

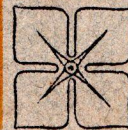
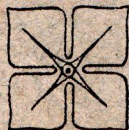
THE AMERICAN MODEL BUILDER

COMPLETE MANUAL OF INSTRUCTION

For all models that can be built with the thirteen Progressive Outfits of
the American Model Builder

Manufactured by
THE AMERICAN MECHANICAL TOY COMPANY
DAYTON, OHIO, U. S. A.

PATENT APPLIED FOR



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1912

The American Model Builder

To Strengthen the Mind is to Exercise not Rest--Pope



THE American Model Builder has been designed to teach the youth the first steps in practical mechanics. In designing the parts, special attention has been given to their accuracy, so they will properly fit into all the models described, and any boy or girl can, with little difficulty, devise many original models of their own design.

The parts in all the outfits are interchangeable and are made of brass and steel and heavily nickel-plated and polished to prevent tarnishing, making the outfits practically indestructible. All such parts as Pulleys, Flanged and Grooved Wheels, Gears, Pinions, Bush Wheels, Eccentric Drive Wheels are made with a brass collar and set screw so as to provide a positive fastening when used in any of the working models.

Every model built with The American Model Builder will work, and each model may be taken apart and the parts used in the construction of other models, enabling the youth to build and design his own toys, and at the same time train the mind along practical lines.

On Pages 48 to 54, we give a short treatise on correct mechanical construction and clearly demonstrate the principles of Bracing, Girder and Truss Construction, Belting, Gear Relations, Centrifugal Governor and Universal Joint Construction. The descriptions appended to the illustrations will enable the boy to quickly understand the mechanical reasons for the different constructions. By making and studying these models carefully, the student will not only develop his own faculties, but he will be enabled to better understand the operation of the more complete Models.

Before attempting to build any of the models described in this Manual, the builder should thoroughly familiarize himself with the parts and names as described on Page 55.

The American Model Builder is made in seven progressive sets numbered from 1 to 7. The Complete Manual accompanying each set gives detailed instructions and descriptions of every model. As the youth's knowledge increases, additional parts may be purchased at any time separately, or in complete Accessory Outfits. For a complete list of parts, contained in each outfit and prices on individual parts, see Pages 55 and 56.

By purchasing a No. 1½ Accessory Outfit, sufficient parts may be obtained to convert a No. 1 Outfit into a regular No. 2. The No. 2½ Accessory Outfit contains sufficient parts to convert a No. 2 into a regular No. 3 Outfit, and so on. In this way, the more complete outfits can be obtained without unnecessary expense.

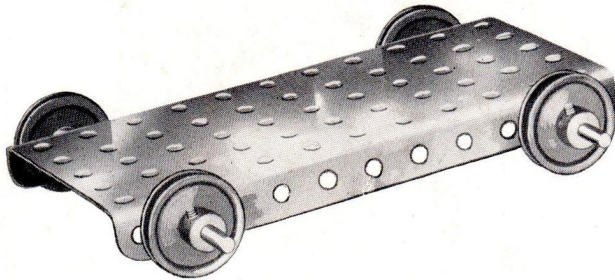
We maintain an Experimental Department at our factory where new designs and models are constantly made and we should like to have the name and address of every user of The American Model Builder, as well as the number of the Outfit used, so that we can keep him advised from time to time of any new models that can be built with the various Outfits.

We want every user of The American Model Builder to feel free to write us at any time when difficulties arise in the building of any of the models and we will gladly give our suggestions and help.

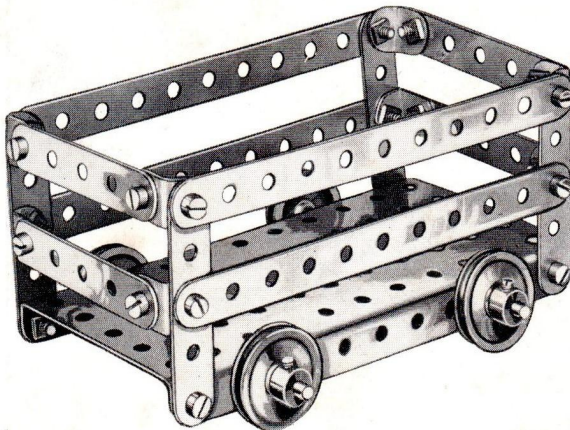
We have a personal interest in every Model Builder, and are going to give them every assistance possible to make these Outfits both interesting and instructive.

THE AMERICAN MECHANICAL TOY CO.,

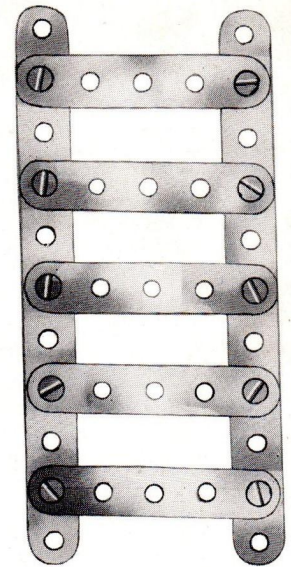
Dayton, Ohio, U. S. A.

FLAT TRUCK**Fig. No. 1****PARTS REQUIRED**

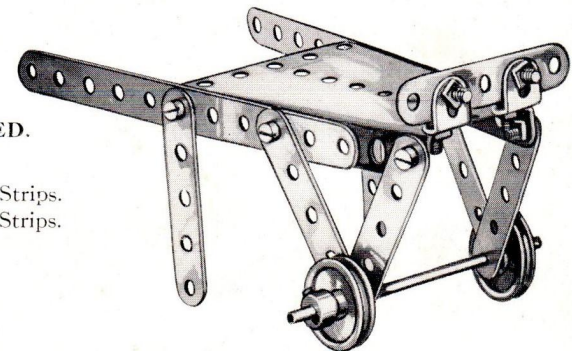
- 1 Large Rectangular Plate.
- 2 $4\frac{1}{2}$ " Axle Rods.
- 4 1" Pulley Wheels.

BOX TRUCK**Fig. No. 3****PARTS REQUIRED.**

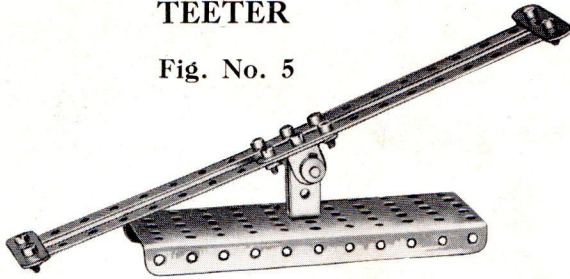
- 1 Large Rectangular Plate.
- 4 $5\frac{1}{2}$ " Perforated Strips.
- 8 $2\frac{1}{2}$ " Perforated Strips.
- 8 Angle Brackets.
- 2 $4\frac{1}{2}$ " Axle Rods.
- 4 1" Pulley Wheels.
- 20 Nuts and Screws.

STEP LADDER**Fig. No. 2****PARTS REQUIRED.**

- 2 $5\frac{1}{2}$ " Perforated Strips.
- 5 $2\frac{1}{2}$ " Perforated Strips.
- 10 Nuts and Screws.

LUGGAGE TRUCK**Fig. No. 4****PARTS REQUIRED.**

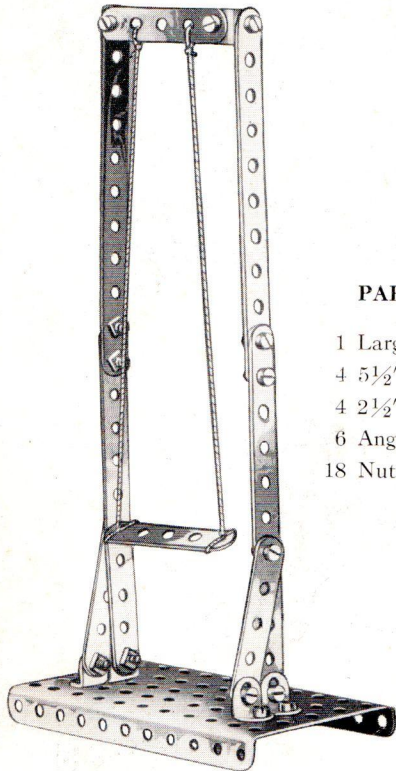
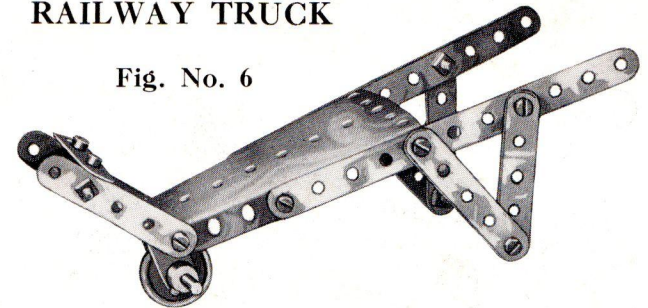
- 1 Sector Plate.
- 2 $5\frac{1}{2}$ " Perforated Strips.
- 7 $2\frac{1}{2}$ " Perforated Strips.
- 1 $4\frac{1}{2}$ " Axle Rod.
- 10 Nuts and Screws.
- 2 Angle Brackets.
- 2 1" Pulley Wheels.

TEETER**Fig. No. 5****PARTS REQUIRED**

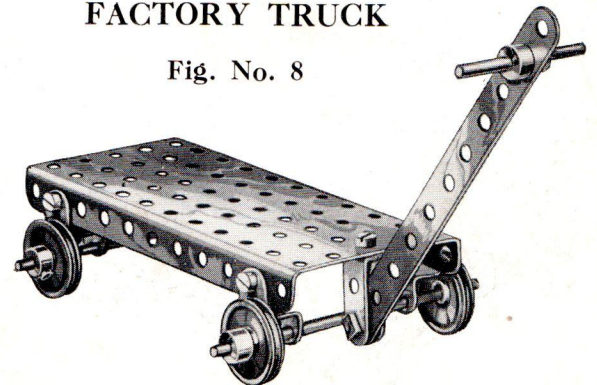
- 1 Large Rectangular Plate.
- 1 Single Bent Strip.
- 1 2" Axle Rod.
- 4 5½" Perforated Strips.
- 2 2½" Perforated Strips.
- 2 Collars and Set Screws.
- 11 Nuts and Screws.
- 2 Angle Brackets.

SWING**Fig. No. 7****PARTS REQUIRED.**

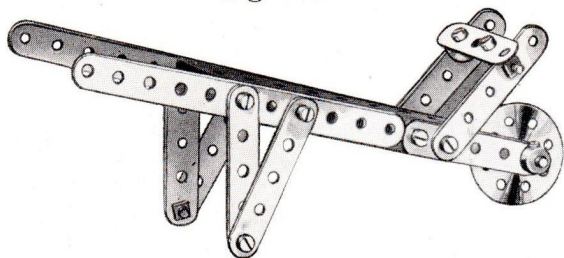
- 1 Large Rectangular Plate.
- 4 5½" Perforated Strips.
- 4 2½" Perforated Strips.
- 6 Angle Brackets.
- 18 Nuts and Screws.

**RAILWAY TRUCK****Fig. No. 6****PARTS REQUIRED.**

- 1 Sector Plate.
- 2 5½" Perforated Strips.
- 7 2½" Perforated Strips.
- 1 Single Bent Strip.
- 1 1" Pulley Wheel.
- 2 Collars and Set Screws.
- 2 Angle Brackets.
- 14 Nuts and Screws.
- 1 2" Axle Rod.

FACTORY TRUCK**Fig. No. 8****PARTS REQUIRED.**

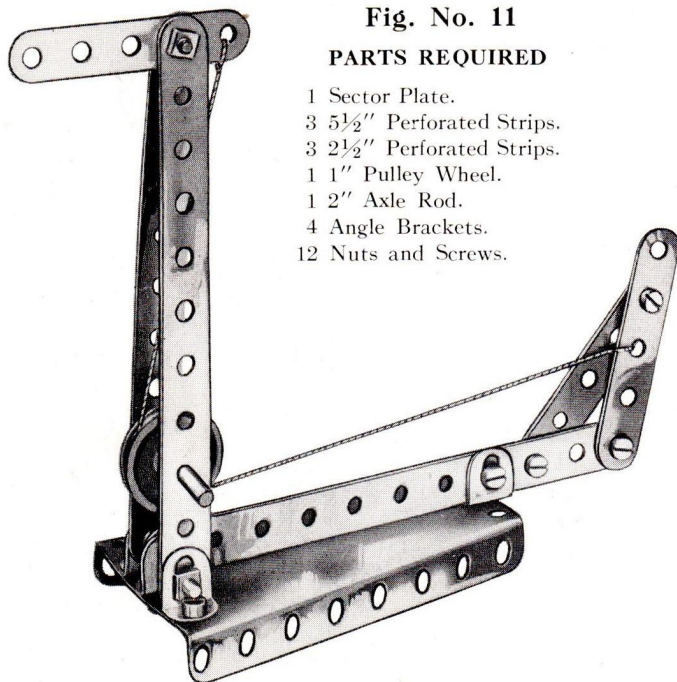
- 1 Large Rectangular Plate.
- 1 5½" Perforated Strip.
- 2 4½" Axle Rods.
- 4 1" Pulley Wheels.
- 8 Angle Brackets.
- 1 Single Bent Strip.
- 10 Nuts and Screws.
- 1 2" Axle Rod.
- 2 Collars and Set Screws.

WHEELBARROW**Fig. No. 9****PARTS REQUIRED**

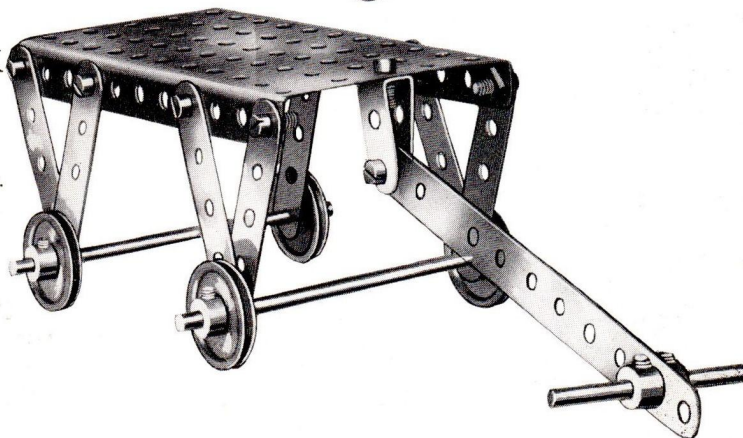
- 2 5½" Perforated Strips.
- 9 2½" Perforated Strips.
- 2 Angle Brackets.
- 1 2" Axle Rod.
- 1 Bush Wheel.
- 14 Nuts and Screws.
- 1 Sector Plate.
- 2 Collars and Set Screws.

RAILWAY SIGNAL**Fig. No. 11****PARTS REQUIRED**

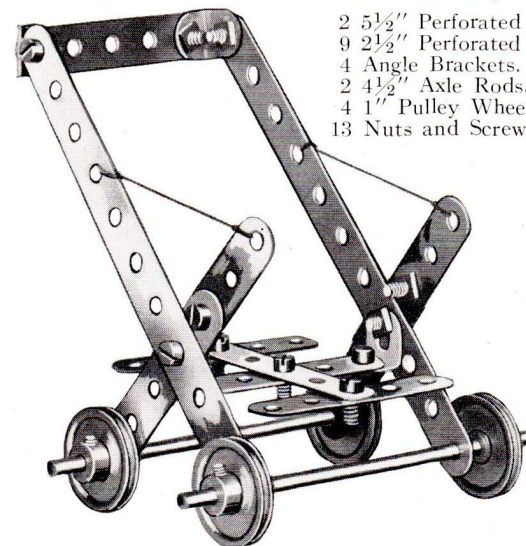
- 1 Sector Plate.
- 3 5½" Perforated Strips.
- 3 2½" Perforated Strips.
- 1 1" Pulley Wheel.
- 1 2" Axle Rod.
- 4 Angle Brackets.
- 12 Nuts and Screws.

**EXPRESS TRUCK****Fig. No. 12****PARTS REQUIRED**

- 1 Large Rectangular Plate.
- 1 5½" Perforated Strip.
- 8 2½" Perforated Strip.
- 1 Single Bent Strip.
- 4 1" Pulley Wheels.
- 2 4½" Axle Rods.
- 1 2" Axle Rod.
- 10 Nuts and Screws.
- 2 Collars and Set Screws.

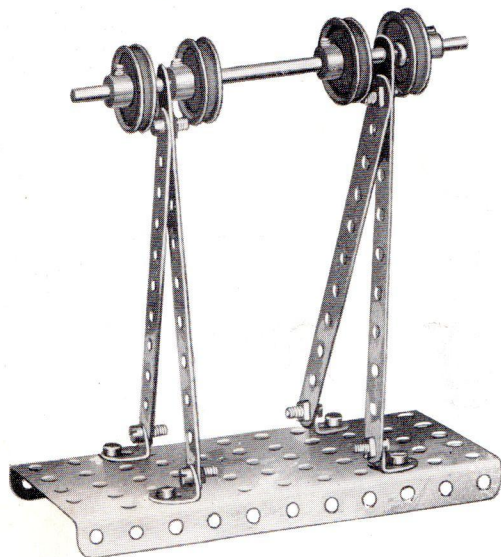
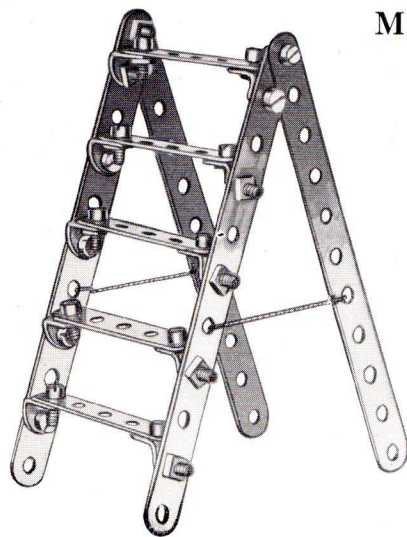
**FOLDING CHAIR****Fig. No. 10****PARTS REQUIRED**

- 2 5½" Perforated Strips.
- 9 2½" Perforated Strips.
- 4 Angle Brackets.
- 2 4½" Axle Rods.
- 4 1" Pulley Wheels.
- 13 Nuts and Screws.



MACHINIST'S LADDER**Fig. No. 13****PARTS REQUIRED.**

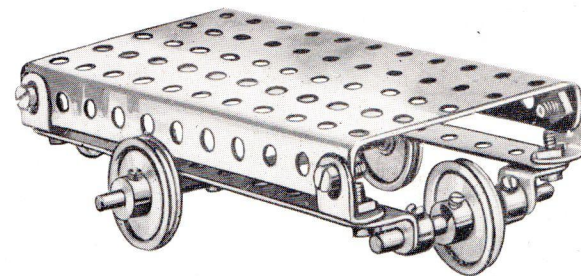
- 4 $5\frac{1}{2}$ " Perforated Strips.
- 5 $2\frac{1}{2}$ " Perforated Strips.
- 10 Angle Brackets.
- 22 Nuts and Screws.

**PULLEY SHAFT****Fig. No. 15****PARTS REQUIRED.**

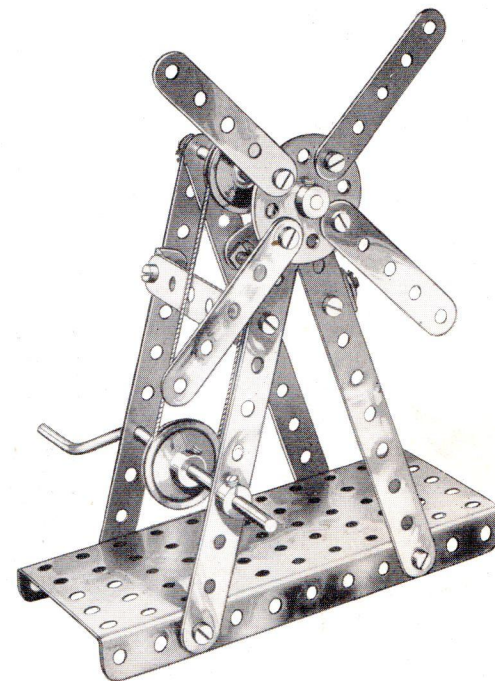
- 1 Large Rectangular Plate.
- 4 $5\frac{1}{2}$ " Perforated Strips.
- 1 $4\frac{1}{2}$ " Axle Rod.
- 4 Angle Brackets.
- 4 1" Pulley Wheels.
- 10 Nuts and Screws.

REVOLVING TRUCK**Fig. No. 14****PARTS REQUIRED.**

- 1 Large Rectangular Plate.
- 3 1" Pulley Wheels.
- 2 $5\frac{1}{2}$ " Perforated Strips.
- 1 $4\frac{1}{2}$ " Axle Rod.
- 1 2" Axle Rod.
- 8 Angle Brackets.
- 10 Nuts and Screws.

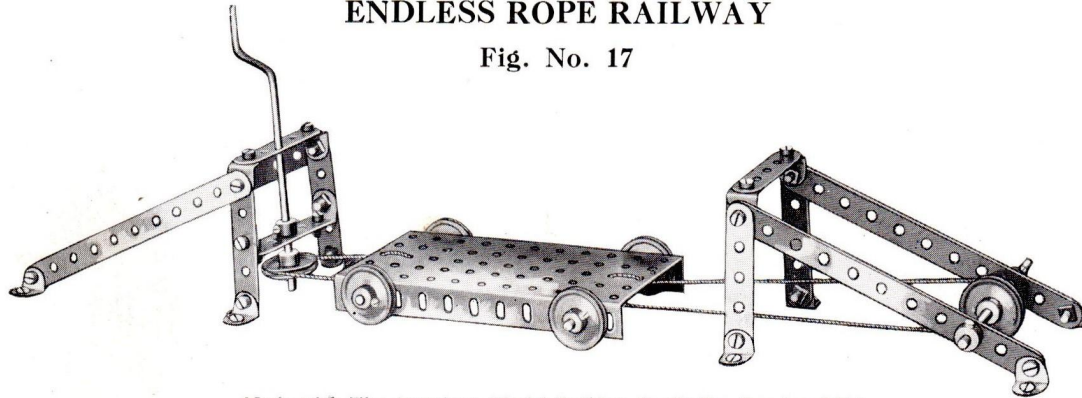
**WINDMILL****Fig. No. 16****PARTS REQUIRED.**

- 1 Large Rectangular Plate.
- 4 $5\frac{1}{2}$ " Perforated Strips.
- 6 $2\frac{1}{2}$ " Perforated Strips.
- 1 $4\frac{1}{2}$ " Axle Rod.
- 1 Crank.
- 2 1" Pulley Wheels.
- 4 Angle Brackets.
- 2 Collars and Set Screws.
- 16 Nuts and Screws.
- 1 Bush Wheel.



ENDLESS ROPE RAILWAY

Fig. No. 17



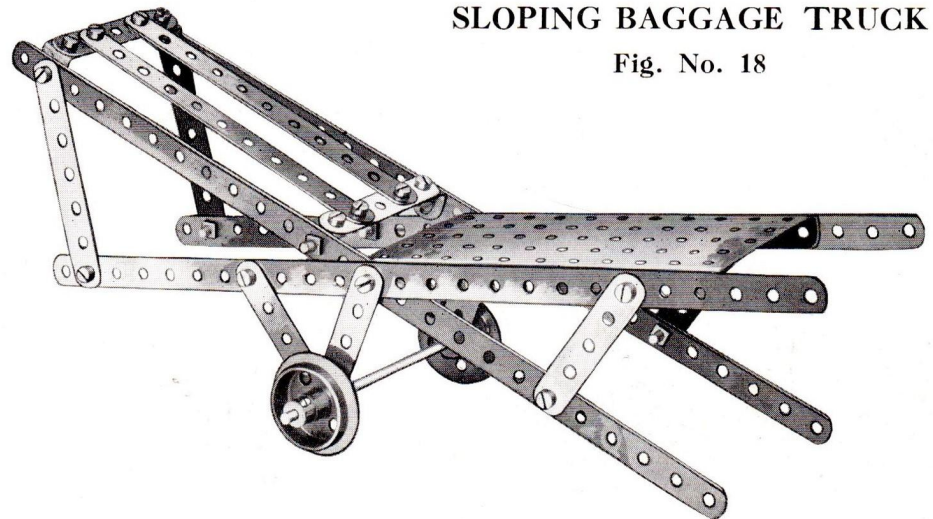
Made with The American Model Builder, Outfit No. 2 or 1 and $1\frac{1}{2}$

PARTS REQUIRED.

- 4 $5\frac{1}{2}$ " Perforated Strips.
- 7 $2\frac{1}{2}$ " Perforated Strips.
- 14 Angle Brackets.
- 6 1" Pulley Wheels.
- 5 Collars and Set Screws.
- 1 $5\frac{1}{2}$ " Crank.
- 3 $4\frac{1}{2}$ " Axle Rods.
- 20 Nuts and Screws.
- 1 Large Rectangular Plate.

SLOPING BAGGAGE TRUCK

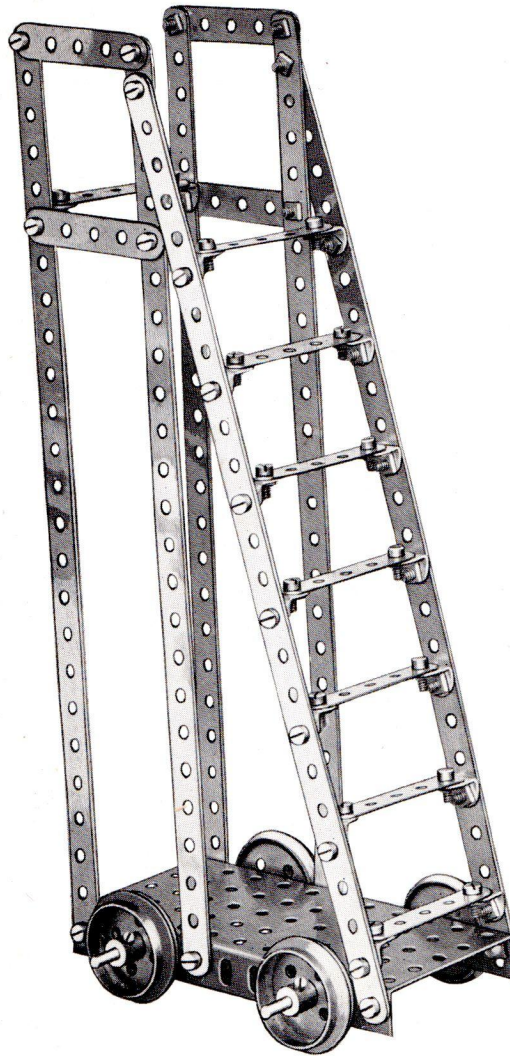
Fig. No. 18



PARTS REQUIRED.

- 4 $12\frac{1}{2}$ " Perforated Strips.
- 2 $5\frac{1}{2}$ " Perforated Strips.
- 2 $3\frac{1}{2}$ " Perforated Strips.
- 9 $2\frac{1}{2}$ " Perforated Strips.
- 4 Angle Brackets.
- 1 $4\frac{1}{2}$ " Axle Rod.
- 2 Flanged and Grooved Wheels.
- 22 Nuts and Screws.
- 1 Large Rectangular Plate.

Made with The American Model Builder, Outfit No 2, or 1 and $1\frac{1}{2}$



LADDER ON WHEELS

Fig. No. 19

PARTS REQUIRED.

- 6 $12\frac{1}{2}$ " Perforated Strips.
- 12 $2\frac{1}{2}$ " Perforated Strips.
- 16 Angle Brackets.
- 1 Large Rectangular Plate.
- 2 5" Axle Rods.
- 4 Flanged and Grooved Wheels.
- 44 Nuts and Screws.

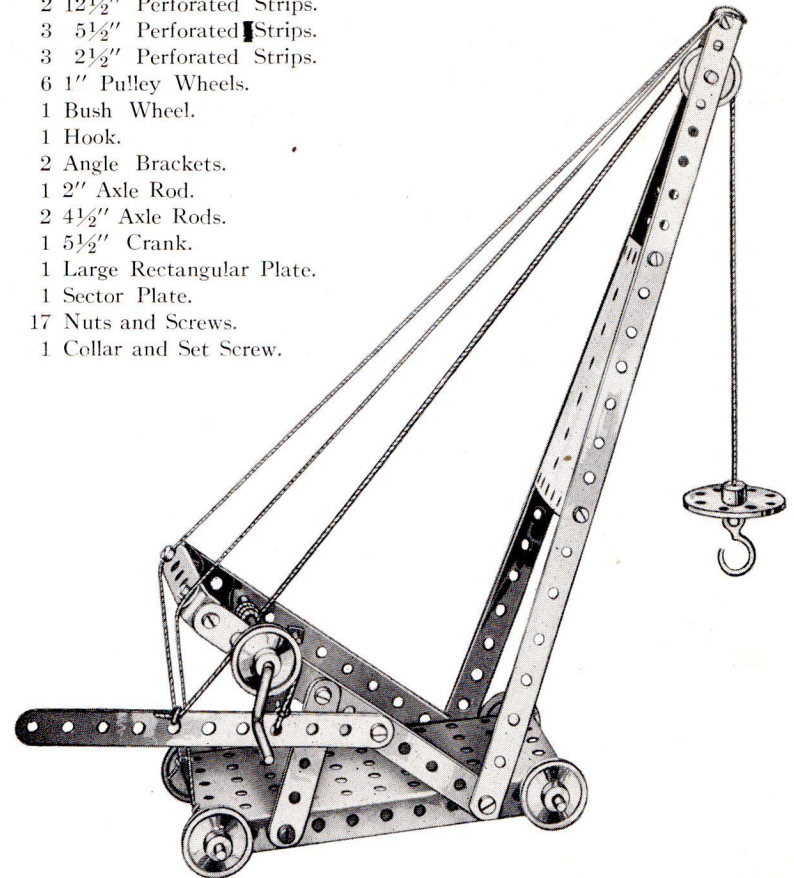
Made with The American Model Builder, Outfit No. 2 or 1 and $1\frac{1}{2}$

TRAVELING JIB CRANE

Fig. No. 20

PARTS REQUIRED.

