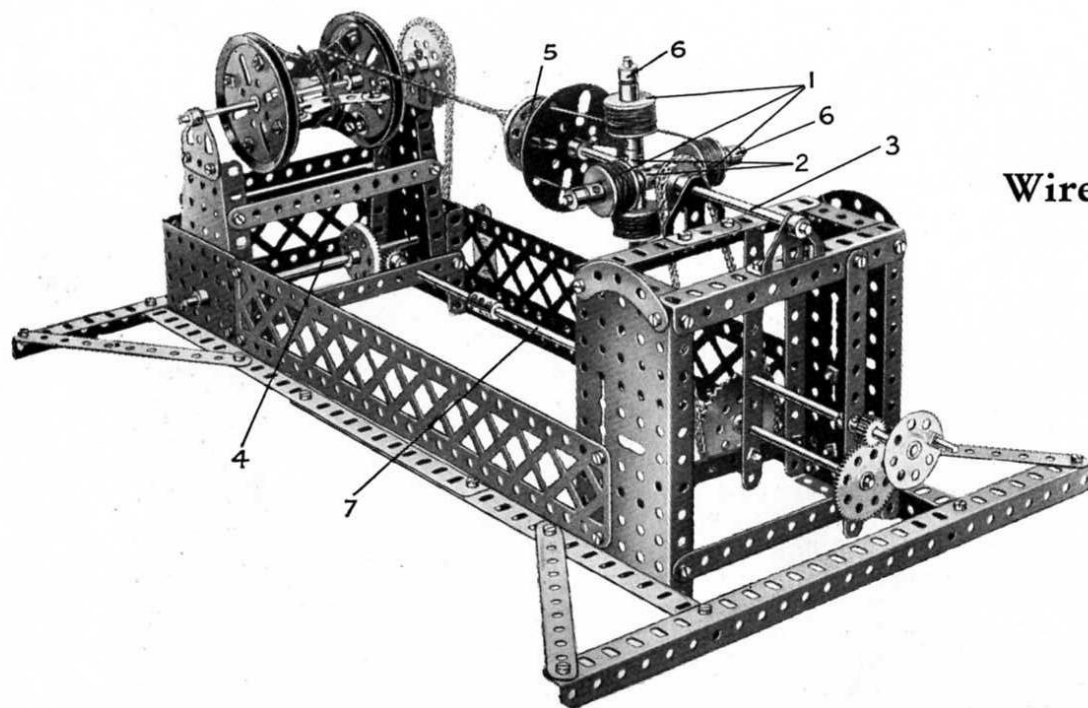
4 of No.	1
10 " "	2
1 " "	3
8 " "	5
4 " "	8
4 " "	11
14 " "	12
3 " "	12A



## Parts required: (continued)

1 of No.	13
5 " "	16
1 " "	18A
2 " "	19
1 " "	19B
6 " "	20B
1 " "	22
2 " "	22A
1 " "	24
2 " "	26
1 " "	27A
1 " "	28
1 " "	29
4 " "	35
85 " "	37
1 " "	46
3 " "	48A
2 " "	52
5 " "	53
1 " "	57
6 " "	59
1 " "	63

This Model can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)



Model No. 4.47

## Wire Rope-Making Machine

The wire from which the rope is to be made is wound on four bobbins 1, each consisting of two  $\frac{3}{4}$ " Flanged Wheels butted together. The bobbins are free to rotate on 2" Rods secured in the ends of two Couplings 2 that are made fast to the 8" Rod 3 at right angles to each other. The wires from the bobbins pass through holes in a Face Plate, a  $1\frac{1}{2}$ " Pulley Wheel 5, and a Bush Wheel secured to the Rod 3 close to the Pulley Wheel 5, and are tied together on a drum at the opposite end of the machine. The drum is mounted on a  $6\frac{1}{2}$ " Rod that is connected by Sprocket Chain to a 1" Sprocket Wheel on the Rod 4, which is revolved slowly from the hand wheel through the gearing shown.

The Rod 3, together with the bobbins, Face Plate, Pulley Wheel 5, and the Bush Wheel, are rotated from the main driving shaft 7 by means of 2" and 1" Sprocket Wheels. The wires are thus twisted together between the Pulley Wheel 5 and the drum, and are wound on the latter in the form of a cable. In order to prevent the wire from unwinding too rapidly, Washers are placed on the 2" Rods between the Couplings and the bosses of the Flanged Wheels 1, and the Collars 6 are pressed hard against the wheels before being secured to the 2" Rods.

A considerable amount of tension is essential to the production of good wire rope, and for this reason the  $1\frac{1}{2}$ " Pulley Wheel 5 and the Bush Wheel behind it are secured close together on the Rod 3 in such a manner that the friction generated by the wires in passing through the holes in the wheels keeps the cable taut while it is being twisted. String or thin wire may be used in the model.

### Parts required:

11 of No.	2	8 of No.	20B	4 of No.	90A
6 " "	8	1 " "	21	1 " "	94
2 " "	9	1 " "	24	2 " "	95
8 " "	12	2 " "	26	2 " "	96
1 " "	13	1 " "	27A	2 " "	99
1 " "	13A	1 " "	28	1 " "	100
2 " "	14	84 " "	37	1 " "	109
1 " "	15A	2 " "	52	1 " "	115
1 " "	16	2 " "	54	2 " "	126
4 " "	17	8 " "	59	2 " "	126A
2 " "	19B	3 " "	63		

This Model can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)

## Model No. 4.48 Submarine

### Parts required:

8 of No.	1	1 of No.	15A
7 " "	2	2 " "	16
6 " "	4	2 " "	17
2 " "	5	4 " "	20A
2 " "	9	1 " "	21
4 " "	10	3 " "	22
11 " "	12	2 " "	22A
1 " "	13A	2 " "	24
1 " "	14	1 " "	32
2 " "	15		

Fig. 4.48a is a sectional view of the conning-tower, and shows the helm. The cord 1, after passing over the 1" fast Pulley 7, is carried round a pair of 1" loose Pulley Wheels on the 5" Rod 2 (see general view), and is given a complete turn round the 1" fixed Pulley Wheel 3 secured to the rudder head. The rudder consists of two 2½" Flat Girders, which are bolted by means of Angle Brackets to a pair of Cranks mounted on the Rod 4. The short Rod carrying the Pulley 7 is journaled in a 2½"x½" Double Angle Strip 8, and is held in place by a Collar and set-screw on its end. Washers should be placed between the Pulley 7 and Strip 8.

The 5½"x2½" Flanged Plates that form the deck of the submarine are bolted together by means of 5½" Angle Girders, which, in turn, are bolted to 3½"x½" Double Angle Strips secured transversely in the hull of the vessel. The hull itself is strengthened by vertical 3" Strips 5. The sides of the conning-tower are represented by two 3½"x2½" Flanged Plates, the forward part being composed of a 2½" small radius Curved Strip and five 2½"x½" Double Angle Strips. The periscope consists of a Coupling and a 5" Rod, which is supported in a further 2½"x½" Double Angle Strip 6.

The vertical Rod supporting the quick-firing gun is free to turn in a Bush Wheel bolted to the deck. Two Collars should be placed on the Rod, one on each side of the Bush Wheel, to maintain the gun in position. The model is arranged to travel on two pairs of ¾" Flanged Wheels secured to 3½" Axle Rods.

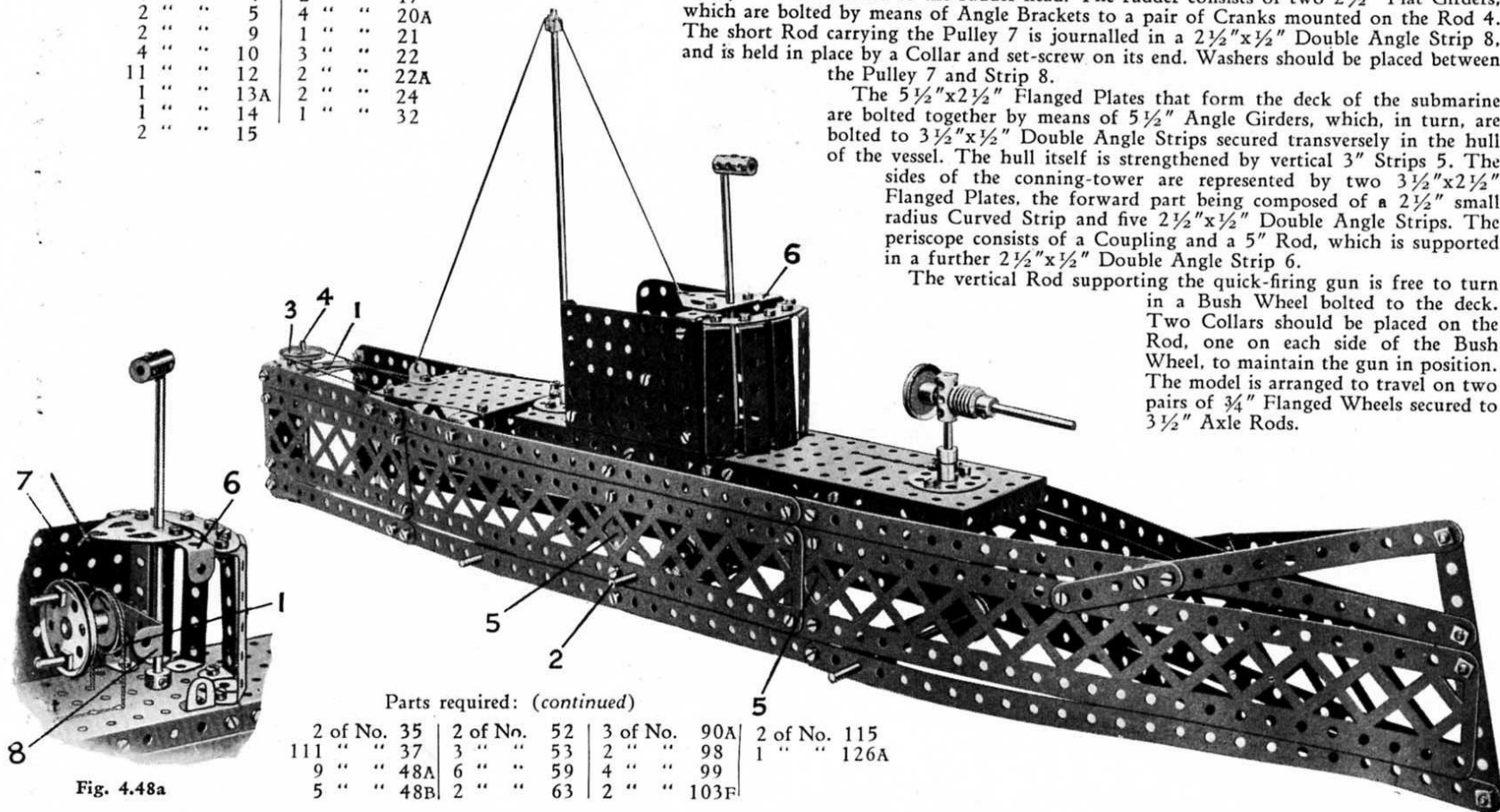


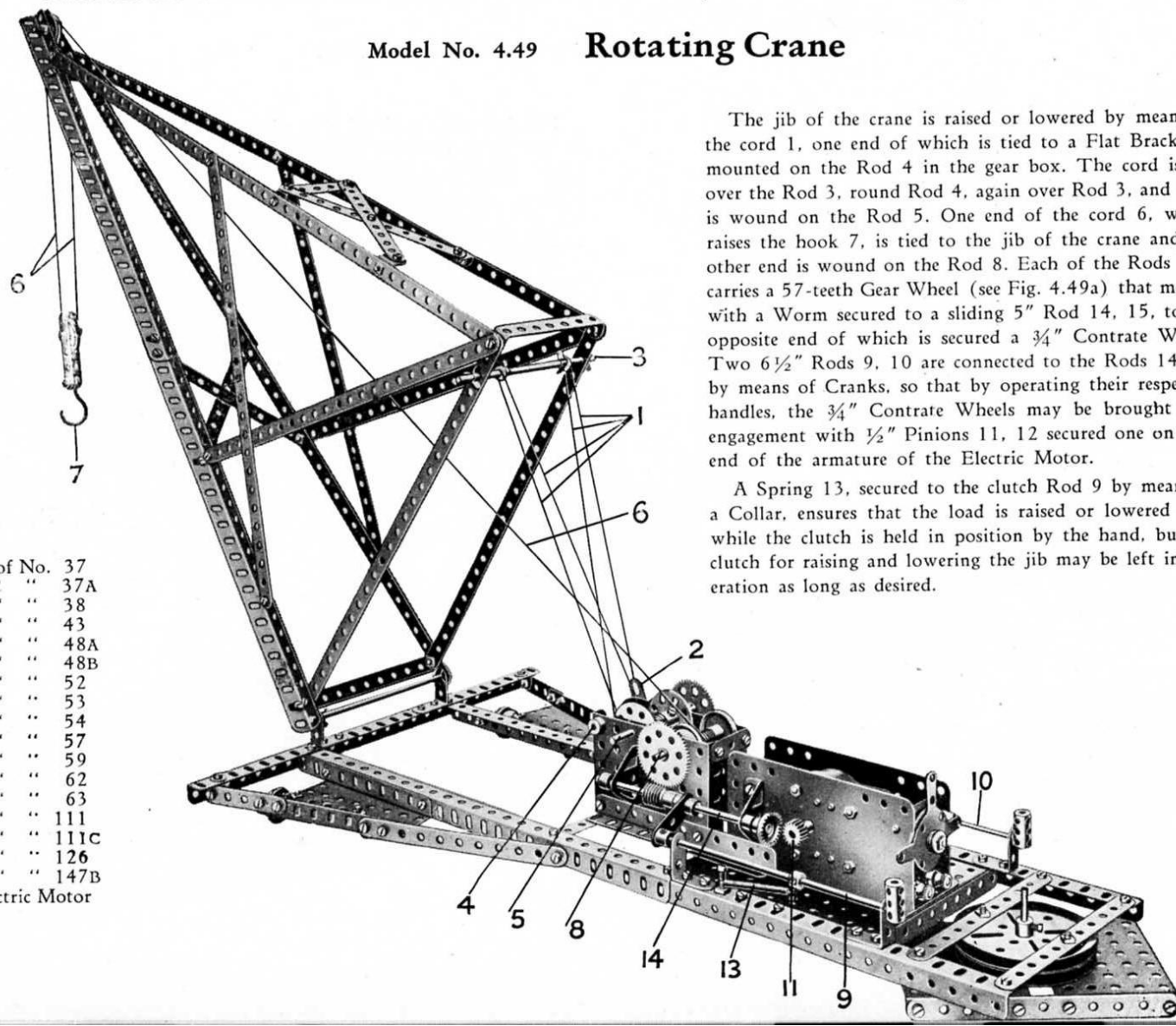
Fig. 4.48a

### Parts required: (continued)

2 of No.	35	2 of No.	52	3 of No.	90A	2 of No.	115
11 " "	37	3 " "	53	2 " "	98	1 " "	126A
9 " "	48A	6 " "	59	4 " "	99		
5 " "	48B	2 " "	63	2 " "	103F		

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

## Model No. 4.49 Rotating Crane



### Parts required:

10 of No.	1	
12 " "	2	
5 " "	5	
1 " "	6A	
9 " "	8	
2 " "	9	
1 " "	10	107 of No. 37
6 " "	12	6 " " 37A
6 " "	12A	10 " " 38
2 " "	14	1 " " 43
4 " "	15	2 " " 48A
2 " "	15A	1 " " 48B
2 " "	16	2 " " 52
2 " "	17	4 " " 53
2 " "	19B	2 " " 54
2 " "	20B	1 " " 57
2 " "	22	10 " " 59
2 " "	22A	2 " " 62
2 " "	24	2 " " 63
2 " "	26	2 " " 111
2 " "	27A	4 " " 111C
2 " "	29	4 " " 126
2 " "	32	7 " " 147B
8 " "	35	Electric Motor

The jib of the crane is raised or lowered by means of the cord 1, one end of which is tied to a Flat Bracket 2 mounted on the Rod 4 in the gear box. The cord is led over the Rod 3, round Rod 4, again over Rod 3, and then is wound on the Rod 5. One end of the cord 6, which raises the hook 7, is tied to the jib of the crane and the other end is wound on the Rod 8. Each of the Rods 5, 8 carries a 57-teeth Gear Wheel (see Fig. 4.49a) that meshes with a Worm secured to a sliding 5" Rod 14, 15, to the opposite end of which is secured a  $\frac{3}{4}$ " Contrate Wheel. Two  $6\frac{1}{2}$ " Rods 9, 10 are connected to the Rods 14, 15 by means of Cranks, so that by operating their respective handles, the  $\frac{3}{4}$ " Contrate Wheels may be brought into engagement with  $\frac{1}{2}$ " Pinions 11, 12 secured one on each end of the armature of the Electric Motor.

A Spring 13, secured to the clutch Rod 9 by means of a Collar, ensures that the load is raised or lowered only while the clutch is held in position by the hand, but the clutch for raising and lowering the jib may be left in operation as long as desired.



# Model No. 4.49 Rotating Crane

(Continued)

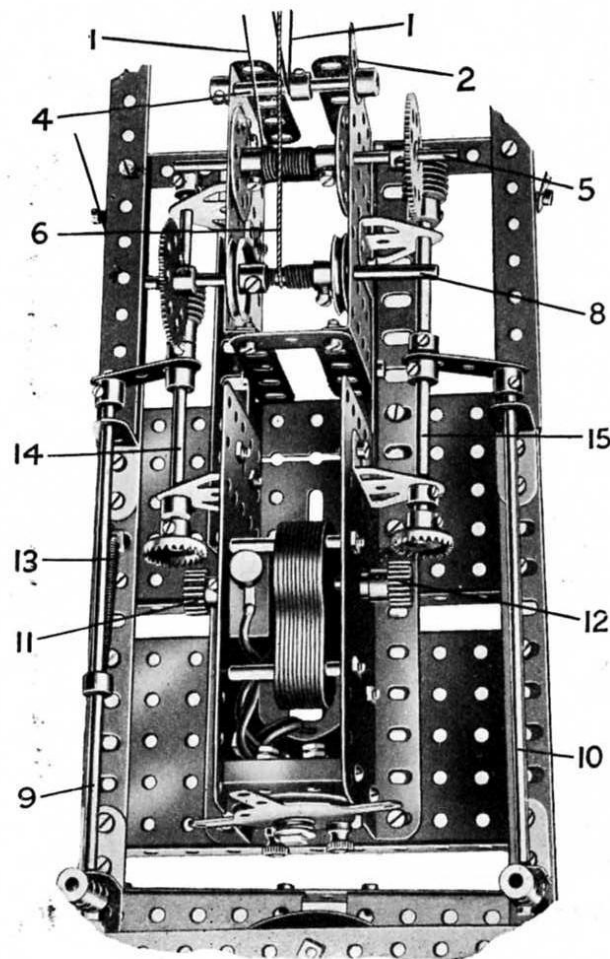


Fig. 4.49a

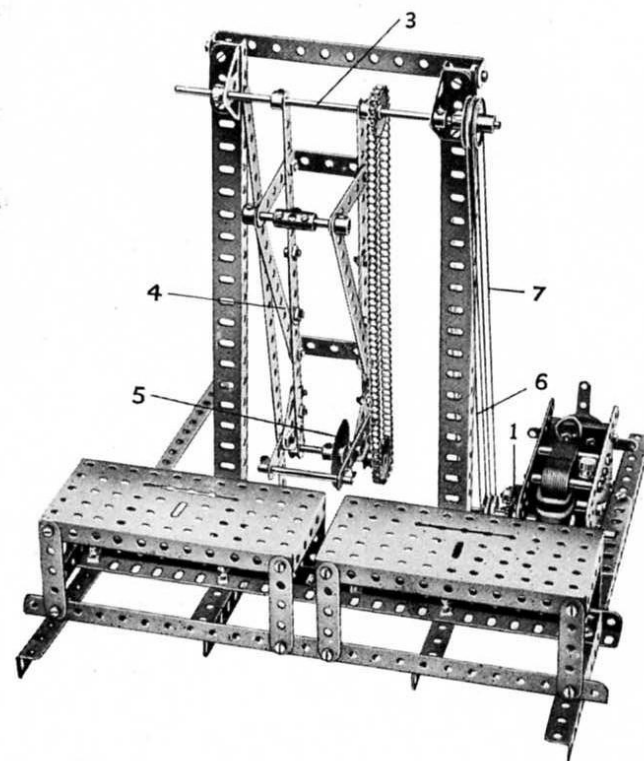
# Model No. 4.50 Swinging Saw

A  $\frac{1}{2}$ " Pinion secured to the armature spindle of the Electric Motor engages with a 57-teeth Gear Wheel 1, the shaft of which carries two 1" Pulleys that transmit the drive by belts to the operating Rod 3. Two driving belts 6 and 7 are used side by side to obtain a more positive grip. The framework 4, carrying the Circular Saw 5, is free to swing about the Rod 3.

## Parts required:

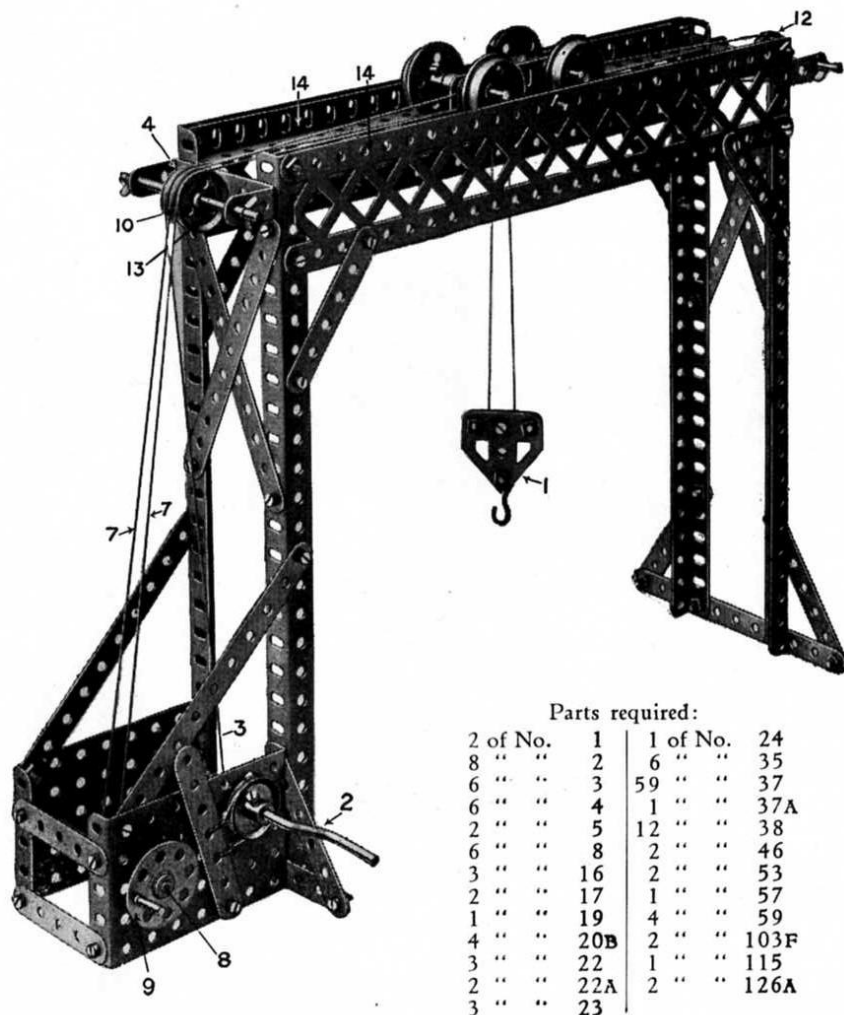
2 of No.	1
6 " "	2
12 " "	5
8 " "	8
2 " "	9
1 " "	14
1 " "	16
3 " "	17
4 " "	22
1 " "	26
1 " "	27A
2 " "	35
57 " "	37
2 " "	48
2 " "	48A
1 " "	48D
2 " "	52
2 " "	53
7 " "	59
1 " "	63
2 " "	96
2 " "	126
2 " "	126A
1 " "	159

Electric Motor



This Model can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)

## Model No. 4.51 Gantry



### Parts required:

2 of No.	1	1 of No.	24
8 " "	2	6 " "	35
6 " "	3	59 " "	37
6 " "	4	1 " "	37A
2 " "	5	12 " "	38
6 " "	8	2 " "	46
3 " "	16	2 " "	53
2 " "	17	1 " "	57
1 " "	19	4 " "	59
4 " "	20B	2 " "	103F
3 " "	22	1 " "	115
2 " "	22A	2 " "	126A
3 " "	23		

The Pulley 1 is capable of being hoisted to raise the load, or traversed. In order to raise the load the Crank Handle 2 is operated, which winds the cord 3 passing over the rear Pulley Wheel 4 round the  $\frac{1}{2}$ " Pulley 5 and a corresponding Pulley in the block, thence round another  $\frac{1}{2}$ " Pulley 6 and is made fast at the end of the gantry. For traversing, a continuous cord 7 is wound several turns on the  $3\frac{1}{2}$ " Rod 8 to which is secured a hand wheel 9. The cord passes over the Pulley Wheel 10 and is secured to one of the side Plates 11, and continues round the Pulley 12 returning to and passing over the nearest Pulley Wheel 13 back to the Rod 8. Consequently by turning the hand wheel 8 in one or other direction, the carriage is traversed to and fro along the top Angle Girders 14, which form the travelling rails. The construction of the travelling carriage is shown in Fig. 4.51a, three Washers 15 being placed on each of the outer bolts, passed through the two Plates 11; and  $\frac{1}{2}$ " Pulley Wheels 5, 6, on the inner bolts. The outer Plates being then bolted together, the Rods 16 of the Flange Wheels are passed through both Plates in the end elongated holes, and Collars 17 secured on the exterior. After which the remaining Flange Wheels 18 are secured on the ends of the Rods 16.

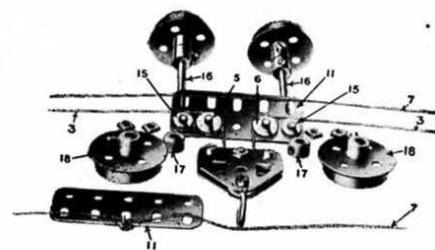


Fig. 4.51a

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

## Model No. 4.52 Tower Wagon

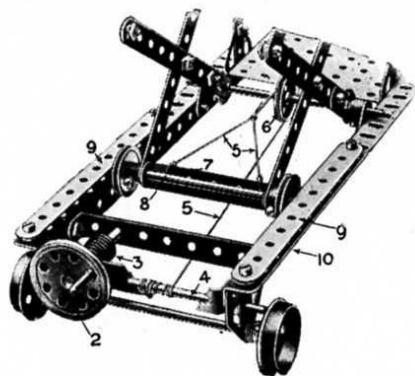
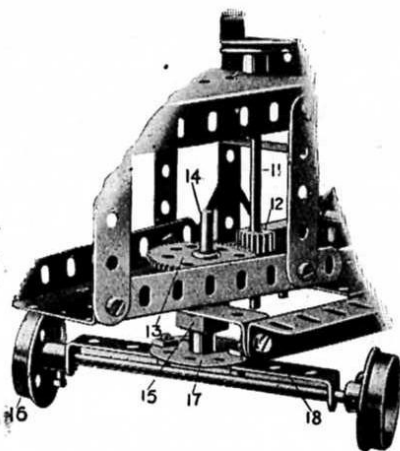
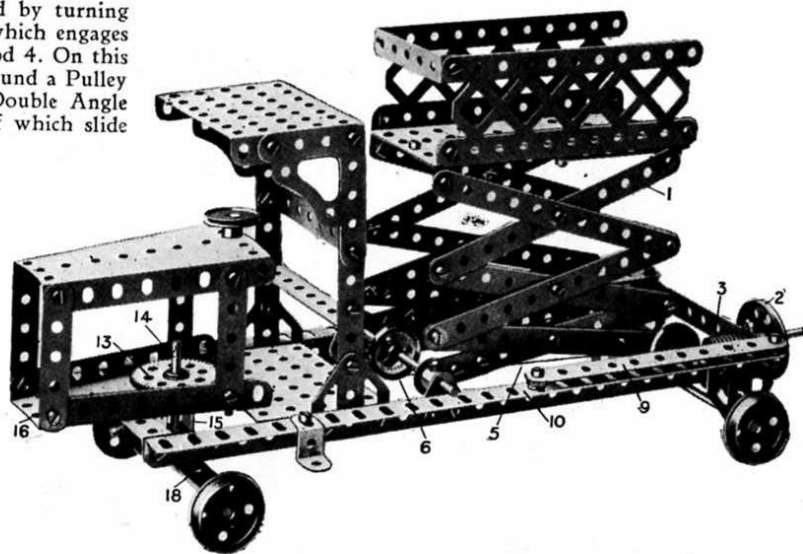


Fig. 4.52a

The Lazy Tongs 1 are extended by turning the hand wheel 2, a Worm 3 on which engages a  $\frac{1}{2}$ " Pinion not shown, on the Rod 4. On this Rod winds a cord 5 which passes round a Pulley 6 and is secured to a  $2\frac{1}{2}$ "x $\frac{1}{2}$ " Double Angle Strip 7 on the Rod 8, the ends of which slide in guides on either side formed by the Strips 9 spaced by Washers and the Angle Girders 10 of the carriage. The Lazy Tongs collapse by their own weight. The steering is effected from the Rod 11, a Pinion 12 on which engages a 57-toothed Gear Wheel 13, the 2" Rod 14 of which passes through a Double Bent Strip 15 bolted to the underside of the Sector Plate 16. The Rod 14 is secured to the Bush Wheel 17 which carries the Double Angle Strip  $3\frac{1}{2}$ "x $\frac{1}{2}$ " 18.



Sig. 4.52b

### Parts required:

16 of No.	2	78 of No.	37
2 " "	4	22 " "	37A
4 " "	5	24 " "	38
2 " "	8	1 " "	45
2 " "	15	4 " "	48A
5 " "	15A	6 " "	48B
1 " "	16	1 " "	52
2 " "	17	2 " "	53
4 " "	20B	2 " "	54
1 " "	21	3 " "	59
3 " "	22	2 " "	62
1 " "	22A	2 " "	77
1 " "	24	2 " "	100
2 " "	26	2 " "	108
1 " "	27A	1 " "	115
1 " "	32	2 " "	125
2 " "	35	4 " "	126A

## Model No. 4.53 Breast Drill



### Parts required:

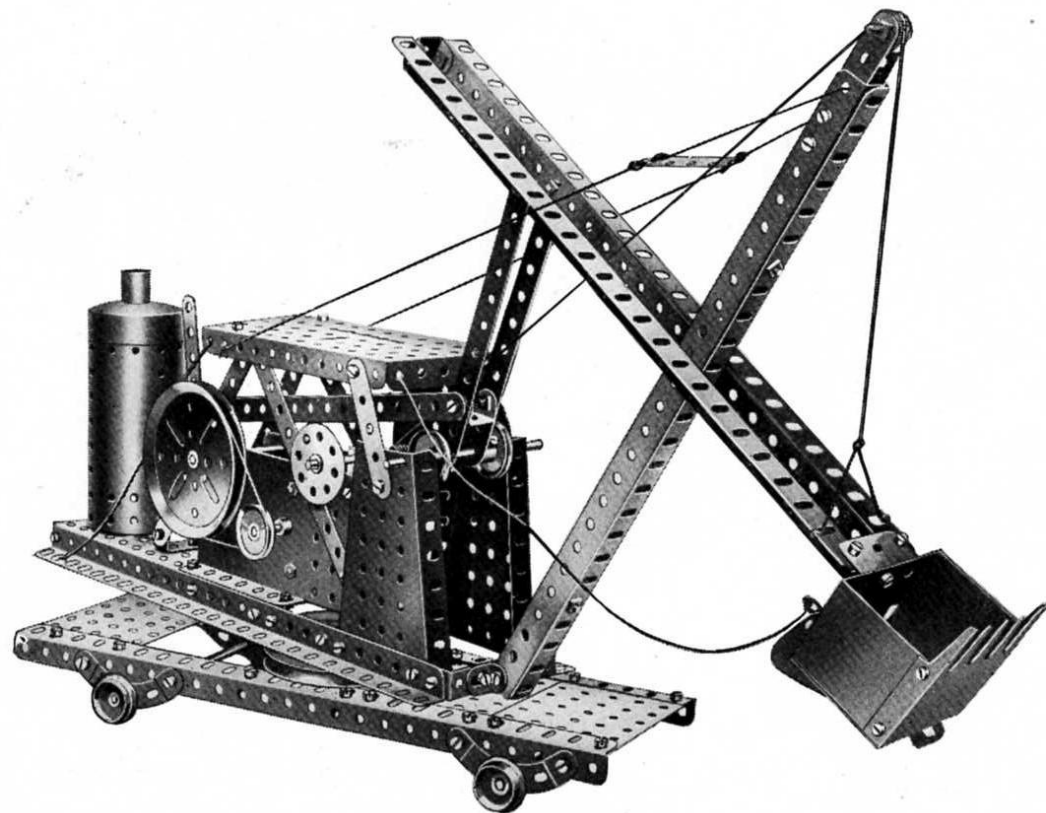
1 of No.	3	1 of No.	23	2 of No.	37
2 " "	15	1 " "	24	1 " "	48A
2 " "	17	2 " "	26	3 " "	59
1 " "	18A	1 " "	28	2 " "	63
1 " "	21				

This Model can be built with MECCANO Outfit No. 4X (or No. 3X and No. 3A)

## Model No. 4.54 Bucket Excavator

Parts required:

8 of No.	2	7 of No.	12	4 of No.	22	1 of No.	46	2 of No.	54	1 of No.	162
1 " "	3	1 " "	15	1 " "	23	1 " "	48	3 " "	59	1 " "	169
5 " "	5	2 " "	15A	1 " "	24	3 " "	48A	4 " "	90A	Electric Motor	
8 " "	8	3 " "	16	88 " "	37	2 " "	48B	1 " "	111		
1 " "	10	4 " "	19B	9 " "	37A	2 " "	52	4 " "	111C		
2 " "	11	4 " "	20B	6 " "	38	3 " "	53	1 " "	126		



The 1" fast Pulley secured to the armature spindle of the Electric Motor drives the 3" Pulley shown, and a second 1" fast Pulley on the axle of the latter is connected to a second 3" Pulley on the hoisting shaft. The cord wound on this shaft passes over a  $\frac{1}{2}$ " loose Pulley Wheel at the end of the jib, and is tied to the bucket arm.

The bucket arm is pivoted by means of bolts and lock-nuts (S.M. 263) to a pair of  $5\frac{1}{2}$ " Strips, which are connected to a lever fitted near the boiler end of the Motor by means of  $5\frac{1}{2}$ " and  $3\frac{1}{2}$ " Strips overlapped so that their effective length is  $9\frac{1}{2}$ ". When the lever is pushed or pulled, the effective length of the bucket arm is increased or decreased. The Digger Bucket is opened by pulling a cord, thereby releasing the catch that holds the bottom in place. The cord is led back to a position conveniently close to the lever that operates the bucket arm.



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

### Model No. 4.55 Croix de Guerre



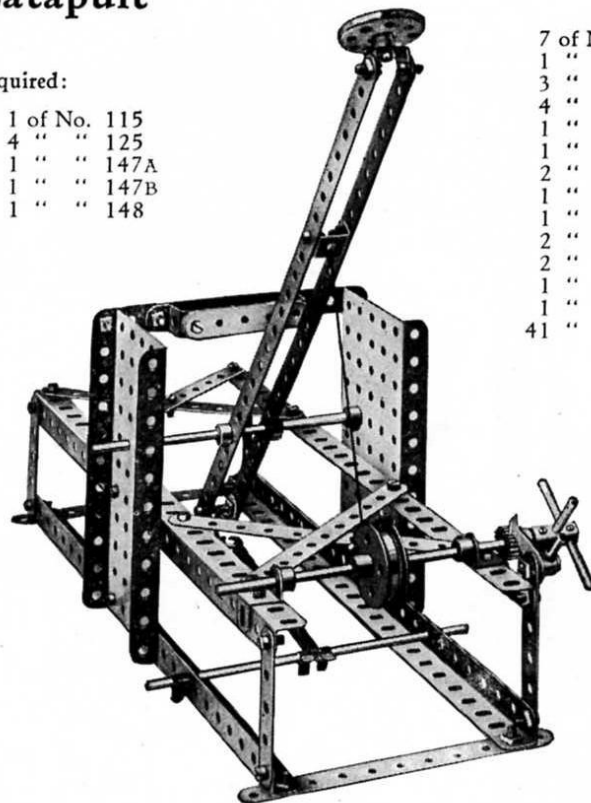
Parts required:

2 of No.	2
2 " "	3
15 " "	5
4 " "	10
2 " "	24
24 " "	37

### Model No. 4.56 Catapult

Parts required:

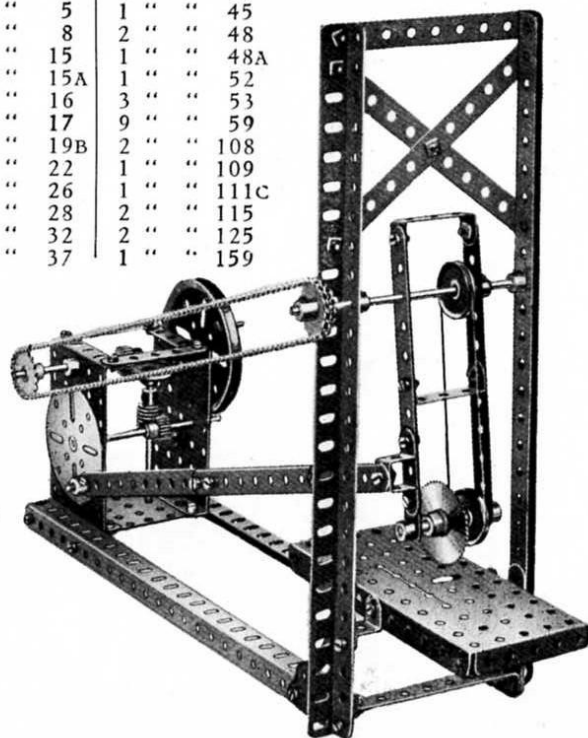
2 of No.	1	1 of No.	115
7 " "	2	4 " "	125
1 " "	4	1 " "	147A
6 " "	5	1 " "	147B
4 " "	8	1 " "	148
3 " "	11		
3 " "	14		
2 " "	17		
1 " "	20B		
1 " "	24		
1 " "	28		
4 " "	35		
44 " "	37		
1 " "	43		
2 " "	52		
1 " "	57		
6 " "	59		
1 " "	63		



### Model No. 4.57 Automatic Saw

Parts required:

7 of No.	2	3 of No.	37A
1 " "	3	2 " "	38
3 " "	5	1 " "	45
4 " "	8	2 " "	48
1 " "	15	1 " "	48A
1 " "	15A	1 " "	52
2 " "	16	3 " "	53
1 " "	17	9 " "	59
1 " "	19B	2 " "	108
2 " "	22	1 " "	109
2 " "	26	1 " "	111C
1 " "	28	2 " "	115
1 " "	32	2 " "	125
41 " "	37	1 " "	159



## HOW TO CONTINUE

Do not consider that you have exhausted the possibilities of your No. 4X Meccano Outfit when you have made the 831 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

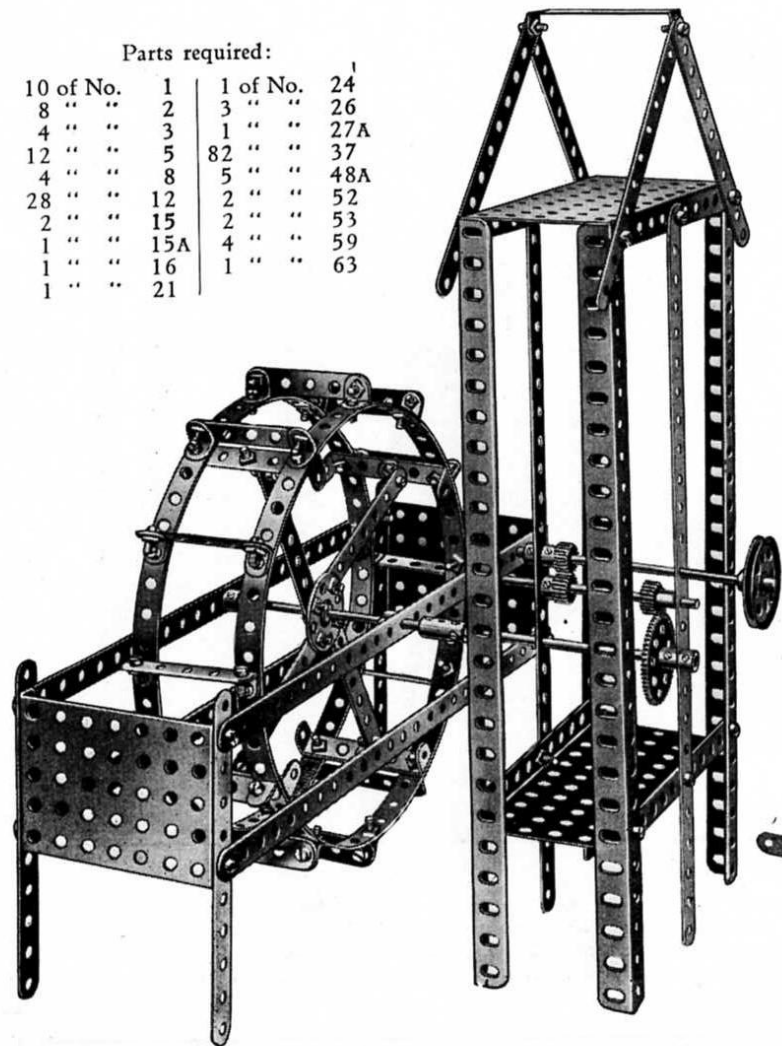
You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 4A Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

These Models can be made with MECCANO Outfit No. 5x (or No. 4x and No. 4A)

## Model No. 5.1 Belgian Water Wheel

Parts required:

10 of No.	1	1 of No.	24
8 " "	2	3 " "	26
4 " "	3	1 " "	27A
12 " "	5	82 " "	37
4 " "	8	5 " "	48A
28 " "	12	2 " "	52
2 " "	15	2 " "	53
1 " "	15A	4 " "	59
1 " "	16	1 " "	63
1 " "	21		



## Model No. 5.2 Hand Car

Parts required:

4 of No.	2	1 of No.	26
2 " "	6A	1 " "	27A
2 " "	8	32 " "	37
1 " "	9D	4 " "	37A
4 " "	11	2 " "	45
2 " "	14	1 " "	46
1 " "	15A	7 " "	59
1 " "	16	2 " "	63
1 " "	17	1 " "	70
4 " "	19A	2 " "	126A
2 " "	24		

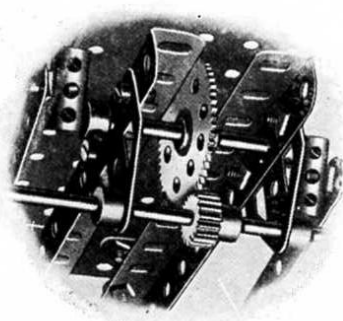
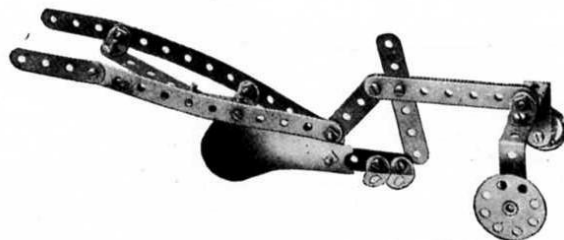
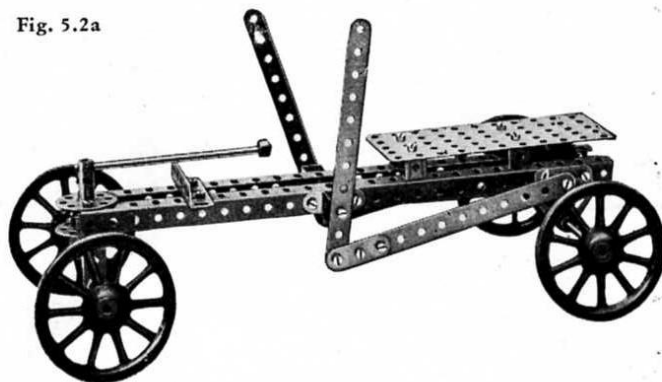


Fig. 5.2a



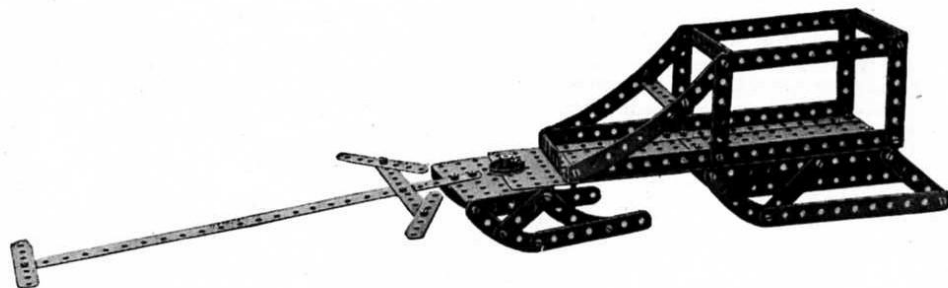
## Model No. 5.3 Plough

Parts required:

2 of No.	2	1 of No.	22
4 " "	3	1 " "	24
1 " "	4	19 " "	37
3 " "	6	1 " "	41
1 " "	10	1 " "	47
8 " "	12		

These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

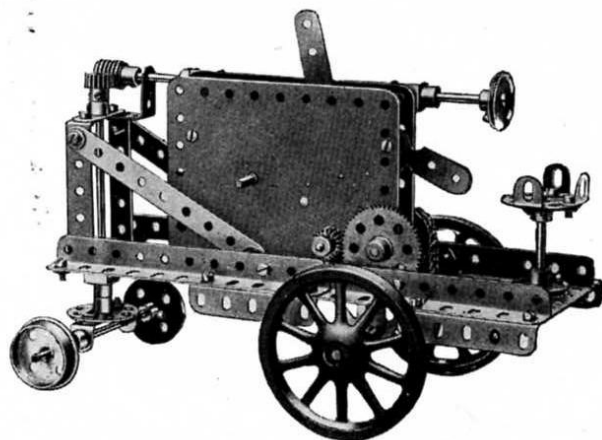
### Model No. 5.4 Horse Sleigh



Parts required:

1 of No.	1	1 of No.	18A
5 " "	2	2 " "	22
5 " "	3	50 " "	37
4 " "	4	3 " "	48B
4 " "	5	1 " "	52
2 " "	6	2 " "	52A
2 " "	8A	1 " "	53
1 " "	9D	2 " "	89
		6 " "	90

### Model No. 5.5 Farm Tractor



Parts required:

2 of No.	2A	1 of No.	27A
1 " "	3	1 " "	32
1 " "	6A	38 " "	37
4 " "	9	6 " "	38
2 " "	11	1 " "	45
7 " "	12	1 " "	48
1 " "	12A	2 " "	48A
1 " "	13A	2 " "	53
1 " "	15	9 " "	59
1 " "	15A	6 " "	94
2 " "	17	2 " "	96
2 " "	19A	2 " "	126A
2 " "	20	Clockwork Motor (not included in Outfit)	
2 " "	22		
2 " "	24		
2 " "	26		

### Model No. 5.6

#### Step Ladder



Parts required:

4 of No.	1
8 " "	2
2 " "	3
3 " "	5
2 " "	10
8 " "	12
1 " "	16
2 " "	17
10 " "	35
44 " "	37
9 " "	48A
2 " "	59

This Model can be made with MECCANO Outfit No. 5x (or No. 4x and No. 4A)

## Model No. 5.7 Sighting Apparatus

This model is for determining the heights of buildings, towers, etc. The pointer  $11\frac{1}{2}$ " Rod 1 is pivoted on the 2" Rod 2 and controlled by a Spring 3, the pointer 1 being adjusted by the cord 4 which passes round a guide Pulley 5 and on to the Axle 6 upon which it is wound by the Crank handle 7 which operates the Gear Wheel and Pinion 8. A graduated scale of degrees 9 made of cardboard, or a protractor, is mounted in order to read off the angle of inclination of the pointer.

