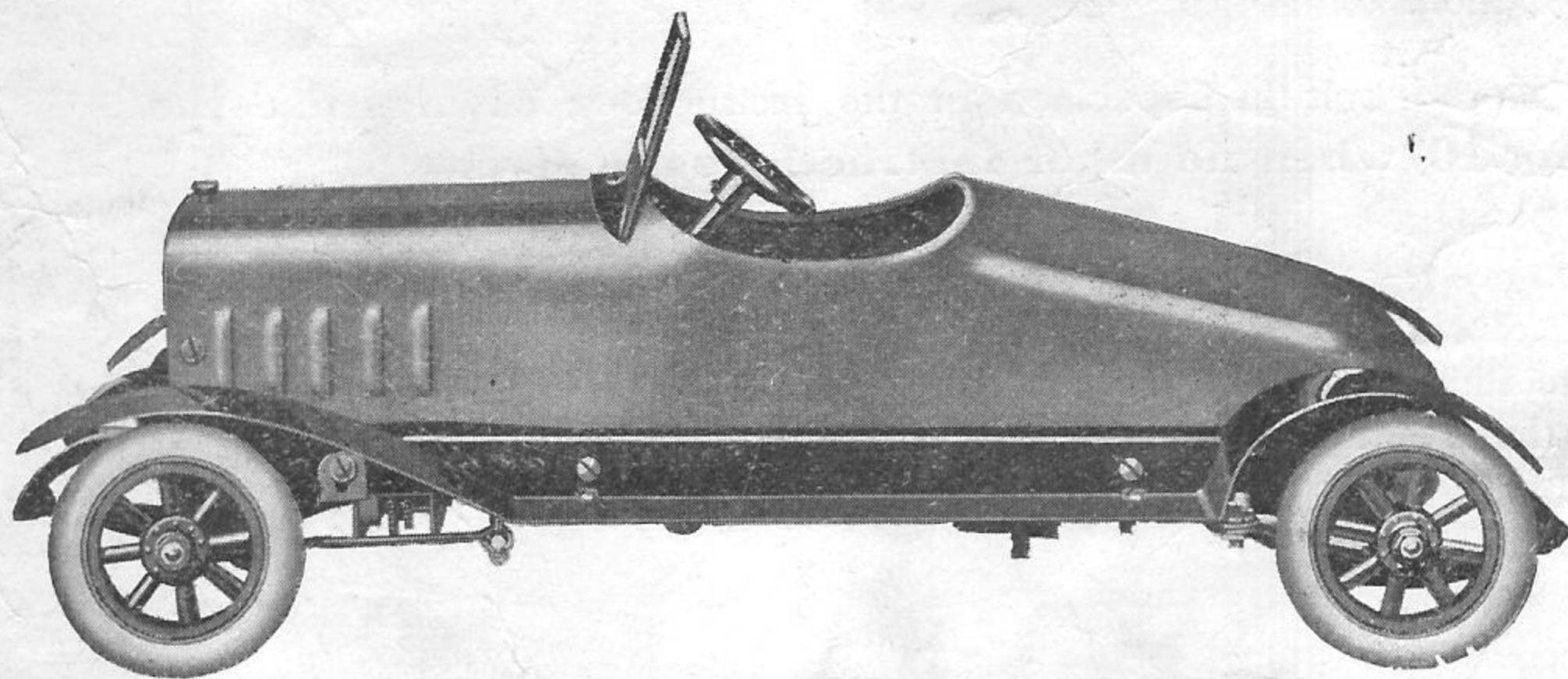

PLANS AND SPECIFICATIONS

FOR BUILDING

**STRUCTO
AUTOMOBILE**

No. 10



1920 MODEL

STRUCTO MANUFACTURING COMPANY

FREEPORT, ILLINOIS, U. S. A.

STRUCTO AUTOMOBILE No. 10

This outfit contains sufficient material to build a miniature Automobile of the Roadster type very similar in appearance and operation to the latest design, of today.

