MANUAL OF INSTRUCTIONS

PART 2
MANUAL
FOR
SETS
7 and 8

PART 3
MANUAL
PRIZE
WINNING
MODELS
FOR ALL
SETS

PRICE
OF
MANUALS
No. 1
No. 2
No. 3
25c
POSTPAID

PART 1

FOR SETS 1-6 INCLUSIVE

THE BOYS' CHOICE :: :: BE A GILBERT DIPLOMA BOY
GREAT FUN FOR BOYS :: FUN AND FAME WHILE AT PLAY

THE A. C. GILBERT CO., NEW HAVEN, CONN., U. S. A.
IN CANADA
THE A. C. GILBERT-MENZIES CO., LIMITED, TORONTO, ONT.

Hello Boys!

You are to be congratulated. You now own an Erector Set, which is the best toy of its kind ever made for boys. It has girders like structural steel, exactly like those used in skyscrapers, factories, public buildings, towers and bridges in New York, Chicago, London and Paris and other great cities of the world.

Then again you can build derricks, machine shops, battleships, elevators, aeroplanes and duplicate any of the celebrated engineering feats. Most of these models can be operated with Gilbert Electric Motor which is included in most sets. You will notice that the models in this Manual cover a very wide range of subjects, and most interesting is the fact that they have been originated by Gilbert Boys. It is for this reason that we have not given a description under most of the models because we have found that boys are able to originate and invent models and we are quite sure that you will not have any difficulty in constructing them when you have the actual photographs before you; provided you carefully study the standard details of construction on pages 1 and 2 and become thoroughly familiar with them before beginning to build the models.

It is much more interesting and more fun to work out these models without being told every step in detail. This is what you will have to do when you become a real engineer.

WARNING. Save yourself trouble. We urge every boy to study the illustrations on Page 1 and 2 thoroughly. These are fundamentals of the first principles of construction. Actually put these combinations together before attempting to build the models and become entirely familiar with all the different parts and names. On the inside back cover of the Manual you will find a list of parts. Commence studying it and become familiar with them. If you will do this you will find it easy to solve any problems that may arise, because these models are from actual photographs and they can be built from the sets you have. If you start with the simpler models and work up we are certain that any live wire Gilbert Boy will succeed in building any of the models, right from the first.

USE YOUR IMAGINATION. This Manual contains only few of the many thousands of Models that have been built by boys. We have simply selected a few from each set as a guide and as a method of developing your own imagination in engineering. In one year alone 60,000 different designs were submitted in the Gilbert Prize Contest.

If you are deeply interested in this work any you wish to build some of the larger models that are in your set by buying extra parts you can build some of the models in the very highest priced sets. If your dealer cannot supply you with parts we will do so direct from the factory.

BE A GILBERT ENGINEER

Mr. Gilbert discovered a long time ago that so many thousands of boys competed that lots of his good friends would be disappointed and he knew that real boys with red blood in their veins wanted an opportunity to do something big that was not limited to the decisions of the judges; so he developed the Gilbert Institute of Toy Engineering.

Yes, sir, you can win degrees of merit and diplomas which will give you a lot of pride and a lot of satisfaction. It really is a big honor to any boy to get a Gilbert Diploma and there is no reason under the sun why you cannot win one and be the pride of your parents and all your boy friends. In the Gilbert Institute of Toy Engineering every boy has a fair chance. If you are interested in the Gilbert Institute of Engineering write us asking for the booklet and we will send you the two colored booklet telling all about it. Be sure and address it to The Gilbert Engineering Institute For Boys, care of The A. C. Gilbert Company, New Haven, Conn.

A WORD TO PARENTS. Mr. Gilbert will be glad to tell you how to solve the boy problem. If you will write today we will send you at once the two colored booklet giving full plans and details how your boy can win the various degrees of merit. You will find the plan chuck full of valuable suggestions which have come to Mr. Gilbert through his experience with thousands of boys.

THE LIVE BOY MAGAZINE, "GILBERT TOY TIPS." Every red blooded boy should be a subscriber to Gilbert Toy Tips. Gilbert Toy Tips is filled with information about Gilbert Boys, Gilbert Prize Contests, and things doing in the world's greatest toy factory, pictures of boys who are diploma winners and descriptions of new and interesting models. It also includes articles by Mr. Gilbert telling how to become a champion athlete, written by Mr. Gilbert himself who was the World's Champion Pole Vaulter, Wrestler and Gymnast. Mr. Gilbert also writes many other articles that are full of interest. "Tips" is published once a month and is sold to boys at 25c a year.

HOW TO GET A YEAR'S SUBSCRIPTION FREE. By using the coupon on the back of this book you can get one year's subscription free. You will find some of your boy friends who will be glad to give 25c for a year's subscription to "Tips". If you do not wish to mutilate your Manual simply make a copy of the coupon and send it in.

A. C. Gilbert

President

Before attempting to build any models g
to make. You will not be successful as a mo

t recommendation we have

Illustrated models from Sets Nos. 1, 2 and 6 can be made from this No. 3 Outfit except where motor is an integral part of model, as no motor is included in the No. 3 Set. By using Crank, E24, as hand-driving power, many of the models that would require a motor can be operated in this way. Many of the motor-driven models can also be operated in this manner.

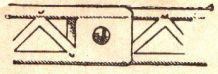


Fig. 1
Simple Lap Joint.

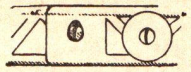


Fig. 2
Adjustable Lap Joint for varying the length of a span.

Simple Right Angle connection.

Simple Acute Angle connection.

Simple Obtuse Angle connection.

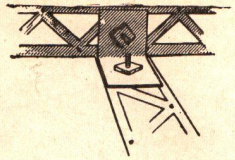


Fig. 6
Right angle connection for branch girders.

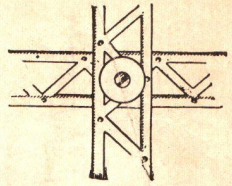


Fig. 7
Cross connection, using screw, nut and washer.

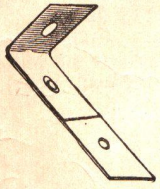


Fig. 8
Right angle with straight angle pieces used on axle bearings, etc.

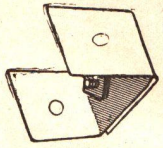


Fig. 9
Use of 2 right angles to make double angle.

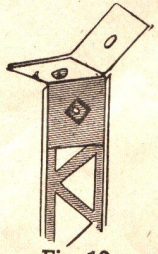


Fig. 10
Use of right angle and obtuse angle.

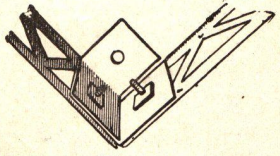


Fig. 11
Use of two right angles for three-way connection.

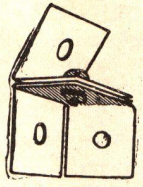


Fig. 12
Use of 2 right angles and acute angle connection.

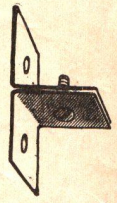
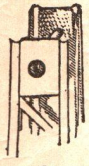
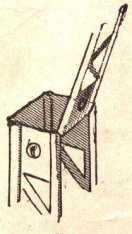


Fig. 13
Use of 2 right angles to make straight angle.



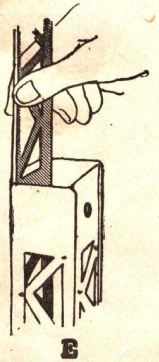
A

B

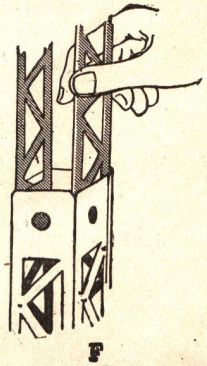


C

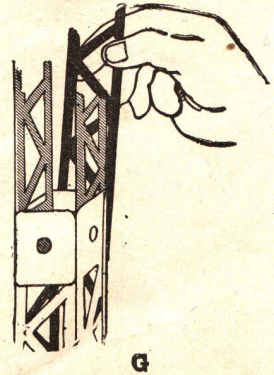
D



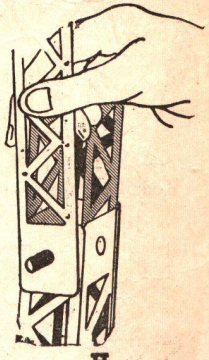
E



F



G



H

To construct a square girder: Commence by placing a long screw through one or both ends of two girders as in A, then separating the two take another girder, pushing it down into the grooves or channels as in B. Having assembled the three sides, take the fourth girder and likewise insert it into the groves or channels, as in C, and clide it down until the two are flush, which makes you a square column girder, D.

To add onto a square girder: Hold a square girder in your left hand, taking another girder the desired length in your right hand and inserting it into the grooves as in E, until the two round holes line up opposite each other. Then take your second girder likewise in your right hand, still retaining the other parts in position with your left hand, inserting it into the grooves or channels on the inside, F. You now have two girders being held in position with your left hand; now take your third girder, placing it on the outside G. You now insert the long srcew through, and take your fourth girder, placing it over the end of the screw now protruding, put a nut on and tighten it up by means of a screwdriver, binding all parts firmly together.

Erector Square Girder: The building of the Erector Square Girder is the foundation of the finest construction work that can be accomplished with any form of Building Toy. It isabsolutely essential and necessary that you become adept in building the square girder before you attempt Erector Model building.

Special Note:—In case you desire to build a square column girder of three or four lengths; fasten three or four strips together with small srrews and then form them into a column very simply and quickly.

Before attempting to build any models go through the exercise of building each standard detail. This is the most important recommendation we have to make. You will not be successful as a model builder unless you follow these fundamental instructions, implicitly.

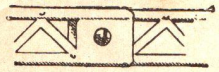


Fig. 1
Simple Lap Joint.

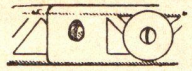


Fig. 2
Adjustable Lap Joint for varying the length of a span.

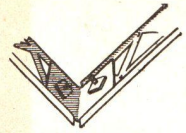


Fig. 3
Simple Right Angle connection.

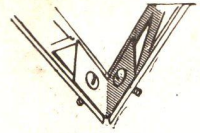


Fig. 4
Simple Acute Angle connection.

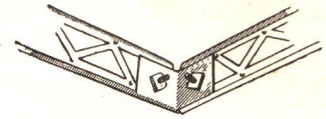


Fig. 5
Simple Obtuse Angle connection.

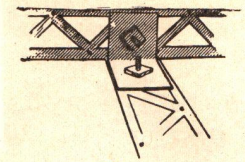


Fig. 6
Right angle connection for branch girders.

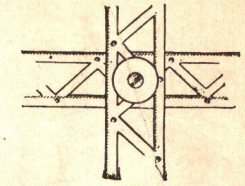


Fig. 7
Cross connection, using screw, nut and washer.

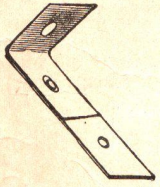


Fig. 8
Right angle with straight angle pieces used on axle bearings, etc.

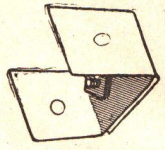


Fig. 9
Use of 2 right angles to make double angle.

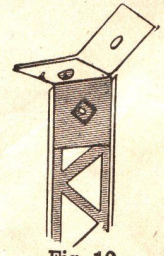


Fig. 10
Use of right angle and obtuse angle.

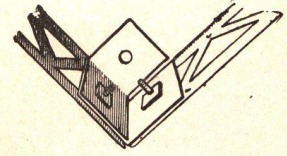


Fig. 11
Use of two right angles for three-way connection.

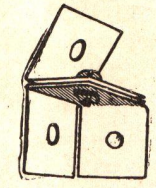


Fig. 12
Use of 2 right angles and acute angle connection.

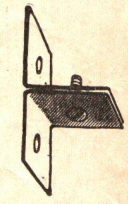
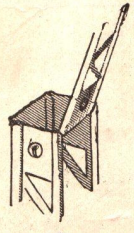


Fig. 13
Use of 2 right angles to make straight angle.

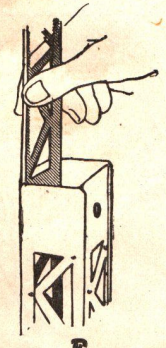
A

B

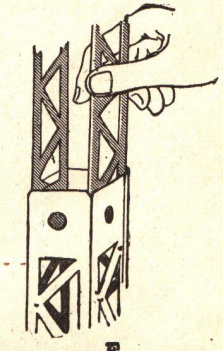


C

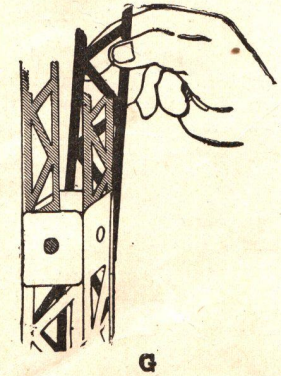
D



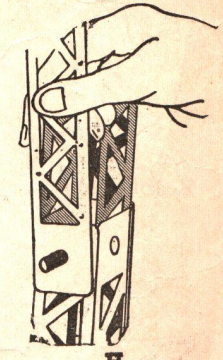
E



F



G



H

To construct a square girder: Commence by placing a long screw through one or both ends of two girders as in A, then separating the two take another girder, pushing it down into the grooves or channels as in B. Having assembled the three sides, take the fourth girder and likewise insert it into the groves or channels, as in C, and clide it down until the two are flush, which makes you a square column girder, D.

To add onto a square girder: Hold a square girder in your left hand, taking another girder the desired length in your right hand and inserting it into the grooves as in E, until the two round holes line up opposite each other. Then take your second girder likewise in your right hand, still retaining the other parts in position with your left hand, inserting it into the grooves or channels on the inside, F. You now have two girders being held in position with your left hand; now take your third girder, placing it on the outside G. You now insert the long srcew through, and take your fourth girder, placing it over the end of the screw now protruding, put a nut on and tighten it up by means of a screwdriver, binding all parts firmly together.

Erector Square Girder: The building of the Erector Square Girder is the foundation of the finest construction work that can be accomplished with any form of Building Toy. It isabsolutely essential and necessary that you become adept in building the square girder before you attempt Erector Model building.

Special Note:—In case you desire to build a square column girder of three or four lengths; fasten three or four strips together with small srrews and then form them into a column very simply and quickly.

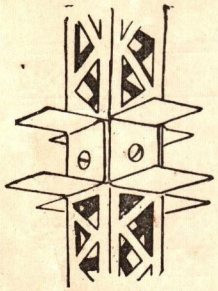


Fig. 15.
Use of 4-way girder connection, using double angles.

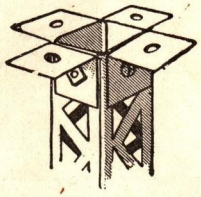


Fig. 16.
4-way single girder connection with right angles.

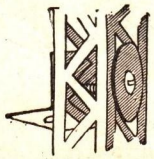


Fig. 17.
Single right angle connection in center of girder using washer and long screw.

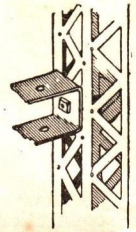


Fig. 18.
Double angle connection in center of girder using washer and long screw, used for connecting square girders.

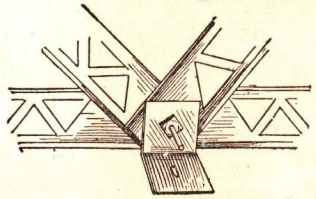


Fig. 19.
5-way connection, used for bridge construction of single girders. The angle is for connecting the cross pieces of the bridge together.

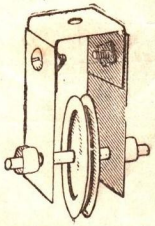


Fig. 20.
Double angle and straight angle for pulley and wheel bearings.

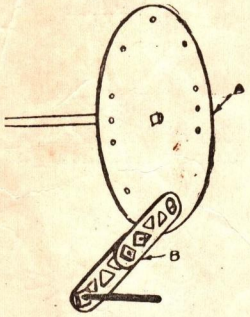


Fig. 21.
Eccentric motion

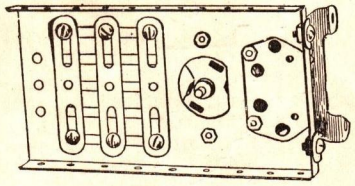


Fig. 34.
Interchangeble gear box showing show slotted strips are used.

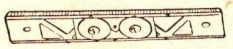


Fig. 35.
How to make connection for rods on any girder.

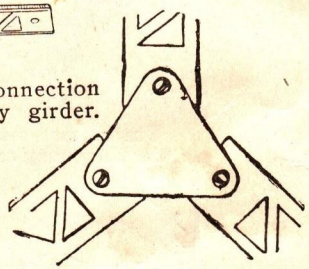
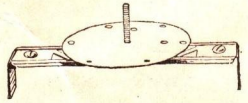


Fig. 26.
Use of triangle plate in single girder 3-way connection.



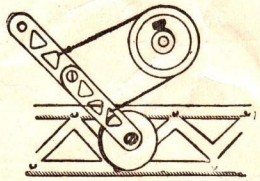


Fig. 27.
Brake Mechanism

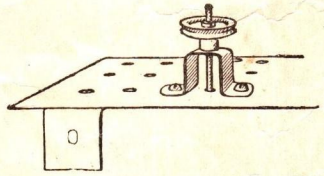


Fig. 28.

How to make connective front wheel steering arrangement.

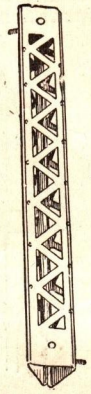


Fig. 38.
3 Side Erector Girder.

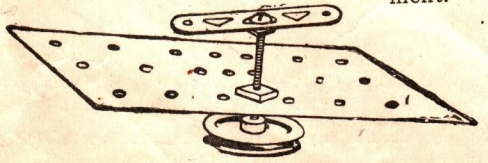


Fig. 29.
Method of making steering gear or where cross piece and pulley wheel are to move together.

Fig. 37.
How to use collar with slotted strip on a rod.

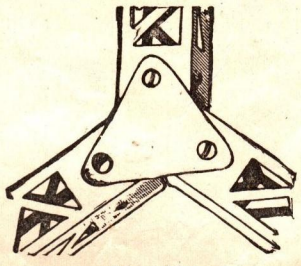


Fig. 31.
Use of triangle plate in 3-way square girder connection. See Bridge work

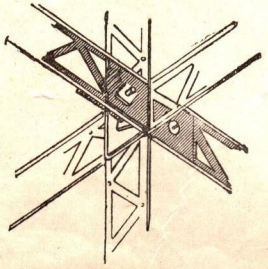


Fig. 32.
6-way single girder corner.

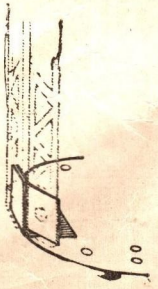
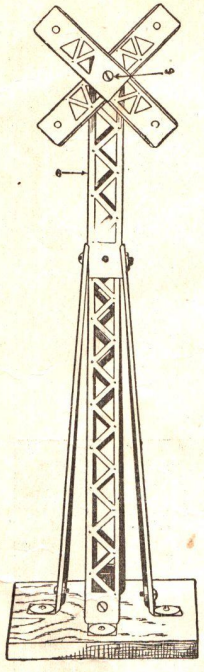
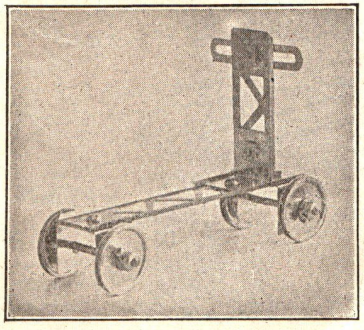


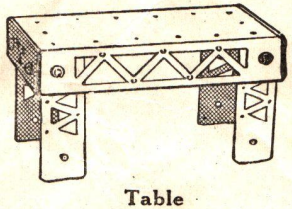
Fig. 33.