- 2 $12\frac{1}{2}$ " Perforated Strips.
- 3 $5\frac{1}{2}$ " Perforated Strips.
- 3 $2\frac{1}{2}$ " Perforated Strips.
- 6 1" Pulley Wheels.
- 1 Bush Wheel.
- 1 Hook.
- 2 Angle Brackets.
- 1 2" Axle Rod.
- 2 $4\frac{1}{2}$ " Axle Rods.
- 1 $5\frac{1}{2}$ " Crank.
- 1 Large Rectangular Plate.
- 1 Sector Plate.
- 17 Nuts and Screws.
- 1 Collar and Set Screw.



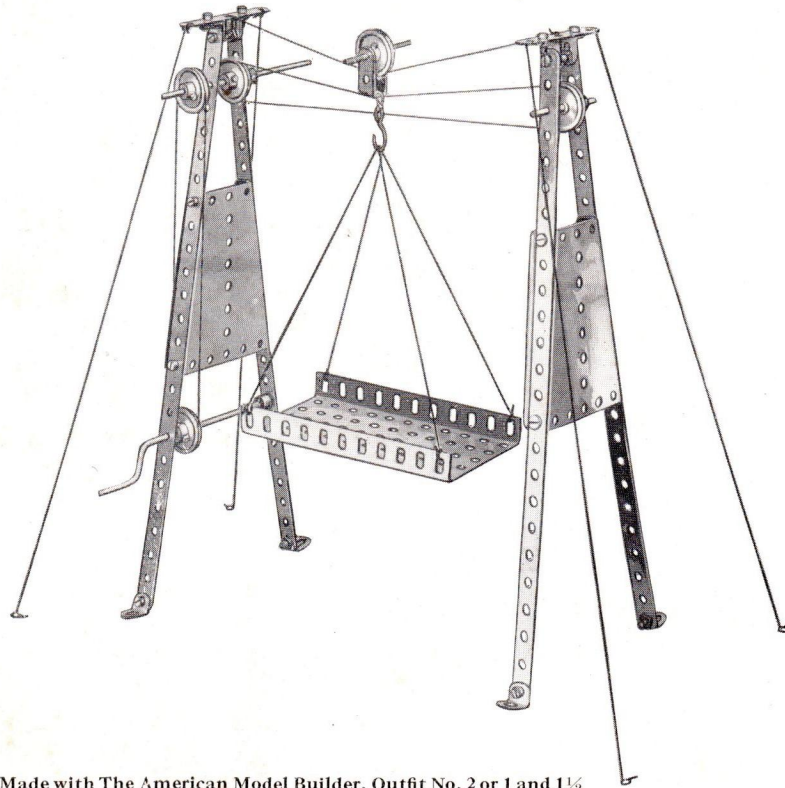
Made with The American Model Builder, Outfit No. 2 or 1 and $1\frac{1}{2}$

SIMPLE TELPHER SPAN

Fig. No. 21

PARTS REQUIRED.

- | | |
|----------------------------|---------------------------|
| 4 12½" Perforated Strips. | 5 1" Pulley Wheels. |
| 2 2½" Perforated Strips. | 4 Wood Screws. |
| 2 Sector Plates. | 1 Single Bent Strip. |
| 1 Large Rectangular Plate. | 1 Hook. |
| 1 5½" Crank. | 8 Angle Brackets. |
| 1 4½" Axle Rod. | 4 Collars and Set Screws. |
| 1 2" Axle Rod. | 20 Nuts and Screws. |



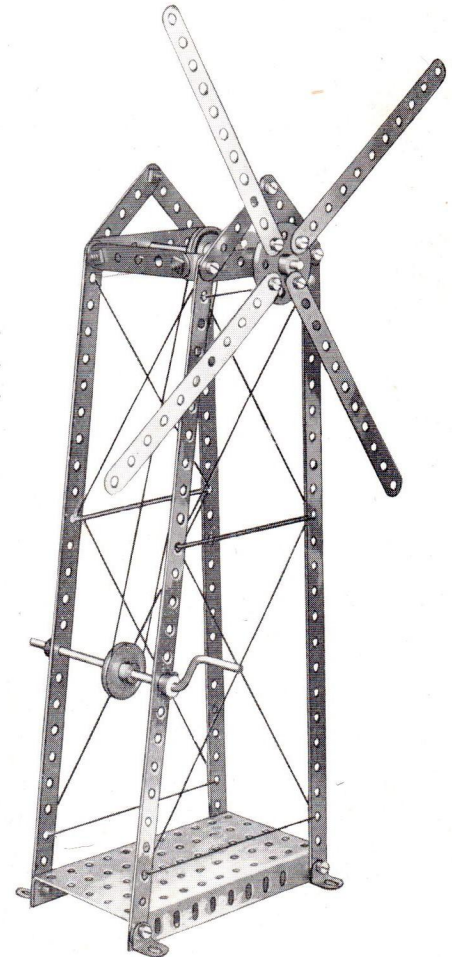
Made with The American Model Builder, Outfit No. 2 or 1 and 1½

WINDMILL

Fig. No. 22

PARTS REQUIRED.

- | |
|---------------------------|
| 4 12½" Perforated Strips. |
| 4 5½" Perforated Strips. |
| 8 2½" Perforated Strips. |
| 8 Angle Brackets. |
| 1 5½" Crank. |
| 1 4½" Axle Rod. |
| 2 1" Pulley Wheel. |
| 1 Bush Wheel. |
| 4 Collars and Set Screws. |
| 18 Nuts and Screws. |



Made with The American Model Builder, Outfit No. 2 or 1 and 1½

REVOLVING WHEEL

Fig. No. 29

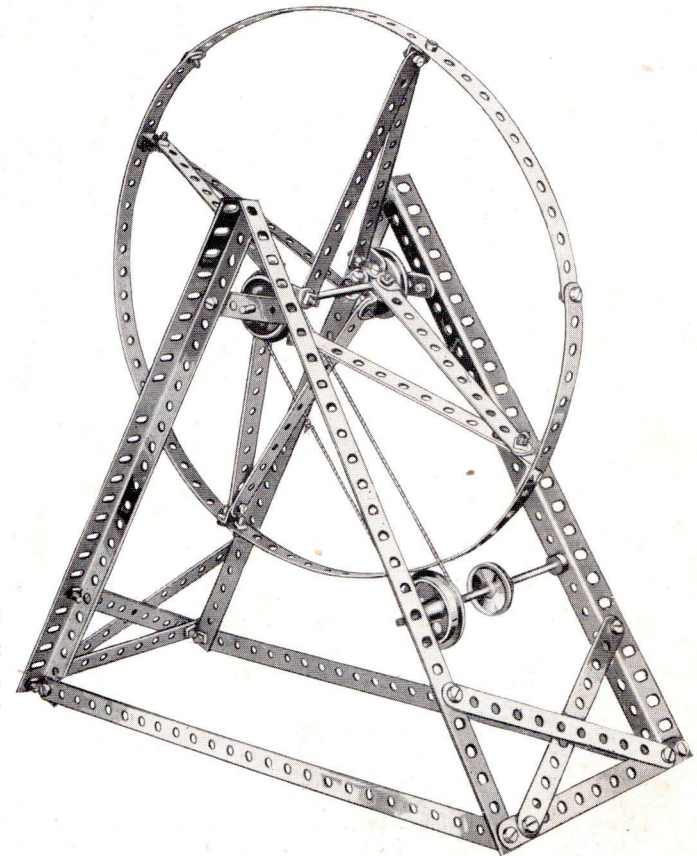
PARTS REQUIRED	Parts Required in Addition to Outfit	No. 2
4 12½" Angle Girders.....	4	
16 Angle Brackets.....	6	
2 5" Axle Rods.....	2	
5 12½" Perforated Strips..	1	
14 5½" Perforated Strips..	10	
2 2½" Perforated Strips..	.....

PARTS REQUIRED	Parts Required in Addition to Outfit	No. 2
4 Flanged and Grooved Wheels.....	4	
1 1" Pulley Wheel.....	.....
48 Nuts and Screws.....	18	
4 Wood Screws.....	.....
3 Collars and Set Screws...	.....

This model is very simple in construction. First make the two side frames by fastening two Angle Girders at the top with a screw, tying them together at the bottom with a 12½" Perforated Strip. Next fasten a 2½" Perforated Strip in the fifth hole from the top of the Angle Girders, which will make the support for the axle of the wheel. Then tie the two frames together at the bottom with three 5½" Strips on each side.

Next make the circumference of the wheel with three 12½" Perforated Strips bent into circular form. Then fasten this to the Flanged Wheels with eight spokes made of 5½" Perforated Strips and bolted in every nineteenth hole in the circumference. Then attach the Pulleys and Flanged Wheels.

This model can also be operated by a small motor by stretching a belt over the small Pulley Wheel on the lower axle.



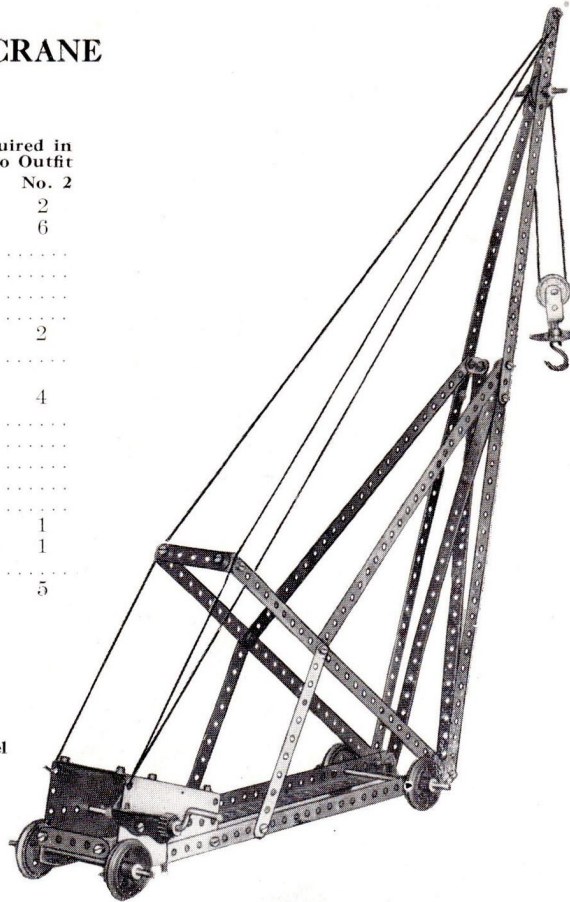
Made with The American Model Builder Outfit No. 3, or 2 and 2½.

TRAVELING JIB CRANE

Fig. No. 30

Parts Required in Addition to Outfit	
PARTS REQUIRED	No. 2
2 12½" Angle Girders.....	2
10 12½" Perforated Strips.....	6
2 5½" Perforated Strips.....	
5 2½" Perforated Strips.....	
2 Sector Plates.....	
8 Angle Brackets.....	
2 5" Axle Rods.....	2
2 2" Axle Rods.....	
4 Flanged and Grooved Wheels.....	4
2 1" Pulley Wheels.....	
1 Single Bent Strip.....	
1 Bush Wheel.....	
1 Hook.....	
1 5½" Crank.....	
1 ½" Pinion Wheel.....	1
1 Pawl.....	1
3 Collars and Set Screws.....	
35 Nuts and Screws.....	5

Made with The American Model
Builder Outfit No. 3.

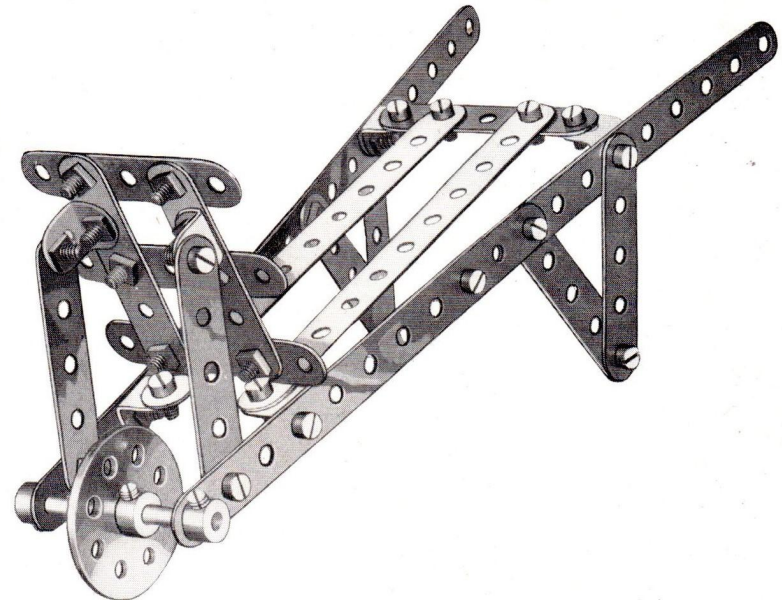


Construct lower frame of two Angle Girders bolted to two Sector Plates placing screw in the fourth hole from the end. Then fasten a screw through the fourth hole of the Sector Plate and the first hole of the Angle Girder bolting these tightly.

Next make the upper frame work by bolting together two 12½" Perforated Strips tying these in the last hole of the Angle Girder. Then fasten two diagonal supports bolting these in the tenth hole of the lower diagonal strips. Then run two 5½" Strips down to the lower frame bolting these in the eighth hole of the Angle Girder. The rest of the construction is simple. This model can be operated by a small motor by attaching a pulley wheel to the crank and bolting the motor to this. A motor with a reversing mechanism is necessary for the operation of this model.

LUMBERMAN'S BARROW

Fig. No. 31

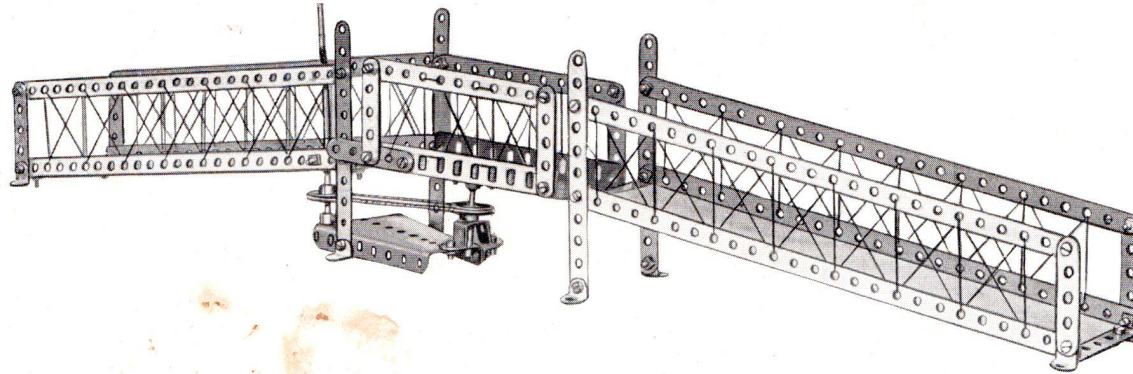


Made with The American Model Builder Outfit No. 3, or 2 and 2½.

Parts Required in Addition to Outfit		Parts Required in Addition to Outfit	
PARTS REQUIRED	No. 2	PARTS REQUIRED	No. 2
6 5½" Perforated Strips.....	2	1 Bush Wheel.....	
12 2½" Perforated Strips.....		2 Collars and Set Screws.....	
8 Angle Brackets.....	3	30 Nuts and Screws.....	

CANAL TURN BRIDGE

Fig. No. 32



Made with The American Model Builder Outfit No. 3, or 2 and 2½.

Parts Required in Addition to Outfit No. 2	
PARTS REQUIRED	
4 12½" Angle Girders.....	4
4 12½" Perforated Strips.....	
6 5½" Perforated Strips.....	2
13 2½" Perforated Strips.....	4
10 Angle Brackets.....	
1 Large Rectangular Plate.....	
1 Sector Plate.....	

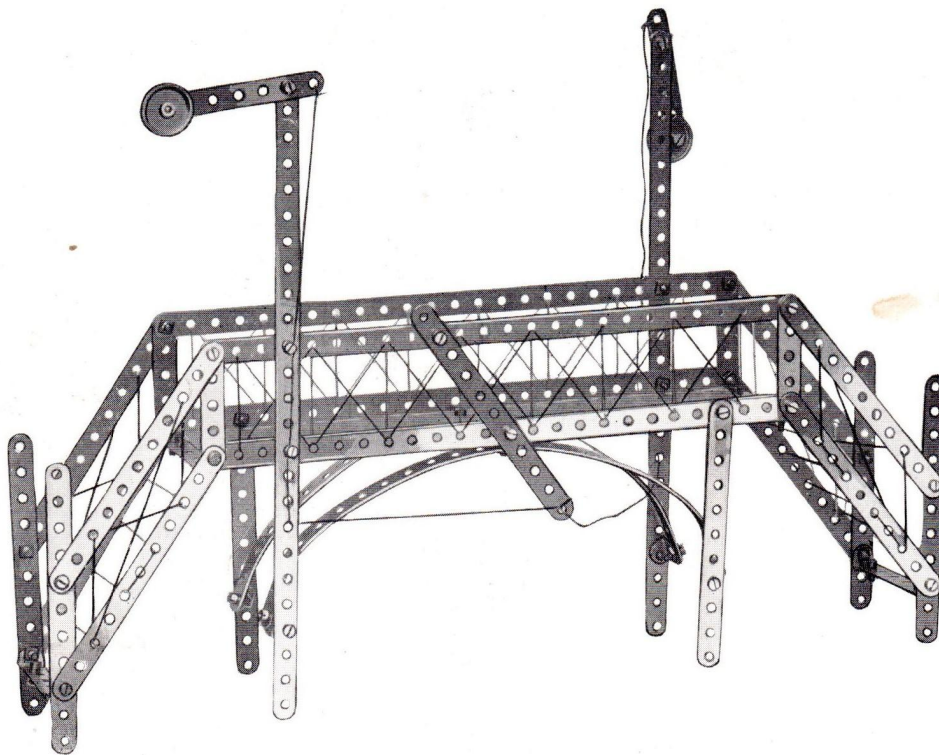
Parts Required in Addition to Outfit No. 2	
PARTS REQUIRED	
1 Double Bent Strip.....	1
2 1" Pulley Wheels.....	
1 5½" Crank.....	
1 Bush Wheel.....	
1 2" Axle Rod.....	
1 Collar and Set Screw.....	
42 Nuts and Screws.....	12

The construction of this model is comparatively simple. Care should be taken in mounting the swinging part of the Bridge. This is accomplished by putting a 2" Axle Rod through the fifth hole of the Rectangular Plate and bolting a Bush Wheel on the underside of the Rectangular Plate. Be sure to securely fasten the set screw on the Bush Wheel through which the 2" Axle Rod passes.

In mounting the Double Bent Strip on the Sector Plate, it is necessary to screw an Angle Bracket on the side of the plate so as to throw the center of the Double Bent Strip under the center of the Rectangular Plate.

RAILWAY SIGNAL BRIDGE

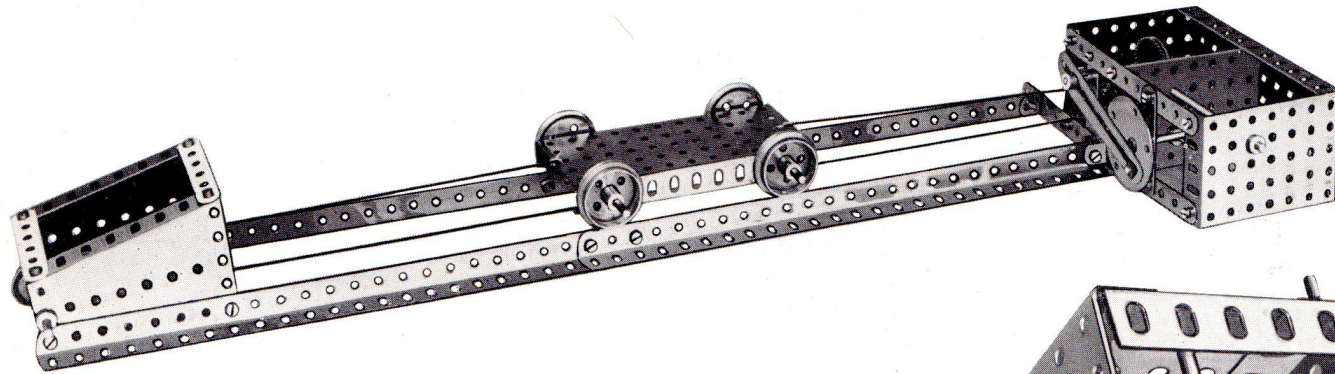
Fig. No. 33



Made with The American Model Builder Outfit No. 3, or 2 and 2½.

PARTS REQUIRED		Parts Required in Addition to Outfit
		No. 2
2	12½" Angle Girders.....	2
6	12½" Perforated Strips..	2
15	5½" Perforated Strips..	11
2	3½" Perforated Strips..	.....
8	2½" Perforated Strips..	.....
2	1" Pulley Wheels.....	.....
8	Angle Brackets.....	.....
44	Nuts and Screws.....	14

The Railway Signal Bridge is a very interesting model, and if properly constructed, the signals will raise and lower as the operating lever in the center is moved from side to side. When the lever is in a perpendicular position, both signals should drop. We will give no explanation as we want this as a test model.



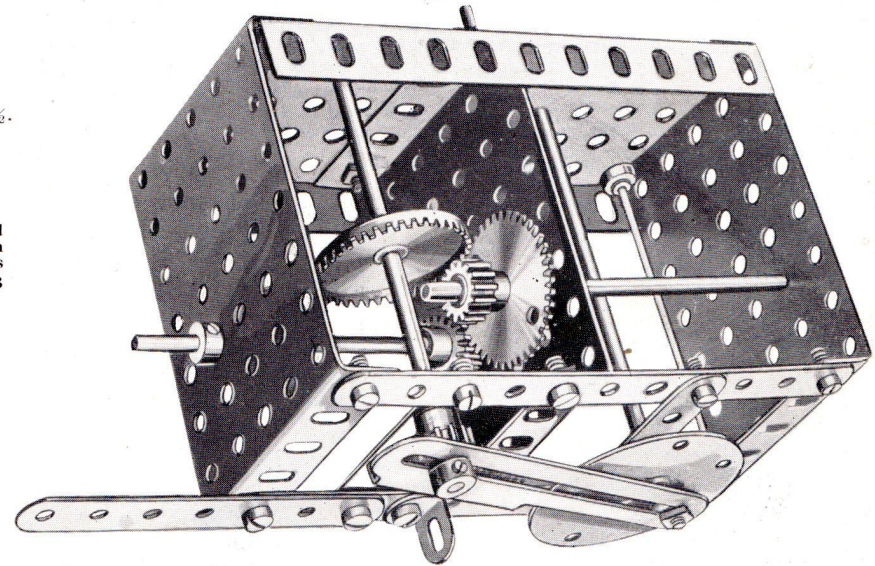
Made with The American Model Builder Outfit No. 4, or 3 and $3\frac{1}{2}$.

POWER CABLE RAILWAY

Fig. No. 34

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
4 $12\frac{1}{2}$ " Angle Girders...	4	...
2 Large Rect'n'r Plates...	1	1
3 Small Rect'n'r Plates...	3	3
2 Sector Plates...	...	...
2 $5\frac{1}{2}$ " Perforated Strips...	...	...
1 $3\frac{1}{2}$ " Perforated Strips...	...	...
2 3" Perforated Strips...	2	2
2 $2\frac{1}{2}$ " Perforated Strips...	...	...
3 $4\frac{1}{2}$ " Axle Rods...	...	...
3 5" Axle Rods...	3	...
1 $5\frac{1}{2}$ " Crank...	...	...
1 Eccentric Drive Wheel	1	1

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
1 Oscillating Rack...	...	...
4 Flanged and Grooved Wheels...	4	...
1 $\frac{3}{4}$ " Crown Gear...	1	1
1 $1\frac{1}{2}$ " Gear Wheel...	1	1
1 $\frac{3}{4}$ " Pinion Wheel...	1	1
2 $\frac{1}{2}$ " Pinion Wheels...	2	1
2 1" Pulley Wheels...	...	...
2 Angle Brackets...	...	...
6 Collars and Set Screws...	2	2
33 Nuts and Screws...	3	...



The Power Cable Railway Model furnishes thought for careful study. The frame work is simple and needs no explanation. We show a sectional view of the gearing as this is most important. On the upper Axle Rod on which the Oscillating Rack operates, attach a $\frac{1}{2}$ " Pinion Wheel and a $1\frac{1}{2}$ " Crown Gear. The Crown Gear meshes with a $\frac{1}{2}$ " Pinion Wheel and the $1\frac{1}{2}$ " Gear Wheel on the same axle meshes with a $\frac{3}{4}$ " Pinion Wheel attached to the lower axles on which the 1" Pulley Wheel is fastened.

You will note this method of gearing moves the truck very rapidly. If it is desired to slow the movement of the truck, a $\frac{3}{4}$ " Crown Gear can be used instead of the $1\frac{1}{2}$ ". You will also note that the distance over which the truck travels can be regulated by fastening the Oscillating Rack in different holes on the Eccentric Drive Wheel. The holes nearest the center of the Drive Wheel give a short movement to the truck, while those nearest the circumference give a long movement. This is a very interesting model when operated by motor which should be belted to a Pulley Wheel attached to the crank.

In this model, we show the apparatus which is most commonly used at the docks in transporting freight to and from the large vessels.

The apparatus consists of two frames, the back one being stationary and securely fastened to the housing containing the gearing, the front part forming the Luffing and Swiveling Jib.

The construction of the stationary frame is very simple, and also the upright swiveling frame which is made of two $12\frac{1}{2}$ " Perforated Strips and fastened at the bottom to two Angle Brackets which are attached to the Bush Wheel and fastened at the top by two Angle Brackets.

The Luffing Jib is constructed of four $12\frac{1}{2}$ " Perforated Strips fastened together and braced in the center. The lower portion of this frame is then bolted to the Angle Brackets attached to the Bush Wheel. In the thirteenth hole from the bottom the Axle Rod and 1" Pulley wheel should be fastened.

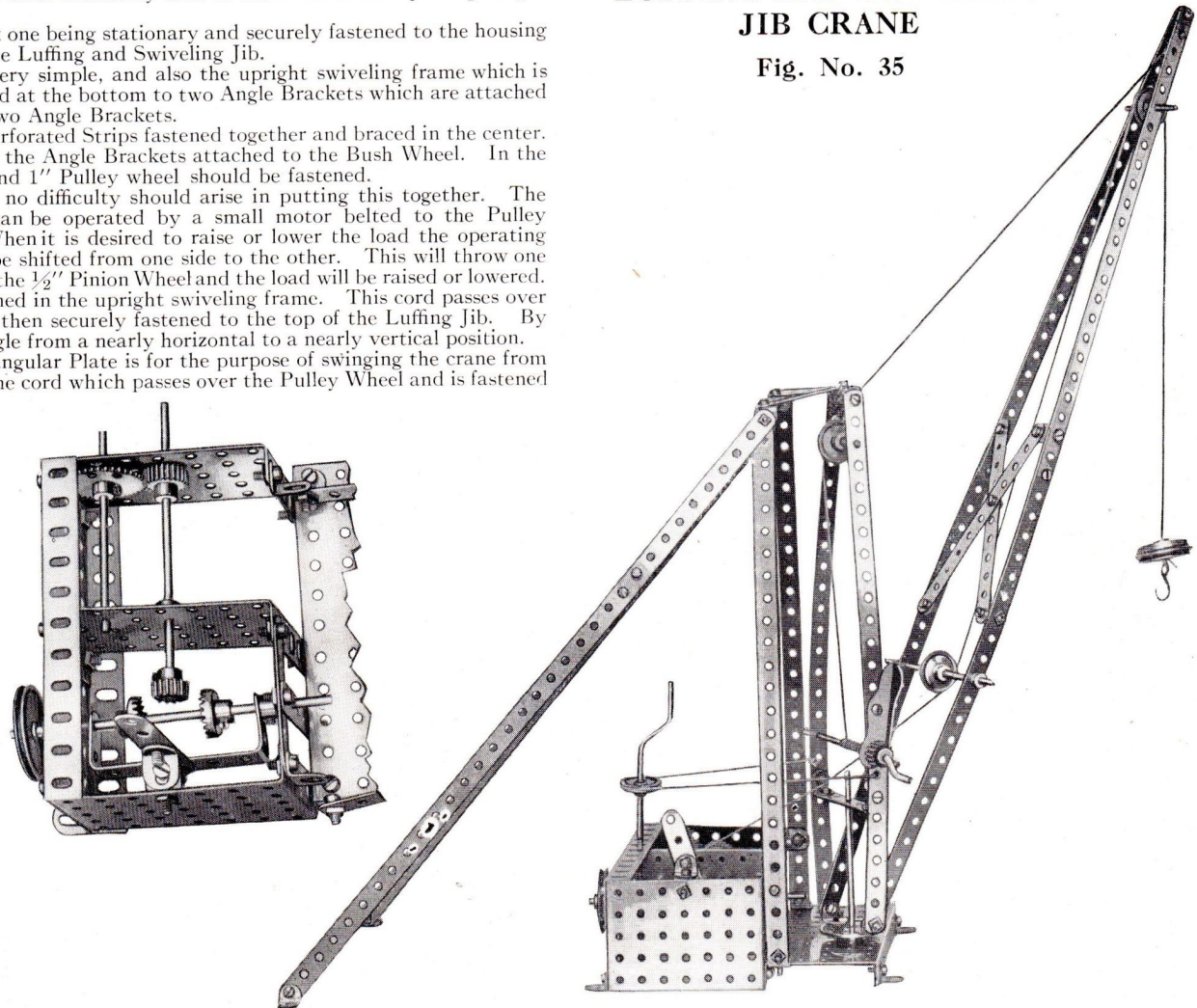
We show a sectional view of the gearing and no difficulty should arise in putting this together. The driving shaft of this model is so designed that it can be operated by a small motor belted to the Pulley Wheel on the outside of the Rectangular Plate. When it is desired to raise or lower the load the operating lever attached to the Large Bent Strip should be shifted from one side to the other. This will throw one or the other of the $\frac{3}{4}$ " Crown Gears in mesh with the $\frac{1}{2}$ " Pinion Wheel and the load will be raised or lowered.

The Luffing Jib is operated by the crank fastened in the upright swiveling frame. This cord passes over the Pulley Wheel in the top of the frame and is then securely fastened to the top of the Luffing Jib. By operating this crank the jib can be put at any angle from a nearly horizontal to a nearly vertical position.