The following list gives you the mechanical details and features of the Structo Car:

- Length of Car (over all).....16"
- Wheel Base.....12½"
- Tread.....5½"
- Left Hand Drive. Steering device, worm gear type.
- Tires.....2½"x¾"

As you know, the engine in every automobile is located in the front part of the car and covered by the "hood," while the wheels that propel the car over the road are on the rear axle, therefore the power must be transmitted from the engine in front, to the axle in the rear. This is one of the many essential points you will learn about automobile construction by building this auto from the Structo Auto Building Outfit.

GENERAL SUGGESTIONS

When "right side" or "left side" of car is mentioned, we mean at your right or left hand side as you face the front end of the car from the rear. All drawings in this book are located so that the right hand side of the illustration shows the right hand side of the car.

TO PLACE A BOLT. See that the holes to be used register—that is, that you can see through the hole into which the bolt is to be placed; then hold the nut over this hole with the tip of the forefinger and insert the bolt and turn it until it engages the thread. In other words, place the nut over the hole and turn the bolt into it, instead of putting the bolt through the hole and then trying to screw the nut on to the bolt.

There are two sizes of bolts used in this Auto Construction as follows:

- 2. No. 117, ½ inch, round head.
- 46. No. 40, ¼ inch.

No. 117
Round Head
Bolt with nut



Do not use a different bolt than specified in the instructions; **always use the shortest bolts (No. 40) when no other instructions are given.**

No. 40
Short Bolt
with nut



DON'T HURRY!

First study the illustration of that part of the Auto you are building and lay out the different parts and compare them with the illustrations.

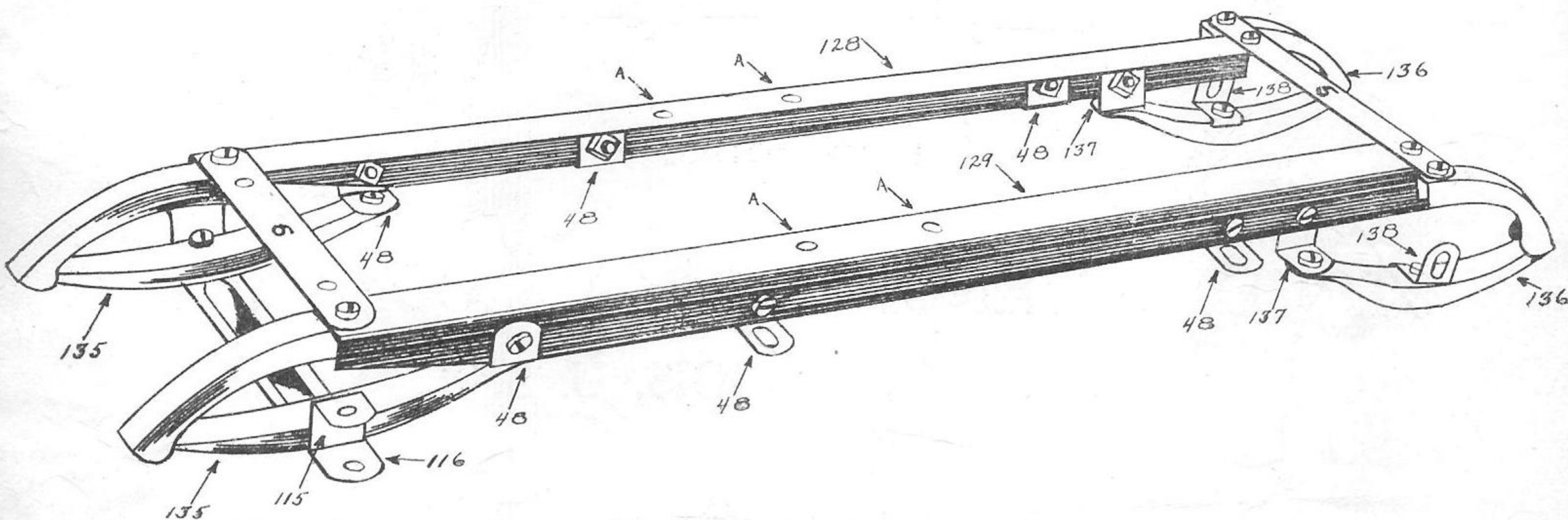


ILLUSTRATION "A"

Building the Frame Refer to Illustration "A"

FIRST study the illustration of that part of the Car you are building, and lay out the different parts and compare them with the illustrations. This will prevent you from using the wrong part.