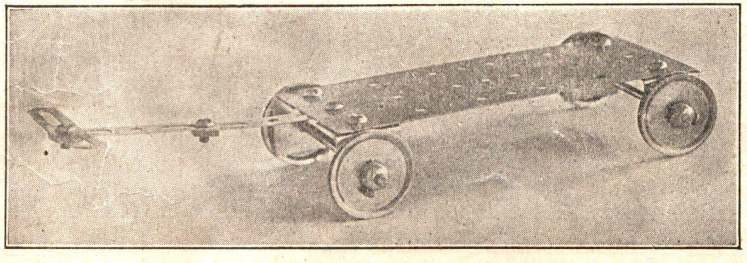
Windmill



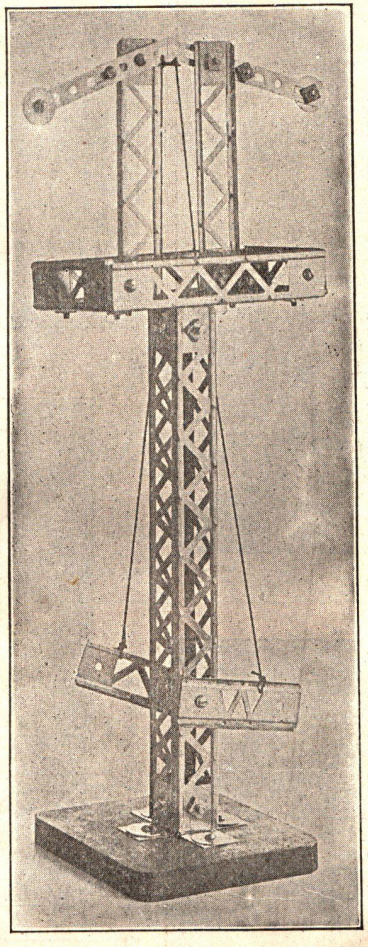
R. R. Hand Car



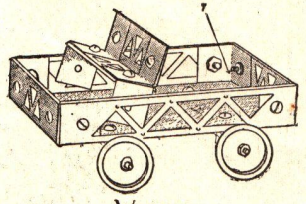
Table



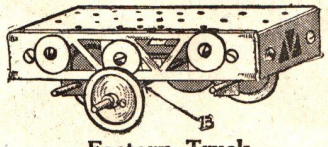
Flat Truck



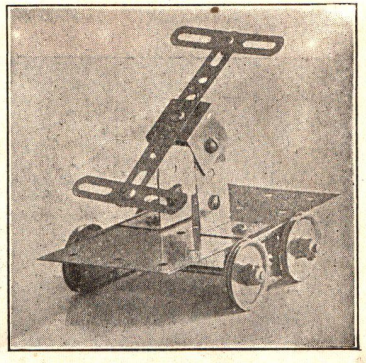
R. R. Signal Tower



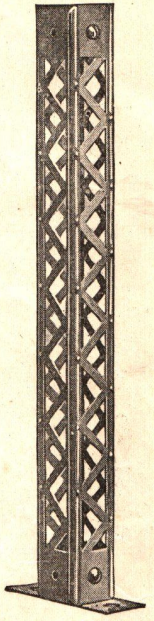
Wagon



Factory Truck



Scooter

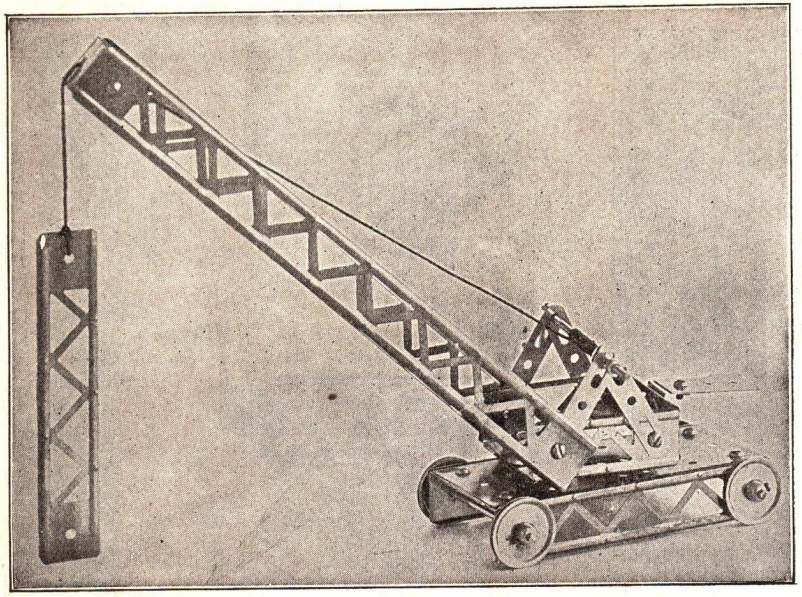


Square Girder

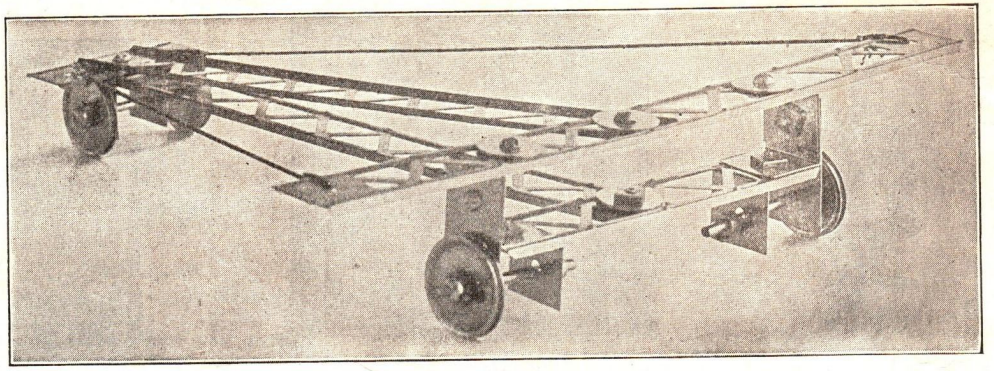
WARNING—You must not proceed with your models until you have worked out all the standard details on pages 1 and 2 even if you are an old Gilbert Model builder. I find myself, after having built thousands of models that I frequently refer to the Standard Details on pages 1 and 2 for reference and help.

The square girder and the triangular girder are the fundamentals of real structural steel engineering. You simply must practise this until you can do it simply and easily. The boy who cannot do this will never become a Gilbert Engineer.

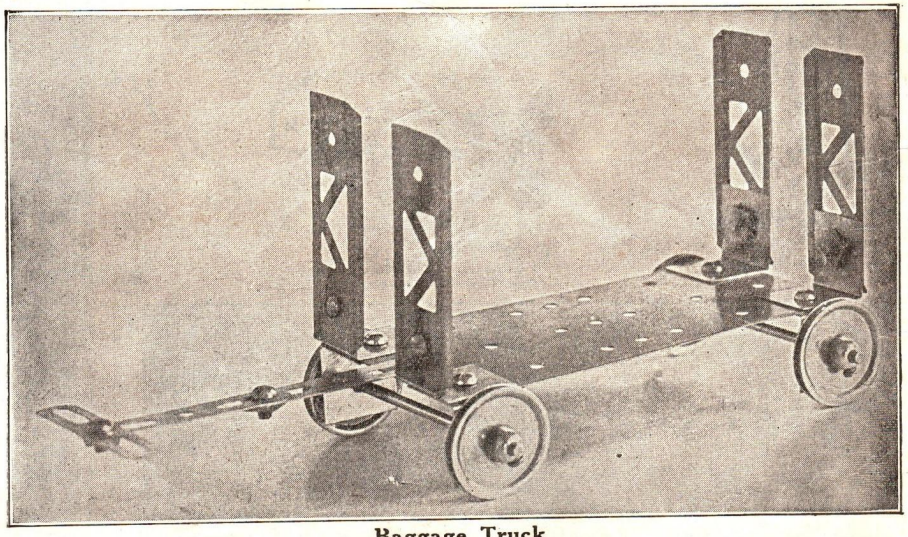
THESE MODELS MADE WITH ERECTOR SET NO. 1



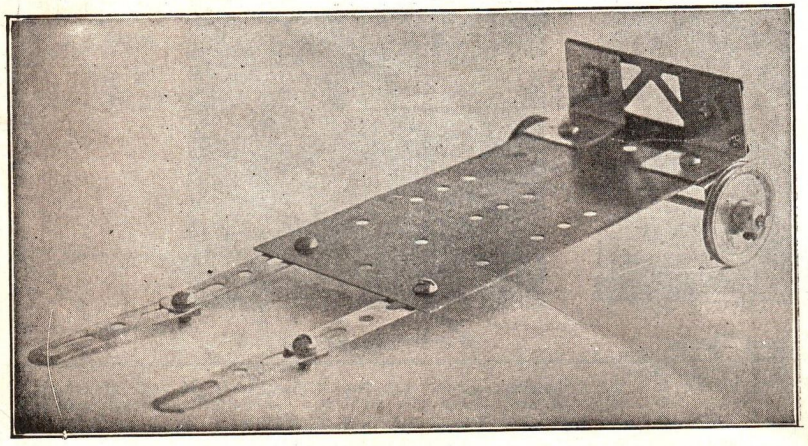
Crane



Monoplane



Baggage Truck

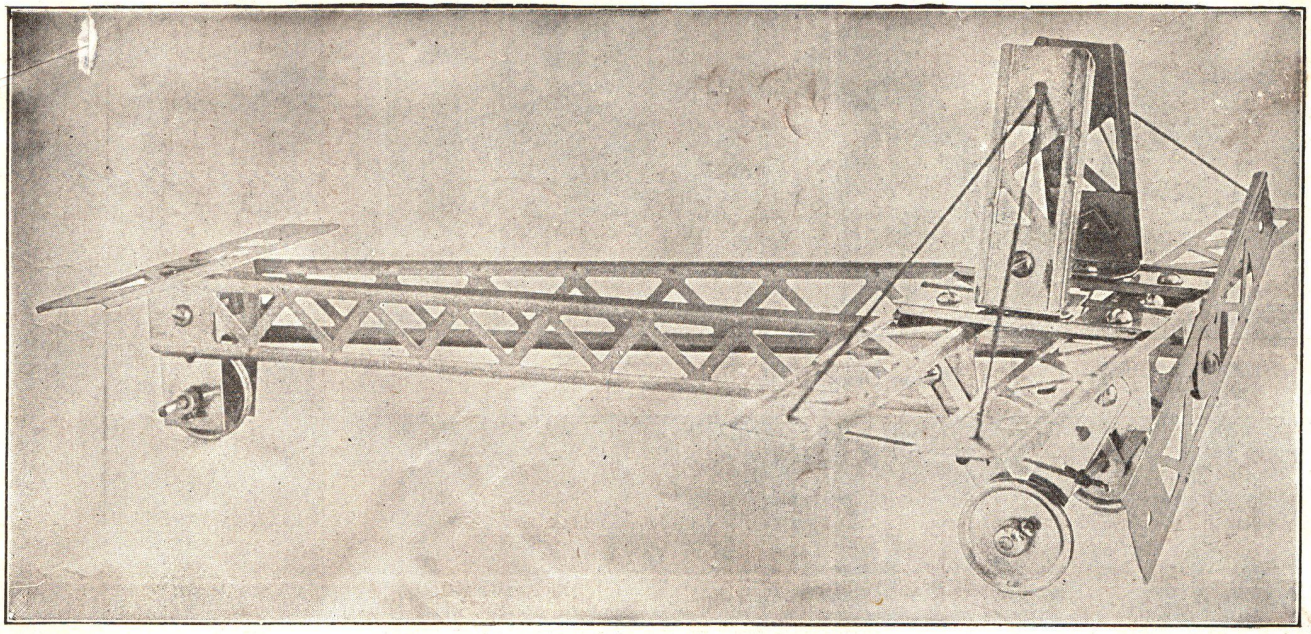


Two Wheel Truck

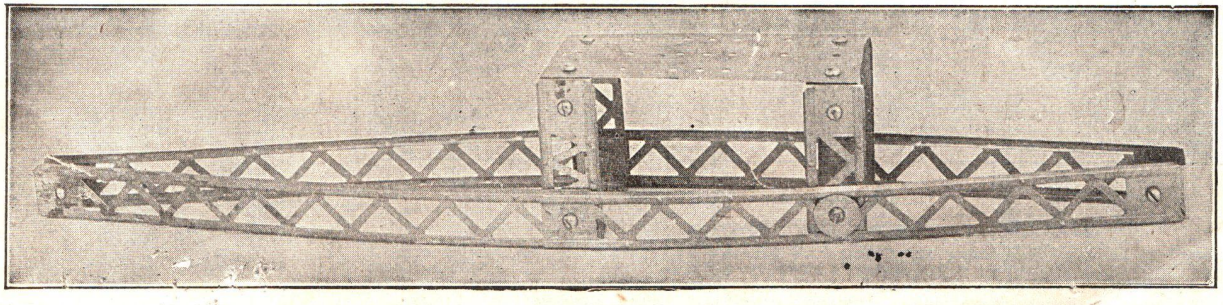
WARNING—Once again I must remind you not to proceed with any of the Gilbert Erector Models without working out each standard detail on pages 1 and 2 and be sure and become familiar with each, and the names of parts on the back of manual

Patience—This will require sime patience but you will not regret it, and you will become a much better Gilbert Engineer and enjoy your Gilbert Erector a great deal more by so doing.

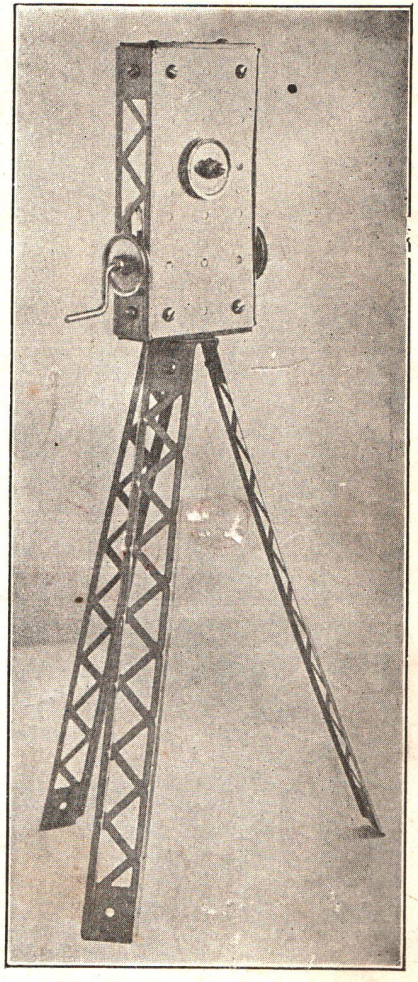
Imagination—Nothing but illustrations are shown in most instances. This is done to encourage imagination and resourcefulness and to help you later on in creating your own models. See about Prize contest on inside cover page and Gilbert Toy Tips, also the Gilbert Engineering Institute.



Monoplane

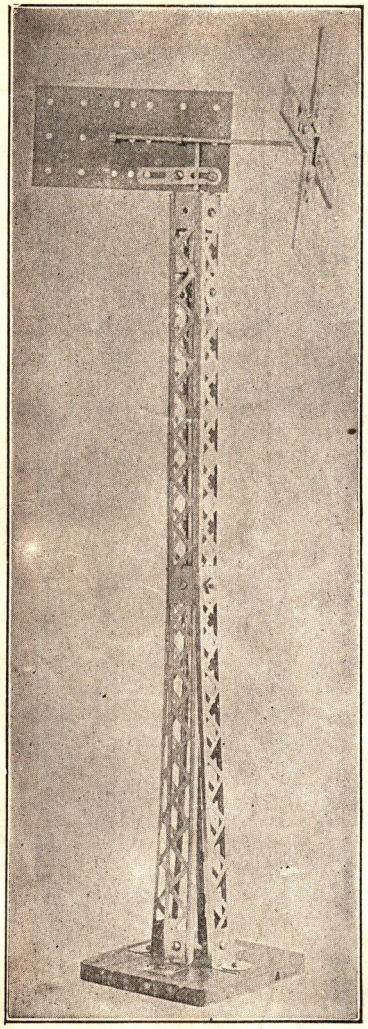


Launch

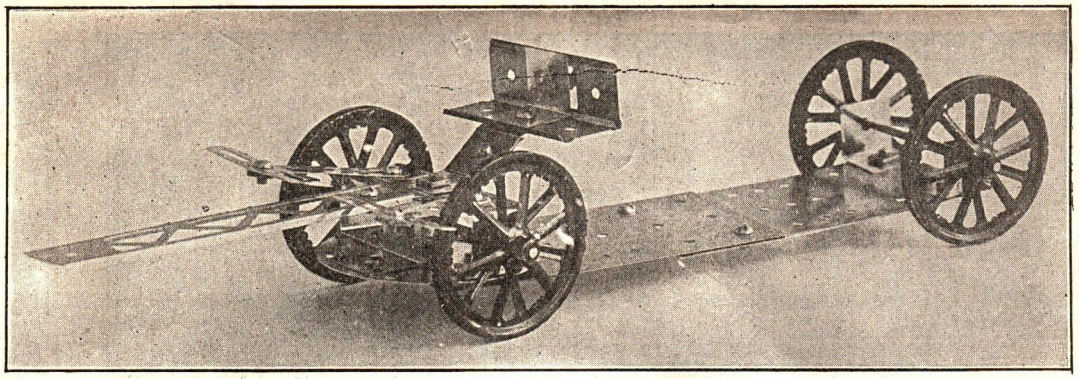


Motion Picture Machine

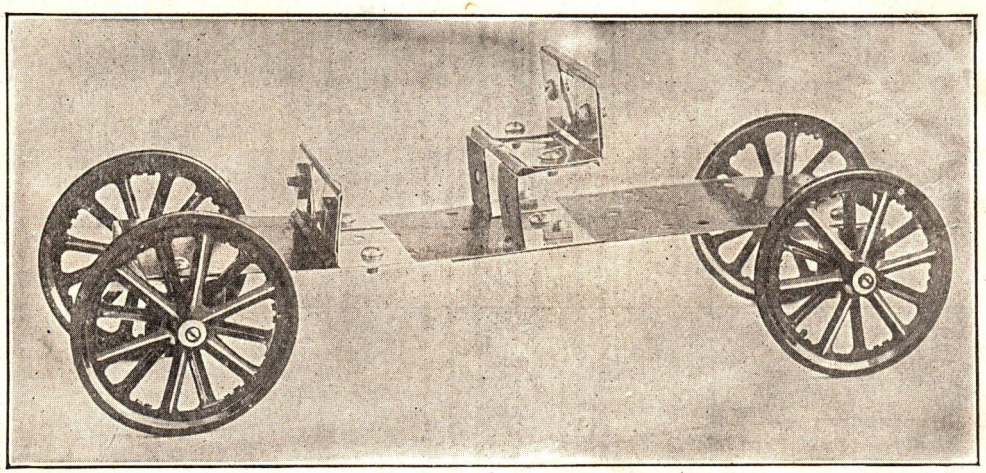
THESE MODELS MADE WITH ERECTOR SET NO. 2



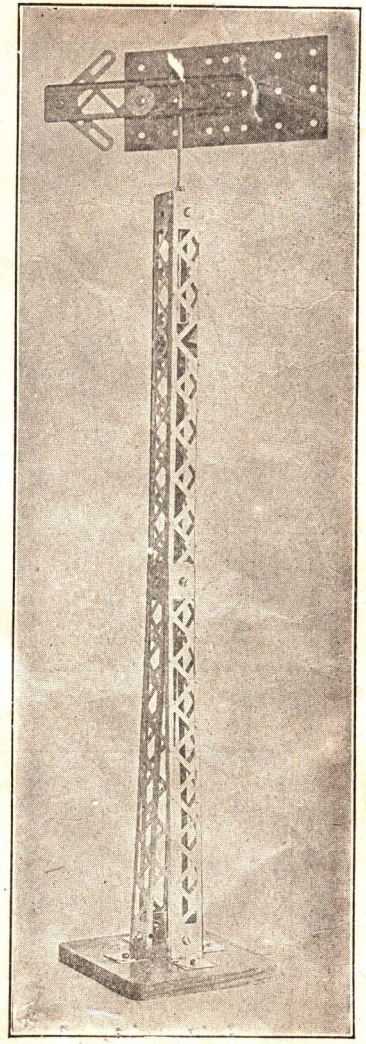
Windmill



Stone Dray



Buckboard



Weather Vane

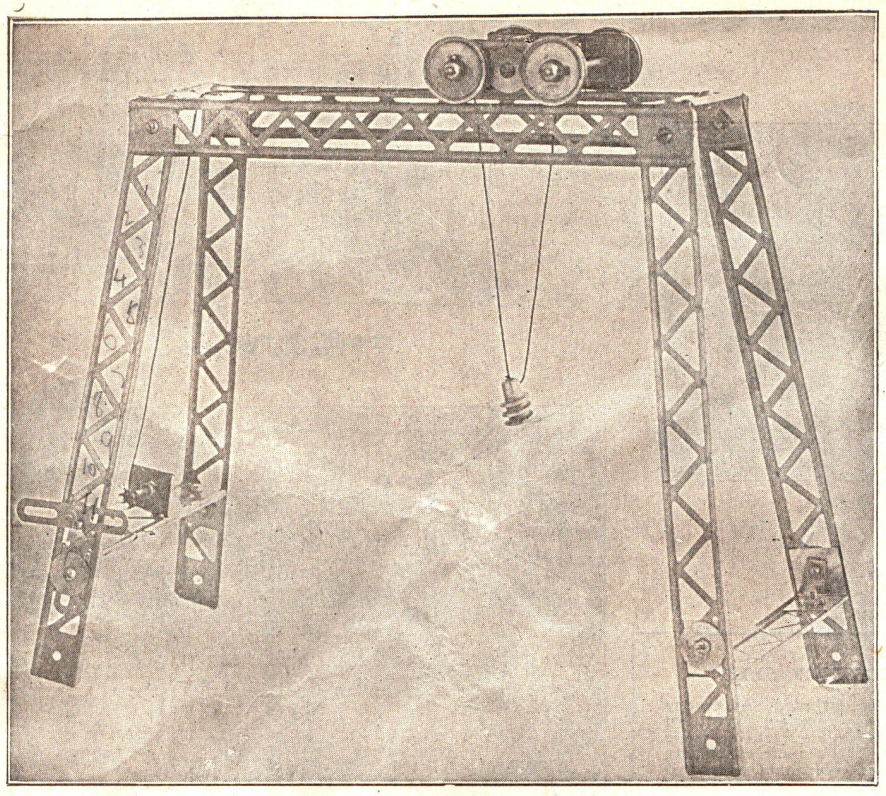
"GILBERT TOY TIPS"

If you want to know what is going on at America's greatest Toy Factory be sure and become a subscriber to Gilbert Toy Tips. This is Mr. Gilbert's magazine for boys. It is published 12 times a year and is just full of all the things that interest boys, pictures of diploma winners, the names of boys who have shown conspicuous achievement in engineering; pictures of prize winners in the Erector Model Building contest; news about the contest and prizes; good story each month; talk by Mr. Gilbert including articles on how to become a world champion athlete.

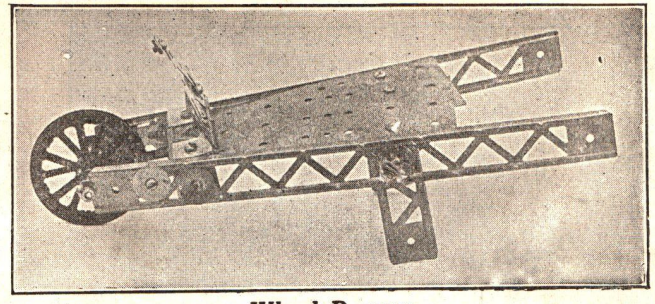
It might be interesting to many boys to know that Mr. Gilbert was himself a World Champion Pole Vaulter, wrestler and gymnast. There are many other interesting things that will interest boys in this magazine and you should make it your business to be a subscriber.

FREE SUBSCRIPTION FOR ONE YEAR.

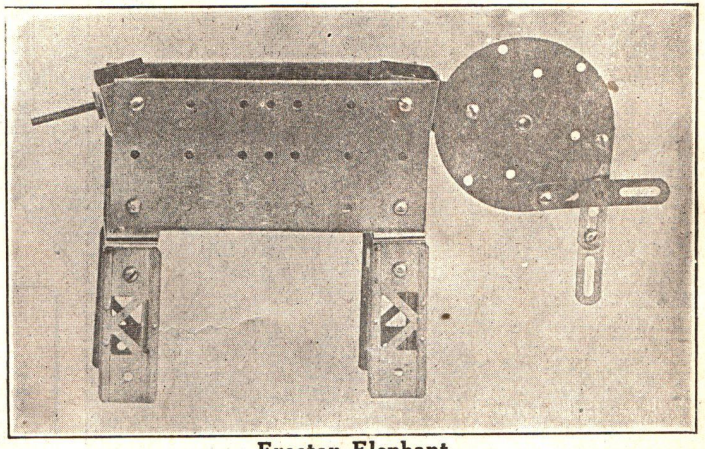
If you send us the names and addresses of five of your boy friends who want to subscribe to this magazine with $1.25 to cover their subscription we will send your Tips free for 1 year.