The upright crank fastened in the Large Rectangular Plate is for the purpose of swinging the crane from one side to the other. This is accomplished by the cord which passes over the Pulley Wheel and is fastened to each side of the swiveling frame.

Parts Required in
Addition to Outfits
No. 2 No. 3

PARTS REQUIRED		No. 2	No. 3
10	$12\frac{1}{2}$ " Perforated Strips...	6	.....
4	$5\frac{1}{2}$ " Perforated Strips...	.....	.....
7	$2\frac{1}{2}$ " Perforated Strips...	.....	.....
1	Large Bent Strip.....	1	1
4	1" Pulley Wheels.....	.....	2
1	$1\frac{1}{2}$ " Pulley Wheel.....	1	1
1	$1\frac{1}{2}$ " Gear Wheel.....	1	1
1	$1\frac{1}{2}$ " Bush Wheel.....	.....	.....
2	$\frac{3}{4}$ " Crown Gear.....	2	2
2	$\frac{1}{2}$ " Pinions.....	2	1
1	$\frac{3}{4}$ " Pinion Wheel.....	1	1
1	Flanged and Grooved Wheel.....	1	.....
1	Hook.....	.....	.....
6	Collars and Set Screws.....	2	2
1	Pawl.....	1	.....
2	Large Rectangular Plates.....	1	1
2	Small Rectangular Plates.....	2	2
23	Angle Brackets.....	13	7
1	$4\frac{1}{2}$ " Crank.....	1	1
1	$5\frac{1}{2}$ " Crank.....	.....	.....
3	5" Axle Rods.....	3	.....
2	$4\frac{1}{2}$ " Axle Rods.....	.....	.....
2	2" Axle Rods.....	.....	.....
60	Nuts and Screws.....	30	10



LUFFING AND SWIVELING JIB CRANE

Fig. No. 35

Made with The American Model Builder Outfit No. 4, or 3 and $3\frac{1}{2}$.

TOWER TRUCK

Fig. No. 36

The Tower Truck is a very interesting and instructing model and can be seen in daily use by the Electric Railway Companies in the repair of their overhead wiring.

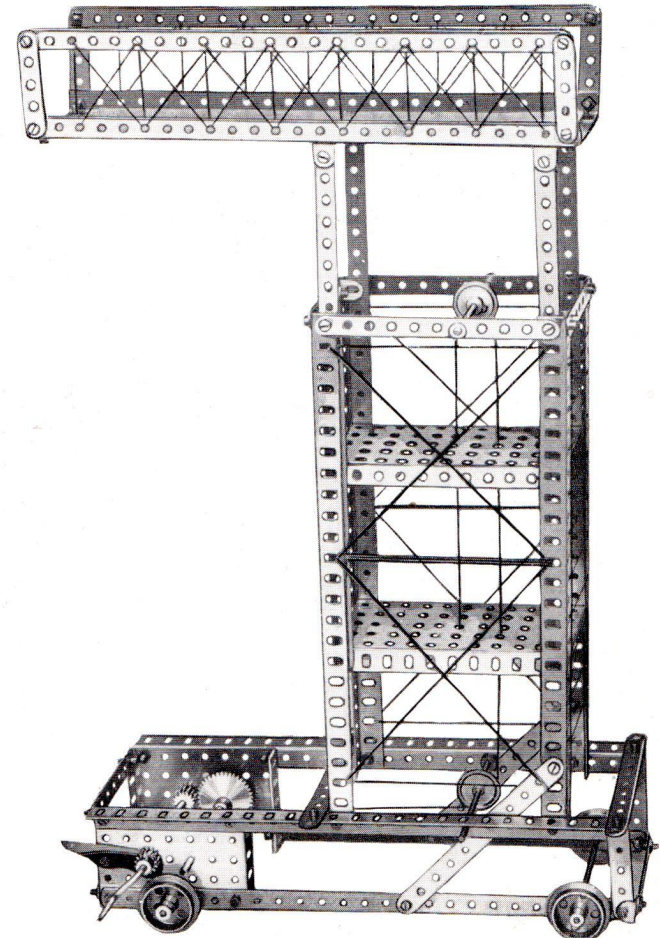
In beginning this model, first study the operations carefully in the cut shown. Begin by making the lower frame by bolting two Angle Girders and two $12\frac{1}{2}$ " Perforated Strips to two small Rectangular Plates. Then tie the Angle Girders together at the rear end with a $5\frac{1}{2}$ " Perforated Strip and the two $12\frac{1}{2}$ " Perforated Strips with a $3\frac{1}{2}$ " Perforated Strip.

Next construct the outside upright frame with four Angle Girders bolted together at the top with two $5\frac{1}{2}$ " Perforated Strips and two $3\frac{1}{2}$ " Perforated Strips, then fasten the upright frame to the lower frame.

Next construct the inside upright frame, by bolting four $12\frac{1}{2}$ " Perforated Strips to two large Rectangular Plates. Then construct the upper cross frame of two $12\frac{1}{2}$ " Perforated Strips tied together at the ends with six $2\frac{1}{2}$ " Perforated Strips. Then bolt the upper cross frame to the upright frame and lace in the string. Now slip the sliding frame into the main upright frame and fasten four Angle Brackets on the inside of the $3\frac{1}{2}$ " Perforated Strips at the top of the main upright frame, which will act as guides as the inside frame moves up and down. Next attach your axles, pulleys and gears and the model is ready for operation.

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
8 $12\frac{1}{2}$ " Angle Girders.....	8	4
8 $12\frac{1}{2}$ " Perforated Strips.....	4	.....
6 $5\frac{1}{2}$ " Perforated Strips.....	2	.....
5 $3\frac{1}{2}$ " Perforated Strips.....	3	2
8 $2\frac{1}{2}$ " Perforated Strips.....	.....	.....
2 Large Rectangular Plates.....	1	1
2 Small Rectangular Plates.....	2	2
10 Angle Brackets.....	.....	.....
2 5" Axle Rods.....	2	.....
3 $4\frac{1}{2}$ " Axle Rods.....	.....	.....

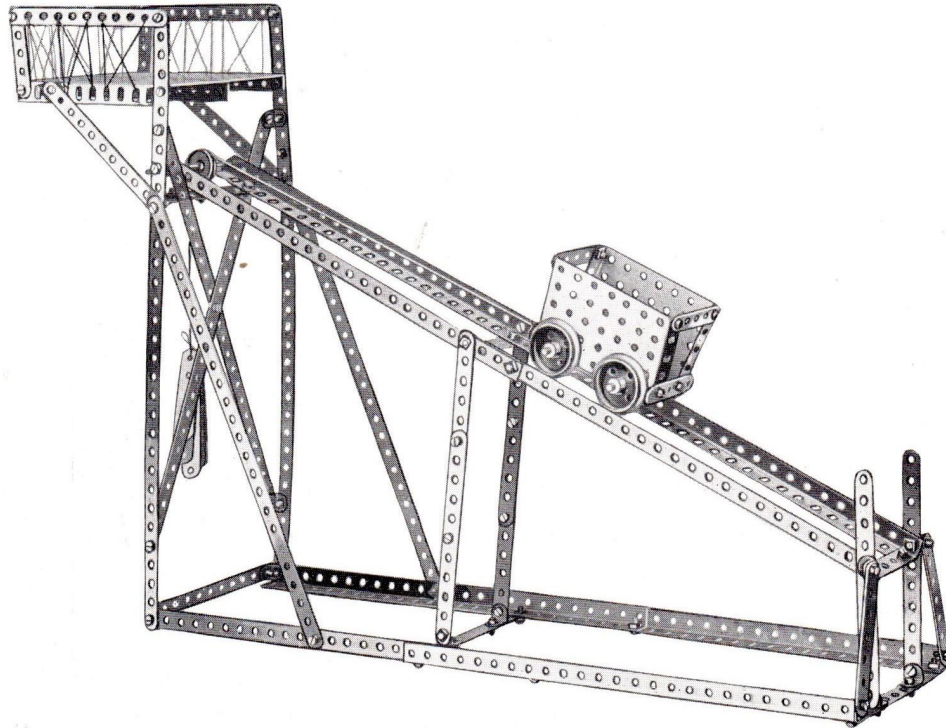
PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
1 $6\frac{1}{2}$ " Crank.....	1	1
4 Flanged and Grooved Wheels.....	4	.....
2 1" Pulley Wheels.....	.....	.....
1 $\frac{1}{2}$ " Pinion Wheel.....	1	.....
1 $\frac{3}{4}$ " Pinion Wheel.....	1	1
1 $1\frac{1}{2}$ " Gear Wheel.....	1	1
1 Pawl.....	1	.....
6 Collars and Set Screws.....	2	2
70 Nuts and Screws.....	40	20



Made with The American Model Builder Outfit No. 4, or 3 and $3\frac{1}{2}$.

INCLINED DELIVERY CHUTE

Fig. No. 37



Made with The American Model Builder Outfit No. 4, or 3 and $3\frac{1}{2}$.

This model illustrates the principle of delivering goods from an elevation to a low point. This is a test model for outfit No. 4, and we, therefore, give no detailed instructions for the building of same.

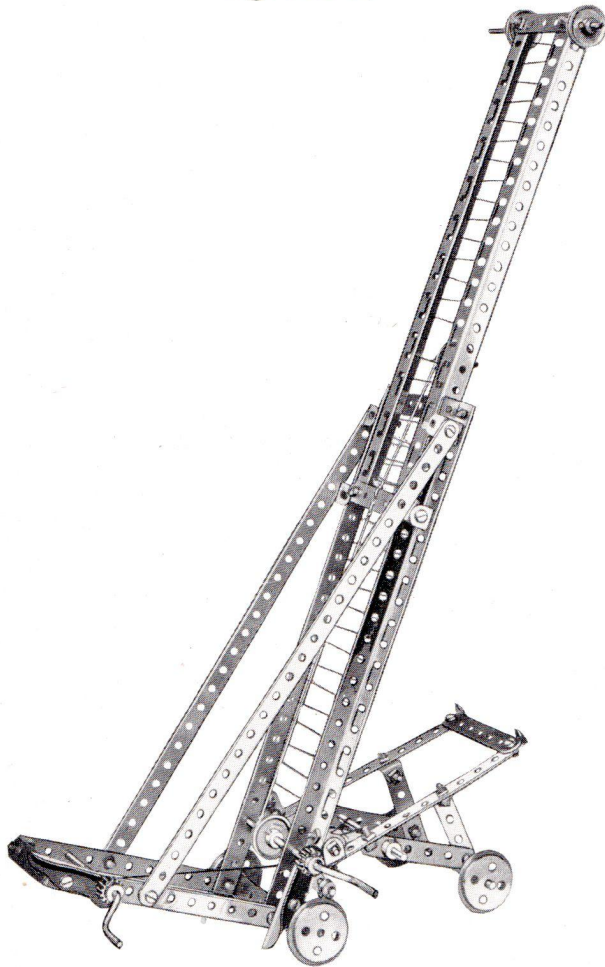
The model is so designed that the weight attached at the far end overbalances the weight of the truck so that when the truck is empty it will always be drawn to the top of the inclined plane. As soon as a load is placed in the truck, the additional weight will cause the truck to move down the inclined plane to the bottom and as soon as the load is discharged, the truck will return automatically to the top.

PARTS REQUIRED

	Parts Required in Addition to Outfits	
	No. 2	No. 3
8 $12\frac{1}{2}$ " Angle Girders.....	8	4
6 $12\frac{1}{2}$ " Perforated Strips.....	2	....
17 $5\frac{1}{2}$ " Perforated Strips.....	13	1
2 $3\frac{1}{2}$ " Perforated Strips.....	....	....
8 $2\frac{1}{2}$ " Perforated Strips.....	....	....
4 Flanged and Grooved Wheels....	4	....
4 $4\frac{1}{2}$ " Axle Rods.....	1	1
2 Large Rectangular Plates.....	1	1
2 Small Rectangular Plates.....	2	2
1 1" Pulley Wheel.....	....	....
1 Hook.....	....	....
18 Angle Brackets.....	8	2
2 Collars and Set Screws.....	....	....
70 Nuts and Screws.....	40	20

EXTENSION FIRE TRUCK

Fig. No. 38



Made with The American Model Builder Outfit No. 4, or 3 and 3½.

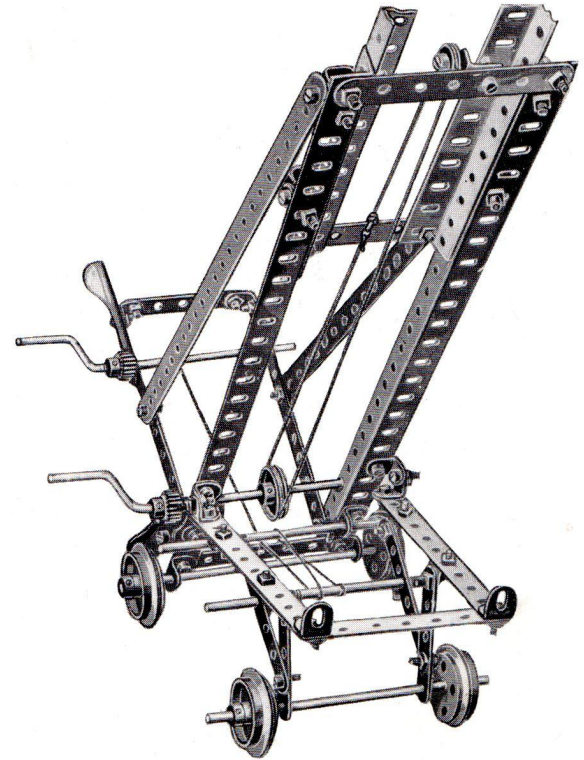
PARTS REQUIRED

	Parts Required in Addition to Outfits	
	No. 2	No. 3
4 12½" Angle Girders.....	4	...
26 Angle Brackets.....	16	10
2 5" Axle Rods.....	2	...
3 4½" Axle Rods.....	...	...
1 2" Axle Rod.....	...	...
2 5½" Cranks.....	1	1
2 12½" Perforated Strips.....	...	...
4 5½" Perforated Strips.....	...	...
3 3½" Perforated Strips.....	1	...
2 3" Perforated Strips.....	2	2
5 2½" Perforated Strips.....	...	...
4 Flanged and Grooved Wheels.....	4	...
3 1" Pulley Wheels.....	...	1
1 ½" Pulley Wheel.....	1	1
2 ½" Pinion Wheels.....	2	1
2 Pawls.....	2	1
1 Single Bent Strip.....	...	...
6 Collars and Set Screws.....	2	2
50 Nuts and Screws.....	20	...

This model is a duplicate of the Extension Fire Trucks used in the larger cities for reaching the higher buildings, and will be found a most interesting study.

In constructing this model first make the lower main frame by tying together two 12½" Angle Girders with two 3½" Perforated Strips at the top and bottom. Then attach two 5½" Perforated Strips at the bottom of the Angle Girders, then fasten two 12½" Perforated Strips in the seventh hole of the 5½" Perforated Strip, fastening the other ends to the two Angle Brackets screwed into the second hole of the Angle Girders.

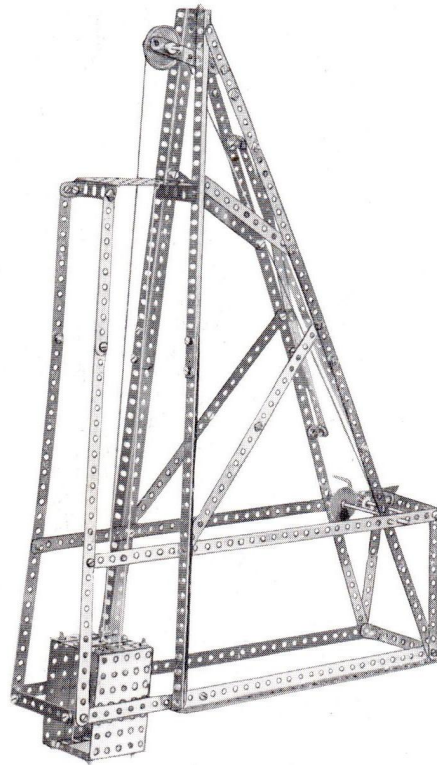
Next make the sliding frame of two 12½" Angle Girders, tying them together at the top and bottom with two 2½" Perforated Strips. Then lace the green cord into each hole of the sliding frame, stretching the string tightly. Next lace the cord into the lower main frame, beginning at the third hole from the top and stopping in the sixth hole from the bottom. The Angle Brackets in the second and sixth holes from the top of the Angle Girders in the main frame will serve as guides for the sliding frame.



Next construct the running truck of two 5½" Perforated Strips tied at one end with a 3½" Perforated Strip. Then make the lower frame work for the wheels by using a 2½" Perforated Strip for the upright and a 3" Perforated Strip for the diagonal support on each side. Fasten the 3" Strip in the second hole from the bottom of the 2½" Strip, leaving the lower hole for the axle to pass through. Then attach the truck to the main frame with two Angle Brackets fastened in the fifth hole of the Angle Girders. Next fasten the Pinion Wheels, Pawls, Pulleys and Flanged Wheels in place and the truck is ready for operation.

PIT HEADGEAR

Fig. No. 39



Made with The American Model Builder
Outfit No. 4, or 3 and 3½.

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
6 12½" Angle Girders.....	6	2
10 12½" Perforated Strips.....	6	.....
16 5½" Perforated Strips.....	12	.....
4 3½" Perforated Strips.....	2	1
1 3" Perforated Strip.....	1	1
6 2½" Perforated Strips.....	.....	.....
3 Small Rectangular Plates.....	3	3
1 1½" Pulley Wheel.....	1	1
1 1½" Gear Wheel.....	1	1

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
1 ¾" Pinion Wheel.....	1	1
1 ½" Pinion Wheel.....	1	.....
1 Pawl.....	1	.....
1 5½" Crank.....	.....	.....
1 4½" Axle Rod.....	1	1
1 2" Axle Rod.....	.....	.....
16 Angle Brackets.....	6	.....
3 Collars and Set Screws.....	.....	.....
70 Nuts and Screws.....	40	20

This is a most interesting model and shows the principle upon which ore is raised from a good many western mines.

The main lower frame is made of two 12½" Angle Girders fastened together at one end with a 3½" Perforated Strip. The main upright frame is then formed by two Angle Girders overlapped and bolted in the third hole. These two girders are then bolted to one end of the Angle Girders forming the base. Next the diagonal supports are made of two 12½" and one 5½" Perforated Strip bolted together. These are fastened to the top of the upright frame and to one end of the Angle Girders forming the base.

In order to strengthen the upright frame a 5½" Perforated Strip is bolted in the twelfth hole from the top of the Angle Girder and in the nineteenth hole from the top in the diagonal strips. Two more 5½" Perforated Strips are then bolted together and fastened in the eleventh hole from the bottom in the upright Angle Girder and the twenty-fifth hole from the top in the diagonal support. The other supports are attached as shown in the cut.

The builder is now ready for the construction of the frame work in which the cage moves up and down. Four 5½" Perforated Strips are bolted in the third hole and extended from the main upright frame. A 12½" and 5½" Perforated Strip are then bolted together and fastened to the small Rectangular Plate by means of two Angle Brackets at the top and bolted fast to the four 5½" Perforated Strips extending from the frame.

The hoisting apparatus operates by means of a crank passed through to the third hole of the 12½" horizontal strip.

This crank should have a ½" Pinion Wheel on the outside of the strip and a ¾" Pinion Wheel on the inside of the strip.

The ¾" Pinion Wheel should mesh with the 1½" Gear Wheel which operates on an axle passed through the fifth hole of the horizontal strip.

When completed this model will be found very interesting and instructive and by setting it on a table and extending the frame work of the cage out over the edge of the table, hoisting can be done from the floor or any depth that is desired by simply increasing the length of the cords. This model can be operated by a small motor as well as by hand by attaching a pulley wheel to the crank and belting the motor to this.

PILE DRIVER

Fig. No. 40

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
2 12½" Angle Girders.....	2	.....
2 12½" Perforated Strips.....	.....	.....
1 3½" Perforated Strip.....	.....	.....
2 3" Perforated Strips.....	2	2
11 2½" Perforated Strips.....	2	.....
2 4½" Axle Rods.....	.....	.....
1 5½" Crank.....	.....	.....
1 ¾" Pinion Wheel.....	1	1
1 1½" Gear Wheel.....	1	1

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
1 1" Pulley Wheel.....	.....	.....
1 1½" Pulley Wheel.....	1	1
5 Collars and Set Screws.....	1	1
1 Large Rectangular Plate.....	.....	.....
1 Small Rectangular Plate.....	1	1
1 Double Bent Strip.....	1	.....
10 Angle Brackets.....	.....	.....
33 Nuts and Screws.....	3	.....

This model illustrates the Pile Driver which can be seen at work in any section of the country where the ground is marshy, or in the building of bridges, where it is necessary to drive piles in order to make a solid footing for the foundations.

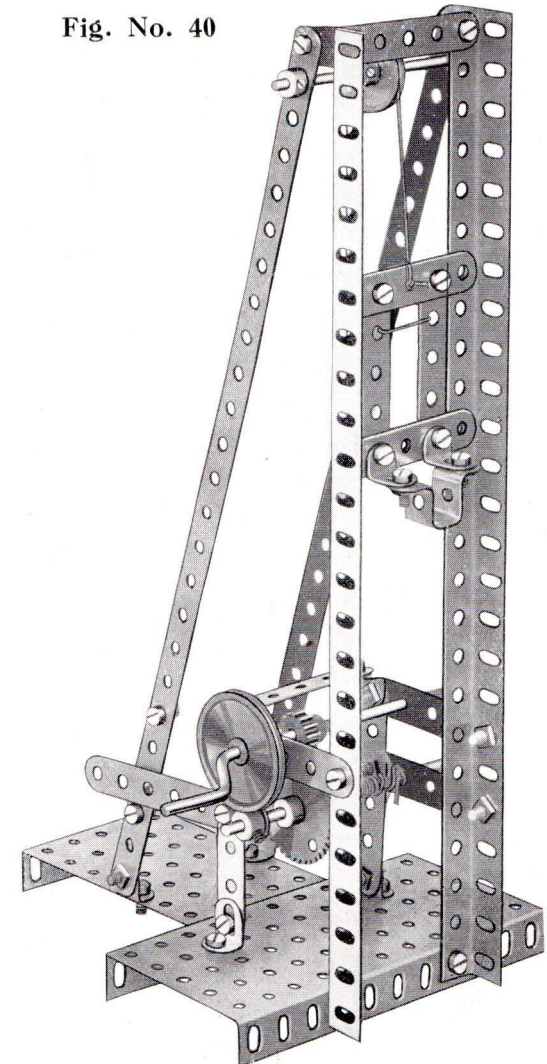
The base is constructed of a large and small Rectangular Plate bolted together. The upright frame is made of two 12½" Angle Girders bolted at the bottom to the large Rectangular Plate and tied together at the top with a 2½" Perforated Strip. Two 12½" Perforated Strips are used for the diagonal supports and are fastened by Angle Brackets at the top and to the small Rectangular Plate at the bottom.

The pile head is made of six 2½" Perforated Strips and slide on the Angle Girders. In constructing this pile head, use two 2½" Perforated Strips at the top and bottom and then fasten the two perpendicular strips between these. This forms a groove at either side in which the Angle Girder will fit.

The operating mechanism consists of a Crank and 4½" Axle Rod. To the top one is attached a 1½" Pulley Wheel and a ¾" Pinion Wheel. To the lower Axle Rod is attached a 1½" Gear Wheel which meshes with the ¾" Pinion Wheel. The lever extending over the diagonal support forms an eccentric for engaging and disengaging the Gear Wheel with the Pinion Wheel. When the lever is thrown up, the gear is disengaged and the pile head will drop and when the lever is thrown down, the gear engages with the Pinion Wheel and draws the pile head to the top.

This model is arranged so it can be operated by hand or with a small motor. Where a motor is used, it should be belted to the pulley wheel attached to the crank.

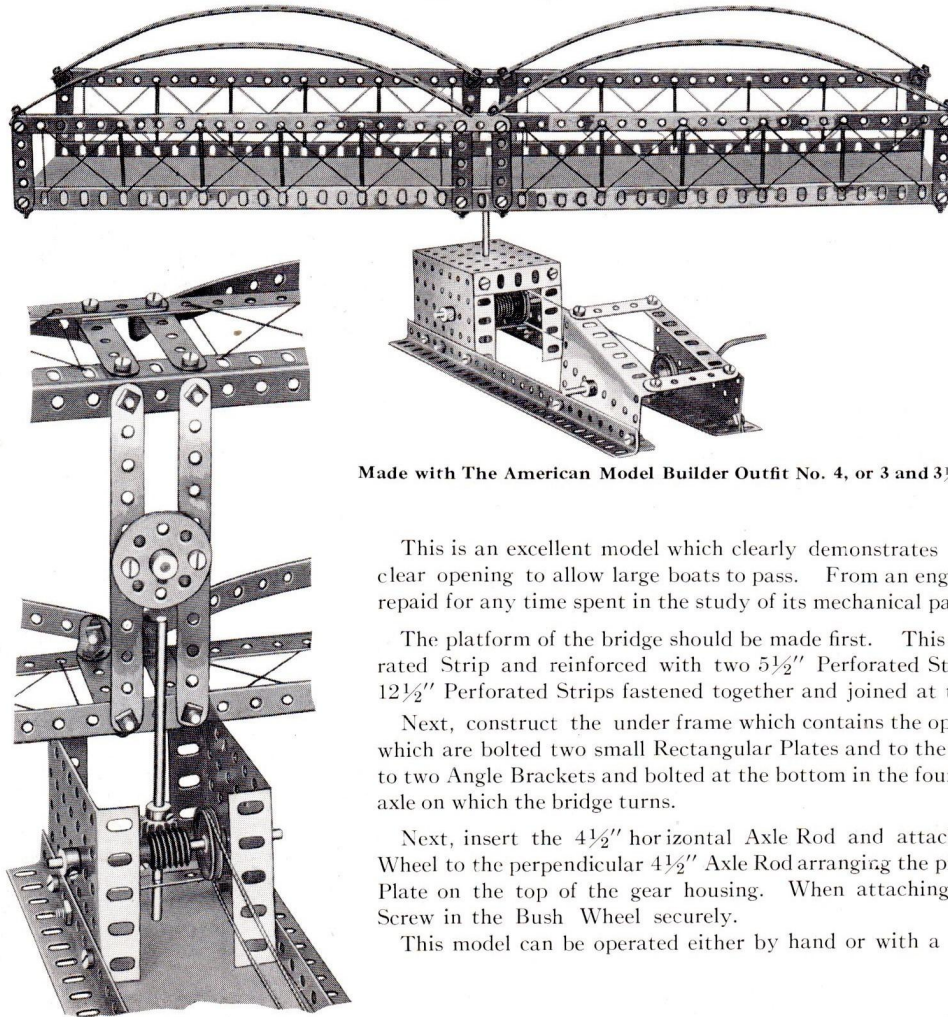
This model can also be mounted on wheels by passing two 5" Axle Rods through the ends of the large Rectangular Plate and attaching four Flanged and Grooved Wheels.



Made with The American Model Builder Outfit No. 4, or 3 and 3½.

SWINGING BRIDGE

Fig. No. 41



Made with The American Model Builder Outfit No. 4, or 3 and 3½

Parts Required in Addition to Outfits

PARTS REQUIRED	No. 2 No. 3	
	No. 2	No. 3
6 12½" Angle Girders.....	6	2
8 12½" Perforated Strips.....	4	.....
4 5½" Perforated Strips.....	.....	.....
12 2½" Perforated Strips.....	3	.....
2 Sector Plates.....	.....	.....
3 Small Rectangular Plates.....	3	3
10 Angle Brackets.....	.....	.....
2 4½" Axle Rods.....	.....	.....
1 5½" Crank.....	.....	.....
4 Collars and Set Screws.....	.....	.....
56 Nuts and Screws.....	26	6
2 1" Pulley Wheels.....	.....	.....
1 ½" Pinion Wheel.....	1	.....
1 Worm Wheel.....	1	1
1 Bush Wheel.....	.....	.....

This is an excellent model which clearly demonstrates the mechanical workings of a Swinging Bridge, where it is necessary to have a clear opening to allow large boats to pass. From an engineering standpoint, this model cannot be excelled and the builder will be well repaid for any time spent in the study of its mechanical parts.

The platform of the bridge should be made first. This is constructed of two 12½" Angle Girders tied at each end with a 5½" Perforated Strip and reinforced with two 5½" Perforated Strips in the center as shown in the sectional view. The sides are made of two 12½" Perforated Strips fastened together and joined at the ends and in the center to the upright 2½" Perforated Strips.

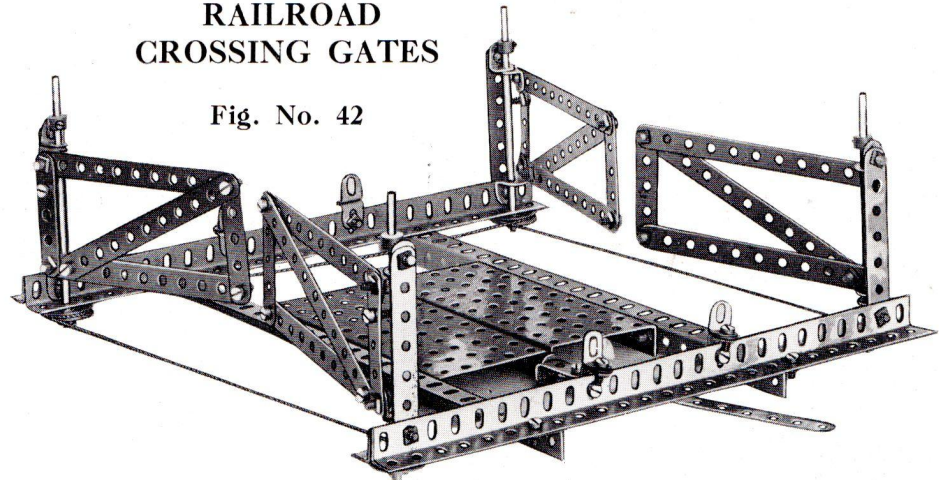
Next, construct the under frame which contains the operating mechanism. This is made of two 12½" Angle Girders to one end of which are bolted two small Rectangular Plates and to the other end two Sector Plates. A 2½" Perforated Strip should then be fastened to two Angle Brackets and bolted at the bottom in the fourth hole of the small Rectangular Plate. This forms the lower support for the axle on which the bridge turns.