Make a special study of the three different brackets shown at the right of page.

You will note there is very little difference in the shape and size of these, yet they each have a different use in the construction of the car.

Bolt the two front or lower springs No. 135 to top side of front axle pieces 115 and 116, shown in Illustration "B" using bolts No. 117. Turn nuts up tight.

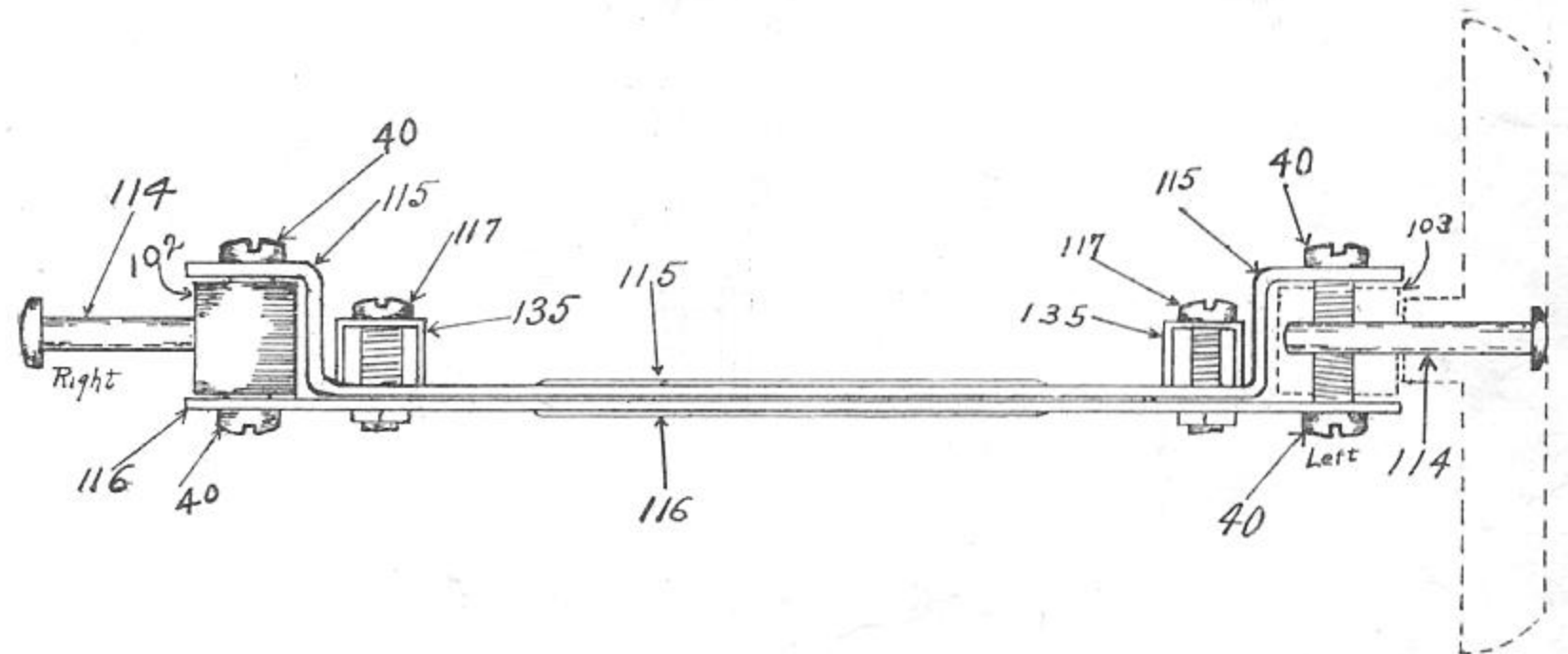
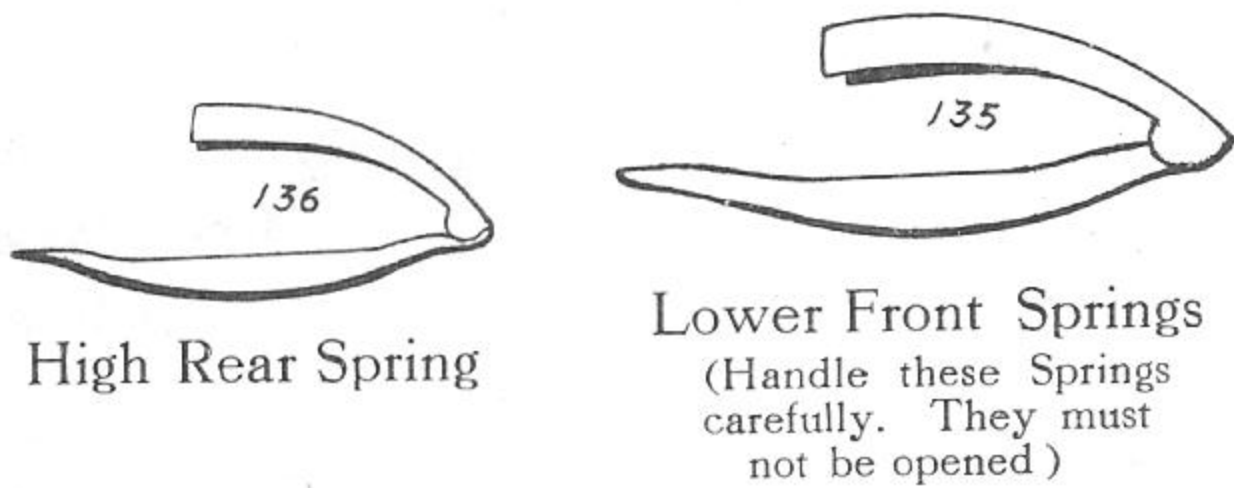
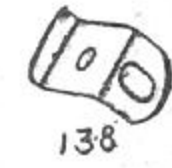
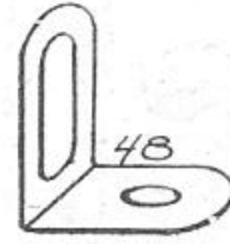