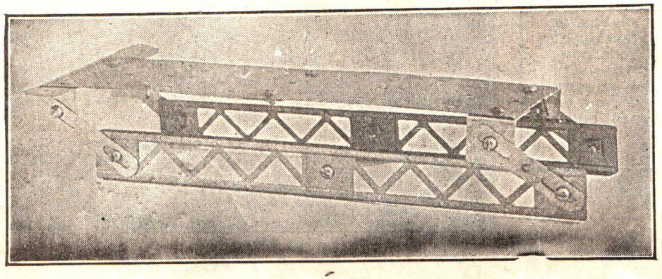
Crane Hoist



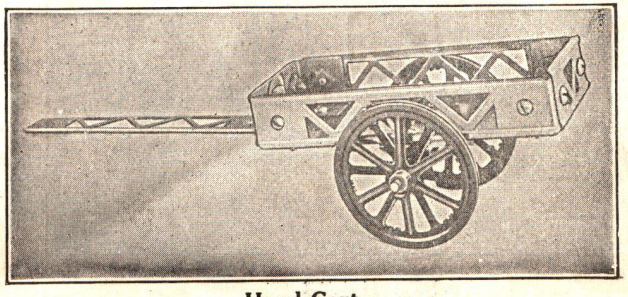
Wheel Barrow



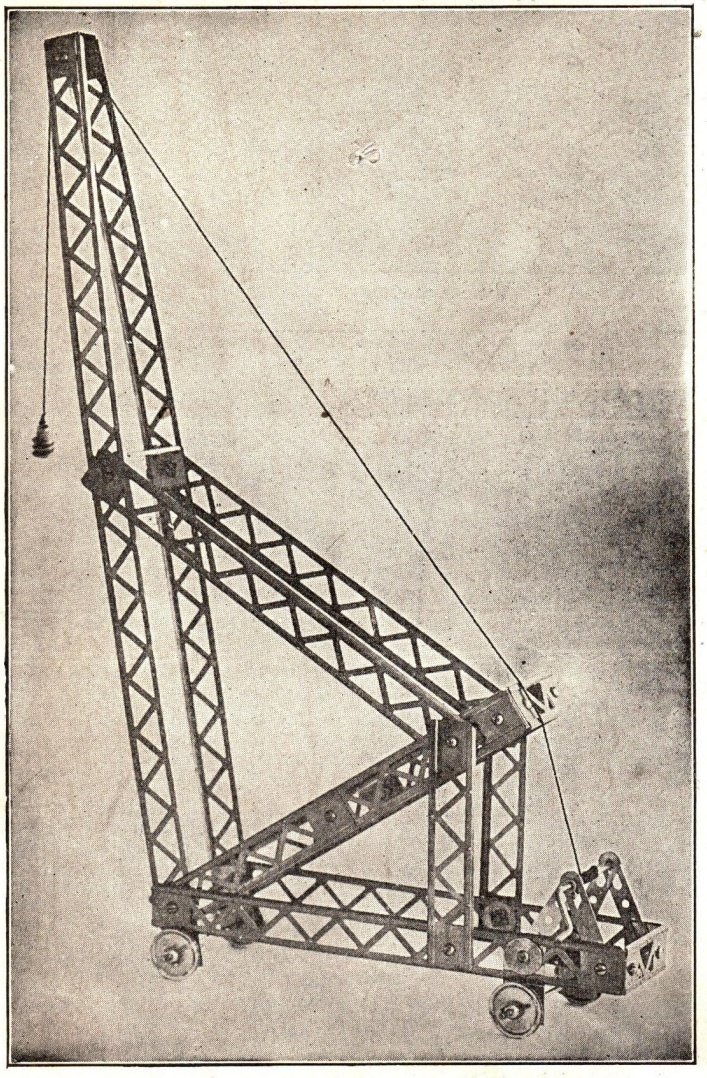
Erector Elephant



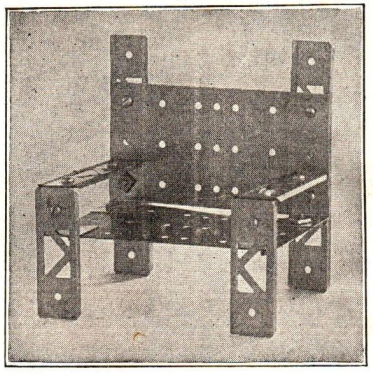
Sled



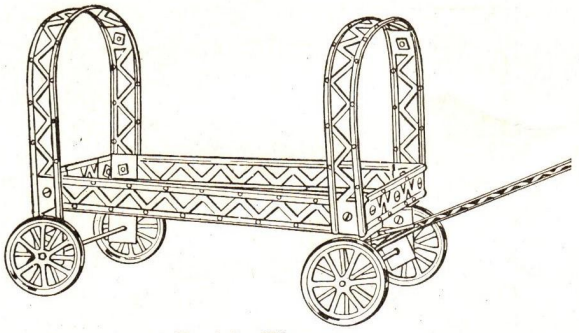
Hand-Cart



Wheel Derrick



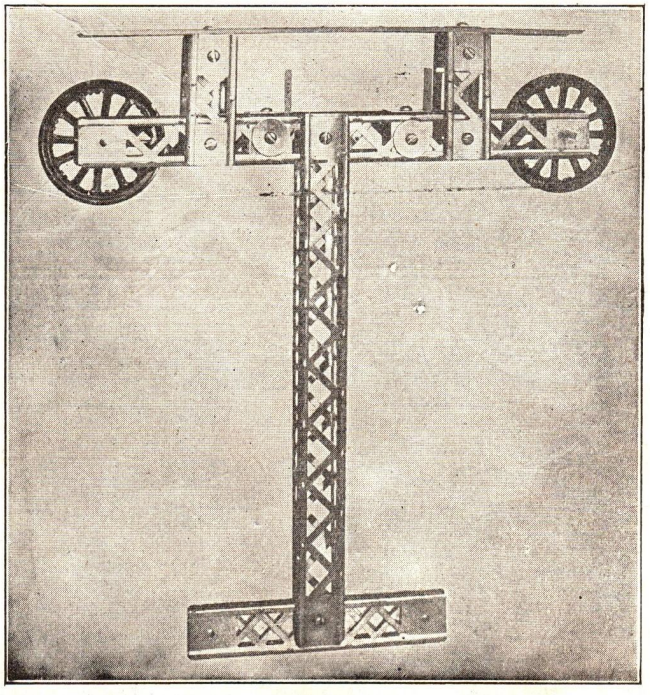
Settee



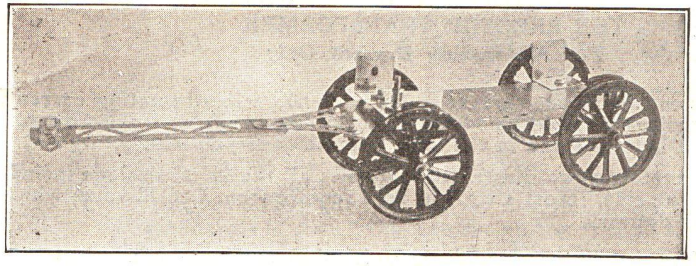
Prairie Wagon

NO ACCESSORY SETS

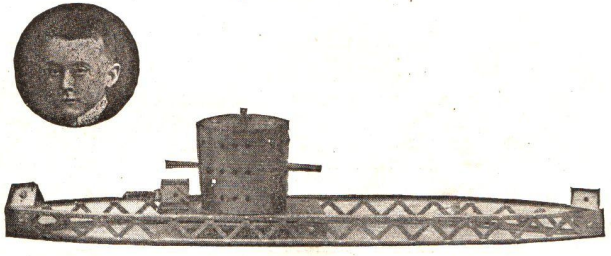
We have discontinued Accessory sets because many of them have been sold to boys as regular sets to their dissatisfaction. The old accessory sets simply contained additional parts for building models which you could not do with regular sets; so, you can buy these extra parts now from the price list on the back of the Manual from us direct or from your toy dealer. This simplifies the whole Erector system of Toy Engineering to the satisfaction of everyone and enables us to keep continuously adding new parts to the sets without interfering with those already on the market. This has been done on the recommendation and suggestion of Mr. Gilbert's boy friends.



Mono-Rail



Lumber Wagon

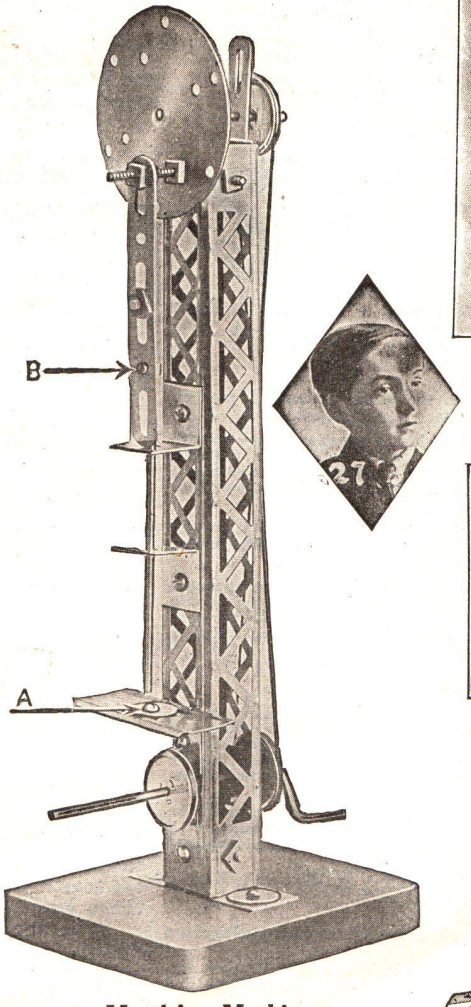


"The Monitor," Special Prize, 1916.
L. Homer Surbeck, Rapid City, S. D.

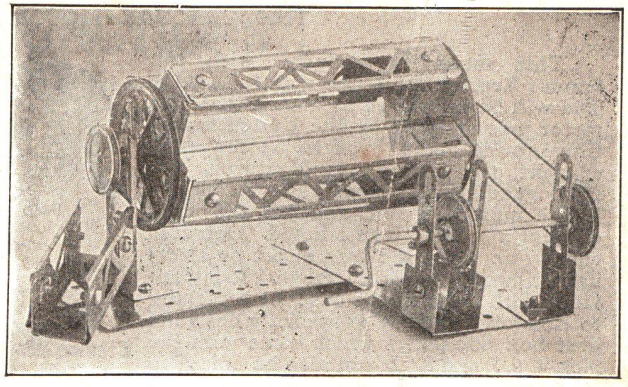
Log Wagon

CATALOG OF GILBERT TOYS

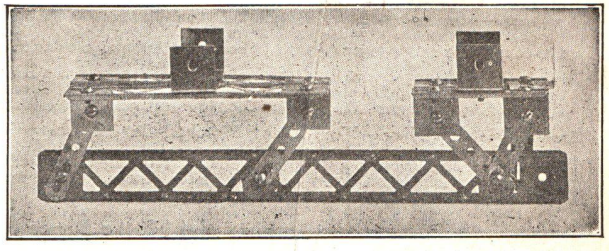
If you are not a possessor of one of our Gilbert Toy Catalogs be sure and send your name and address to The A. C. Gilbert Company, New Haven, Conn., and we will mail one of these catalogs free postpaid. It will be interesting to many of Mr. Gilbert's boy friends to know that he manufactures many other toys besides Erector, combining great fun and educational value; such as electrical toys of all kinds, Chemistry Sets, Machine Guns, Toy Tanks, Wireless Sets, Toy Machinery, etc. **Don't forget to get Gilbert Toy Tips..**



Mortising Machine
27th Prize Winner, 1915.
Ferdinand Tub, Chicago, Ill.



Cement Mixer

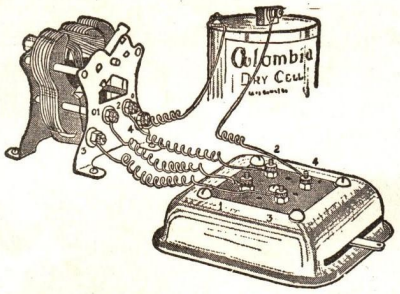


Skate, 4th Prize Winner, 1914.
Clayton B. Frye, N. Y.

Farm Wagon

THE ERECTOR MOTOR

This motor is included with the famous Erector No. 4 also with 6, 7, and 8. You will be interested to known that this motor was adopted by the United States Government and proved to be the most efficient toy motor manufactured, for Propoganda Distributors. For its size it is the most powerful and yet the most efficient motor yet constructed. Operates equally as well on either direct or alternating current of low voltage. It is provided with holes in the base for attaching to Erector models or to specially designed gear box side plates which come with the Nos. 4, 6, 7 and 8. It can also be bolted to Reverse Base. In fact there are many combinations on which it may be used.



Erector Motor P-58 **Reversing Base P-59**

Battery Current.—It requires from one to four dry cells, according to the power desired. If used on storage batteries one or two cells of two volts each, or a four volt battery will do nicely.

More Efficient.—The Erector Motor is highly Efficient because it has a short magnetic circuit—a small air space between armature and magnet—has high grade steel laminations—thoroughly insulated windings—large pole surface—has new type tubular holders with copper gauze brushes. The brushes can be easily replaced and purchased from any Erector dealer. These brushes are held in place against the commutator by a spring, so that the contact is always certain.

Terminals.—The motor has four terminals. As it comes in the Erector sets, is so wired that it runs in one direction only. It, however, has four terminals, so that it can be changed into a reversing motor by attaching to Reverse Base P-59, which is furnished with the Erector sets Nos. 7 and 8.

Special Motor Pulley.—The Erector Motor Pulley is a remarkable feature which no other motor possesses. It is designed so that by means of a coupling (see P-15 on inside back cover) you can directly attach this on to a shafting, thereby driving a shafting without the use of a belting or any regular gear such as a crown, worm or pinion gear any one of which can also be connected direct to the motor spindle.

Making the Motor Reversible

The terminals on the motor and base are 1, 2, 3 and 4. No. 1 on the motor corresponds to No. 1 on the base, etc. First remove the wire on the outside of the motor which connects terminals one and two. Now connect with insulated wire (which you can purchase from any electrical store), the different terminals just the same as illustrated above, connecting terminal one on the motor with terminal one on the reverse base. When the arm in the base is turned from one side to the other it will reverse. When the arm is in the center of the base the motor is at rest.

Operation of Models at a Distance.—Any boy can extend the terminal connections from the motor to the base to any length. Besides this the hole in the end of the switch arm allows for the attaching of a long cord so that the switch can be moved backward and forward at a long distance, such as from one room to another.

Base.—The Reverse Switch Base P-59 is packed only in sets Nos. 7 and 8, and also in the Erector Electrical Set and can be bought separate from your toy dealer for 75 cents.

Mounting on Base P-59.—The Erector motor can be mounted on the base if so desired by passing short Erector bolts through the holes in the bottom.

Erector Motor P-58 is always shipped with terminals one and two connected with a wire. Battery connections to be made with terminals three and four. To make motor reversible remove the wire and follow directions as given.

Reverse Switch Base P59.—This comes with sets, 6, 7 and 8 and can be bought separately from your toy dealer or from the factory at 75c. (See description of other electrical accessories in Gilbert Toy Catalog, sent free upon request.)

THE ERECTOR TRANSFORMER

For Alternating Current Only

Since 90 per cent of house current is 110 volts 60 cycle alternating current, the Erector Transformer is designed for use on this current, and will give you more power than batteries and in the long run will save you money.

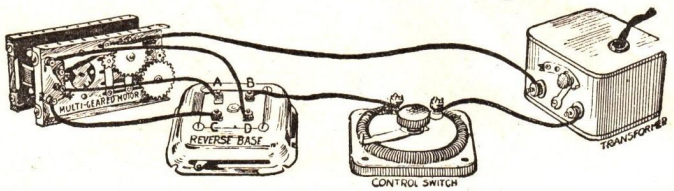
The New Transformer as illustrated embodies all the latest designs including rheostat on the side. Most electrical toys require from 4 to 12 volts, which this transformer delivers.

No Shock.—In transforming current from high voltage to low, high heat is produced, because electricity in passing through resistance coils, etc., dissipates its energy in heat. We have overcome this in our transformer by thoroughly ventilating the coils and constructing them with a large area of radiating surface. To still further reduce resistance we use high grade electrical steel in the core. High grade insulation and the wires thoroughly eliminates the possibility of shock.

Power at Low Cost.—By using a transformer one can operate working working models and various mechanical toys at the lowest expense . The saving over the use of batteries will soon pay for the purchase price of a transformer. Besides the current is even and always strong enough for operating all models.

The Gilbert Transformer will not burn out if used on 110 volts, 60 cycle alternating current. It is absolutely safe and there is no possible danger to the boy using it.

USES OF THE ERECTOR ELECTRICAL ACCESSORIES



This illustration shows you some of the uses of the Electrical Accessories which can be conveniently used in conjunction with Erector and other electrical toys. Every Gilbert Engineer should send for the booklet which describes these accessories.

The above illustration gives excellent practice by attaching reverse base P59 and control switch P61 and transformer P60C with the Motor and gear box sides with gearing. With this combination any one can gear any of the models to the speed desired and also make it run back and forth by use of the Reverse Switch base. Further control of the speed is made with control switch. There is a constant even current through the transformer, which in turn reduces the operating cost to the minimum.

TYPICAL GEARS AND THEIR FUNCTIONS

Gears and pulleys provide a means for transmitting power, increasing power, and regulating speed.

If power is desired speed must be sacrificed.

If speed is desired power must be sacrificed.

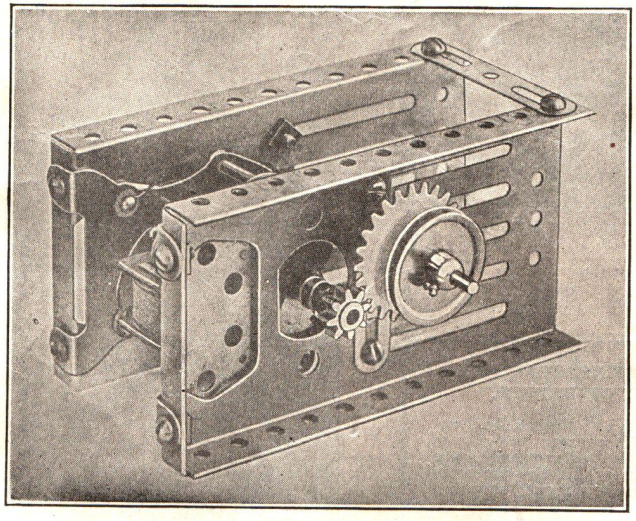
The driving wheel is called the driver and the driven wheel the driven. These different styles of gear boxes are shown together to illustrate and treat practical mechanics. They also offer the builder a variety of different kinds of power from which he can select the most practical for any particular model.

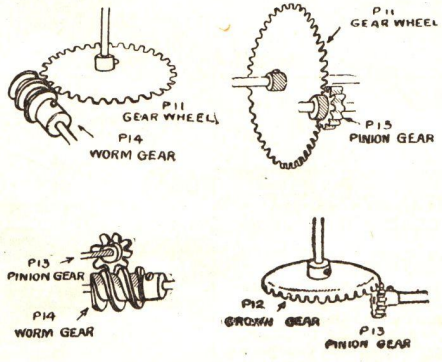
The gear box models shown on this and following pages illustrate the various gearings which are commonly used in engineering work.

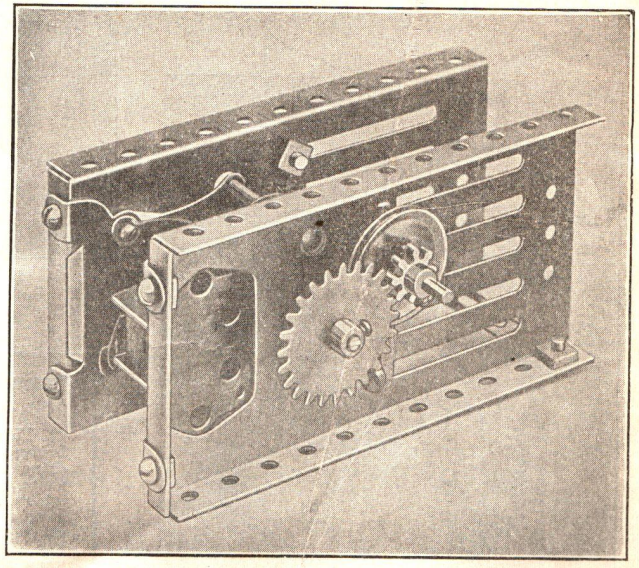
By using these different gearings one will be able to make the different working models such as elevators, derricks, lift bridges, cranes, etc., exact working miniatures of the real things.

By means of these gearings the full amount of power is used which the Erector Motor develops.

Before assembling motor and interchangeable gear side plates, refer to Standard Details, noting how the slotted strips can be made to suit any gear combination. Carefully note illustration, and you will be able to design any kind of a gear box required for your engineering models. Practically every gearing combination can be made with this newly invented interchangeable gear plate. The possibilities are unlimited. The additional use of control switch and reverse base enables one to control exactly the speed and direction of various drives needed.







LOW SPEED GEAR BOX

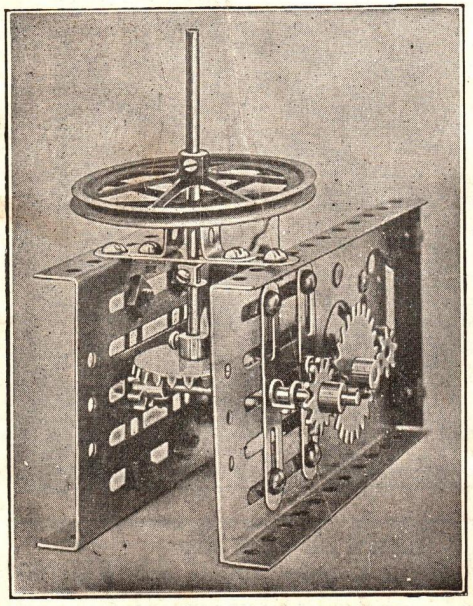
The small pinion is the driver and the large gear the driven. In this type the power is increased and the speed decreased, and is designed to lift heavy weights. Note—Operated by hand or Erector Motor.