Next, insert the 4½" horizontal Axle Rod and attach to this a 1" Pulley Wheel and a Worm Gear. Then fasten a ½" Pinion Wheel to the perpendicular 4½" Axle Rod arranging the pinion so it will mesh with the Worm Gear. Then fasten a small Rectangular Plate on the top of the gear housing. When attaching the bridge to the 4½" upright Axle Rod, be sure and fasten the Set Screw in the Bush Wheel securely.

This model can be operated either by hand or with a small motor that is equipped with a reversing mechanism.

RAILROAD CROSSING GATES

Fig. No. 42



Made with The American Model Builder Outfit No. 4, or 3 and 3½.

This model should be constructed with considerable care as all the parts must operate simultaneously in order to have all four gates open and close by the operation of the lever.

The construction of the base is very simple and this is made of two large Rectangular Plates fastened together and bolted fast to two 12½" Angle Girders.

Next, construct the frame work which supports the swinging gates. This is accomplished by fastening two 12½" Angle Girders together with a 3½" Perforated Strip inserted between them and bolted in the second hole from each end of the Angle Girders. These Angle Girders are then bolted fast to the Angle Girders which form the base. The construction of the gates is very simple as these are made up of two 5½" Perforated Strips fastened together at the ends with a 2½" Perforated Strip and a 5½" Perforated Strip running diagonally from the top of the gate at one end to the bottom at the other.

The matter of hinging these gates is accomplished by fastening an Angle Bracket at the top and bottom on the inside of each gate, and also having an Angle Bracket fastened at the top and bottom of the 3½" Perforated Strip used as an upright.

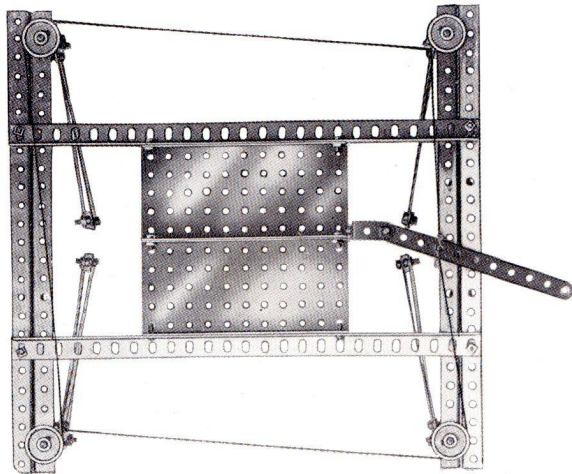
Next fasten a 1" Pulley Wheel to one end of the 5" Axle Rods securely fastening the Set Screw to prevent the Pulley Wheel from turning. Then pass these axles through the second hole of the Angle Girder, at the same time passing it through the Angle Brackets which are attached to the 3½" upright strip and to the inside of the gates.

In order to make the gates move when this axle is being turned, it is necessary to have a screw placed in the second hole from the bottom of these gates and screwed up tightly so that the end comes in contact with the axle rod.

In the inverted view, we show the arrangement of the operating cord, and you will note that this cord is wound in opposite directions around every other pulley. This is done so as to have the two gates move in opposite directions at the same time. It is desirable to wind the operating cord twice around each pulley in order to give it a better grip.

When this model is properly constructed, it operates very easily and by throwing the lever to one side all the gates will open simultaneously and by throwing the lever back all the gates will close simultaneously.

PARTS REQUIRED	Parts Required in Addition to Outfits	
	No. 2	No. 3
6 12½" Angle Girders.....	6	2
13 5½" Perforated Strips.....	9	.....
4 3½" Perforated Strips.....	2	1
8 2½" Perforated Strips.....	.....	.....
25 Angle Brackets.....	15	9
1 Single Bent Strip.....	.....	.....
4 1" Pulley Wheels.....	.....	2
4 5" Axle Rods.....	4	1
2 Large Rectangular Plates.....	1	1
4 Collars and Set Screws.....	.....	.....
53 Nuts and Screws.....	23	3



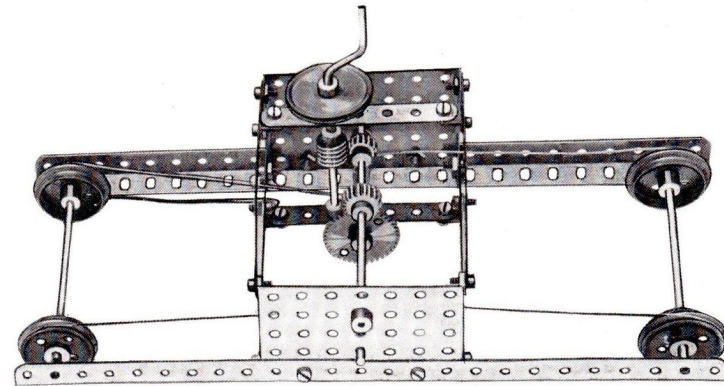
SUSPENDED RAILROAD BRIDGE

Fig. No. 43



Made with The American Model Builder Outfit No. 5, or 4 and 4½.

PARTS REQUIRED		Parts Required in Addition to Outfits			PARTS REQUIRED		Parts Required in Addition to Outfits		
		No. 2	No. 3	No. 4			No. 2	No. 3	No. 4
8 12½" Angle Girders.....	8	4	.....	.....	1 1½" Pulley Wheel.....	1	1	.....	.....
8 12½" Perforated Strips...	4	.....	.....	.....	1 Worm Wheel.....	1	1	.....	.....
16 5½" Perforated Strips...	12	.....	.....	.....	1 ¾" Pinion Wheel.....	1	1	.....	.....
2 3½" Perforated Strips...	.....	.....	.....	.....	2 ½" Pinion Wheels.....	2	1	.....	.....
4 3" Perforated Strips.....	4	4	2	.....	4 5" Axle Rods.....	4	1	.....	.....
4 2½" Perforated Strips...	.....	.....	.....	.....	1 5½" Crank.....	.....	.....	.....	.....
36 Angle Brackets.....	26	20	10	.....	2 Small Rectangular Plates..	2	2	.....	.....
4 Flanged & Grooved Wheels	4	.....	.....	.....	5 Collars and Set Screws....	1	1	.....	.....
1 1½" Gear Wheel.....	1	1	.....	.....	96 Nuts and Screws.....	66	46	26	.....



This is a very instructive model and demonstrates the principle upon which suspended railroad bridges are operated.

When the bridge is raised, it enables steam ships to pass and when lowered into position forms a railroad bridge.

The two main upright frames are constructed of four 12½" Angle Girders and are braced by four 12½" Perforated Strips bolted to 5½" Perforated Strips at the bottom.

The movable platform is made of two 12½" Angle Girders and two 12½" Perforated Strips bolted at each end to 5½" Perforated Strips. The two 12½" Perforated Strips are used as railroad tracks upon which a small engine can pass. We have shown a sectional view of the gear housing so that this construction can easily be followed. You will note that the Axle Rods carrying the four Flanged and Grooved Wheels are supported by four Angle Brackets bolted fast to the Angle Girders.

When attaching the cord for raising and lowering the bridge have the platform set in its lowest position, then fasten the cords securely to the axle upon which is mounted the 1½" Gear Wheel. This cord should be tied securely around the Collar and Set Screws that it will readily wind around the axle when the crank is turned.

AERIAL SWING

Fig. No. 44

Every boy has taken a ride on an Aerial Swing, and the building of one will be extremely interesting.

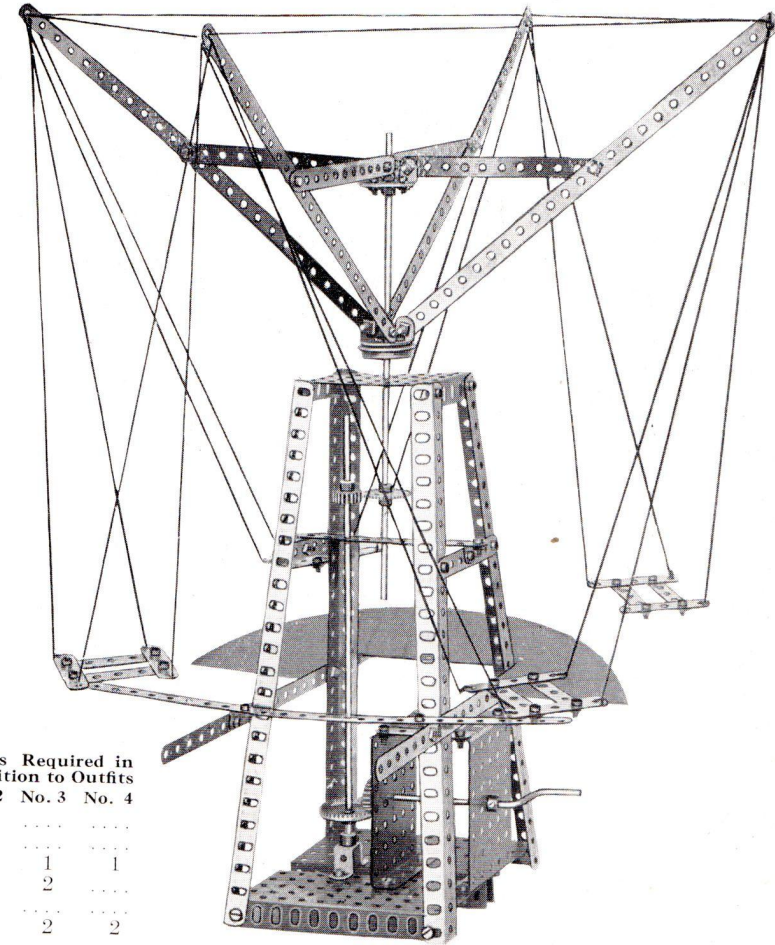
The main supporting frame is made of two large Rectangular Plates to which are bolted four upright Angle Girders fastened at the top to the small Rectangular Plate. The crank to which the $\frac{3}{4}$ " Pinion Wheel is attached is supported by two small Rectangular Plates bolted fast to the two large Rectangular Plates forming the base and tied together at the top with two $2\frac{1}{2}$ " Perforated Strips. The two $12\frac{1}{2}$ " Perforated Strips are then bolted in the tenth hole from the bottom to the Angle Girders and two $12\frac{1}{2}$ " perforated Strips are fastened to these by Angle Brackets. This forms the frame work which carries the platform. The platform is made from heavy card board cut in a circle and should be 14 inches in diameter. In the cut we show only one-half of this platform so that the gearing could be clearly photographed.

The arms carrying the swings are made of four $12\frac{1}{2}$ " Perforated Strips bolted at one end to Angle Brackets which are fastened to a Flanged and Grooved Wheel and these are held in position by four $5\frac{1}{2}$ " Perforated Strips which are bolted to Angle Brackets fastened to the Bush Wheel.

The gearing is very simple and is accomplished by a $1\frac{1}{2}$ " Gear Wheel attached to the $11\frac{1}{2}$ " Axle Rod carrying the revolving top. The lower $11\frac{1}{2}$ " perpendicular Axle Rod has a $\frac{3}{4}$ " Pinion Wheel fastened at the top and a $1\frac{1}{2}$ " Crown Gear at the bottom which meshes with the $\frac{3}{4}$ " Pinion Wheel attached to the crank. A small collar should be attached to the Axle Rod carrying the revolving frame which should rest on the $5\frac{1}{2}$ " cross strip. A small collar should also be attached to the perpendicular axle rod beneath the Crown Gear which will rest on the Double Bent Strip. Two collars should also be attached to the crank on the outside of the small Rectangular Plates to prevent any lost motion.

If it is desired this model can be operated by a small motor in which case a Pulley Wheel should be attached to the crank on the inside of the two small Rectangular Plates.

This is a very interesting model and should afford untold pleasure to the boy after it is built.



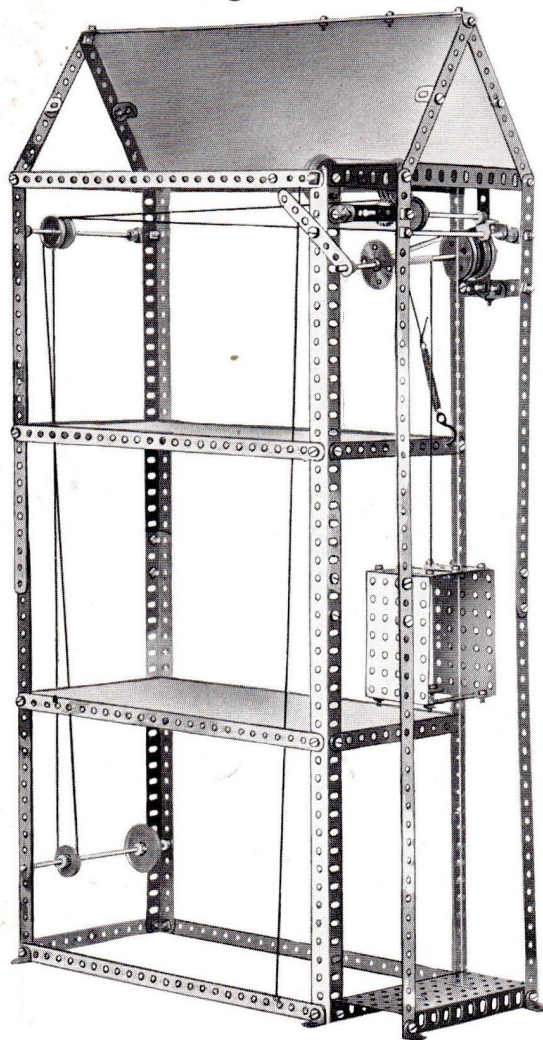
PARTS REQUIRED	Parts Required in Addition to Outfits		
	No. 2	No. 3	No. 4
4 $12\frac{1}{2}$ " Angle Girders.....	4	.....	.....
8 $12\frac{1}{2}$ " Perforated Strips...	4	.....	.....
5 $5\frac{1}{2}$ " Perforated Strips...	1	.....	.....
2 $3\frac{1}{2}$ " Perforated Strips.....	.....	.....	.....
18 $2\frac{1}{2}$ " Perforated Strips...	9	4	4
1 Double Bent Strip.....	1	.....	.....
14 Angle Brackets.....	4	.....	.....
3 Small Rectangular Plates...	3	3	.....
2 Large Rectangular Plates...	1	1	.....

PARTS REQUIRED	Parts Required in Addition to Outfits		
	No. 2	No. 3	No. 4
1 $1\frac{1}{2}$ " Bush Wheel.....	.....	.....	.....
1 Flanged & Grooved Wheel.	1	.....	.....
1 $1\frac{1}{2}$ " Crown Gear.....	1	1	1
2 $\frac{3}{4}$ " Pinion Wheels.....	2	2	.....
4 Collars and Set Screws....	.....	.....	.....
2 $11\frac{1}{2}$ " Axle Rods.....	2	2	2
1 $5\frac{1}{2}$ " Crank.....	.....	.....	.....
74 Nuts and Screws.....	44	24	4

Made with The American Model Builder Outfit No. 5, or 4 and $4\frac{1}{2}$.

WAREHOUSE WITH ELEVATOR

Fig. No. 45

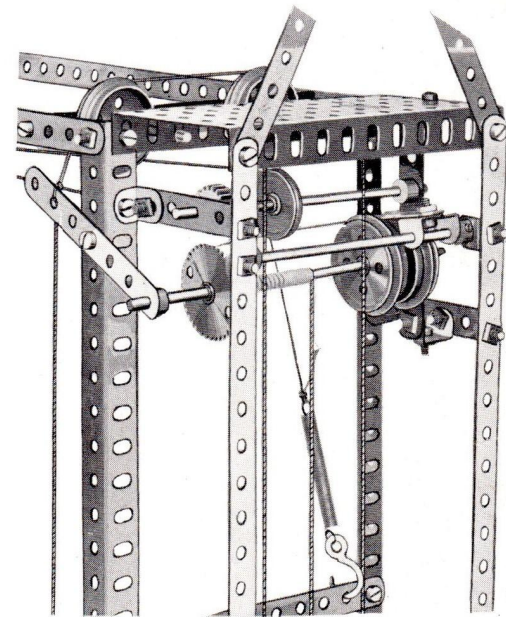


PARTS REQUIRED	Parts Required in Addition to Outfits		
	No. 2	No. 3	No. 4
8 12 1/2" Angle Girders.....	8	4	.....
13 12 1/2" Perforated Strips....	9	3	3
13 5 1/2" Perforated Strips....	9	.....	.....
2 3 1/2" Perforated Strips....	.....	.....	.....
7 2 1/2" Perforated Strips....	.....	.....	.....
2 Large Rectangular Plates...	1	1	.....
2 Small Rectangular Plates...	2	2	.....
27 Angle Brackets.....	17	11	1
1 1 3/4" Spring.....	1	1	1
1 1 1/2" Pulley Wheel.....	1	1	1
4 1" Pulley Wheels.....	.....	2	.....
4 Flanged & Grooved Wheels	4	.....	.....
1 1 1/2" Gear Wheel.....	1	1	.....
1 3/4" Pinion Wheel.....	1	1	1
1 Hook.....	.....	.....	.....
2 6" Axle Rods.....	2	2	2
3 5" Axle Rods.....	3	.....	.....
2 2" Axle Rods.....	.....	.....	.....
8 Collars and Set Screws....	4	4	2
92 Nuts and Screws.....	62	42	22

This is a very ingenious model and is a copy of the elevators used for the storage of grain. When completed it will afford a great deal of pleasure to the builder. The main frame work is very simple and can easily be constructed by referring to the cut.

The gearing is the most important part, and in order that this may be properly assembled, we have shown an enlarged view of this. As you will note from the cut this model is to be operated by a small motor which should be belted to the 1 1/2" Pulley Wheel on the lower Axle Rod. This can, however, be operated by hand by simply substituting a crank instead of a straight Axle Rod. The main driving belt is carried from the 1" Pulley Wheel on the lower axle over the two 1" Pulley Wheels on the upper axle, then over the 1" Pulley Wheel that is attached to the axle supported in the center of the frame carrying the elevator. A 3/4" Pinion Wheel is also attached to this same axle which furnishes the power for raising and lowering the cage. The axle carrying the 1 1/2" Gear Wheel is fastened through the third hole from the bottom of the 3 1/2" upright strip and through the end hole of the 3 1/2" Oscillating Strip. The two Flanged and Grooved Wheels are also fastened to this axle close to the 3 1/2" Perforated Strips. These are used as a brake drum to prevent the cage from dropping down quickly when the gear is thrown out of mesh. A 5 1/2" Perforated Strip provides the brake lever which passes over this brake drum. This is fastened at one end to two Angle Brackets which are supported by the third Axle Rod.

In order to place the proper tension on the brake, it is necessary to attach a 1 3/4" Spring to the cross frame and to this a cord is attached engaging the brake lever and passing over the two Flanged and Grooved Wheels at the top and fastened to the Oscillating arm which supports the 1 1/2" Gear Wheel. This cord is then fastened to the bottom of the frame. When it is desired to move the cage up and down, it is only necessary to pull on the cord that is attached to the Oscillating arm until the 1 1/2" Gear Wheel meshes with the 3/4" Pinion Wheel. When it is desired to lower the elevator, simply release this cord and the cage will drop down of its own weight. The roof and flooring are made of stiff card board cut to size.



Made with The American Model Builder Outfit No. 5, or 4 and 4 1/2.

ROTARY TRAVELING CRANE

Fig. No. 46

PARTS REQUIRED	Parts Required in Addition to Outfits			PARTS REQUIRED	Parts Required in Addition to Outfits		
	No. 2	No. 3	No. 4		No. 2	No. 3	No. 4
2 12½" Angle Girders.....	2	.....	.....	1 Double Bent Strip.....	1	.....	.....
3 12½" Perforated Strips....	.....	.....	.....	1 Hook.....	.....	.....	.....
6 5½" Perforated Strips....	2	.....	.....	1 5½" Crank.....	.....	.....	.....
4 3½" Perforated Strips....	2	1	.....	1 4½" Crank.....	1	1	.....
15 2½" Perforated Strips....	6	1	1	2 ½" Pinion Wheels.....	2	1	.....
16 Angle Brackets.....	6	.....	.....	1 ¾" Pinion Wheel.....	1	1	1
1 6" Axle Rod.....	1	1	1	1 Worm Wheel.....	1	1	.....
1 4½" Axle Rod.....	.....	.....	.....	1 1½" Gear Wheel.....	1	1	.....
1 2" Axle Rod.....	.....	.....	.....	1 Bush Wheel.....	.....	.....	.....
2 5" Axle Rods.....	2	.....	.....	4 Collars and Set Screws....	.....	.....	.....
5 Flanged & Grooved Wheels	5	1	1	1 Pawl.....	1	.....	.....
1 1" Pulley Wheel.....	.....	.....	.....	51 Nuts and Screws.....	21	1	.....

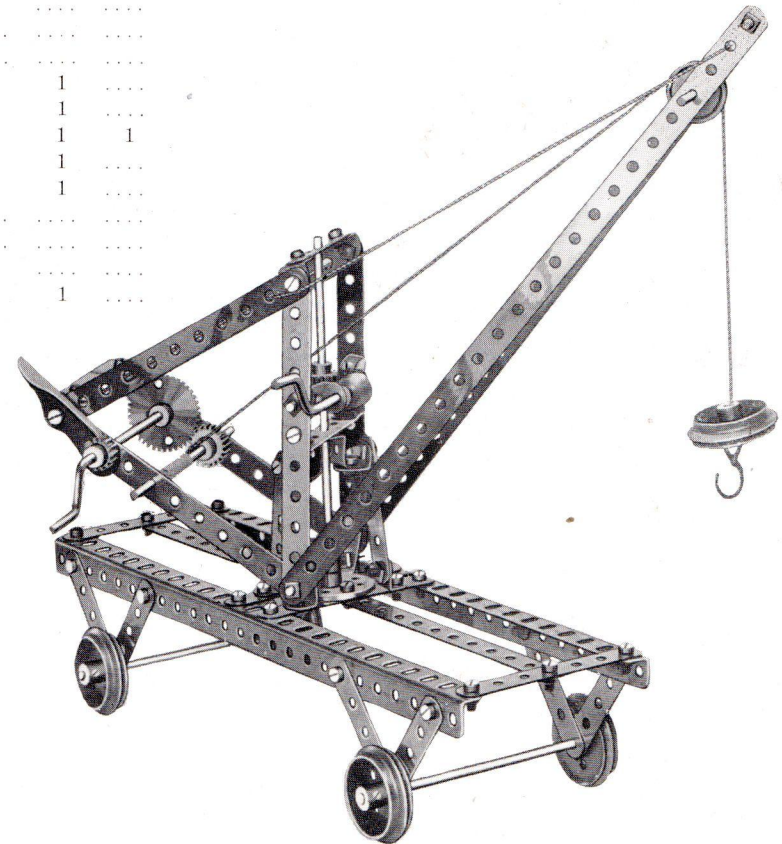
The Rotary Traveling Crane is in every day use by the construction gangs on railroads and is used for transporting a load from one side of the track to the other.

The building of the lower truck is very simple, being made of two 12½" Angle Girders and one 12½" Perforated Strip and these are bolted together with four 3½" Perforated Strips as shown in the cut. The matter of attaching the wheels and axles is accomplished by bolting two 2½" Perforated Strips to the Angle Girders.

The movable crane is made of two 12½" Perforated Strips which form the uprights and these are bolted to the bottom of a triangle made by three 5½" Perforated Strips. These triangles are then tied tightly together at the top and rear with two 2½" Perforated Strips. The frame work supporting the movable crane is made of four 2½" Perforated Strips bolted fast at the bottom to four Angle Brackets which are bolted to the 3½" cross strips. Two Angle Brackets are then fastened to the top of these 2½" Perforated Strips and a Double Bent Strip is screwed fast to these brackets.

The matter of gearing is very simple. The crane being rotated by means of a Worm Wheel which meshes with a 2½" Pinion wheel. The hoisting mechanism is constructed of a 5½" Crank with a ½" Pinion Wheel fastened on the outside of the frame work and a 1½" Gear Wheel fastened on the inside of the frame. This 1½" Gear Wheel meshes with the ¾" Pinion Wheel which is fastened to the Axle Rod on which the cord is wrapped.

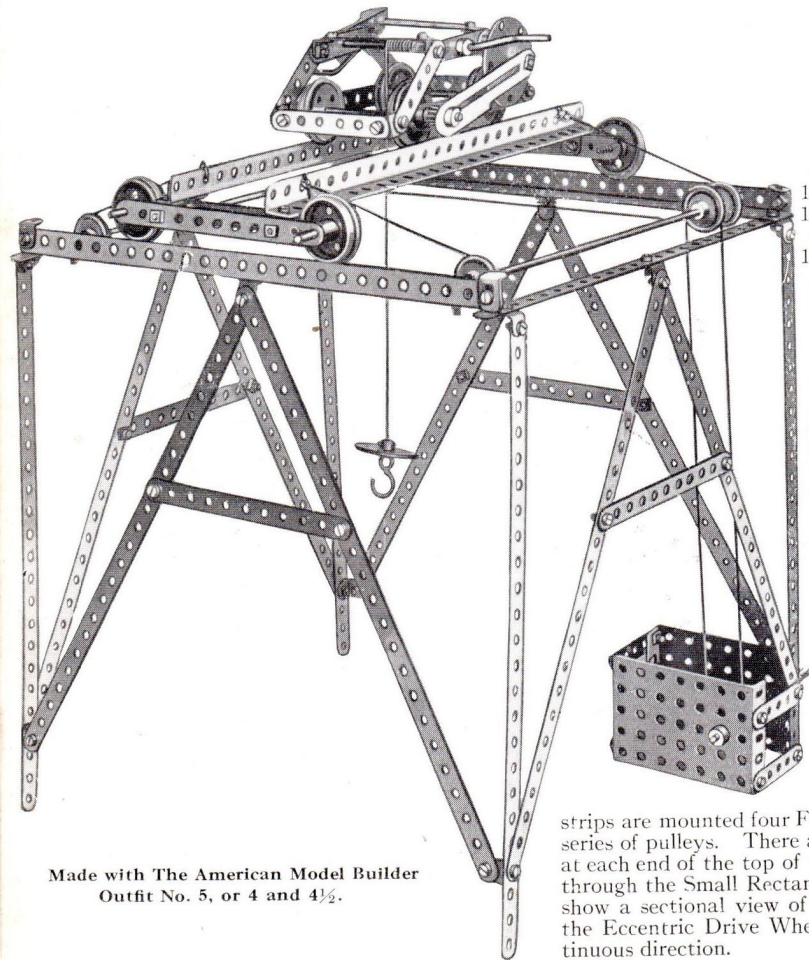
This model clearly demonstrates the use of the Worm Wheel where extremely heavy loads are to be handled slowly. The workings of the entire model are very interesting and instructive and this crane will lend itself to a good many uses in the boy's amusement.



Made with The American Model Builder Outfit No. 5, or 4 and 4½.

OVERHEAD DOUBLE ACTION TRAVELING CRANE

Fig. No. 47

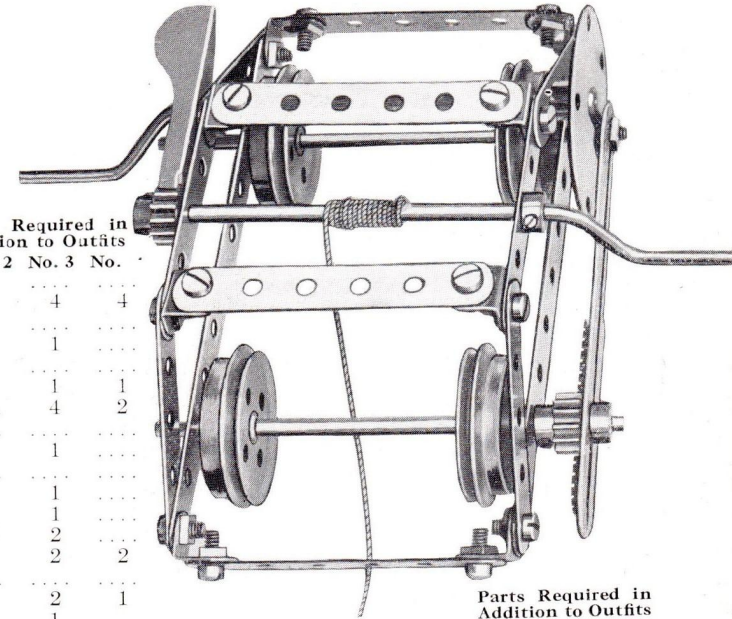


Made with The American Model Builder
Outfit No. 5, or 4 and 4½.

Parts Required in
Addition to Outfits

PARTS REQUIRED

	No. 2	No. 3	No. 4
4 12½" Angle Girders....	4	.....	.....
14 12½" Perforated Strips	10	4	4
10 5½" Perforated Strips	6	.....	.....
4 3½" Perforated Strips	2	1	.....
10 2½" Perforated Strips	1	.....	.....
5 Flanged & Grooved Wheels	5	1	1
6 1" Pulley Wheels.....	.....	4	2
1 Bush Wheel.....	.....	.....	.....
1 2½" Eccentric Drive Wheel	1	1	.....
1 Oscillating Rack.....	.....	.....	.....
2 ½" Pinion Wheels.....	2	1	.....
5 Collars and Set Screws.	1	1	.....
2 Small Rectangular Plates	2	2	.....
2 11½" Axle Rods.....	2	2	2
2 4½" Axle Rods.....	.....	.....	.....
4 2" Axle Rods.....	2	2	1
1 4½" Crank.....	1	1	.....
2 5½" Crank.....	1	1	1
1 Pawl.....	1	.....	.....
1 Hook.....	.....	.....	.....

Parts Required in
Addition to Outfits

PARTS REQUIRED	No. 2	No. 3	No. 4
35 Angle Brackets.....	25	9	.....
98 Nuts and Screws....	68	48	28

This model represents a crane such as is used in the majority of the large machine shops for raising and transporting extremely heavy weights. This is an extremely interesting model and should be closely studied as the builder will be well repaid for any time spent on it. In beginning the construction, first build the lower frame work which is made of four 12½" Perforated Strips and these are fastened to two 12½" Angle Girders at the top. This frame work is then reinforced by two 12½" Perforated Strips on each side set diagonally in the shape of a letter A. The housing which is used for the motive power is made of two Small Rectangular Plates tied together at each end with two 2½" Perforated Strips.