ILLUSTRATION "B"



Bracket for Rear Axle



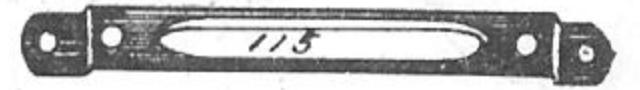
Bracket for Body and Fenders



Bracket for Rear Spring



Front Axle—Bottom

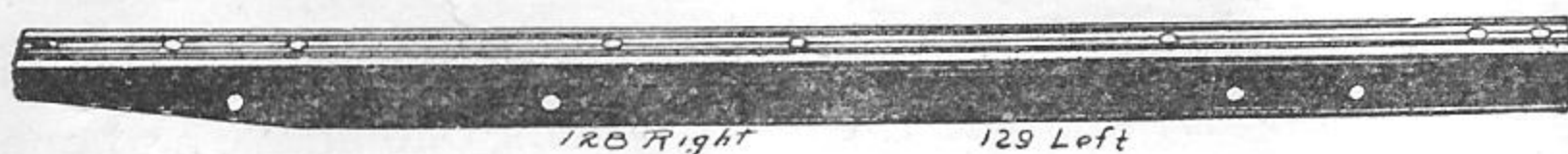


Front Axle—Top

Bolt brackets 48 through the slotted holes to ends of springs. Bolt frame cross member 6 and right frame side member 128 to right front spring as shown, Illustration "A." Bolt frame cross member 6 and frame side member 129 in same way. Brackets 48, already attached to springs, should now be bolted to the side of frame side members. Bolt rear cross member 5 to rear ends of frame side members 128 and 129.

Assemble rear or high springs by fastening rear axle bearing brackets 138 to rear springs 136, in the position shown in illustration "A." Bolt rear spring bracket 137 (not smaller bracket 48 which has one hole slotted) to springs.

Bolt rear springs 136 to rear cross member 5 and bolt rear spring brackets 137 to frame, Illustration "A." Bolt four fender brackets 48 to frame sides in position shown in illustration "A."



DON'T HURRY!

Now look across the top of Main frame to see if the two frame sides (128 and 129) are **exactly parallel** with each other. If not, twist frame true and then go over all bolts to make sure they are tight.