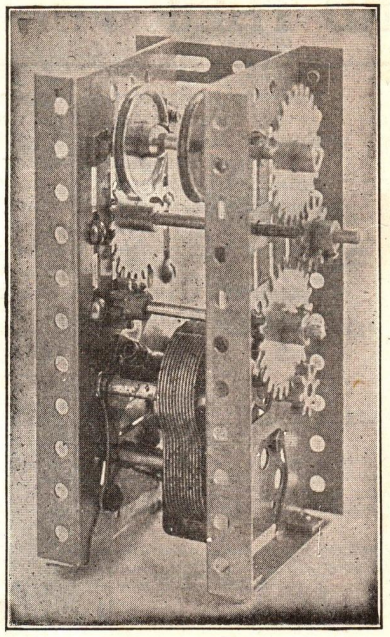
HIGH SPEED GEAR BOX

The large gear is the driver and the small pinion the driven. In this type the speed is increased and the power diminished, and is designed for a gear box where high speed is wanted, not power.

RIGHT ANGLE DRIVE GEAR BOX, MOTOR DRIVEN

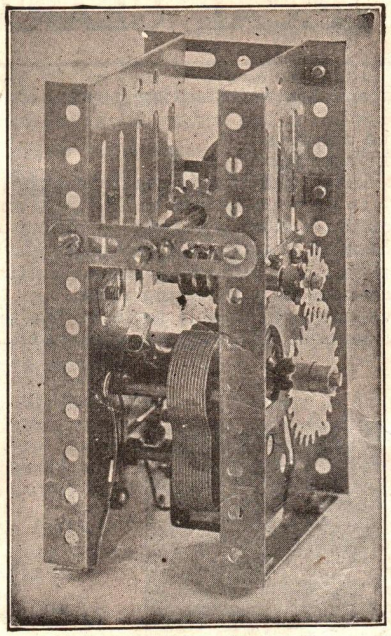
This gear box is used where speed is required and where power is transmitted, at right angles. A crown gear, held in place with crank, meshes with pinion on axle. The rest is made of perforated strips, small angle, base plate and pulleys.





HORIZONTAL WORM DRIVE GEAR BOX.

This is used for revolving bridges, etc. The flat gear drives the small pinion on the same shafting with worm gears which mesh with another flat gear on perpendicular shafting. By turning the crank the perpendicular shaft will revolve very slowly.

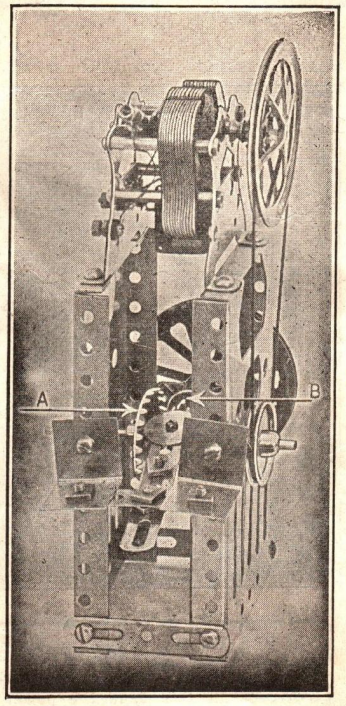


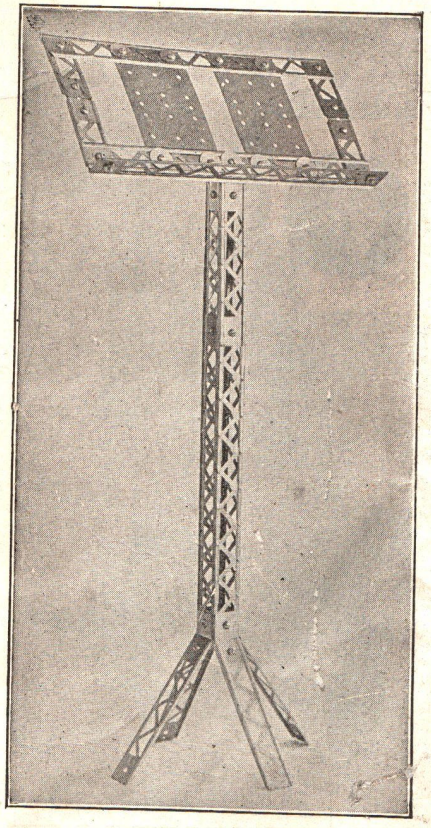
REVERSING GEAR BOX MOTOR DRIVEN.

This type of gear box enables the operator to change the direction of motion of the shaft from which the power is transmitted without stopping the power.

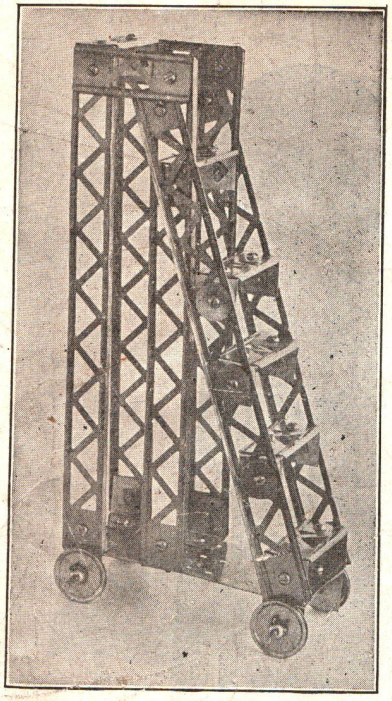
DRUM GEAR BOX.

This style of gear box is used on hoists to wind a cable. Small pinion on shaft with crank and wheel drives the flat gear, on which are two pulley wheels, about one inch apart between which the cable winds up, acting as a drum.

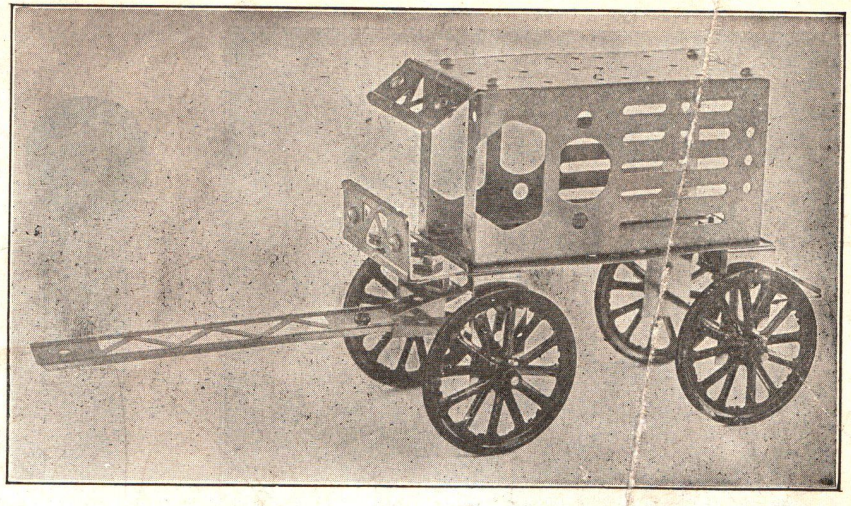




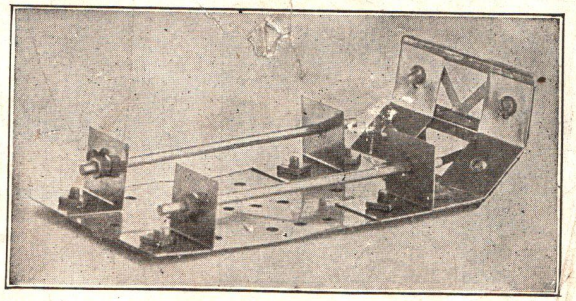
Music Stand



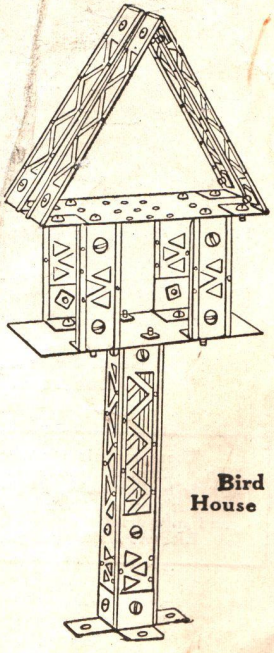
Trolley Repairer



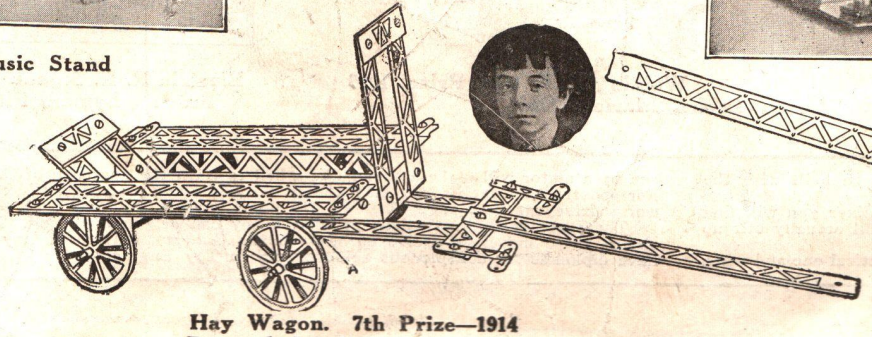
Grocery Wagon



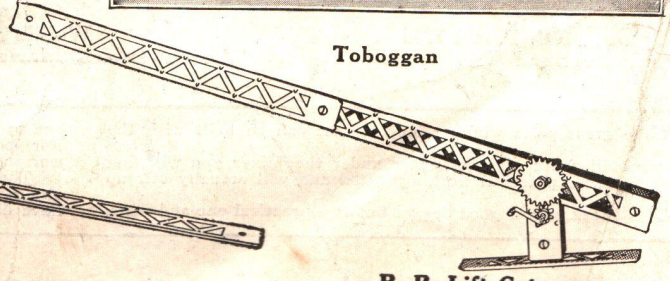
Toboggan



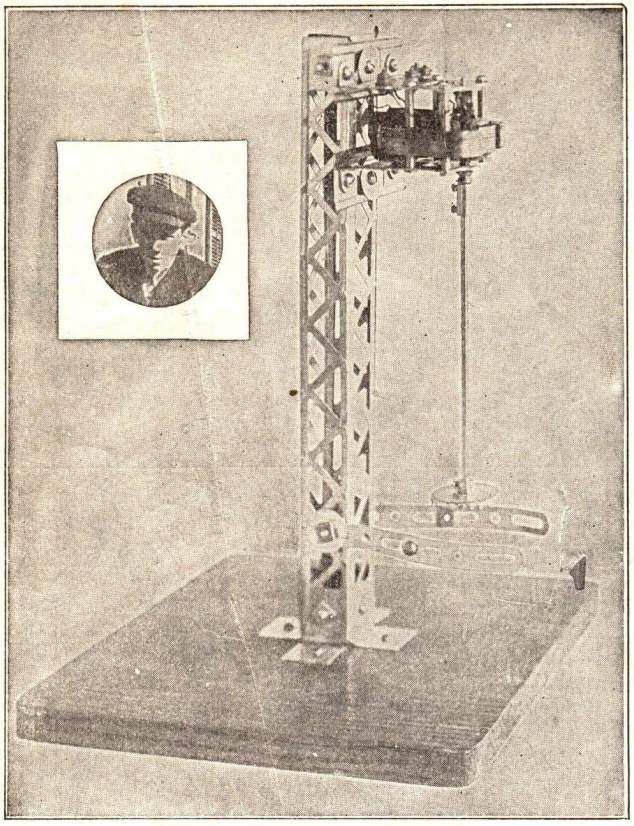
Bird House



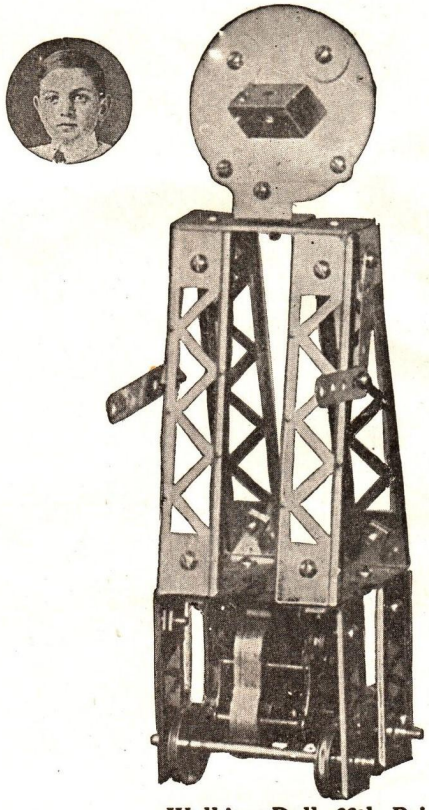
Hay Wagon. 7th Prize—1914
Bernard Schultz—Chicago, Ill.



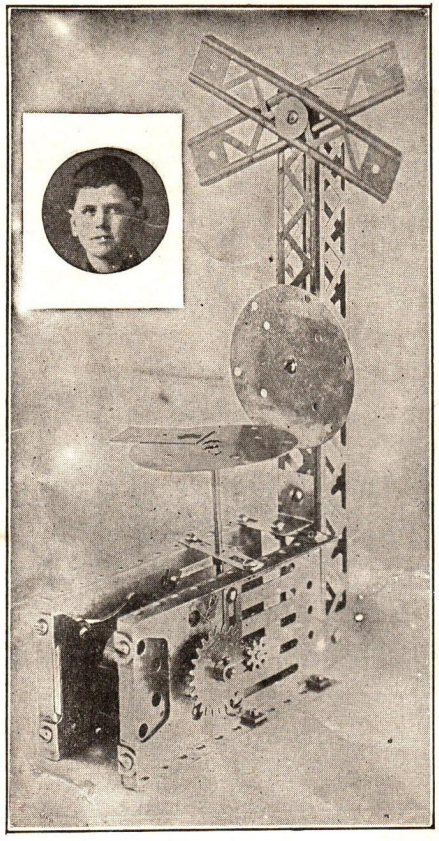
R. R. Lift Gate
Harry Brown—San Francisco, Cal.



Soda Fountain Mixer. 16th Prize, 1916
Robert B. Kelsey, Portland Ore.



Walking Doll, 66th Prize, 1916
Warren Leeka, Marion, Ohio



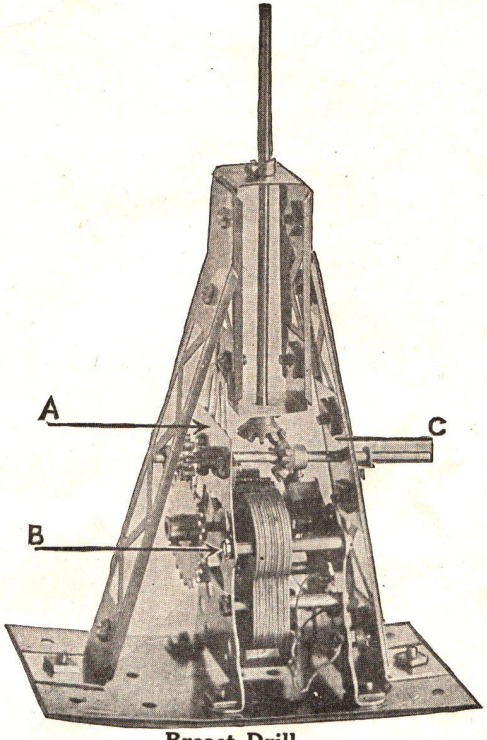
Electric R. R. Signal, 7th Prize, 1916
Francis Lyman, Pittsburg, Pa.

These models represent three great prize winning models that can be built with the No 4 Erector.

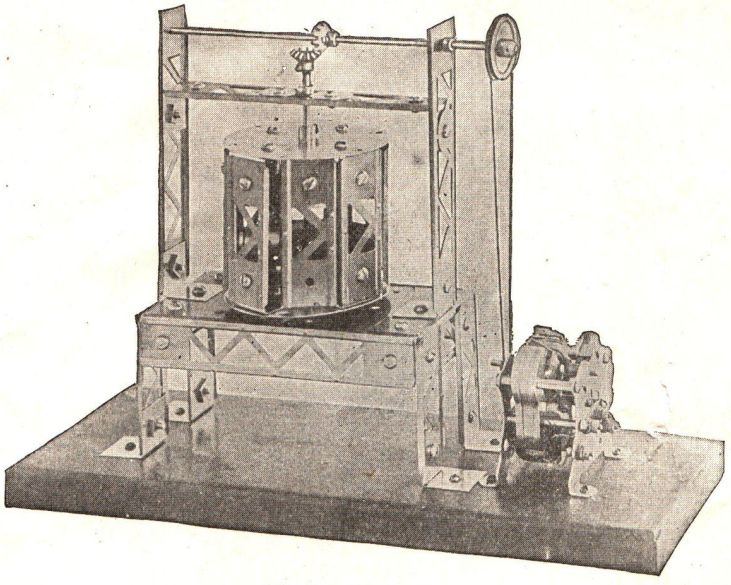
Soda Fountain Mixer—If you will put a glass of water under the Mixer you will find that it is not only a good design but a practical working model and will actually stir up and mix drinks.

Electric Railway Signal—This is not only a good design but is a practical one and when run by a motor will make a sound like a bell to warn the approach of the oncoming train. For construction details you may choose the right angle drivegear box or the horizontal worm drivegear box, page 12.

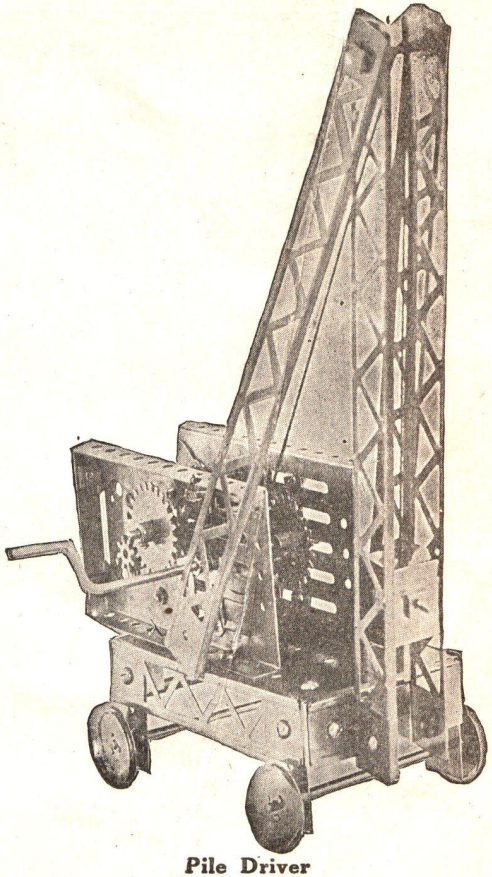
These are good illustrations of what a boy can originate himself. The boys who designed these models are also enrolled in the Gilbert Institute of **Toy** Engineering and have diplomas for conspicuous achievement in Toy Engineering.



Breast Drill



Washing Machine



Pile Driver

BREAST DRILL.

"A" is a Straight Angle (P5).

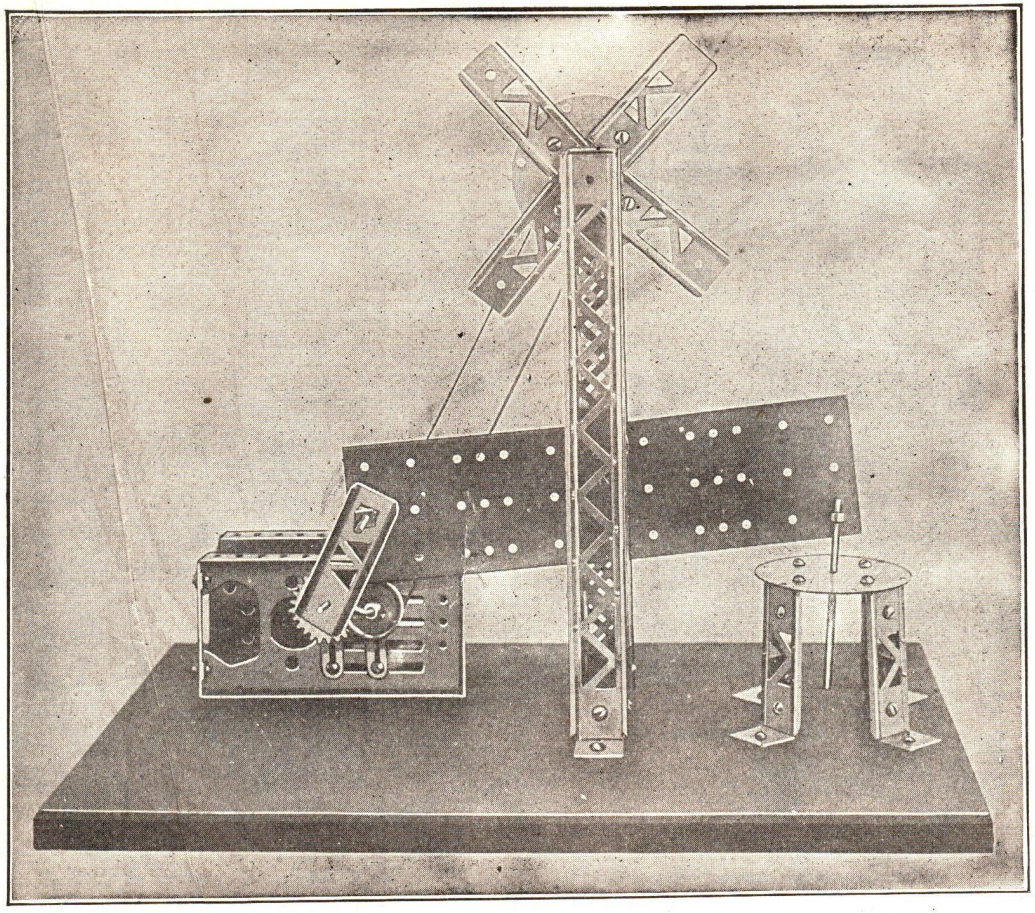
"B" is Frame nut (P412) on the motor. This, and the one opposite it will have to be unscrewed and the Slotted Strip (P21S) attached under the nut. This Slotted Strip (P21SP) holds "A" the straight angle, in position by means of nuts and screws.