In finding the height of a building, measure out a number of feet or yards from the foot of the building, and set this out to some scale corresponding to the line  $a\ b$  (Fig. 5.7b). Then standing at the point  $a$  furthest from the building, and keeping the Angle Girders 10 horizontal, move the pointer 1 until it is directed towards the top of the building. Then read off the angle on the scale 9, and draw a line  $a\ c$ , making the angle  $b\ a\ c$  equal to the angle read off. Then draw a vertical line  $b\ c$  from the point  $b$ , and with the same scale used for setting off the distance  $a\ b$  measure the height  $b\ c$ , which will be the height of the building.

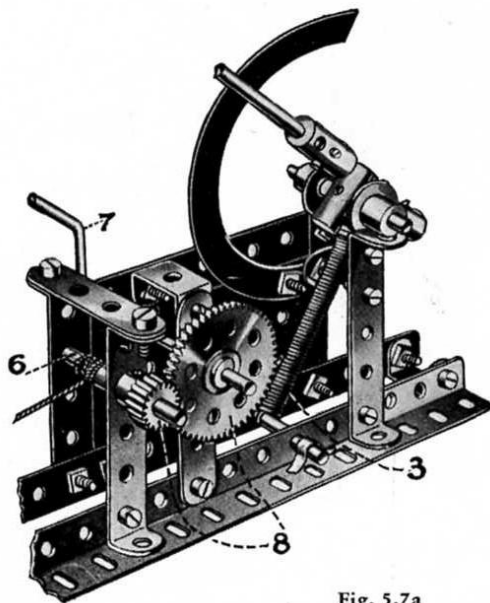
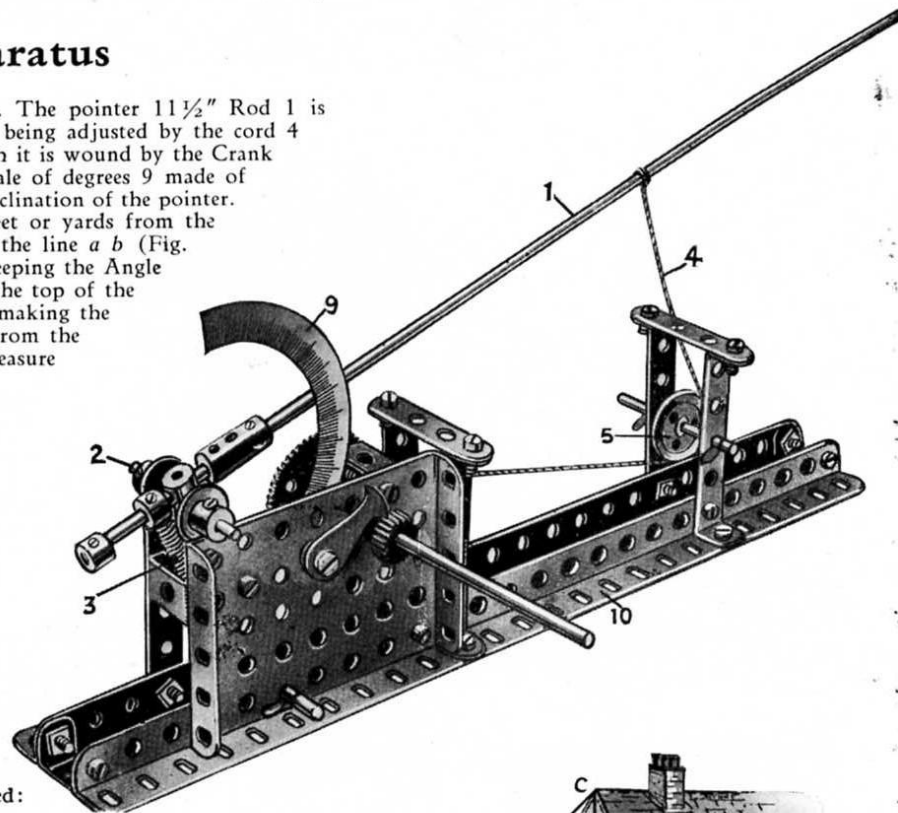


Fig. 5.7a



### Parts required:

1 of No.	5	24 of No.	37
2 " "	6	1 " "	43
2 " "	8	5 " "	48A
4 " "	11	1 " "	53
1 " "	13	3 " "	59
4 " "	17	2 " "	62
1 " "	19	2 " "	63
1 " "	22	1 " "	147A
1 " "	26	1 " "	147B
1 " "	27A	1 " "	148
2 " "	35		

Scale not supplied in outfit; can be cut out of cardboard.

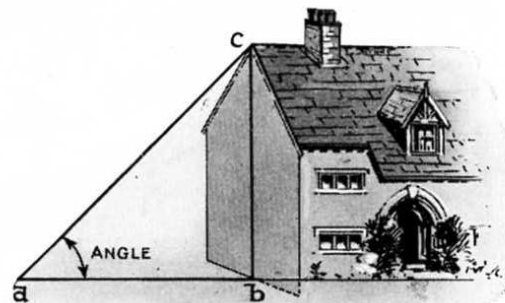


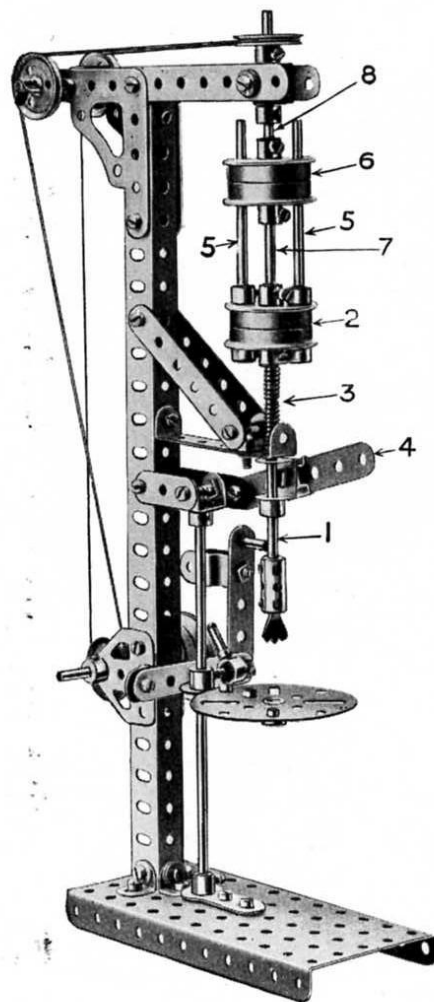
Fig. 5.7b



## Model No. 5.9 Fret Saw

## Model No. 5.8

## Vertical Drill

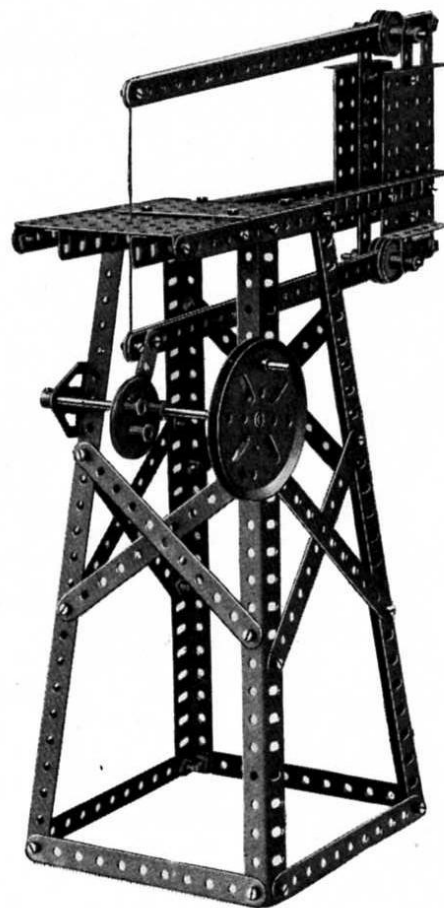


## Parts required:

2 of No.	2	4 of No.	16	1 of No.	48A
3 " "	4	1 " "	17	1 " "	50
2 " "	5	6 " "	20	10 " "	59
1 " "	6	2 " "	21	2 " "	62
1 " "	6A	2 " "	22A	1 " "	65
2 " "	8	4 " "	35	2 " "	108
5 " "	11	39 " "	37	1 " "	109
6 " "	12	6 " "	38	1 " "	111
1 " "	14	1 " "	43	2 " "	115
1 " "	15A	1 " "	44	2 " "	126A

The drill Rod 1 is connected to the boss of the lower pair of Flanged Wheels 2 which are reversed, a Spring 3 round the Rod raising the drill after it has been depressed by the handle Strip 4. Bolted in the Wheels 2 are two outer Rods 5 which slide in the upper Flanged Wheels 6. The central Rod 7 is bolted in the upper Wheels and slides in the centre bosses of the lower Wheels 2. The upper Wheels 6 are bolted to the driving spindle 8 and consequently the drill is driven by the Rods 5 when the drill is depressed by the handle 4 against the Spring.

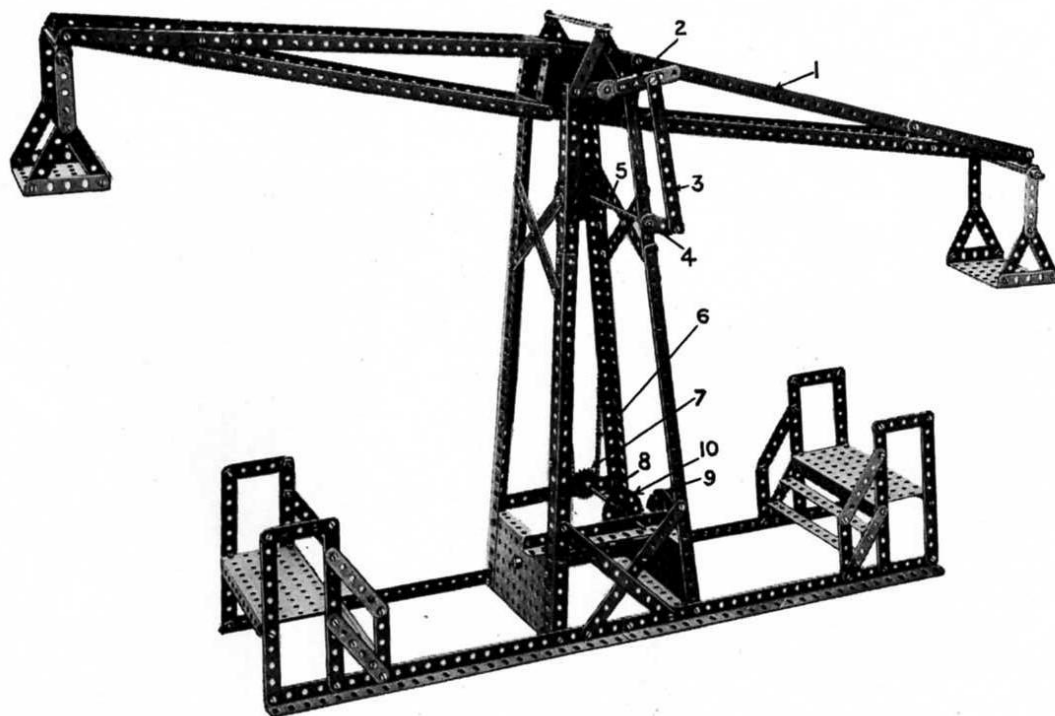
See also "Meccano Standard Mechanisms," under Locking Device (S.M. 137) and Variable Drive (Section XIII).



## Parts required:

4 of No.	1
17 " "	2
6 " "	8
1 " "	15
2 " "	17
1 " "	19B
4 " "	22
53 " "	37
4 " "	53
5 " "	59
1 " "	115
2 " "	126A
1 " "	130

## Model No. 5.10 Giant Auto Swing



## Parts required:

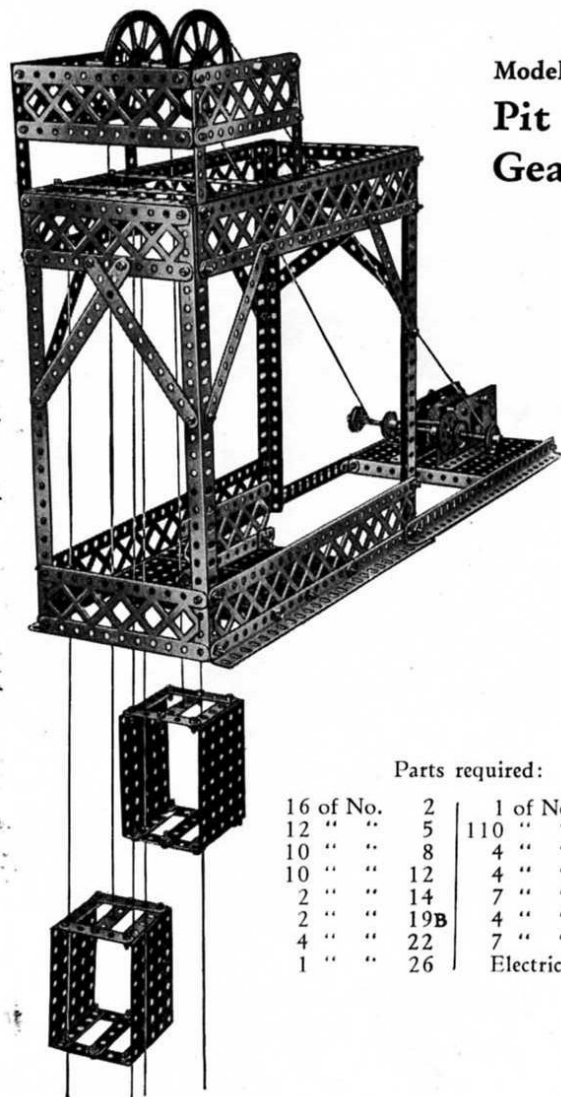
8 of No.	1
26 " "	2
2 " "	3
8 " "	4
31 " "	5
12 " "	8
1 " "	9
18 " "	12
2 " "	14
4 " "	15
1 " "	19B
1 " "	24
1 " "	27A
1 " "	32
165 " "	37
2 " "	38
2 " "	48A
2 " "	48B
4 " "	48D
4 " "	52
4 " "	53
9 " "	59
2 " "	62
28 " "	94
1 " "	95
1 " "	96
1 " "	1473

The beam 1 is rocked by means of a Crank 2 secured on the end of a Rod which forms the beam pivot and which is bolted in a Bush Wheel secured to the beam. This Crank 2 is connected by a Strip 3 to another Crank 4 on a Rod 5. On the end of this is a large Sprocket Wheel driven by a chain 6 from a small Sprocket Wheel 7 on a Rod 8. This Rod is driven by means of a Worm on the Rod of the 3" Pulley 9 which Worm engages and drives the Gear Wheel 10 on the Rod 8. As the Crank 4 continuously rotates the link 3 causes the upper Crank 2 to oscillate and also the beam 1.

Model No. 5.11  
Rocking Chair

## Parts required:

9 of No.	2	2 of No.	48A
8 " "	5	1 " "	48B
2 " "	10	2 " "	53
3 " "	12	4 " "	80
44 " "	37		



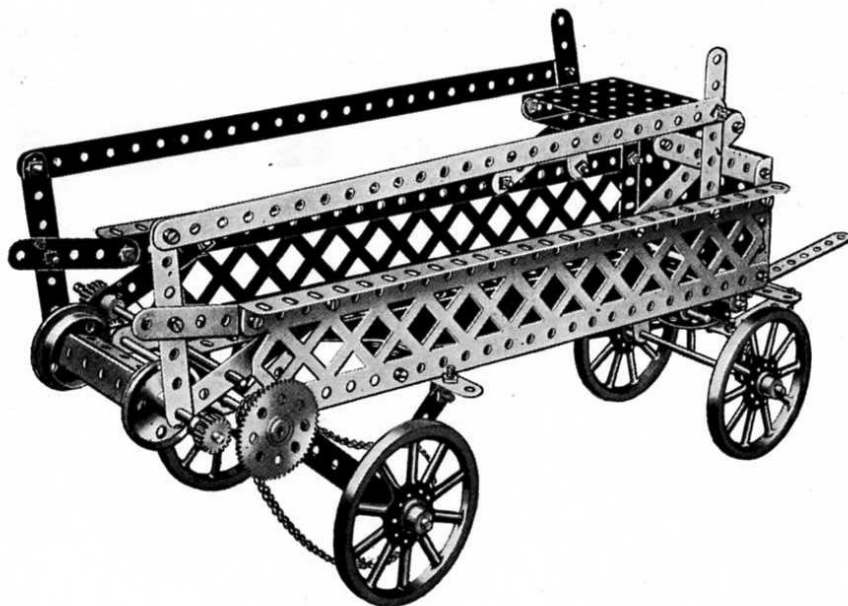
Model No. 5.12  
Pit Head  
Gear

Parts required:

16 of No.	2	1 of No.	27A
12 " "	5	110 " "	37
10 " "	8	4 " "	52
10 " "	12	4 " "	53
2 " "	14	7 " "	59
2 " "	19B	4 " "	99
4 " "	22	7 " "	100
1 " "	26	Electric Motor	

Model No. 5.13

Manure Distributing Cart

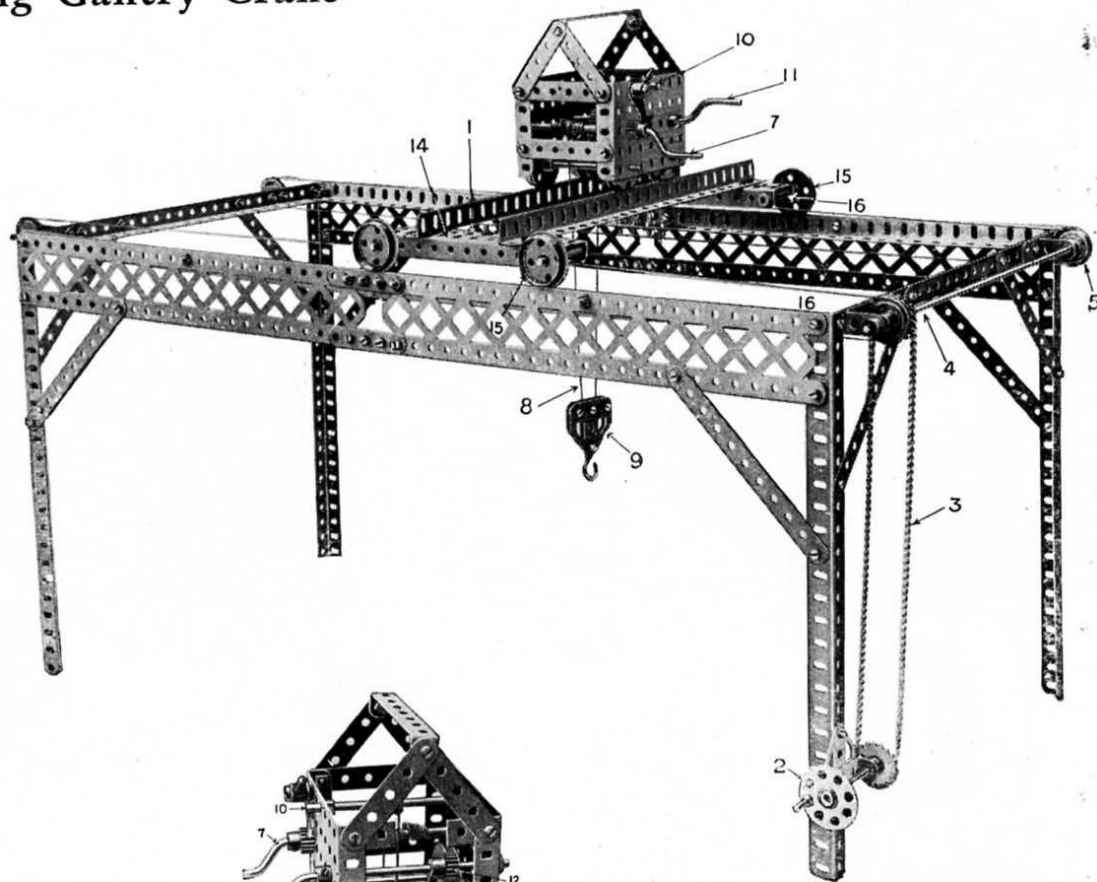


Parts required:

2 of No.	1	3 of No.	15	3 of No.	26	2 of No.	53
3 " "	2	2 " "	15A	1 " "	27A	8 " "	59
10 " "	3	2 " "	17	4 " "	35	1 " "	94
9 " "	5	4 " "	19A	57 " "	37	1 " "	95
4 " "	8	2 " "	20	1 " "	46	1 " "	96
6 " "	12	1 " "	24	4 " "	48A	2 " "	99
1 " "	14						

## Model No. 5.14 Travelling Gantry Crane

The travelling gantry 1 is traversed along the rails by a hand wheel 2, a Sprocket Chain 3 driving the Rod 4, round the Pulleys 5 on which pass the cords 6 which are connected to the travelling gantry. The load is raised or lowered by operating the Crank Handle 7 on which a cord 8 is wound, passing round a  $\frac{1}{2}$ " Pulley in the block 9 and being secured to a Rod 10. The winch is traversed along the rails of the gantry 1 by means of the Crank Handle 11, a Pinion 12 on which engages a 57-toothed Gear Wheel 13, on the axle of the travelling wheels. The travelling gantry is built up of the rails of the Angle Girders 1 bolted at each end to two  $5\frac{1}{2}$ " Angle Girders 14 butted together. The Flanged Wheels 15 are carried upon their axles 16 passed through the end holes of the Angle Girders 14.



### Parts required:

4 of No.	1	8 of No.	20	1 of No.	57
8 " "	2	4 " "	22	8 " "	59
4 " "	4	1 " "	23	24 " "	94
10 " "	5	1 " "	24	2 " "	96
12 " "	8	1 " "	25	4 " "	99
4 " "	9	1 " "	27A	4 " "	100
2 " "	11	2 " "	35	2 " "	115
4 " "	12A	96 " "	37	3 " "	126A
2 " "	13	6 " "	38	1 " "	147A
3 " "	16	1 " "	48	1 " "	147B
5 " "	17	1 " "	48B	1 " "	148
2 " "	19	2 " "	53		

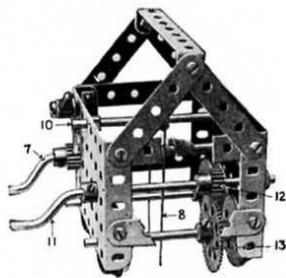
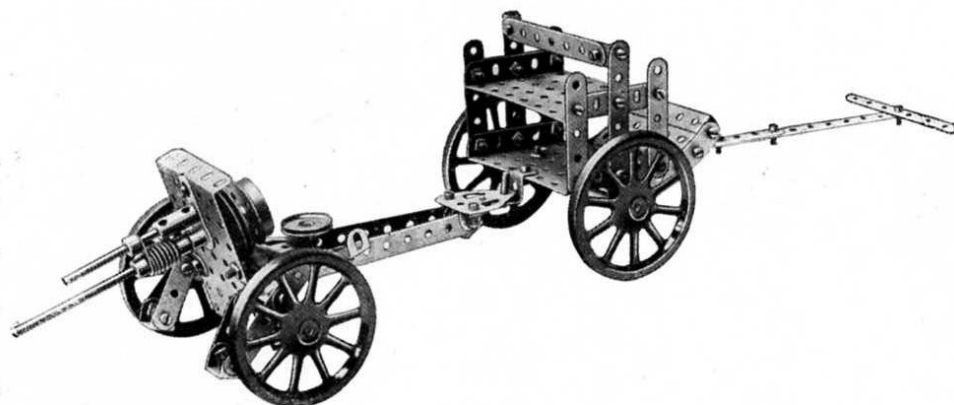


Fig. 5.14a

These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

### Model No. 5.15 Field Gun and Carriage



Parts required:

4 of No.	2	1 of No.	22
2 " "	3	1 " "	24
2 " "	4	1 " "	32
6 " "	5	62 " "	37
2 " "	6A	2 " "	38
3 " "	10	3 " "	48A
3 " "	11	2 " "	48B
14 " "	12	2 " "	53
2 " "	15	3 " "	59
1 " "	15A	1 " "	62
1 " "	16	1 " "	63
1 " "	18A	2 " "	90
4 " "	19A	1 " "	115
1 " "	20	2 " "	125
1 " "	21	2 " "	126A

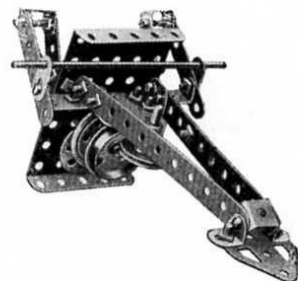
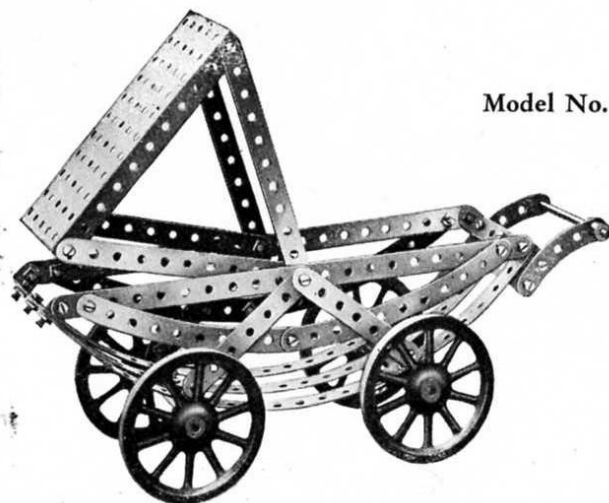


Fig. 5.15a

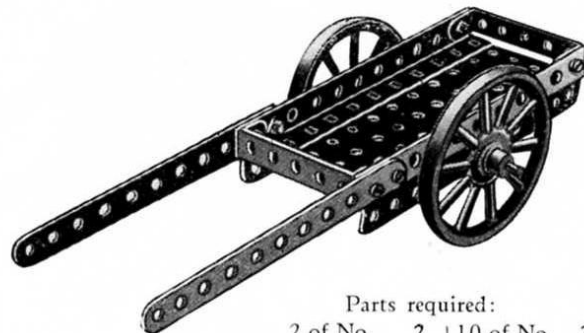
### Model No. 5.16 Perambulator



Parts required:

3 of No.	1	37 of No.	37
8 " "	2	5 " "	48A
4 " "	3	1 " "	52
6 " "	12	2 " "	59
3 " "	16	4 " "	89
4 " "	19A	2 " "	90

### Model No. 5.17 Station Cart



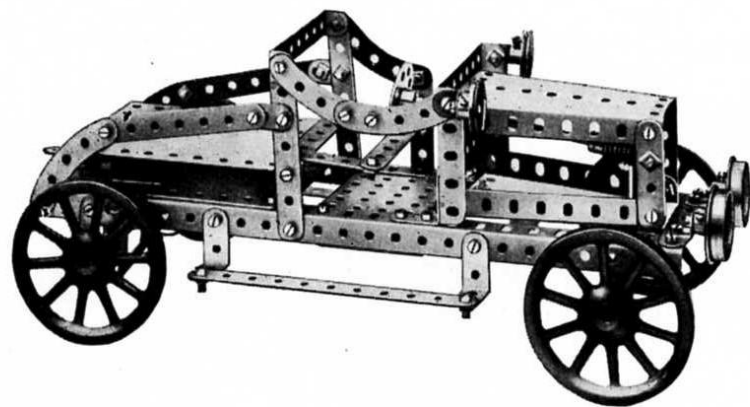
Parts required:

2 of No.	2	10 of No.	37
2 " "	9	2 " "	48A
1 " "	15A	1 " "	52
2 " "	19A		



These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

### Model No. 5.18 Motor Car

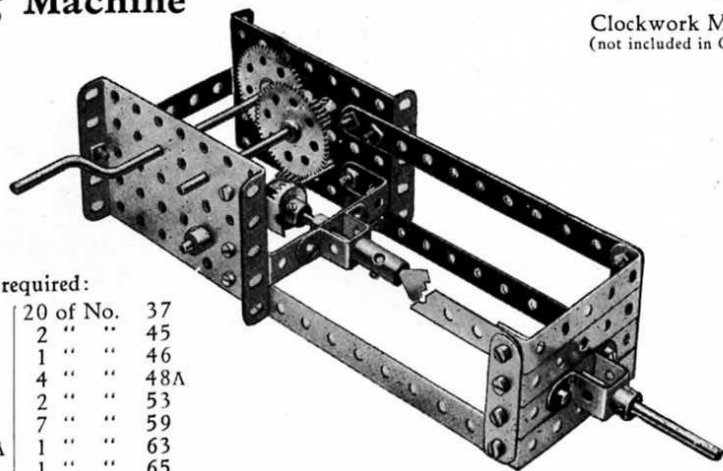


#### Parts required:

2 of No.	2
8 " "	3
1 " "	5
4 " "	6
2 " "	8
2 " "	10
8 " "	12
6 " "	12A
1 " "	14
2 " "	15
1 " "	16
4 " "	19A
2 " "	20
2 " "	22
2 " "	24
2 " "	26
1 " "	28
1 " "	32
75 " "	37
4 " "	38
3 " "	48B
2 " "	53
2 " "	54
7 " "	59
2 " "	89
2 " "	126A

Clockwork Motor  
(not included in Outfit)

### Model No. 5.19 Spooling Machine



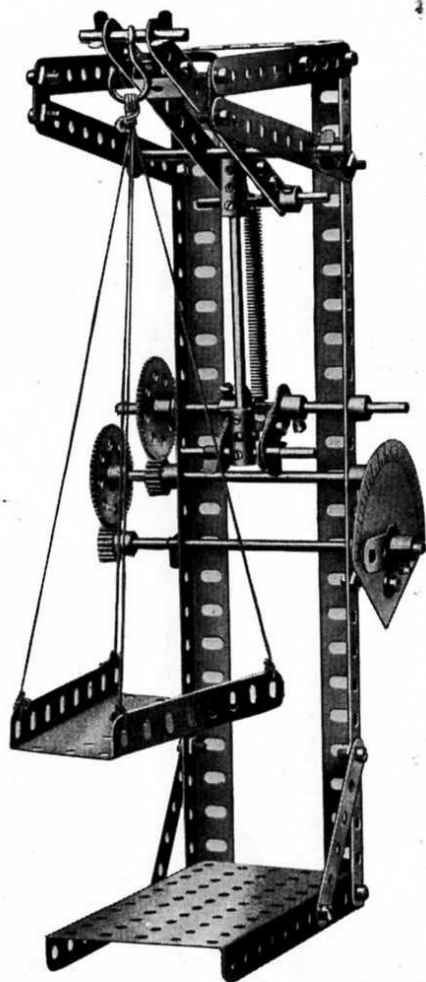
#### Parts required:

4 of No.	2	20 of No.	37
1 " "	3	2 " "	45
3 " "	16	1 " "	46
1 " "	17	4 " "	48A
1 " "	19	2 " "	53
2 " "	26	7 " "	59
2 " "	27A	1 " "	63
1 " "	29	1 " "	65

### Model No. 5.20 Spring Scales

#### Parts required:

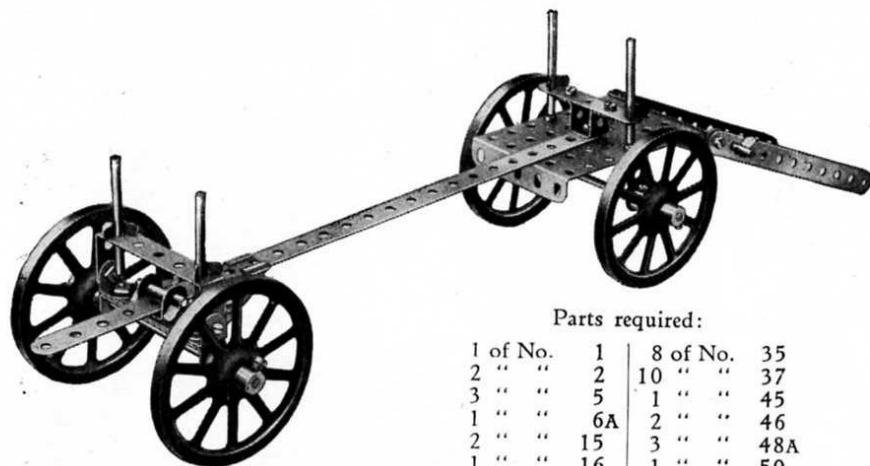
6 of No.	2
2 " "	4
2 " "	8
2 " "	10
3 " "	11
2 " "	15
1 " "	15A
2 " "	16
2 " "	17
1 " "	18A
2 " "	26
2 " "	27A
23 " "	37
1 " "	43
2 " "	48A
1 " "	52
1 " "	54
1 " "	57
2 " "	59
2 " "	62
2 " "	63
1 " "	111



The scale beam consists of two  $5\frac{1}{2}$ " strips distanced by double brackets. A vertical Rod is connected pivotally to the beam by means of a  $\frac{3}{4}$ " bolt, and to a short Rod passed through the ends of two Cranks. The latter are secured to an axle which carries a 57-toothed Gear Wheel, the motion of which is led through the gear train shown to a pointer moving over a graduated scale. A Meccano spring, attached to the Rod carrying the Cranks, is connected to the end of the beam and acts as the spring balance.

These Models can be made with MECCANO Outfit No. 5x (or No. 4x and No. 4A)

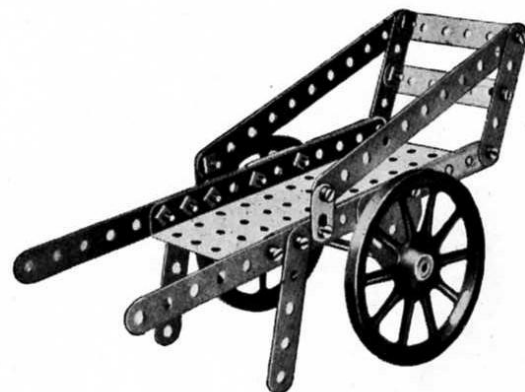
### Model No. 5.21 Lumber Carriage



Parts required:

1 of No.	1	8 of No.	35
2 " "	2	10 " "	37
3 " "	5	1 " "	45
1 " "	6A	2 " "	46
2 " "	15	3 " "	48A
1 " "	16	1 " "	50
4 " "	17	1 " "	53
1 " "	18A	4 " "	59
4 " "	19A	1 " "	111

### Model No. 5.22 Coster's Barrow



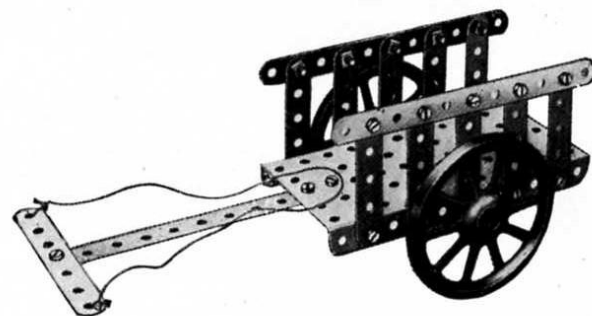
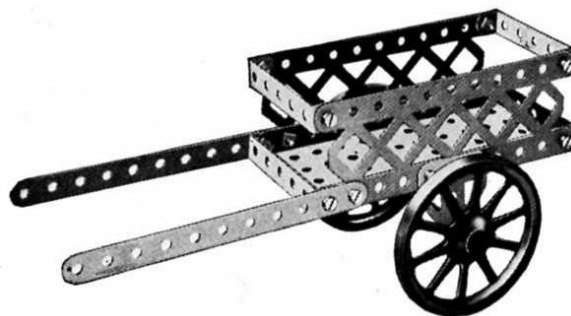
Parts required:

4 of No.	2	1 of No.	16	2 of No.	48A
4 " "	5	2 " "	19A	1 " "	52
2 " "	10	18 " "	37	2 " "	126A

### Model No. 5.23 Cart

Parts required:

2 of No.	2
1 " "	16
2 " "	19A
14 " "	37
4 " "	48A
1 " "	52
2 " "	100
2 " "	126A

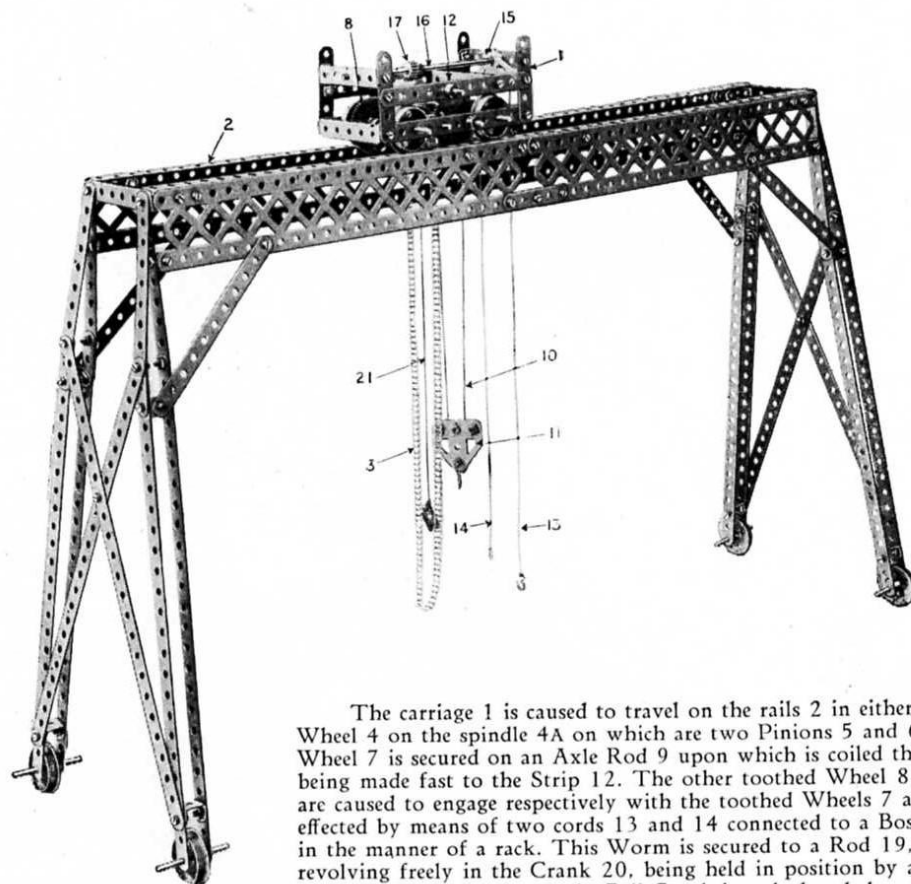


Parts required:

3 of No.	2	1 of No.	16	21 of No.	37
1 " "	3	2 " "	19A	1 " "	52
10 " "	5				

This Model can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

## Model No. 5.25 Travelling Crane



### Parts required:

16 of No.	1	2 of No.	27A
16 " "	2	1 " "	32
6 " "	5	86 " "	37
4 " "	8	8 " "	38
2 " "	9	2 " "	47A
8 " "	11	5 " "	48A
4 " "	12	1 " "	57
1 " "	14	6 " "	59
1 " "	15A	1 " "	62
4 " "	16	1 " "	63
4 " "	17	30 " "	94
8 " "	20	1 " "	96
1 " "	22	4 " "	99
1 " "	23	2 " "	126A
3 " "	26	1 " "	128

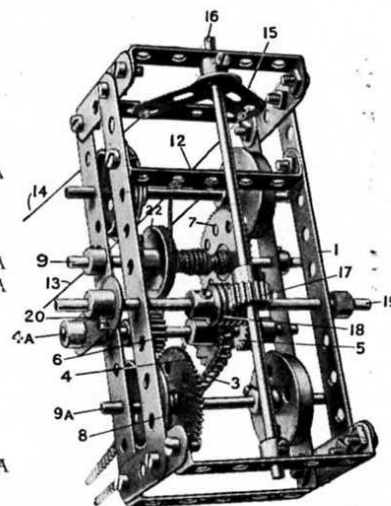
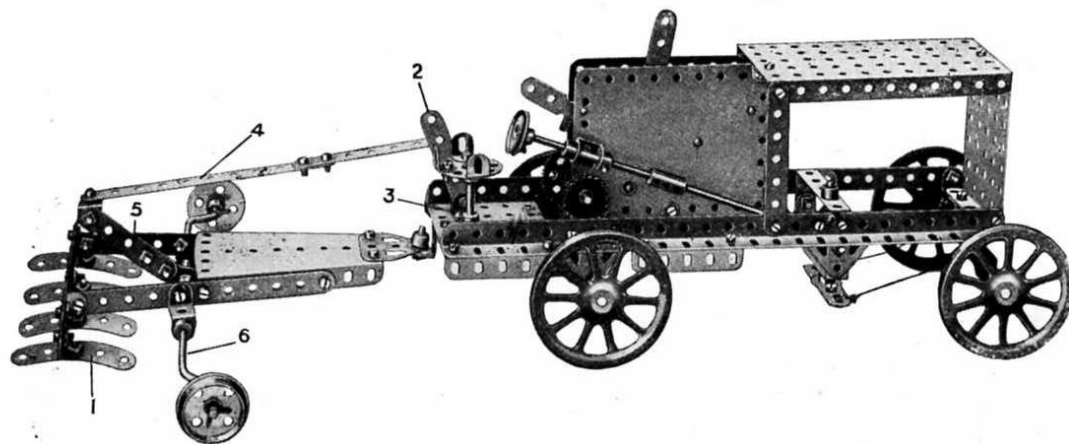


Fig. 5.25a

The carriage 1 is caused to travel on the rails 2 in either direction by the Sprocket Chain 3, which passes over a 1" Sprocket Wheel 4 on the spindle 4A on which are two Pinions 5 and 6 for engagement respectively with toothed Wheels 7 and 8. The toothed Wheel 7 is secured on an Axle Rod 9 upon which is coiled the winding cord 10 passing round a  $\frac{1}{2}$ " Pulley in the block 11, and being made fast to the Strip 12. The other toothed Wheel 8 is secured on the axle of the travelling Wheels 9A. The Pinions 5 and 6 are caused to engage respectively with the toothed Wheels 7 and 8 by sliding the Pinion axle 4A in the carriage frame 1. This is effected by means of two cords 13 and 14 connected to a Boss Bell Crank 15 on a Rod 16, a Pinion 17 which engages a Worm 18 in the manner of a rack. This Worm is secured to a Rod 19, which is connected by a crank piece 20 to the pinion rod 4A. The latter revolving freely in the Crank 20, being held in position by a Collar on each side of the Crank. Consequently, by pulling on one or other of the cords 13, 14, the Bell Crank is racked and the pinions caused to engage with one or other of the toothed Wheels 7 or 8. When engaging the toothed Wheel 7 the load may be raised or lowered by pulling the Sprocket Chain 3, but when the Pinion 6 engages the toothed Wheel 8, the carriage travels on the rails. The cord 21 passes round a Pulley 22 on the winding axle and acts as a brake.

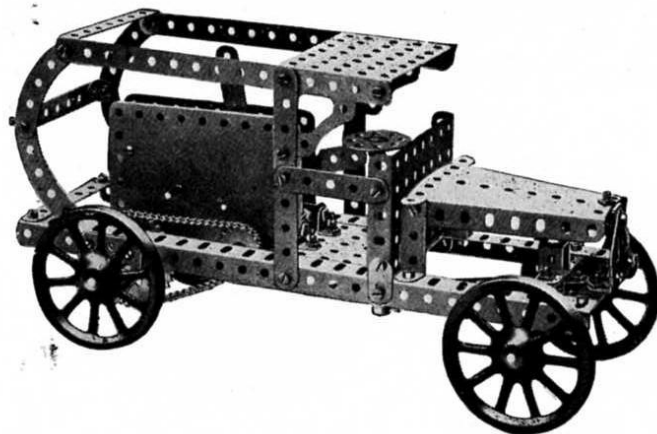
These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

### Model No. 5.26 Motor Plough



The ploughshares 1 are raised or lowered by the handle 2 pivoted to an Angle Bracket on the far side of the seat pillar, and connected by Strips 4 to a Crank 5 secured on the bent axle 6 of the wheels formed by Crank Handles. The plough is driven by a Meccano Clockwork Motor.