**Assembly of Steering Gear Case and Control Lever on Footboard
Illustration "C"**

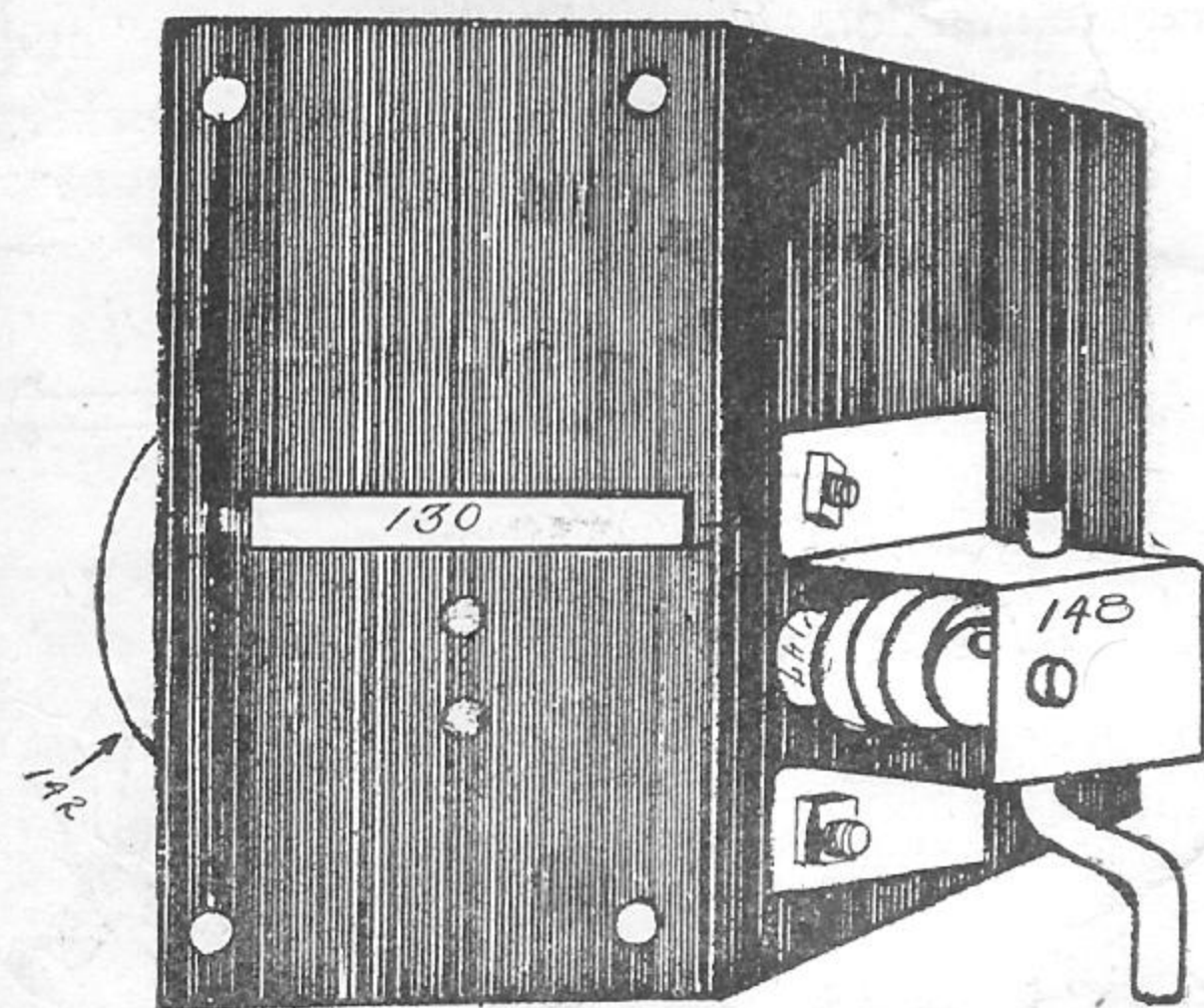
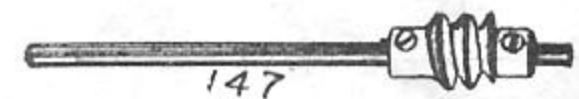
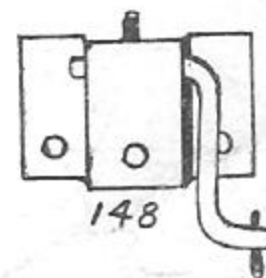


ILLUSTRATION "C"



From the under side of footboard 130 thrust steering post 147 through center one of three holes, in tapering section of footboard. Bolt steering gear case 148 to footboard. The end of steering post 147 should rest in hole in steering gear case and worm on end should mesh with teeth of steering gear.