"C" is another Straight Angle (P5 attached to the 6-inch girder. This acts as a bearing for Horizontal shaft, onto which is attached the Mitre Gear.

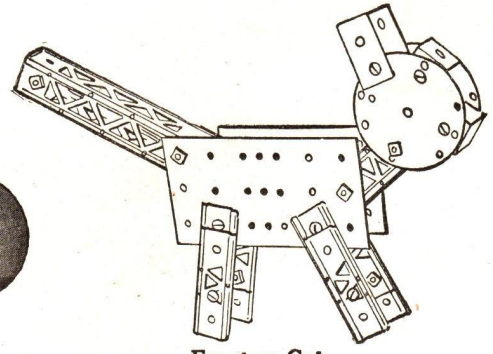
With these details and by following the illustration and using care you should have no difficulty in making a practical working model.

PILE DRIVER.

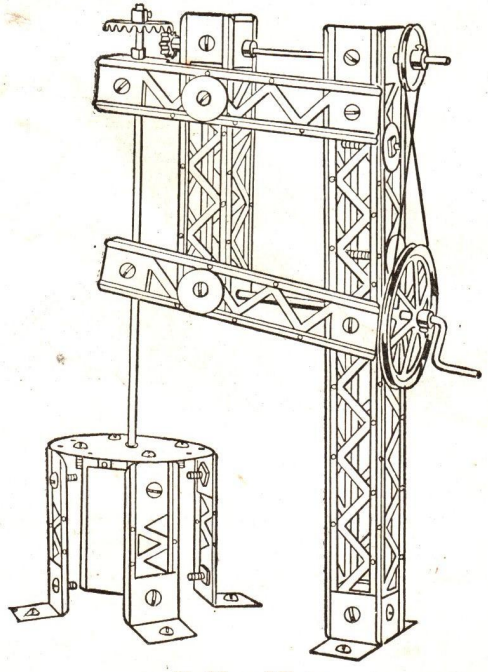
This is a specially constructed gear box. The gear P14 is attached on crank so that by pulling the crank out the gear can be disengaged and will allow the weight to automatically drop when the motor has pulled the weight to the top of the Pile Driver. The gear is attached to the crank so that by pushing the crank you can engage the gear and pulling it out, disengage it.



Combination Wind and Motor Pump **Jack Powers, St. Louis, Mo.**



Erector Cat



Fodder Mixer

COMBINATION WIND AND MOTOR PUMP.

Note carefully the method of attaching the 3-inch Girder to the crank. Also note use of collar and rod. See standard details for attaching collar on rod and base plate for free motion.

This model requires a little patience but if carefully and properly constructed will work perfectly.

Swinging Saw. First Prize, 1917
John Russell Botton, Philadelphia, Pa.

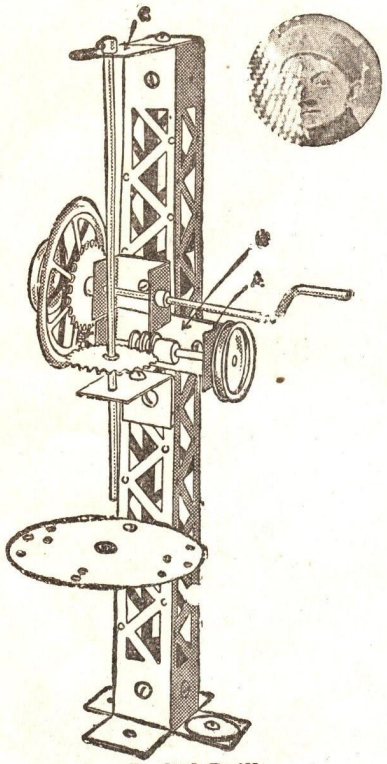
Charles M. Smith, West Branch, Iowa

SWINGING SAW MODEL.

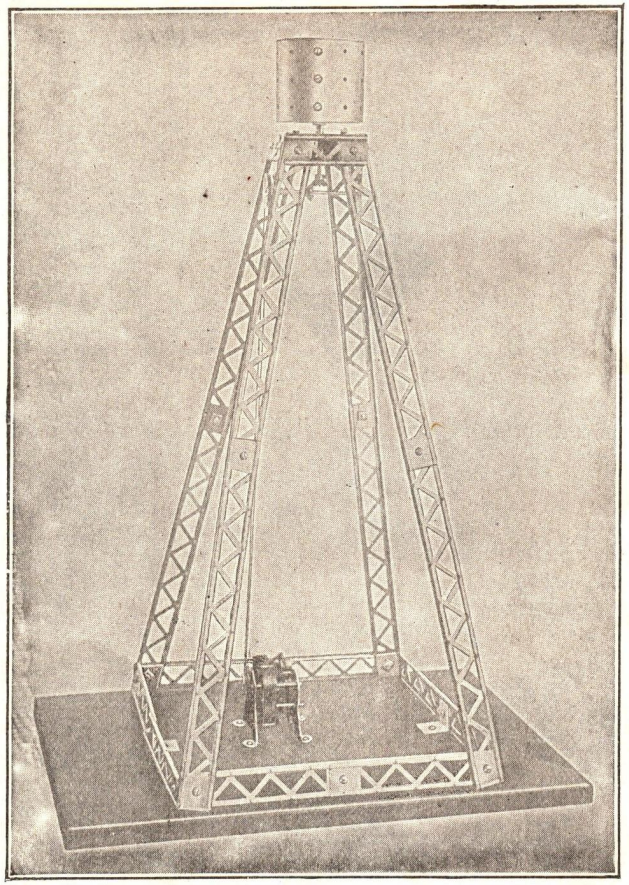
This is one of the very best models built with No. 4 Erector. The segment gear section can be attached to the circular plate making a perfect saw. This model requires patience but if nicely built will repay the model builder for his efforts, and the design is excellent and works perfectly.

CHURN MODEL.

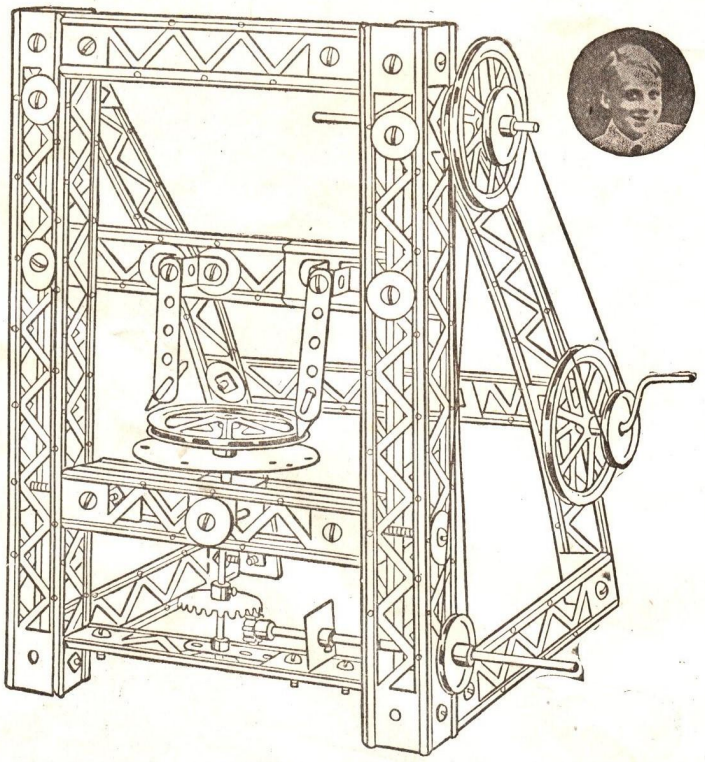
This Churn Model is comparitively simple to construct, is an excellent model and if placed into the bowl of water, its efficiency can easily be demonstrated. Both these models will give great satisfaction and they are two of our best prize winning models.



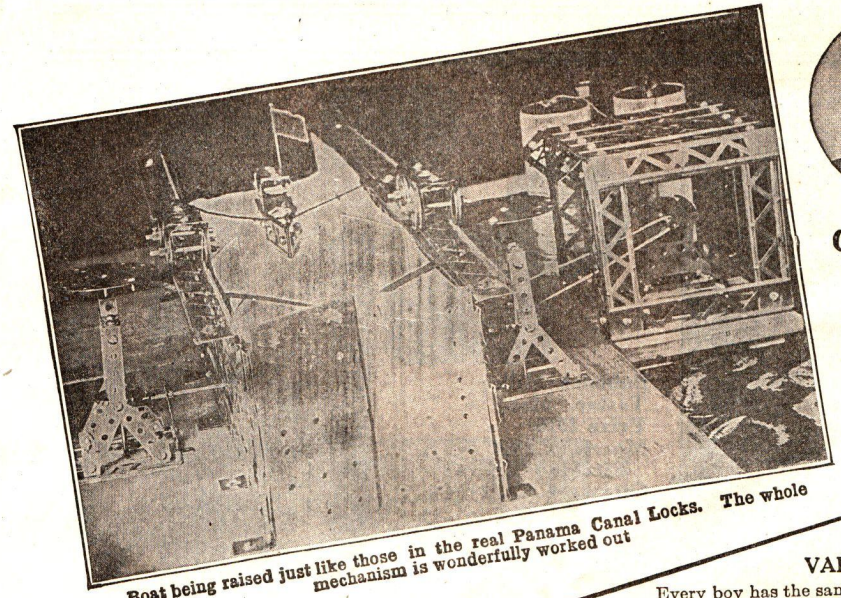
Radial Drill
2nd Prize, 1914
C. Cooper, Illinois



Revolving Lighthouse

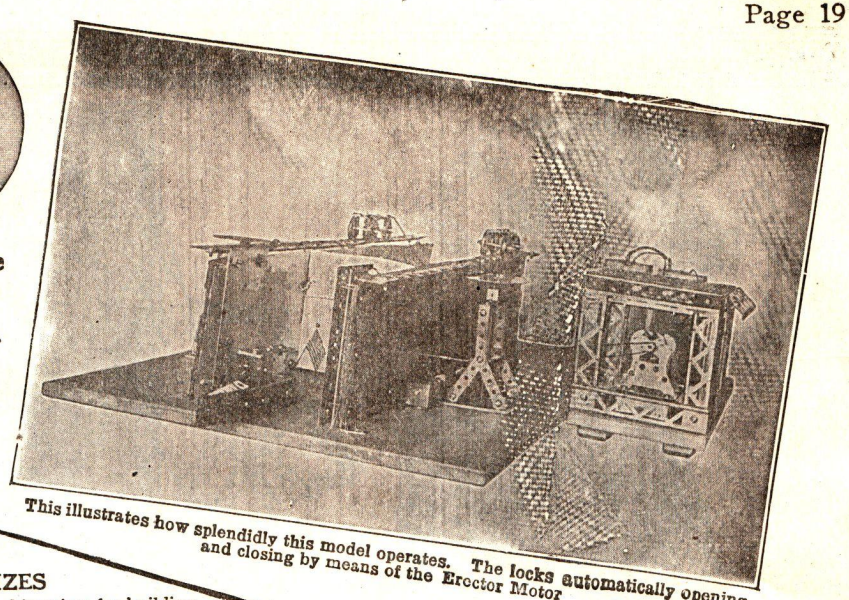


.Low Speed Trimmer..
26th Prize Winner
James Harrington, Chicago, Ill.



Boat being raised just like those in the real Panama Canal Locks. The whole mechanism is wonderfully worked out

Gardner Grote
Gilbert
Engineer
St. Louis, Mo.
Winner of
First Prize
1916

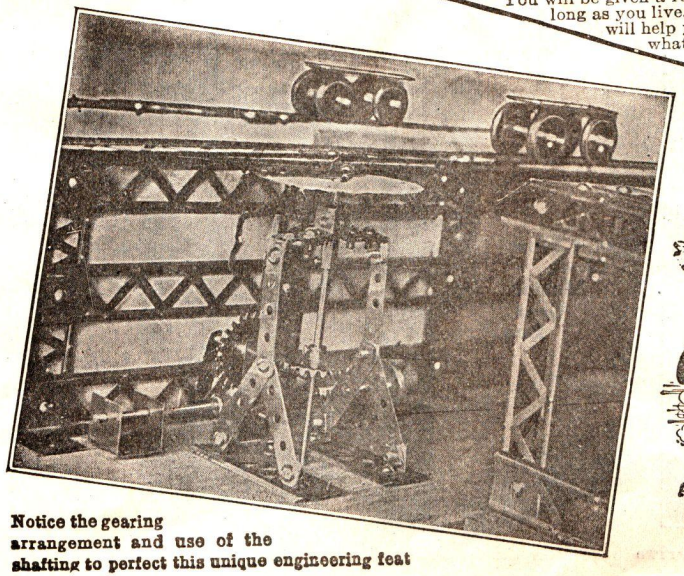


This illustrates how splendidly this model operates. The locks automatically opening and closing by means of the Erector Motor

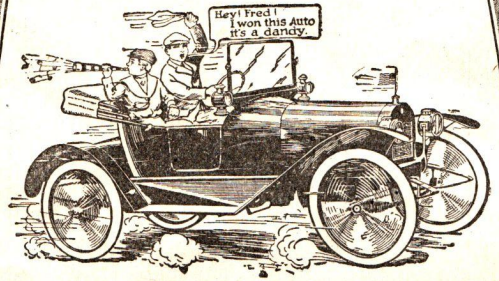
WIN VALUABLE PRIZES

Every boy has the same chance to win big prizes for building clever, new designs with Erector. You can also achieve fame by being awarded diplomas for winning Gilbert Engineer, Master Gilbert Engineer and other high degrees. You will be given a regular diploma which can be framed and it will be a fine thing to have as long as you live. Very often a few extra girders, angles, wheels or an electric motor will help you to be a prize winner. See cover of this manual telling you what to do so you can begin to-day being an Erector Expert.

BE A DIPLOMA WINNER

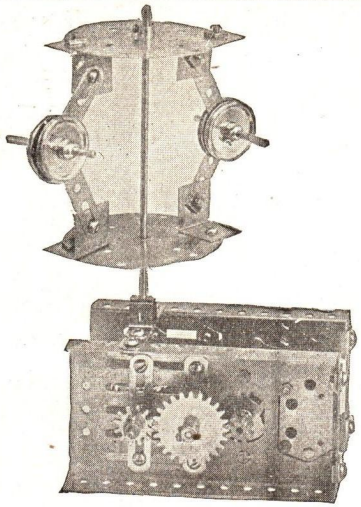


Notice the gearing arrangement and use of the shafting to perfect this unique engineering feat

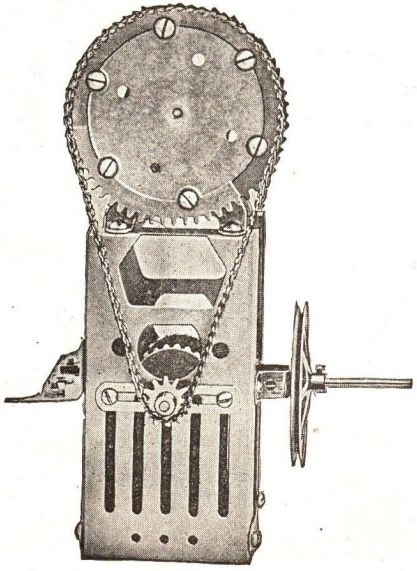


A real automobile was won by Gardner Grote for his model of "The Locks." See cover of Manual for prizes in the contest now taking place

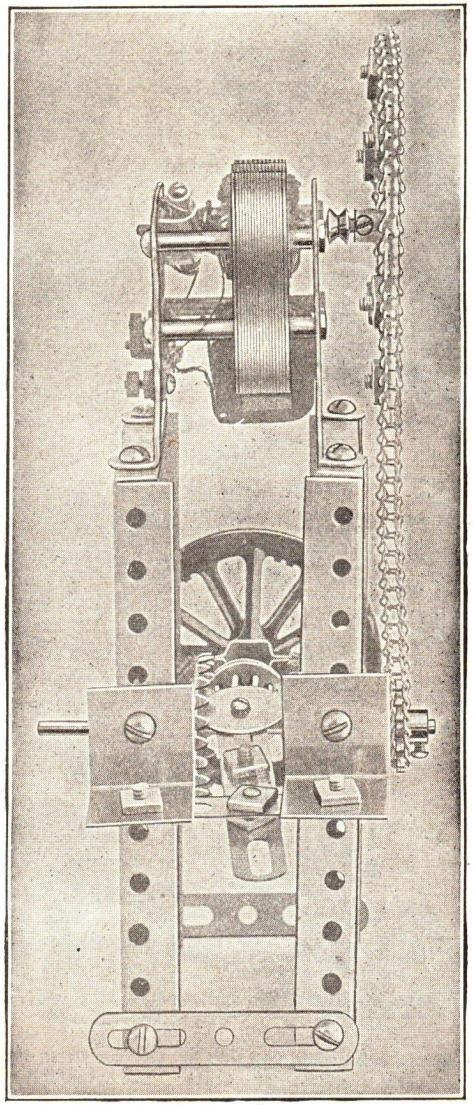
The "Four Judges" of the No. 3 Prize Contest and some of the many thousands of photos entered by Erector Boys



Centrifugal Governor

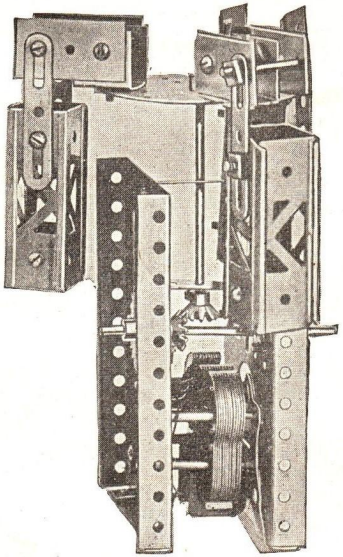


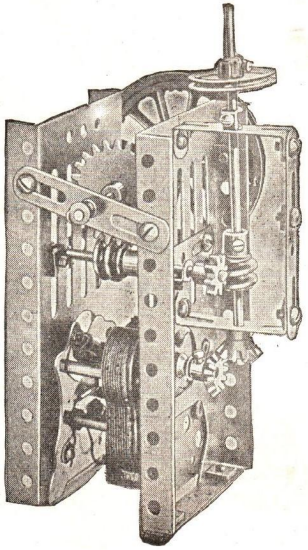
Side View Reversing Gear Box.



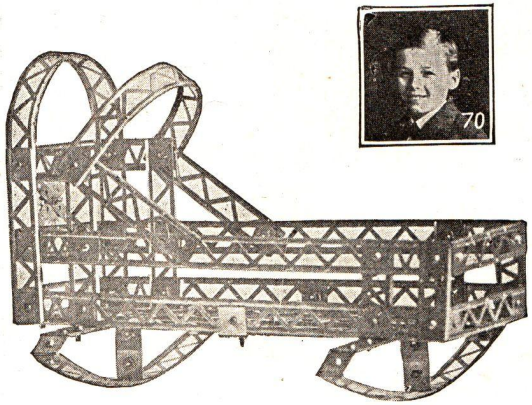
Back View Reversing Gear Box Chain Drive

Babcock Milk Tester. 51st., Prize 1916. Morris Ritchie Ottawa, Kans.

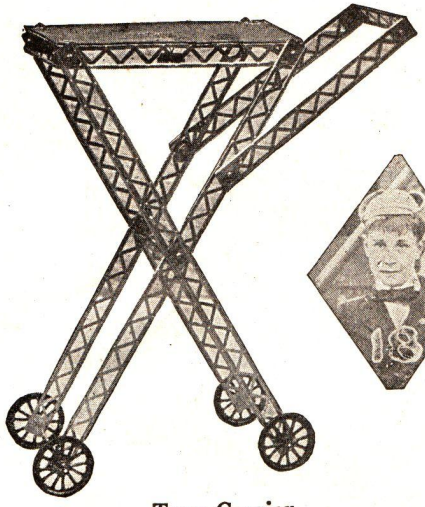




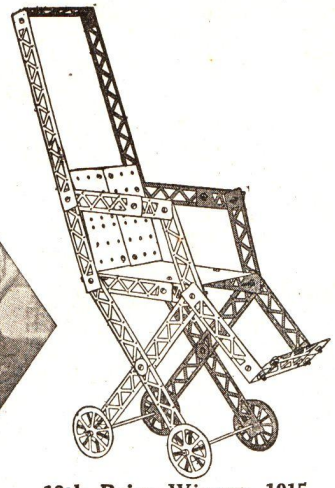
No. 4 Slow Clock Motion Gear Box.



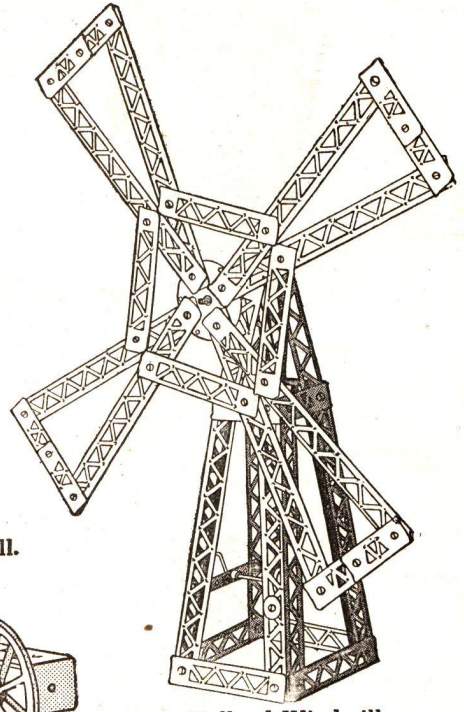
Cradle, 70th Prize, 1916.
..Frederick W. Vath, Reading„ Pa



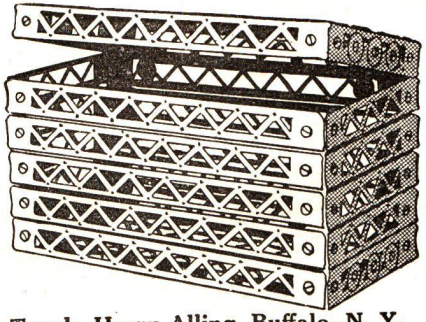
Tray Carrier



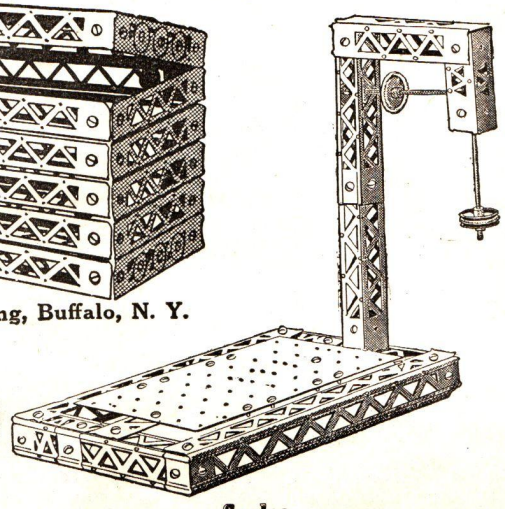
18th Prize Winner, 1915
Go-Cart
John E. Pitcher,
2244 W. Lake St., Chicago, Ill.