### Model No. 5.27 Motor Car



Parts required:

3 of No.	2	2 of No.	45
4 " "	3	2 " "	48
5 " "	5	2 " "	48B
2 " "	8	3 " "	53
2 " "	10	1 " "	54
11 " "	12	3 " "	59
2 " "	15A	1 " "	62
1 " "	16	4 " "	90
1 " "	17	12 " "	94
4 " "	19A	1 " "	95
2 " "	24	2 " "	96
63 " "	37	1 " "	108
2 " "	38	1 " "	125

3 of No. 126A

Clockwork Motor  
(not included in Outfit)

Parts required:

5 of No.	2	2 of No.	26	1 of No.	54
3 " "	3	1 " "	27A	9 " "	59
3 " "	5	1 " "	29	1 " "	62
2 " "	8	4 " "	35	2 " "	63
2 " "	10	24 " "	37	4 " "	90
1 " "	11	6 " "	38	6 " "	94
19 " "	12	1 " "	45	2 " "	96
3 " "	15A	1 " "	46	1 " "	115
1 " "	16	4 " "	48A	3 " "	125
3 " "	17	1 " "	52	5 " "	126A
2 " "	19	3 " "	53		
4 " "	19A				
2 " "	20				
3 " "	22				
1 " "	24				

Clockwork Motor  
(not included in Outfit)

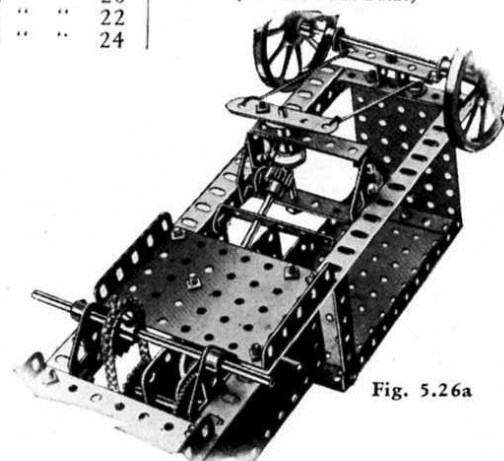
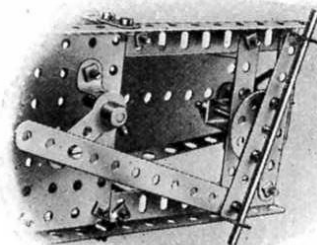


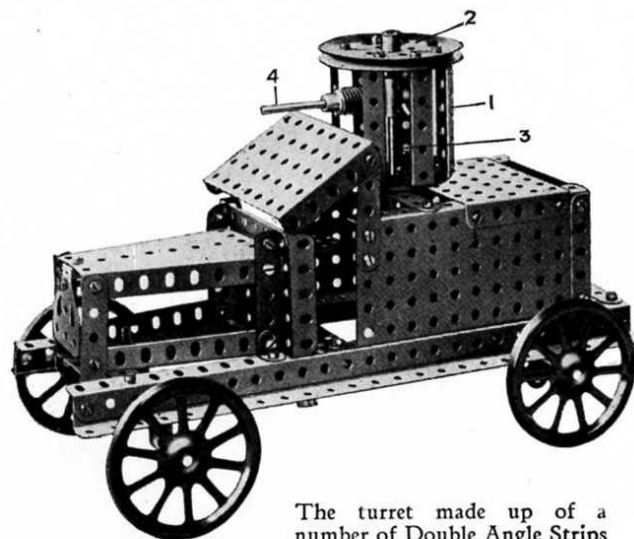
Fig. 5.26a

Fig. 5.27a



These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

## Model No. 5.28 Armored Motor Car

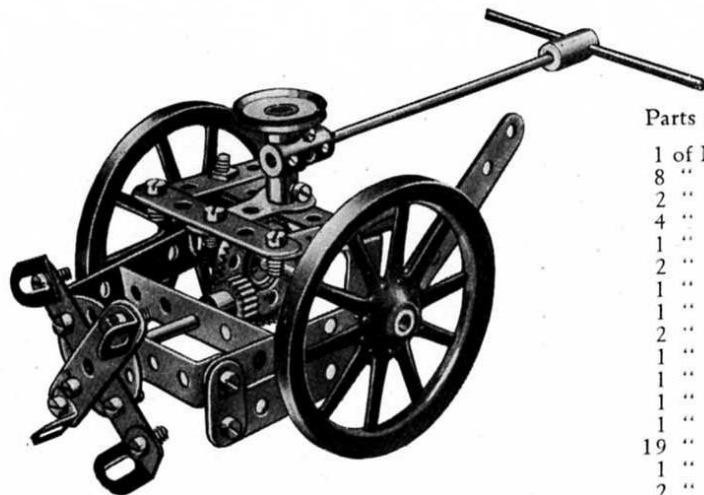


The turret made up of a number of Double Angle Strips 1 bolted at the top to a 3" Pulley 2 and below to a face plate is bolted on a Rod 3 passing up the centre which forms the pivot of the turret so that it may freely turn. The gun 4 is bolted in a coupling on this pivot rod.

### Parts required:

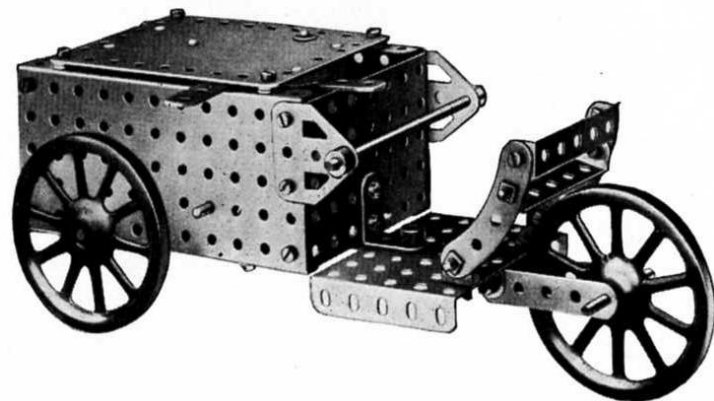
5 of No.	3
6 " "	5
4 " "	8
5 " "	12
1 " "	12A
2 " "	14
1 " "	15
2 " "	16
2 " "	18A
4 " "	19A
1 " "	19B
2 " "	22
2 " "	24
1 " "	32
77 " "	37
2 " "	38
2 " "	45
7 " "	48A
1 " "	48B
2 " "	52
4 " "	53
2 " "	54
8 " "	59
1 " "	63
1 " "	109
3 " "	126A

## Model No. 5.29 Potato Reaper



### Parts required:

1 of No.	3
8 " "	5
2 " "	10
4 " "	12
1 " "	15
2 " "	16
1 " "	17
1 " "	18A
2 " "	19B
1 " "	22
1 " "	24
1 " "	26
1 " "	28
19 " "	37
1 " "	46
2 " "	48A
1 " "	59
1 " "	62
2 " "	63



## Model No. 5.30 Delivery Van

### Parts required:

1 of No.	3	1 of No.	28
3 " "	5	31 " "	37
4 " "	12	9 " "	38
1 " "	12A	2 " "	48A
1 " "	15	2 " "	52
2 " "	15A	3 " "	53
1 " "	17	7 " "	59
1 " "	18A	2 " "	90
3 " "	19A	9 " "	94
1 " "	26	2 " "	96

2 of No. 126A

Clockwork Motor  
(not included in Outfit)

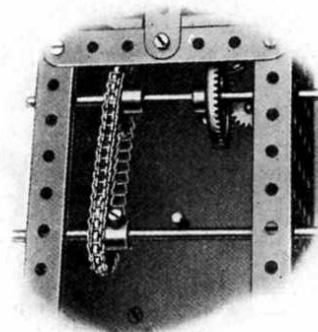


Fig. 5.30a

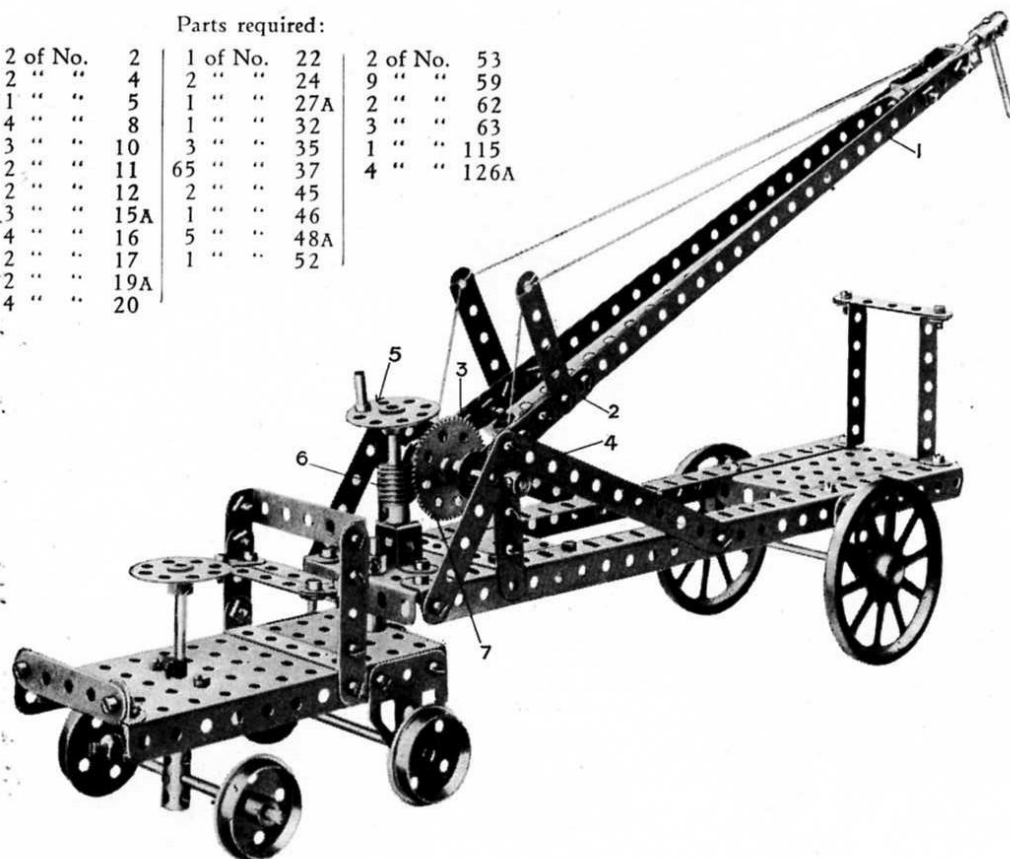


These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

### Model No. 5.31 Fire Watertower

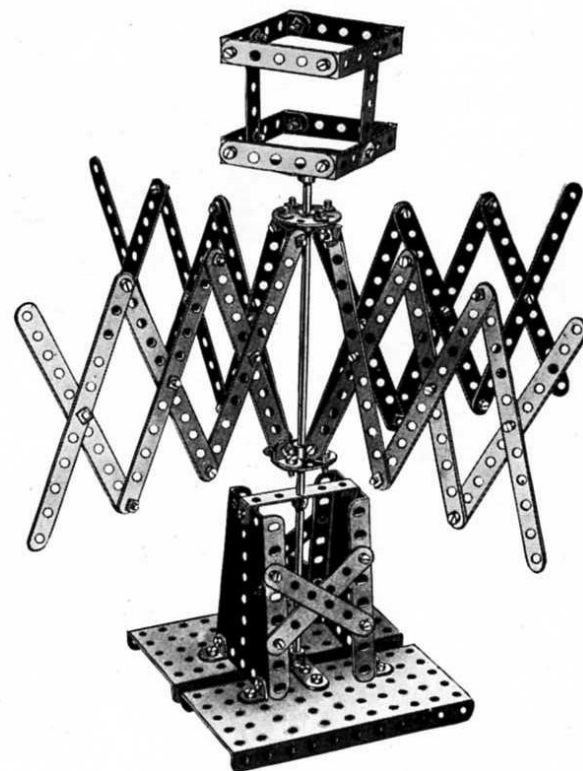
Parts required:

2 of No.	2	1 of No.	22	2 of No.	53
2 " "	4	2 " "	24	9 " "	59
11 " "	5	1 " "	27A	2 " "	62
4 " "	8	1 " "	32	3 " "	63
3 " "	10	3 " "	35	1 " "	115
2 " "	11	65 " "	37	4 " "	126A
2 " "	12	2 " "	45		
3 " "	15A	1 " "	46		
4 " "	16	5 " "	48A		
2 " "	17	1 " "	52		
2 " "	19A				
4 " "	20				



This is an apparatus for raising a water-hose and directing the nozzle towards high buildings. The hose is led along the support 1, formed of two  $12\frac{1}{2}$ " Angle Girders, secured by Strips 2 and Cranks 3 to the Rod 4, forming a pivot for the support. The support is raised or lowered about the pivot by turning the hand-wheel 5, a Worm 6 on the spindle of which engages a 57-toothed Wheel 7 on the Rod 4.

### Model No. 5.32 Skein Winder



Parts required:

24 of No.	2	2 of No.	24
4 " "	4	86 " "	37
7 " "	5	5 " "	48A
8 " "	12	2 " "	52
1 " "	13	2 " "	54
1 " "	21	2 " "	59

These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

## Model No. 5.33 Measuring Machine

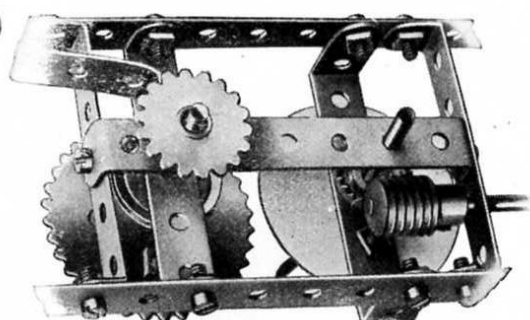
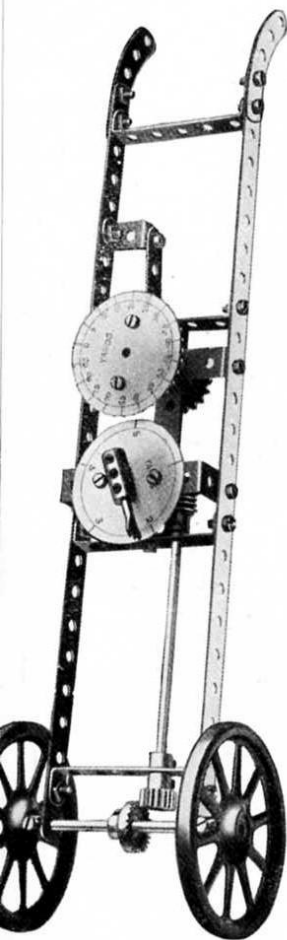


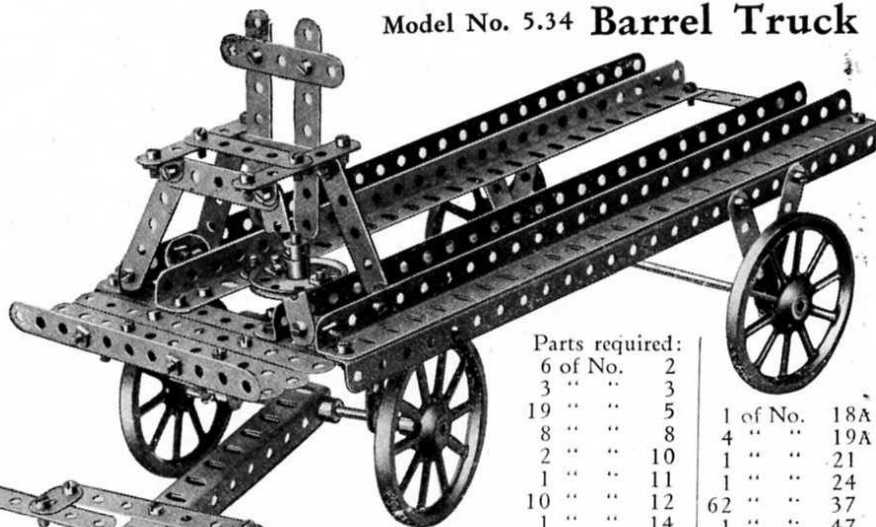
Fig. 5.33a

Parts required:

2 of No.	1
1 " "	5
1 " "	15
1 " "	16
2 " "	17
2 " "	19A
1 " "	22
1 " "	26
2 " "	29
1 " "	32
22 " "	37
1 " "	46
5 " "	48A
1 " "	48B
1 " "	59
1 " "	63
1 " "	65
2 " "	90
1 " "	95
1 " "	96
1 " "	125

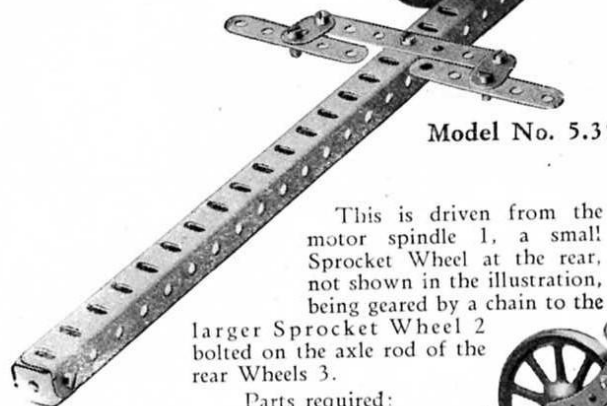
The cardboard discs are not supplied with the outfit; they may be cut out of cardboard.

## Model No. 5.34 Barrel Truck



Parts required:		
6 of No.	2	
3 " "	3	
19 " "	5	
8 " "	8	1 of No. 18A
2 " "	10	4 " " 19A
1 " "	11	1 " " 21
10 " "	12	1 " " 24
1 " "	14	62 " " 37
1 " "	15	1 " " 47
		6 " " 39

## Model No. 5.35 Armored Motor Tricycle

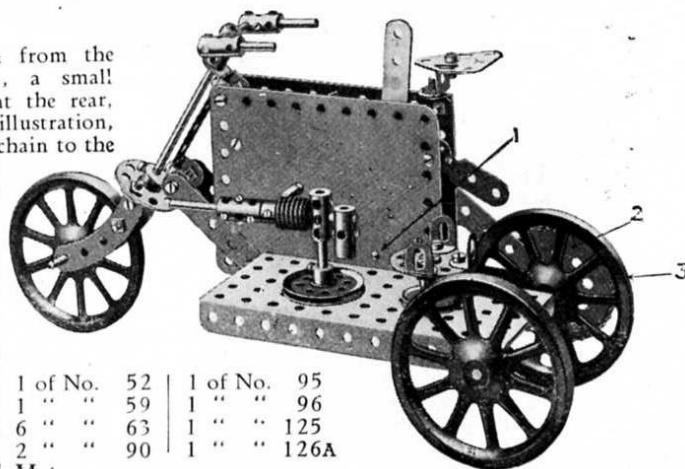


This is driven from the motor spindle 1, a small Sprocket Wheel at the rear, not shown in the illustration, being geared by a chain to the

larger Sprocket Wheel 2 bolted on the axle rod of the rear Wheels 3.

Parts required:

2 of No.	2	4 of No.	18A
2 " "	5	3 " "	19A
1 " "	9D	1 " "	21
2 " "	11	3 " "	22
4 " "	12	2 " "	24
2 " "	12B	1 " "	32
1 " "	15A	22 " "	37
2 " "	16	10 " "	38
2 " "	17	1 " "	48A

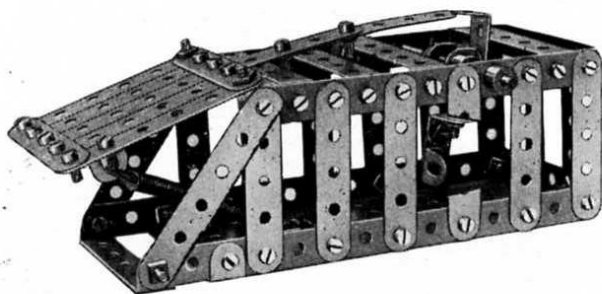


Clockwork Motor  
(not included in Outfit)

1 of No.	52	1 of No.	95
1 " "	59	1 " "	96
6 " "	63	1 " "	125
2 " "	90	1 " "	126A

These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

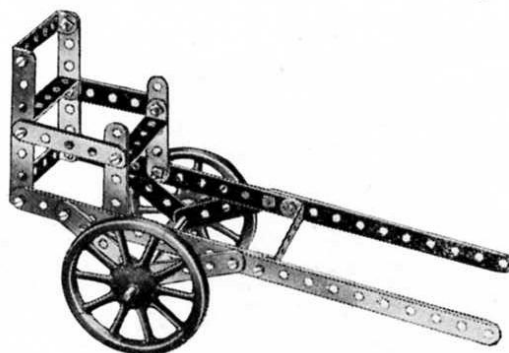
Model No. 5.36 Mouse Trap



Parts required:

3 of No.	2
8 " "	4
18 " "	5
1 " "	10
1 " "	11
4 " "	12
1 " "	16
59 " "	37
5 " "	38
1 " "	43
1 " "	48
9 " "	48A
1 " "	52
4 " "	59

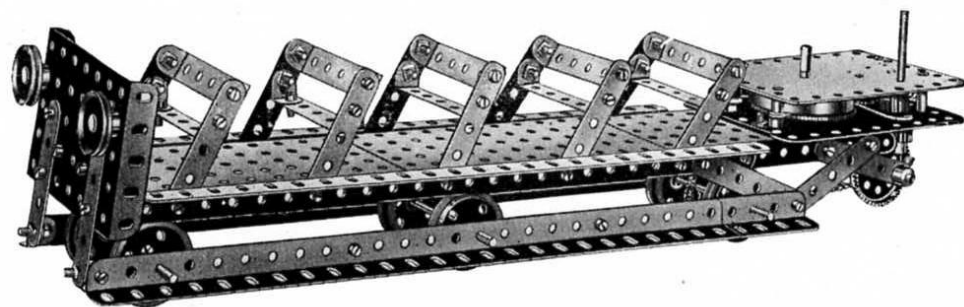
Model No. 5.37 Ducking Chair



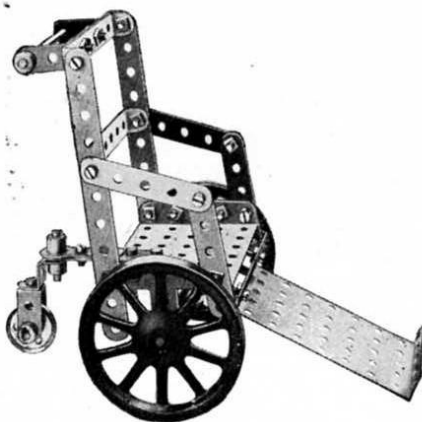
Parts required:

4 of No.	2
2 " "	3
8 " "	5
1 " "	15A
2 " "	19A
4 " "	35
16 " "	37
5 " "	48A

Model No. 5.39 Touring Tram Car



Model No. 5.38 Invalid Chair



Parts required:

2 of No.	2
5 " "	5
1 " "	10
1 " "	15A
1 " "	16
2 " "	18A
2 " "	19A
1 " "	22A
25 " "	37
5 " "	38
1 " "	46
3 " "	48B
2 " "	53
5 " "	59
1 " "	62
1 " "	102
1 " "	125
2 " "	126A

Parts required:

20 of No.	5	6 of No.	20	8 of No.	48A
6 " "	8	2 " "	22	3 " "	52
8 " "	12	1 " "	26	1 " "	53
4 " "	16	1 " "	28	2 " "	59
		64 " "	37		

Clockwork Motor  
(not included in Outfit)

These Models can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

## Model No. 5.40 Automobile

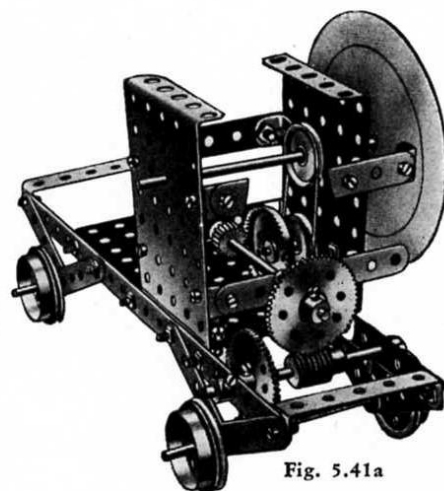
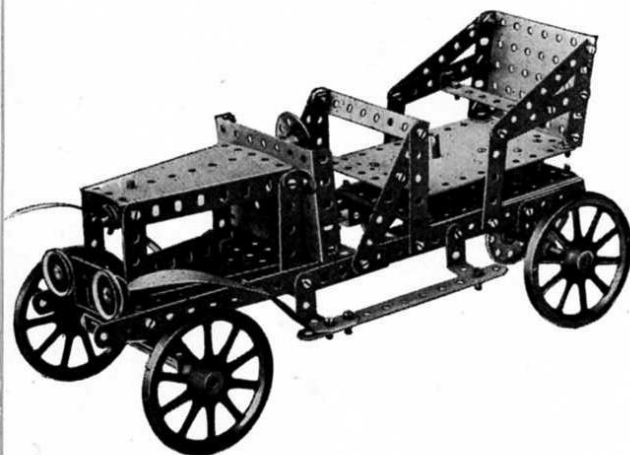
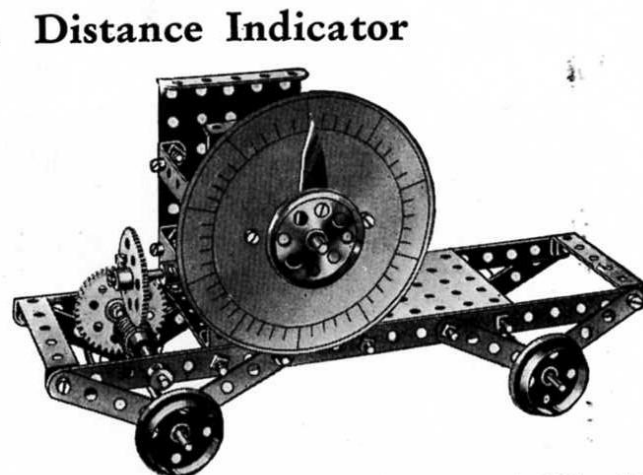


Fig. 5.41a



Parts required:									
4 of No.	2	2 of No.	15A	2 of No.	22	1 of No.	32		
4 "	3	1 "	16	1 "	24	38 "	37		
8 "	5	1 "	17	2 "	26	2 "	48A		
10 "	12	4 "	20	2 "	27A	1 "	52		
2 "	15	1 "	21	1 "	28	2 "	53		
						6 "	59		

N. B.—Indicator not supplied; may be made from cardboard.

## Model No. 5.42 Railroad Car

Parts required:

2 of No.	1	2 of No.	24
2 "	2	2 "	26
7 "	3	1 "	28
4 "	4	1 "	32
7 "	5	67 "	37
2 "	9	3 "	38
9 "	12	2 "	41
4 "	12A	1 "	48A
1 "	14	3 "	48B
2 "	15	3 "	53
1 "	16	2 "	54
4 "	19A	7 "	59
2 "	22	2 "	126A

Clockwork Motor  
(not included in Outfit)

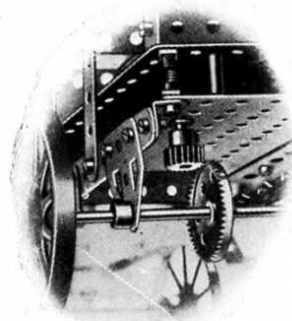
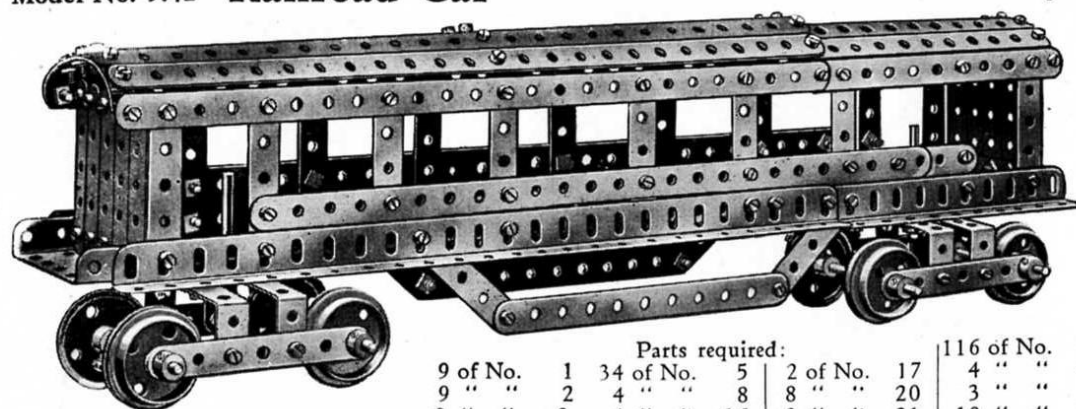


Fig. 5.40a



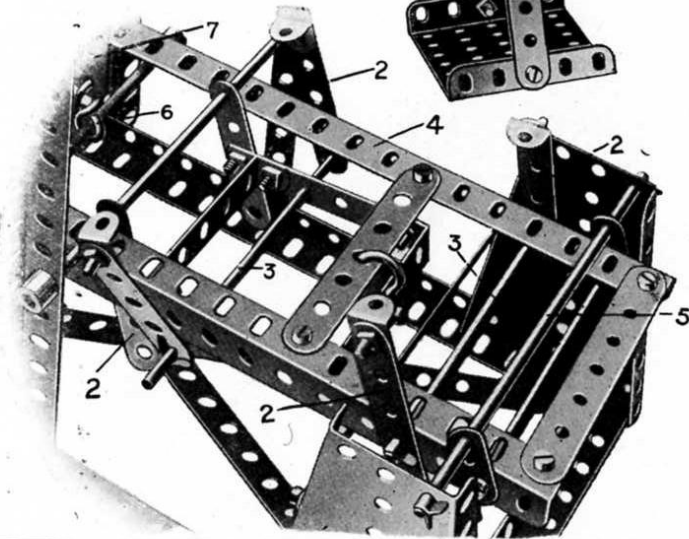
Parts required:									
9 of No.	1	34 of No.	5	2 of No.	17	116 of No.	37		
9 "	2	4 "	8	8 "	20	4 "	46		
8 "	3	4 "	16	2 "	21	3 "	52		
						10 "	59		

This Model can be made with MECCANO Outfit No. 5X (or No. 4X and No. 4A)

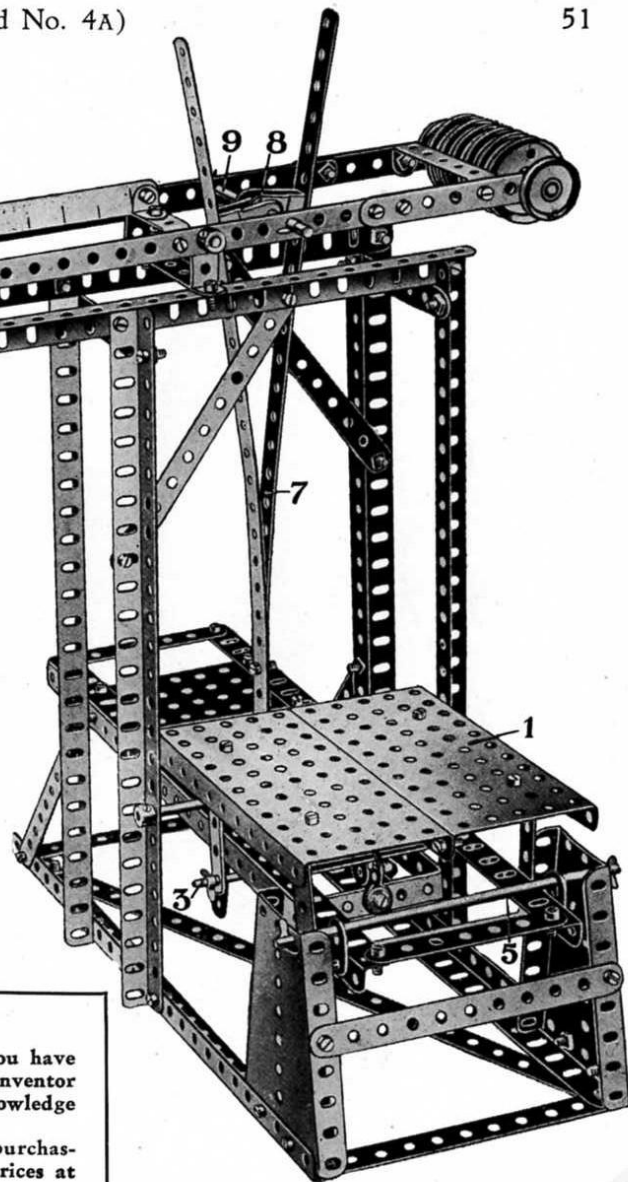
### Model No. 5.43 Beam Scales

#### Parts required:

7 of No.	1	7 of No.	20
10 " "	2	2 " "	22
8 " "	3	88 " "	37
2 " "	4	2 " "	44
10 " "	5	1 " "	46
10 " "	8	5 " "	48A
2 " "	10	1 " "	50
9 " "	12	2 " "	52
2 " "	14	2 " "	53
2 " "	15	2 " "	54
4 " "	15A	2 " "	57
2 " "	16	8 " "	59



The weighing platform 1 is bolted to the four uprights 2, which engage over transverse Rods 3, to permit of a parallel movement. The frame 4 of the platform is pivotally slung by Flat Brackets from the Rod 5, and is coupled by Hook 6, pull Rods 7, which are connected by a pair of Cranked Bent Strips 8 to a Rod 9, passing through the side Strips 10 to the main weight beam. The sliding weight 11 is adjustable on the graduated arm by an eye piece 13.



#### HOW TO CONTINUE

Do not consider that you have exhausted the possibilities of your No. 5X Meccano Outfit when you have made the 873 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

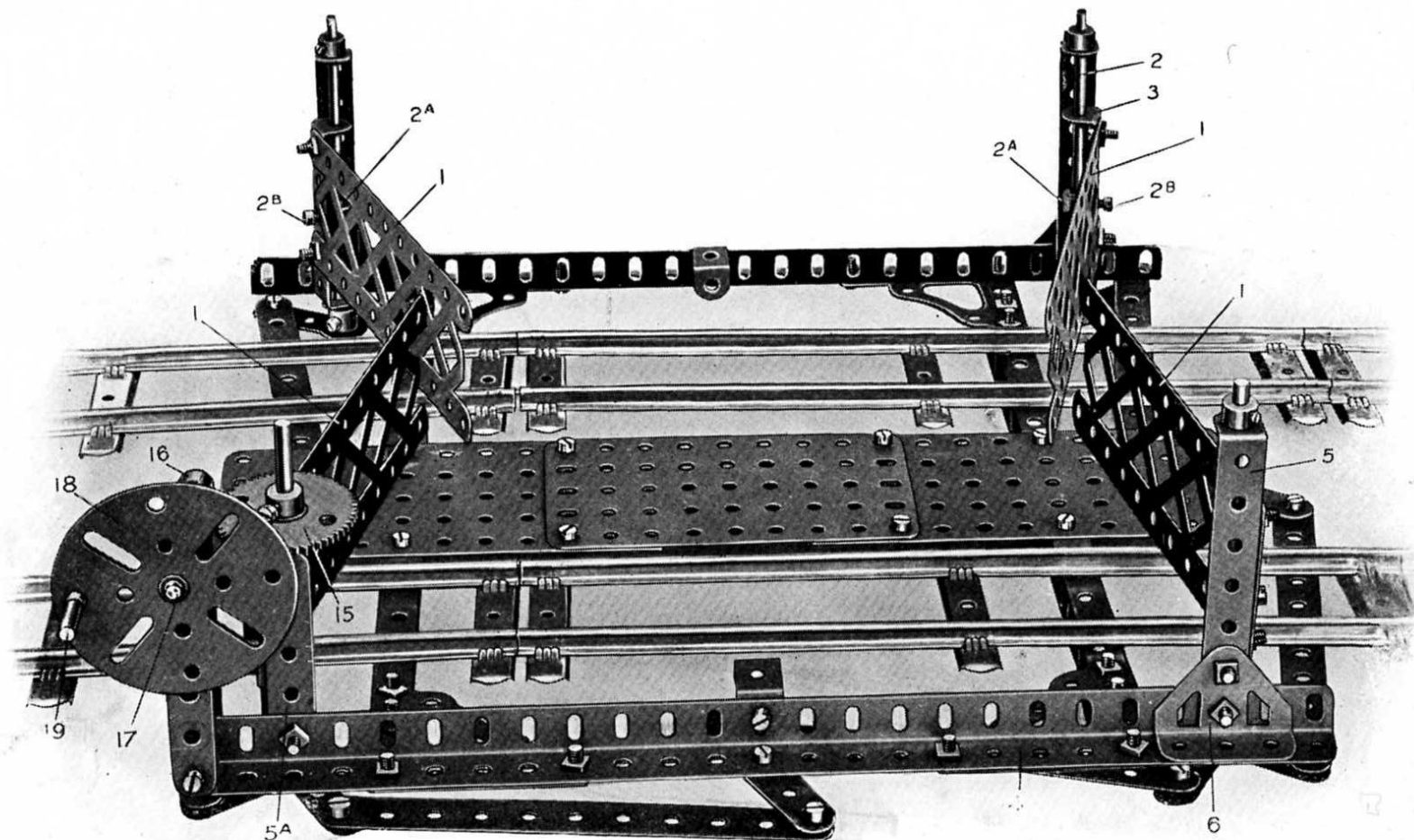
You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 5A Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

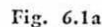


This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

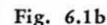
Model No. 6.1

# Level Crossing Gates





6 of No.	2
2 " "	4
3 " "	5
1 " "	6A
2 " "	8
2 " "	8A
4 " "	11
4 " "	15A
1 " "	17
1 " "	27A
1 " "	32
53 " "	37
16 " "	37A
4 " "	48A
3 " "	48B
1 " "	53A
7 " "	59
2 " "	62
3 " "	70
4 " "	100
4 " "	108
1 " "	109
3 " "	115
1 " "	126
2 " "	123



The gates consist of 5½" Braced Girders 1 and are pivotally carried on the Rods 2 being bolted to 2½" by ½" Double Angle Strips 3. On each Rod 2 is threaded a Collar 2A, Fig. 6.1, and a bolt 2B is passed through the centre hole of the Double Angle Strips 3 and screwed into the thread hole of the Collar 2A, nipping the Collar to the Rod 2, thus ensuring that the Braced Girders 1 shall turn with the Rods 2. Three of the Rods 2 are carried from the lower Angle Girders 4 in 3½" by ½" Double Angle Strips 5, and one in a 2½" by ½" Double Angle Strip 5A, the feet of the Strips 5 being reinforced to the Angle Girders 4 by the Trunnions 6. The Rods 2 are coupled together by Cranks 7 on the rear Rods, and Bell Cranks 8 on the other Rods, the ends of the two Bell Cranks being connected by Strips 9 to 2½" Strip 10 pivoted on the bolt 11, Fig. 6.1a, while the Bell Cranks 8 are connected to the Cranks 7 by other Strips 12, pivotally connected to 2½" Strips 13, pivoted on the bolts 14. Consequently, all the Rods 2 are inter-connected. As will be seen from the Figs. 6.1 and 6.1b, a 57-toothed Gear Wheel 15 is secured on one of the Rods 2, and is engaged by a Worm 16 on a Rod 17 to which is secured a Face Plate 18, fitted with a Threaded Pin, 19, as an operating handle. By turning the Face Plate 18 the spindles 2 are all rotated, and the gates caused to open or close.

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

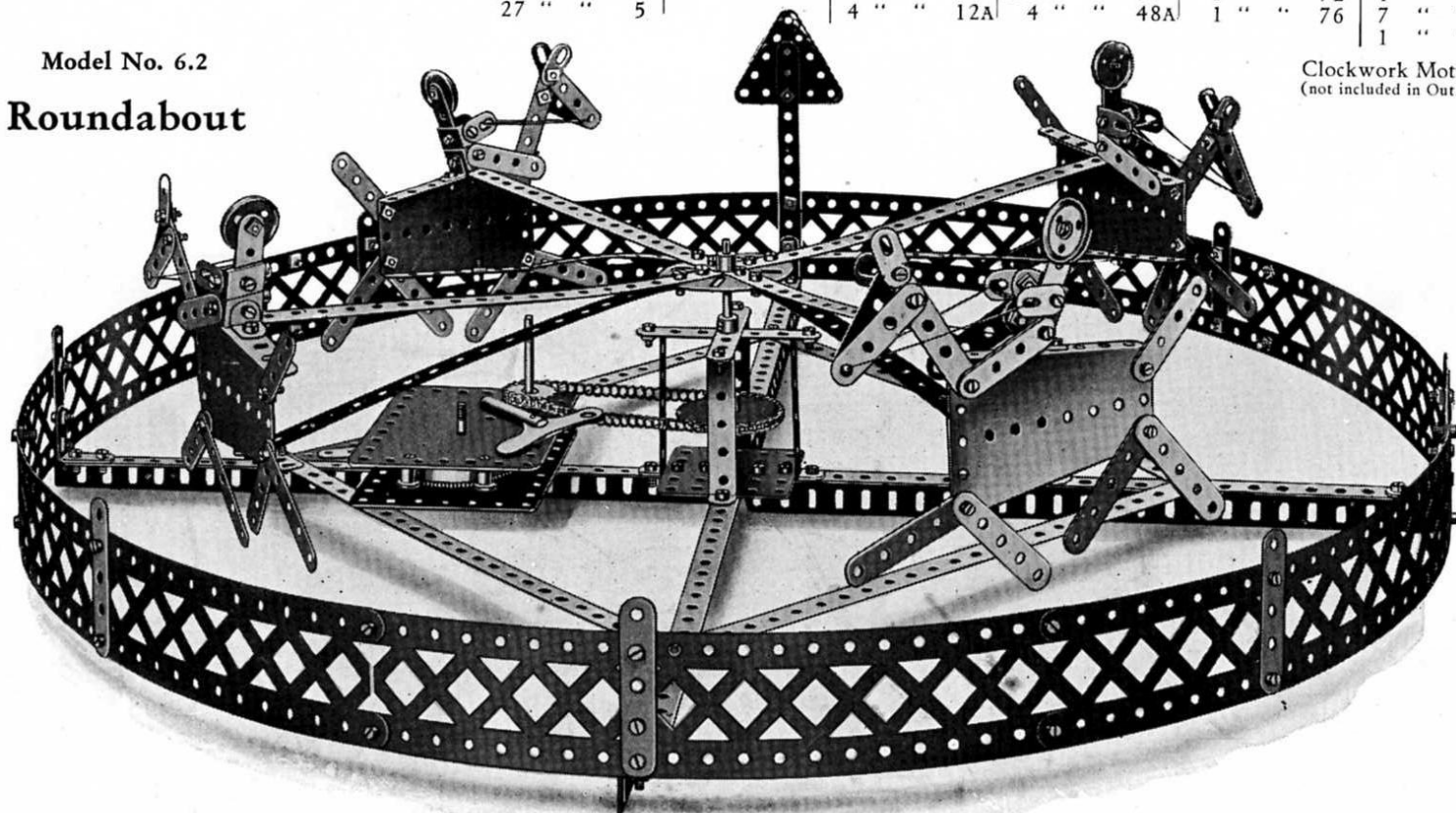
Parts required:

12 of No.	1	24 of No.	6	16 of No.	10	1 of No.	15	4 of No.	54	14" of No.	94
1 " "	2	4 " "	8	8 " "	11	4 " "	22A	2 " "	59	1 " "	95
2 " "	3			4 " "	12	135 " "	37	1 " "	72	1 " "	96
27 " "	5			4 " "	12A	4 " "	48A	1 " "	76	7 " "	99
										1 " "	109

Clockwork Motor  
(not included in Outfit)

Model No. 6.2

## Roundabout

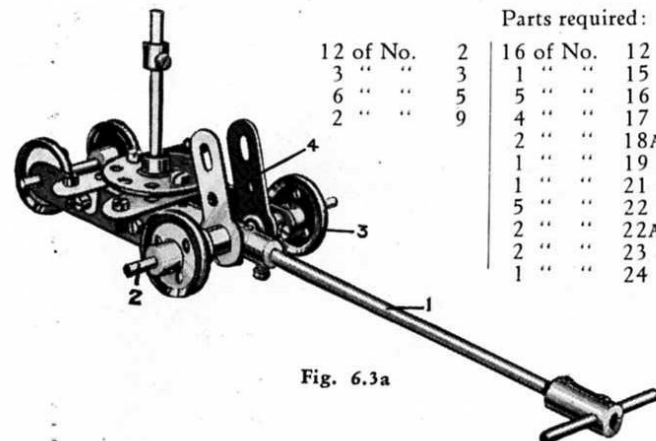


In this model the animals, built up from Sector Plates and short Strips to represent the limbs, are carried from 9½" Strips bolted to a Face Plate, which is rotated from the centre Rod by means of a Chain and a 1" Sprocket Wheel connected to the Spring Motor.

The centre Rod, by means of which the rotating figures are driven, is supported below the Face Plate by a light framing to give rigidity.

The model is surrounded by Braced Girder Strips bolted together, and strengthened by 12½" cross Angle Girders, connected in the centre by a 2½" by 2½" Flat Plate. The centre hole of this Plate carries the lower end of the vertical Rod upon which the animals are mounted.