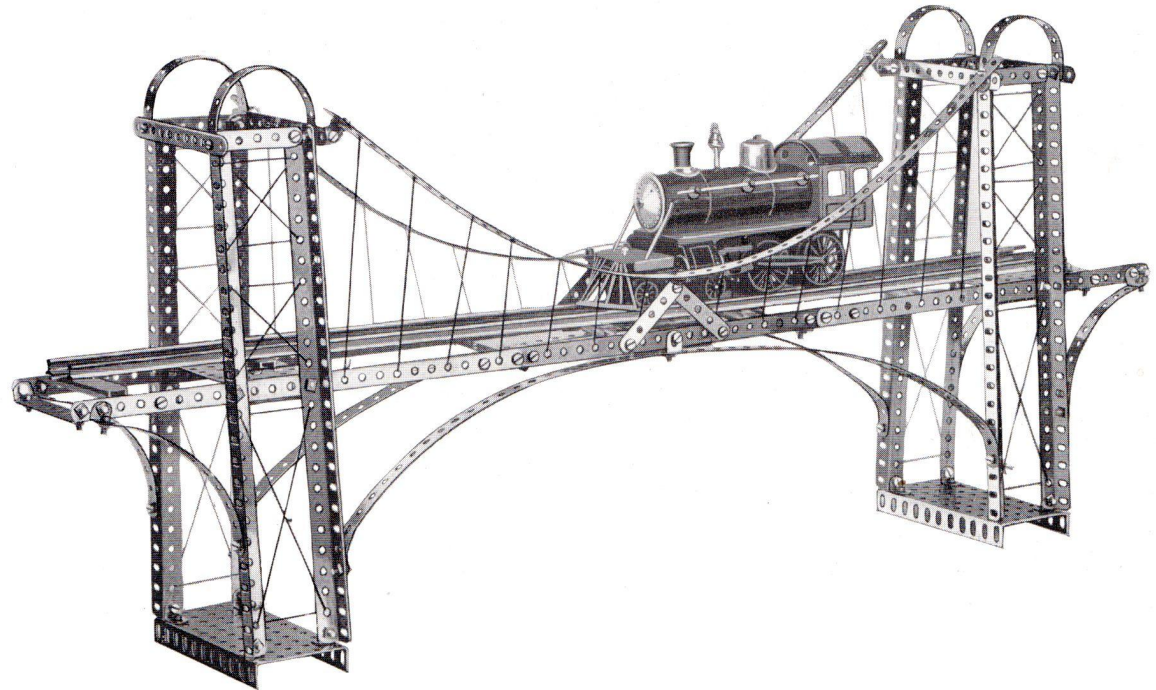
Next construct the large carriage which carries the hoisting frame. This is made of two 12½" Angle Girders and at each end are mounted two 5½" Perforated Strips. Between these strips are mounted four Flanged and Grooved Wheels on 2" Axle Rods. The power to this movable carriage is applied by a series of pulleys. There are four 1" Pulley Wheels mounted on two 11½" Axle Rods and fastened through Angle Brackets at each end of the top of the main frame. One of these Axle Rods should then be belted to the 4½" Crank which passes through the Small Rectangular Plates. This furnishes the power for the large carriage and moves it back and forth. We show a sectional view of the hoisting carriage which is very simple in construction. By using the Oscillating Rack and the Eccentric Drive Wheel this hoisting carriage moves backward and forward although the crank is operated in one continuous direction.

The distance over which this hoisting carriage travels is governed by the hole in which the Oscillating Rack is fastened on the Eccentric Drive Wheel. When this rack is bolted close to the center of the Drive Wheel, the carriage travels a short distance and when it is bolted to one of the outside holes on the Drive Wheel, the carriage travels over a greater distance. A small washer should be used between the Oscillating Rack and the Drive Wheel and two nuts used on the screw passing through it so as to allow the rack to move perfectly free.

SUSPENSION BRIDGE

Fig. No. 48

PARTS REQUIRED	Parts Required in Addition to Outfits		
	No. 2	No. 3	No. 4
8 12½" Angle Girders.....	8	4	.....
14 12½" Perforated Strips..	10	4	4
12 5½" Perforated Strips..	8	.....	.....
6 3½" Perforated Strips..	4	3	.....
8 2½" Perforated Strips..	.....	.....	.....
36 Angle Brackets.....	26	20	10
2 Large Rectangular Plates.	1	1	.....
3 Small Rectangular Plates.	3	3	.....
108 Nuts and Screws.....	78	58	38

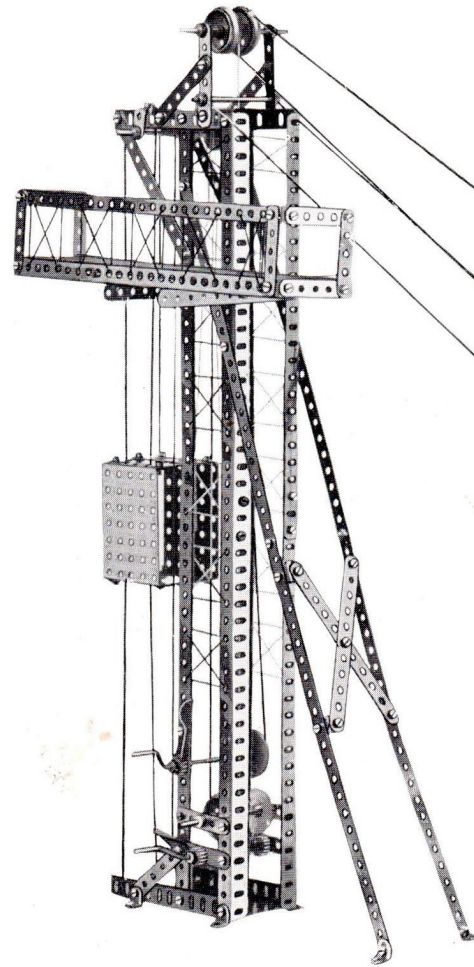


Made with The American Model Builder Outfit No. 5, or 4 and 4½.

In this model, the towers are made first and are constructed of four 12½" Angle Girders fastened at the bottom to a large Rectangular Plate and tied together at the top with a 2½" Perforated Strip. Two 5½" Perforated Strips are then bent in circular form and bolted fast to the top of these Angle Girders. These two towers are then tied together with 3 12½" Perforated Strips all bolted together. These should be fastened in the thirteenth hole from the bottom of the Angle Girders. Between these strips on the inside of the towers is fastened a small Rectangular Plate and a small Rectangular Plate is also fastened in the center of these strips. To these should be bolted the track on which the engine runs. The engine and the track in this cut are simply for an illustration and are not included in the regular outfit.

CABLE SPAN

Fig. No. 49

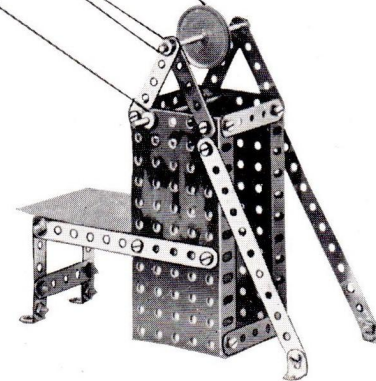


PARTS REQUIRED

7	12 1/2" Angle Girders.....	7	7	3	.....	.....
6	12 1/2" Perforated Strips.....	2	.....	.....	.....	.....
12	5 1/2" Perforated Strips.....	8	.....	.....	.....	.....
2	3 1/2" Perforated Strips.....	.....	.....	.....	.....	.....
6	3" Perforated Strips.....	6	6	4	2	.....
43	2 1/2" Perforated Strips.....	34	29	29	25	.....
4	Large Rectangular Plates.....	3	3	2	2	.....
4	Small Rectangular Plates.....	4	4	1	1	.....
2	3 1/2" Axle Rods.....	2	2	2	2	.....
4	4 1/2" Axle Rods.....	1	1	1	.....	.....
2	5" Axle Rods.....	2	.....	.....	.....	.....
1	6 1/2" Crank.....	1	1	1	.....	.....
1	5 1/2" Crank.....	.....	.....	.....	.....	.....
2	1 1/2" Pulley Wheels.....	2	2	1	1	.....
5	1" Pulley Wheels.....	.....	3	.....	.....	.....
3	Flanged and Grooved Wheels...	3	.....	.....	.....	.....
1	1 1/2" Gear Wheel.....	1	1	.....	.....	.....
1	3/4" Pinion Wheel.....	1	1	.....	.....	.....
2	1/2" Pinion Wheels.....	2	1	.....	.....	.....
2	Pawls.....	2	1	.....	.....	.....
12	Collars and Set Screws.....	8	8	6	4	.....
28	Angle Brackets.....	18	12	2	.....	.....
130	Nuts and Screws.....	100	80	60	20	.....

Parts Required in Addition to Outfits

No. 2	No. 3	No. 4	No. 5
7	3	.....	.....
2	.....	.....	.....
8	.....	.....	.....
.....
6	6	4	2
34	29	29	25
3	3	2	2
4	4	1	1
2	2	2	2
1	1	1	.....
2	.....	.....	.....
1	1	1	.....
1	5 1/2" Crank.....	.....	.....
2	1 1/2" Pulley Wheels.....	2	1
5	1" Pulley Wheels.....	.....	3
3	Flanged and Grooved Wheels...	3	.....
1	1 1/2" Gear Wheel.....	1	1
1	3/4" Pinion Wheel.....	1	1
2	1/2" Pinion Wheels.....	2	1
2	Pawls.....	2	1
12	Collars and Set Screws.....	8	8
28	Angle Brackets.....	18	12
130	Nuts and Screws.....	100	80



Made with The American Model Builder Outfit No. 6, or 5 and 5 1/2.

CABLE SPAN

Made with The American Model Builder Outfit No. 6, or 5 and 5½.

This is a model of an apparatus that is used in hilly countries for transporting ore and other substances across gulleys or deep ravines.

In starting this model, use a large Rectangular Plate for the base with the flanges turned upward. Attach to this the four uprights which are made of two 12½" Angle Girders over-lapped in the third hole. At the top of these attach another Large Rectangular Plate. This frame work is then supported on either side by two 12½" Perforated Strips set diagonally and over-lapped in the third hole. The upper Large Rectangular Plate is also supported by two 5½" Perforated Strips set diagonally and fastened to the main frame.

The walking platform rests upon two 5½" Perforated Strips fastened to the sides of the main frame, and is made of one 12½" Angle Girder and two 12½" Perforated Strips forming the bottom and sides. These are tied together at each end with four 2½" Perforated Strips.

The small loading platform at the bottom is made of two Large Rectangular Plates tied together with 2½" Perforated Strips, and at the top of these is mounted a 1½" Pulley Wheel.

Next construct the riding carriage which travels back and forth. The swinging cage on this is made of two Small Rectangular Plates tied together at each end with two 2½" Perforated Strips. This is fastened to the riding carriage by means of a 4½" Axle Rod. This riding carriage is made of two 5½" Perforated Strips tied together at the top with two 2½" Perforated Strips and on each side are mounted two 2½" Perforated Strips, set diagonally through which the Axle Rod is passed.

The gearing on this model is accomplished by means of a 5½" Crank and attached to this is a ¾" Pinion Wheel which meshes with a 1½" Gear Wheel mounted on a 4½" Axle Rod. On this same Axle Rod is mounted a Flanged and Grooved Wheel. This Flanged and Grooved Wheel is then belted to one of the Flanged and Grooved Wheels mounted at the extreme top of the model and controls the movement of the riding carriage. You will notice this carriage rides on two cables tightly stretched and is operated by a belt which passes over the Flanged and Grooved Wheel at the top of the main structure and around the 1½" Pulley Wheel mounted on the loading platform.

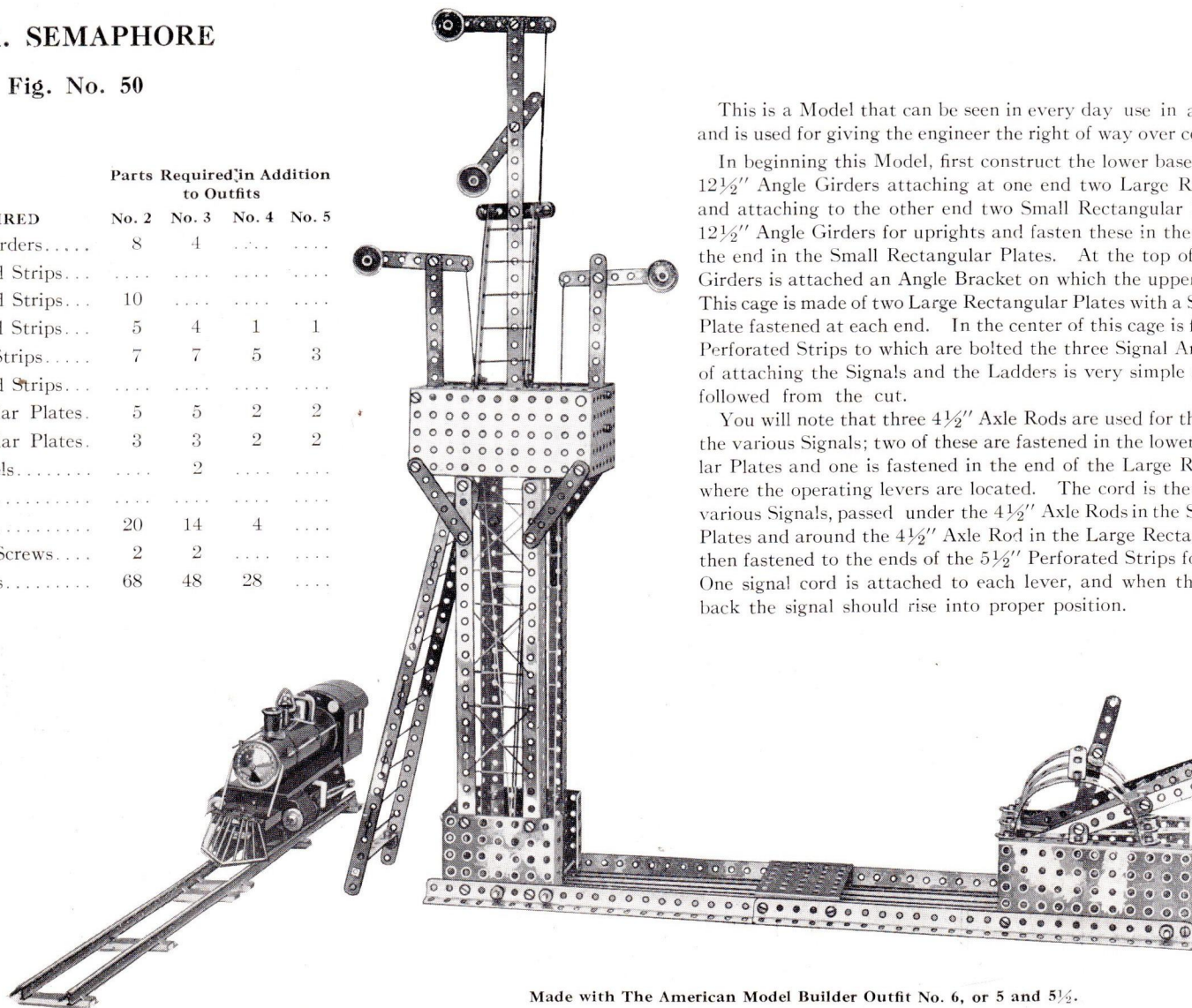
The second Crank that is mounted through the ninth hole from the bottom in the Angle Girders operates the elevator cage. At the end of this Crank is attached a 1½" Pulley Wheel that is belted to the 1" Pulley Wheel mounted on a 5" Axle Rod which operates and controls the up and down movement of the elevator cage.

When completed, this is an extremely interesting model and will be a source of a great deal of satisfaction to the builder, as it clearly demonstrates some of the engineering problems that confront our engineers who operate in hilly countries.

R. R. SEMAPHORE

Fig. No. 50

PARTS REQUIRED	Parts Required in Addition to Outfits			
	No. 2	No. 3	No. 4	No. 5
8 12½" Angle Girders.....	8	4	.....	.....
3 12½" Perforated Strips...	.....	.....	.....	.....
14 5½" Perforated Strips...	10	.....	.....	.....
7 3½" Perforated Strips...	5	4	1	1
7 3" Perforated Strips.....	7	7	5	3
1 2½" Perforated Strips...	.....	.....	.....	.....
5 Small Rectangular Plates.	5	5	2	2
4 Large Rectangular Plates.	3	3	2	2
4 1" Pulley Wheels.....	.....	2	.....	.....
3 4½" Axle Rods.....	.....	.....	.....	.....
30 Angle Brackets.....	20	14	4	.....
6 Collars and Set Screws...	2	2	.....	.....
98 Nuts and Screws.....	68	48	28	.....



This is a Model that can be seen in every day use in any railroad yard and is used for giving the engineer the right of way over certain tracks.

In beginning this Model, first construct the lower base which is made of 12½" Angle Girders attaching at one end two Large Rectangular Plates and attaching to the other end two Small Rectangular Plates. Use four 12½" Angle Girders for uprights and fasten these in the second hole from the end in the Small Rectangular Plates. At the top of these four Angle Girders is attached an Angle Bracket on which the upper cage is fastened. This cage is made of two Large Rectangular Plates with a Small Rectangular Plate fastened at each end. In the center of this cage is fastened two 5½" Perforated Strips to which are bolted the three Signal Arms. The matter of attaching the Signals and the Ladders is very simple and can be easily followed from the cut.

You will note that three 4½" Axle Rods are used for the cords operating the various Signals; two of these are fastened in the lower Small Rectangular Plates and one is fastened in the end of the Large Rectangular Plates where the operating levers are located. The cord is then attached to the various Signals, passed under the 4½" Axle Rods in the Small Rectangular Plates and around the 4½" Axle Rod in the Large Rectangular Plates and then fastened to the ends of the 5½" Perforated Strips forming the levers. One signal cord is attached to each lever, and when the lever is thrown back the signal should rise into proper position.

COAL ELEVATOR

Fig. No. 51

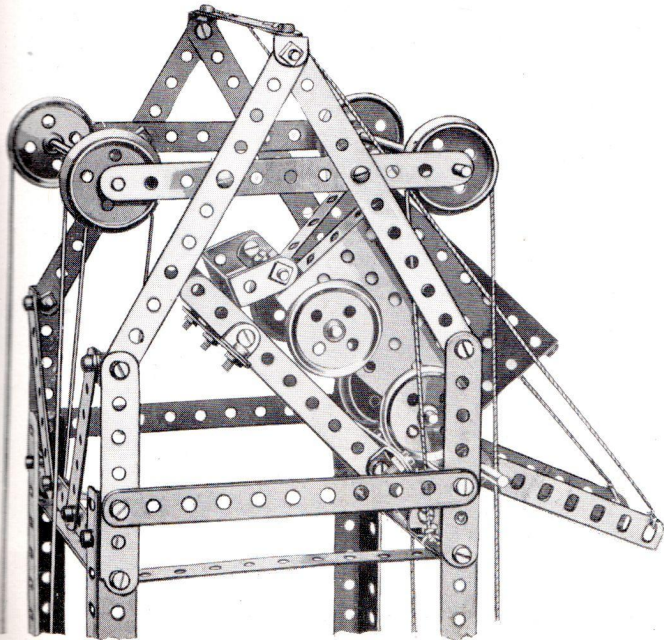
The Coal Elevator is used extensively by manufacturing plants where the coal is received in carload lots on ground level and the coal itself elevated to a hopper which automatically feeds the boilers.

The construction of this model will be found very simple, although very interesting when completed. The outside framework is made of four 12½" Angle Girders to which are attached four 3½" Perforated Strips bolted in the third hole. These Angle Girders are then tied together with six 5½" Perforated Strips and bolted fast on two sides at the bottom to two 12½" Angle Girders which form the base.

The upper framework carrying the Flanged and Grooved Wheels is made of seven 5½" Perforated Strips which are attached to the ends of the 3½" Perforated Strips forming an extension to the Angle Girders.

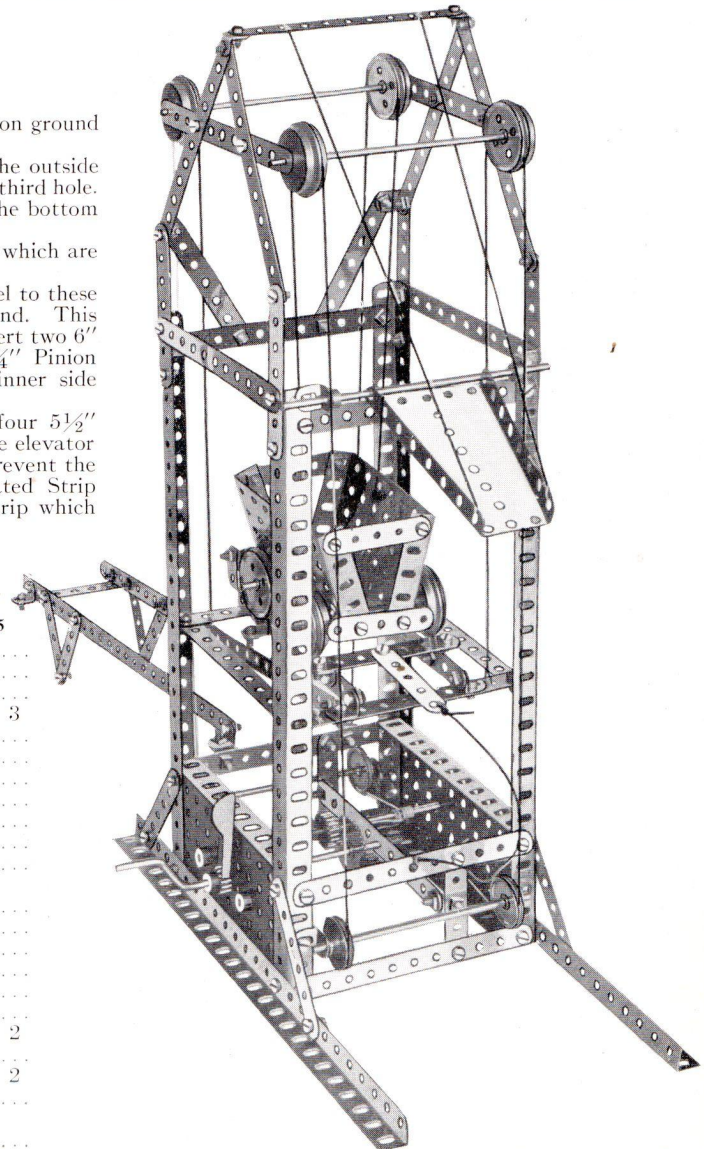
The Gear Housing is made of two Large Rectangular Plates. Then fasten a 5½" Perforated Strip parallel to these Rectangular Plates to two 2½" Perforated Strips which are bolted fast to the 5½" Perforated Strips at each end. This 5½" Perforated Strip forms a bearing for the Axle Rods, and the Crank which carries the gearing. Then insert two 6" Axle Rods in the fourth hole from the end of these Large Rectangular Plates and on the inner side attach two ¾" Pinion Wheels. Then insert a 6½" Crank in the seventh hole from the end of the Rectangular Plate and on the inner side attach a 1½" Gear Wheel which will mesh with the two ¾" Pinion Wheels.

The Elevator Base carrying the dump car is very simple in construction, the outside frame being made of four 5½" Perforated Strips. The track on which the car runs is fastened at one end to two Angle Brackets so that when the elevator is raised to the top of the chute, it will automatically dump as is shown in the sectional view. In order to prevent the dump car from running off the track when dumping two Angle Brackets are attached to the 3½" Perforated Strip forming the lower tie for the two tracks and on the end of the dump car is fastened a Large Bent Strip which hooks under these Angle Brackets.

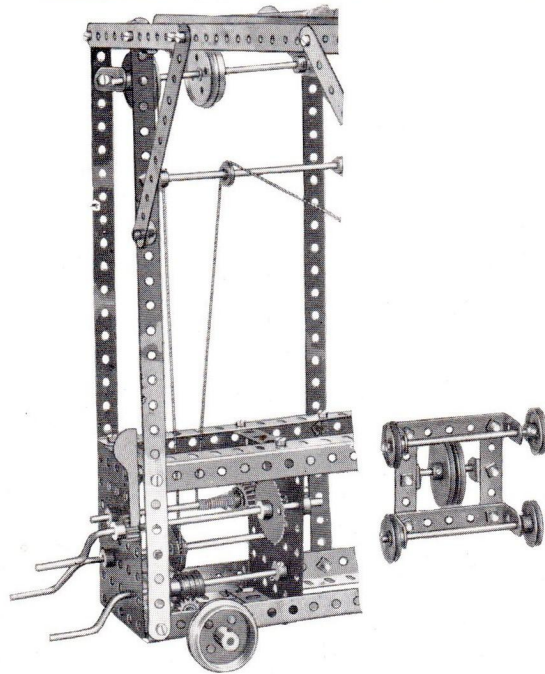


Parts Required in Addition to Outfits

PARTS REQUIRED	No. 2	No. 3	No. 4	No. 5
6 Angle Girders....	6	2	.....	.....
2 12½" Per. Strips....	.....	.....	.....	.....
21 5½" Per. Strips....	17	1	.....	.....
9 3½" Per. Strips....	7	6	3	3
4 3" Per. Strips....	4	4	2	.....
11 2½" Per. Strips....	2	.....	.....	.....
2 Large Rect. Plates..	1	1	.....	.....
2 Small Rect. Plates..	2	2	.....	.....
1 Sector Plate.....	.....	.....	.....	.....
1 Large Bent Strip....	1	1	.....	.....
28 Angle Brackets....	18	12	2	.....
8 Flanged and Grooved Wheels.....	8	4	4	.....
4 1" Pulley Wheels....	.....	2	.....	.....
1 1½" Gear Wheel....	1	1	.....	.....
1 ½" Pinion Wheel....	1	.....	.....	.....
2 ¾" Pinion Wheels....	2	2	.....	.....
1 Pawl.....	1	.....	.....	.....
4 6" Axle Rods.....	4	4	4	2
3 5" Axle Rods.....	3	.....	.....	.....
2 3½" Axle Rods....	2	2	2	2
1 6½" Crank.....	1	1	1	.....
7 Collars and Set Screws.....	3	3	1	.....
114 Nuts and Screws..	84	64	44	4



Made with The American Model Builder Outfit No. 6, or 5 and 5½.



TRAVELING HOIST

Fig. No. 52

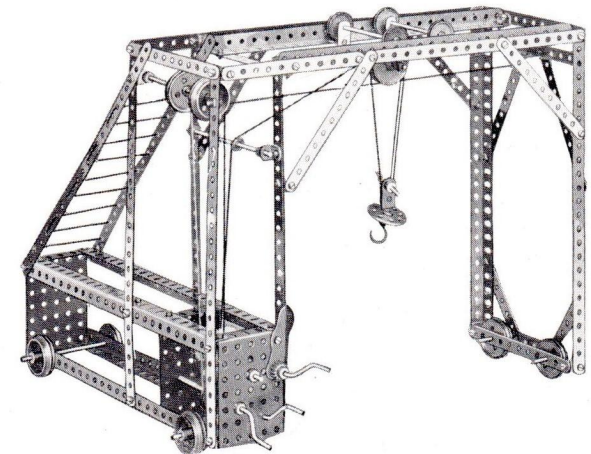
PARTS REQUIRED	Parts Required in Addition to Outfits				PARTS REQUIRED	Parts Required in Addition to Outfits			
	No. 2	No. 3	No. 4	No. 5		No. 2	No. 3	No. 4	No. 5
8 12½" Angle Girders.....	8	4	.....	.....	2 ½" Pinion Wheels.....	2	1	.....	.....
8 12½" Perforated Strips..	4	.....	.....	.....	1 Worm Wheel.....	1	1	.....	.....
14 5½" Perforated Strips..	10	.....	.....	.....	1 Hook.....	.....	.....	.....	.....
2 3½" Perforated Strips..	.....	.....	.....	.....	1 Pawl.....	1	.....	.....	.....
2 2½" Perforated Strips..	.....	.....	.....	.....	3 Small Rectangular Plates.	3	3	.....	.....
2 Large Bent Strips.....	2	2	1	1	2 5" Axle Rods.....	2	.....	.....	.....
2 Single Bent Strips.....	1	1	1	1	3 4½" Axle Rods.....	.....	.....	.....	.....
8 Flanged & Grooved Wheels	8	4	4	.....	2 3½" Axle Rods.....	2	.....	.....	2
6 1" Pulley Wheels.....	.....	4	2	1	4 2" Axle Rods.....	2	2	1	.....
2 1½" Pulley Wheels.....	2	2	1	1	2 6½" Cranks.....	2	2	2	1
2 ½" Pulley Wheels.....	2	2	1	.....	1 5½" Crank.....	.....	.....	.....	.....
1 1½" Gear Wheel.....	1	1	.....	.....	14 Collars and Set Screws...	10	10	8	6
1 Bush Wheel.....	.....	.....	.....	.....	16 Angle Brackets.....	6	.....	.....	.....
1 ¾" Pinion Wheel.....	1	1	.....	.....	82 Nuts and Screws.....	52	32	12	.....

This is a very effective Model, and when properly constructed, it shows some pretty machine movements. In beginning this model, make the lower frame work carrying the Gear Housing first. This is made of four Angle Girders at each end of which is fastened a Small Rectangular Plate, also one being attached in the seventh hole from the end.

The Gearing is very simple as the lower Crank operates the Worm Wheel which is in mesh with the ½" Pinion Wheel attached to the Axle Rod carrying the Flanged and Grooved Wheels. The Crank on which the Pawl operates has attached to it a 1½" Gear Wheel which meshes with the ¾" Pinion Wheel mounted on the 5" Axle Rod. This Axle Rod winds the cord that carries the load. The third Crank has attached to it a 1" Pulley Wheel which is belted to the Flanged and Grooved Wheel on the upper Axle Rod and operates the Carriage back and forth.

We show above a sectional view of the Gear Housing so that it may be easily assembled. Next construct the main frame work which is made of two Angle Girders on one end and four 12½" Perforated Strips at the other. These are braced by the 5½" Perforated Strips as shown in the cut. The Carriage which carries the load back and forth is made of two Large Bent Strips fastened together at each end with a 2½" Perforated Strip. These strips are mounted on two 3½" Axle Rods to which are attached four 1" Pulley Wheels. These travel back and forth on two 12½" Angle Girders which are attached on the inside of the frame.