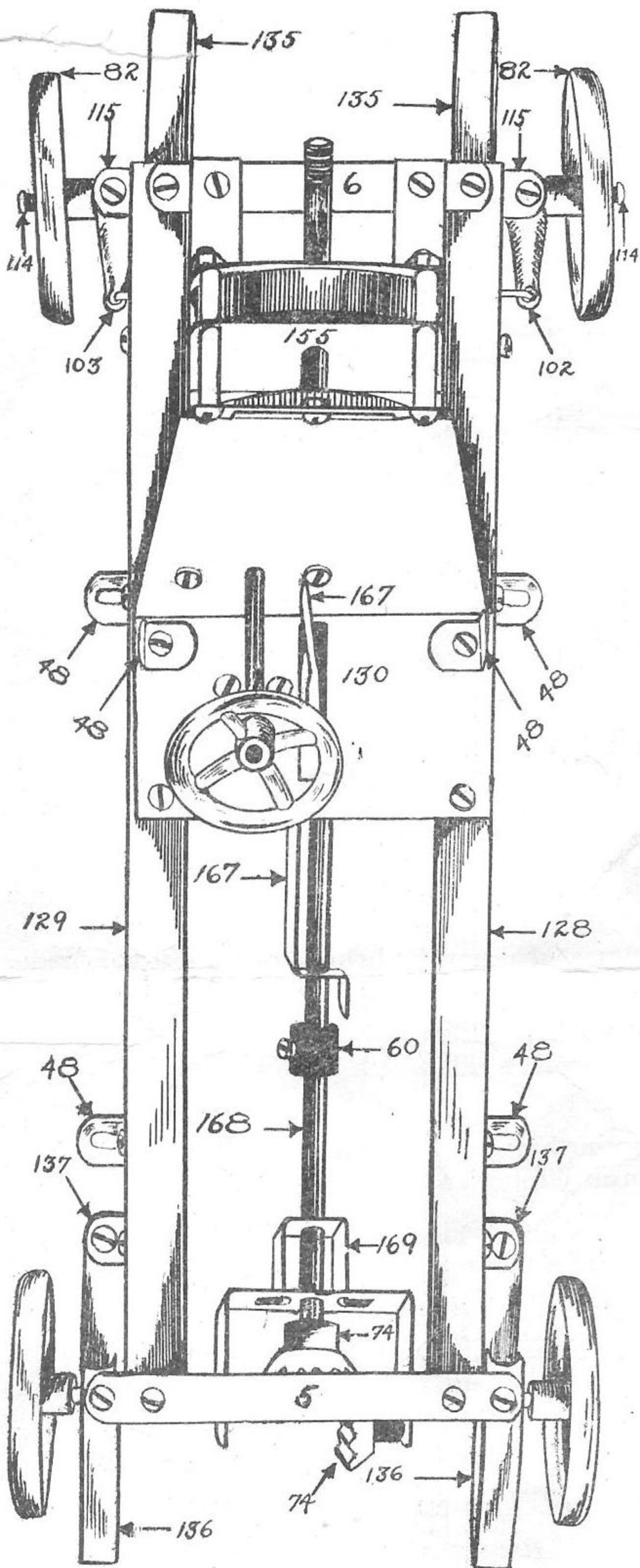
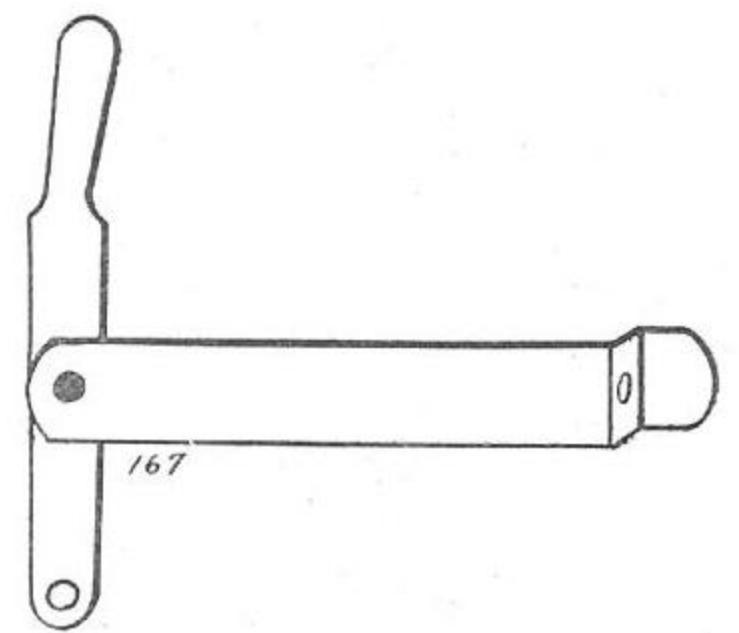
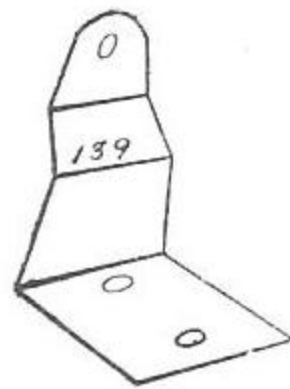