## Model No. 6.3 Portable Crane



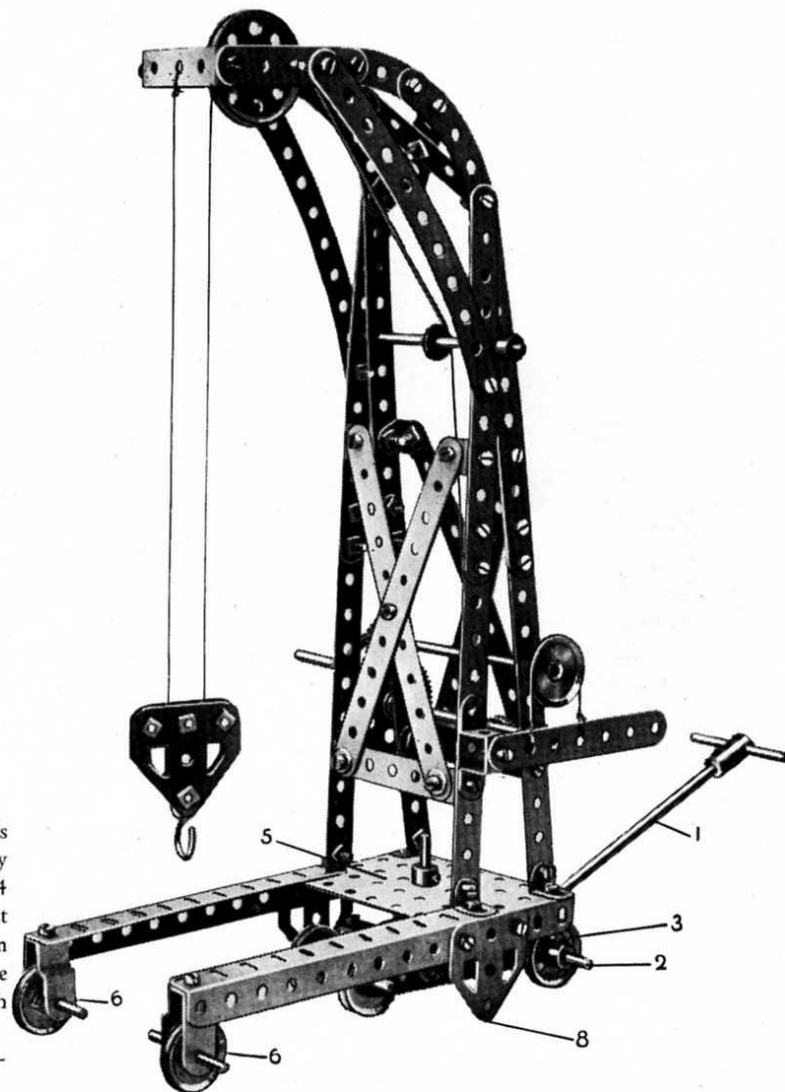
## Parts required:

12 of No.	2	16 of No.	12	1 of No.	26
3 " "	3	1 " "	15	1 " "	27A
6 " "	5	5 " "	16	74 " "	37
2 " "	9	4 " "	17	16 " "	38
		2 " "	18A	1 " "	40
		1 " "	19	2 " "	44
		1 " "	21	1 " "	45
		5 " "	22	1 " "	48
		2 " "	22A	2 " "	48A
		2 " "	23	1 " "	53
		1 " "	24	1 " "	57
				10 " "	59
				2 " "	62
				2 " "	63
				2 " "	89
				2 " "	90
				4 " "	126A

Fig. 6.3a

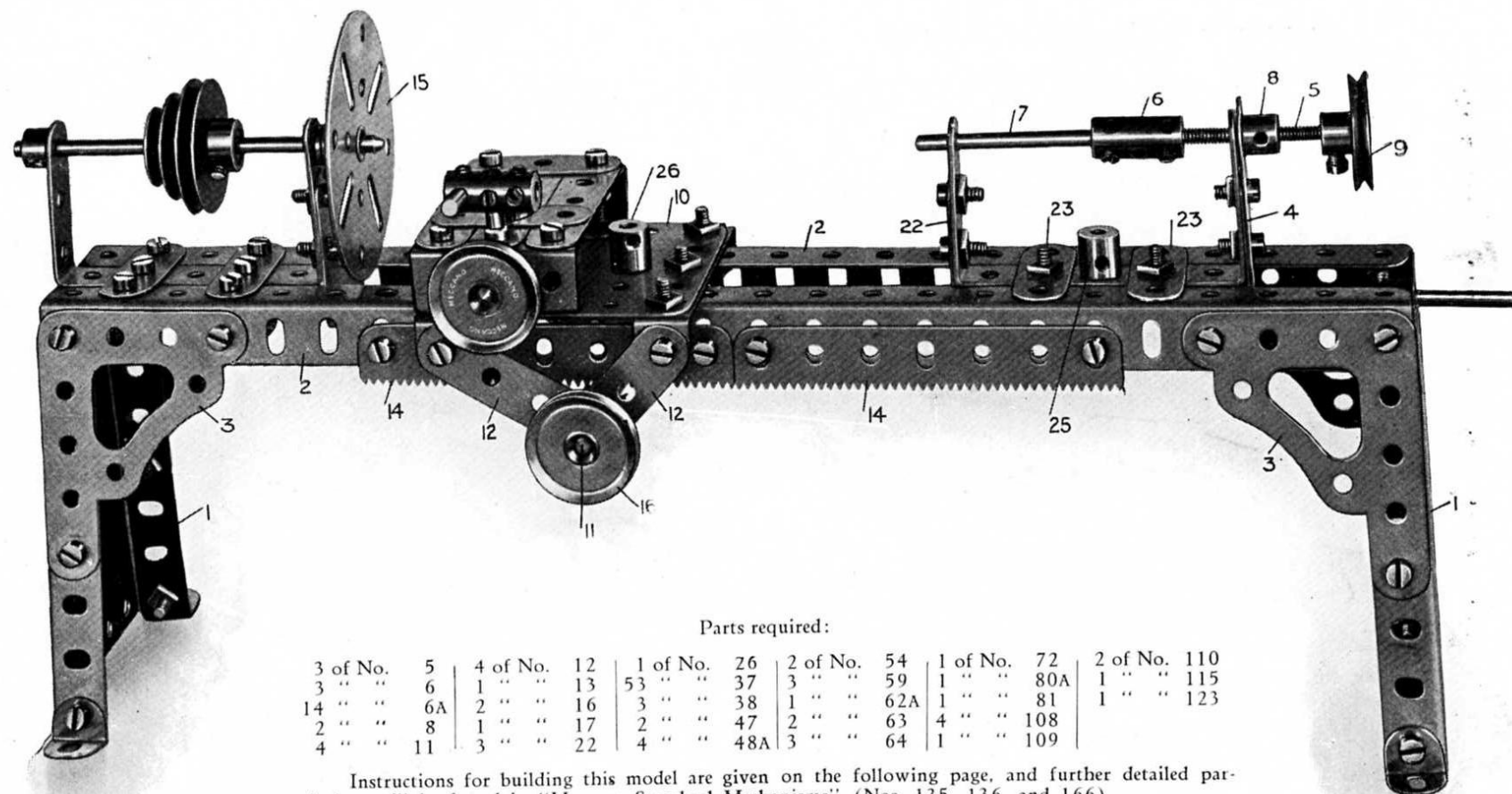
The construction of the tower is quite clear from the illustration. The crane is moved about by depressing the handle 1 carrying an Axle 2 for the 1" Loose Pulley Wheels 3, which are secured in position by Collars and set screws. A pair of Cranks 4 are secured to the Axle 2 and are arranged when the handle is depressed to bear against the underface of the small Rectangular Plate 5 and lift the crane so that it then runs on the Wheels 3 and 6. When the crane is brought to rest its weight forces down the Crank 4 which raises the handle 1, and the tips 8 of the Flat Trunnions together with front Wheels 6 then support the crane.

The load is controlled by a strap and lever brake (see "Meccano Standard Mechanisms," detail No. 81).



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.4 Lathe



### Parts required:

3 of No.	5	4 of No.	12	1 of No.	26	2 of No.	54	1 of No.	72	2 of No.	110
3 " "	6	1 " "	13	53 " "	37	3 " "	59	1 " "	80A	1 " "	115
14 " "	6A	2 " "	16	3 " "	38	1 " "	62A	1 " "	81	1 " "	123
2 " "	8	1 " "	17	2 " "	47	2 " "	63	4 " "	108		
4 " "	11	3 " "	22	4 " "	48A	3 " "	64	1 " "	109		

Instructions for building this model are given on the following page, and further detailed particulars will be found in "Meccano Standard Mechanisms" (Nos. 135, 136, and 166).



## Model No. 6.4 Lathe (continued)

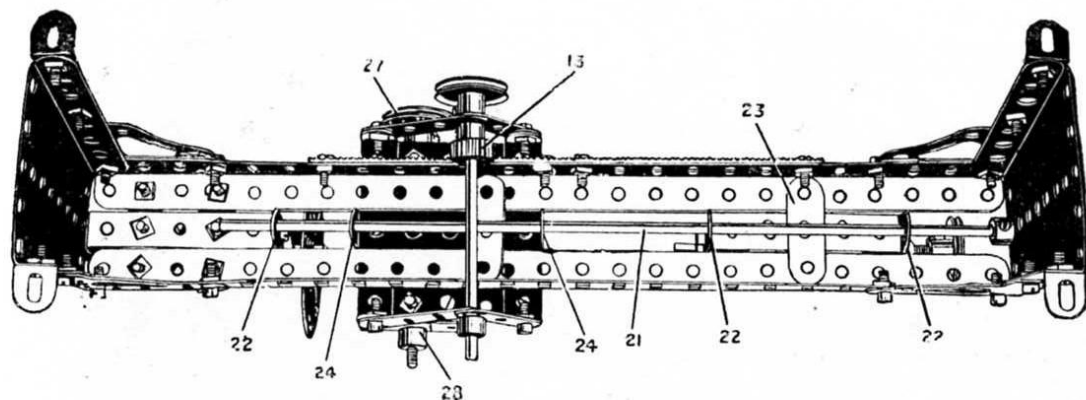


Fig. 6.4a

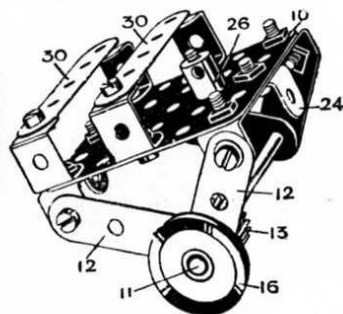


Fig. 6.4b

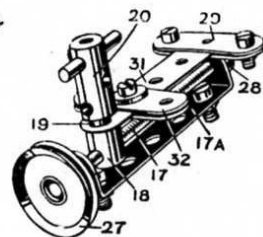
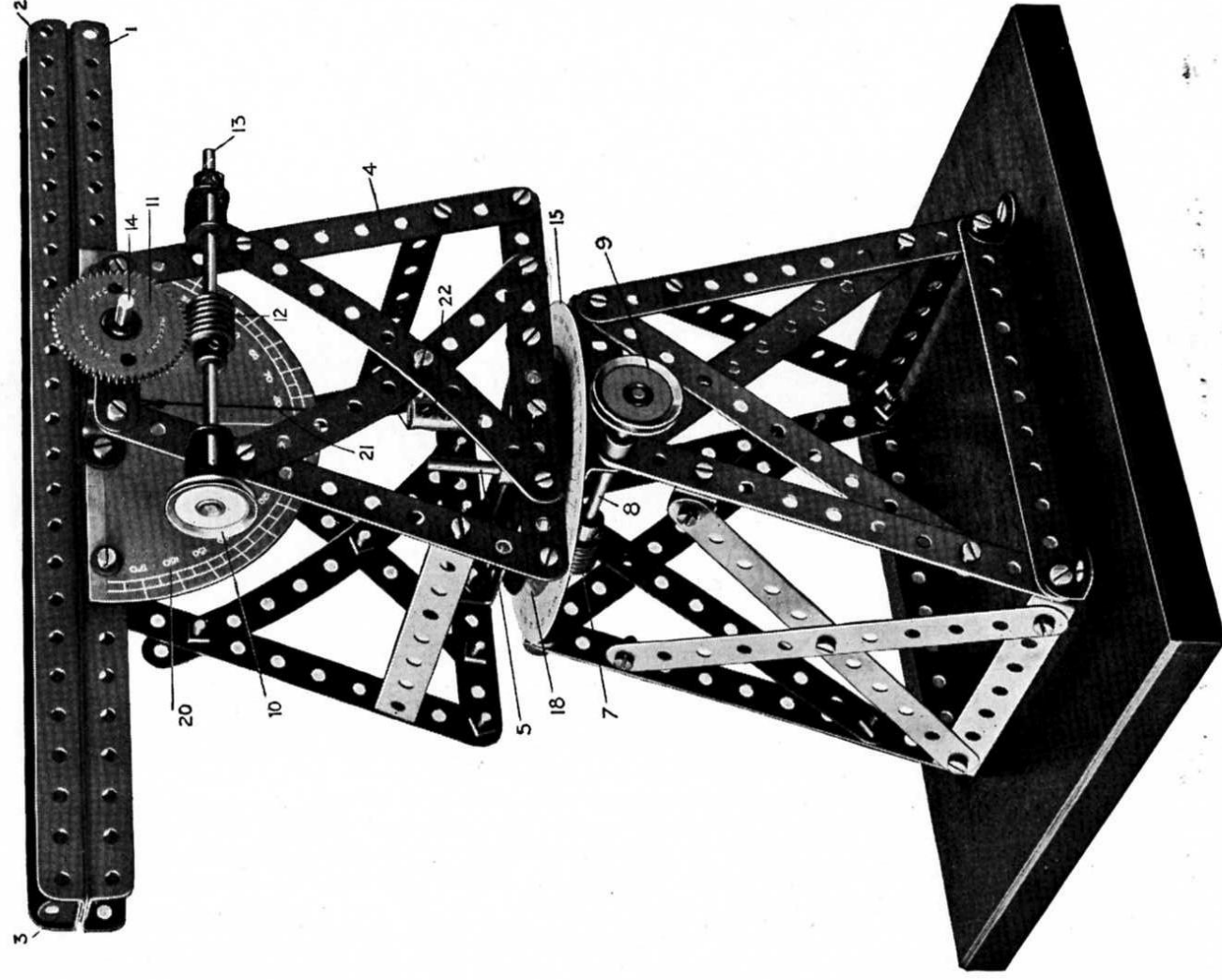


Fig. 6.4c

The lathe frame is built up from Sector Plates 1, at each end bolted to 12 1/2" Angle Girders 2, forming the bed, by means of Architraves 3. The tail stock 4 slides between the Angle Girders 2, and has a screw adjustment 5, the screw of which is connected by the Coupling 6 to the short Rod 7; the screw 5 is threaded into a Threaded Crank 8, and is operated by the 1" Pulley Wheel 9. The tail stock is locked by turning the Threaded Boss 25, which engages the bolt holding the underneath cross Strip 23, thus gripping it beneath the lathe bed. The saddle 10, consisting of a 2 1/2" by 2 1/2" Flat Plate, carries the Rod 11, journalled in the Strip 12, and carries a Pinion 13, Fig. 6.4b, which engages the racks 14, so that the saddle may be moved to or from the Face Plate 15, by turning the Pulley Wheel 16. The traversing movement is obtained by means of the screw 17, which engages a Threaded Boss 18, into the end of which is screwed a Threaded Pin 19, carrying the Coupling 20, which forms the tool post. The saddle is locked by the Threaded Boss 26, similar to the tail stock. The Screwed Rod 17 is held against end movement in the 2 1/2" by 1/2" Bent Strip 17A, by the Pulley Wheel 27 at one side and the Collar 28 on the other.

The construction of the saddle is shown in Figs. 6.4b and 6.4c, where the 1 1/2" Strips 29, of Fig. 6.4c are shown removed from Fig. 6.4b; these Strips 29 are bolted at the end of the guide Strips 30, Fig. 6.4b, and form guides for the 2 1/2" Strip 31, carrying the tool post. They are spaced apart by the thickness of the Strips 30, and the 1 1/2" Strips 32, bolted to the Strip 31, slide on the Strips 30. As will be seen from the underneath view, Fig. 6.4a, a guide Rod 21, is fixed beneath the bed Plates, and is engaged by the end holes of the 1 1/2" Strips 22, secured to the sides of the head and tail stocks; 1 1/2" Strips 23, being bolted above and below to retain the tail stock in position. The saddle engages the Rod 21 by means of a 2 1/2" by 1/2" Double Angle Strip 24.

### Model No. 6.5 Theodolite



## Model No. 6.5 Theodolite (continued)

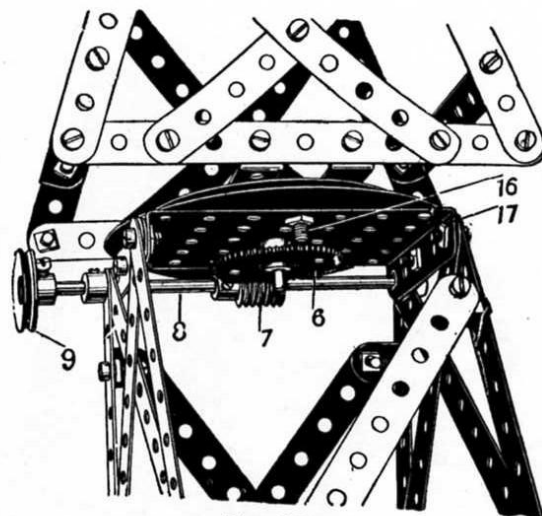


Fig. 6.5a

Parts required:		
20 of No.	2	
2 " "	5	
6 " "	6A	
4 " "	8	
2 " "	11	
10 " "	12	
3 " "	15	
1 " "	17	
1 " "	19B	
2 " "	22	
2 " "	27A	
2 " "	32	
60 " "	37	
1 " "	45	
6 " "	48B	
1 " "	53	
6 " "	59	
1 " "	62	
1 " "	63	
4 " "	89	
1 " "	135	

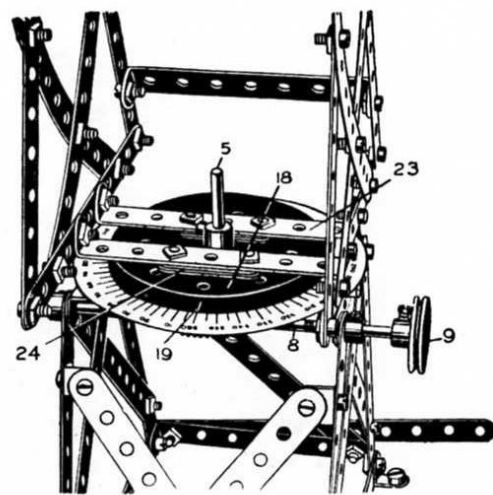


Fig. 6.5b

The Theodolite is represented by two reverse pairs of Angle Girders 1 and 2, which form a "sighting arm," an Angle Bracket 3 being bolted at one end to form an eye piece. A small piece of gummed paper is fastened over the aperture in the Angle Bracket, and a fine pin-hole made in the paper at the centre of the aperture. Two crossed threads are gummed across the aperture of the Angle Bracket bolted at the other end of the sighting arm.

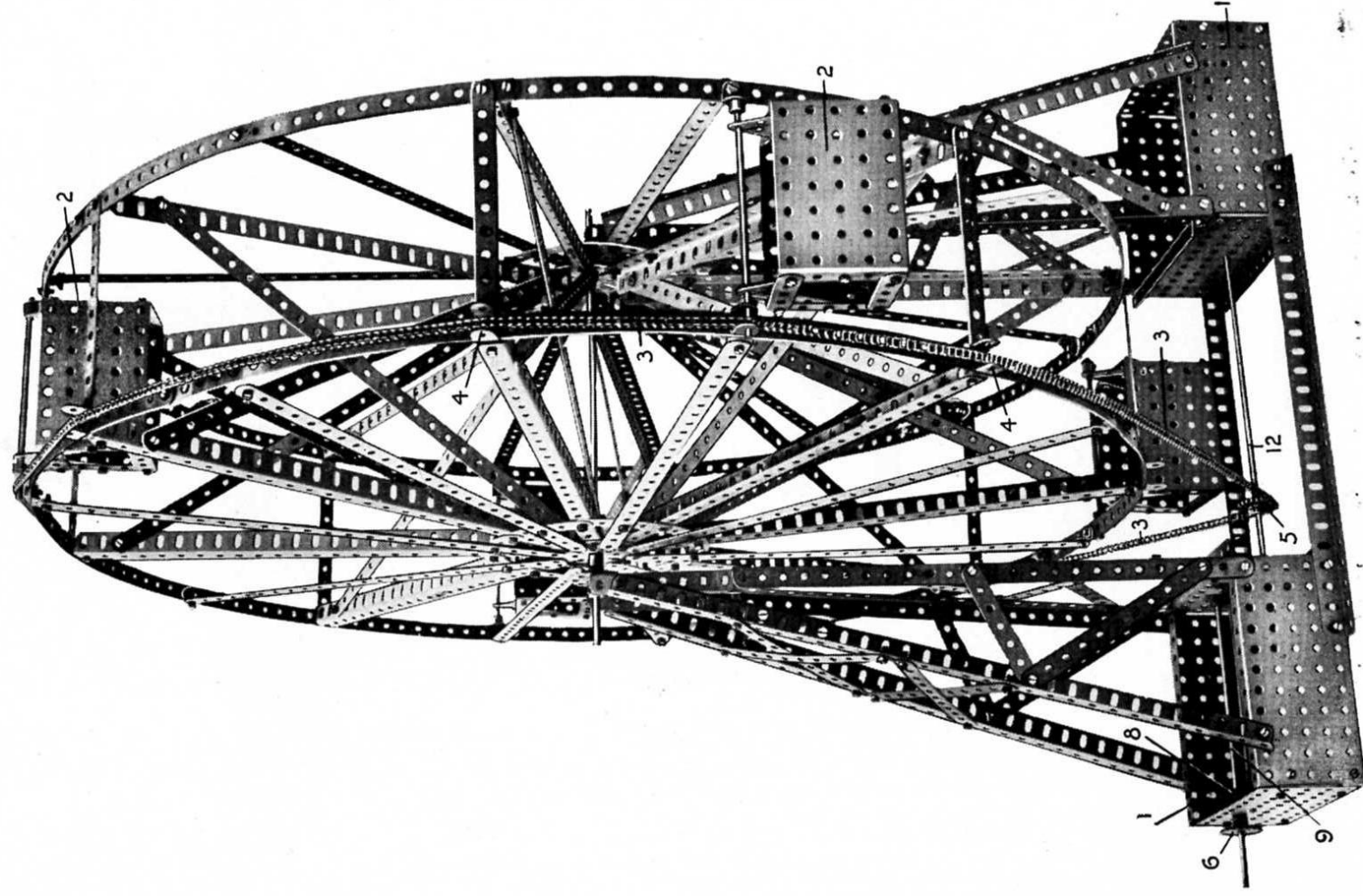
The upper framework 4 swivels horizontally with the vertical spindle 5 as a pivot. On the lower end of this Rod is a Gear Wheel 6, Fig. 6.5a, engaged by a Worm 7 on a Rod 8, operated by the 1" Pulley 9. This gives the horizontal traverse of the upper frame 4, in which the sighting arm is pivotally mounted upon a Rod 14, on which is a Gear Wheel 11 engaged by a Worm 12 on a Rod 13 operated by a 1" Pulley 10. This mechanism gives the vertical traverse or inclination of the sighting arm.

A protractor for the horizontal angular movement of the upper frame 4 consists of a graduated cardboard disc 15, which is bolted by a bolt 16 to a perforated Flanged Plate  $3\frac{1}{2}$ " by  $2\frac{1}{2}$ " 17, the head of the bolt 16 being above the cardboard disc, and beneath the 3" Pulley Wheel 18. The cardboard disc is thus held against movement by the bolt 16, its centre hole engaging round the pivot Rod 5. An index mark or pointer 19 is made on the Pulley Wheel 18. The movement of this pointer round the graduated scale on the disc shows the horizontal angular traverse.

Similarly, the vertical traverse of the sighting arm is indicated by means of a semi-circular protractor 20, bolted to the lower Angle Girder 1 of the sighting arm, a cord 21 carrying a weight 22, being hung from the Rod 14, the position of the thread 21 over the protractor 20 indicating the vertical angular adjustment of the sighting arm. The thread 21 has a loop by which it is hung on the Rod 14, so that its direction always points truly radially to the Rod 14, and this gives the correct angular reading. In order to bring the Double Angle Strips 23 flush with the outer rim of the Pulley Wheel 18, three  $1\frac{1}{2}$ " packing Strips 24 are bolted beneath the Double Angle Strips, as shown in Fig. 6.5b.

The sighting arm is secured to the Rod 14 by a Crank bolted to the arm on the opposite side to the protractor and nipped by the set screw to the Rod 14.

## Model No. 6.6 Big Wheel



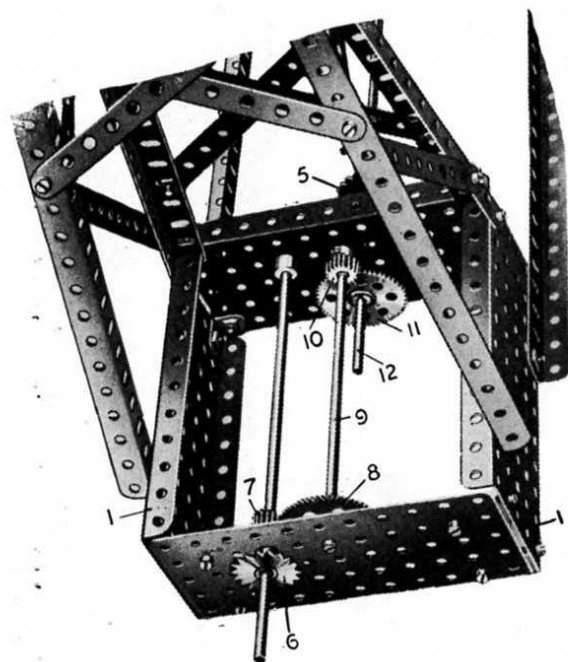
Model No. 6.6 **Big Wheel** (continued)

Fig. 6.6a

Parts required:	
46 of No.	1
24 " "	2
4 " "	3
32 " "	5
26 " "	8
4 " "	9
8 " "	11
44 " "	12
2 " "	13
1 " "	13A
1 " "	14
4 " "	15
2 " "	24
2 " "	26
2 " "	27A
308 " "	37
6 " "	38
4 " "	48D
6 " "	52
8 " "	53
2 " "	54
13 " "	59
2 " "	70
16 " "	90
8 " "	94
2 " "	96
2 " "	109

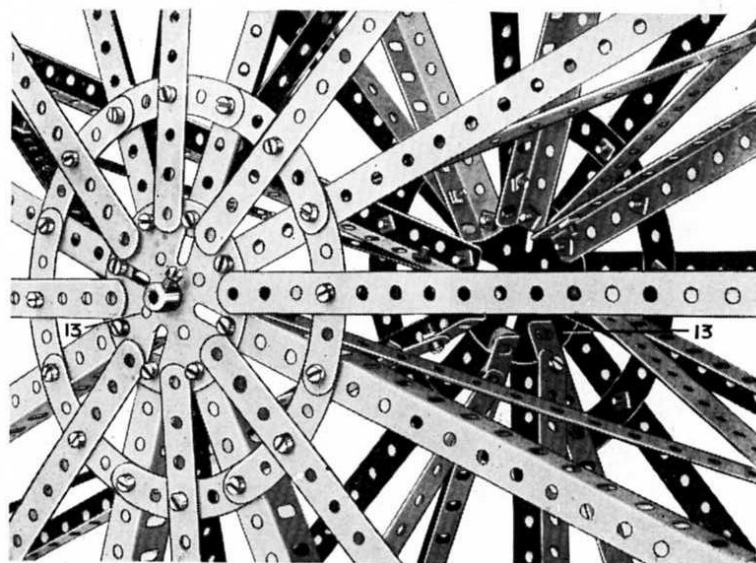


Fig. 6.6b

In constructing this model, Flanged Plates 1 are used to form the sides and inner part of the base of the side pedestals, and also to form the suspended cages 2 on the wheel. The driving Chain 3 is conveniently kept in position round the periphery of one of the side elements of the wheel by a series of Double Angle Brackets 4, bolted on the ends of the spokes.

Fig. 6.6a shows how the driving Chain 3 is actuated from the Sprocket Wheel 5. On the Axle of the driving Sprocket 6 is a  $\frac{1}{2}$ " Pinion 7 driving a  $1\frac{1}{2}$ " Gear Wheel 8 on an Axle 9. On the other end of this Axle 9 is a  $\frac{1}{2}$ " Pinion 10 engaging a  $1\frac{1}{2}$ " Gear Wheel 11 on the Rod 12 of the Sprocket Wheel 5.

Fig. 6.6b shows how the wheel is built up from the centre Face Plates 13.



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

### Model No. 6.7

## Automatic Weighing Machine

#### Parts required:

2 of No.	1	1 of No.	24	12 of No.	59
6 "	2	2 "	26	2 "	62
2 "	3	2 "	27A	6 "	63
6 "	4	64 "	37	10 "	94
4 "	5	2 "	37B	1 "	96
4 "	8	1 "	43	2 "	99
1 "	13	1 "	48A	6 "	100
2 "	13A	3 "	48B	2 "	108
1 "	15A	2 "	52		
7 "	16	1 "	53		

The platform 1 is connected by cross Rod and Couplings 2a to a Rod 2 (by means of a further Coupling) passing through the centre of the machine and guided in the 3½" Double Angle Strips 3 and 3a connected to side Strips 4. At the upper end of this Rod 2 is a Bush Wheel 5, to which is connected a cord 6 and Sprocket Chain 7. This chain passes round a Sprocket Wheel 8 on the same spindle as the 57-toothed Gear Wheel 9 engaging a ½" Pinion 10. The Pinion 10 also engages another 57-toothed Gear Wheel 10a, and this in turn a ½" Pinion 11 on the Spindle 12 carrying the pointer 13. The other end of the Chain is coupled by a Spring 14 to the cross piece 3a, and the pointer is thus always returned to zero immediately the load is removed from the platform.

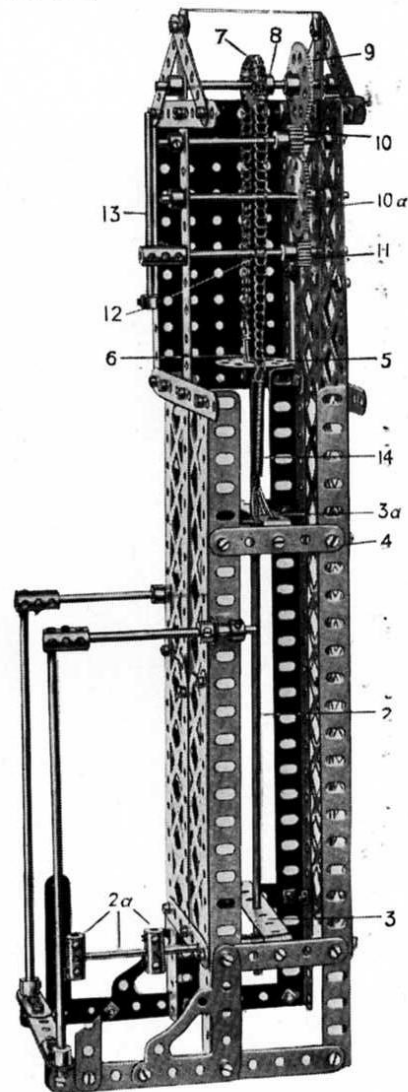
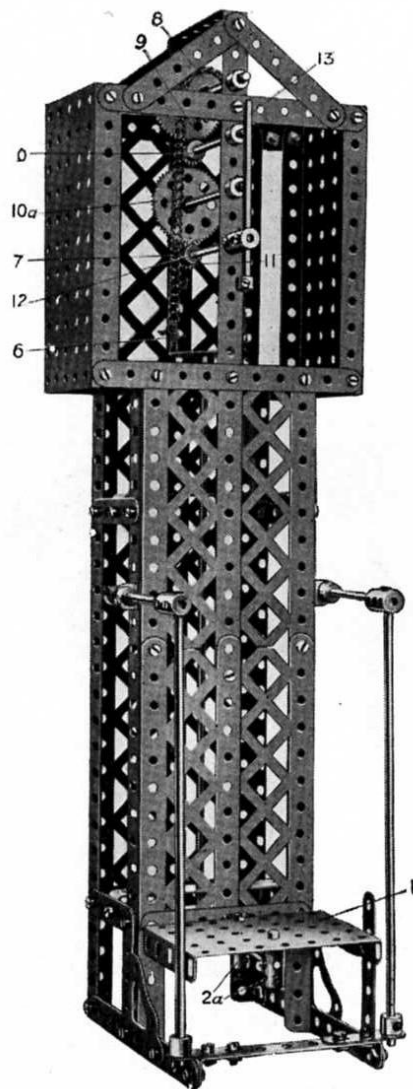


Fig. 6.7a

## Model No. 6.8 Derricking Grab

The grab 1 is suspended by the cords 2 which pass over the Pulleys 3 and round the outer Pulleys of a set of four 4 at the head of the standard 5. The cords continue down and under the outer Pulleys of a set of smaller Pulleys 6 and are wound on a Crank Handle 7 at the centre of which they are connected by a Spring Clip. (Care should be taken to see that, when winding up, the double lapping of each cord on the rod occurs simultaneously, as otherwise the grab will cant over).

The grab is opened or closed by the cord 8 which, after passing over one of two inner Pulleys at the end of the jib 9, then passes over another of the four Pulleys 4 and one of the Pulleys 6 to the Crank Handle 10.

The jib 9 is raised or lowered by the cord 11 which is secured to the standard 5, and having passed around the other of the two inner Pulleys at the jib-end is passed back and around one of the four Pulleys 4 and one of the Pulleys 6 to the Crank Handle 13 on the end of a Rod, on which is a  $\frac{1}{2}$ " Pinion 14 engaging a Contrate Wheel 15 at the foot of the standard 5.

Gear Wheels 16 and 17 are bolted on the Crank Handles 10 and 7 and are connected by the Pinion 18. The Crank Handle 7 is fixed against longitudinal movement, but the Crank Handle 10 may be slid clear of the pinion 18, and the Handle 7 turning the grab is raised or lowered. If the handle 10 is slid to disengage its Gear Wheel from the Pinion 18 and the Handle turned, the grab is opened or closed.

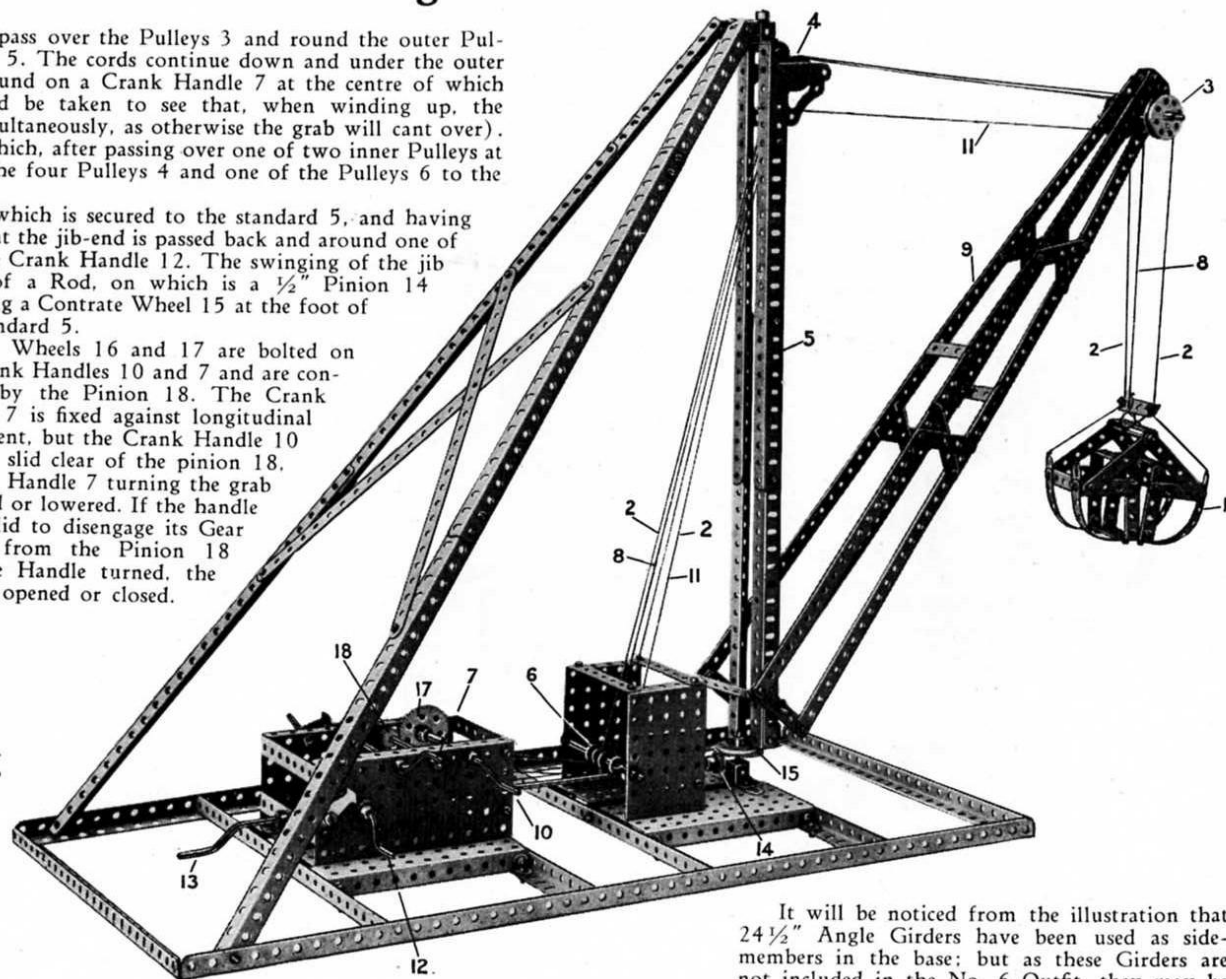


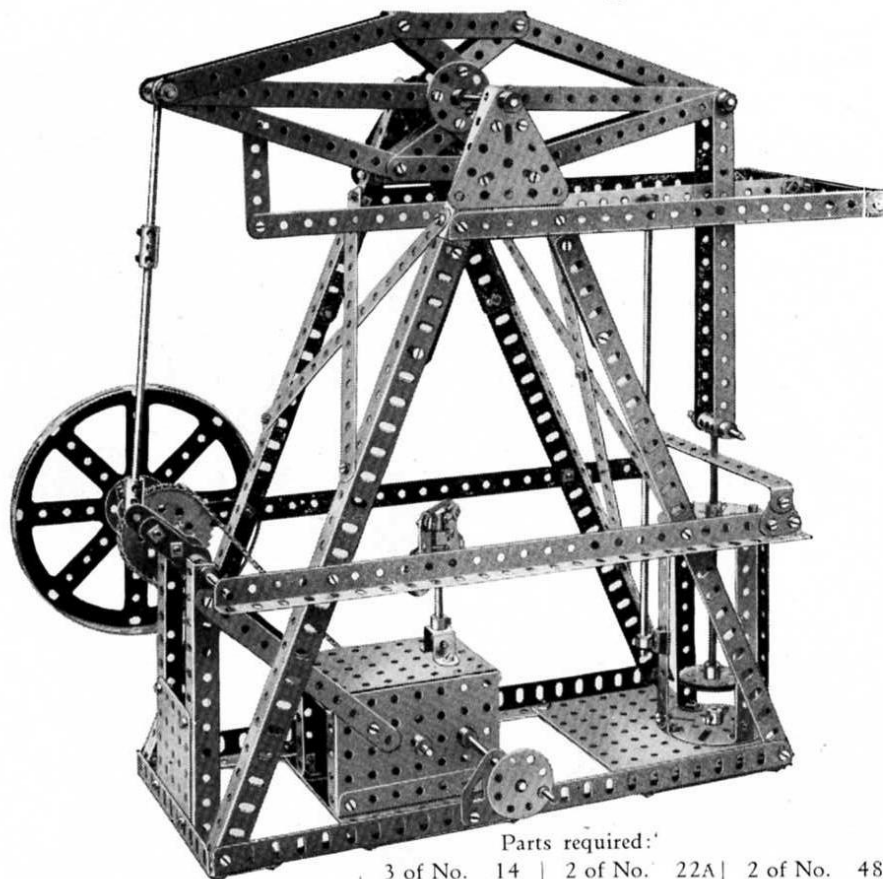
Fig. 6.8a

### Parts required:

10 of No.	1	1 of No.	18A	9 of No.	48A
6 "	3	4 "	19	5 "	48B
4 "	4	2 "	20	6 "	52
20 "	5	2 "	22	2 "	53
4 "	6	3 "	22A	1 "	57
18 "	8	4 "	23	16 "	59
2 "	9	2 "	24	1 "	63
6 "	10	2 "	26	2 "	108
6 "	11	2 "	27A	2 "	115
10 "	12	1 "	28	1 "	126
1 "	13	6 "	35	2 "	147A
2 "	15A	6 "	37	2 "	147B
3 "	16	2 "	44	2 "	148
2 "	17	4 "	48		

It will be noticed from the illustration that  $24\frac{1}{2}$ " Angle Girders have been used as side-members in the base; but as these Girders are not included in the No. 6 Outfit, they may be dispensed with, if desired, by substituting two  $12\frac{1}{2}$ " Girders bolted end to end along each side of the base frame.

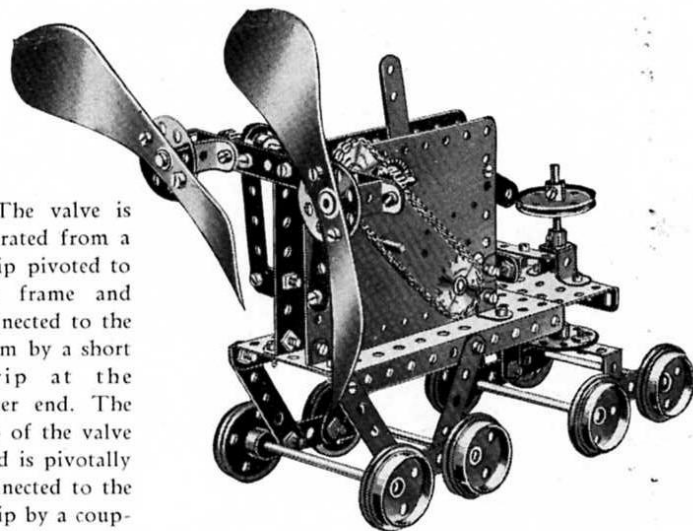
### Model No. 6.9 Beam Engine



Parts required:

5 of No.	1	5 of No.	6A	3 of No.	14	2 of No.	22A	2 of No.	48D	2 of No.	76
4 " "	1B	8 " "	8	3 " "	15	4 " "	24	1 " "	50	2 " "	77
10 " "	2	2 " "	8A	2 " "	15A	2 " "	26	2 " "	52A	1 " "	95
1 " "	2A	7 " "	9	1 " "	16	1 " "	27A	3 " "	53	1 " "	96A
4 " "	4	2 " "	9B	1 " "	16A	1 " "	29	17 " "	59	2 " "	109
1 " "	5	4 " "	11	2 " "	17	120 " "	37	2 " "	62	1 " "	115
8 " "	6	2 " "	12	2 " "	18A	6 " "	38	6 " "	63	1 " "	118
		1 " "		1 " "	18B	1 " "	45	1 " "	63B	1 " "	126A
		3 " "		1 " "	21	3 " "	48C	1 " "	72	2 " "	133

### Model No. 6.10 Aerocar



The valve is operated from a Strip pivoted to the frame and connected to the beam by a short Strip at the other end. The top of the valve Rod is pivotally connected to the Strip by a coupling into which a bolt passing through a hole in the Strip is screwed.

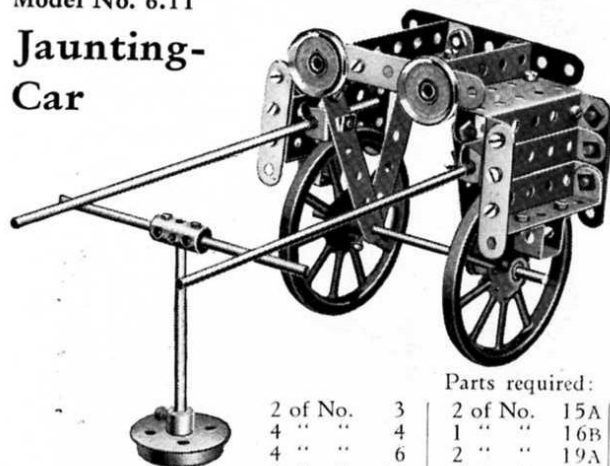
Parts required:

1 of No.	2	2 of No.	29
1 " "	4	47 " "	37
10 " "	5	4 " "	41
10 " "	12	3 " "	45
2 " "	15A	1 " "	46
4 " "	16	1 " "	52
2 " "	17	1 " "	53
8 " "	20	2 " "	59
3 " "	24	2 " "	96
2 " "	26		

Clockwork Motor  
(not included in Outfit)

Model No. 6.11

## Jaunting-Car



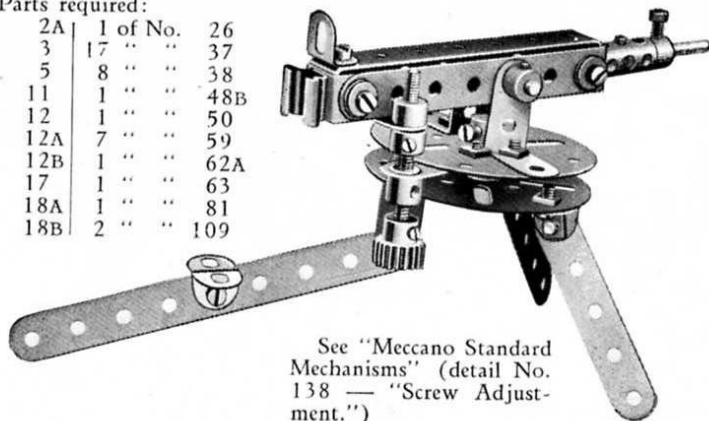
Parts required:

2 of No.	3	2 of No.	15A	39 of No.	37
4 " "	4	1 " "	16B	2 " "	45
4 " "	6	2 " "	19A	10 " "	48A
2 " "	11	1 " "	20	1 " "	53
8 " "	12	2 " "	22	1 " "	63
2 " "	13A	4 " "	35		

Model No. 6.12 Machine Gun

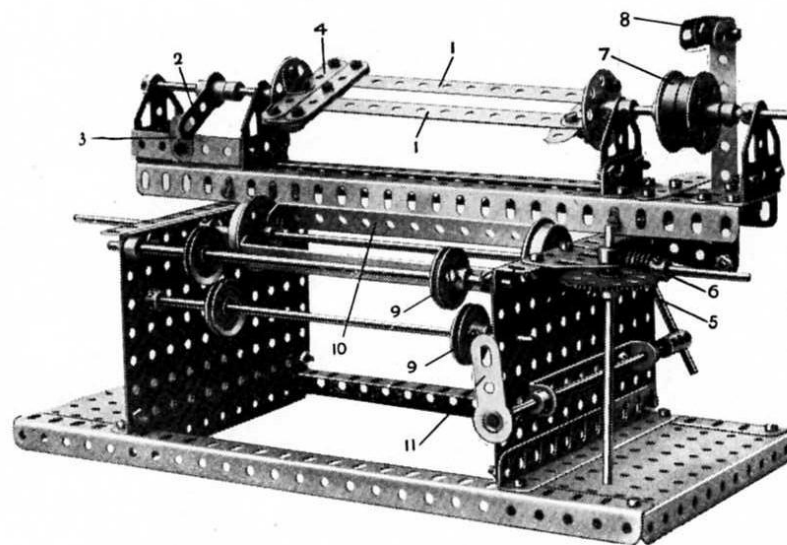
Parts required:

1 of No.	2A	1 of No.	26
2 " "	3	17 " "	37
2 " "	5	8 " "	38
2 " "	11	1 " "	48B
5 " "	12	1 " "	50
2 " "	12A	7 " "	59
2 " "	12B	1 " "	62A
1 " "	17	1 " "	63
1 " "	18A	1 " "	81
1 " "	18B	2 " "	109



See "Meccano Standard Mechanisms" (detail No. 138 — "Screw Adjustment.")

Model No. 6.13 Linen Winder



Parts required:

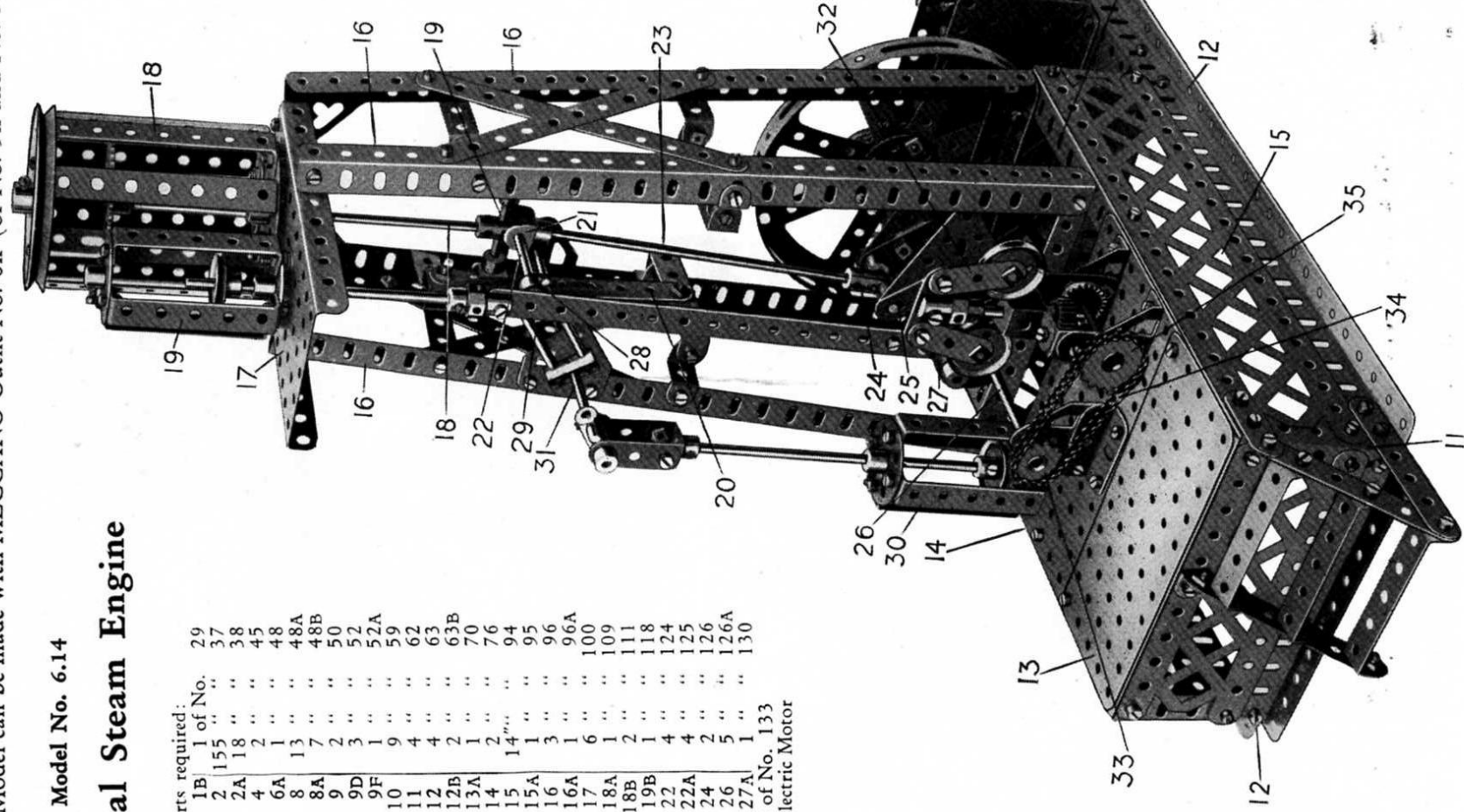
2 of No.	2	1 of No.	13	1 of No.	27A	2 of No.	48D
1 " "	2A	2 " "	13A	1 " "	32	2 " "	52
8 " "	5	1 " "	14	66 " "	37	2 " "	52A
4 " "	8	1 " "	15A	2 " "	37A	16 " "	59
4 " "	9	2 " "	16	1 " "	37B	2 " "	62
4 " "	9F	1 " "	16A	6 " "	38	2 " "	63
6 " "	10	4 " "	20	1 " "	44	5 " "	126A
1 " "	11	4 " "	22	1 " "	48A		
7 " "	12	2 " "	24	1 " "	48B		

In order to disengage the winding frame bars 1 the Crank 2 is lifted clear of the stop 3 and drawn back, this action disengaging the end cross Strips 4 from the tips of the frame bars 1 and permitting the wound linen to be removed. The Gear Wheel 5 engaging the Worm 6 forms a counter, 7 are the belt pulleys, and 8 the belt striker operated by Crank 11; 9 are the guide Pulleys for the main linen drums 10.