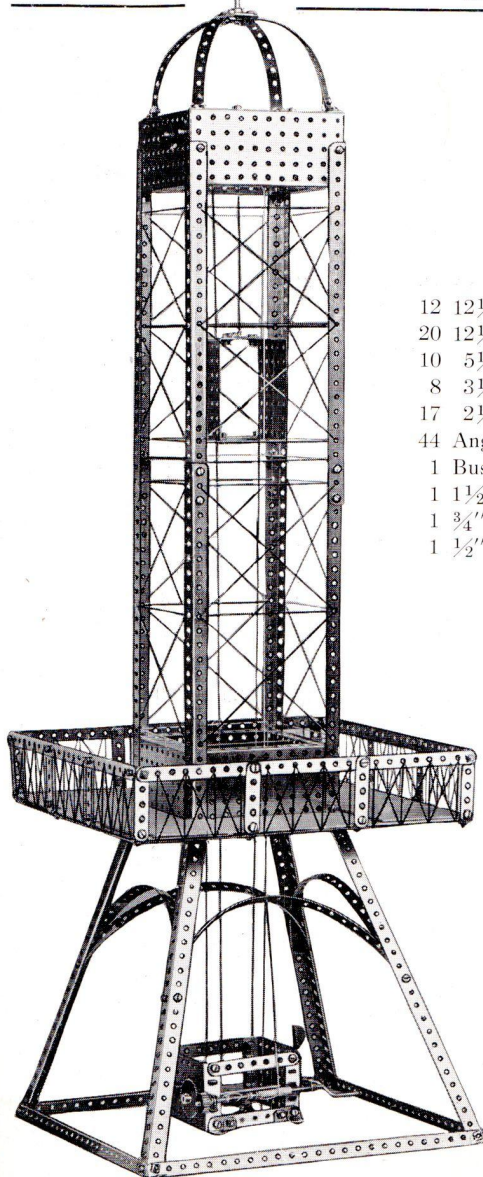
This apparatus really has three distinct movements. First, in operating the Crank, it moves the entire Hoist back and forth. Second, by operating the Crank to which the Pawl is attached, it raises the load, and by operating the third Crank to which the Pulley Wheel is attached, it moves the Carriage carrying the load back and forth.



Made with The American Model Builder Outfit No. 6, or 5 and 5½.

EIFFEL TOWER

Fig. No. 53



Made with The American Model Builder Outfit
No. 7, or 6 or 6½.

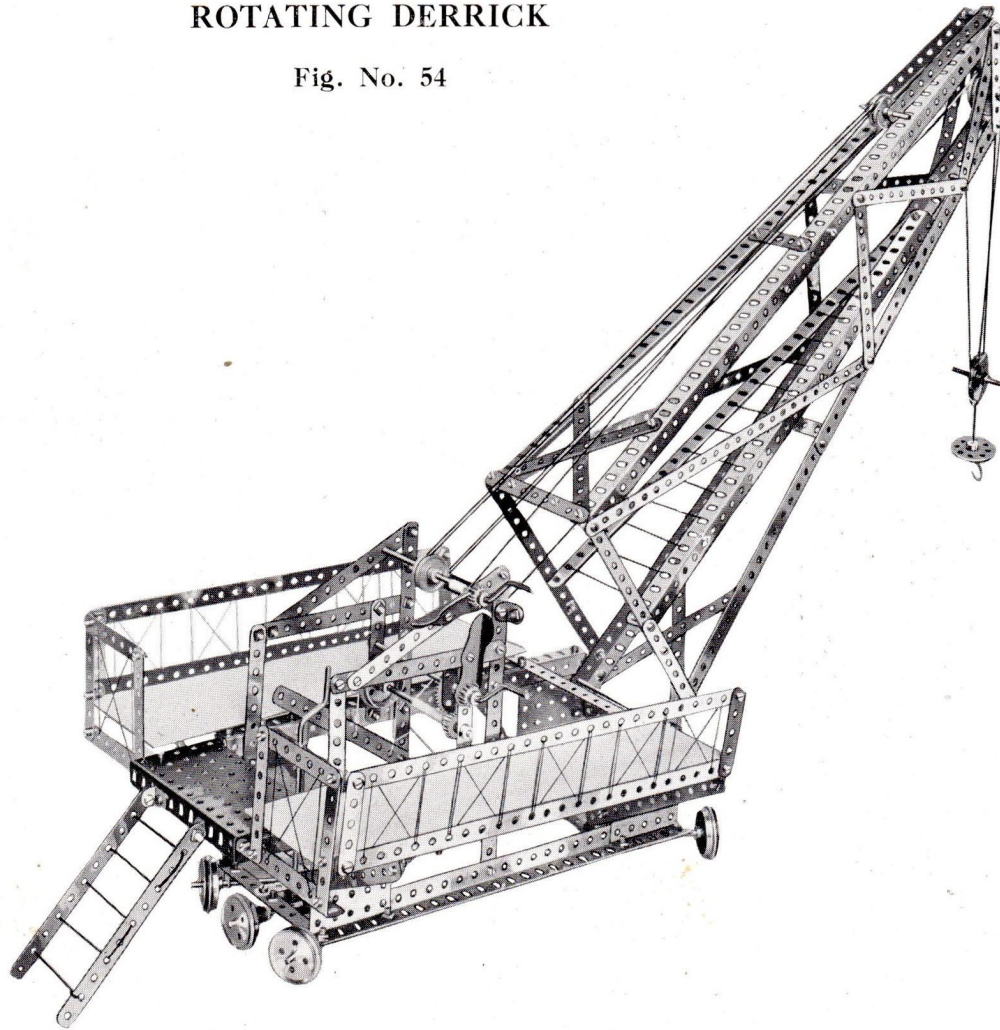
PARTS REQUIRED	Parts Required in Addition to Outfits					PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6		No. 2	No. 3	No. 4	No. 5	No. 6
12 12½" Angle Girders.....	12	8	4	4	3	1 Pawl.....	.....	1	.....	.....	.....
20 12½" Perforated Strips...	16	10	10	6	6	1 6½" Crank.....	1	1	.....	.....	.....
10 5½" Perforated Strips...	6	.....	.....	.....	.....	2 5" Axle Rods.....	2	.....	.....	.....	.....
8 3½" Perforated Strips...	6	5	2	2	.....	2 6" Axle Rods.....	2	2	2	.....	.....
17 2½" Perforated Strips...	8	3	3	.....	.....	2 1" Pulley Wheels.....	.....	.....	.....	.....	.....
44 Angle Brackets.....	34	28	18	.....	.....	6 Collars and Set Screws...	2	2	.....	.....	.....
1 Bush Wheel.....	.....	.....	.....	.....	.....	8 Large Rectangular Plates...	7	7	6	6	4
1 1½" Gear Wheel.....	1	1	.....	.....	.....	2 Small Rectangular Plates...	2	2	.....	.....	.....
1 ¾" Pinion Wheel.....	1	1	.....	.....	.....	146 Nuts and Screws.....	116	96	76	36	.....
1 ½" Pinion Wheel.....	1	.....	.....	.....	.....		

This model is a miniature of the famous Eiffel Tower located at Paris. The construction of this is very simple, and the model itself pleasing in effect.

In beginning the model, first build the lower frame work which is made of four 12½" Angle Girders, and these are tied together at the bottom with four 12½" Perforated Strips. At the top of each one of these Angle Girders is mounted an Angle Bracket, and to these are bolted four large Rectangular Plates, forming the base for the first platform. The remainder of the upright construction is made of two 12½" Angle Girders over-lapped in the third hole, and these are bolted at the top to four large Rectangular Plates and reinforced in the center by four 5½" Perforated Strips. The lower platform is supported by four 12½" Perforated Strips which are bolted to the bottom of the lower Rectangular Plates. The construction of the railing around the plates is very simple and needs no particular instruction. The elevator which moves up and down is made of two Small Rectangular Plates fastened at the top and bottom with 2½" Perforated Strips. The cage at the bottom from which the elevator starts is made of two Small Rectangular Plates tied together at the end with four 3½" Perforated Strips. On either side is mounted a 3½" Perforated Strip extending over the edge two holes which forms the axis for the shaft which raises and lowers the elevator. The gearing is very simple and is accomplished by means of a 6½" Crank at the end of which is attached a 1½" Gear Wheel which meshes with the ¾" Pinion Wheel mounted on the 5" Axle Rod. The top mechanism consists of two 6" Axle Rods on each of which is mounted a 1" Pulley Wheel. This model can be operated by motor, in which case the Crank should be replaced by a 5" Axle Rod on the end of which should be mounted a 1½" Pulley Wheel.

ROTATING DERRICK

Fig. No. 54

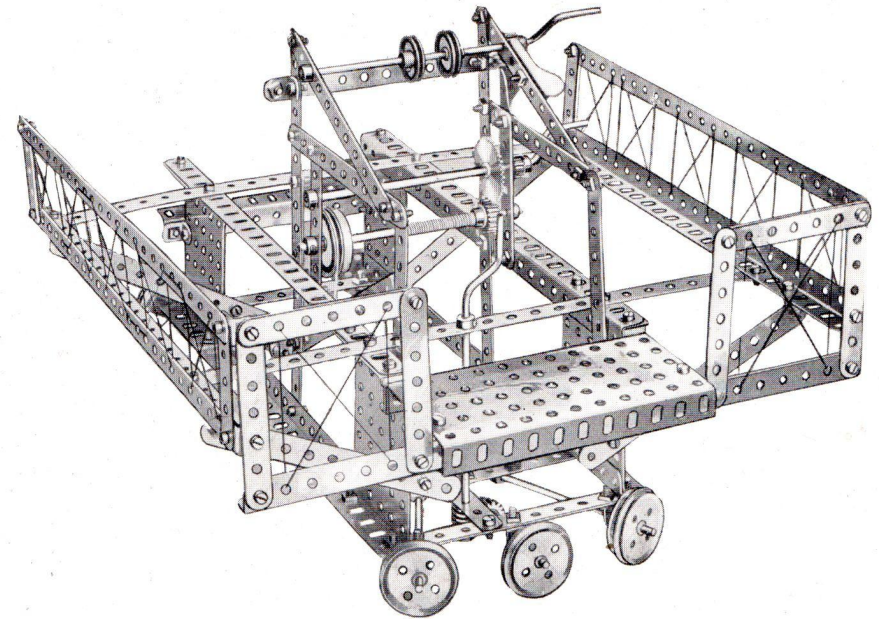


Made with The American Model Builder Outfit No. 7, or 6 and 6½

PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
6 Flanged & Grooved Wheels	6	2	2	.....	.....
2 1½" Pulley Wheels	2	2	1	1	.....
5 1" Pulley Wheels	.....	3	1	.....	.....
1 Bush Wheel	.....	.....	.....	.....	.....
1 ¾" Pinion Wheel	1	1	.....	.....	.....
3 ½" Pinion Wheels	3	2	1	1	1
1 Worm Wheel	1	1	.....	.....	.....
1 1½" Gear Wheel	1	1	1	.....	.....
2 Pawls	2	1	.....	.....	.....
6 12½" Perforated Strips	2	.....	.....	.....	.....
36 5½" Perforated Strips	32	20	18	16	12
14 3½" Perforated Strips	12	11	8	8	.....
1 3" Perforated Strip	1	1	.....	.....	.....
7 2½" Perforated Strips	.....	.....	.....	.....	.....
36 Angle Brackets	26	20	10	.....	.....
17 12½" Angle Girders	17	13	9	9	8
3 5½" Angle Girders	3	3	3	3	3
1 6" Axle Rod	1	1	1	.....	.....
1 5" Axle Rod	1	.....	.....	.....	.....
5 4½" Axle Rods	2	2	2	1	1
3 2" Axle Rods	1	1	.....	.....	.....
3 6½" Cranks	3	3	3	2	1
1 Large Rectangular Plate	.....	.....	.....	.....	.....
4 Small Rectangular Plates	4	4	1	1	.....
2 Single Bent Strips	1	1	1	1	.....
12 Collars and Set Screws	8	8	6	4	.....
136 Nuts and Screws	106	86	66	26	.....

ROTATING DERRICK

This is a model of a large derrick used for raising extremely heavy loads and is used a great deal in railroad and bridge construction. In beginning this model, the boom or movable jib should be made first. The outside frame of this is constructed of eight $12\frac{1}{2}$ " Angle Girders. Those for the upper frame over-lapping six holes and those for the lower frame over-lapping five holes. These are then bolted together at one end and separated at the rear by two $3\frac{1}{2}$ " Perforated Strips over-lapping five holes. The bracing on the sides is then accomplished by using a $12\frac{1}{2}$ " and three $5\frac{1}{2}$ " Perforated Strips on each end with a $3\frac{1}{2}$ " Perforated Strip at the extreme end. The ladder that is used on the inside of this jib is made of two $12\frac{1}{2}$ " Angle Girders to which are bolted two $5\frac{1}{2}$ " Angle Girders over-lapped in the third hole. Next, construct the main lower frame which is made of four $12\frac{1}{2}$ " Angle Girders at each end of which is bolted a Small Rectangular Plate. These two sides are tied together with four $5\frac{1}{2}$ " Perforated Strips bolted at the bottom to these Rectangular Plates and these strips form the supports for the axles carrying the Flanged and Grooved Wheels. You will note that these wheels are set at an angle so that the crane will revolve in a complete circle.



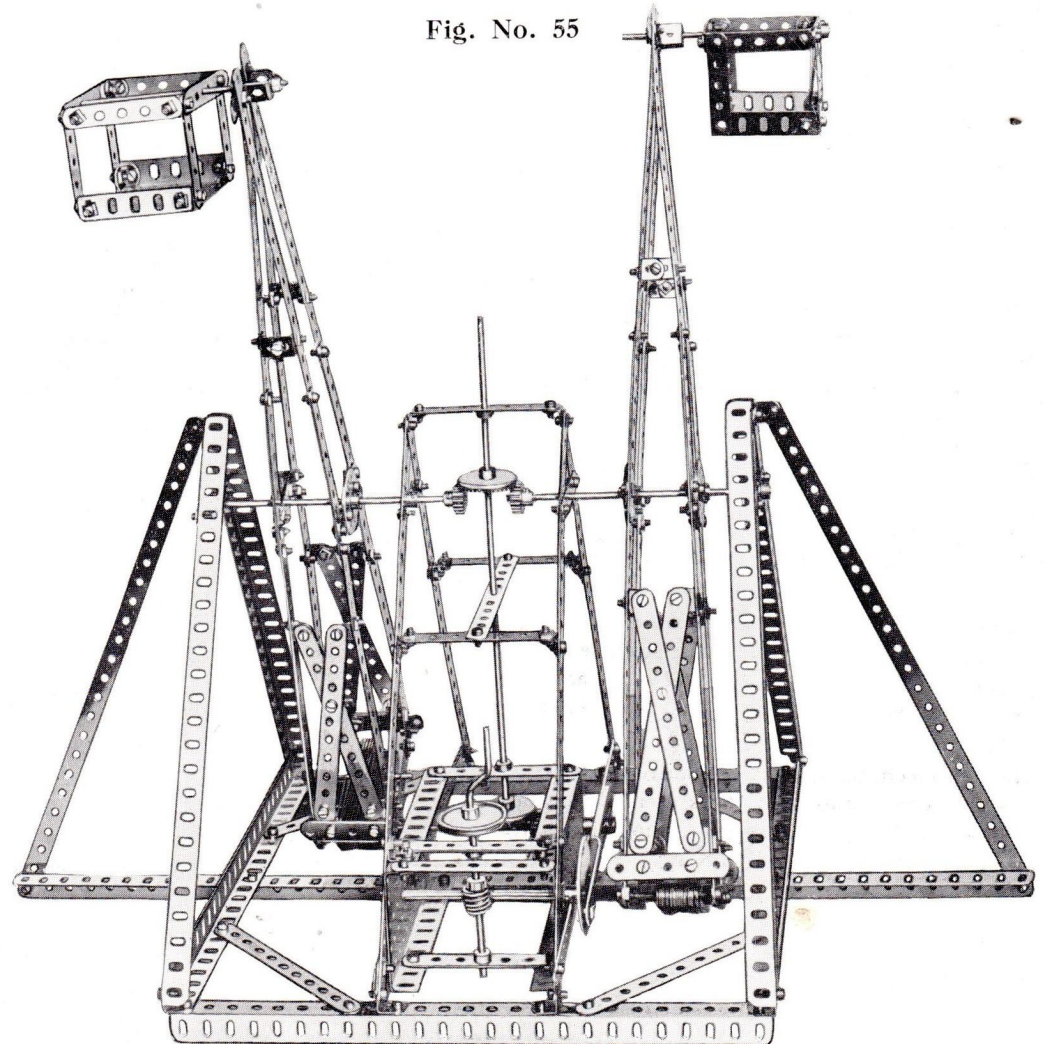
We show a sectional view of the frame work containing the gearing so that there will be no difficulty in the construction of this. After the base of the crane is made, the upper frame work which forms the landings of the crane should then be constructed. These landings are made of two $12\frac{1}{2}$ " Angle Girders for the base and are supported by two $12\frac{1}{2}$ " Perforated Strips bolted across the top of the lower frame. This frame work should be extended back five holes from the front of the lower base so as to allow ample room for an operator to mount from the rear and have a clear passage all around. It is necessary to support the outer edge of this gang-way by four $5\frac{1}{2}$ " Perforated Strips which are set at an angle from the outside edge and fastened to the Small Rectangular Plates.

You will note that the upper Crank or frame work containing the gearing raises and lowers the Boom or Jib. This is accomplished by running the cord over two Pulleys at each end, then attaching it to the Crank. This method greatly multiplies the weight that can be raised from the Crank. This will be found an extremely interesting model and the builder will be fully repaid for any time spent on the study of its details.

WHITE CITY FLIP-FLAP

Fig. No. 55

PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2.	No. 3	No. 4	No. 5	No. 6
10 12½" Angle Girders.....	10	6	2	2	1
24 12½" Perforated Strips..	20	14	14	10	10
13 5½" Perforated Strips..	9	.....	.....	.....	.....
15 3½" Perforated Strips..	13	12	9	9	6
26 2½" Perforated Strips..	17	12	12	8	.....
58 Angle Brackets.....	48	32	32	14	5
2 Double Bent Strips.....	2	1	1	1	1
1 11½" Axle Rod.....	1	1	1	.....	.....
2 6" Axle Rods.....	2	2	2	.....	.....
2 5" Axle Rods.....	2	.....	.....	.....	.....
2 4½" Axle Rods.....	.....	.....	.....	.....	.....
4 2" Axle Rods.....	2	2	1	.....	.....
1 5½" Crank.....	.....	.....	.....	.....	.....
2 1½" Crown Gears.....	2	2	2	1	1
3 ¾" Pinion Wheels.....	3	3	1	1	.....
2 ½" Pinion Wheels.....	2	1	.....	.....	.....
1 Worm Wheel.....	1	1	.....	.....	.....
1 1½" Pulley Wheel.....	1	1	.....	.....	.....
4 Bush Wheels.....	3	3	3	3	3
18 Collars and Set Screws..	14	14	12	10	4
1 Eccentric Drive Wheel..	1	1	.....	.....	.....
1 Oscillating Rack.....	.....	.....	.....	.....	.....
205 Nuts and Screws.....	175	155	135	95	45



Made with The American Model Builder Outfit No. 7, or 6 and 6½.

WHITE CITY FLIP-FLAP

This is one of the most interesting models that we show, and it is built along the lines of the Flip-Flap that was built for the Franco-British Exposition at London. It is a similar device to the Ferris Wheel that is used for raising passengers high into the air to give them a bird's-eye view of the exhibition grounds.

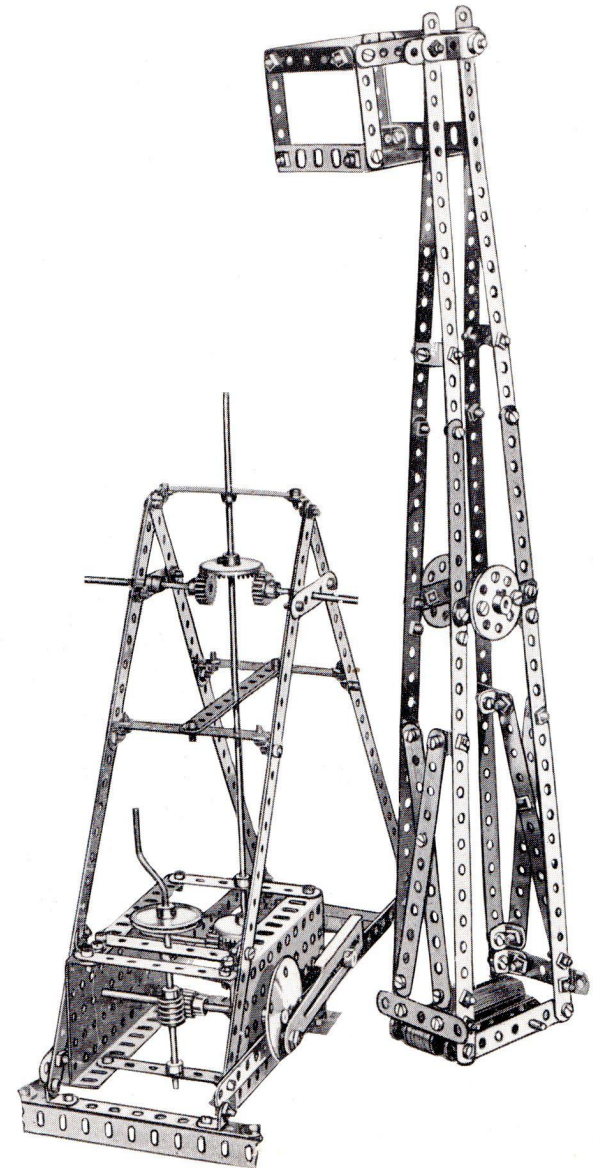
In beginning this model, first make the base frame which is made of four $12\frac{1}{2}$ " Angle Girders fastened at each corner, then fasten two $12\frac{1}{2}$ " Angle Girders over-lapped in the third hole through the center of this base. Next construct the end frames which are made of two $12\frac{1}{2}$ " Angle Girders supported by a $12\frac{1}{2}$ " Perforated Strip set diagonally. The center frame work is very simple, and can be easily constructed from the sectional view that is shown.

We also show a sectional view of one of the arms carrying the cage. These are made of eight $12\frac{1}{2}$ " Perforated Strips, and are over-lapped in the ninth hole. These are fastened together at one end with two $3\frac{1}{2}$ " Perforated Strips, and one $2\frac{1}{2}$ " Perforated Strip is fastened at the top, which, with the Double Bent Strip, forms the support for the passenger cage. This frame work is stiffened by four $5\frac{1}{2}$ " Perforated Strips fastened at the lower end of these arms. The $2\frac{1}{2}$ " Perforated Strips carrying the Bush Wheels should be bolted in the eighteenth hole from the bottom, and when the cage is attached, sufficient small strips should be mounted on 2" Axle Rods and fastened at the bottom of the Arm between the two $3\frac{1}{2}$ " Perforated Strips to off-set the weight of the cage. Ordinarily, it will require twenty-three 3" Perforated Strips to balance the weight of the cage, and care must be taken to see that this arm is perfectly balanced so as to insure the smooth operation of the model.

The Gear Housing is shown in the sectional view, and is made of two Large Rectangular Plates tied together at the top with three $3\frac{1}{2}$ " Perforated Strips, and fastened to the sides of the center frame work by means of two Angle Brackets. The Gearing in this model should be carefully studied as it involves a good many practical mechanical movements.

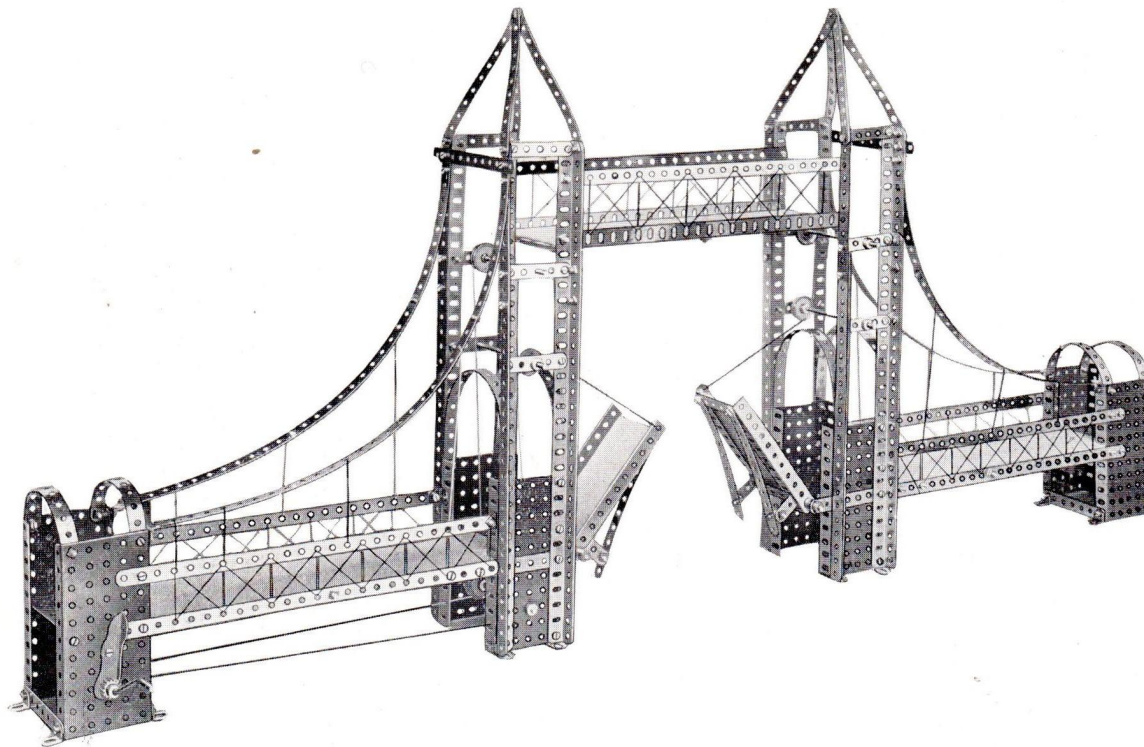
The model is operated by the upright Crank fastened in the center of the Gear Housing to which is attached a Worm Wheel which meshes with the $\frac{1}{2}$ " Pinion Wheel fastened on a $4\frac{1}{2}$ " Axle Rod. On the end of this Crank is attached the Eccentric Drive Wheel, and to this is fastened the Oscillating Rack which is geared to the outside of the rear Axle Rod and meshes with the $\frac{1}{2}$ " Pinion Wheel. This Oscillating Rack must be fastened through the second hole that is closest to the center of the Eccentric Drive Wheel in order to give the proper swing to the moving arm. A small washer should also be fastened between the Rack and the Eccentric Drive Wheel so as to relieve the friction from these parts. When attaching the $\frac{1}{2}$ " Pinion Wheel to the outside of the rear Axle Rod, be sure to have the Collar and Set Screw on the Pinion Wheel rest on the outside of the Large Rectangular Plate. On the inside of this rear Axle Rod is attached a $\frac{3}{4}$ " Pinion Wheel which meshes with the $1\frac{1}{2}$ " Crown Gear fastened to the lower end of the $11\frac{1}{2}$ " up-right Axle Rod. On the upper end of this $11\frac{1}{2}$ " Axle Rod is attached another $1\frac{1}{2}$ " Crown Gear, which meshes with two $\frac{3}{4}$ " Pinion Wheels attached to the ends of the 6" Axle Rods which form the axis for the moving arms.

When this model is completed, you will notice that the Crank can be turned in one continuous direction and that the arms will automatically reverse when they reach a certain position. This movement is very unique and is accomplished by means of the Eccentric Drive Wheel and the Oscillating Rack. As stated above, this is one of the most interesting models that we show and any boy can feel proud of his accomplishment when this model is completed.



LONDON TOWER BRIDGE

Fig. No. 56



Made with The American Model Builder Outfit No. 7, or 6 and 6½.

PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
6 1" Pulley Wheels.....	.....	4	2	1	.....
1 ½" Pinion Wheel.....	1	.....	.....	.....	.....
18 Collars and Set					
Screws.....	14	14	12	10	4
1 Pawl.....	1	.....	.....	.....	.....
4 5" Axle Rods....	4	1	.....	.....	.....
1 4½" Axle Rods....	.....	.....	.....	.....	.....
1 6½" Crank.....	1	1	1	.....	.....
10 12½" Angle					
Girders.....	10	6	2	2	1
10 5½" Angle Girders	10	10	10	10	10
20 12½" Per. Strips..	16	10	10	6	6
26 5½" Per. Strips..	22	10	8	6	2
9 3½" Per. Strips..	7	6	3	3	.....
14 2½" Per. Strips..	5	.....	.....	.....	.....
2 Large Bent Strips..	2	2	1	1	.....
26 Angle Brackets...	16	10	.....	.....	.....
8 Large Rect. Plates	7	7	6	6	4
4 Small Rect. Plates	4	4	1	1	.....
180 Nuts and Screws..	150	130	110	70	20

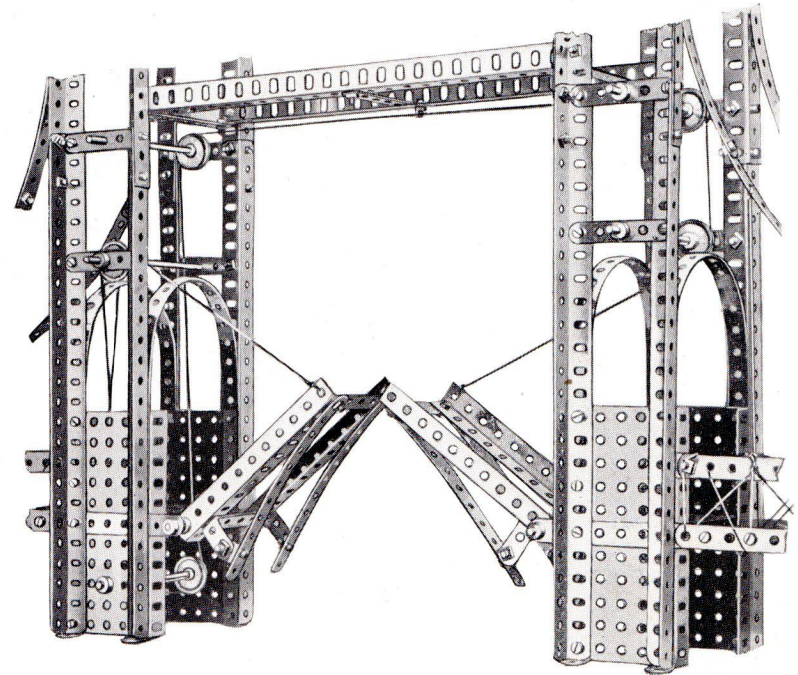
LONDON TOWER BRIDGE

You will find this model an exact duplicate of the famous Tower Bridge crossing the Thames River at London. When completed, this makes a very beautiful model.