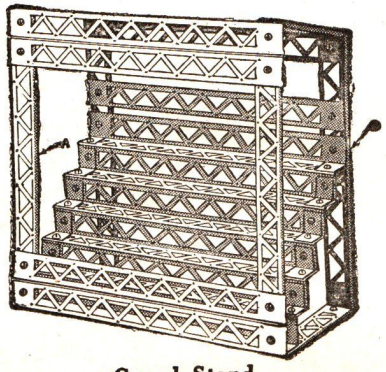
Holland Windmill



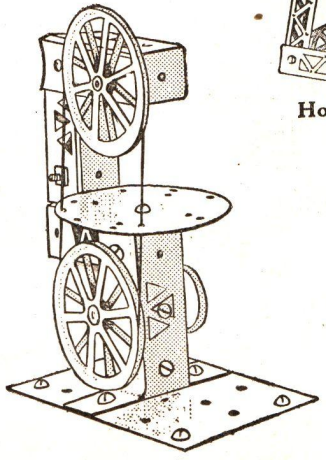
Trunk, Harry Alling, Buffalo, N. Y.



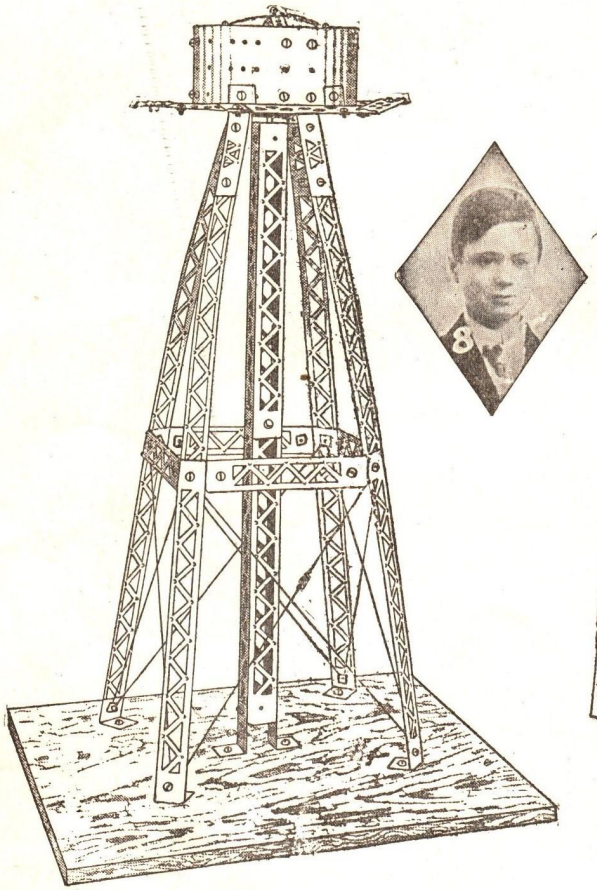
Scales



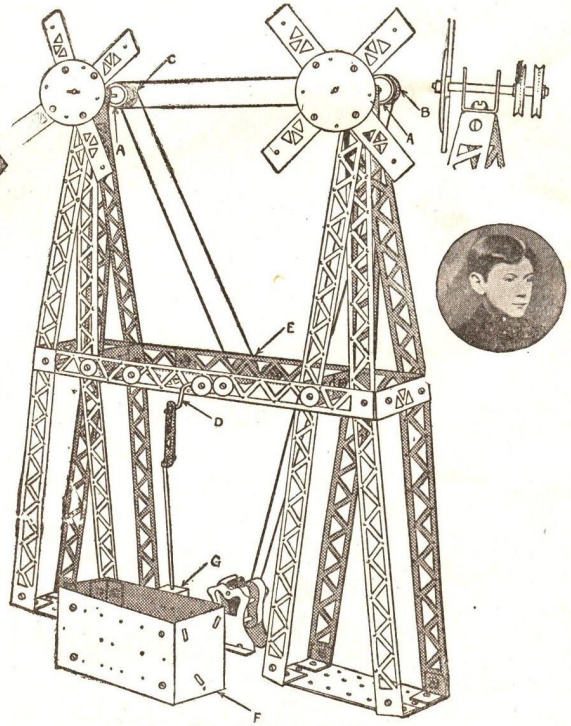
Grand Stand



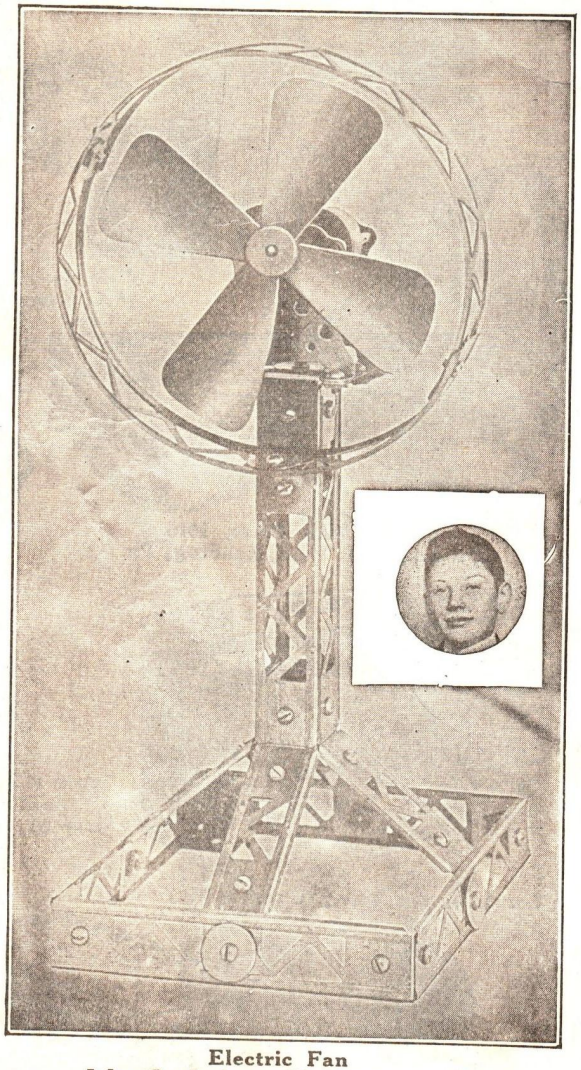
Band Saw



8th Prize Winners, 1915. Water Tank.
Alfred Bakewell, 265 Dragon Avenue,
Detroit, Michigan



Double Windmill Pump
Paul Osborne, Philadelphia, Pa.



Electric Fan
John O. Jackson, Montgomery, Ala.
28th Prize, 1916

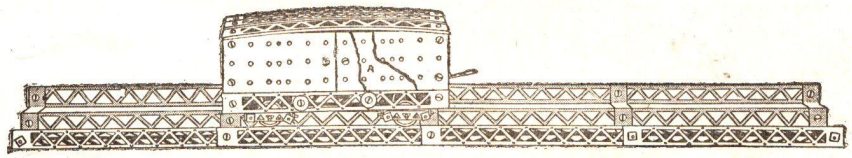
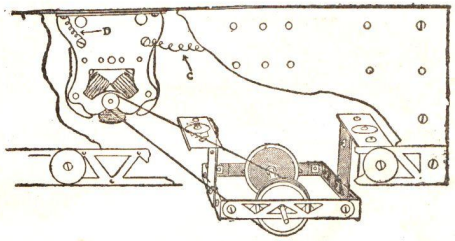


Fig. 1.

A DANDY MODEL.

Run by Gilbert Erector Motor, Made with No. 4 Erector.



Method of attaching motor to roof of car. Note how trucks are constructed. and belted to motor.

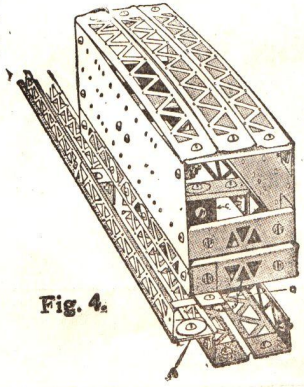


Fig. 4.

Fig. 2.

Fig. 3.

THIRD RAIL MOTOR CAR.

The Car—The construction of the car itself is simple and needs no other description than the illustration themselves, (Fig. 4).

Contact Strip—The method of attaching and insulating the contact strip is shown in Fig. 2. One wire from the motor is clamped with the contact strip as shown, between two angles. The wire and strip must touch each other, but are insulated from the angles by a piece of thin card or heavy paper folded as shown.

The other wire from the motor is fastened under any screw head in the car, it only being necessary to make an electrical connection with body of the car.

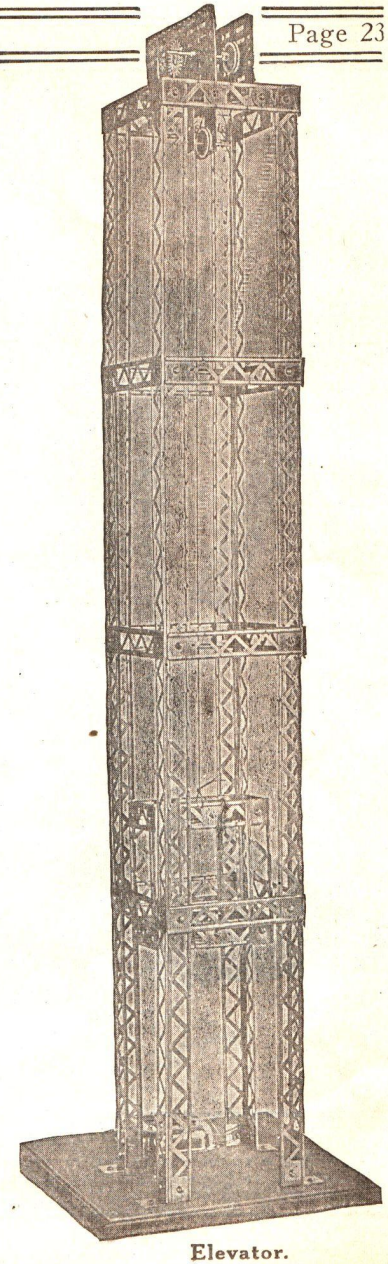
Track and Third Rail—Fig. 4 shows the general appearance of the track and how the third rail is supported above and to one side of the main track.

Instalation—A piece of thin card, five-eighths inches wide and one inch long, is folded along its length into three parts, two of which enclose the edge of the girder, the third standing up as shown in Fig. 3 to prevent the end of an angle from touching the face of the girder. These supports are attached at every lap joint of the third rail and attached as shown at every lap joint of the main track, the rails of which are spaced the proper distance apart by means of a 6-inch girder.

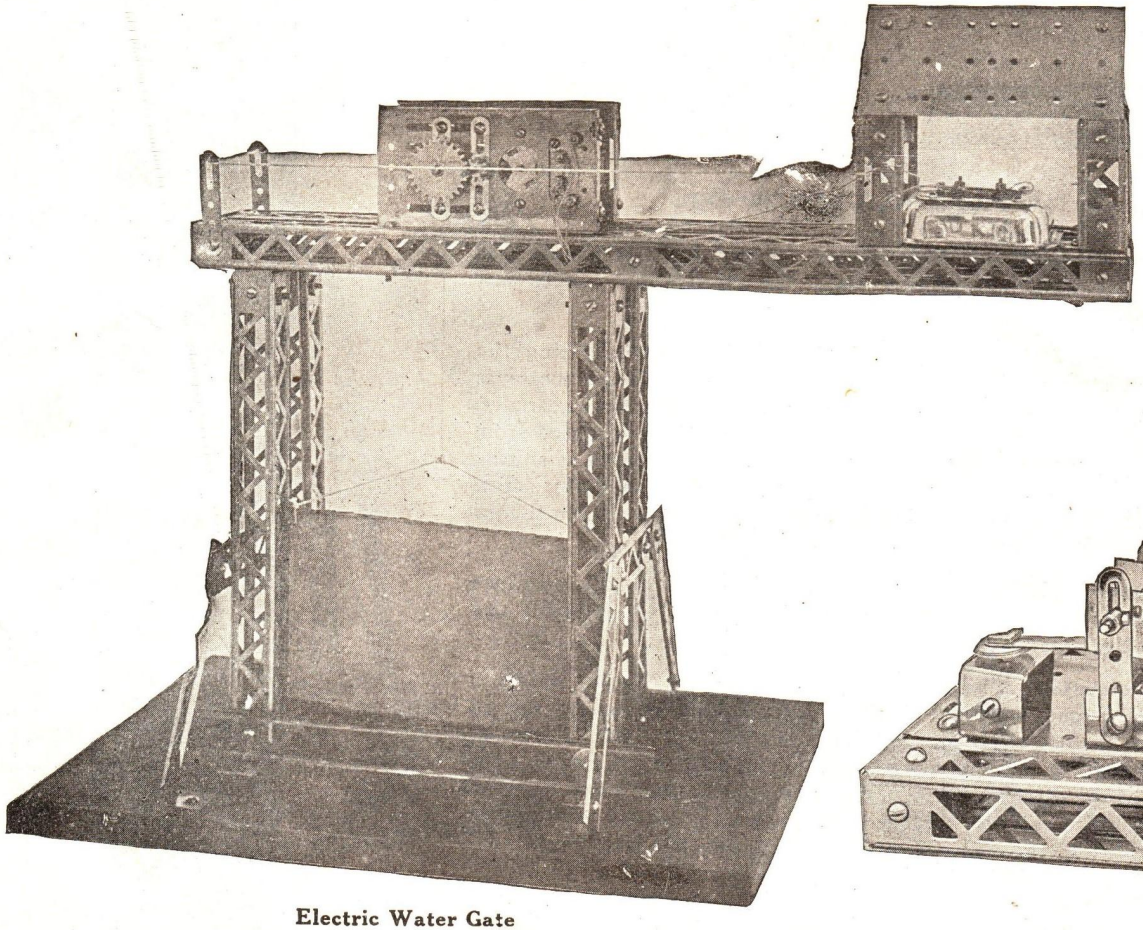
When track is complete, if directions are carefully followed, the third rail will be entirely insulated electrically from the rest of the track.

Power—Now attach one wire of your battery anywhere to the main track and the other to your third rail.

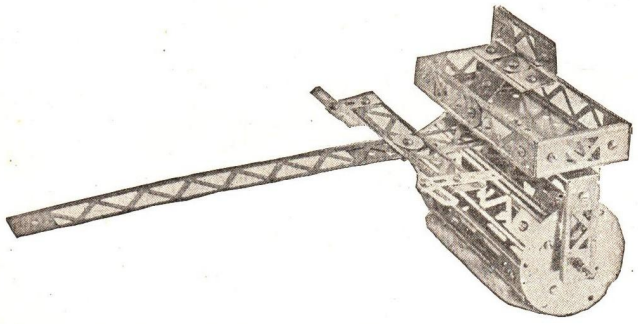
If care is taken throughout the construction of this model, to insulate perfectly as described, this car cannot fail to operate.



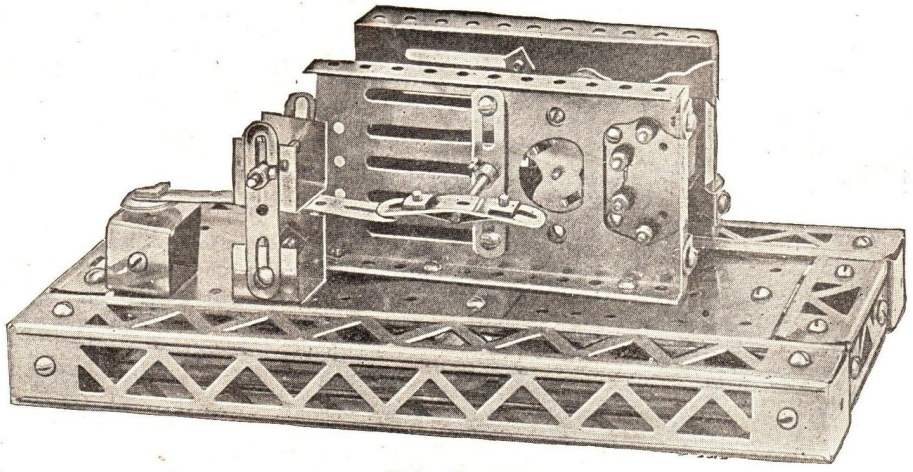
Elevator.



Electric Water Gate



Road Roller



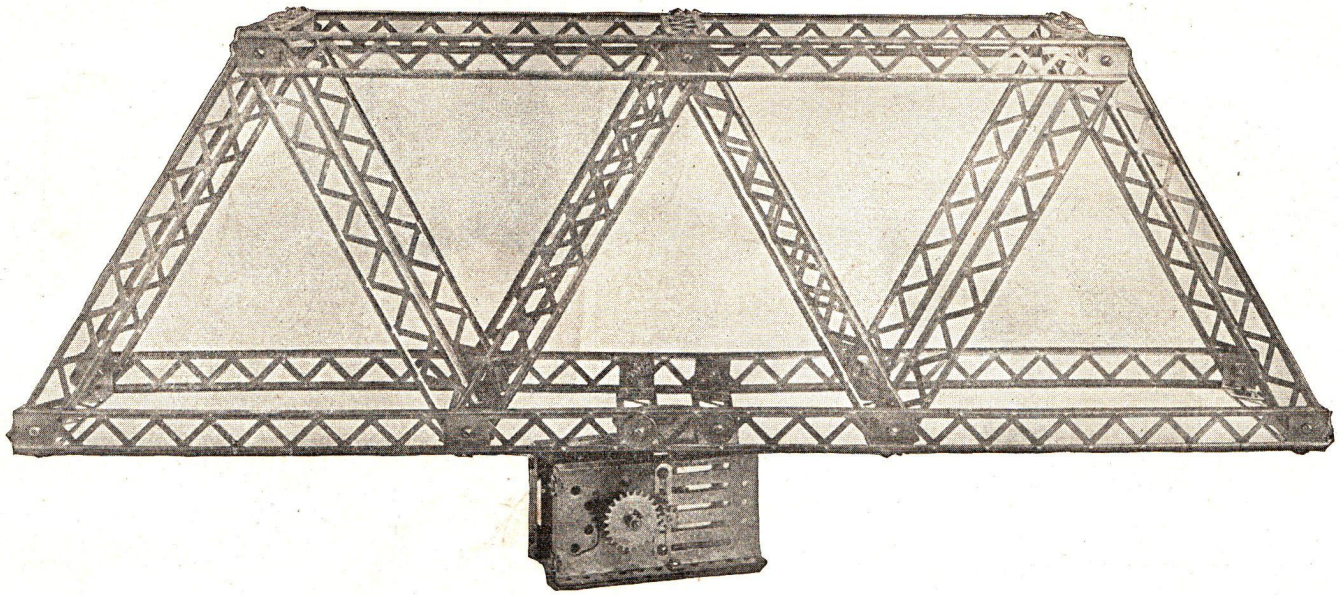
Trip Hammer

ELECTRIC WATER GATE.

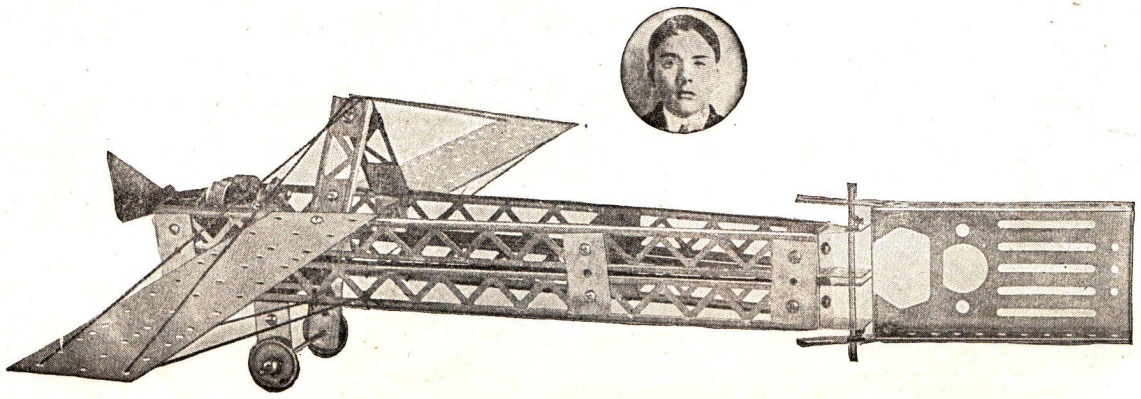
Select a suitable gear box on pages 11 and 12. Excellent use of reverse base is here shown for raising and lowering the gate, which can be made out of a piece of heavy cardboard, wood or metal.

TRIP HAMMER.

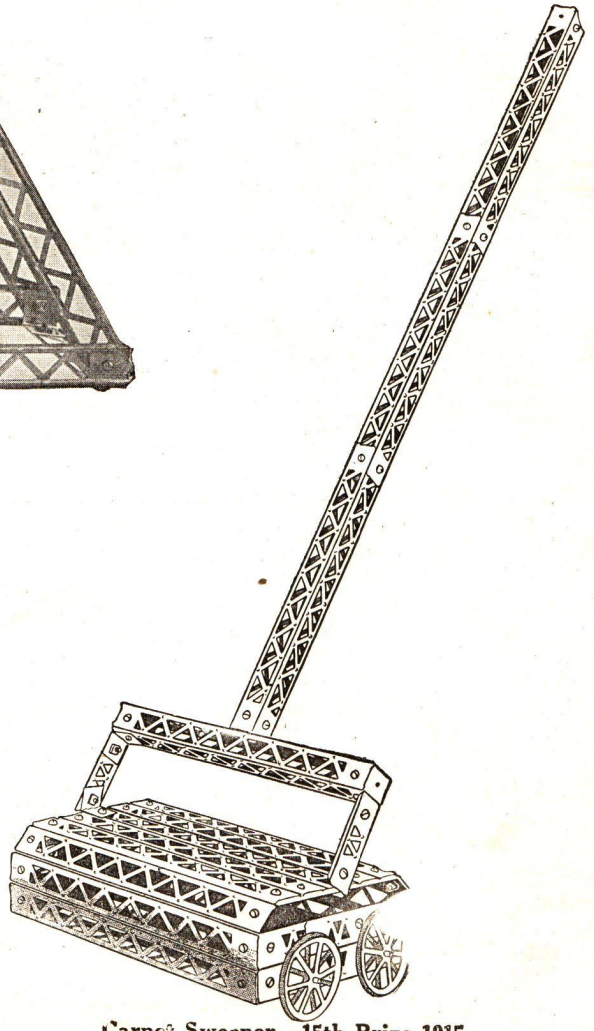
Select suitable gear box on pages 11 and 12, high or low speed as desired.