# Model No. 6.14

## Vertical Steam Engine

Parts required:	
1 of No.	1B 1 of No.
4 "	2 155 "
2 "	2A 18 "
3 "	4 2 "
8 "	6A 1 "
6 "	8 13 "
2 "	8A 7 "
7 "	9 2 "
5 "	9D 3 "
1 "	9F 1 "
4 "	10 9 "
3 "	11 4 "
3 "	12 4 "
1 "	12B 2 "
1 "	13A 1 "
1 "	14 2 "
2 "	15 14 "
2 "	15A 1 "
2 "	16 3 "
4 "	16A 1 "
4 "	17 6 "
1 "	18A 1 "
1 "	18B 2 "
2 "	19B 1 "
2 "	22 4 "
2 "	22A 4 "
5 "	24 2 "
4 "	26 5 "
3 "	27A 1 "
2 of No. 133	
Electric Motor	
29	37
38	45
48	48A
48B	50
52	52A
59	62
63	63B
70	76
94	95
96	96A
100	109
111	118
124	125
126	126A
130	





This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

### Model No. 6.14

## Vertical Steam Engine

(continued)

As shown in Fig. 6.14a, the motor drives the engine through a reduction gearing arranged as follows:

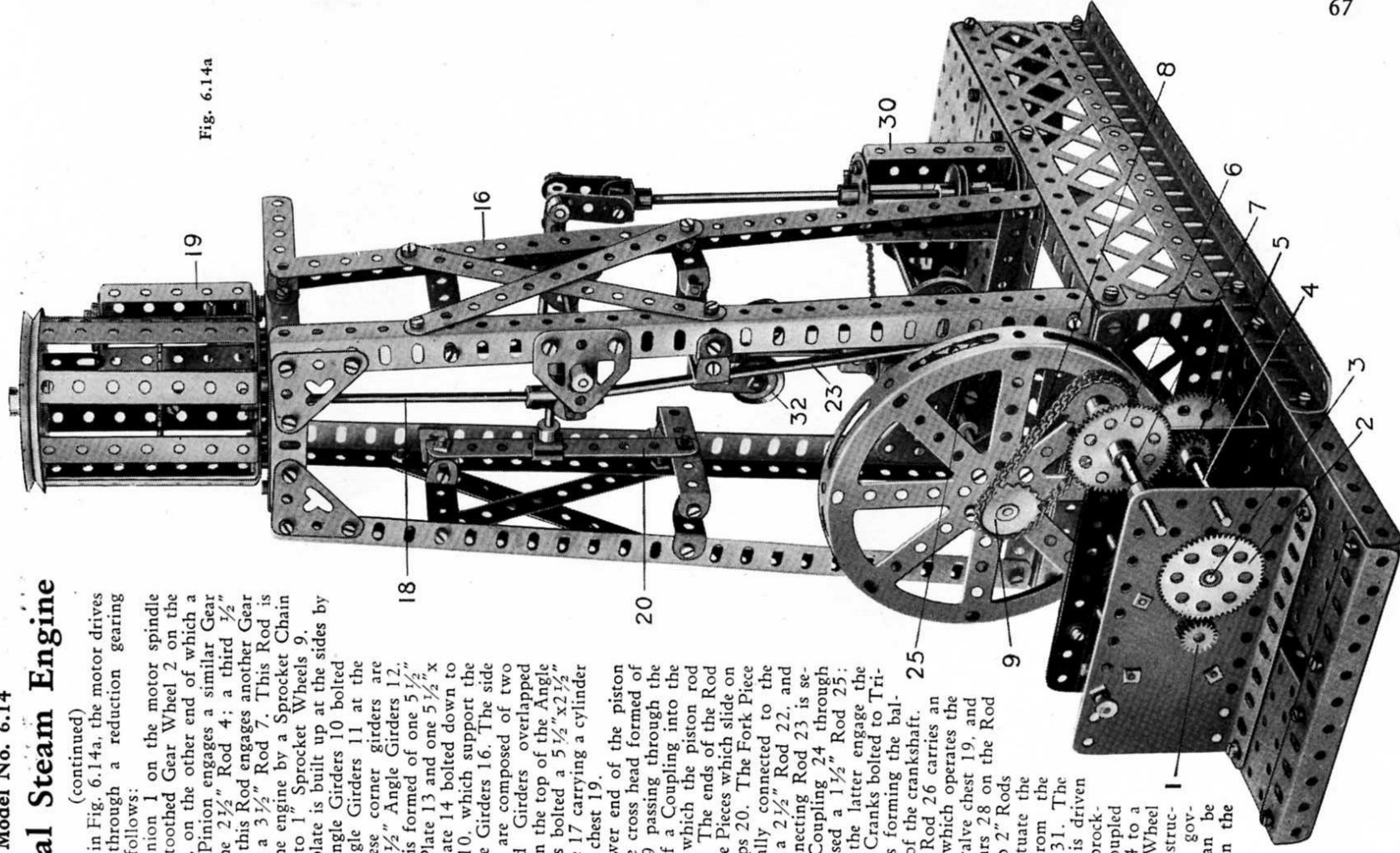
A  $\frac{1}{2}$ " Pinion 1 on the motor spindle drives a 57-toothed Gear Wheel 2 on the  $2\frac{1}{2}$ " Rod 3, on the other end of which a further  $\frac{1}{2}$ " Pinion engages a similar Gear Wheel on the  $2\frac{1}{2}$ " Rod 4; a third  $\frac{1}{2}$ " Pinion 5 on this Rod engages another Gear Wheel 6 on a  $3\frac{1}{2}$ " Rod 7. This Rod is coupled to the engine by a Sprocket Chain 8 connected to 1" Sprocket Wheels 9.

The bed plate is built up at the sides by two  $9\frac{1}{2}$ " Angle Girders 10 bolted to  $2\frac{1}{2}$ " Angle Girders 11 at the corners. These corner girders are bolted to  $12\frac{1}{2}$ " Angle Girders 12, and the top is formed of one  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flat Plate 13 and one  $5\frac{1}{2}$ " x  $3\frac{1}{2}$ " Flat Plate 14 bolted down to the Girders 10, which support the vertical Angle Girders 16. The side members 15 are composed of two  $5\frac{1}{2}$ " Braced Girders overlapped three holes. In the top of the Angle Girders 16 is bolted a  $5\frac{1}{2}$ " x  $2\frac{1}{2}$ " Flanged Plate 17 carrying a cylinder 18 and valve chest 19.

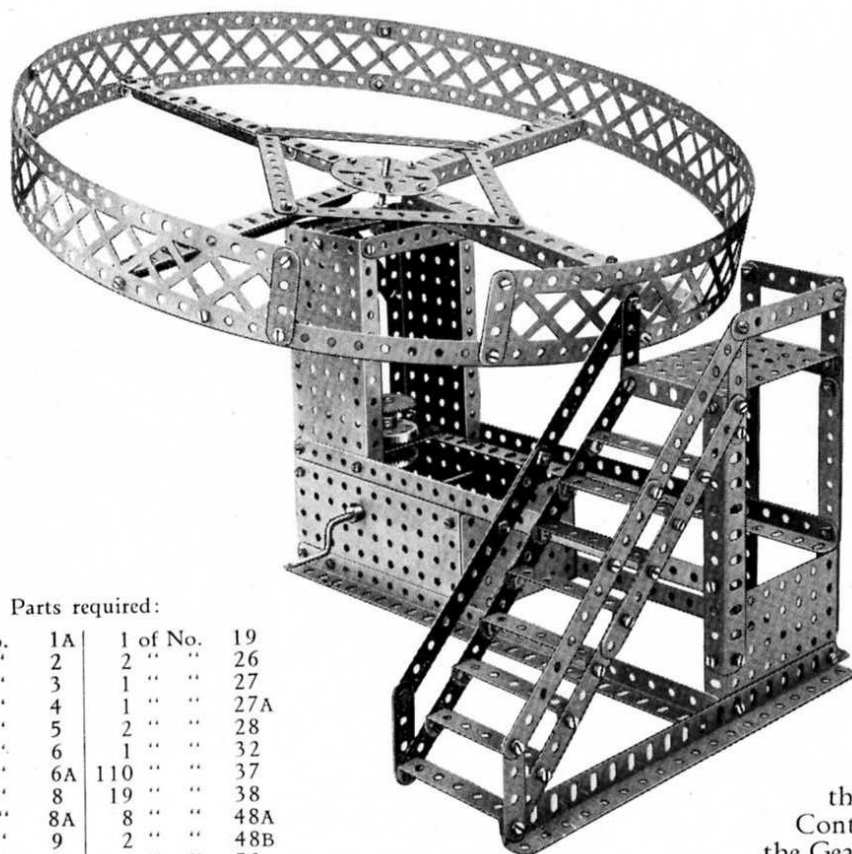
At the lower end of the piston rod 18 is the cross head formed of a 2" Rod 19 passing through the centre hole of a Coupling into the end hole of which the piston rod 18 is secured. The ends of the Rod 19 engage Eye Pieces which slide on the  $4\frac{1}{2}$ " Strips 20. The Fork Piece 21 is pivotally connected to the Coupling by a  $2\frac{1}{2}$ " Rod 22, and the  $6\frac{1}{2}$ " connecting Rod 23 is secured to a Coupling 24 through which is passed a  $1\frac{1}{2}$ " Rod 25; the ends of the latter engage the bosses of two Cranks bolted to Triangular Plates forming the balance weights of the crankshaft.

The  $4\frac{1}{2}$ " Rod 26 carries an Eccentric 27 which operates the valve in the valve chest 19, and the two Collars 28 on the Rod 22 engage two 2" Rods 29 which actuate the pump 30 from the rocking rod 31. The governor 32 is driven from a  $\frac{3}{4}$ " Sprocket Wheel 33 coupled by a Chain 34 to a 1" Sprocket Wheel 35. The construction of the governor gear can be clearly seen in the illustration.

Fig. 6.14a



## Model No. 6.15 Joy Wheel



## Parts required:

1 of No.	1A	1 of No.	19
16 " "	2	2 " "	26
4 " "	3	1 " "	27
2 " "	4	1 " "	27A
2 " "	5	2 " "	28
5 " "	6	1 " "	32
2 " "	6A	110 " "	37
4 " "	8	19 " "	38
1 " "	8A	8 " "	48A
9 " "	9	2 " "	48B
1 " "	9D	4 " "	52
5 " "	12	4 " "	53
1 " "	14	6 " "	59
1 " "	16	4 " "	99
1 " "	17	1 " "	109
1 of No. 126			

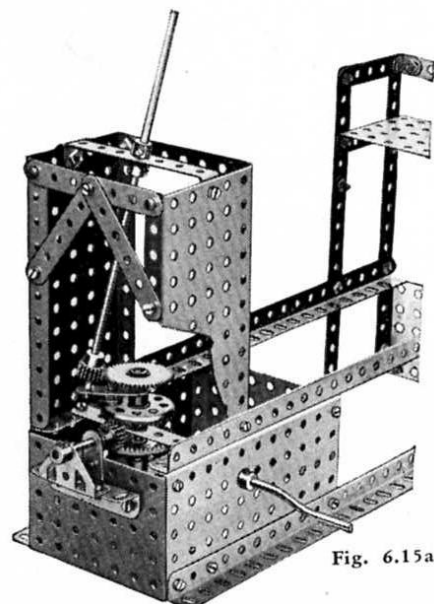


Fig. 6.15a

This model comprises a new and very interesting Meccano motion.

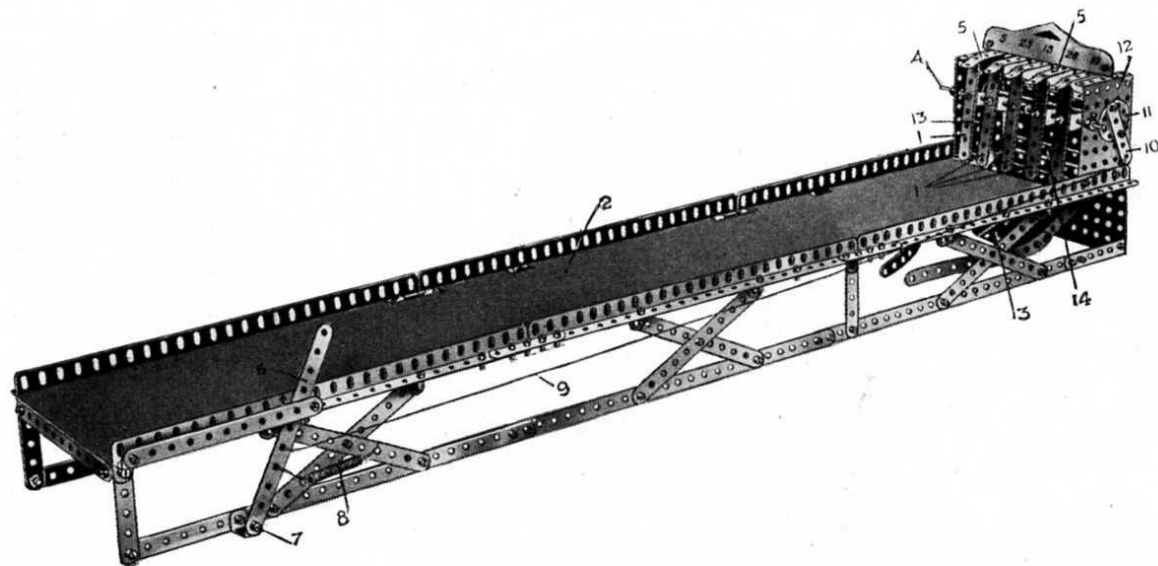
The Crank Handle drives by means of a Worm Wheel and 57-toothed Gear Wheel a vertical Rod carrying two  $1\frac{1}{2}$ " Contrate Wheels and a Gear Wheel as shown in Figure A. The lower Contrate Wheel is secured to the shaft but the upper one revolves freely upon it. The latter is driven from the fixed Contrate Wheel by means of a  $\frac{1}{2}$ " Pinion, and its direction of rotation is consequently reversed.

The end of the shaft carrying the revolving part of the model is journaled on a short Strip bolted to the upper Contrate Wheel and carries a  $\frac{1}{2}$ " Pinion which engages with the Gear Wheel secured on the vertical shaft. Thus on operation of the Crank Handle, the model revolves upon its axis, at the same time twisting slowly round with an amusing "wobble." A circular piece of cardboard is cut and placed in position to represent the floor found in real "Joywheels."

## Model No. 6.16 Box Ball Alley

### Parts required:

6 of No.	1
19 " "	2
5 " "	3
2 " "	4
15 " "	5
6 " "	8
5 " "	11
27 " "	12
1 " "	14
1 " "	15
2 " "	16
1 " "	24
8 " "	35
132 " "	37
1 " "	43
2 " "	52
2 " "	53
2 " "	54
2 " "	59
2 " "	62
1 " "	63

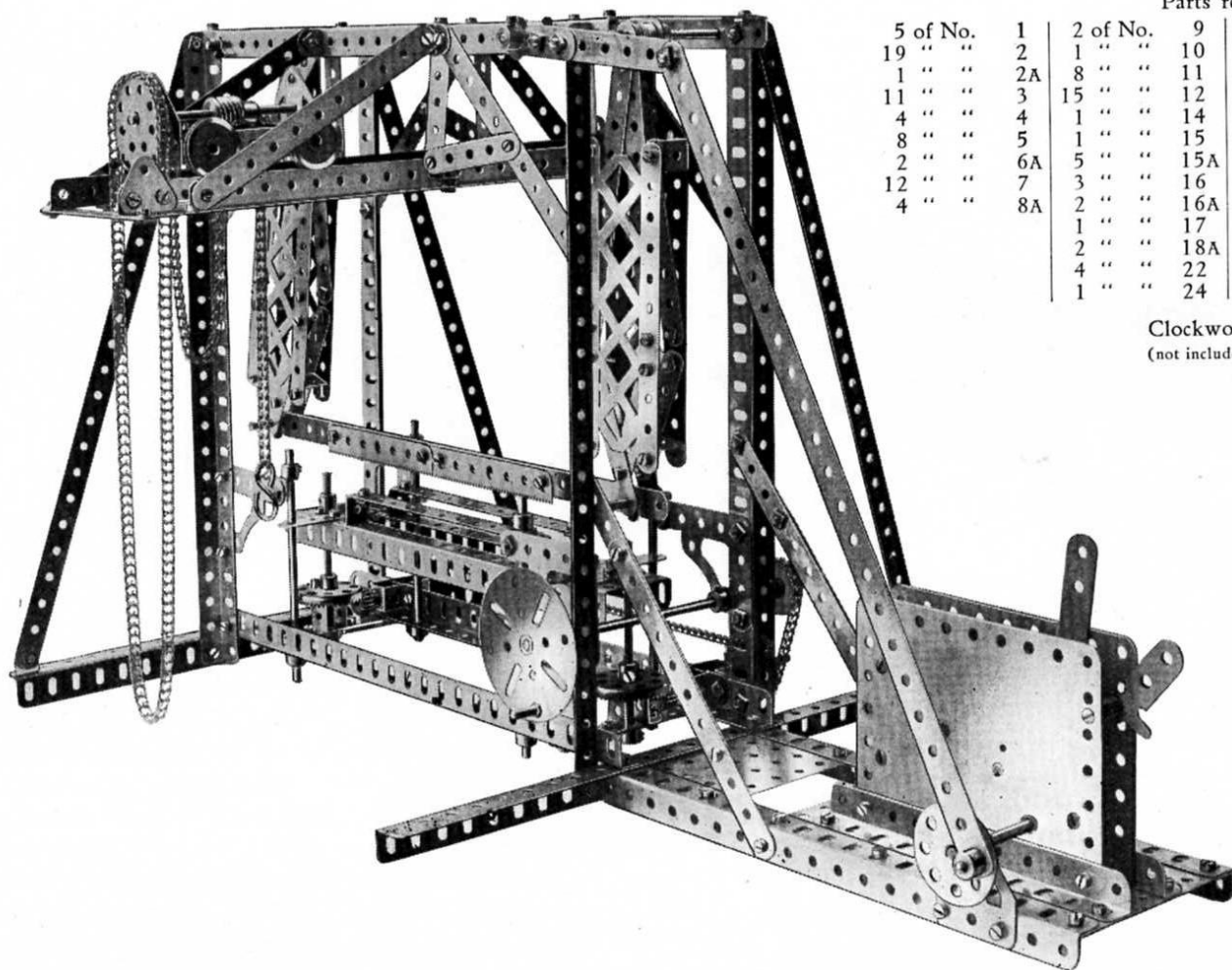


This model of a Box Ball Alley gives endless amusement, apart from the actual construction.

The object is to hit one of the Strips 1, which have various number values, by means of a ball rolled along the platform 2, the ball after striking and tipping one of the Strips being returned by the tray 3 to the player. The Strips 1 are pivoted by Double Bent Strips on to a Rod 4, so that each Strip may swing independently. The upper end of each Strip is engaged by Strips 5, the ends of which are bent slightly down, as shown, so that while the Strips 1 are normally held in the position shown, when one of the Strips is struck by the ball it is deflected backward and its upper end snaps outward past the bent end of its Strip 5, which thus acts as a spring, the deflected Strip being then retained in that position until it is reset. To reset any or all of the Strips 1 a handle is formed by a Strip 6 pivoted at 7 and controlled by a tension Spring 8. A cord 9 connects the Strip 6 to a short Strip 10 forming a crank and bolted to a Bush Wheel 11 on an Axle journaled in the Side Plates 12. This Axle on its interior carries two further Bush Wheels to which are secured two short Strips 13 forming cranks, a long Double Bent Strip 14 being in turn bolted to the Strips 13. When therefore the handle 6 is pulled out against the Spring 8 the cord 9 rotates the Bush Wheel 11 and forces out the long Double Bent Strip 14 which pushes out the Strips 1 and resets them in their normal positions. During this resetting operation the upper ends of the Strips 1 snap back beneath the bent ends of the spring Strips 5.

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.17 Stone-Sawing Machine



### Parts required:

5 of No.	1	2 of No.	9	3 of No.	26	2 of No.	62A
19 " "	2	1 " "	10	2 " "	28	2 " "	77
1 " "	2A	8 " "	11	1 " "	32	2 " "	80A
11 " "	3	15 " "	12	12 " "	35	40 " "	94
4 " "	4	1 " "	14	185 " "	37	1 " "	95A
8 " "	5	1 " "	15	32 " "	38	1 " "	96A
2 " "	6A	5 " "	15A	6 " "	45	4 " "	100
12 " "	7	3 " "	16	1 " "	47	4 " "	108
4 " "	8A	2 " "	16A	5 " "	48A	1 " "	109
		1 " "	17	3 " "	53	2 " "	110
		2 " "	18A	2 " "	57	2 " "	115
		4 " "	22	15 " "	59	4 " "	125
		1 " "	24	2 " "	62	3 " "	126A

Clockwork Motor  
(not included in Outfit)

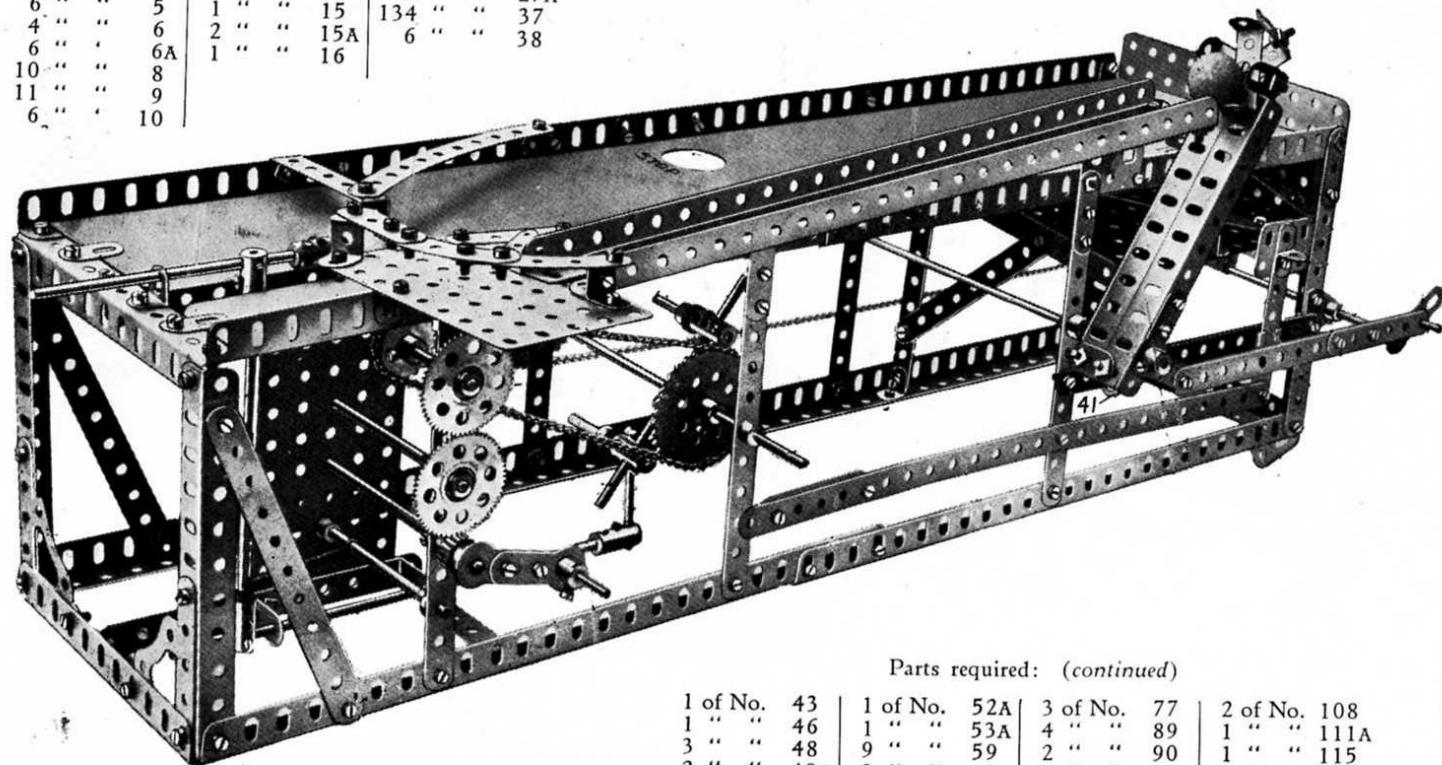
This is a very interesting model to construct and operate. The saw is represented by two Rack Strips, but if desired these may be substituted by a hack saw blade. The model includes a trolley that runs on overhead rails and carries a self-sustaining chain hoist. The elevation of the sawing table is adjusted by means of a hand wheel. Full instructions for building the model, together with sectional illustrations that make every detail clear, are contained in a special leaflet included in the Outfit. This leaflet may also be obtained from your dealer, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, N. J.

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.18 Bagatelle Table

### Parts required:

1 of No. 1	5 of No. 11	3 of No. 17
10 " " 2	9 " " 12	2 " " 18A
2 " " 2A	1 " " 12B	1 " " 18B
1 " " 3	4 " " 13A	1 " " 26
1 " " 4	2 " " 14	2 " " 27A
6 " " 5	1 " " 15	134 " " 37
4 " " 6	2 " " 15A	6 " " 38
6 " " 6A	1 " " 16	
10 " " 8		
11 " " 9		
6 " " 10		



### Parts required: (continued)

1 of No. 43	1 of No. 52A	3 of No. 77	2 of No. 108
1 " " 46	1 " " 53A	4 " " 89	1 " " 111A
3 " " 48	9 " " 59	2 " " 90	1 " " 115
2 " " 48A	3 " " 62	3 " " 95	1 " " 125
1 " " 50	7 " " 63	1 " " 96	3 " " 126A
2 " " 52	1 " " 70	1 " " 103H	1 " " 128

The Meccano Bagatelle Table will provide hours of fun for all members of the family. The game is played merely by turning the handle. The ball or marble is struck automatically and rolled toward the end of the table (which consists of a sheet of cardboard cut to the required shape). A number of holes are pierced in the end of the table and the score is made according to the particular hole through which the ball falls. The ball is afterwards returned to the playing end automatically. A detailed explanation of this model would require much space, and full instructions have therefore been prepared in the form of a special leaflet, which is included in the Outfit. The leaflet may also be obtained from your dealer, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, N. J.

It should be noted that the ball and strip of cardboard forming the table are not included in the Meccano Outfit.

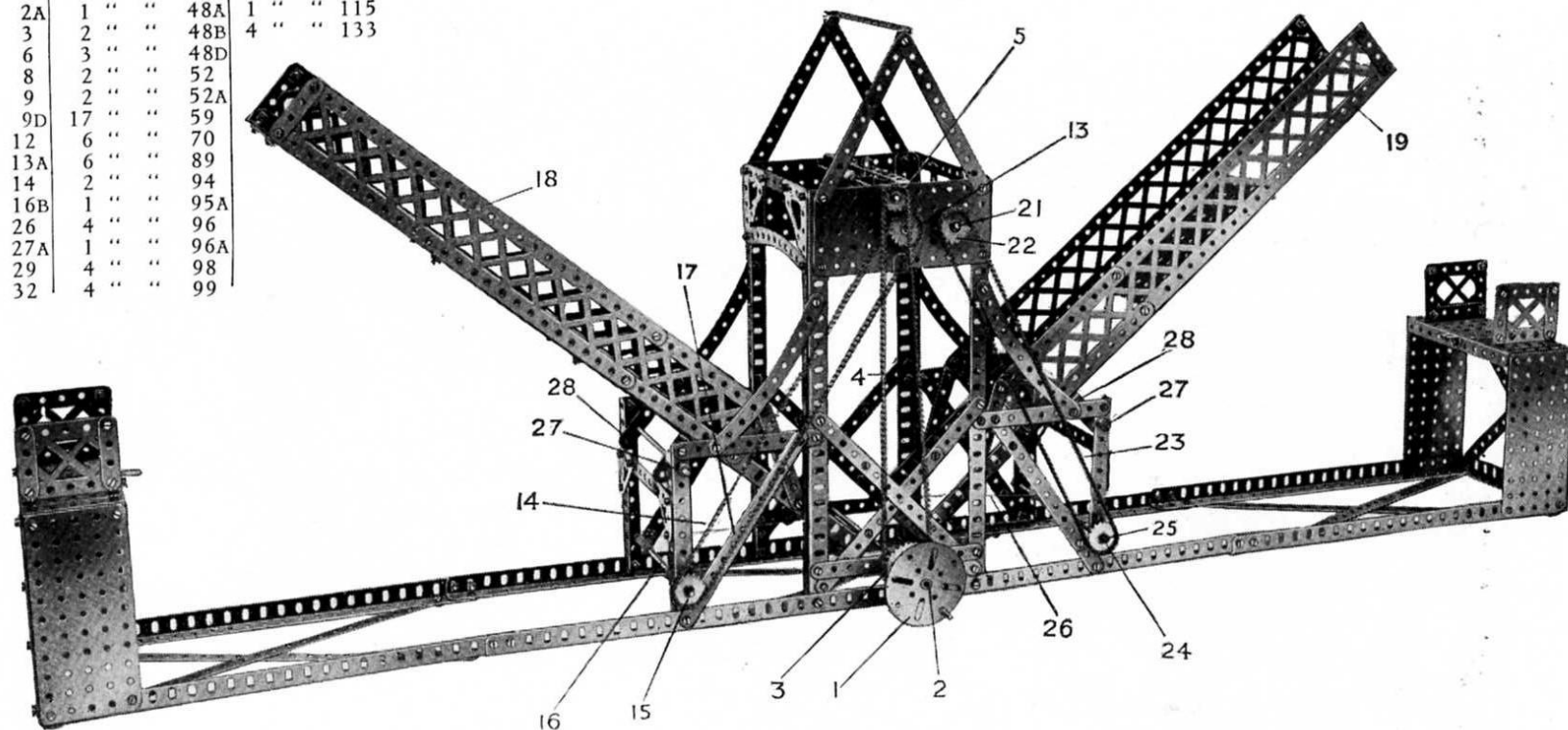


This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.19 Jack Knife Bridge

### Parts required:

6 of No.	1	210 of No.	37	4 of No.	100
4 " "	1B	6 " "	38	4 " "	108
26 " "	2	1 " "	40	1 " "	109
4 " "	2A	1 " "	48A	1 " "	115
4 " "	3	2 " "	48B	4 " "	133
16 " "	6	3 " "	48D		
20 " "	8	2 " "	52		
6 " "	9	2 " "	52A		
4 " "	9D	17 " "	59		
6 " "	12	6 " "	70		
1 " "	13A	6 " "	89		
6 " "	14	2 " "	94		
1 " "	16B	1 " "	95A		
2 " "	26	4 " "	96		
2 " "	27A	1 " "	96A		
1 " "	29	4 " "	98		
1 " "	32	4 " "	99		



The arms of the bridge are raised or lowered by rotating the hand-wheel 1. On the 8" Rod 2 of the hand-wheel is mounted a  $1\frac{1}{2}$ " Sprocket Wheel 3 which is coupled by a Chain 4 to a  $\frac{3}{4}$ " Sprocket Wheel 5 on a  $6\frac{1}{2}$ " Rod 6, Fig. 6.19a. On this Rod a Worm Wheel 7 drives a  $\frac{1}{2}$ " Pinion 8 on a  $3\frac{1}{2}$ " Rod 9, on which is a  $\frac{3}{4}$ " Contrate Wheel 10. This engages a  $\frac{3}{4}$ " Pinion 11 carried on a 3" Rod 12, on the outer end of which is a 1" Sprocket Wheel 13 connected by a Sprocket Chain 14 to a 1" Sprocket Wheel 15 on a  $6\frac{1}{2}$ " Rod 16; on this Rod a cord 17 is wound, connected to the end of one arm 18 of the bridge. The other arm 19 is operated from a 57-toothed Gear Wheel 20 on the Rod 12 engaging a similar Wheel 29 on the  $6\frac{1}{2}$ " Rod 21. On the end of this Rod

These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

**Model No. 6.19 JACK KNIFE BRIDGE**  
(continued)

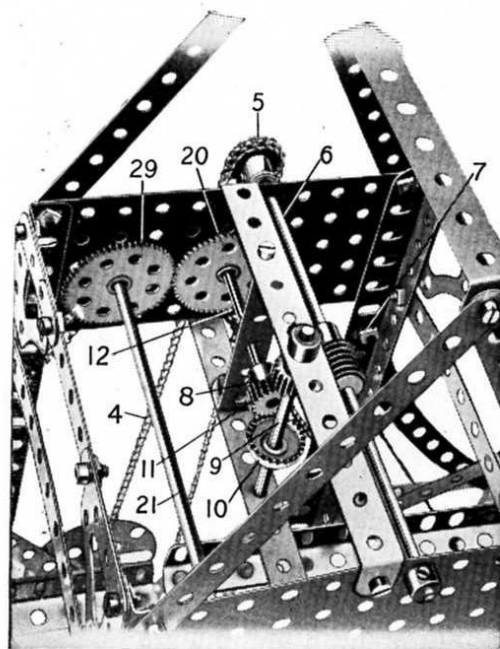
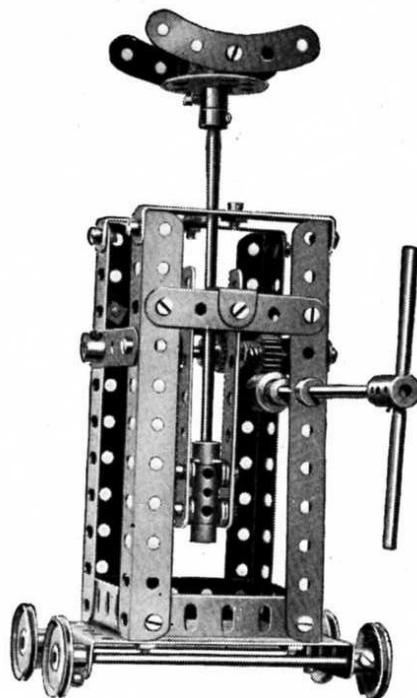


Fig. 6.19a

a 1" Sprocket Wheel 22 is coupled by a Chain 23 to another 1" Sprocket Wheel 24 on the 6½" winding Rod 25, the cord 26 from which is connected to the other arm 19 of the bridge.

The arms 18 and 19 are pivotally carried on 6½" Rods 27 by means of 3½" x 1½" Double Angle Strips 28.

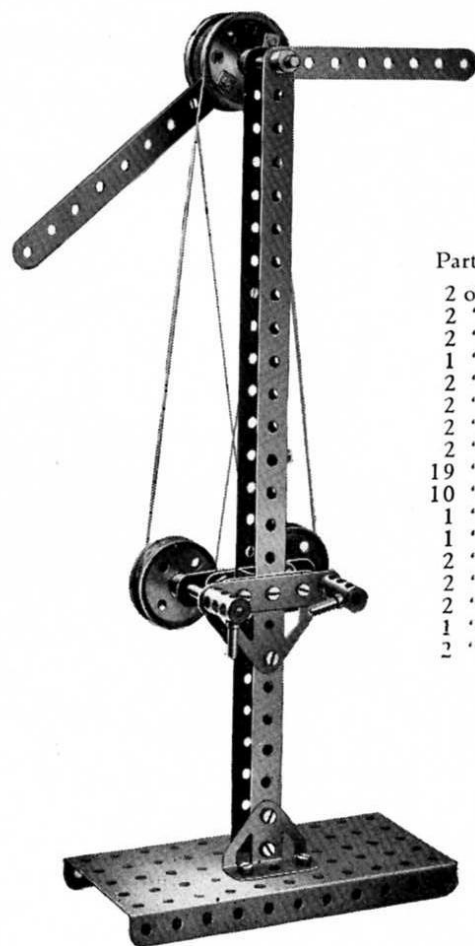
**Model No. 6.20**  
**Jack**



Parts required:

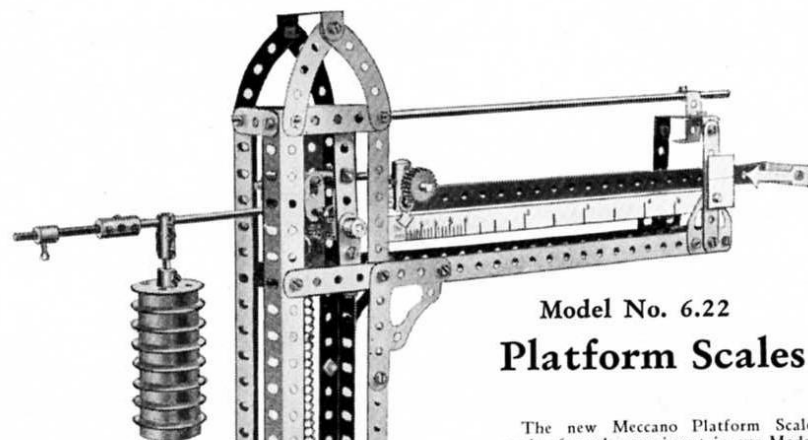
5 of No.	5	3 of No.	26
4 " "	9	1 " "	32
4 " "	9D	32 " "	37
2 " "	12	8 " "	38
2 " "	14	3 " "	48A
2 " "	15A	1 " "	53
1 " "	16	7 " "	59
1 " "	16B	2 " "	63
4 " "	22	2 " "	90
1 " "	24	2 " "	110

**Model No. 6.21 Semaphore**



Parts required:

2 of No.	2
2 " "	5
2 " "	8
1 " "	16A
2 " "	17
2 " "	20
2 " "	21
2 " "	24
19 " "	37
10 " "	38
1 " "	40
1 " "	52
2 " "	59
2 " "	63
2 " "	115
1 " "	126
2 " "	126A



Model No. 6.22  
Platform Scales

The new Meccano Platform Scales have been produced as a result of much experiment in our Model Department. A very efficient knife edge bearing, constructed entirely from Meccano parts, is a feature, and friction in the model is so small that objects ranging from  $\frac{1}{2}$  oz. to  $4\frac{1}{2}$  lbs. may be weighed with remarkable accuracy. Full instructions for building the model, together with sectional illustrations that make every detail clear, are contained in a special leaflet. This leaflet is included in the No. 6x Outfit; it may also be obtained from your dealer, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, N. J.

Parts required:

3 of No.	1
2 " "	2
2 " "	3
2 " "	4
3 " "	5
2 " "	6
6 " "	6A
4 " "	8
2 " "	9
4 " "	10
1 " "	11
2 " "	12
1 " "	12A
3 " "	12B
2 " "	13
2 " "	14
1 " "	15
3 " "	16
2 " "	16B
1 " "	17
2 " "	18A
1 " "	18B
8 " "	20
1 " "	25

2 of No.	26	6 of No.	57	4 of No.	90
8 " "	35	20 " "	59	3 " "	100
78 " "	37	2 " "	62	2 " "	102
14 " "	38	8 " "	63	2 " "	108
1 " "	46	1 " "	63B	1 " "	111
3 " "	48	1 " "	64	1 " "	111A
4 " "	48D	2 " "	65	2 " "	115
2 " "	52A	1 " "	81	2 " "	126A

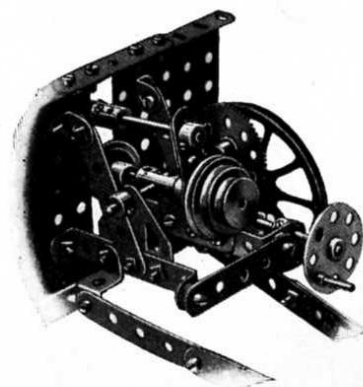
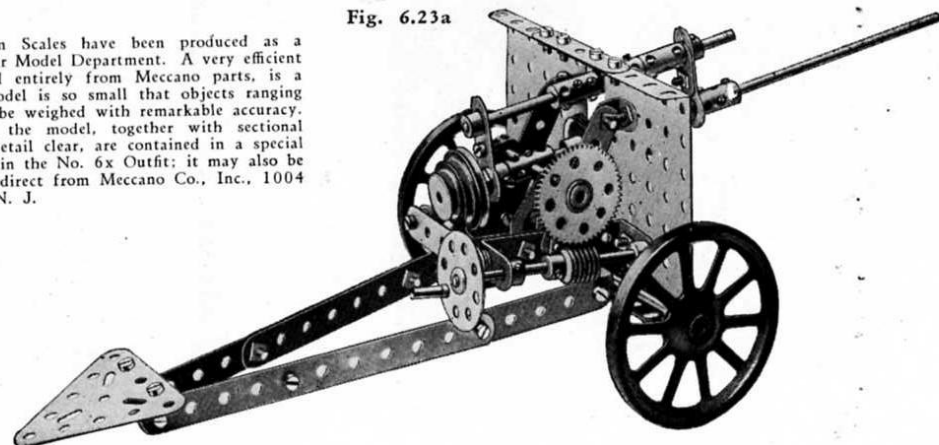


Fig. 6.23a

Model No. 6.23

Field Gun



Parts required:

4 of No.	2	1 of No.	14	3 of No.	22	6 of No.	38	4 of No.	63
5 " "	5	1 " "	15	1 " "	24	1 " "	46	1 " "	76
2 " "	10	1 " "	16	1 " "	26	1 " "	47	1 " "	115
1 " "	11	1 " "	16A	1 " "	27A	2 " "	53	1 " "	123
6 " "	12	1 " "	18B	1 " "	32	5 " "	59	2 " "	124
1 " "	13A	2 " "	19B	34 " "	37	2 " "	62	2 " "	126

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

75

Parts required:

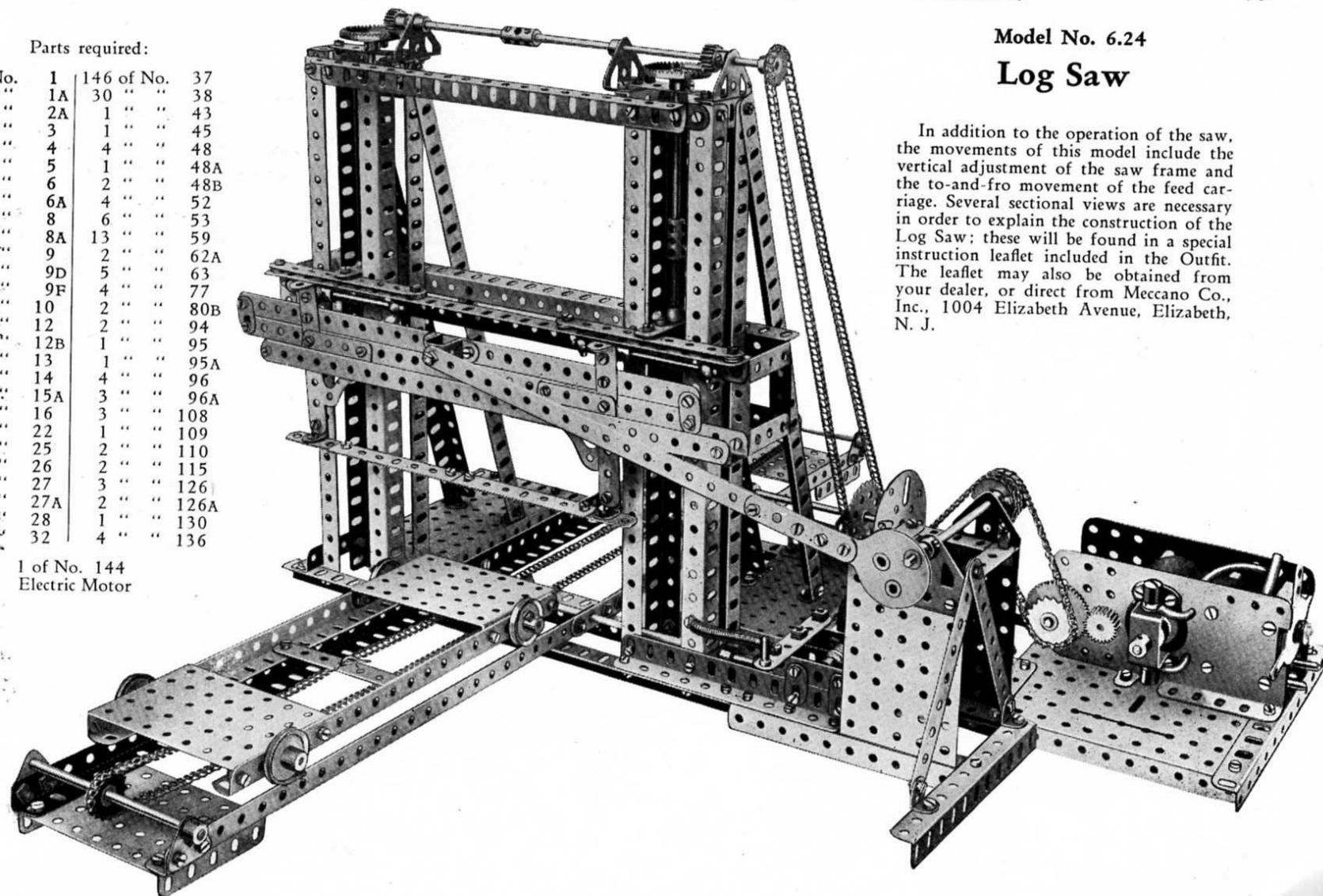
3 of No.	1	146 of No.	37
2 " "	1A	30 " "	38
4 " "	2A	1 " "	43
1 " "	3	1 " "	45
1 " "	4	4 " "	48
8 " "	5	1 " "	48A
10 " "	6	2 " "	48B
2 " "	6A	4 " "	52
23 " "	8	6 " "	53
4 " "	8A	13 " "	59
7 " "	9	2 " "	62A
2 " "	9D	5 " "	63
4 " "	9F	4 " "	77
6 " "	10	2 " "	80B
14 " "	12	2 " "	94
1 " "	12B	1 " "	95
1 " "	13	1 " "	95A
1 " "	14	4 " "	96
6 " "	15A	3 " "	96A
5 " "	16	3 " "	108
4 " "	22	1 " "	109
2 " "	25	2 " "	110
3 " "	26	2 " "	115
1 " "	27	3 " "	126
1 " "	27A	2 " "	126A
2 " "	28	1 " "	130
1 " "	32	4 " "	136

1 of No. 144  
Electric Motor

Model No. 6.24

# Log Saw

In addition to the operation of the saw, the movements of this model include the vertical adjustment of the saw frame and the to-and-fro movement of the feed carriage. Several sectional views are necessary in order to explain the construction of the Log Saw; these will be found in a special instruction leaflet included in the Outfit. The leaflet may also be obtained from your dealer, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, N. J.