Begin by building the towers first which are constructed of four $12\frac{1}{2}$ " Angle Girders and to these are attached four $5\frac{1}{2}$ " Angle Girders over-lapping three holes. These are tied together at the sides with three $2\frac{1}{2}$ " Perforated Strips and are bolted fast at the bottom to two Large Rectangular Plates. The two arches are formed of two $12\frac{1}{2}$ " Perforated Strips slightly bent and fastened between the Angle Girders and the Large Rectangular Plates. The crown of these towers is made by bolting four $5\frac{1}{2}$ " Perforated Strips together at the top and fastening them at the corner of the tower.

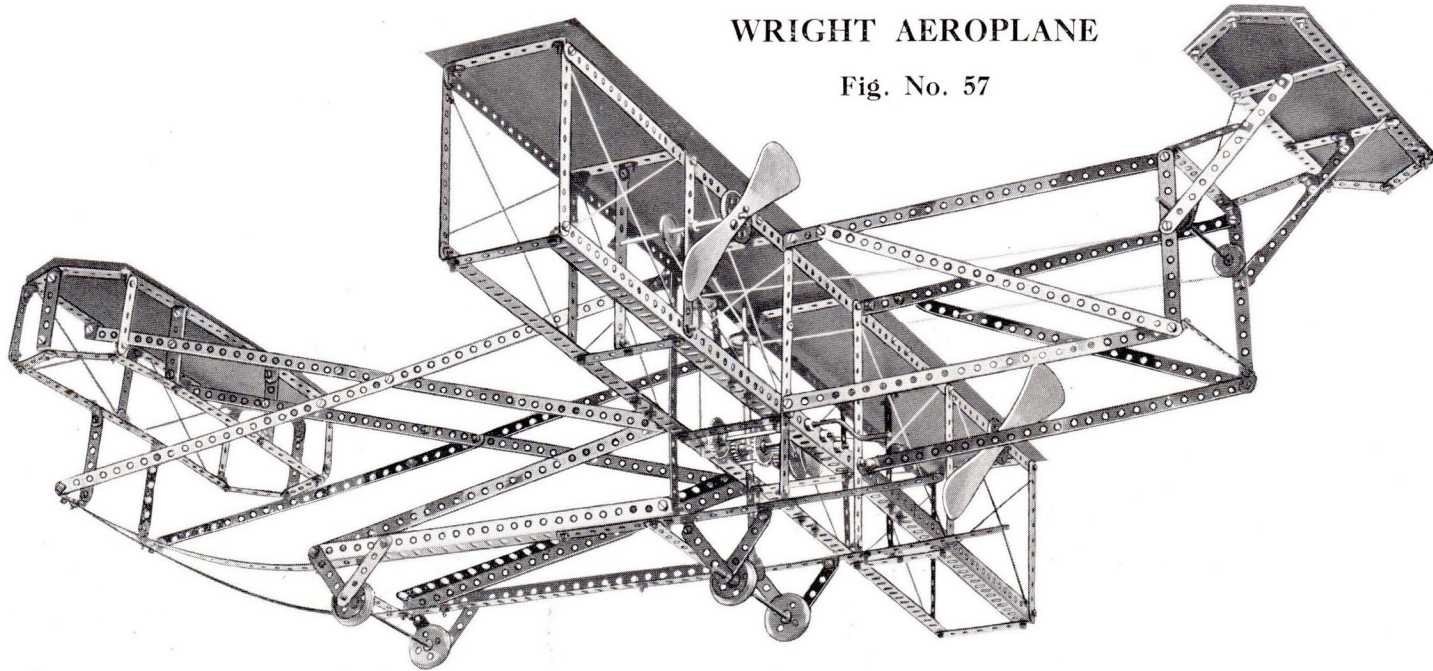
The small side spans are very simple in construction, being made of four $12\frac{1}{2}$ " Perforated Strips bolted to the main tower and then fastened to two Large Rectangular Plates which form the end towers. The curved arches over these end towers are made of two $5\frac{1}{2}$ " Perforated Strips slightly bent. The upper bridge at the top of the towers is made of two $12\frac{1}{2}$ " Angle Girders bolted together with three $3\frac{1}{2}$ " Perforated Strips, while the upper sides are made of two $12\frac{1}{2}$ " Perforated Strips. You will note that all of the Large Rectangular Plates used at the base of the towers are supported on the inside by Small Rectangular Plates. These can be used for the purpose of supporting the track in case it is desirable to run a small engine across the bridge.

The mechanism for raising and lowering the center lower bridge is very simple. This is accomplished by a cord that is attached to the end of each half of the lower bridge and drawn over the Pulley Wheels and connected at the rear to the Crank. In order to have both halves of the bridge operate at the same time, it is necessary to have the cord attached to the right hand half run over two Pulley Wheels in the tower and then cross over to the left hand tower down through the Small Rectangular Plate and back to the Crank. With the aid of the sectional views which we show in this model, no difficulty will be found whatever in the construction of same.



WRIGHT AEROPLANE

Fig. No. 57



Made with The American Model Builder Outfit No. 7, or 6 and 6½.

PARTS REQUIRED

	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
4 Flanged and Grooved Wheels.....	4	.....	.....	.....	.....
2 1½" Pulley Wheels.....	2	2	1	1	.....
4 1" Pulley Wheels.....	.....	2	.....	.....	.....
2 Bush Wheels.....	1	1	1	1	1
2 1½" Gear Wheels.....	2	2	1	1	.....
2 ¾" Pinion Wheels.....	2	2	.....	.....	.....
10 Collars and Set Screws.....	6	6	4	2	.....
10 12½" Angle Girders.....	10	6	2	2	1
28 12½" Perforated Strips.....	24	18	18	14	14
29 5½" Perforated Strips.....	25	13	11	9	5

PARTS REQUIRED

	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
14 3½" Perforated Strips.....	12	11	8	8	.....
4 3" Perforated Strips.....	4	4	2	.....	.....
26 2½" Perforated Strips.....	17	12	12	8	.....
65 Angle Brackets.....	55	49	39	21	12
1 8" Axle Rod.....	1	1	1	1	1
4 6" Axle Rods.....	4	4	4	2	.....
2 4½" Axle Rods.....	.....	.....	.....	.....	.....
1 6½" Crank.....	1	1	1	.....	.....
4 Propeller Blades.....	4	4	4	4	2
213 Nuts and Screws.....	183	163	143	103	53

WRIGHT AEROPLANE

Through the courtesy of the Wright Brothers, we are enabled to reproduce an exact model of their original Aeroplane. This model stands 36" wide and 43" long when completed, and will give the builder an excellent idea of Aeroplane construction.

Begin by constructing the center frame that forms the main sail. This is made of six $12\frac{1}{2}$ " Angle Girders over-lapped in the third hole and tied together by six $3\frac{1}{2}$ " Perforated Strips at the bottom. To those Angle Girders are then attached six $5\frac{1}{2}$ " Perforated Strips on either side and to these are bolted six $12\frac{1}{2}$ " Perforated Strips over-lapped in the third hole. These are tied together at the top with six $3\frac{1}{2}$ " Perforated Strips on which the top sail is fastened.

After this is completed, construct the frame work which carries the front sail. This is made of eight $12\frac{1}{2}$ " Perforated Strips crossed in the center. The front sail is made of four $12\frac{1}{2}$ " Perforated Strips supported by nine up-rights made of $2\frac{1}{2}$ " Perforated Strips. This front sail is then fastened to the frame work made of the $12\frac{1}{2}$ " Perforated Strips and attached to the Glider frame by means of two $12\frac{1}{2}$ " Perforated Strips.

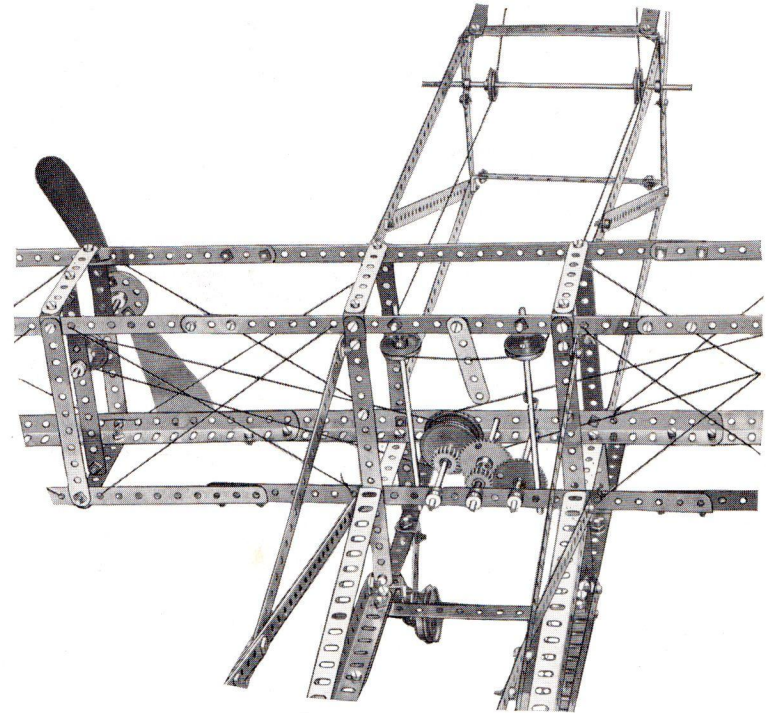
The Glider frame is made of four $12\frac{1}{2}$ " Angle Girders, and at the rear of the two lower Girders are attached two $12\frac{1}{2}$ " Perforated Strips bolted in the seventh hole. To this frame are then attached the wheels which support the plane while it is rising from the ground. The rear frame work supporting the tail sail is made of six $12\frac{1}{2}$ " Perforated Strips and supported by four $5\frac{1}{2}$ " Perforated Strips in the rear. To this tail is then attached the tail sail which is made of two $12\frac{1}{2}$ " Perforated Strips and reinforced with six $2\frac{1}{2}$ " Perforated Strips.

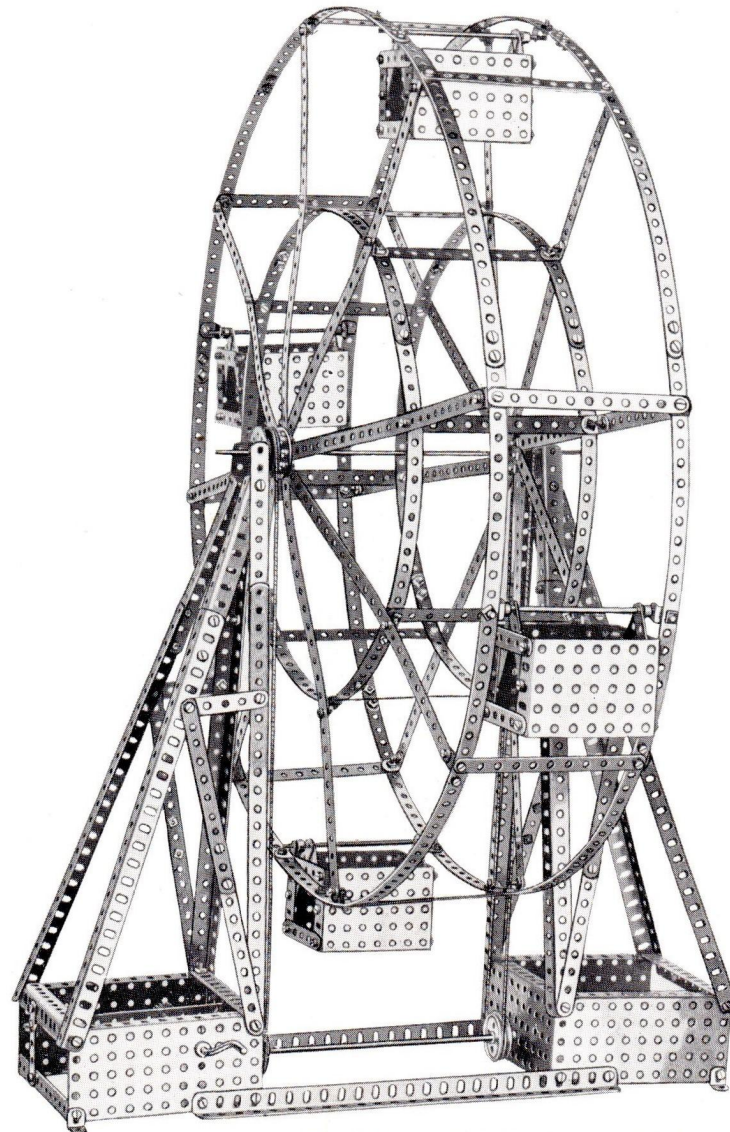
In mounting the Axle Rods that carry the Propeller Blades, it will be necessary to fasten a $5\frac{1}{2}$ " Perforated Strip in the center of the plane, so as to give the Axle Rod two bearings. Between these two supports should be fastened one 1" Pulley Wheel on each Axle Rod and these are belted directly to the two $1\frac{1}{2}$ " Pulley Wheels mounted on the Axle Rod running through the lower main frame.

We show a sectional view of the construction of the main frame as well as the Gearing. The Propeller Blades are operated by revolving the Crank on which is attached a $1\frac{1}{2}$ " Gear Wheel. This meshes with the $\frac{3}{4}$ " Pinion Wheel mounted on a 5" Axle Rod. On this same Axle Rod is mounted a $1\frac{1}{2}$ " Gear Wheel which meshes with the $\frac{3}{4}$ " Pinion Wheel attached to the Axle Rod carrying the two $1\frac{1}{2}$ " Pulley Wheels. By this method of Gearing, the Propeller Blades revolve six times while the Crank is turned once.

The tail sail is tilted by means of the cords running over the Pulley Wheels and is operated by the small $2\frac{1}{2}$ " Perforated Strips attached to the top of the main frame. This Strip is attached directly above where the operator's seat would be located. Card-board can be used to represent the sails on the main frame as well as on the front and tail frames and these can be fastened down with some of the screws in the frame.

While this model may be somewhat complicated at first sight, it is very simple in construction, and will give any boy a great deal of delight when it is completed.





Made with The American Model Builder Outfit No. 7, or 6 and 6½.

FERRIS WHEEL

Fig. No. 58

PARTS REQUIRED

	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
38 12½" Perforated Strips.....	34	28	28	24	24
25 5½" Perforated Strips.....	21	9	7	5	1
37 2½" Perforated Strips.....	28	23	23	19	....
10 12½" Angle Girders.....	10	6	2	2	3
12 5½" Angle Girders.....	12	12	12	12	12
46 Angle Brackets.....	36	30	20	2	....
2 11½" Axle Rods.....	2	2	2	....	....
1 6" Axle Rod.....	1	1	1	....	....
4 5" Axle Rods.....	4	1	....	....	....
1 6½" Crank.....	1	1	1	....	....
2 Flanged & Grooved Wheels.....	2	....	....	....	....
2 1½" Pulley Wheels.....	2	2	1	1	....
4 Bush Wheels.....	3	3	3	3	3
2 ¾" Pinion Wheels.....	2	2	....	....	....
1 1½" Gear Wheel.....	1	1	....	....	....
1 1½" Crown Gear.....	1	1	1	....	....
6 Large Rectangular Plates.....	5	5	4	4	2
8 Small Rectangular Plates.....	8	8	5	5	3
13 Collars and Set Screws.....	9	9	7	5	....
255 Nuts and Screws.....	225	205	185	145	95

FERRIS WHEEL

This is an exact duplicate of the Ferris Wheel used at the Chicago Exposition and will prove to be one of the most interesting models that can be built with any outfit. The action is perfect and it can easily be operated by hand or with a motor.

In constructing this model, the two supporting towers should be built first. These are made of three large Rectangular Plates bolted together at two ends and are tied at the other end with a $5\frac{1}{2}$ " Angle Girder at the top and bottom. Next construct the uprights which are made up of four $12\frac{1}{2}$ " Angle Girders and four $5\frac{1}{2}$ " Angle Girders. At the top of these is fastened a Bush Wheel through which the axle of the wheel passes. They are then braced on the sides with two $5\frac{1}{2}$ " Perforated Strips and a $2\frac{1}{2}$ " Perforated Strip as shown in the cut. We show a sectional view of this supporting tower as well as the gearing that operates the wheel which is very simple.

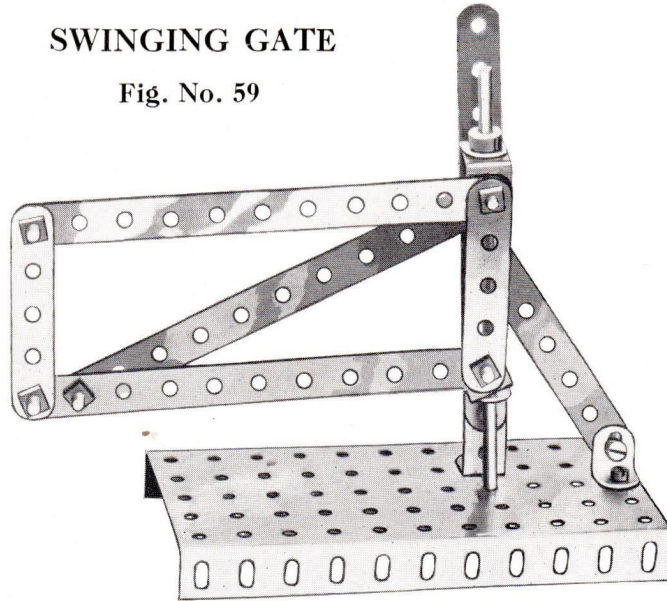
No difficulty will be found in building the wheel itself if the instructions given here are closely followed. First, take a $1\frac{1}{2}$ " Bush Wheel and fasten to this wheel eight $12\frac{1}{2}$ " Perforated Strips. Care should be taken to leave the collar of the Bush Wheel on the outside. Then fasten an Angle Bracket in the fifteenth hole as well as the top hole of each of these Perforated Strips. The circumference of the small wheel is made of three $12\frac{1}{2}$ " Perforated Strips tied together. These are then fastened to the lower Angle Brackets and bolted in every twelfth hole. The outside diameter of the wheel is made of seven $12\frac{1}{2}$ " Perforated Strips all bolted together and fastened to the Angle Brackets at the top of the side arms. These should be bolted in every twenty-first hole. A duplicate of this one side should then be made and the two sides then tied together with sixteen $5\frac{1}{2}$ " Perforated Strips.

The cars are made of two Small Rectangular Plates tied together at each end with two $2\frac{1}{2}$ " Perforated Strips. Four $2\frac{1}{2}$ " Perforated Strips are then bolted to the sides and through these are passed a 5" Axle Rod with Collar and Set Screw on either side. These are then fastened to the outside diameter of the wheel and secured by two Angle Brackets through which the 5" Axle Rod passes. When the wheel is completed, place it between the two supporting towers passing the axle through the four bush wheels and inserting a $1\frac{1}{2}$ " Pulley Wheel between the two Bush Wheels on either side. The Set Screw of this Pulley Wheel should then be securely fastened to the Axle Rod. A Pulley Belt is used on either side of the wheel in order to give an even motion and these pulleys are belted to the two Flanged and Grooved Wheels fastened on the lower axle rod which passes through the Large Rectangular Plates.



SWINGING GATE

Fig. No. 59



Made with The American Model Builder Outfit No. 3, or 2 and 2½.

Parts Required in Addition to Outfit No. 2		Parts Required in Addition to Outfit No. 2	
PARTS REQUIRED		PARTS REQUIRED	
1 Large Rectangular Plate.....	.....	6 Angle Brackets.....	.....
4 5½" Perforated Strips.....	.....	1 5" Axle Rod.....	1
1 3½" Perforated Strip.....	.....	2 Collars and Set Screws.....	.....
2 2½" Perforated Strips.....	.....	11 Nuts and Screws.....	.....

In this model we demonstrate two principles, that of properly hinging a gate and the application of a diagonal brace to stiffen the structure.

You will note in the cut that the lower hinge that is attached to the gate rests upon the lower hinge that is attached to the upright, while the upper hinge attached to the gate is underneath the hinge that is attached to the upright. By passing an Axle Rod through the four hinges, you will find that the gate is perfectly balanced and opens and closes freely. In ordinary practice instead of these hinges being made of angle pieces as is shown in the cut, they are made of steel straps with one end turned up into a circle through which the axle passes.

In this model we also demonstrate the principles of diagonal bracing. Before the diagonal strip is attached to the frame work, you will note that there is no rigidity, and that the frame work can be twisted in almost any shape. As soon as the diagonal strip is attached in the manner shown in the cut, the entire structure is stiffened and it is impossible to twist the frame work out of shape. This method of bracing also prevents the gate from sagging in the front as the strain is carried from the lower cross piece diagonally to the hinge.

TRESTLE BRACING

Fig. No. 60

PARTS REQUIRED		Parts Required in Addition to Outfits No. 2 No. 3	
2 12½" Perforated Strips.....	.....	.....	.....
5 5½" Perforated Strips.....	.....	1	.....
1 3½" Perforated Strip.....	.....	.....	.....
1 3" Perforated Strip.....	.....	1	1
12 Nuts and Screws.....	.....	.....	.....

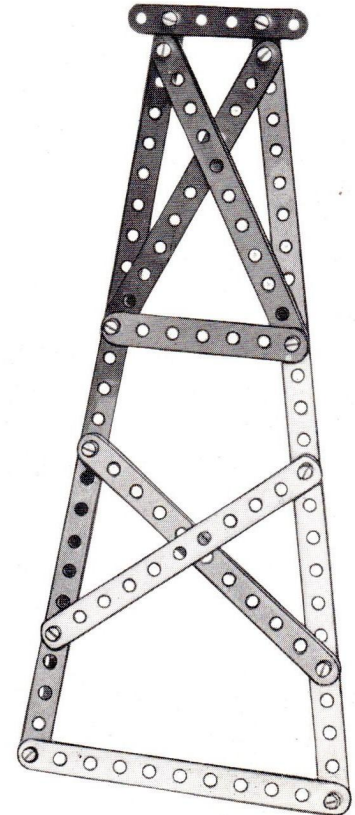
This cut shows the ordinary way of building a trestle frame which is to carry heavy weight. In actual practice, there are two of these and they are tied together with two diagonal strips to keep the sides from separating.

The track or road bed is laid across the top and the strain of the load is carried by the two 12½" Side Strips supported by the bracing, afforded by the two upper 5½" Perforated Strips.

The 3½" Cross Strips strengthen the entire frame work and prevent the sides from giving in the center.

The two lower 5½" cross pieces stiffen the base of the frame work while the bottom 5½" Perforated Strip prevents the Trestle from spreading when the load is carried.

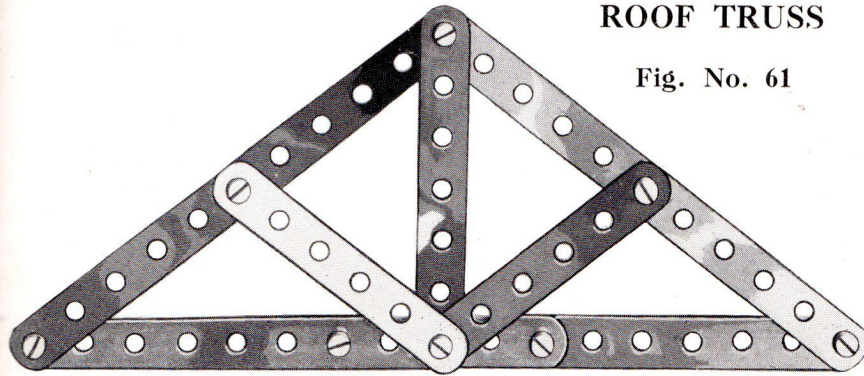
While this construction is very simple, the different points should be carefully studied by the student. This kind of a trestle can be found in use on any railroad where a temporary elevation of their tracks is necessary and is only replaced by a permanent bridge.



Made with The American Model Builder Outfit No. 4, or 3 and 3½.

ROOF TRUSS

Fig. No. 61



Made with The American Model Builder Outfit No. 4, or 3 and $3\frac{1}{2}$.

PARTS REQUIRED

	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
1 Large Rectangular Plate.....					
4 $5\frac{1}{2}$ " Perforated Strips.....					
8 $2\frac{1}{2}$ " Perforated Strips.....					
1 8" Axle Rod.....	1	1	1	1	1
2 $3\frac{1}{2}$ " Axle Rods.....					
1 $1\frac{1}{2}$ " Pulley Wheel.....	1	1			
4 1" Pulley Wheels.....		2			
7 Collars and Set Screws.....	3	3	1		
8 Angle Brackets.....					
24 Nuts and Screws.....					

In this model, we demonstrate the principles of the Straight and Crossed Belt Drive. This practice is common in every machine shop where it is necessary to obtain a forward motion on some machines and a reversed motion on others.

The construction of this Model is very simple and needs no detailed description.

The belting of the motor to the Main Drive Shaft is accomplished by means of a Rubber Pulley Belt passing from the Pulley Wheel on the motor to the $1\frac{1}{2}$ " Pulley Wheel on the shaft. The machines to be driven are represented by the lower shafts.

When this Model is set into operation, you will note that the left hand lower shaft will revolve in a forward direction while the one on the right hand side will revolve in the opposite direction.

In actual machine shop practice, a loose pulley is provided on every machine, so that the belt can be shifted to this, when it is desired to have any one machine in operative without affecting any other machine belted to the same Driving Shaft. This means a saving of considerable power when machines are not in use.

The item of power is quite an item and in all modern machine shops ball bearing driving shafts are used in order to eliminate as much friction as possible and thus increase the efficiency of the motor. The motor shown in this cut is not included in the regular outfit.

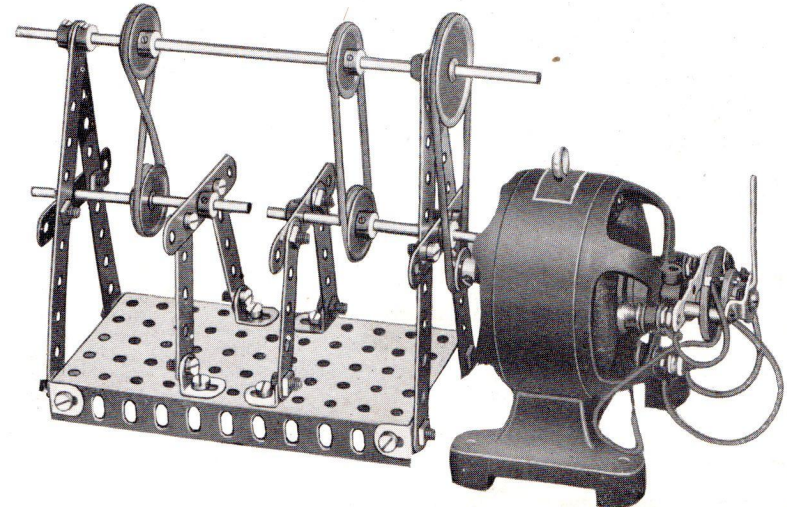
PARTS REQUIRED

	Parts Required in Addition to Outfits	
	No. 2	No. 3
4 $5\frac{1}{2}$ " Perforated Strips.....		
1 $3\frac{1}{2}$ " Perforated Strip.....		
2 $3\frac{1}{2}$ " Perforated Strips.....	2	2
8 Nuts and Screws.....		

In the accompanying cut, we show the ordinary construction that is used for supporting a wide Gable Roof. The lower girder is put in position first. Then the two diagonal Girders are supported and fastened at the top. The $3\frac{1}{2}$ " Perpendicular Strip and the lower Girder are merely in tension while the thrust is taken by the two diagonal supports that are bolted to the lower Girder and fastened to the sloping sides. The greatest strain of the roof is carried by these pieces and in actual practice where the roof is of any considerable weight, these pieces are generally made of Angle Girders or I Beams. In order to give the student some idea of the strength in such a small part, two or three of these should be built in series and fastened together at the top and you will be surprised to see the enormous weight that they will carry.

STRAIGHT AND CROSSED BELT DRIVE

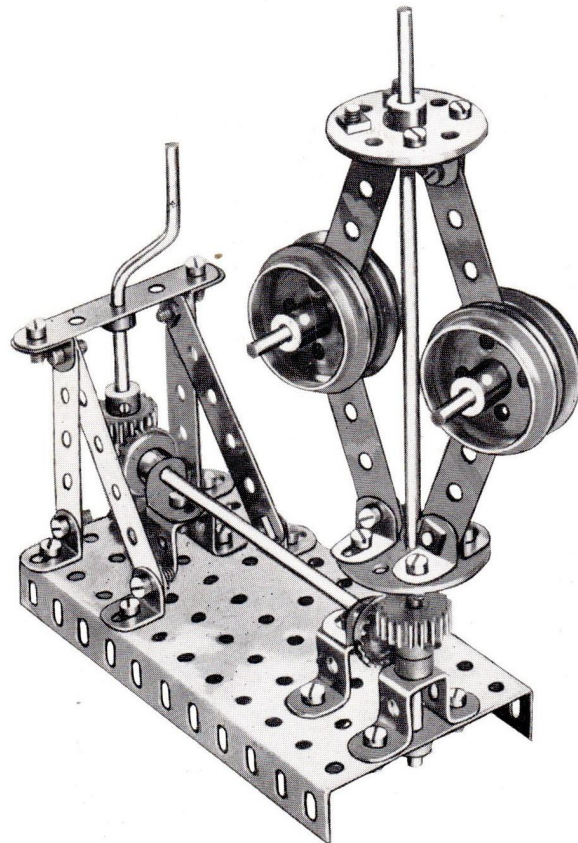
Fig. No. 62



Made with The American Model Builder Outfit No. 7, or 6 and $6\frac{1}{2}$.