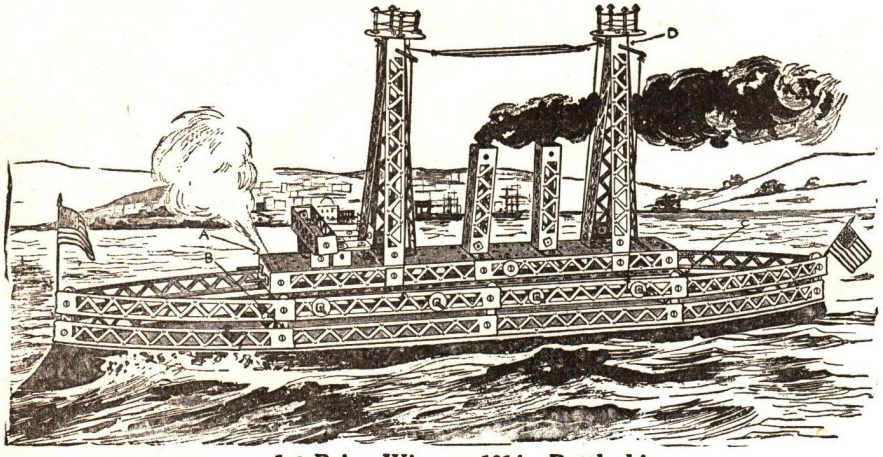
Revolving Bridge—See Gear Box Worm Drive, Page 12



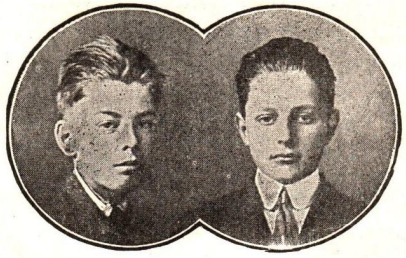
Aeroplane—99th Prize. 1916. Morris Gold. Schenectady, N. Y.

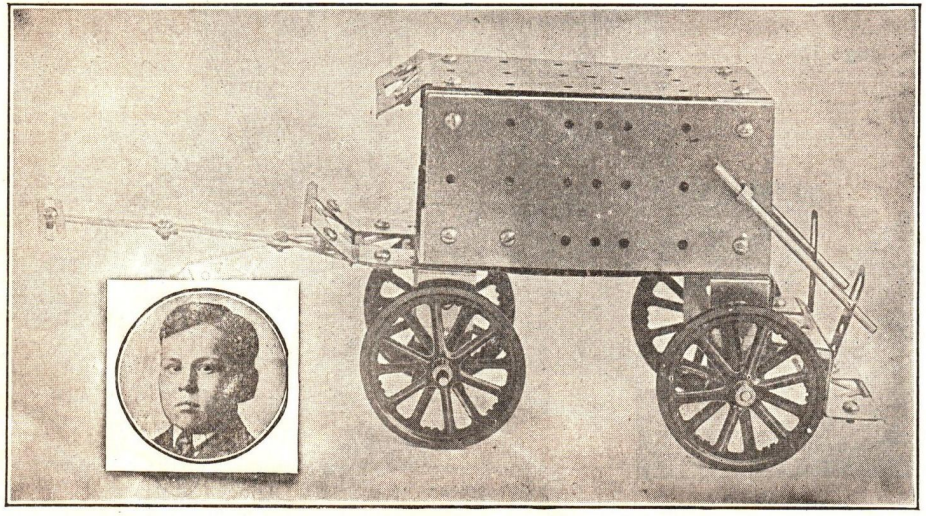


Carpet Sweeper. 15th Prize 1915
Richard Sanchery, Brooklyn, N. Y.

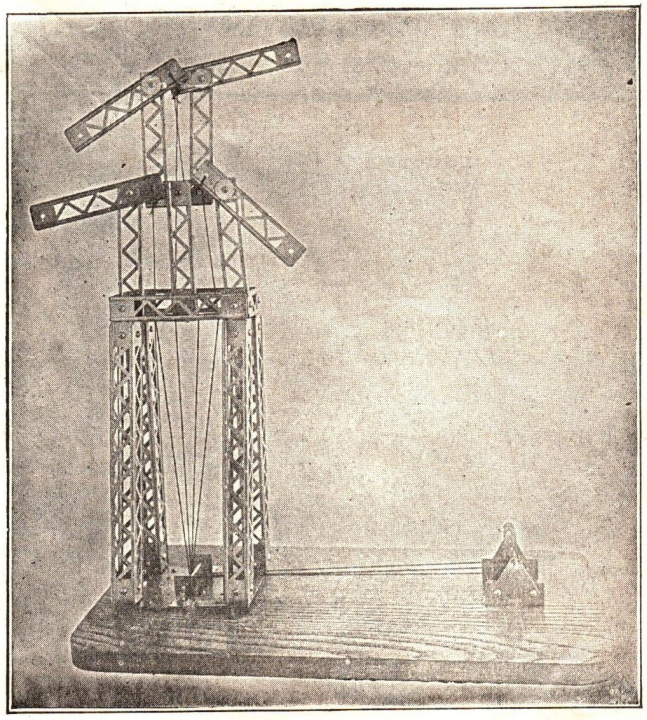


1st Prize Winner, 1914. Battleship
Richard E. Harrison and Samuel A. York, New Haven, Conn.

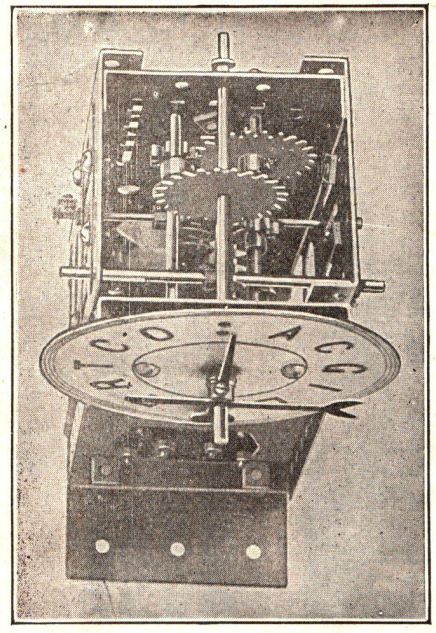


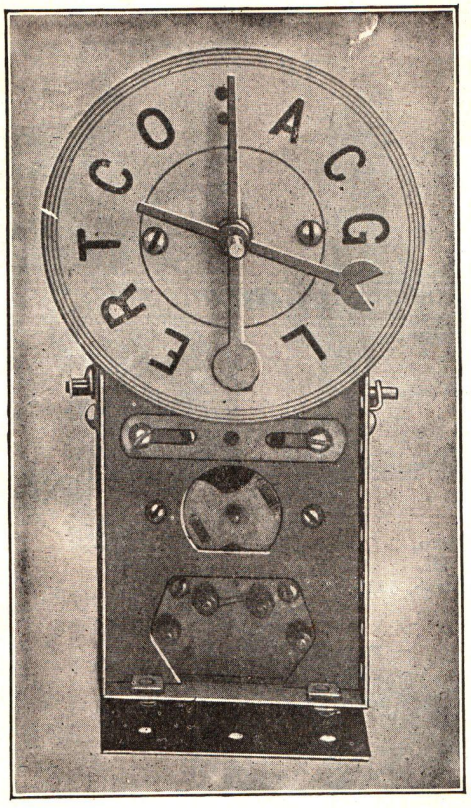


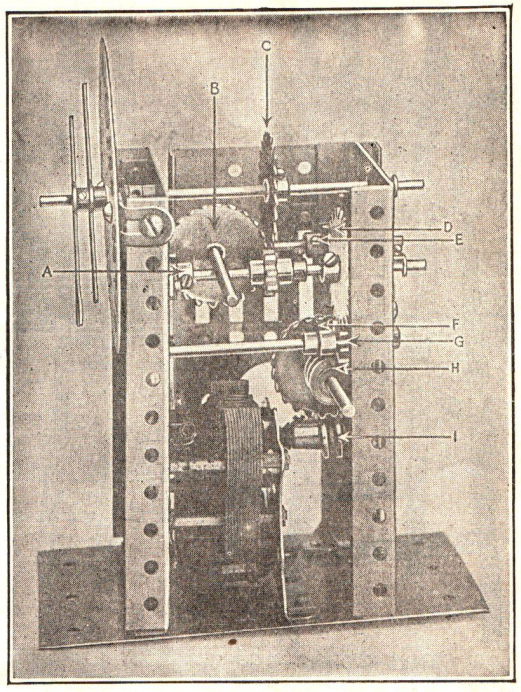
Patrol Wagon. 5th Prize 1914. Fred Ammann, New Haven, Conn.



Railroad Signal







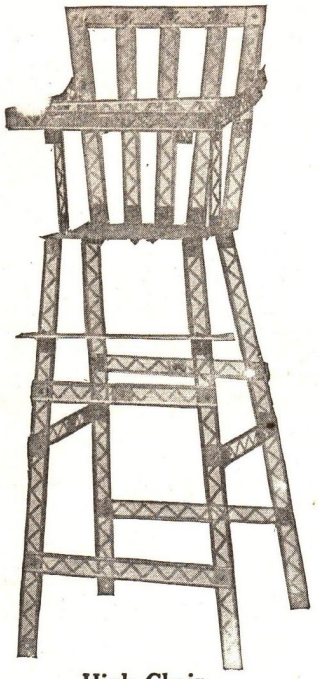
ELECTRIC CLOCK—SPECIAL MODEL.

This is a special model designed by Mr. Gilbert and will require extra parts. You will need considerable patience but anyone who cares to work out an intricate and fascinating model will find this well worth the patience and time. It is the very last word in Mechanical Construction.

Three different views are shown. The face of the clock can be made out of ordinary cardboard and the hands can be made out of sheet metal or we will furnish them for 5c each.

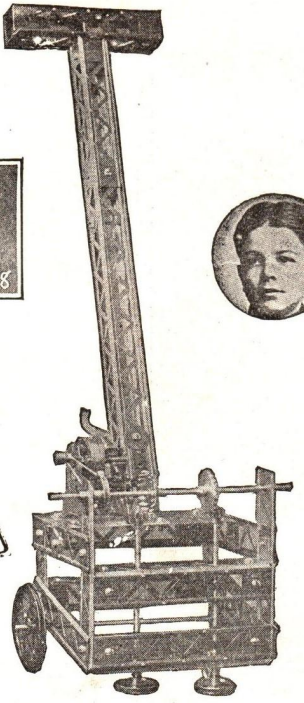
The right hand illustration shows the clock with one of the Gear Plates (P541) taken off "A" is a pinion (P13) which meshes with "B" a Crown Gear (P12). "C" is a flat gear (P11). Both "B" and "C" mesh with the pinion in front, the pinion (P13) being loose on the shaft; one collar on each side holding it in position. "D" is a flat gear that meshes with "E" a pinion (P13.) "F" is a Crown gear which is driven by "I" a worm gear (P14). "H" is another worm gear which drives Pinion "G".

The shaft on which the pinion "E" engages flat gear "D" runs through to the front gear on the end of which shaft is attached another flat gear which meshes with small pinion on the same shaft that the flat gear "C" is on. This pinion which is just back of the face of the clock is loose on the shaft and the minute hand is attached to this pinion which protrudes through the face of the clock as per illustration. The Hour hand is attached onto the collar by a drop of solder, and is fastened firmly to the shaft coming through the face of the clock. If properly adjusted the minute hand will make two revolution to one of the hour hand.

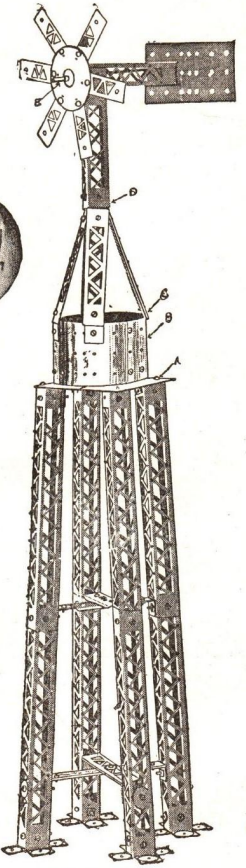


High Chair,
Alfred D. Bowen, Suffolk, Va.
Special Price, 1916

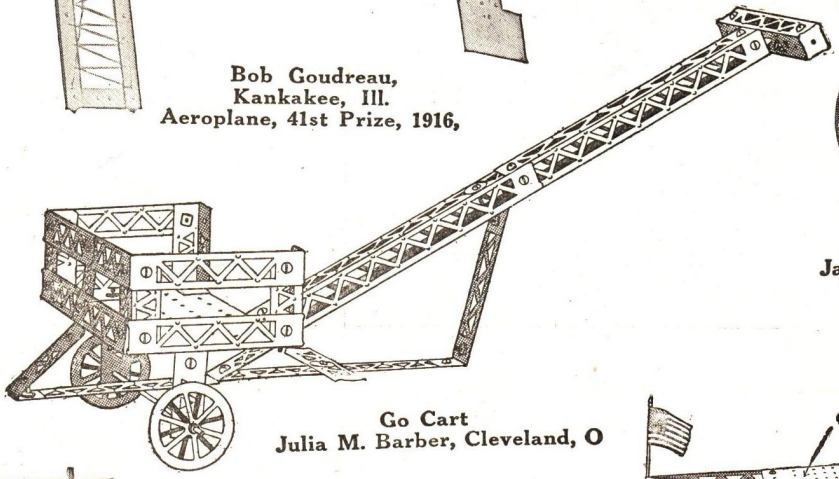
Bob Goudreau,
Kankakee, Ill.
Aeroplane, 41st Prize, 1916,



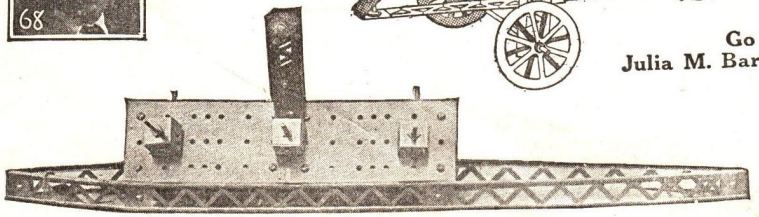
Electric Floor Planer,
Eighteenth Prize, 1916.
James Smith, Sanford, Me.



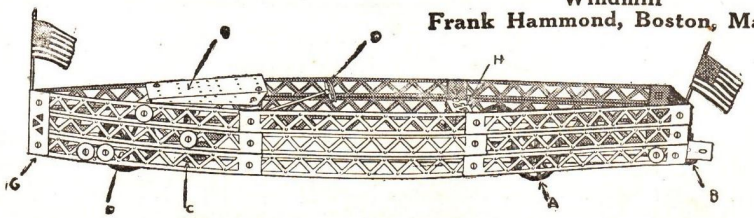
Windmill
Frank Hammond, Boston, Mass.



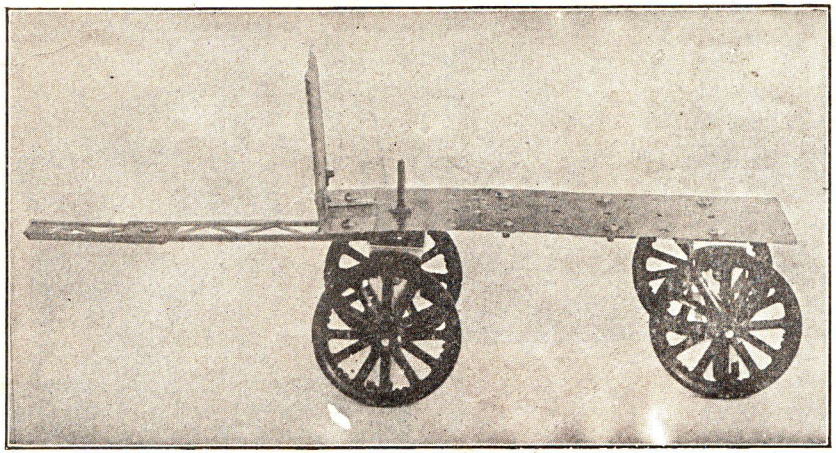
Go Cart
Julia M. Barber, Cleveland, O



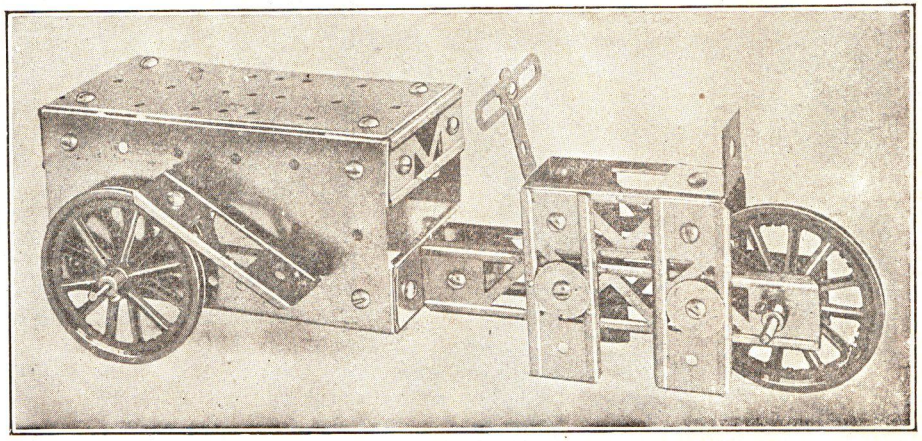
"The Merrimac," Sixty-eighth Prize, 1916
L. Homer Surbeck, Rapid City, S. D.



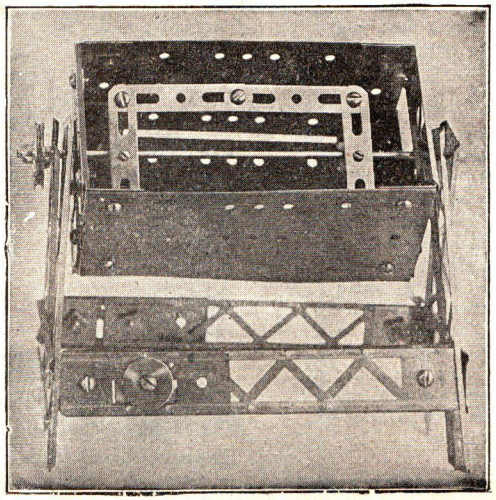
Motor Launch



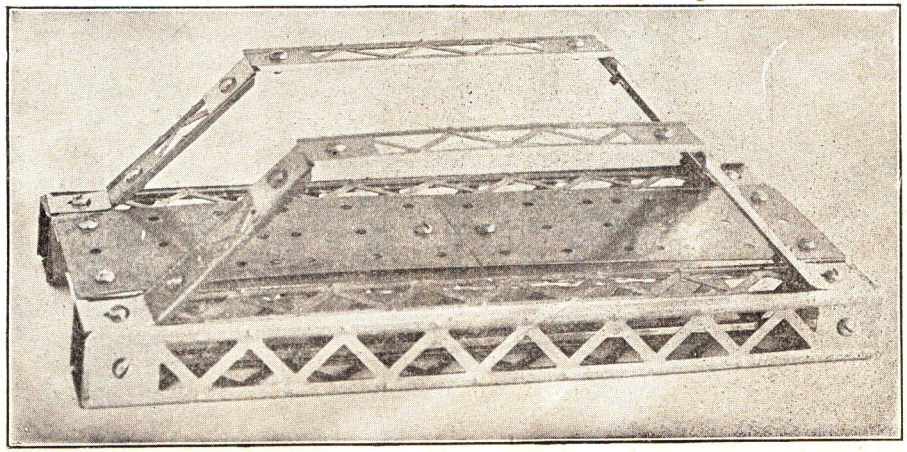
Baggage Truck



Parcel Post Delivery

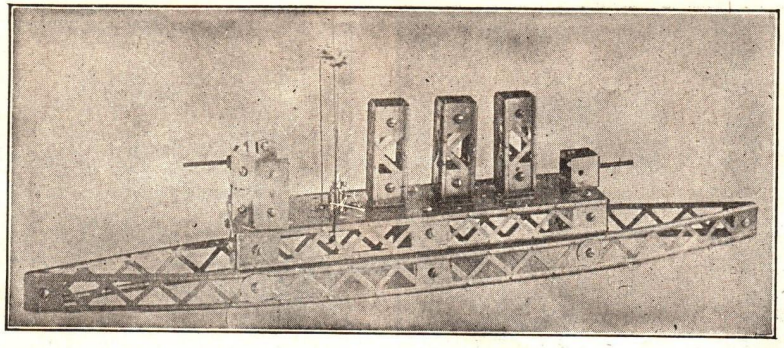


Electric Washer

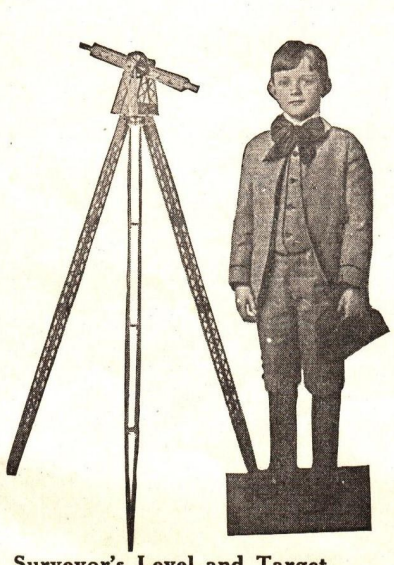


Foot Bridge

Telescope, Ninth Prize, 1916
Paul and John Novack, Escanaba, Mich.
SPECIAL MODEL



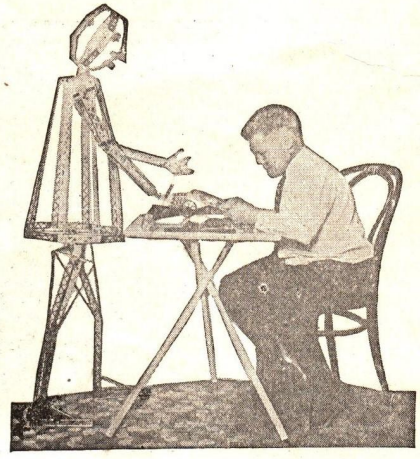
Torpedo Boat

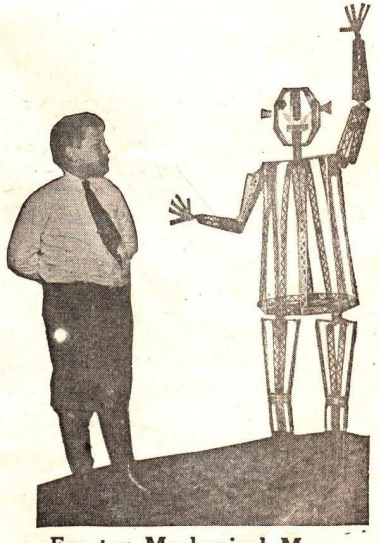


Surveyor's Level and Target
Fifty-ninth Prize, 1916
Al Campbell, River Rouge, Mich.