## Model No. 6.26 Crane

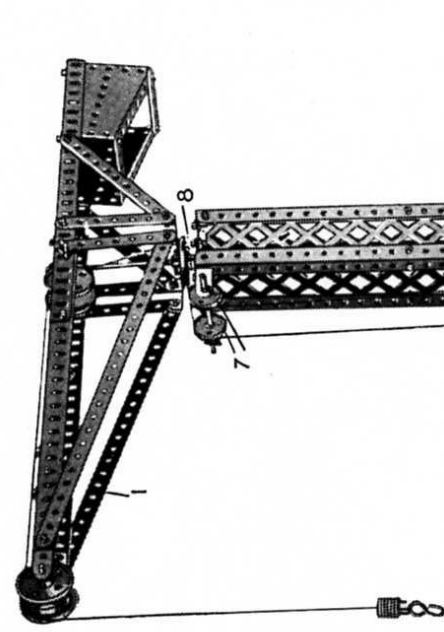
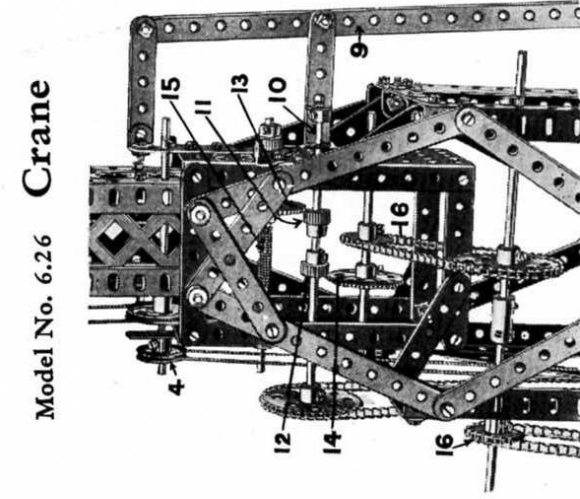


Fig. 6.25a

## Parts required:

10 of No.	1	3 of No.	27A
12 "	2	4 "	35
8 "	3	139 "	37
4 "	4	1 "	45
17 "	5	1 "	46
16 "	8	2 "	48A
1 "	11	4 "	52
9 "	12	1 "	53
2 "	13A	2 "	54
4 "	14	1 "	57
2 "	15	14 "	59
2 "	15A	1 "	62
3 "	16	1 "	63
2 "	17	6 "	94
1 "	18A	2 "	95
8 "	20	4 "	96
2 "	21	6 "	99
2 "	22	1 "	147A
2 "	22A	1 "	147B
1 "	24	1 "	148
3 "	26		

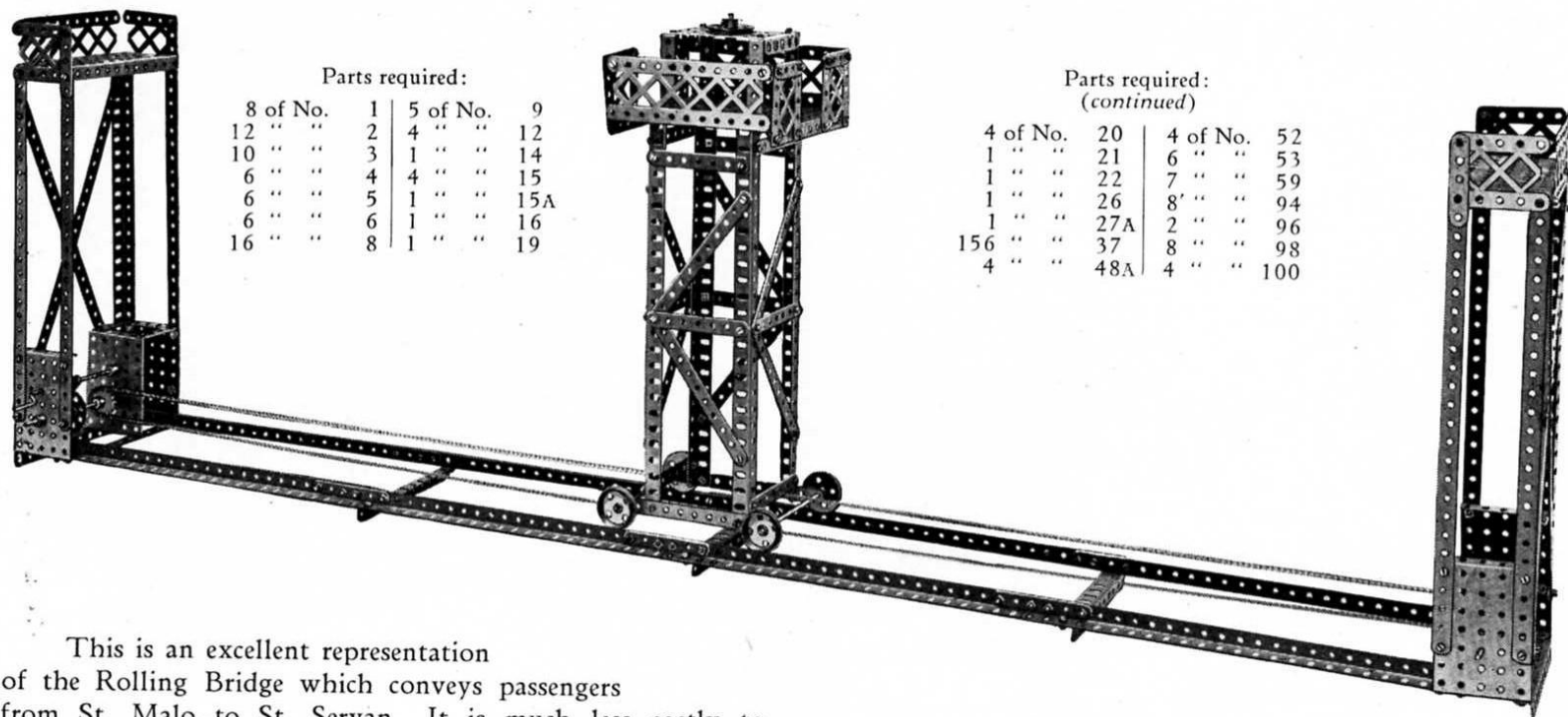
Electric Motor

The frame of the model is well shown in the illustration. The swinging of the jib 1 is effected from the handle 2 by means of a cord coupling a Pulley 3 to a Pulley 4. Round a larger Pulley 5 on the same shaft passes a continuous cord 6 which, after winding round guide Pulley 7, passes round a Pulley 8 fixed on the central spindle jib. The Handle 9 slides the spindle 10 carrying two Pinions 11 and 12 so that either the Pinion 11 may engage the Gear Wheel 13 or the Pinion 12 the Gear Wheel 14. When the Pinion engages the Wheel 13 the cord 15 is wound on or off the spindle to raise or lower the load, and when the Pinion 12 engages the wheel 14 the traversing movement is effected through the Chain and Sprocket 16. The power is taken from the Motor by way of the 1" and 2" Sprockets 17, the latter on the spindle carrying the Pinions 11 and 12.



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

### Model No. 6.26 St. Malo Transporter Bridge



#### Parts required:

8 of No.	1	5 of No.	9
12 " "	2	4 " "	12
10 " "	3	1 " "	14
6 " "	4	4 " "	15
6 " "	5	1 " "	15A
6 " "	6	1 " "	16
16 " "	8	1 " "	19

#### Parts required: (continued)

4 of No.	20	4 of No.	52
1 " "	21	6 " "	53
1 " "	22	7 " "	59
1 " "	26	8 " "	94
1 " "	27A	2 " "	96
156 " "	37	8 " "	98
4 " "	48A	4 " "	100

This is an excellent representation of the Rolling Bridge which conveys passengers from St. Malo to St. Servan. It is much less costly to construct than a transporter bridge of the Newport type, but of course it can only be used over marshy land with shallow water over which a solid track can be laid. The clever Meccano boy will know how to add little decorations to the transporter and the landing platforms in the way of flags, etc., and make a first-class toy of this fine model.

## Model No. 6.27 Automatic Weighing Machine

Parts required:

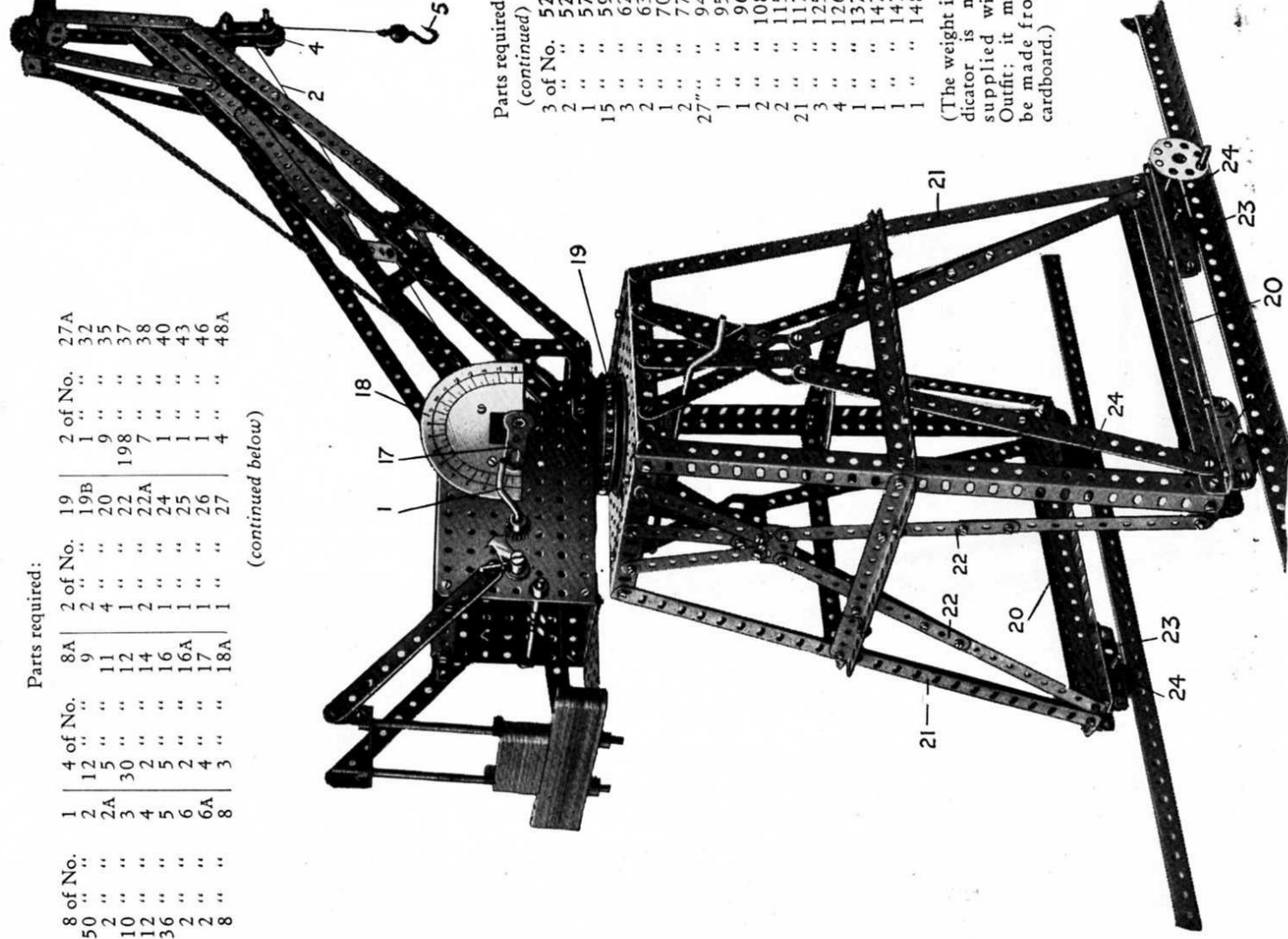
8 of No.	4 of No.	8A	2 of No.	19	2 of No.	27A
50 "	1	9	2 "	19B	1 "	32
2 "	2A	11	4 "	20	9 "	35
10 "	3	12	1 "	22	198 "	37
12 "	4	14	2 "	22A	7 "	38
36 "	5	16	1 "	24	1 "	40
2 "	6	16A	1 "	25	1 "	43
2 "	6A	17	1 "	26	1 "	46
8 "	8	18A	1 "	27	4 "	48A

(continued below)

Parts required:  
(continued)

3 of No.	52
2 "	52A
1 "	57B
15 "	59
3 "	62
2 "	63
2 "	70
1 "	77
27 "	94
1 "	95A
1 "	96
2 "	108
2 "	115
21 "	117
3 "	125
4 "	126A
1 "	137
1 "	147A
1 "	147B
1 "	148

(The weight indicator is not supplied with Outfit; it may be made from cardboard.)



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

79

## Model No. 6.27 Automatic Weighing Crane

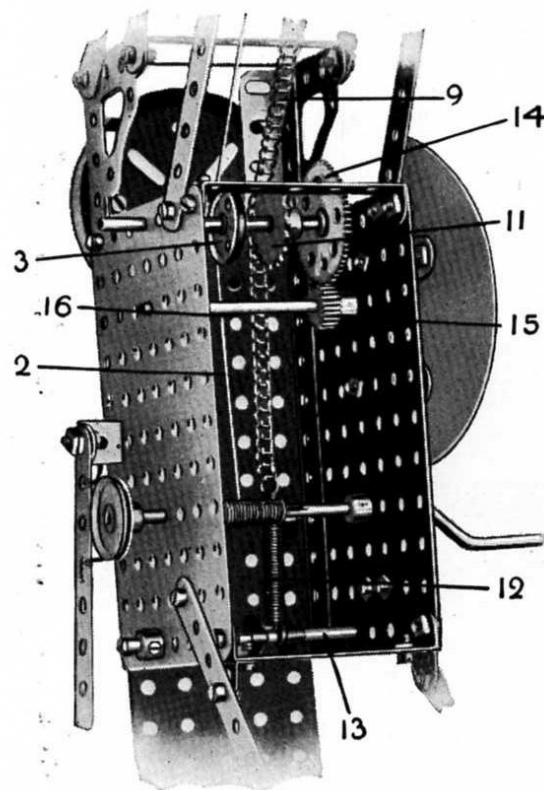


Fig. 6.27a

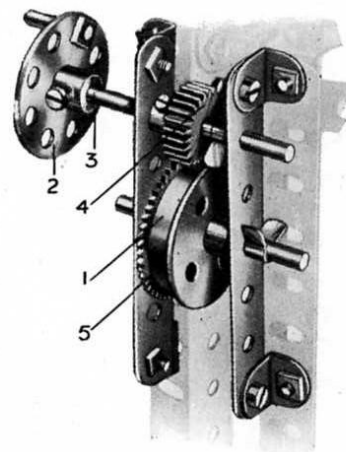


Fig. 6.27b

This is a model of a crane that, when raising a load, automatically indicates the weight carried. The load is raised or lowered by the operation of the Crank Handle 1 upon which is wound a lifting cord 2 passing round a 1" Pulley 3 and over another 1" Pulley 4 (Fig. 6.27c) to the Loaded Hook 5. The 1" Pulley 4, which bears the weight of the load, is carried by two Cranks 6 connected to a  $3\frac{1}{2}$ " Rod 7, slidable in two Double Brackets 8.

To the top of the Rod is connected a Sprocket Chain 9 which passes over a  $1\frac{1}{2}$ " Sprocket Wheel 10 and under a 1" Sprocket Wheel 11 (Fig. 6.27a), the other end of the chain being connected to a Spring 12, secured to a  $3\frac{1}{2}$ " Rod 13. Thus, when a load is being raised the weight is carried by the Rod 7 which pulls down in its bearings and consequently extends the Spring 12. In this movement, the Chain 9 rotates the Sprocket Wheel 11 and a  $1\frac{1}{2}$ " Gear Wheel 14 on the Rod of the Sprocket 11 engages a  $\frac{1}{2}$ " Pinion 15 on a Rod 16. On the outer end of this Rod 16 is a Crank 17

that sweeps round the graduated dial 18 to indicate the weight of the load that is being lifted.

The construction of the remainder of the model will be clearly seen from the illustration. The bearings 23 carrying the Flanged Wheels 24 are formed of  $2\frac{1}{2}$ " Strips connected to the Girders 20 by Angle Brackets.

It will be noted that the crane jib is carried upon Ball Bearings 19, the balls (Part No. 117) for which are not supplied in the No. 6 Outfit but may be obtained separately. The crane will work well without the Ball Bearing, but the operation is easier when such a bearing is fitted.

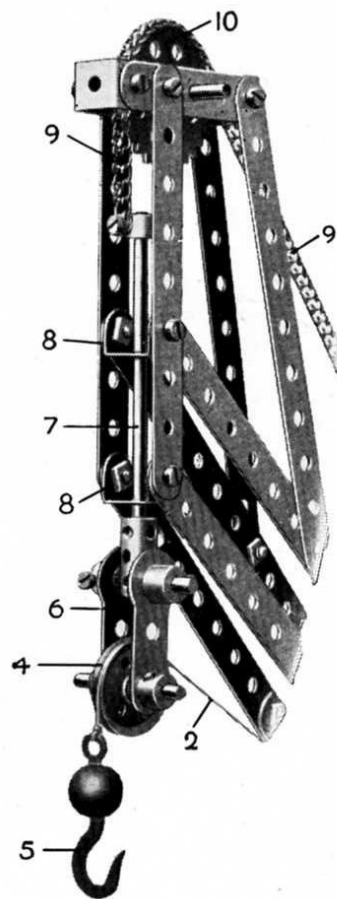
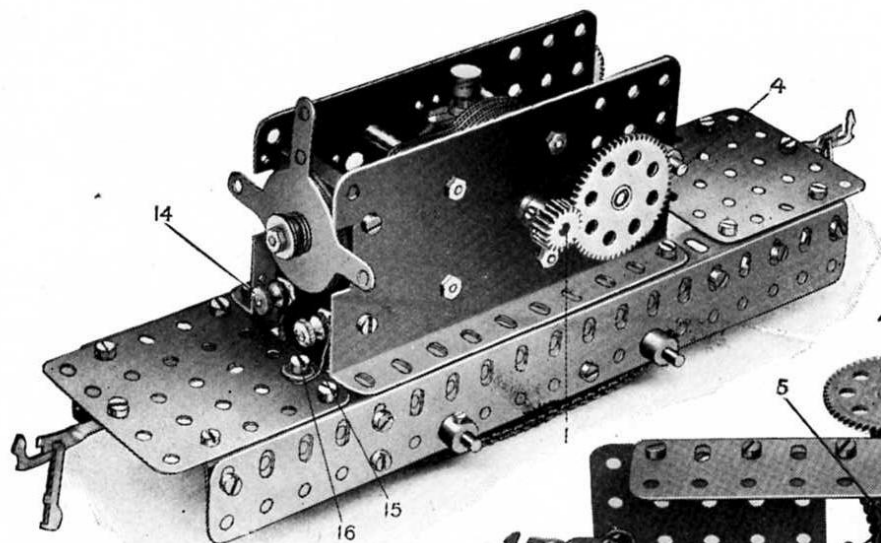


Fig. 6.27c

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.28 Meccano High-Power Electric Loco Chassis



Parts required:

2 of No. 8A	2 of No. 26	4 of No. 59	2 of No. 96
2 " " 16	2 " " 27A	2 " " 64	2 " " 96A
1 " " 17	22 " " 37	2 " " 72	2 " " 103A
4 " " 20	2 " " 48A	1 " " 94	2 " " 121

1 of No. 149  
Electric Motor

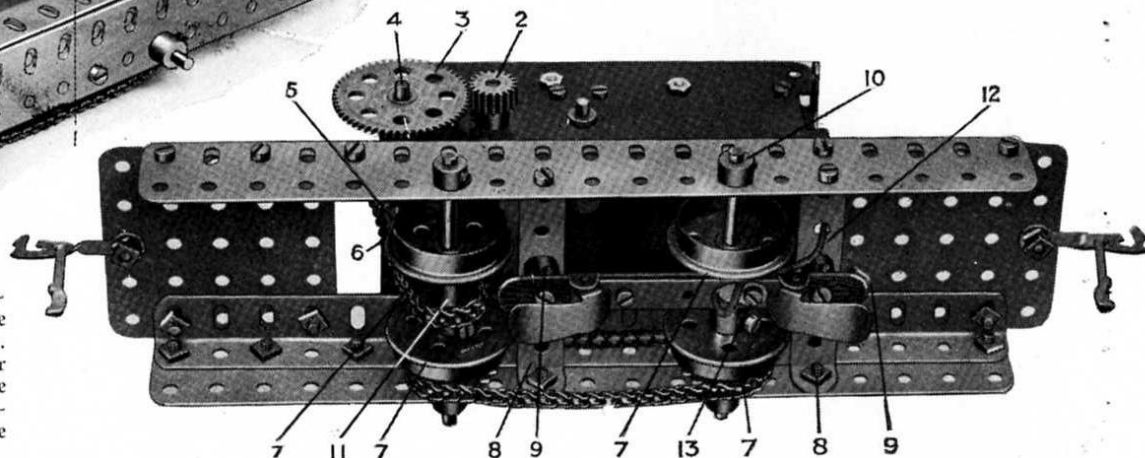


Fig. 6.28a

This is a simply constructed and very efficient electric loco. The construction of the chassis will be clearly seen from the illustrations. The gearing should be built on to the Motor before bolting the latter in position. On the motor spindle 1 is secured a  $\frac{1}{2}$ " Pinion engaging a 57-toothed Gear Wheel spaced from the Motor by three Washers.

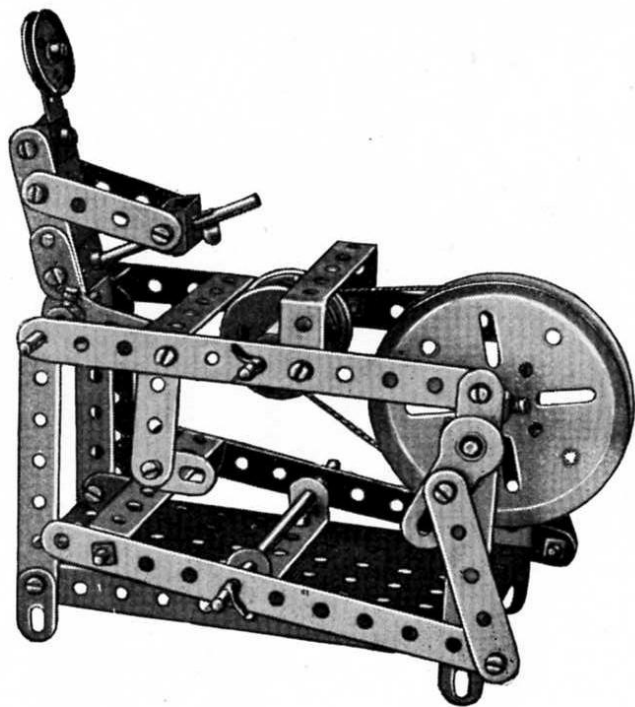
On the spindle of this Gear Wheel a second  $\frac{1}{2}$ " Pinion 2 is also secured, but on the opposite side of the Motor. The Pinion 2 engages a further 57-toothed Gear Wheel 3 on the spindle 4, and between the Side Plates, on the latter spindle, is secured a  $\frac{3}{4}$ " Sprocket Wheel 5. Before inserting the spindle 4 a ring of Sprocket Chain 6, containing 39 links, should be threaded over the Sprockets 5 and 11, after which the Motor may be bolted on to the chassis. The flanged travelling Wheels 7 may now be placed in position as shown. The Sprocket Wheel 11 is  $\frac{3}{4}$ " in diameter and the Sprocket Wheels connecting the Axles are 1". The ring of Sprocket chain for these should contain 52 links.

The Meccano Electric Shoe is bolted to the  $2\frac{1}{2}$ " Double Angle Strips 8, spaced with a Threaded Boss 9 at each end to give clearance to the Axle Rod 10. One end of a piece of insulated wire 12 is connected to the bolt head 13, and the other end to the terminal 14, while another piece of wire is connected with the terminal 15 and the bolt head 16.

The loco is designed to run on "0" gauge electric rails. Any suitable superstructure may be built up on the chassis, to represent an electric loco, to suit the builder's taste.

## Model No. 6.29

## Knife Grinder



## Parts required:

4 of No.	2
4 " "	3
2 " "	4
4 " "	5
3 " "	6
4 " "	10
3 " "	11
2 " "	12
1 " "	15
3 " "	16
1 " "	17
1 " "	19A
2 " "	20
1 " "	22
1 " "	22A
2 " "	35
32 " "	37
6 " "	37A
1 " "	46
2 " "	48A
1 " "	48B
1 " "	52
3 " "	62

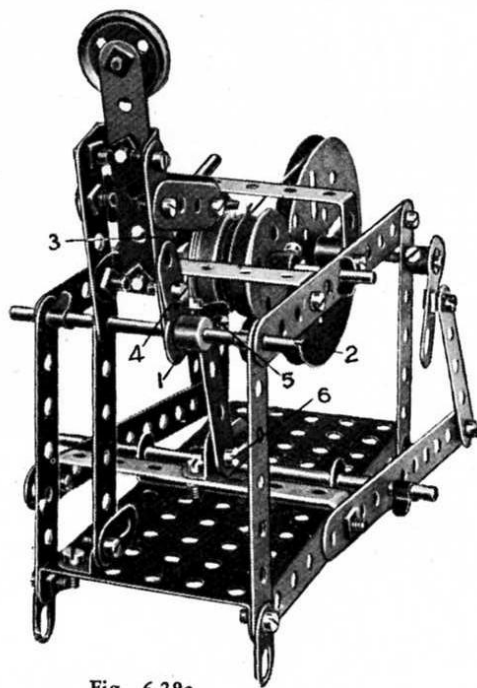


Fig. 6.29a

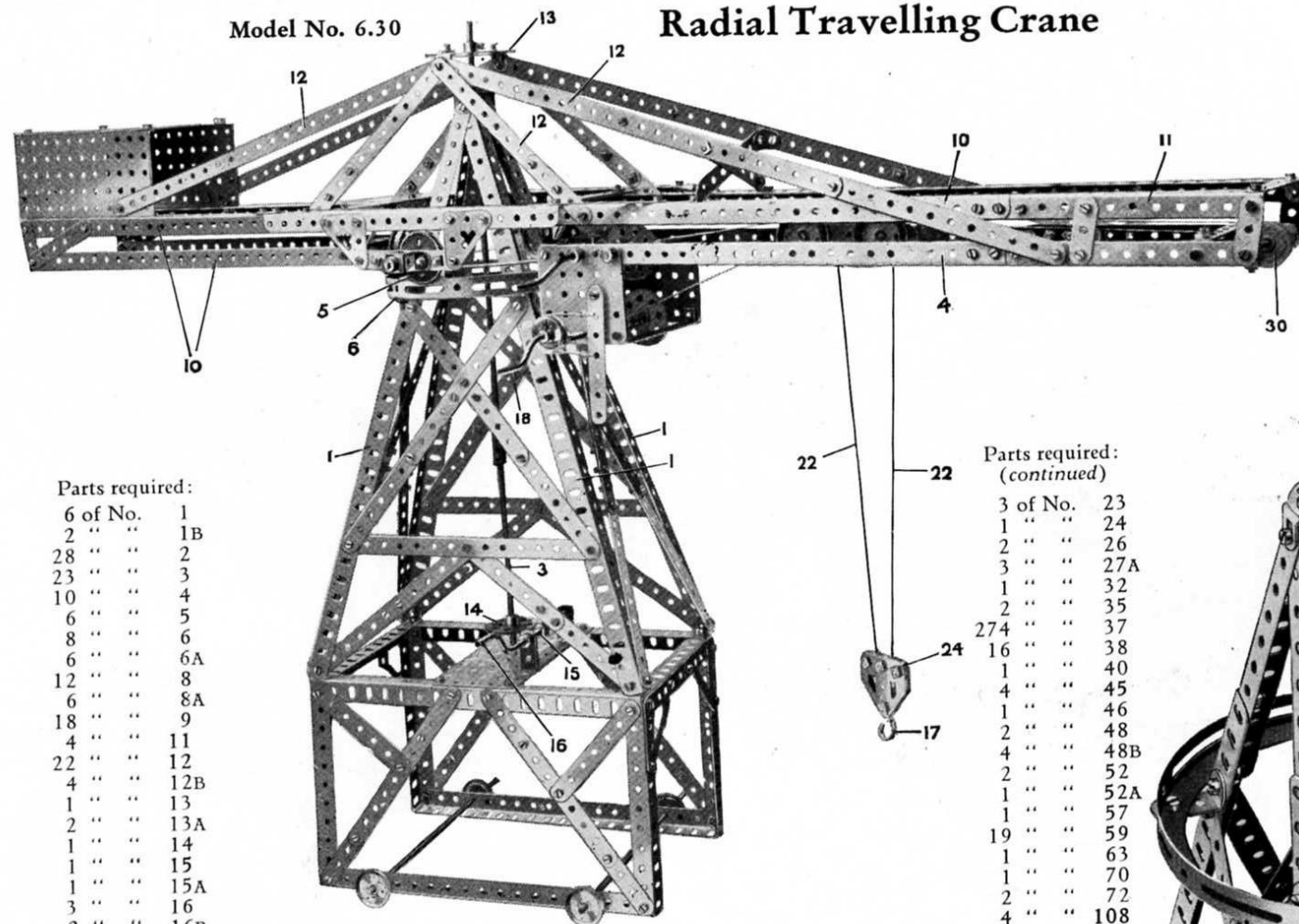
The Crank 1 is secured to the Rod 2, and the  $2\frac{1}{2}$ " side Strip 3 is clamped to the Crank 1 by the Flat Bracket 4. The bolt at the end of the Crank forming the knee and the bolt 5 are lock-nutted to allow free movement. When the treadle is operated the body works backwards and forwards.



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

Model No. 6.30

## Radial Travelling Crane



## Parts required:

6 of No.	1
2 " "	1B
28 " "	2
23 " "	3
10 " "	4
6 " "	5
8 " "	6
6 " "	6A
12 " "	8
6 " "	8A
18 " "	9
4 " "	11
22 " "	12
4 " "	12B
1 " "	13
2 " "	13A
1 " "	14
1 " "	15
1 " "	15A
3 " "	16
2 " "	16B
4 " "	18A
3 " "	19
8 " "	20
6 " "	22

Parts required:  
(continued)

3 of No.	23
1 " "	24
2 " "	26
3 " "	27A
1 " "	32
2 " "	35
274 " "	37
16 " "	38
1 " "	40
4 " "	45
1 " "	46
2 " "	48
4 " "	48B
2 " "	52
1 " "	52A
1 " "	57
19 " "	59
1 " "	63
1 " "	70
2 " "	72
4 " "	108
1 " "	109
2 " "	126A
8 " "	133
1 " "	143

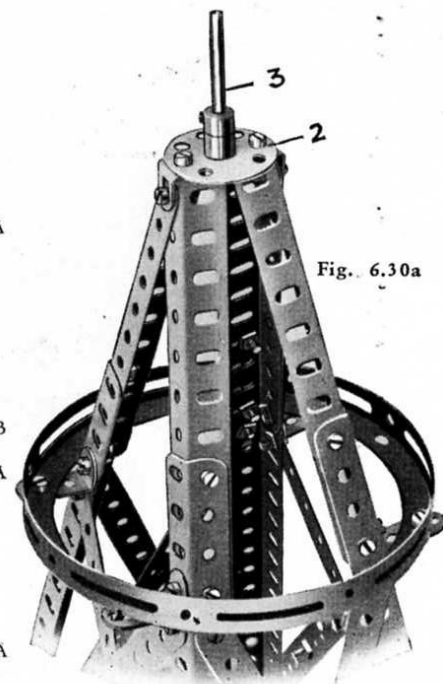


Fig. 6.30a

## Model No. 6.30 Radial Travelling Crane (continued)

Begin to build this model by constructing the main tower, the details of which are clearly brought out in the illustrations on the previous page. Notice that the inclined corner Angle Girders 1 are connected at the top (as shown in Fig. 6.30a) by a Bush Wheel 2 secured by Angle Brackets. This Bush Wheel forms a bearing for the vertical Rod 3 by which the cantilever arm 4 is turned.

The cantilever arm 4 turns on a wheel-race formed of Flanged Wheels 5, which run on a Circular Girder 6 supported by four  $1\frac{1}{2}$ " Angle Brackets bolted to the corner Girders 1. The cantilever is built up (as shown in Fig. 6.30b) from two  $9\frac{1}{2}$ " Angle Girders 8 braced by two  $5\frac{1}{2}$ " Angle Girders 9 overlapped nine holes. From these,  $12\frac{1}{2}$ " Angle Girders 10 extend at one side, and to similar Girders 10 at the other side are connected  $5\frac{1}{2}$ " Girders 11.

The inclined Strips 12 are connected at the top, by means of Angle Brackets, to a Face Plate 13 secured to the vertical Rod 3. At the foot of the Rod 3 is a  $1\frac{1}{2}$ " Gear Wheel 14 engaged by a Worm Wheel 15 operated by the Crank Handle 16 and in this way the cantilever arm is swung round, the Wheels 5 riding on the Circular Girder 6.

The load carried from the Hook 17 is raised or lowered by the Crank Handle 18, a  $\frac{1}{2}$ " Pinion 19 on which engages a  $1\frac{1}{2}$ " Gear Wheel 20 on a Rod 21 on which is wound a cord 22. This cord passes over a  $\frac{1}{2}$ " Pulley 23 to the block 24 and back over another  $\frac{1}{2}$ " Pulley on the trolley, and is secured to the  $3\frac{1}{2}$ "x $\frac{1}{2}$ " Double Angle Strip 25 at the outer end of the cantilever arm. Consequently, when the trolley is caused to travel along the cantilever arm the load remains suspended at a constant height—an important point and an interesting detail.

The trolley is caused to move to and fro along the cantilever arm by the action of the Crank Handle 26. On this a  $\frac{1}{2}$ " Pinion 27 engages a  $1\frac{1}{2}$ " Gear Wheel 28 on a Rod on which is wound the cord 29, the opposite ends of which are connected to the opposite ends of the trolley. The cord 29 passes round a Pulley 30 at the outer end of the jib. By turning the Crank Handle 26, therefore, the cord 29 winds on and off its rod, and moves the trolley to and fro, its Wheels 31, as shown in Fig. 6.30c, running on the Angle Girders 10.

The Wheels 5 are connected to  $1\frac{1}{2}$ " Rods 5a which are journaled in Double Bent Strips 5b bolted to  $3\frac{1}{2}$ " Strips 5c carried from the Angle Girders 8 by corner Brackets 5d.

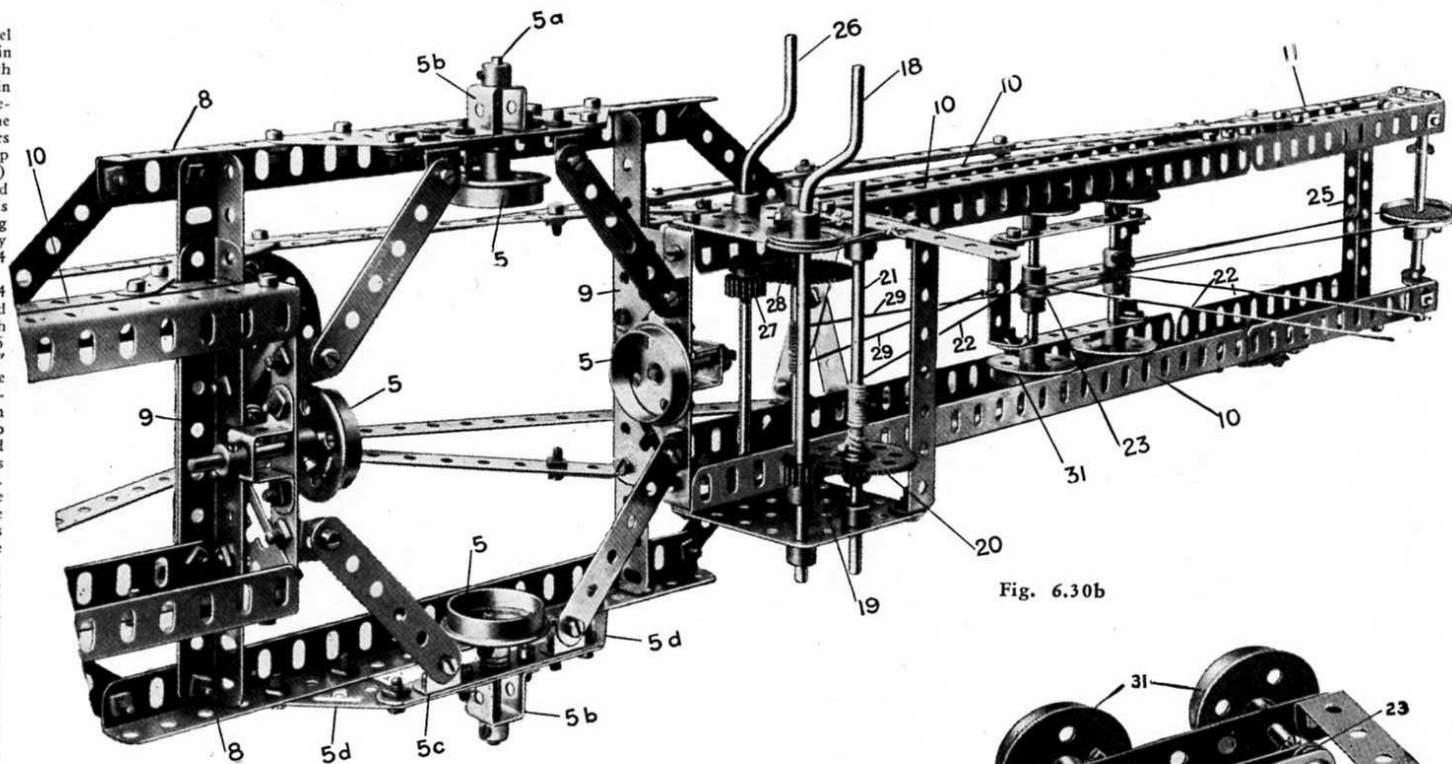


Fig. 6.30b

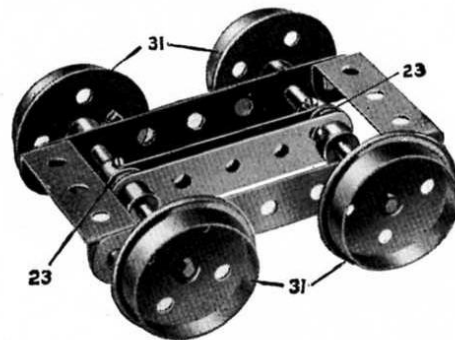


Fig. 6.30c

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

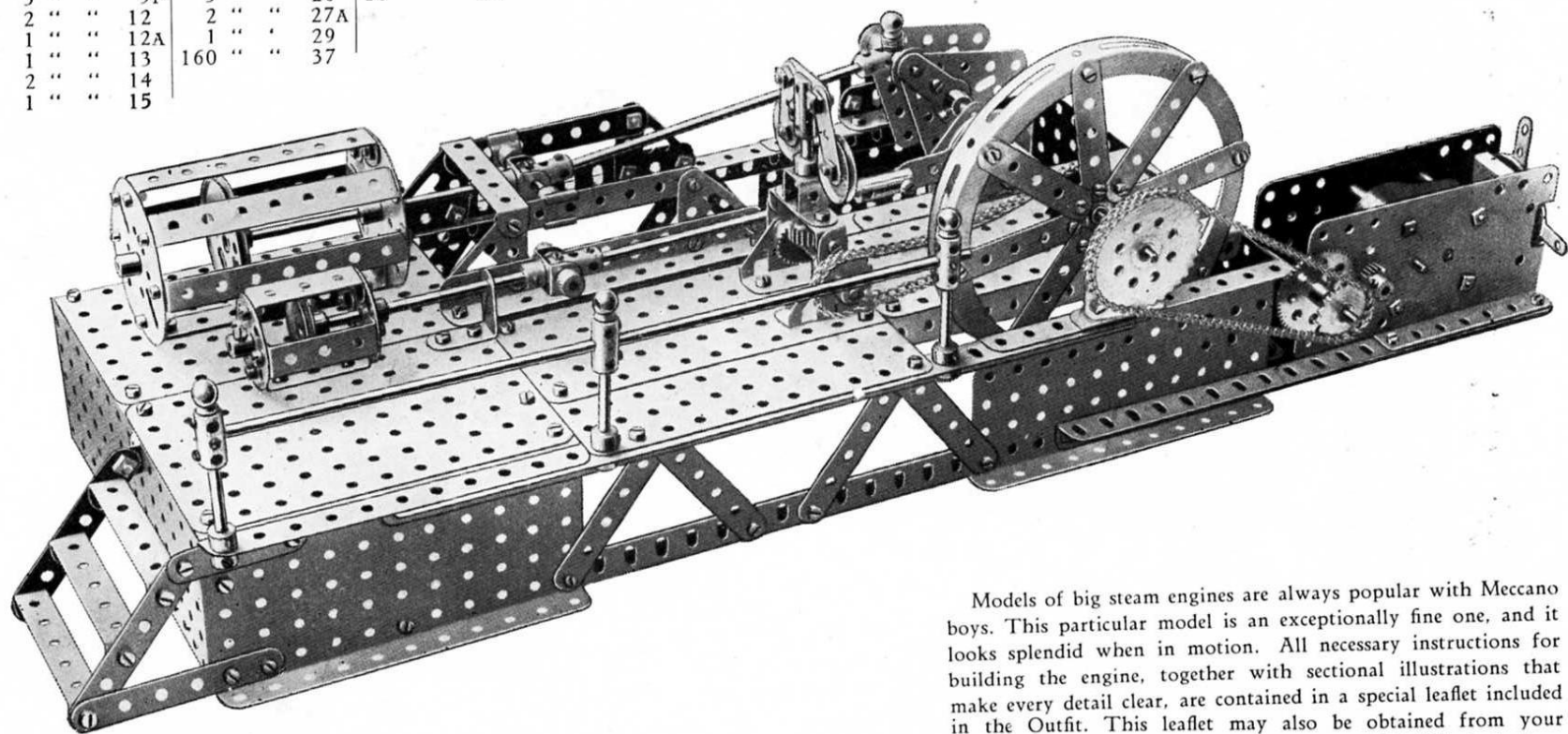
## Parts required:

2 of No.	3	1 of No.	15A	20 of No.	38
11 " "	4	2 " "	16	1 " "	45
8 " "	5	2 " "	16A	4 " "	48
1 " "	6	5 " "	17	4 " "	48A
5 " "	6A	2 " "	18A	6 " "	48B
8 " "	8	1 " "	20A	2 " "	50
1 " "	8A	1 " "	22	7 " "	52
3 " "	9	2 " "	22A	2 " "	52A
1 " "	9B	3 " "	24	4 " "	53
3 " "	9F	3 " "	26	16 " "	59
2 " "	12	2 " "	27A		
1 " "	12A	1 " "	29		
1 " "	13	160 " "	37		
2 " "	14				
1 " "	15				

# Model No. 6.31 Horizontal Engine

Parts required:  
(continued)

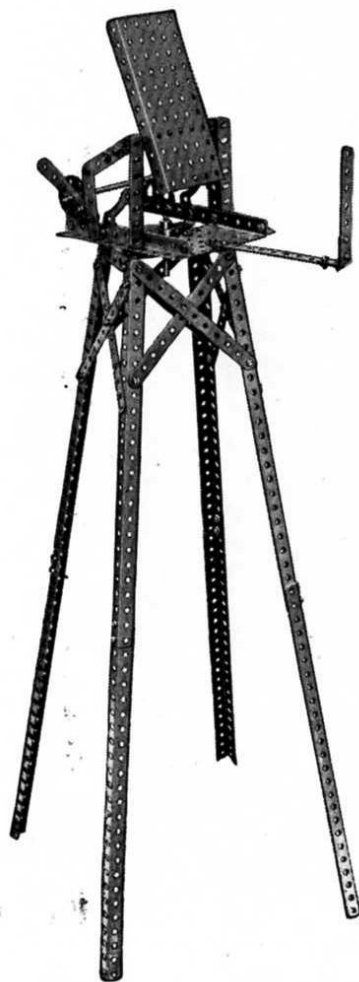
4 of No.	62	2 of No.	109
6 " "	63	2 " "	116
2 " "	63B	1 " "	118
3 " "	70	2 " "	126
2 " "	76	3 " "	126A
26 " "	94	4 " "	133
1 " "	95	4 " "	136
3 " "	96		Electric Motor



Models of big steam engines are always popular with Meccano boys. This particular model is an exceptionally fine one, and it looks splendid when in motion. All necessary instructions for building the engine, together with sectional illustrations that make every detail clear, are contained in a special leaflet included in the Outfit. This leaflet may also be obtained from your dealer, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, N. J.