ILLUSTRATION "D"
Top View of Chassis

Assemble two front wheels 82 on front of car, (set screws must not be used in front wheels as wheels MUST turn freely on the spindles,) placing small end of Spindle 114 through hole in wheels from the outside and then into holes in the knuckle. See illustrations B. & F. Allow enough play so that wheels TURN FREELY ON SPINDLES. Bolts that hold knuckles in place should now be tightened.

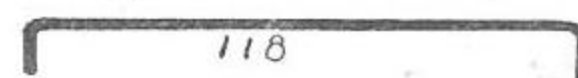
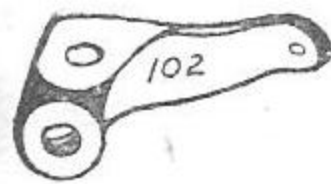
Illustration "E" shows correct position of Spindle assembled in right Knuckle; the wheel is not shown in illustration.



Bolt Control Lever Bracket 139 to under side of footboard. Insert Control Lever 167 through slot in Footboard from the under side and bolt it to the bottom of bracket 139. Lock-nut this bolt by putting on two nuts, turn the nuts up tight against each other, but NOT against the lever.

Place assembled footboard on frame in position shown in Illustration "D". Bolt rear corners of footboard to frame side members. Place bracket 48 with slotted side next to footboard and bolt in place as shown. Don't Hurry.

Assembly of Chassis



To assemble the STEERING KNUCKLES: First, insert Steering Cross Rod 118 in small hole in Right Steering Knuckle 102, see Illustration "F," then place Knuckle in Axle as shown in Illustration "B" and fasten with two bolts, one above and one below. DO NOT screw bolts all the way in at this time. Now, insert other end of Steering Cross Rod 118 in corresponding hole in Left Steering Knuckle 103, Illustration "F," then place the Knuckle in axle as shown in Illustration "B," and bolt this Knuckle in Axle in same manner as the Right Knuckle. DO NOT TIGHTEN BOLTS until Spindles 114 are in.