THE CENTRIFUGAL GOVERNOR

Fig. No. 63



Made with The American Model Builder Outfit No. 7,
or 6 and 6½.

PARTS REQUIRED

	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
1 Large Rectangular Plate.....					
2 3" Perforated Strips.....	2	2			
7 2½" Perforated Strips.....					
3 Double Bent Strips.....	3	2	2	2	2
2 Bush Wheels.....	1	1	1	1	1
4 Flanged and Grooved Wheels.....	4				
2 ¾" Crown Gears.....	2	2			
2 ¾" Pinion Wheels.....	2	2			
1 8" Axle Rod.....	1	1	1	1	1
1 4½" Axle Rod.....					
2 2" Axle Rod.....					
1 4½" Crank.....	1	1			
4 Collars and Set Screws.....					
16 Angle Brackets.....	6				
32 Nuts and Screws.....	2				

This type of Governor can be found on every steam engine and its function is to regulate the amount of steam that is admitted to the cylinders.

In constructing this Model, begin by belting two Angle Brackets to two Bush Wheels and bolt to these a 2½" Perforated Strip. These strips should then be fastened together at the ends by inserting a 2" Axle Rod through the end holes and fastening a Flanged and Grooved Wheel on either side.

Next mount a Double Bent Strip on a Large Rectangular Plate and insert an 8" Axle Rod through the Bush Wheels fastening a ¾" Pinion Wheel at the lower end of the Axle Rod before it is passed through the Double Bent Strip. The upper Bush Wheel should be fastened to the Axle Rod with the Set Screw, but the lower Bush Wheel should be left loose.

The Gearing is very simple, being accomplished by mounting two ¾" Crown Gears on a 4½" Axle Rod and these are made to mesh with the ¾" Pinion Wheel on the 8" Axle Rod and the ¾" Pinion Wheel on the Crank.

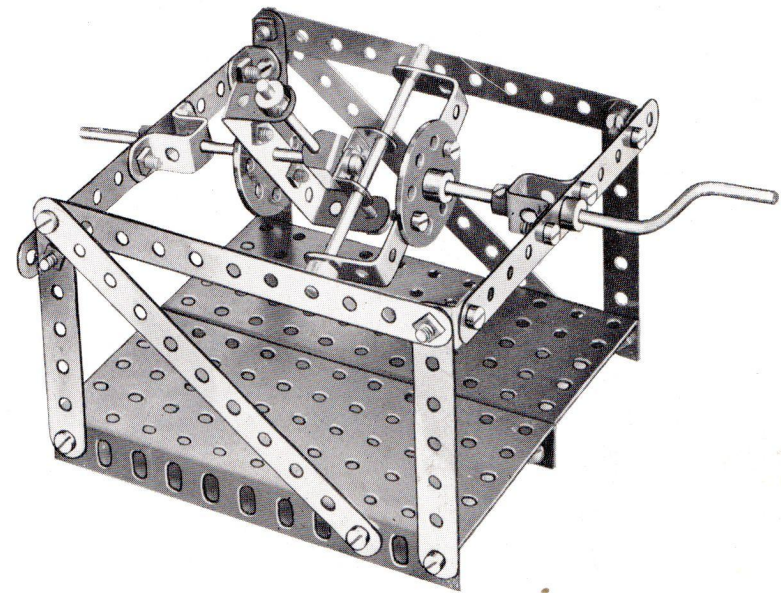
This mechanism derives its name from its action. When the crank is turned at a considerable speed, you will notice that the centrifugal force of the Flanged and Grooved Wheels will cause the lower Bush Wheel to rise on the Axle Rod. The greater the speed, the higher it will rise. When this action takes place on an engine, this rise and fall operates on the valve admitting the steam to the cylinders and thus regulates the speed of the engine.

This is a highly interesting and scientific Model and should be closely studied as it will give the student a perfect understanding of the control of a high powered steam engine.

UNIVERSAL JOINT

Fig. No. 64

PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
2 Large Rectangular Plates.....	1	1	.....	.....	.....
6 5½" Perforated Strips.....	2	.....	.....	.....	.....
4 3½" Perforated Strips.....	2	1	.....	.....	.....
2 Large Bent Strips.....	2	2	1	1	.....
2 Double Bent Strips.....	2	1	1	1	1
2 3½" Axle Rods.....	2	2	2	2	.....
1 4½" Axle Rod.....	.....	.....	.....	.....	.....
1 5½" Crank.....	.....	.....	.....	.....	.....
2 Bush Wheels.....	1	1	1	1	1
8 Angle Brackets.....	.....	.....	.....	.....	.....
7 Collars and Set Screws.....	3	3	1	.....	.....
24 Nuts and Screws.....	.....	.....	.....	.....	.....



Made with The American Model Builder Outfit No. 7, or 6 and 6½.

This Model clearly demonstrates the Universal Joint which is used today on every Driving Shaft of an automobile. Its peculiar construction will admit of one shaft being perfectly straight while the other may be on an incline, as is shown in the cut, and yet give a perfect rotating movement. This kind of a joint is used on automobiles in order to allow for the vibration of the Driving Shaft attached to the rear Axle when rough places in the road are encountered and to prevent this vibration being carried direct to the engine.

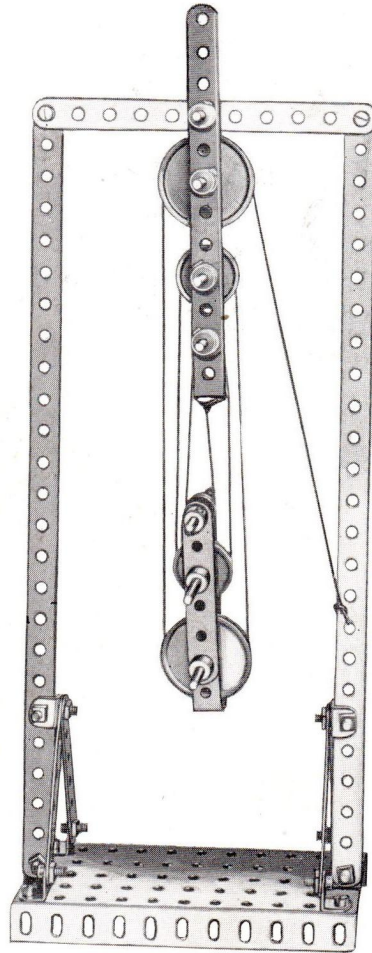
The construction is very simple, the outside frame work representing the frame work of an automobile. The joint itself is made of two Bush Wheels to which are bolted two Large Bent Strips. Through the end holes are inserted two 3½" Axle Rods and in the center of these Axle Rods are attached two pairs of Angle Brackets bolted together, having the lips turned up in opposite directions.

In order to give a bearing to the Crank and Axle Rod a Double Bent Strip is bolted on each end of the frame.

When operating the Crank at any speed, it should be noted that the back Axle can be raised or lowered without affecting the perfect working of the device.

BLOCK AND TACKLE

Fig. No. 65



Made with The American Model Builder
Outfit No. 7, or 6 and 6½.

PARTS REQUIRED	Parts Required in Addition to Outfits					PARTS REQUIRED	Parts Required in Addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6		No. 2	No. 3	No. 4	No. 5	No. 6
1 Large Rectangular Plate...						2 1" Pulley Wheels.....					
2 12½" Perforated Strips...						2 1½" Pulley Wheels.....	2	2	1	1	
3 5½" Perforated Strips...						7 2" Axle Rods.....	5	5	4	3	2
6 3" Perforated Strips...	6	6	4	2		14 Collars and Set Screws...	10	10	8	6	
2 Single Bent Strips.....	1	1	1	1		8 Angle Brackets.....	8	4			
2 ½" Pulley Wheels.....	2	2	1			18 Nuts and Screws.....					

This is an ingenious Model, and will give the student a thorough understanding of the application of the pulley system in a Block and Tackle apparatus.

The construction is very simple; three Pulley Wheels of graduated size being mounted between the strips and held in place by 2" Axle Rods. The cord is then fastened to the Single Bent Strip on the upper frame and then passed over the ½" Pulley Wheels, then over the 1" Pulley Wheels, then over the 1½" Pulley Wheels. For actual demonstration, a weight should be attached to the lower Single Bent Strip. It should be noted that in order to raise this weight one inch, it will be necessary to move the outside cord seven inches, thus multiplying the force applied on the outside cord by the number of times the cord is passed over the Pulley Wheels which in this case would be seven times, eliminating friction. In other words if a weight weighing one pound were attached to the end of the outside cord, it would balance a weight weighing seven pounds attached to the Single Bent Strip under the Pulleys.

In actual practice, the upper Pulley Wheels would be mounted on the Axle Rod side by side and the Lower Pulleys on one Axle Rod side by side and the cord passed over them as shown in the cut. This gives the same mechanical result, but the apparatus is more convenient and easier handled and is generally adopted.

We simply show the Pulleys in the cut in a straight line in order to demonstrate the principle more clearly.

GEAR TRAIN

Fig. No. 66

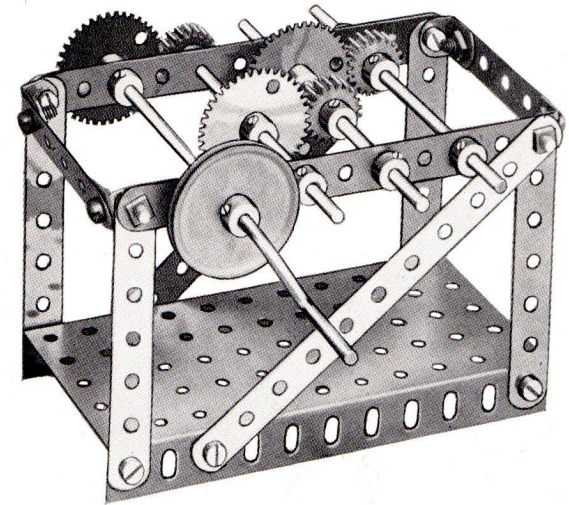
This is a very instructive model and clearly demonstrates the principles of gearing as applied in practical mechanics, showing how the number of revolutions of any shaft may be increased by a series of gears. This model can either be operated by hand or by motor. If it is operated by motor, four Angle Brackets should be attached to the corners of the Large Rectangular Plate and bolted fast to a board or table, and the motor should be belted directly to the $1\frac{1}{2}$ " Pulley Wheel mounted on the Crank Shaft.

In making this model, mount a $1\frac{1}{2}$ " Gear Wheel on the end of the Crank and have this Gear Wheel mesh with the $\frac{3}{4}$ " Pinion Wheel mounted on the first Axle Rod. In the center of this same Axle Rod, mount a $1\frac{1}{2}$ " Gear Wheel which should mesh with the $\frac{3}{4}$ " Pinion Wheel on the second Axle Rod. On the second Axle Rod also mount a $1\frac{1}{2}$ " Gear Wheel which should mesh with the $\frac{3}{4}$ " Pinion Wheel on third Axle Rod.

By turning the Crank slowly, you will notice that the Crank and the second Axle Rod will revolve in a forward direction, while the first and third Axle Rods will revolve in a reverse direction. You will also note that the first Axle Rod travels faster than the Crank itself. The second Axle Rod travels still faster and the third Axle Rod makes more revolutions than any of the rest.

In order to determine the number of revolutions that are made by any of these Axle Rods, it is necessary to count the number of teeth in the large $1\frac{1}{2}$ " Gear Wheels that are mounted on them and multiply these together. Then count the number of teeth in the small Pinion Wheels that mesh with these Gear Wheels and multiply these together, then divide the product secured by multiplying the number of teeth in the large Gear Wheels by the product secured by multiplying the number of teeth in the Pinion Wheels which will give you the number of revolutions that the Axle Rod makes to one revolution of the Crank Shaft.

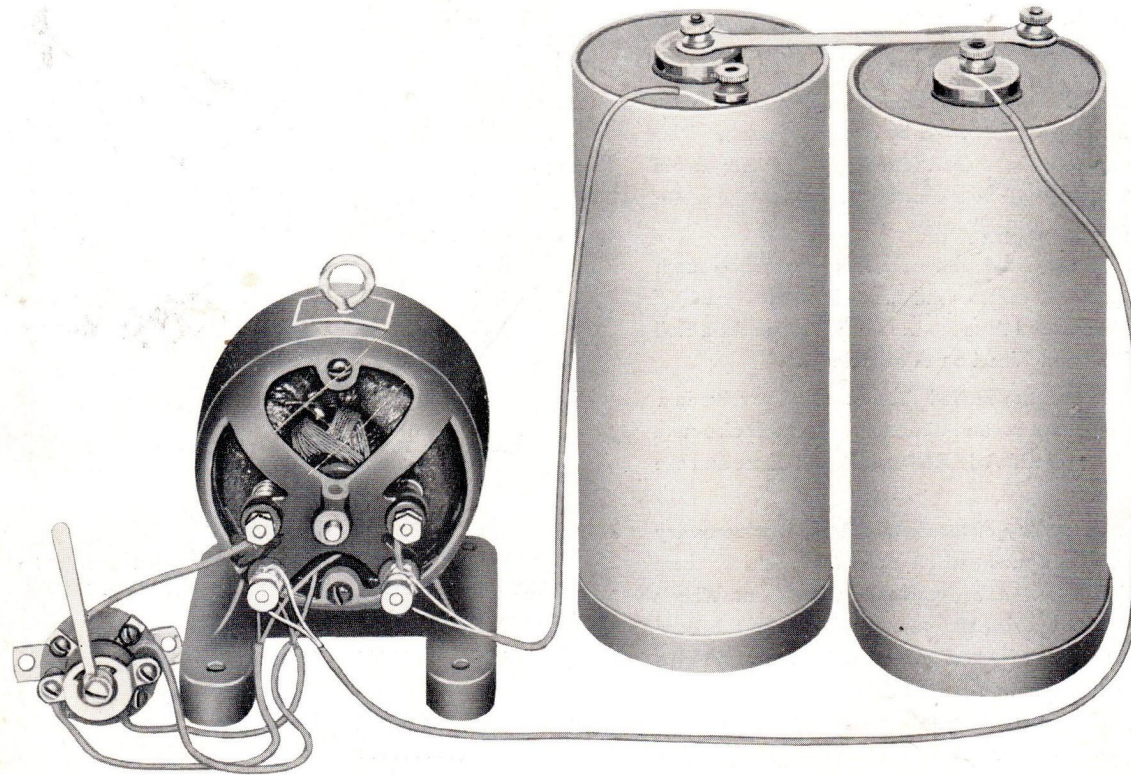
For instance, if you wish to determine the number of revolutions that are made by the third Axle Rod, count the number of teeth in the large Gear Wheel which is forty, then multiply this sum by forty, representing the teeth in the Gear Wheel on the first Axle Rod and this product by forty, representing the number of teeth in the Gear Wheel on the second Axle Rod which should give you 64,000. Then multiply the number of teeth on the small Pinion Wheel mounted on the first Axle Rod, which is twenty, by the number of teeth in the small Pinion Wheel on the second Axle Rod, and this product by twenty, the number of teeth in the Pinion Wheel mounted on the third Axle Rod. This product will be found to be 8,000, then divide 8,000 into 64,000 which will give you 8, showing that the third Axle Rod makes eight revolutions to one of the Crank Shaft. If the motor that is belted to the Crank Shaft travels at a rate of 300 revolutions per minute, the third Axle Rod would travel eight times this number or 2,400 revolutions per minute.



Made with The American Model Builder Outfit
No. 7 or 6 and $6\frac{1}{2}$.

PARTS REQUIRED	Parts Required in addition to Outfits				
	No. 2	No. 3	No. 4	No. 5	No. 6
1 Large Rectangular Plate.....					
4 $5\frac{1}{2}$ " Perforated Strips.....					
4 $3\frac{1}{2}$ " Perforated Strips.....	2	1			
2 $2\frac{1}{2}$ " Perforated Strips.....					
4 Angle Brackets....					
3 $4\frac{1}{2}$ " Axle Rods....					
1 $5\frac{1}{2}$ " Crank.....					
3 $1\frac{1}{2}$ " Gear Wheels..	3	3	2	2	1
3 $\frac{3}{4}$ " Pinion Wheels..	3	3	1	1	
1 $1\frac{1}{2}$ " Pulley Wheel..	1	1			
7 Collars and Set Scr's	3	3	1		
14 Nuts and Screws...					

MOTOR



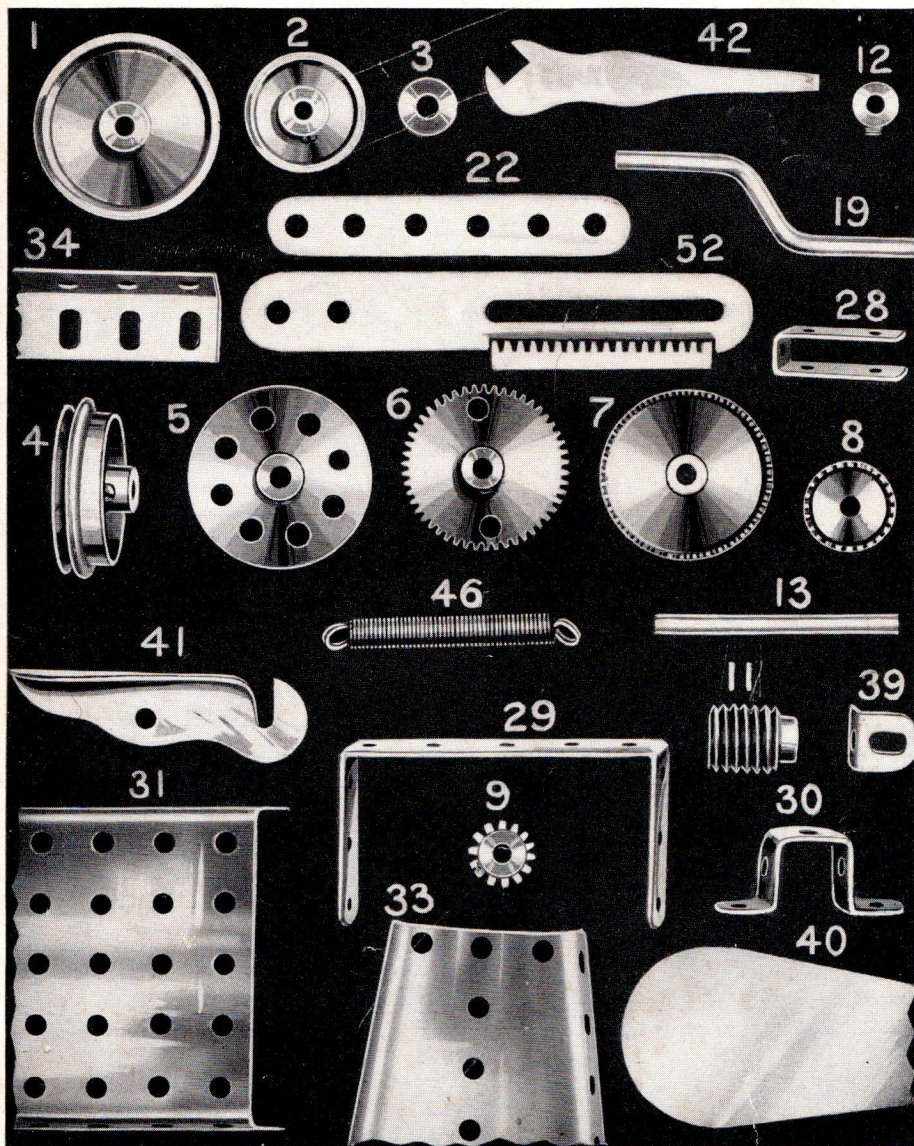
On account of the large demand for power driven models, we have had specially designed for us a motor to be used in connection with our toys. This motor is built along the lines of a regular power motor, is substantially made in every way, and has every appearance of a regular motor, except that it is miniature in size. We have same equipped with a 9-16" Pulley Wheel so that it can be easily belted to any of our toys, or it can be used in operating any other mechanical device requiring electric power. It can be operated either from two or four Dry Cells. No Dry Cells are furnished with this motor, as they can be secured from any electrician or dealer in automobiles. We merely show the Dry Cells in this cut, so that the user may know how to connect them. Every Dry Cell has a positive and negative pole and where two or more are used in series, it is necessary to connect the positive with the negative pole by means of a copper wire. Then attach one wire to the negative pole and one to the positive pole and carry these to the motor as shown in the cut. The two pole field in this motor is cast solid and it has form wound coils. The armature is of the drum type $1\frac{3}{8}$ " in diameter, laminated with shaft and 9-16" Pulley.

The brushes are spring tension and operate perfectly. This motor stands $4\frac{1}{2}$ " high including the base, and is finished in black enamel with nickel trimmings and weighs $2\frac{1}{2}$ lbs.

We can also furnish a small Rheostat or starting device with this motor when it is desired. It should be attached somewhere near the motor. This enables the operator to start and stop the motor without detaching any of the wires that are connected to the Dry Cells. When this lever is in the center, the motor is inoperative; when thrown to the right, the rotating of the armature is in a forward direction and when thrown to the left, the armature rotates in the opposite direction. We will furnish this motor to the users of our Outfits, as well as the small Rheostat when desired at the prices quoted below.

Price of Motor.....\$2.50

Additional, if equipped with Rheostat.....\$.50



No.		Cents.
1.	Pulley Wheel, 1½" Diam., with collar and set screw, nickel-plated.....each	.10
2.	" " " 1" " " " " " " "	.10
3.	" " " ½" " " " " " " "	.05
4.	Flanged " 1¼" with collar and set screw, nickel-plated..	.20
5.	Bush " 1½" " " " " " " "	.15
6.	Gear " 1¾" " " " " " " "	.25
7.	Crown Gear, 1½" " " " " " " "	.30
8.	" " ¾" " " " " " " "	.25
9.	Pinion Wheel ¾" " " " " " brass.....	.20
10.	" " ½" " " " " " " "	.15
11.	Worm Wheel, with collar and set screw, brass.....	.20
12.	Collar and Set Screw, brass.....	.05
13.	Axle Rod, 2" long, polished.....	.02½
14.	" " 3½" " " " " " " "	.02½
15.	" " 4½" " " " " " " "	.05
16.	" " 5" " " " " " " "	.05
17.	" " 6" " " " " " " "	.05
18.	" " 11½" " " " " " " "	.10
19.	Crank, 4½" long, over all, polished.....	.10
20.	" " 5½" " " " " " " "	.10
21.	" " 6½" " " " " " " "	.10
22.	Perforated Strips, 2" long, nickel-plated.....per one-half dozen	.10
23.	" " 2½" " " " " " " "	.10
24.	" " 3" " " " " " " "	.10
25.	" " 3½" " " " " " " "	.10
26.	" " 5½" " " " " " " "	.15
27.	" " 12½" " " " " " " "	.25
28.	Single Bent Perforated Strip, small, nickel-plated.....each	.05
29.	" " " large " " " " "	.05
30.	Double " " nickel-plated.....	.05
31.	Rectangular Perforated Plate, 2½ x 5½", large, nickel-plated.....	.15
32.	" " 2½ x 3½", small, " " " " "	.10
33.	Sector Plate, Perforated, nickel-plated.....	.10
34.	Angle Girder, 5½" long, nickel-plated.....per one-half dozen	.20
35.	" " 12½" " " " " " " "	.30
39.	Angle Brackets, nickel-plated.....per dozen	.10
40.	Propeller Blades, nickel-plated .....per pair	.15
41.	Pawls, " " " " " " each	.10
42.	Screw Driver and Spanner Combined, nickel-plated.....	.10
43.	Large Screw Driver, nickel-plated.....	.10
44.	Nuts and Bolts, brass.....per dozen	.10
45.	Round Rubber Pulley Belt .....each	.05
46.	Spring 1¼" long .....each	.05
47.	Cord, Heavy Blue, Hank " .02½	
48.	Cord, Light Weight, Green, 40 feet lengths " .02½	
49.	Cord, Light Weight, Green, 80 feet lengths..... " .05	
50.	Eye Piece, nickel-plated " .05	
51.	Eccentric Drive Wheel, nickel-plated.....each	.15
52.	Oscillating Rack " .15	
53.	Hook, nickel-plated " .05	
54.	Instruction Book " .05	
55.	Complete Manual, including treatise on mechanical construction.....	.15

When ordering any of the above parts, give number and name.

	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
Flanged and Grooved Wheel	..	..	..	4	4	..	4	4	8	..	8	..	8
Pulley Wheels, 1½"	..	..	..	..	..	1	1	1	1	1	2	..	2
Pulley Wheels, 1"	4	2	6	..	2	2	4	1	5	1	6	..	6
Pulley Wheels, ½"	..	..	..	..	..	1	1	1	2	4	6	..	6
Bush Wheel	1	..	1	..	1	..	1	..	1	..	1	3	4
Pinion Wheel, ¾"	..	..	..	..	..	2	2	..	2	1	3	..	3
Pinion Wheel, ½"	..	..	..	1	1	1	2	..	2	..	2	1	3
Gear Wheel 1½"	..	..	..	..	..	1	1	..	1	1	2	1	3
Crown Gear, 1½"	..	..	..	..	..	..	..	1	1	..	1	1	2
Crown Gear, ¾"	..	..	..	..	..	2	2	..	2	..	2	..	2
Worm Wheel	..	..	..	..	..	1	1	..	1	..	1	1	2
Collar and Set Screw	2	2	4	..	4	2	6	2	8	6	14	4	18
Perforated Strip, 12½"	..	4	4	6	10	..	10	4	14	..	14	34	48
Perforated Strip, 5½"	4	..	4	12	16	2	18	2	20	4	24	36	60
Perforated Strip, 3½"	..	2	2	1	3	3	6	..	6	11	17	19	36
Perforated Strip, 3"	..	..	..	..	..	2	2	2	4	4	8	16	24
Perforated Strip, 2½"	9	..	9	5	14	..	14	4	18	26	44	4	48
Perforated Strip, 2"	..	..	..	..	..	..	..	..	6	6	18	24	24
Angle Girder, 12½"	..	..	..	4	4	4	8	..	8	1	9	11	20
Angle Girder, 5½"	..	..	..	..	..	..	..	..	..	..	..	12	12
Angle Bracket	10	..	10	6	16	10	26	18	44	9	53	115	168
Single Bent Strip	1	..	1	..	1	..	1	..	1	1	2	1	3
Double Bent Strip	..	..	..	1	1	..	1	..	1	..	1	7	8
Large Bent Strip	..	..	..	..	..	1	1	..	1	1	2	..	2
Pawl	..	..	..	1	1	1	2	..	2	..	2	..	2
Spanner and Screw Driver	1	..	1	..	1	..	1	1	2	..	2	..	2
Screw Driver, Large	..	..	..	1	1	..	1	..	1	..	1	1	2
Hook	..	1	1	..	1	..	1	..	1	..	1	1	2
Rectangular Plate, Large	1	..	1	..	1	1	2	..	2	2	4	4	8
Rectangular Plate, Small	..	..	..	..	..	3	3	..	3	2	5	3	8
Sector Plate	1	1	2	..	2	..	2	..	2	..	2	2	4
Nuts	22	25	30	20	50	20	70	40	110	50	160	340	500
Machine Screws	22	25	30	20	50	20	70	40	110	50	160	340	500
Wood Screws	..	4	4	..	4	4	8	..	8	4	12	12	24
Axle Rod, 11½"	..	..	..	..	..	..	..	2	2	..	2	2	4
Axle Rod, 8"	..	..	..	..	..	..	..	..	..	..	..	1	1
Axle Rod, 6"	..	..	..	..	..	..	..	2	2	2	4	..	4
Axle Rod, 5"	..	..	..	3	3	1	4	..	4	..	4	..	4
Axle Rod, 4½"	2	1	3	..	3	..	3	1	4	..	4	2	6
Axle Rod, 3½"	..	..	..	..	..	..	..	..	..	2	2	2	4
Axle Rod, 2"	2	..	2	..	2	1	3	1	4	1	5	2	7
Cranks, 6½"	..	..	..	..	..	..	..	1	1	1	2	2	4
Cranks, 5½"	1	..	1	..	1	..	1	..	1	1	1	1	2
Cranks, 4½"	..	..	..	..	..	1	1	..	1	1	2	2	4
Spring	..	..	..	..	..	..	..	1	1	..	1	1	2
Eye Pieces	..	..	..	..	..	..	..	2	2	..	2	2	4
Oscillating Rack	1	..	1	..	1	..	1	1	2	..	2	..	2
Eccentric Drive Wheel	..	..	..	..	..	..	1	1	2	..	2	..	2
Cord, Heavy Blue, Hank	..	1	1	1	2	1	3	1	4	2	6	..	6
Cord, Green, 40 ft. Lengths	1	..	1	1	..	..	..	..	..	..	..	..	..
Cord, Green, 80 ft. Lengths	..	..	..	..	1	..	1	..	1	1	2	1	3
Propeller Blades	..	..	..	..	..	..	..	..	..	2	2	2	4
Round Rubber Pulley Belt	..	..	..	..	..	..	..	1	1	1	2	2	4
Manual of Instruction	..	1	1	1	1	1	1	1	1	1	1	1	2
Instruction Book	1	..	..	..	..	..	..	..	..	..	..	..	..

Price List of Outfits

No. 1	American Model Builder Outfit	\$1.00
No. 2	American Model Builder Outfit	2.00
No. 3	American Model Builder Outfit	4.00
No. 4	American Model Builder Outfit	6.00
No. 5	American Model Builder Outfit	9.00
No. 6	American Model Builder Presentation Outfit (Packed in a Hardwood Box Mission Finish, with Lock and Key)	15.00
No. 7	American Model Builder Presentation Outfit (Packed in a Hardwood Box Mahogany Finish, with Lock and Key)	30.00
No. 1½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 1 Outfit into a No. 2 Outfit)	1.00
No. 2½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 2 Outfit into a No. 3 Outfit)	2.00
No. 3½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 3 Outfit into a No. 4 Outfit)	2.00
No. 4½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 4 Outfit into a No. 5 Outfit)	3.00
No. 5½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 5 Outfit into a No. 6 Outfit)	6.50
No. 6½	American Model Builder Accessory Outfit (Containing Sufficient Parts to Convert a No. 6 Outfit into a No. 7 Outfit. Packed in a Hardwood Box with Lock and Key)	15.00