These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

## Model No. 6.32 Heliograph



### Parts required:

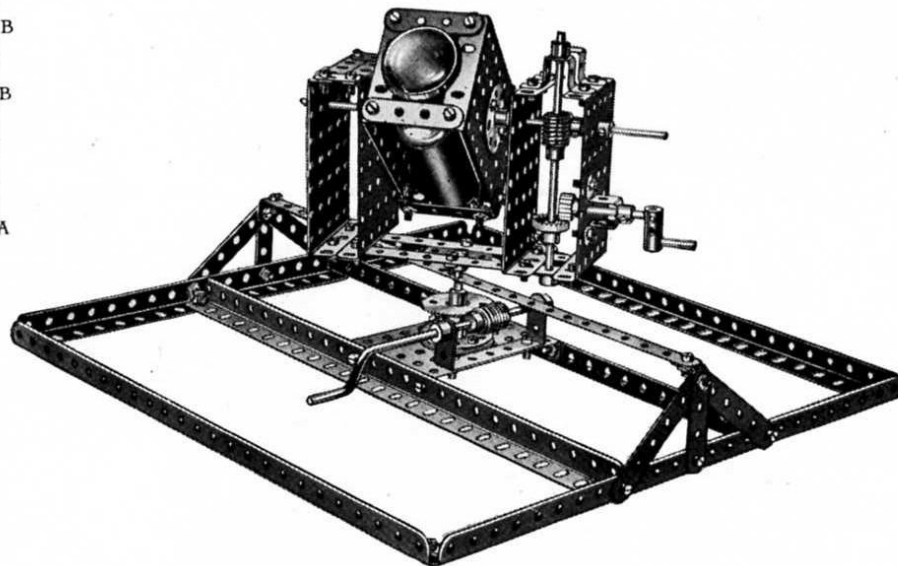
9 of No.	2	1 of No.	17
1 " "	3	1 " "	19B
1 " "	4	1 " "	24
1 " "	5	61 " "	37
1 " "	6	1 " "	48B
6 " "	6A	1 " "	52
8 " "	8	2 " "	53
2 " "	9	5 " "	59
2 " "	9B	2 " "	62
1 " "	12A	2 " "	108
2 " "	15A	2 " "	126A

A large Rectangular Plate is secured to an Axle, about which it pivots, by means of a Crank bolted to one of its flanges, and its position is altered on operation of the lever shown.

The Rectangular Plate should be fitted with a mirror, and a sighting aperture mounted in front, the operator bringing one of the perforations in the Plate in line with the aperture while signalling, so that he can see the opposite instrument in the distance.

The platform is pivotally mounted on the standard so that it may be swung round to any position, a Bush Wheel being bolted to the top of the standard in which the pivot works. The platform is made of two small Rectangular Plates butted together and connected on each side by Strips.

## Model No. 6.33 Searchlight



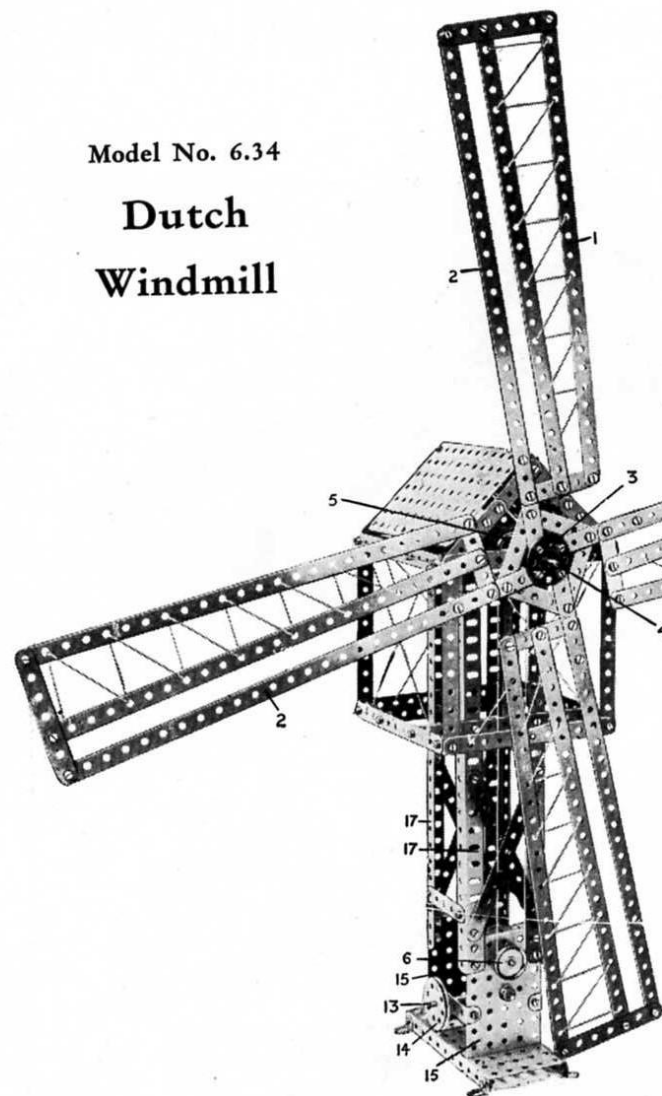
### Parts required:

1 of No.	1	6 of No.	12	1 of No.	21	62 of No.	37
2 " "	2	1 " "	15	3 " "	24	3 " "	45
4 " "	4	1 " "	16	2 " "	26	1 " "	46
6 " "	6	2 " "	17	1 " "	27A	7 " "	53
6 " "	8	1 " "	18A	1 " "	29	8 " "	59
2 " "	10	1 " "	19	2 " "	32	1 " "	63

A splendid model with which great fun may be obtained by fitting an electric flash lamp. The light may be quickly manœuvred in any direction and enemy aircraft "spotted" at once.

Model No. 6.34

# Dutch Windmill



The construction of the sails 1 of the mill, will be readily followed from the illustration. They are bolted to an inner Strip frame 2 and to a Bush Wheel 3 fixed on a Rod 4, on which is also mounted a Pulley wheel 5. The driving cord passes round this Pulley Wheel to a lower Pulley Wheel 6, the driving of which will be followed from Fig. 6.34a.

The Pulley Wheel 6 is on the outer end of the Rod 7 on which is fitted a  $1\frac{1}{2}$ " Gear Wheel 8 driven by a  $\frac{1}{2}$ " Pinion 9 on the Axle Rod 10. This Axle Rod also carries a  $\frac{1}{2}$ " Pinion 11 engaged by a Worm 12 on the driving shaft 13 which carries a driving Pulley 14. The driving gear is enclosed in two small side Flanged Plates 15 bolted to a base Plate 16.

The vertical tower of the mill is made from corner Angle Girders 17 bolted to side Plates 15.

## Parts required:

12 of No. 18	1	24 of No. 1	12	2 of No. 26	2 of No. 52
4 " " 4	2	1 " " 1	14	1 " " 27A	2 " " 52A
4 " " 4	3	3 " " 3	16	1 " " 32	2 " " 53
4 " " 4	4	1 " " 1	21	124 " " 37	5 " " 59
18 " " 18	5	2 " " 2	22	1 " " 40	
4 " " 4	8	1 " " 1	24	2 " " 48A	

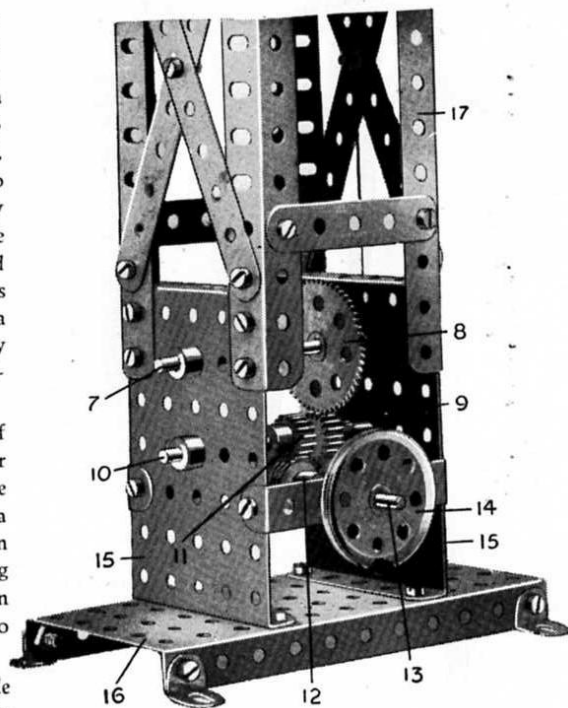
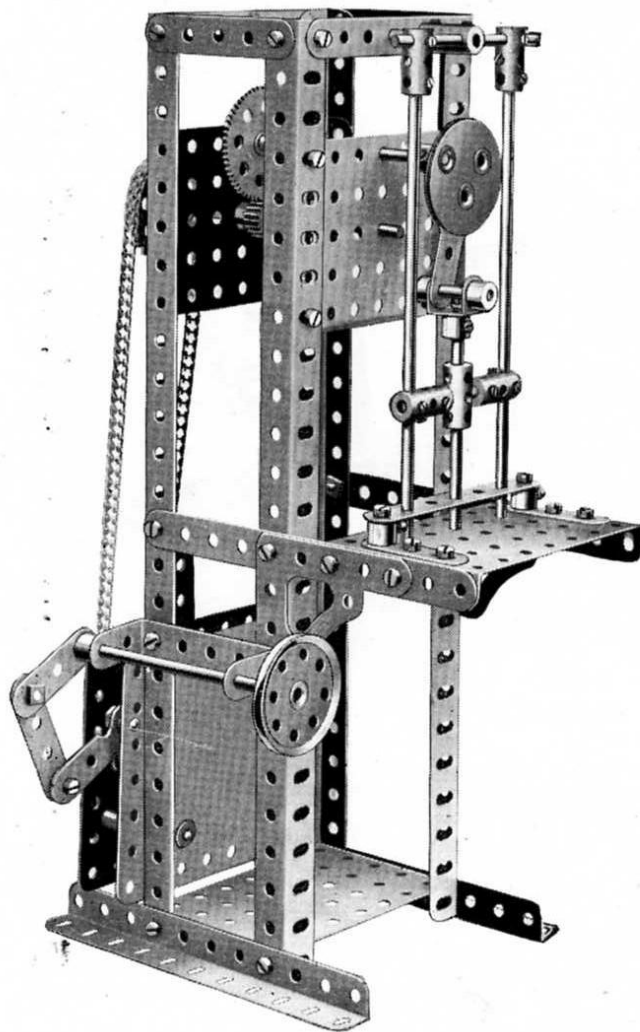


Fig. 6.34a

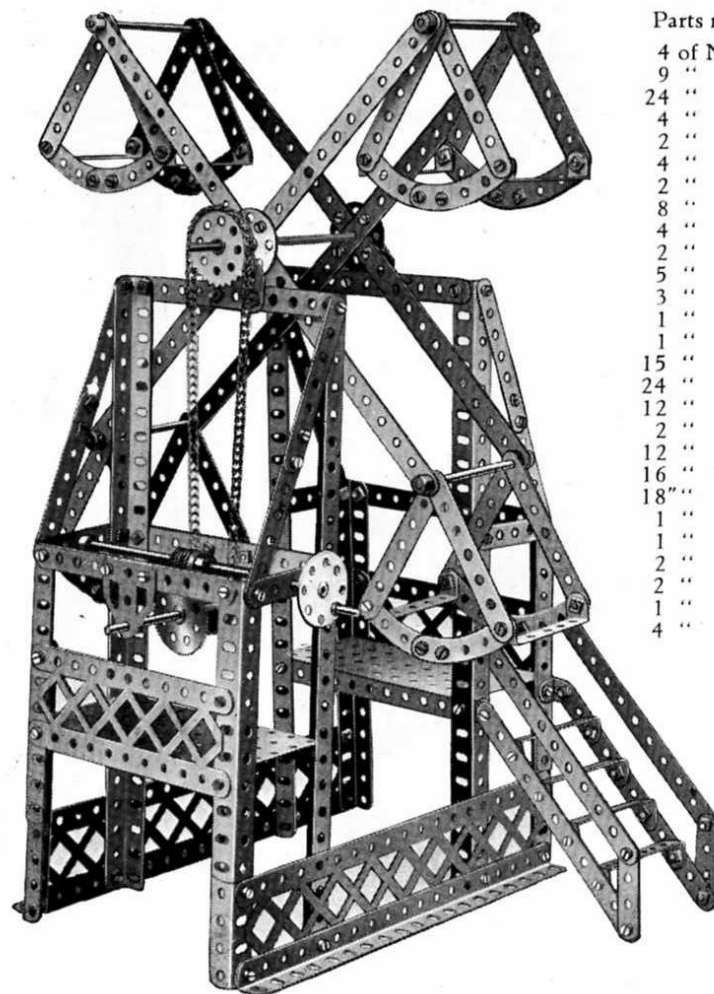


Model No. 6.35 **Punching Machine**

## Parts required:

2 of No.	2
3 " "	3
2 " "	5
1 " "	6
4 " "	8
2 " "	9
2 " "	14
2 " "	15A
2 " "	16
1 " "	16B
1 " "	17
1 " "	18A
2 " "	18B
1 " "	21
1 " "	26
1 " "	27A
42 " "	37
1 " "	38
1 " "	46
4 " "	53
6 " "	59
3 " "	62
6 " "	63
1 " "	94
1 " "	95A
1 " "	96
2 " "	108
1 " "	116
1 " "	130

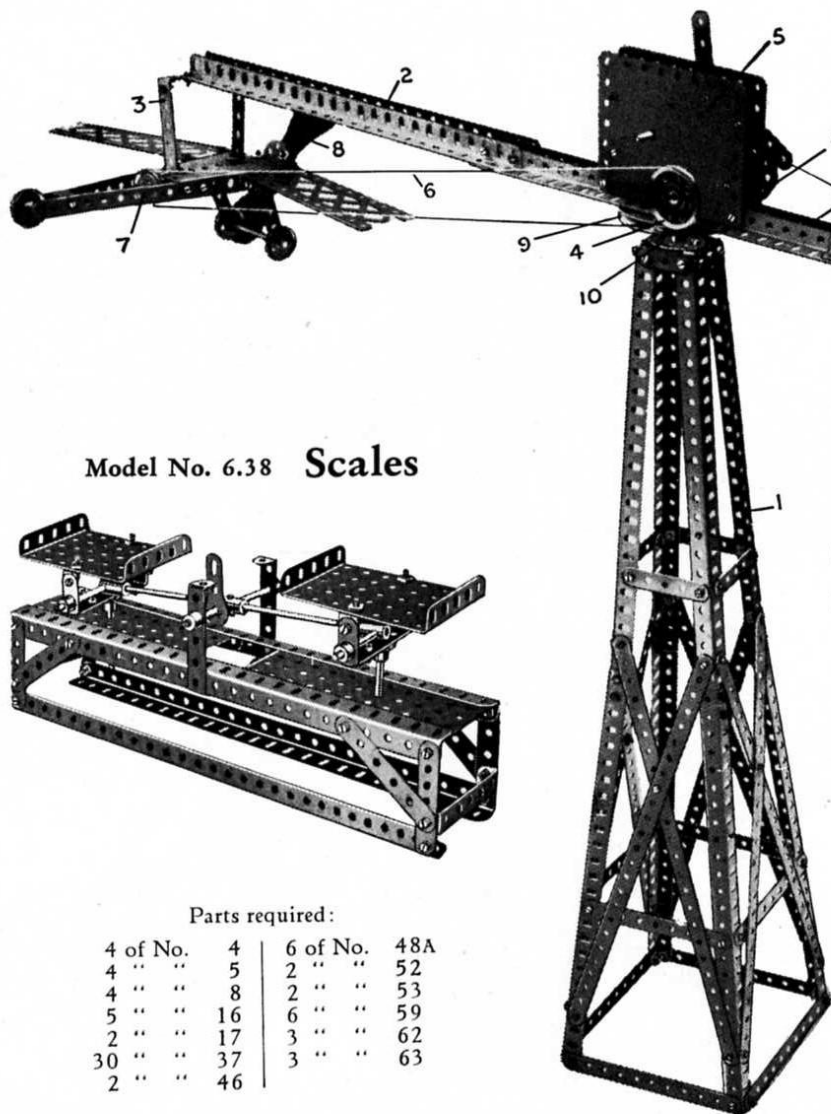
Clockwork Motor  
(not included in Outfit)

Model No. 6.36 **Fly Boats**

## Parts required:

4 of No.	1
9 " "	2
24 " "	3
4 " "	5
2 " "	6
4 " "	8
2 " "	8A
8 " "	9
4 " "	12
2 " "	14
5 " "	16
3 " "	24
1 " "	27A
1 " "	32
15 " "	37
24 " "	38
12 " "	48A
2 " "	52
12 " "	59
16 " "	90
18 " "	94
1 " "	95A
1 " "	96
2 " "	99A
2 " "	100
1 " "	115
4 " "	126A

These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)



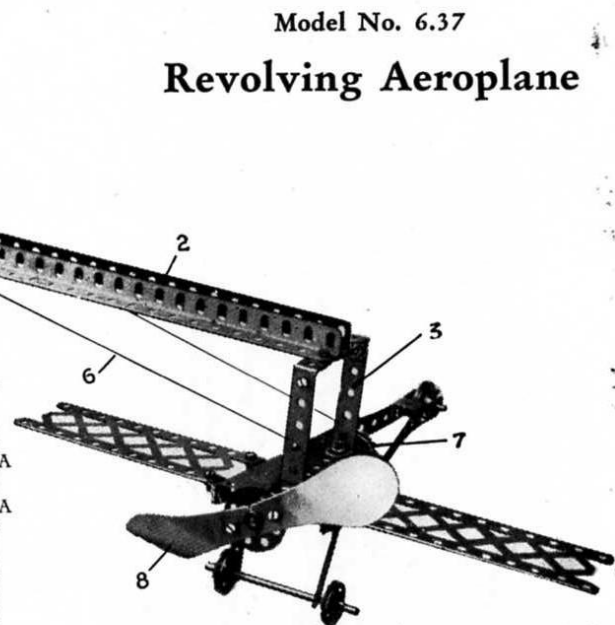
Model No. 6.38 Scales

Parts required:

4 of No.	4	6 of No.	48A
4 "	5	2 "	52
4 "	8	2 "	53
5 "	16	6 "	59
2 "	17	3 "	62
30 "	37	3 "	63
2 "	46		

Parts required:

8 of No.	1
8 "	2
4 "	2A
8 "	5
4 "	6A
14 "	8
2 "	11
14 "	12
2 "	15
3 "	16
1 "	17
2 "	18B
1 "	19B
2 "	21



Model No. 6.37

## Revolving Aeroplane

4 of No.	22	122 of No.	37	6 of No.	48A
4 "	22A	8 "	38	2 "	54
3 "	24	1 "	40	2 "	59
4 "	35	4 "	41	4 "	100

Clockwork Motor (not included in Outfit)

The construction of the tower 1 is clearly brought out in the illustration. The rotating arm carrying the aeroplanes is built up of three pairs of two 12½" Angle Girders 2 overlapped three holes, at the outer ends of which the aeroplane models are carried from the 2½"x ½" Double Angle Strips 3.

Two 1½" Pulleys 4 on the driving Axle of the Clockwork Motor 5 are connected by the driving cord 6 to 1" Pulleys 7 on the model aeroplanes, the propellers 8 being secured on the other ends of the rods of these Pulleys 7. Therefore when the Motor is running the propellers, in revolving, cause the arm 2 bolted to the 3" Pulley 9 to swing round. This 3" Pulley is secured to a short Rod which passes through the Bush Wheel 10 bolted on the top of the tower 1.

These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

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## Model No. 6.39 Drop Hammer

Parts required:

1 of No.	1	1 of No.	11	2 of No.	26	5 of No.	59
2 " "	1B	1 " "	12A	2 " "	27A	1 " "	63
4 " "	2	1 " "	13	75 " "	37	2 " "	72
1 " "	2A	1 " "	15A	6 " "	38	1 " "	95A
4 " "	3	4 " "	16	1 " "	40	2 " "	97
4 " "	5	6 " "	20	4 " "	48A	4 " "	108
10 " "	8	1 " "	22A	2 " "	52		
2 " "	9D	2 " "	24	1 " "	53		

The construction details of this model are clearly shown in the illustration. The vertical hammer shaft is guided through  $2\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips secured in the upper frame-work. The operating cord is led from a point on the shaft near the hammer-head up to a guide Pulley (Standard Mechanism No. 39) situated at the top of the model, and from thence down to the winding drum, consisting of two Flanged Wheels butted together, in the gear box.

The Rod carrying the winding drum is rotated through a chain of reduction gearing from the driving shaft carrying a Sprocket Wheel, which may, of course, be coupled to a Meccano Motor or any other driving method. The intermediate shaft is slidable in its bearings and is controlled by the hand lever shown in Fig. 6.30a, while its gears are so arranged that they may be easily slipped out of engagement with the driving shaft, with the result that the hammer, being released, forcibly strikes the table secured in the base of the machine. From this it will be seen that the power of the blow may be altered as desired, since the hammer may be dropped from varying heights.

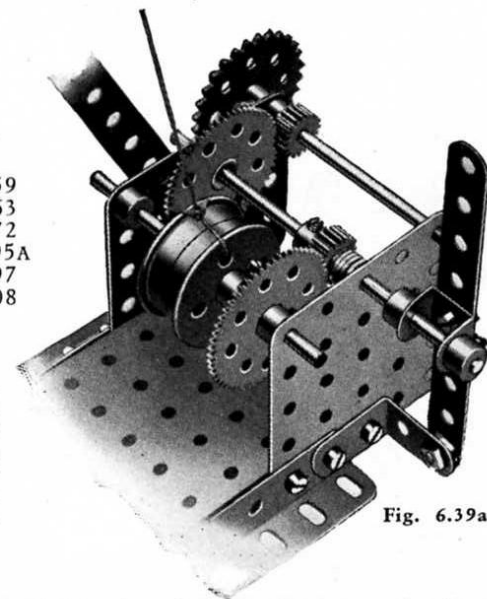
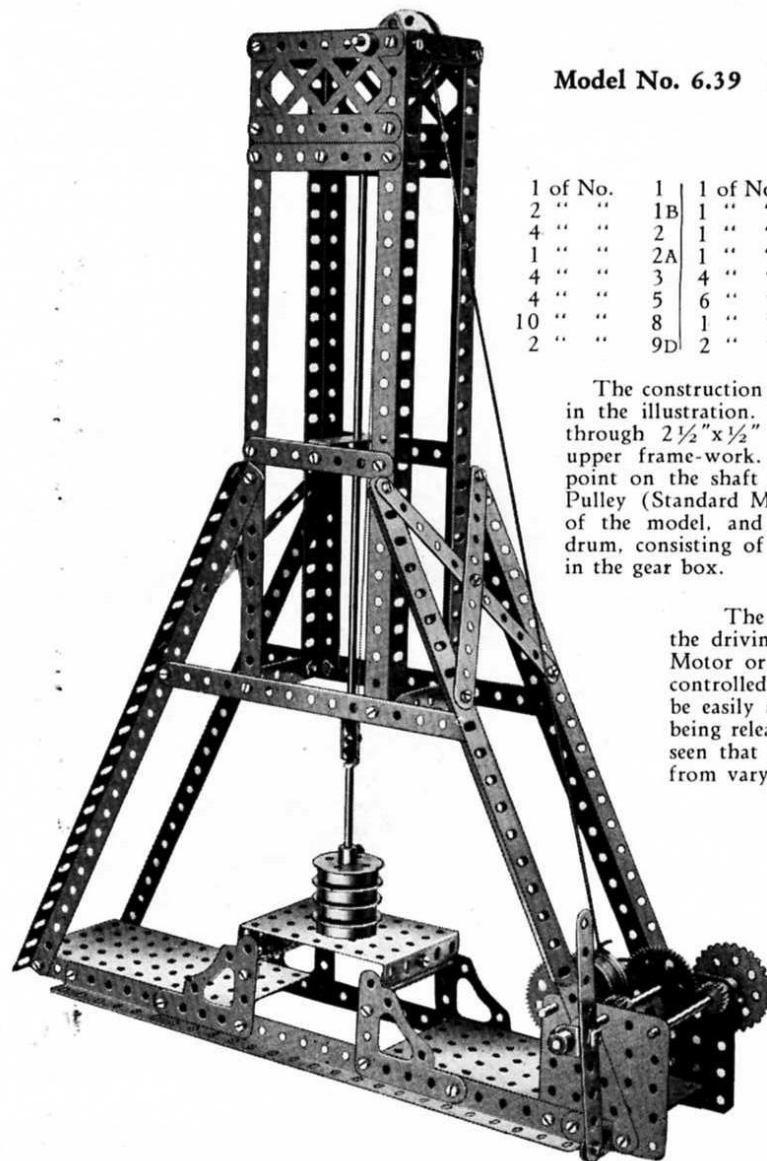
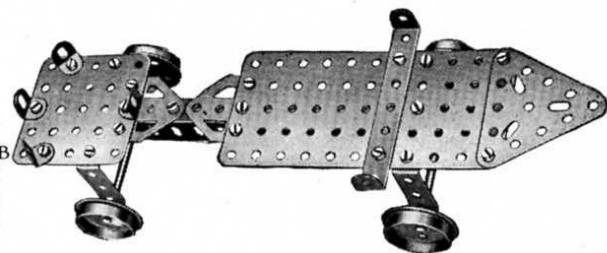


Fig. 6.39a

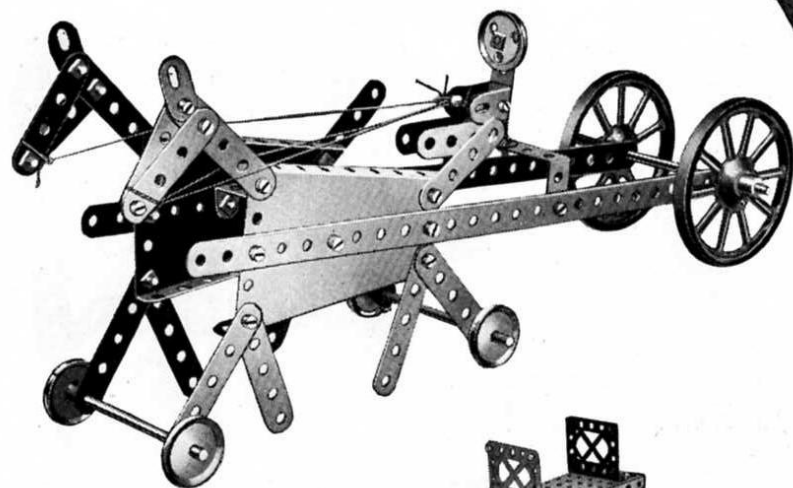
## Model No. 6.40 Roller Skate

Parts required:

2 of No.	8B	2 of No.	47
4 " "	12	1 " "	48B
2 " "	16	1 " "	70
4 " "	20	1 " "	72
19 " "	37	1 " "	76
2 of No. 126A			



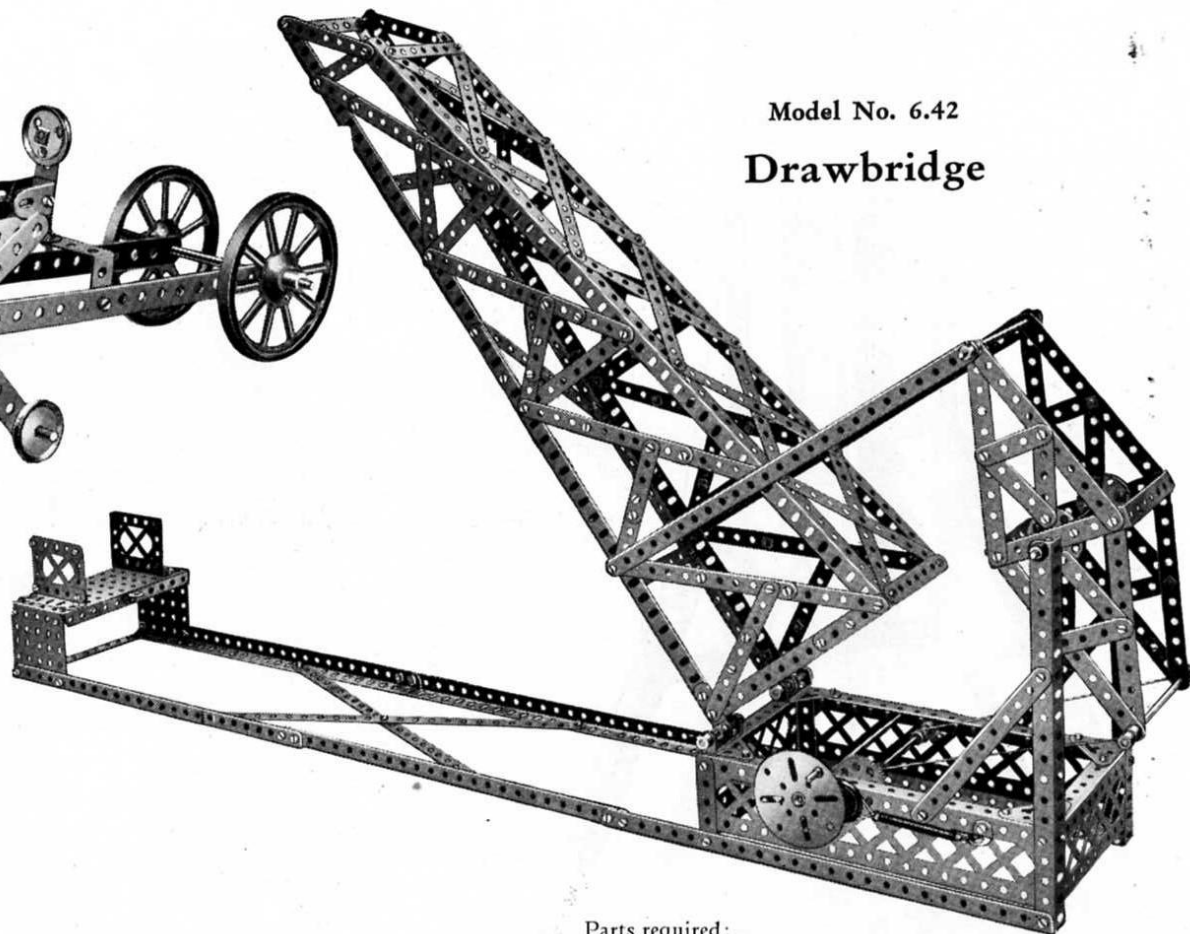
These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)



Model No. 6.41  
**Sulky and Driver**

Parts required:

2 of No.	1	2 of No.	19A
10 " "	5	4 " "	22
9 " "	6	1 " "	22A
4 " "	10	32 " "	37
2 " "	11	1 " "	46
1 " "	12	2 " "	48A
3 " "	15A	2 " "	54



Model No. 6.42  
**Drawbridge**

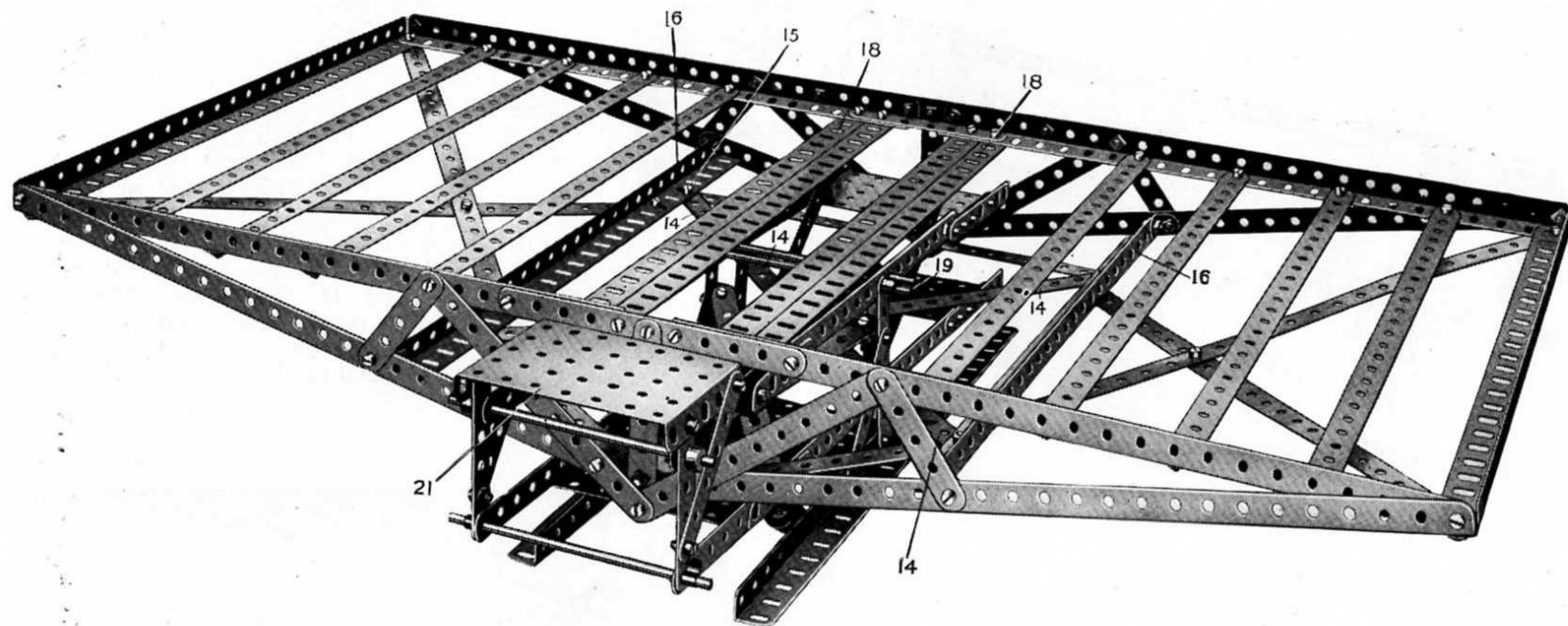
Parts required:

4 of No.	1	8 of No.	6	3 of No.	14	1 of No.	27A	2 of No.	48B	2 of No.	99A
44 " "	2	14 " "	8	2 " "	15	177 " "	37	1 " "	52	2 " "	100
2 " "	2A	4 " "	8A	2 " "	17	6 " "	38	23 " "	59	1 " "	109
14 " "	3	2 " "	9	1 " "	22	1 " "	40	2 " "	62	1 " "	115
4 " "	4	6 " "	9D	2 " "	24	1 " "	43	2 " "	72	4 " "	133
18 " "	5	2 " "	12	1 " "	26	2 " "	48	2 " "	98		

This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

91

# Model No. 6.43 Weighbridge



## Parts required:

22 of No. 1	8 of No. 3	6 of No. 5	10 of No. 12	2 of No. 35	16 of No. 37A
10 " " 2	6 " " 4	14 " " 8	6 " " 15A	107 " " 37	6 " " 53
		6 of No. 59			

(Continued on the next page)



This Model can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

### Model No. 6.43 Weighbridge (continued)

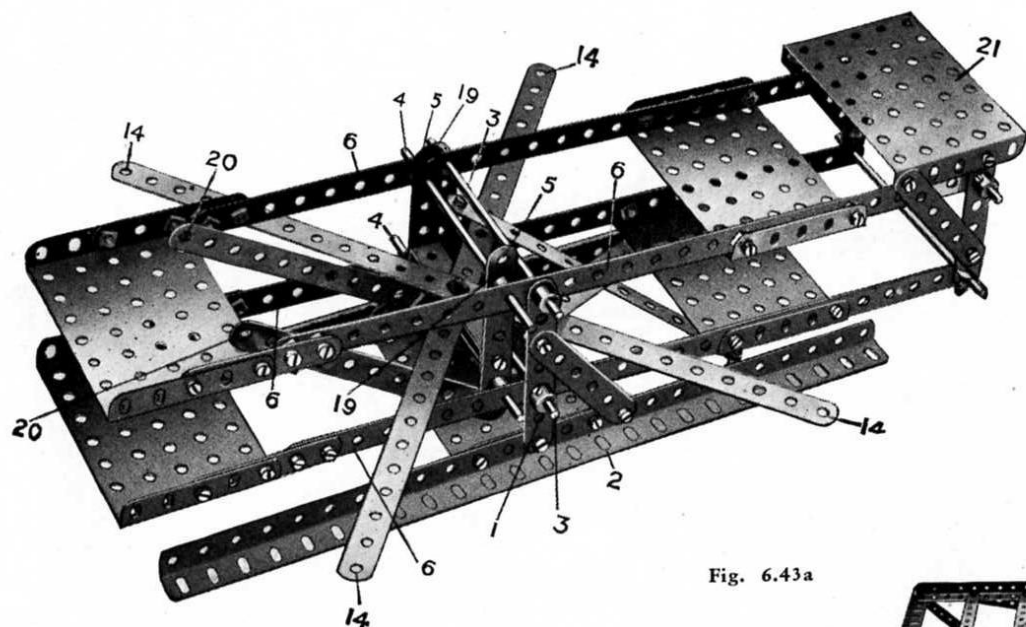


Fig. 6.43a

Begin the construction of this model by making the weigh beam, Fig. 6.43a. The side Strips 1 are bolted to the base Angle Girders 2, and in the Strips 1 are journaled the Rods 3 which form the fixed pivots of the weigh beam. The upper and lower Rods 4 are journaled in the Strips 5 and form the moving pivots of the beam. All the Rods 3 and 4 pass through perforations in the upper and lower Strips 6 of the beam. Next construct the platform, Fig. 6.43b, leaving the Strips at one side unconnected, as shown. The platform is then passed between the upper and lower parts of the weigh beam, and the unconnected Strips then bolted, as follows:

The ends 7 are bolted to the lowest hole 8, and the ends 9 to the bolt 10, which also carries an Angle Bracket. The outer holes 14 of the 12 1/2" crossed Strips, Fig. 6.43a, are then bolted to the same holes 15 in the Angle Girders 16 as the Strips 17. The other ends of the Strips 17 are secured to the Angle Brackets at 10. The Double Angle Girders 18 are then bolted in position, and the upper holes 19, Fig. 6.43a, are bolted to the Angle Girders 18 in the centre holes and the holes 20, Fig. A, to the Angle Girders 18 at the fifth hole from the Girder ends. The load to be weighed rests on the main platform, and the weights are placed on the small Rectangular Plate 21 at the end of the weigh beam.

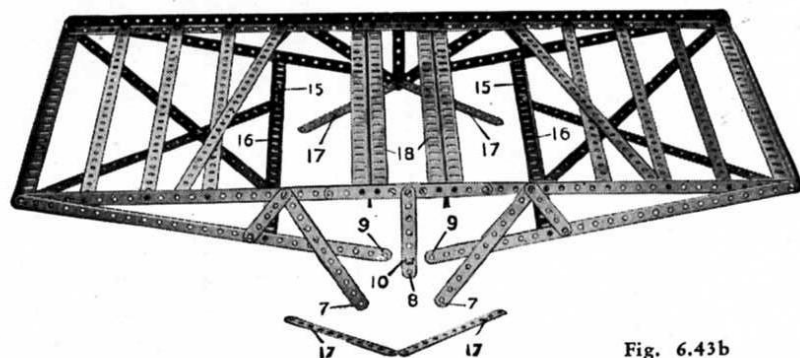
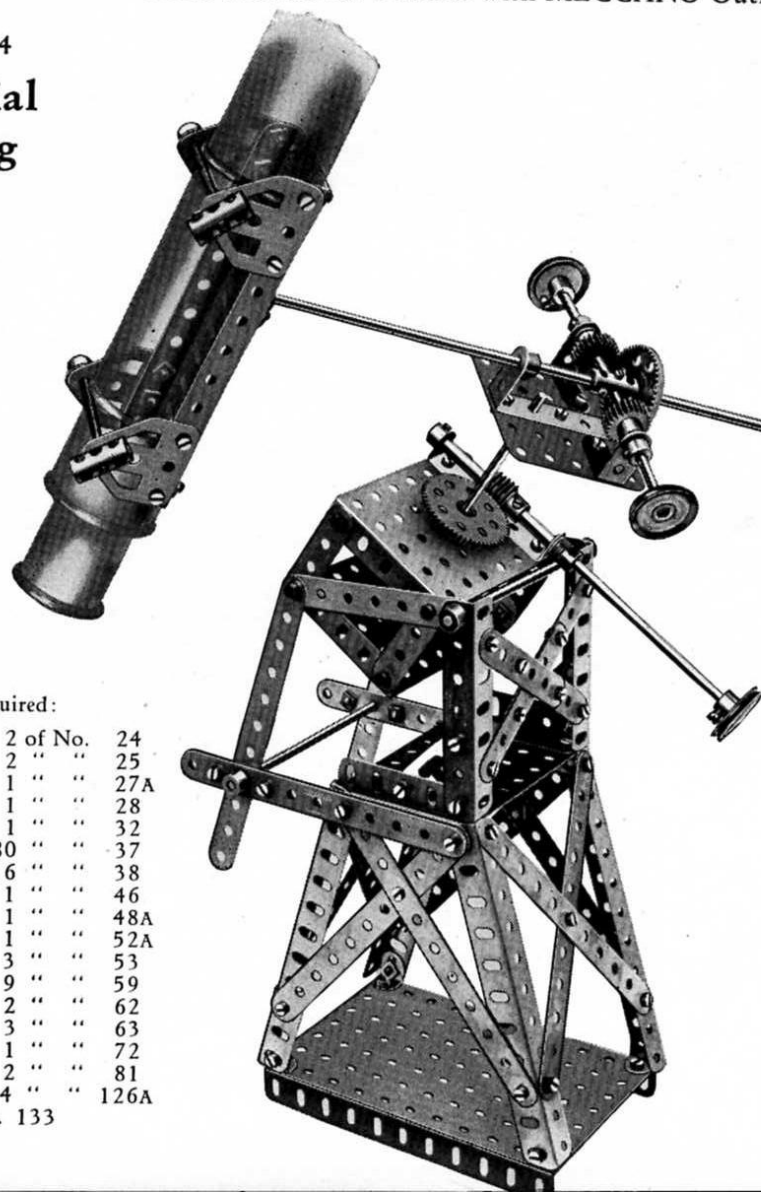


Fig. 6.43b

These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

Model No. 6.44

## Equatorial Mounting

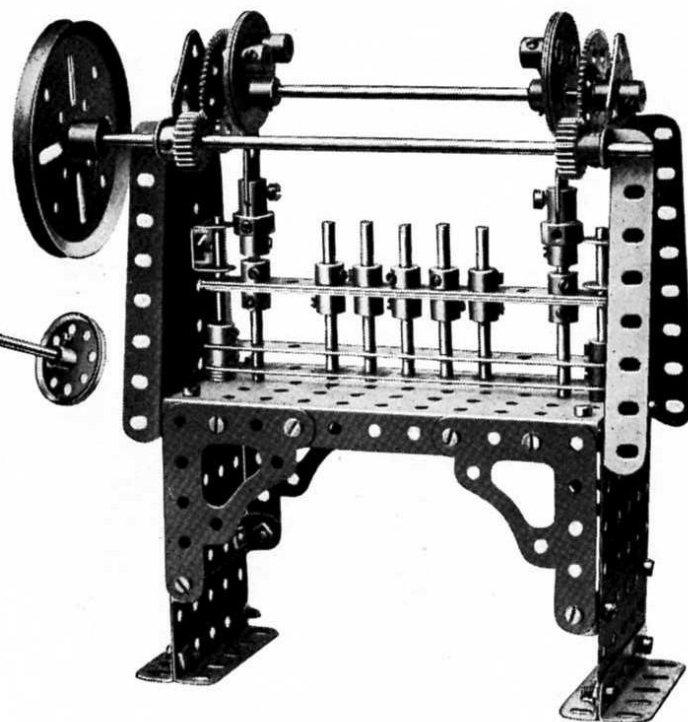


### Parts required:

4 of No.	2	2 of No.	24
2 " "	3	2 " "	25
4 " "	4	1 " "	27A
4 " "	6	1 " "	28
2 " "	6A	1 " "	32
8 " "	9	80 " "	37
2 " "	9B	16 " "	38
2 " "	9D	1 " "	46
4 " "	12	1 " "	48A
2 " "	12A	1 " "	52A
1 " "	13	3 " "	53
1 " "	14	9 " "	59
1 " "	15	2 " "	62
2 " "	15A	3 " "	63
2 " "	16B	1 " "	72
1 " "	21	2 " "	81
3 " "	22	4 " "	126A
2 of No. 133			

Model No. 6.45

## Punching Press



### Parts required:

5 of No.	2	1 of No.	19B	2 of No.	53
2 " "	6	2 " "	25	2 " "	54
2 " "	9D	2 " "	27A	21 " "	59
2 " "	11	34 " "	37	2 " "	63B
1 " "	13A	6 " "	38	4 " "	108
1 " "	14	2 " "	48A	2 " "	126A
9 " "	17	1 " "	52	2 " "	130

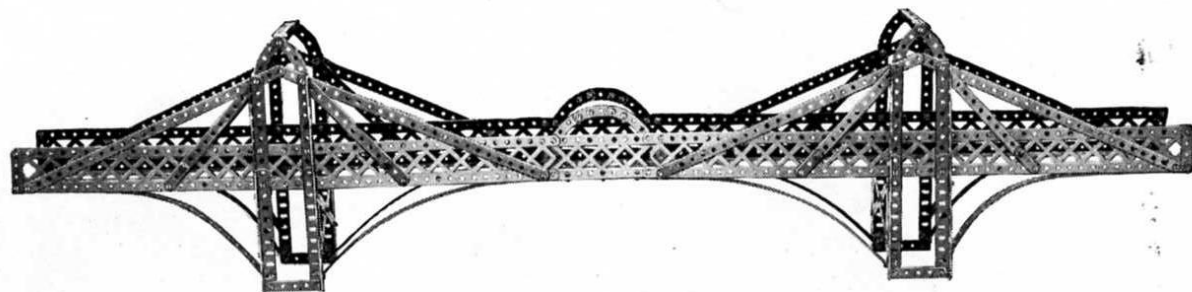
These Models can be made with MECCANO Outfit No. 6x (or No. 5x and No. 5A)

### Model No. 6.46

## Cantilever Bridge

Parts required:

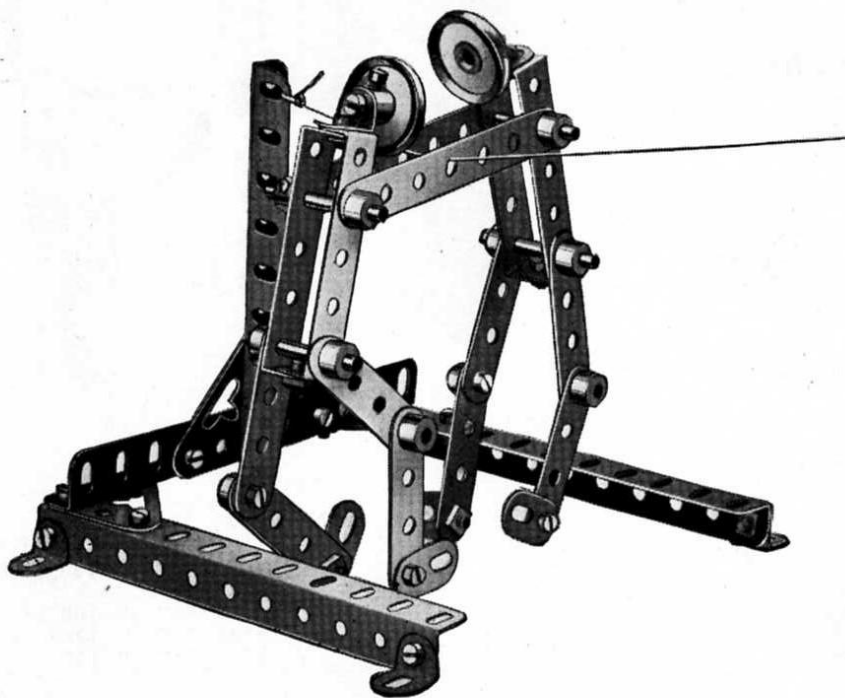
16 of No.	1	18 of No.	9
16 " "	2	8 " "	12
3 " "	3	136 " "	37
4 " "	5	2 " "	48B
4 " "	6	14 " "	90
8 " "	6A	8 " "	99
8 " "	8	2 " "	100



### Model No. 6.47 The Wrestlers

Parts required:

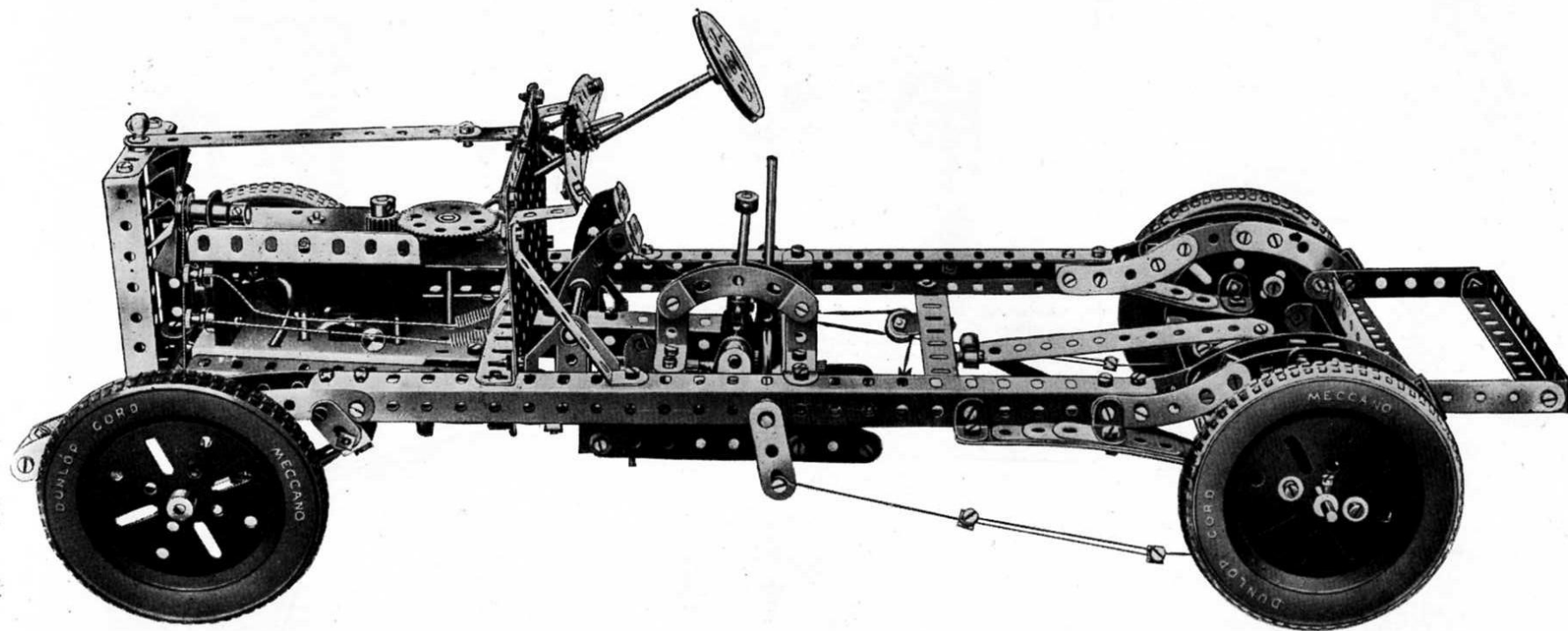
2 of No.	3	4 of No.	10	22 of No.	37	12 of No.	59
8 " "	6	6 " "	12	6 " "	37B	4 " "	133
3 " "	9	4 " "	18A	1 " "	38		
1 " "	9A	2 " "	22	4 " "	48A		



Boys will at once recognize this familiar toy. When the cord, which should be about 4" long, is kept fairly tight and manipulated, the figures will wrestle in a most realistic manner. The model should be mounted on a board, to keep it steady.