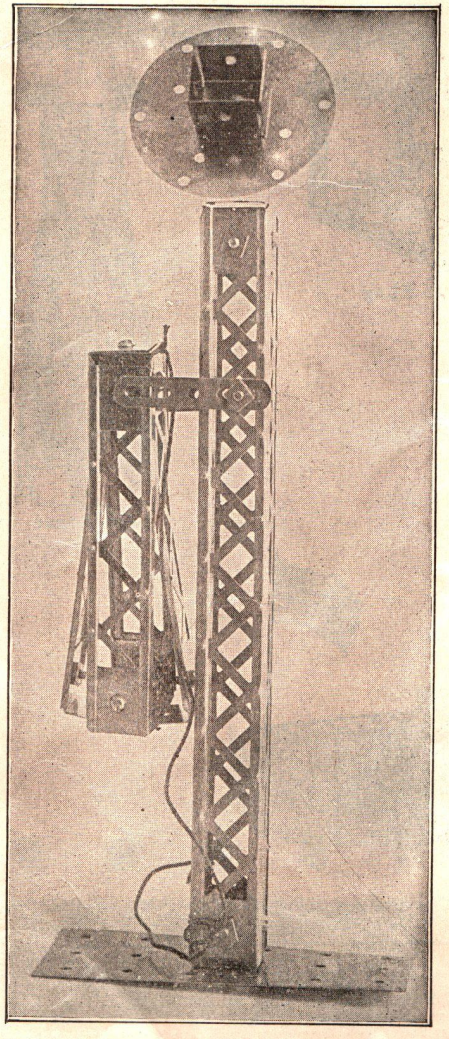
Telescope—This model was built by Paul & John Novack, of Ecanaba Mich. and won 9th prize in 1916. These boys bought extra parts to imitate this engineering feat and the resuult was the building of a very beautiful model.

Erector Mechanical Man—Lester Ferlow, Jersey City, N. J. built this unusual Erector Mechanical man. This model has ball and socket parts and was one of most interesting models ever sent in to the A. C. Gilbert Company. This is is also a special model that can only be built by getting extra parts. These are two good illustrations of what a boy can do in designing something really good. The illustration is very small, but with a little engineering you can easily duplicate this very interesting and facinating model.

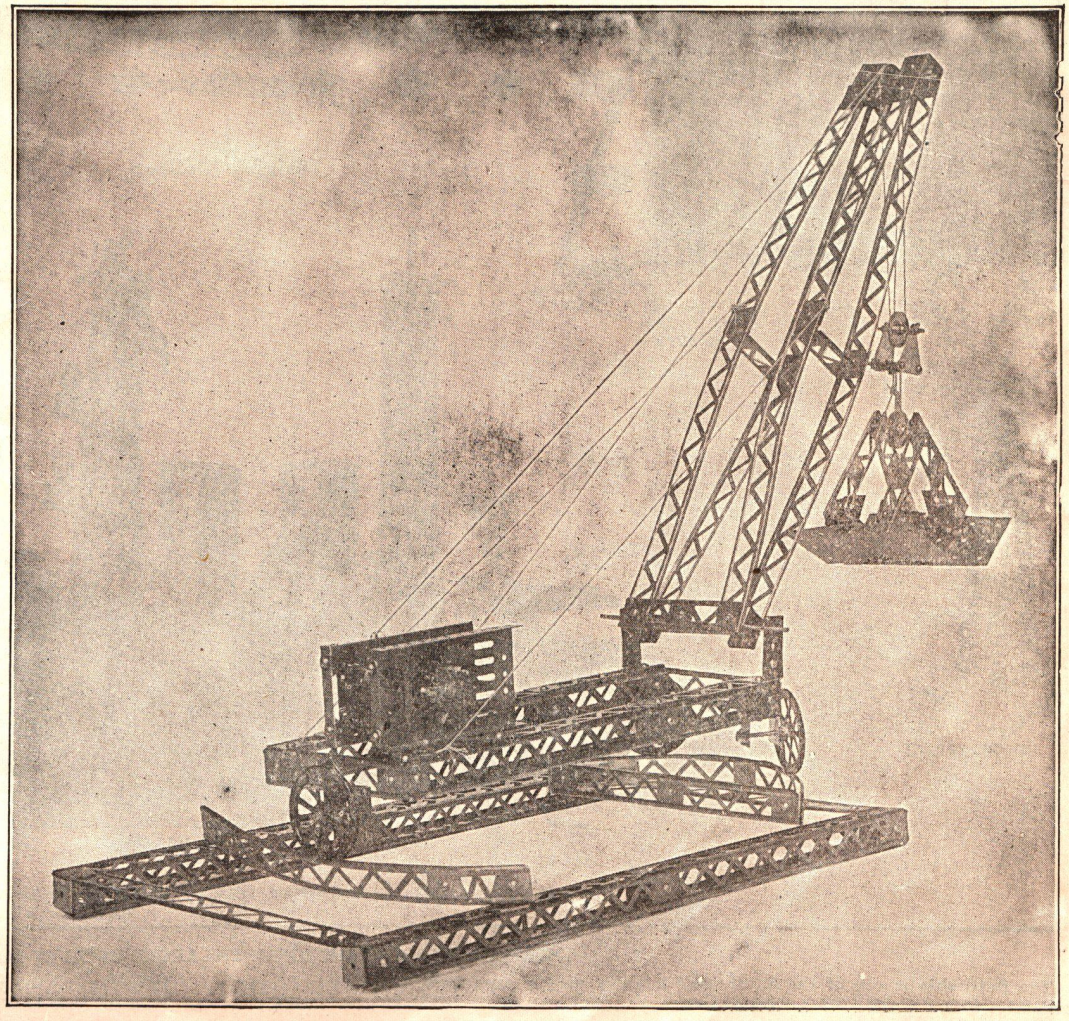




Erector Mechanical Man,
Seventh Prize, 1916
Lester Ferlow, Jersey City, N. J.
SPECIAL MODEL

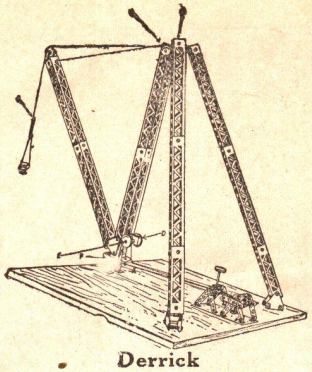


Model Telephone

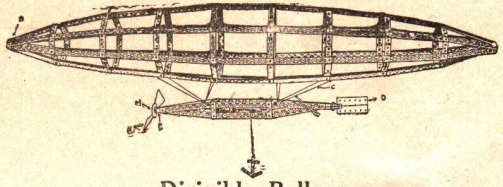


Turn Table Crane

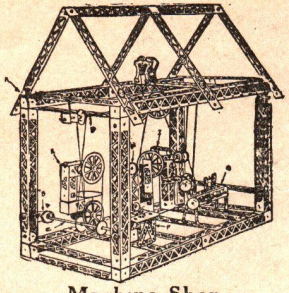
THESE ARE PRIZE WINNING MODELS THAT HAVE BEEN BUILT BY THE USE OF EXTRA PARTS



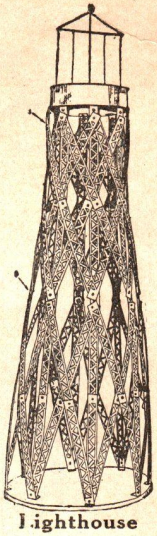
Derrick



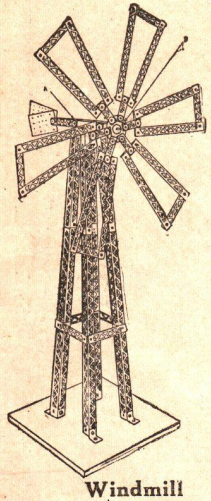
Dirigible Balloon



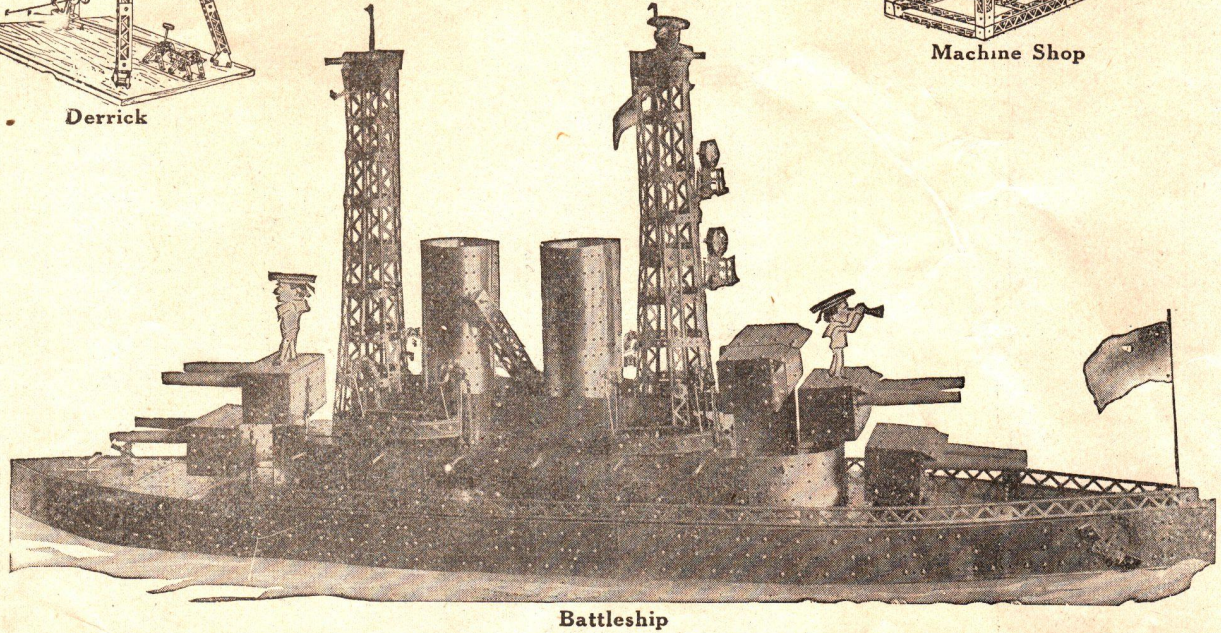
Machine Shop



Lighthouse



Windmill

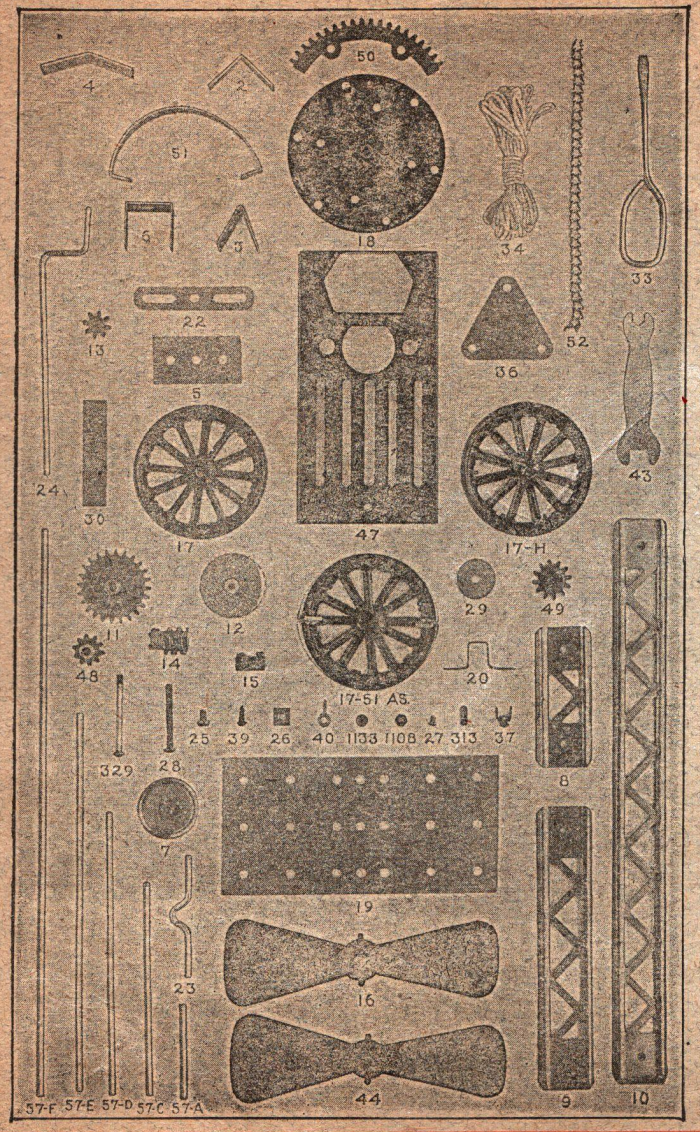


Battleship

THESE MODELS ARE SHOWN IN ENLARGED SIZES IN MANUALS 2 AND 3.

The Battleship is one of the finest prize winning models ever constructed from Erector parts. This was built by a boy at The A. C. Gilbert Company great toy factory, which barred him from participating in the prizes. The searchlights were really operated by electric light bulbs from the Gilbert Electrical Set. The guns were made of wood dowels. Otherwise all the parts were supplied from Erector parts. This model has been displayed in many stores throughout the United States and is considered to be the finest model ever designed from any structural steel building toy. Any boy can duplicate this engineering feat by buying extra base plates and a few other extra parts.

CHART OF ERECTOR SEPARATE PARTS



BE CERTAIN THE NAME ERECTOR IS ON THE BOX

Separate Erector Parts

GO TO DEALER.—Toy dealers generally have our cabinet of separate parts—which contains the whole assortment listed below. We prefer that you would buy these parts of the toy dealers—rather than send to us.

MUST ORDER 50 CENTS WORTH.—We do not accept orders for separate parts calling for quantities less than 50 cent's worth. Toy, Department, Hardware, Stationery, Sporting Goods and Electrical Stores will be glad to supply you.

No.		U. S. A. Prices	Canadian Prices	Quantity
E 2	Large Right Angles	.25	.38	per doz.
E 3	Acute Angles	.25	.33	" "
E 4	Obtuse Angles	.25	.33	" "
E 5	Straight Angles	.25	.38	" "
E 6	Double Angles	.25	.38	" "
E 7	Small Wheels	.15	.23	each
E11	Flat Gear	.15	.23	"
E12	Crown Gears	.20	.30	"
E13	Pinion Gear	.18	.27	"
E14	Worm Gear	.25	.38	"
E15	Couplings	.18	.27	"
E17	Large Grooved Wheel	.25	.33	"
E18	Round Plates	.20	.30	"
E19	Base Plates	.18	.27	"
E20	5-hole Strips Formed	.05	.08	"
E57A	2-inch Rods	.02	.03	"
E57C	4½-inch Rods	.04	.06	"
E57D	6-inch Rods	.04	.06	"
E57E	8-inch Rods	.07	.11	"
E57F	12-inch Rods	.10	.15	"
E23	Special Cranks	.08	.12	"
E24	Cranks	.08	.12	"
E25	Short Screws	.10	.15	per doz.
E28	Long Screws	.20	.30	" "
E26	Nuts	.05	.08	" "
E27	Set Screws	.10	.15	" "
E29	Washers	.15	.23	" "
E30	Contact Strip	.05	.08	each

No.		U. S. A. Prices	Canadian Prices	Quantity
E 8	3-inch Girders	.35	.53	per doz.
E 9	6-inch Girders	.50	.75	" "
E10	12-inch Girders	.85	1.28	" "
E33	Screw Drivers	.10	.15	each
E34	Hank of String	.03	.05	"
E36	Triangle Pieces	.50	.75	per doz.
E39	Wood Screws	.25	.38	" "
E40	Screw Eyes	.25	.38	" "
E43	Wrench	.10	.15	each
E1133	Terminal Thumb Nuts	.05	.08	"
E44	Propellor Blade with Hub	.35	.53	per pair
E16	Propellor Blade	.35	.53	" "
E17-51	As. Large Pulley Wheel	.40	.60	each
E17H	Large Grooved Wheel with Two Hubs	.30	.45	"
E22	Slotted Strip	.15	.23	doz.
E1108	Brass Hex Nut	.15	.23	"
E313	Motor Brush	.07	.11	each
E329	Frame Screw	.25	.38	doz.
E37	Pressed Steel Collar	.35	.53	"
E47	Gear Box Side Plate	.25	.38	each
E50	Large Gear Wheel, Segment	.10	.15	each
E51	Pulley Band	.10	.15	"
E48	Mitre Gear	.20	.30	"
E52	Chain	.20	.30	ft.
E49	12-tooth Pinion	.20	.30	each
	No. I, II and III Manuals	.25	.38	"

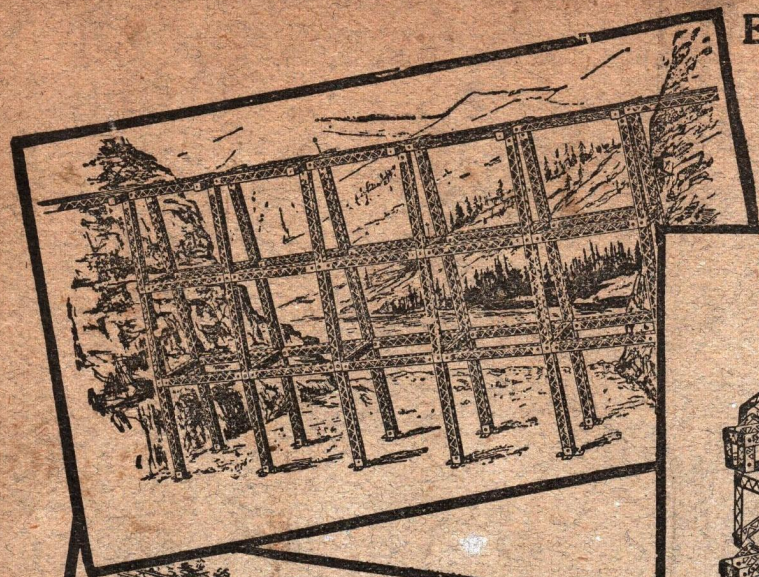
THE A. C. GILBERT CO., NEW HAVEN, CONN., U. S. A.

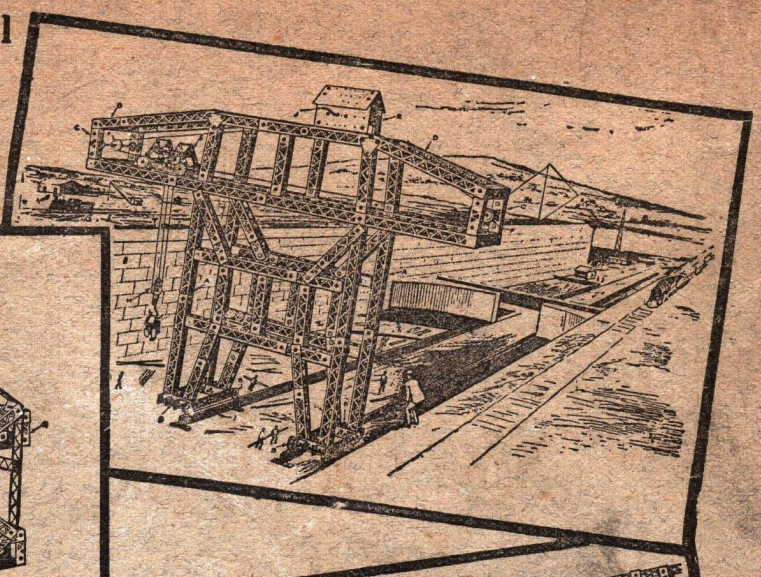
IN CANADA:

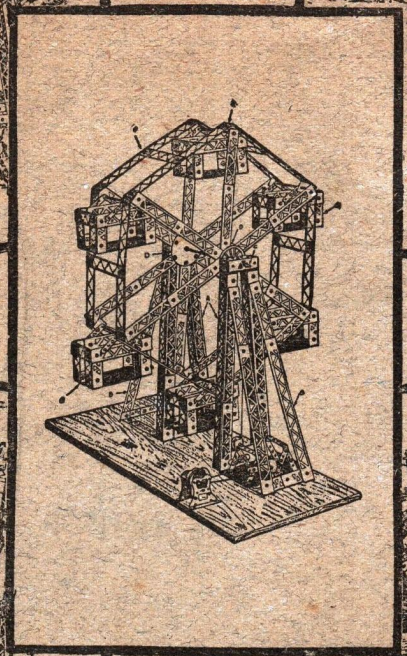
THE A. C. GILBERT—MENZIES CO., LIMITED, TORONTO, ONTARIO.

Educational Models

Ferris Wheel
Pacific Coast Trestle
Panama Canal Crane
South African Bridge
Niagara Falls Bridge







ERECTOR

Builds
These Great
Structures

These models represent some great engineering feats in Toy Engineering. T hey have been built from extra parts. Large pictures of these models are shown in Manuals 2 and 3, which sell for 25c each.