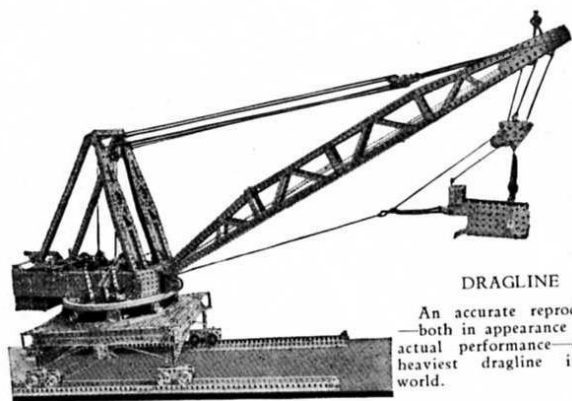
# The Meccano Auto Chassis

Special Model No. 7.1



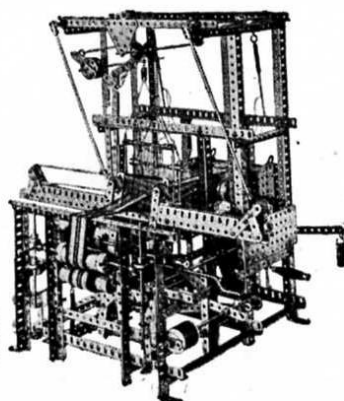
The Meccano Auto Chassis is a model of exceptional interest as it provides a complete demonstration of a real Auto Chassis. It is equipped with a perfect differential, worm steering mechanism and a transmission giving three speeds forward and reverse. It is underslung and provided with semi-elliptic front springs and cantilever rear springs. In order to make its construction quite clear a number of sectional photographs and drawings are necessary. These are all contained in a special leaflet of instruction, making everything quite clear, and this may be purchased from Meccano Company, Inc., Elizabeth, N. J., price 10 cents postpaid.

## A Selection of



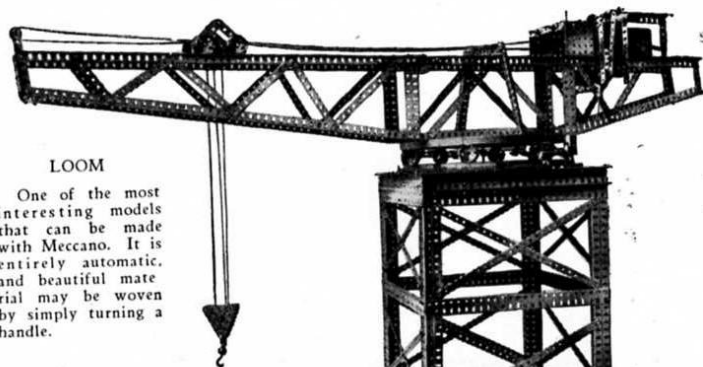
DRAGLINE

An accurate reproduction—both in appearance and in actual performance—of the heaviest dragline in the world.



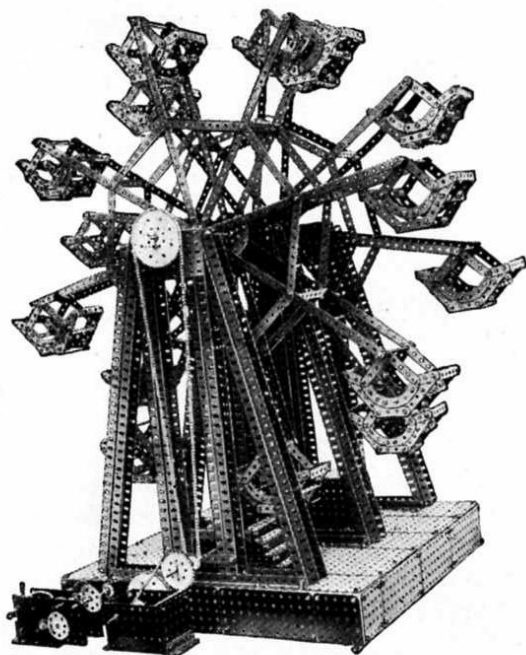
LOOM

One of the most interesting models that can be made with Meccano. It is entirely automatic, and beautiful material may be woven by simply turning a handle.



HAMMERHEAD CRANE

An excellent reproduction of a type of crane used in many of our large dockyards. It has three distinct movements controlled from a single gear box.

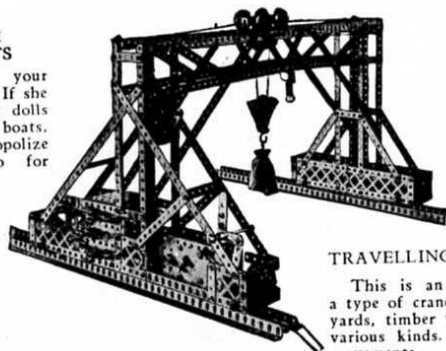


DOUBLE FLYBOATS

Don't let your sister see this! If she once gives her dolls a ride in the boats, she will monopolize your Meccano for several weeks.

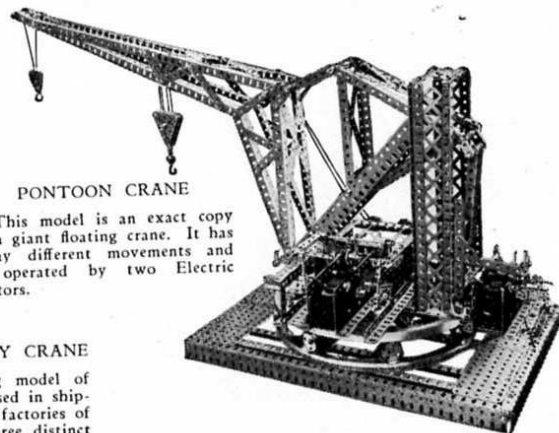
The models illustrated on this page show the wonderful possibilities of Meccano. They comprise a selection from a range of super models that have been specially built for the delight of Meccano boys.

A descriptive leaflet giving full particulars of all the models in the series and the prices of the special Instruction Leaflets that are published in connection with them, may be obtained from your dealer or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, New Jersey, free of charge.



TRAVELLING GANTRY CRANE

This is an interesting model of a type of crane that is used in shipyards, timber yards, and factories of various kinds. It has three distinct movements.

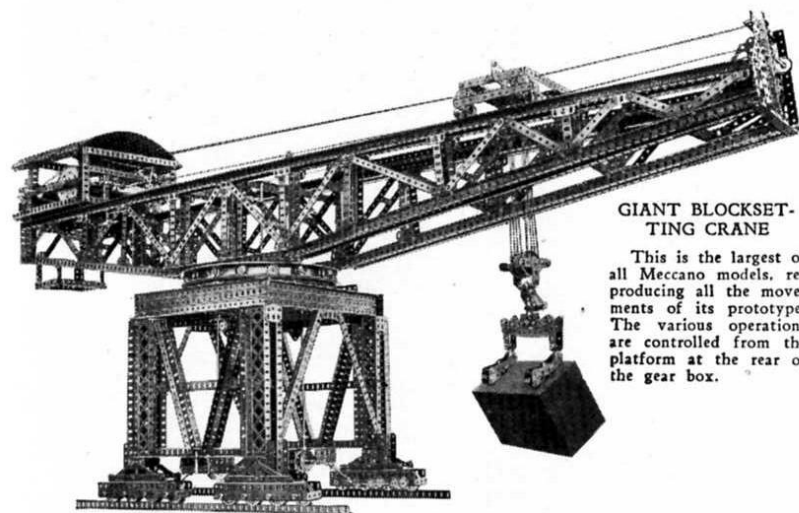


PONTOON CRANE

This model is an exact copy of a giant floating crane. It has many different movements and is operated by two Electric Motors.

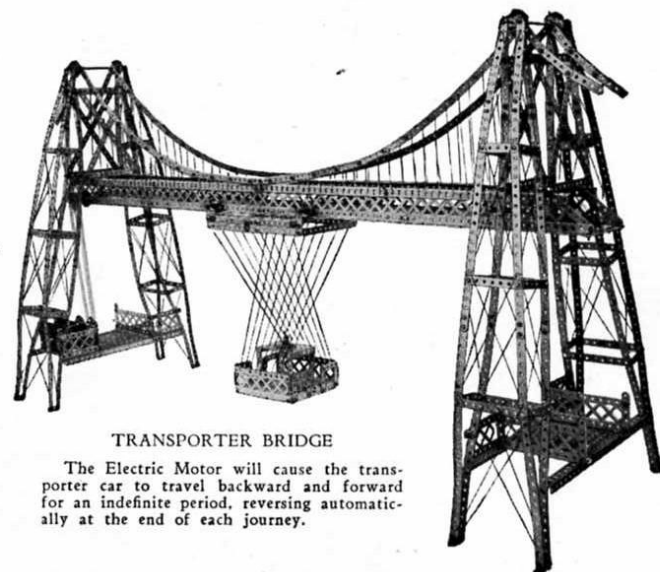


## Super Meccano Models



**GIANT BLOCKSETTING CRANE**

This is the largest of all Meccano models, reproducing all the movements of its prototype. The various operations are controlled from the platform at the rear of the gear box.

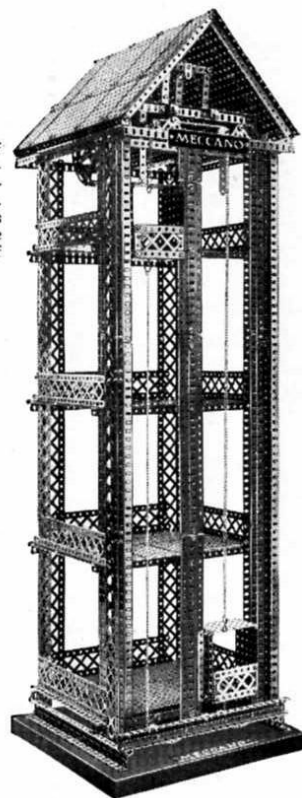
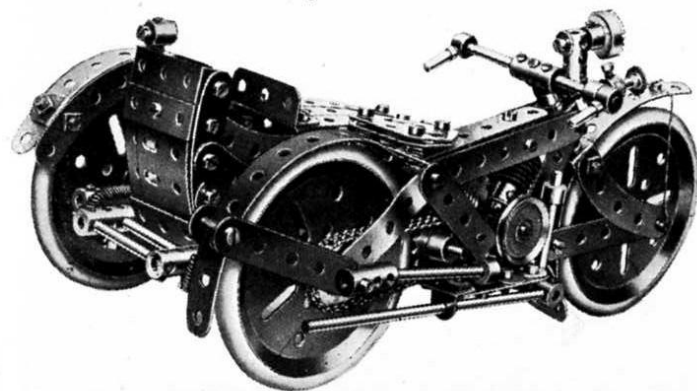


**TRANSPORTER BRIDGE**

The Electric Motor will cause the transporter car to travel backward and forward for an indefinite period, reversing automatically at the end of each journey.

**MOTORCYCLE AND SIDECAR**

This model is an excellent example of Meccano miniature engineering, and affords a remarkable testimonial to the adaptability of the system. Its construction is a severe test of model-building skill.

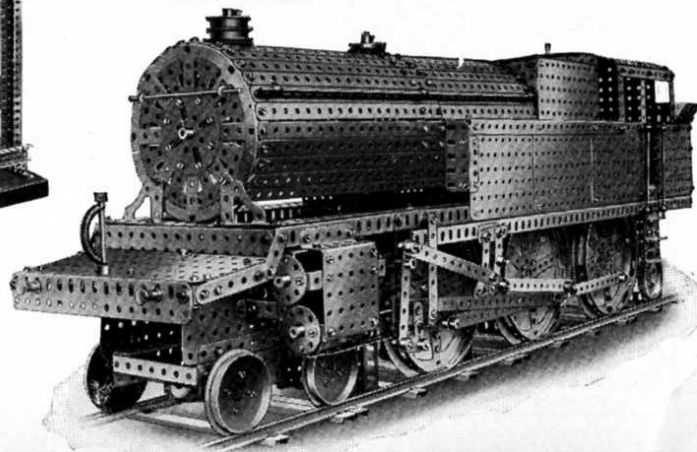


**WAREHOUSE**

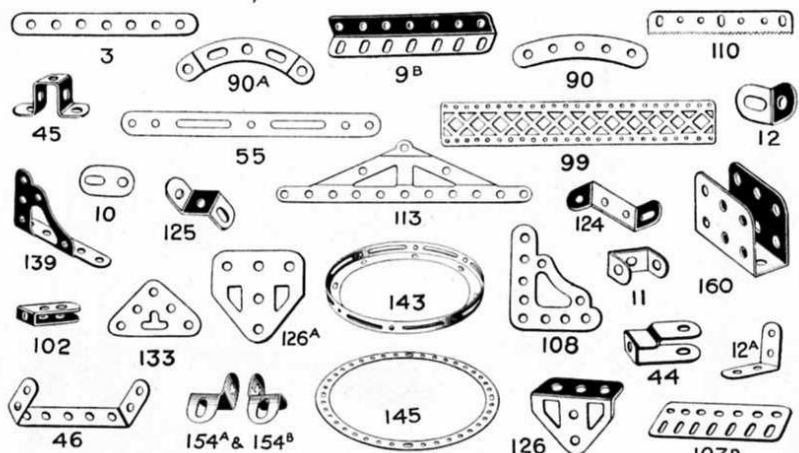
The two lifts continue to rise and descend automatically without any attention once the mechanism is set in motion.

**4-6-2 TANK LOCOMOTIVE**

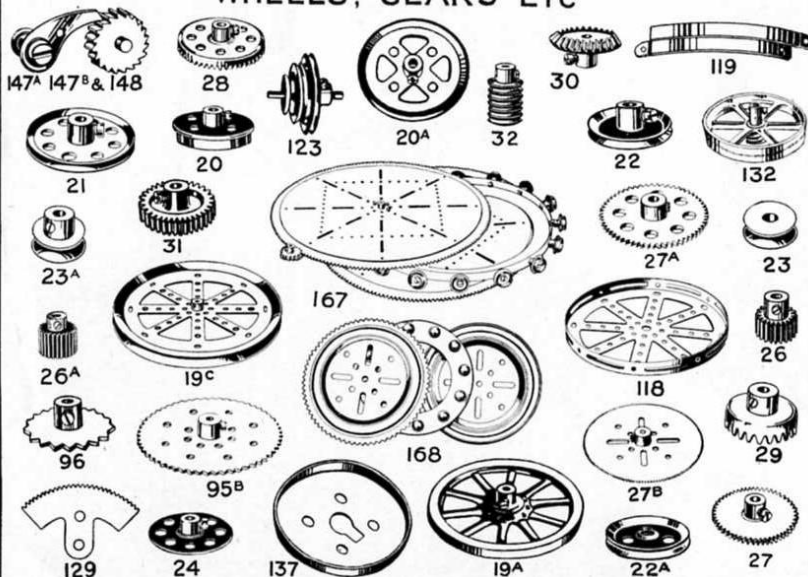
This splendid tank locomotive runs under its own power, and is equipped with a working model of Walschaert's Valve gear.



## STRIPS, GIRDERS AND BRACKETS



## WHEELS, GEARS ETC



## Particulars and Prices

Perforated Strips			No.		
No.	\$	No.	\$	No.	\$
1. 12½" ½ doz.	.30	3. 3½" ½ doz.	.10	35. Spring Clips	per box (doz.) .15
1a. 9½" "	.25	4. 3" "	.10	36. Screw Drivers	each .10
1b. 7½" "	.20	5. 2½" "	.06	36a. Screw Drivers, Extra Long	.25
2. 5½" "	.15	6. 2" "	.06	37. Nuts and Bolts, 7/32"	per box (doz.) .15
2a. 4½" "	.10	6a. 1½" "	.06	37a. Nuts	" " .05
Angle Girders					
7. 24½" each	.25	9a. 4½" ½ doz.	.30	37b. Bolts, 7/32"	" " .10
7a. 18½" "	.20	9b. 3½" "	.30	38. Washers	" " .05
8. 12½" ½ doz.	.50	9c. 3" "	.30	40. Hanks of Cord	each .05
8a. 9½" "	.45	9d. 2½" "	.25	41. Propeller Blades	per pair .15
8b. 7½" "	.40	9e. 2" "	.25	43. Springs	each .05
9. 5½" "	.35	9f. 1½" "	.25	44. Cranked Bent Strips	.03
10. Flat Brackets			.05	45. Double	.03
11. Double Brackets			.03	46. Double Angle Strips, 2½"×1"	½ doz. .20
12. Angle Brackets, ½"×½"	dozen .10			47. " " 2½"×1½"	" .30
12a. " " 1"×1"	½ doz. .15			47a. " " 3"×1½"	" .35
12b. " " 1"×½"	.10			48. " " 1½"×½"	" .15
Axle Rods					
13. 11½" each	.05	16a. 2½" 2 for	.02	48a. " " 2½"×½"	" .15
13a. 8" "	.05	16b. 3" "	.03	48b. " " 3½"×½"	" .20
14. 6½" "	.04	17. 2" 3 for	.03	48c. " " 4½"×½"	" .30
15. 5" "	.03	18a. 1½" "	.02	48d. " " 5½"×½"	" .30
15a. 4½" 2 for	.05	18b. 1" "	.02	50a. Eye Pieces, with boss	each .15
16. 3½" "	.04			52. Perforated Flanged Plates, 5½"×2½"	.20
19. Crank Handles, Large				52a. Flat Plates, 5½"×3½"	.15
19a. Wheels, 3" diam. with set screws	.45			53. Perforated Flanged Plates, 3½"×2½"	.15
20. Flanged Wheels, 1½" diam.	.20			53a. Flat Plates, 4½"×2½"	.12
20b. " " ¾" "	.15			54. Perforated Flanged Sector Plates	.15
Pulley Wheels					
19b. 3" dia. with centre boss and set screw	.25			55. Perforated Strips, slotted, 5½" long	.05
19c. 6" "	1.00			55a. " " 2" "	.03
20a. 2" "	.20			56a. Instruction Manuals, No. 00-3x	.50
21. 1½" "	.15			56b. " " No. 4x-6x	.75
22. 1" "	.10			56c. " " No. 00	.15
23a. ½" "	.10			56d. Meccano Standard Mechanisms Manual	.50
22a. 1" " without	.05			57. Hooks	.01
23. ½" "	.05			57a. " Scientific	.02
24. Bush Wheels	.15			57b. " Loaded	.15
25. Pinion Wheels, ¾" diam.	.20			58. Spring Cord	per length .30
25a. " " ¾" " double width	.30			59. Collars with Set Screws	each .05
	.15			61. Windmill Sails	4 for .25
26. " " ½" " double width	.15			62. Cranks	each .10
26a. " " ½" " double width	.25			62a. Threaded Cranks	.12
Gear Wheels					
27. 50 teeth to gear with ¾" pinion	.20			62b. Double Arm Cranks	.10
27a. 57 " " ¾" "	.20			63. Couplings	.15
27b. 133 " " ½" "	.65			63a. Octagonal Couplings	.20
	.30			63b. Strip Couplings	.20
28. Contrate Wheels, 1½" diam.	.30			63c. Threaded Couplings	.20
29. " " ¾" "	.20			64. Threaded Bosses	.06
30. Bevel Gears, ¾" " 26 teeth	.30			65. Centre Forks	.05
30a. " " ½" " 16 "	.25			66. Weights, 50 grammes	.20
30c. " " 1½" " 48 "	.65			67. " 25 grammes	.15
31. Gear Wheels, 1" 38 "	.40			68. Woodscrews, ½" "	doz. .10
32. Worm Wheels	.20			69. Set Screws	.10
34. Spanners	.05			69a. Grub Screws, 5/32"	.10
34b. Box Spanners	.20			69b. " " 7/32"	.10
				70. Flat Plates, 5½"×2½"	each .15
				72. " " 2½"×2½"	.10
				76. Triangular Plates, 2½" "	.05
				77. " " 1" "	.05

# of Meccano Parts

Screwed Rods							
No.		\$		No.		\$	
78.	1 1/2" each	.25		80a.	3 1/2" each	.05	
79.	8" "	.15		80b.	4 1/2" "	.08	
79a.	6" "	.10		81.	2" "	.03	
80.	5" "	.10		82.	1" "	.02	
89.	5 1/2" Curved Strips, 10" radius		.05				
89a.	3" " cranked, 1 1/4" radius, 4 to circle		.05				
90.	2 1/2" " 2 3/8" radius 1/2 doz.		.25				
90a.	2 1/2" " cranked, 1 1/8" radius, 4 to circle		.25				
94.	Sprocket Chain, 2" diam. per 40" length		.25				
95.	Sprocket Wheels, 2" diam.		.20				
95a.	" " 1 1/2" "		.15				
95b.	" " 3" "		.30				
96.	" " 1" "		.10				
96a.	" " 3/4" "		.10				
97.	Braced Girders, 3 1/2" long		1/2 doz. .20				
97a.	" " 3" "		.18				
98.	" " 2 1/2" "		.15				
99.	" " 1 1/2" "		.75				
99a.	" " 9 1/2" "		.60				
99b.	" " 7 1/2" "		.55				
100.	" " 5 1/2" "		.50				
100a.	" " 4 1/2" "		.35				
101.	Healds, for looms		doz. .30				
102.	Single Bent Strips		each .05				
103.	Flat Girders, 5 1/2" long		1/2 doz. .25				
103a.	" " 9 1/2" "		.35				
103b.	" " 12 1/2" "		.40				
103c.	" " 4 1/2" "		.25				
103d.	" " 3 1/2" "		.25				
103e.	" " 3" "		.20				
103f.	" " 2 1/2" "		.20				
103g.	" " 2" "		.15				
103h.	" " 1 1/2" "		.15				
103k.	" " 7 1/2" "		.30				
104.	Shuttles, for looms		each 1.20				
105.	Reed Hooks, for looms		.10				
106.	Wood Rollers		.40				
106a.	Sand Rollers		.45				
107.	Tables for Designing Machines		.25				
108.	Architraves		.07				
109.	Face Plates, 2 1/2" diam.		.15				
110.	Rack Strips, 3 1/2" "		.10				
111.	Bolts, 3/4" "		.02				
111a.	" 1/2" "		2 for .03				
111c.	" 3/8" "		doz. .15				
113.	Girder Frames		each .10				
114.	Hinges		per pair .20				
115.	Threaded Pins		each .05				
116.	Fork Pieces, Large		.10				
116a.	" Small		.10				
117.	Steel Balls, 3/8" diam.		.02				
118.	Hub Disc, 5 1/2" diam.		.50				
119.	Channel Segments (8 to circle, 1 1/2" diam.)		.15				
120b.	Compression Springs		.03				
122.	Miniature Loaded Sacks		.05				

Cone Pulleys							
No.				No.			
123.	Reversed Angle Brackets, 1" "		each .50				
124.	" 1/2" "		1/2 doz. .15				
125.	" "		.10				
126.	Trunnions		each .08				
126a.	Flat Trunnions		.05				
127.	Simple Bell Cranks		.05				
128.	Boss Bell Cranks		.10				
129.	Rack Segments, 3" diam.		.20				
130.	Triple Throw Eccentrics		.40				
131.	Dredger Buckets		.10				
132.	Flywheels, 2 1/4" diam.		.75				
133.	Corner Brackets		.05				
134.	Crank Shafts, 1" stroke		.05				
135.	Theodolite Protractors		.06				
136.	Handrail Supports		.10				
137.	Wheel Flanges		.15				
138.	Ship's Funnels		.15				
138a.	" Cunard type		.25				
139.	Flanged Brackets (right)		.10				
139a.	" (left)		.10				
140.	Universal Couplings		.30				
141.	Wire Lines (for suspending clock weights)		.15				
142a.	Dunlop Tire, 2" "		4 for .50				
142b.	" 3" "		.75				
143.	Circular Girders, 5 1/2" diam.		each .55				
144.	Dog Clutches		.75				
145.	Circular Strips, 7" diam. over all		.50				
146.	" Plates, 6" "		.60				
147a.	Pawls		.06				
147b.	Pivot Bolt with 2 nuts		.06				
148.	Ratchet Wheels		.30				
150.	Crane Grabs		.25				
151.	Pulley Blocks, Single Sheave		.25				
152.	" Two "		.35				
153.	" Three "		.50				
154a.	Corner Angle Brackets, 1/2" , right hand		1/2 doz. .25				
154b.	Corner Angle Brackets, 1/2" , left hand		.25				
155.	Rubber Rings, 3/8" "		each .03				
156.	Pointers, 2 1/2" over all, with boss		.15				
157.	Fans, 2" diam.		.15				
159.	Circular Saws		.50				
160.	Channel Bearings, 1 1/2" x 1" x 1/2" "		.15				
162.	Boiler, complete with ends		.50				
162a.	Boiler ends		.15				
163.	Sleeve Pieces		pair .15				
164.	Chimney Adaptors		each .12				
165.	Swivel Bearings		.25				
166.	End		.15				
167.	Geared Roller Bearings		12.50				
167a.	Roller Races, geared, 192 teeth		3.00				
167b.	Ring Frames for Rollers		2.00				
167c.	Pinions for Roller Bearings, 16 teeth		.75				
168.	Ball Bearings, 4" diam.		3.00				
168a.	Ball Races, flanged		.50				
168b.	" geared		.75				
168c.	Ball Casings, complete with balls		1.75				
169.	Digger Buckets		.75				
170.	Eccentrics, 1/2" throw		.30				



## A SELECTION OF MECCANO STANDARD MECHANISMS

Here are a few simple and interesting movements showing how real mechanisms operate in actual practice. They are a selection from the Meccano Standard Mechanisms Manual, particulars of which are given on a previous page.

Fig. A

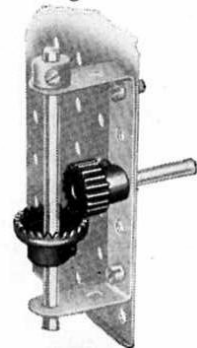


Fig. C

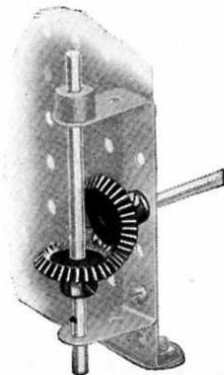


Fig. D

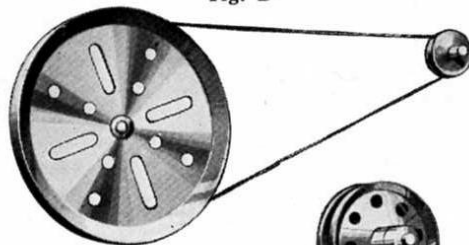


Fig. G

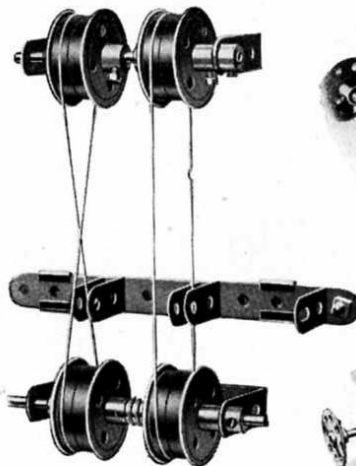


Fig. H

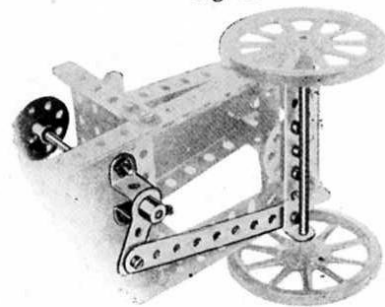


Fig. B

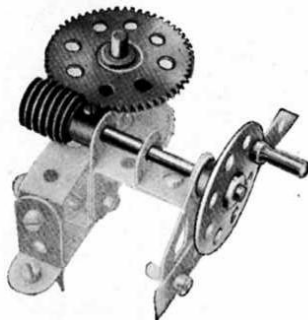


Fig. E



Fig. F

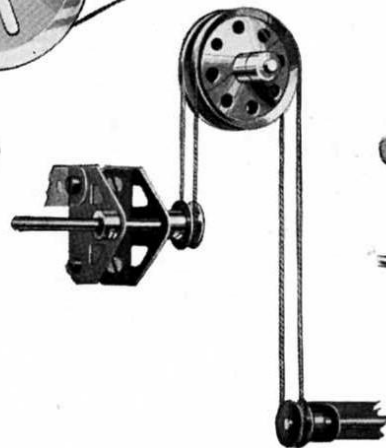
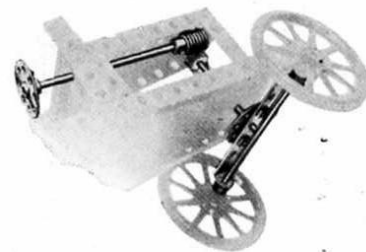


Fig. J



### Gears

The Meccano system includes a wide range of Gear-Wheels, Bevel-Gears, Pinion-Wheels, Con- trate-Wheels and Worm-Wheels in various sizes. All manner of interesting movements may be obtained by the use of these gear-wheels.

Fig. A shows how a vertical movement may be converted into a horizontal movement, or vice versa. Fig. B shows a Worm-Wheel engaged with a Gear-Wheel giving a very great reduction in shaft speed. Fig. C. Still a further movement is shown in this figure, using Meccano Bevel Gears.

### Belt and Chain Drives

In Figs. D, E, F and G we show examples of belt and chain drives. The movements illustrated require no explanation excepting, perhaps, Fig. G which shows a simple method for slipping the belt from the fast to the loose Pulleys or vice versa.

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

### Steering Gears

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

Fig. H. In this case the road wheels are moved about their central pivot by means of a Crank, which is secured to the steering shaft, and a connecting Strip.

Fig. J. The road wheels in this example are secured to a central Rod, which forms a pivot, and is rotated from the hand-wheel by means of a Worm Gear.



# A SELECTION OF MECCANO STANDARD MECHANISMS

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(Continued)

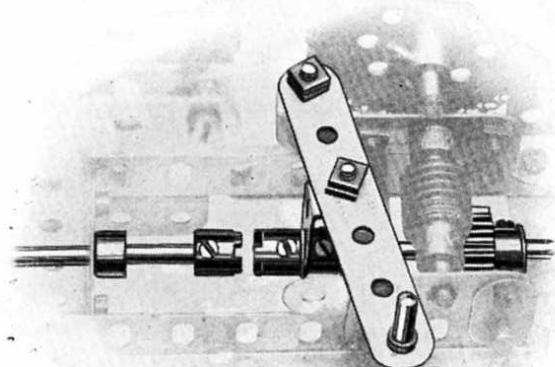


Fig. K

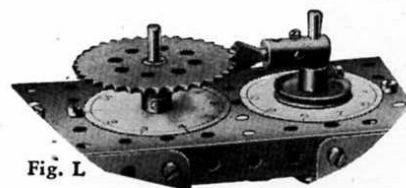


Fig. L

## Dog Clutch

The Meccano Dog Clutch (Fig. K) may be used in most models where a simple clutch is required. It is also useful in the construction of drive-changing and reversing mechanisms, etc. Various kinds of clutches in addition to the Dog Clutch, may be constructed from the standard Meccano parts.

## Intermittent Rotary Motion

Fig. L shows a device by means of which intermittent rotary motion may be obtained. Such an arrangement is useful in revolution counters, measuring machines, etc. In addition to mechanisms that give true intermittent motion, different types of cams, converting a regular rotary motion into a constant or intermittent reciprocating motion, are described in the S. M. Manual.

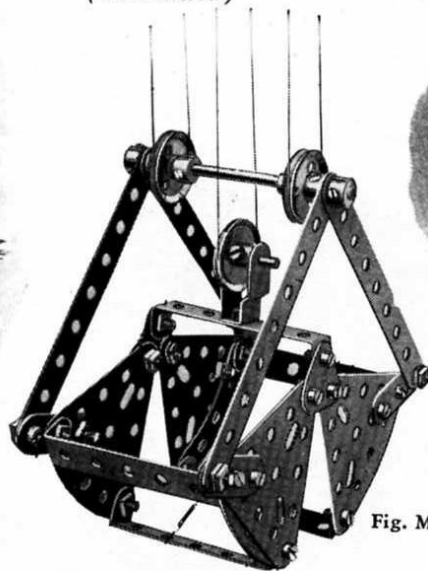


Fig. M

## Grab

A typical example of the many kinds of grab that can be constructed from Meccano is shown in Fig. M. If this grab is fitted to a model crane or ship-coaler, all its movements can be controlled from an operating box built into the base 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.

## Pawl and Ratchet Wheel

Fig. N illustrates the standard Meccano Pawl and Ratchet Wheel gear, which allows the shaft carrying the Ratchet Wheel to rotate in one direction only. The advantages of such an arrangement are obvious, especially when attached to model Cranes, hoisting-tackle, etc., where the Pawl and Ratchet gear prevents falling-back of the load as it is hoisted.

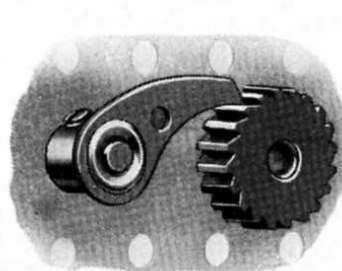


Fig. N

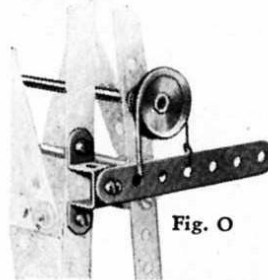


Fig. O

## Strap and Lever Brake

This device (Fig. O) is very useful as a quick emergency hand-brake. Although, perhaps, it is the most simple of such devices, it has also proved one of the most valuable.

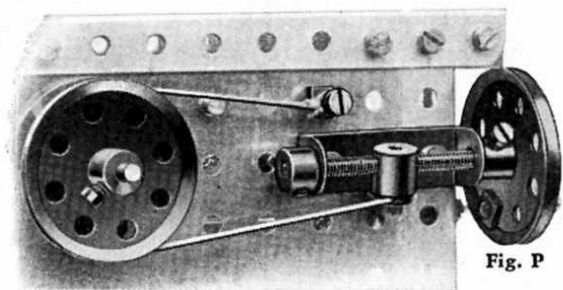


Fig. P

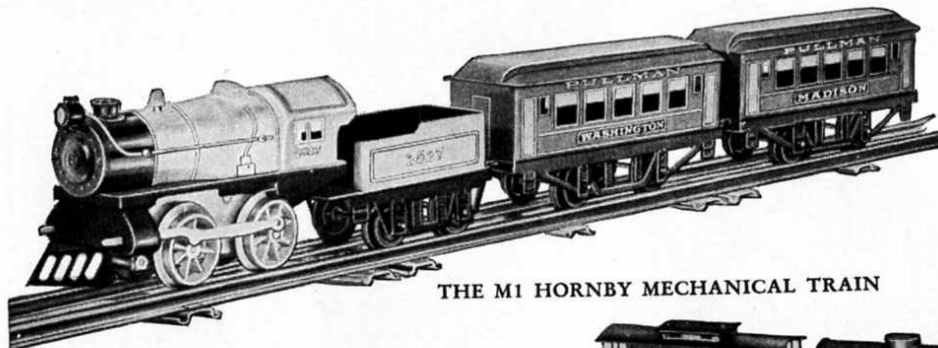
## Strap and Screw Brake

The type of brake shown in Fig. P is used to apply a constant retarding motion to a rotating shaft. It can thus be utilized in a crane to prevent the load from falling back when the winding spindle is stationary. One advantage of the brake is that the speed of the shaft to which it is applied can be infinitely varied, so that in some models it will take the place of a gear-changing mechanism.



# HORNBY MECHANICAL TRAINS

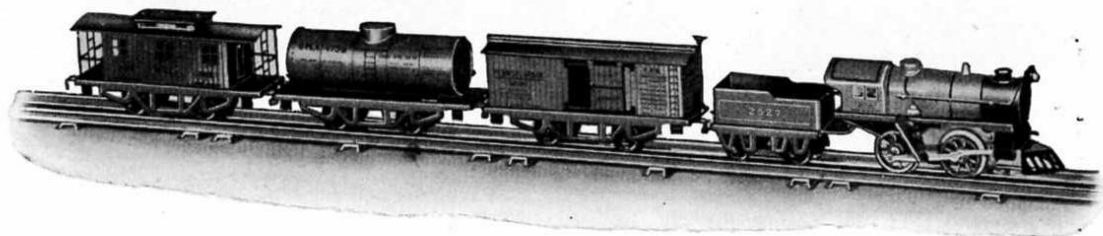
Hornby Mechanical Trains are driven by a powerful spring motor and give a most remarkable performance. Made of pressed steel, beautifully lithographed in colors, they are practically scale models of actual up-to-date trains and are fully guaranteed by Meccano Company, Inc. You will have loads of fun running these trains with Meccano bridges, cranes, etc.



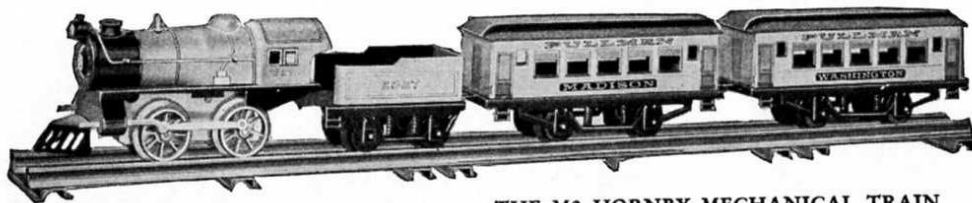
THE M1 HORNBY MECHANICAL TRAIN

## The M-3 Hornby Mechanical Train

This very realistic freight train consists of locomotive, tender, box car, tank car and caboose, with 12 sections of track. Colors: box car, yellow; tank car, red; caboose, brown; in attractive cardboard carton. Price, \$5.00



THE M3 HORNBY FREIGHT TRAIN



THE M2 HORNBY MECHANICAL TRAIN

## The M-1 Hornby Mechanical Train

Consists of locomotive, tender and two cars, all richly lithographed in colors, with ten sections of track and necessary track connections. Locomotive is made of pressed steel with one piece boiler and cab, attains maximum speed-yet holds the track under control of a finely adjusted governor; fitted with headlight, brake and brass boiler handrail. Colors: locomotive, red and black; cars, green and gold. Packed in an attractive cardboard box. Price, \$3.75

## The M-2 Hornby Mechanical Train

Both the M-1 and M-2 Hornby Trains are practically scale models of real trains and are beautifully finished in the same colors as those used on the B. & O. and Great Western Railroads.

All the cars are solidly made of pressed steel and the Pullmans have the new type square windows. The contents of the M-2 set are the same as M-1, but differently colored. Locomotive, green and black with gold trimming; cars, yellow and black. Price, \$3.75

# Meccano Price List

## MECCANO OUTFITS

For convenience Meccano parts are sold in Outfits of varying size. The quality and finish of the parts are of the same high standard throughout the series. Each Outfit listed below is complete with necessary tools and illustrated instructions.

No. 0. Meccano Outfit .....	\$1.50
No. 10. " " .....	3.50
No. 5. Spec. " " (with elec. motor) .....	5.00
No. 20. " " ( " reversing elec. motor) .....	7.50
No. 30. " " " " " " .....	10.00
No. 40. " " " " " " .....	15.00
No. 50. " " " " " " .....	25.00
No. 60. " " " " " " .....	35.00
No. 70. " " " " " " .....	55.00

## ACCESSORY OUTFITS

Each of the Complete Outfits may be converted into the one next larger by the purchaser of the connecting Accessory Outfit. In this way, no matter with what Outfit you commence, you can build it up by degrees until it equals the largest Outfit made.

No. 0a. (converts a No. 0 into a No. 10) .....	\$2.00
No. 20a. ( " " " 10 " " " 30) .....	
less elec. motor and rubber tires .....	2.50
No. 20a. (converts a No. 20 into a No. 30) .....	2.50
No. 30a. ( " " " 30 " " " 40) .....	5.00
No. 40a. ( " " " 40 " " " 50) .....	10.00
No. 50a. ( " " " 50 " " " 60) .....	7.50
No. 60a. ( " " " 60 " " " 70) .....	20.00

## Meccano Motors and Transformer

The Meccano Motors are especially designed to operate Meccano models and are simple, strong and durable. They can be built right into the model and form a rigid part of it.

E-2 Electric Motor, reversing, with pulley and pinion \$4.50 S1 Meccano Clockwork Motor, reversing \$3.00

Type B Transformer for operating Meccano Electric Motors direct from the house current. Safe and convenient; has no moving parts. For 110 volts, 60 cycles alternating current only. Each \$2.50.



# MECCANO

Hornby's Original System, First Patented 1901

PATENTED IN THE UNITED STATES

Nov. 18, 1913	Feb. 15, 1916	Oct. 9, 1917	Dec. 14, 1920
Nov. 23, 1915	Aug. 1, 1916	Dec. 24, 1918	Apr. 11, 1922
Dec. 21, 1915	Aug. 29, 1916	Feb. 11, 1919	May 15, 1923
Jan. 4, 1916	Oct. 24, 1916	Oct. 19, 1920	Jan. 18, 1927
			Mar. 1, 1927

Design Patent July 4, 1916

PATENTED THROUGHOUT THE WORLD

## Meccano is more than a Toy

**I**T is important to remember that when a boy is playing with MECCANO he is using engineering parts in miniature, and that these parts act in precisely the same way as do the corresponding engineering elements in actual practice. No other system of model construction can be correct, and other toys which attempt the same object by other methods must avail themselves of constructive elements which are not correct engineering elements. Consequently, though a boy may succeed in building playthings with them, they are merely toys and nothing else.



# MECCANO

THE TOY THAT MADE ENGINEERING FAMOUS

*For every one boy who plays with any other construction toy a thousand play with Meccano.*

These are the Meccano Factories and distributing centres.

Meccano Ltd., Liverpool

Meccano Ltd., Paris

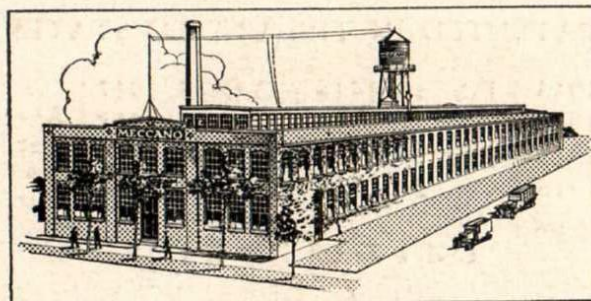
Meccano Ltd., Toronto

*Meccano Agencies:*

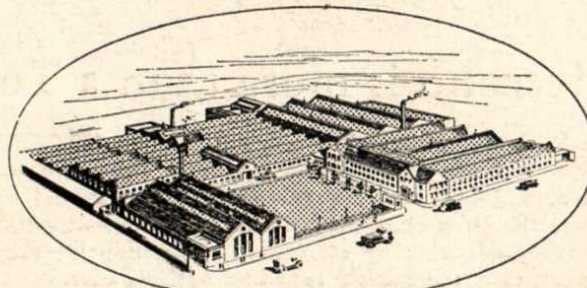
Algiers,	Bogota,
Amsterdam,	Bombay,
Auckland,	Brussels,
Barcelona,	Buenos Aires,
Basle,	Cape Town.



London Warehouse



Head offices and factory, Elizabeth, N. J.



Factory, Liverpool

New York Showroom

200 Fifth Avenue

*Meccano Agencies:*

Constantinople,	Malta,
Durban,	Monte Video,
Genoa,	Oslo,
Iquitos,	Stockholm,
Johannesburg,	Sydney.



Factory—Paris