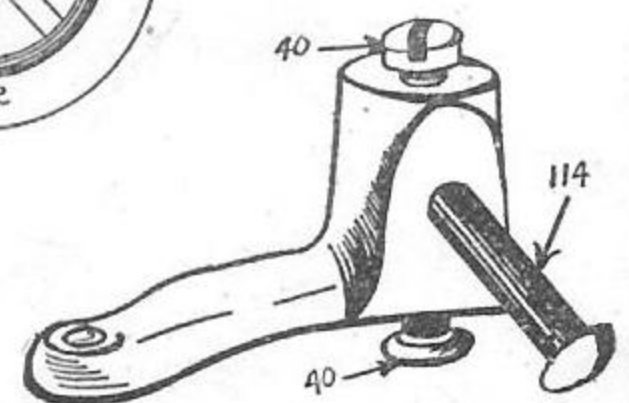
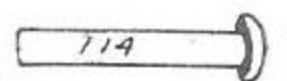
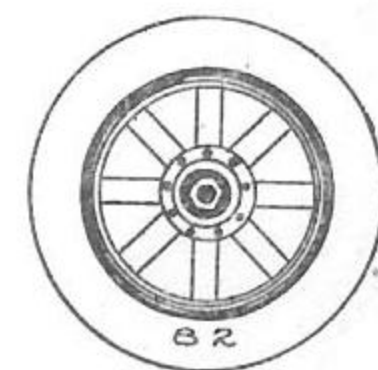
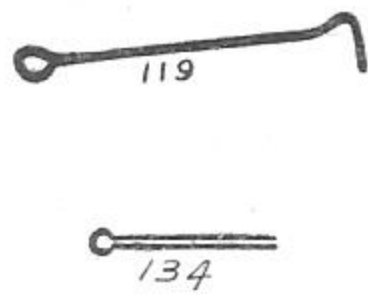
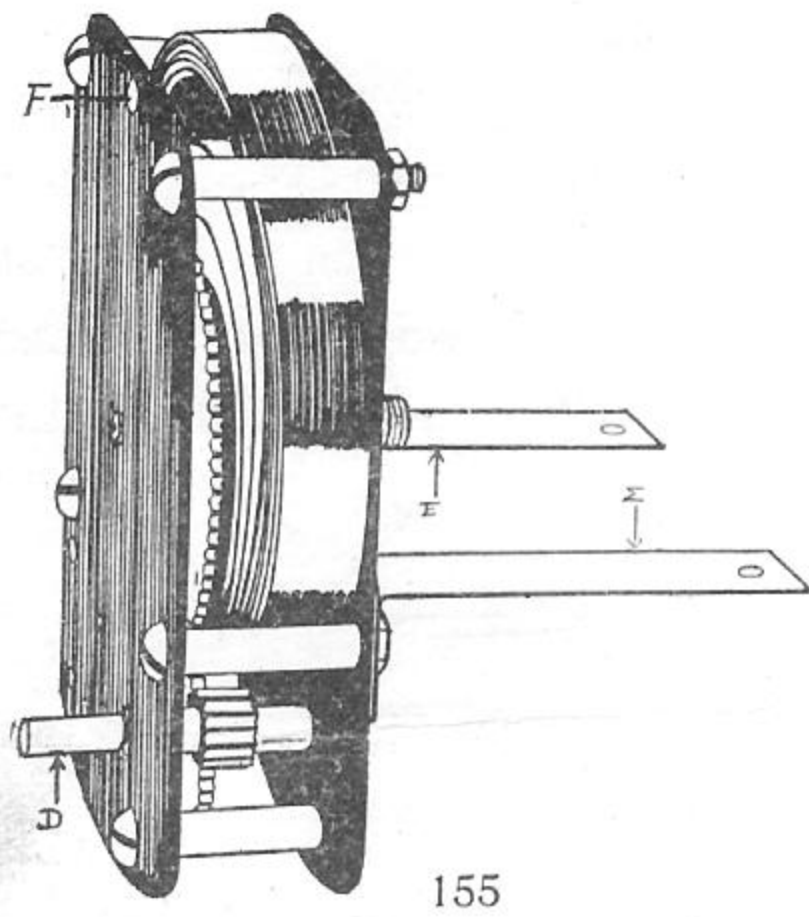


ILLUSTRATION "E"



COTTER KEY

Now insert hooked end of steering gear reach rod 119 in remaining hole in left steering knuckle. Slip looped end of same rod

over end of crank on steering gear case; lock in place by thrusting cotter key through small hole in crank and spreading the split end of cotter key. See Illustration F.

Bolt single unit motor 155 in place with brackets EE bolted to front cross member 6 as shown in illustration "D." Oil Motor well.

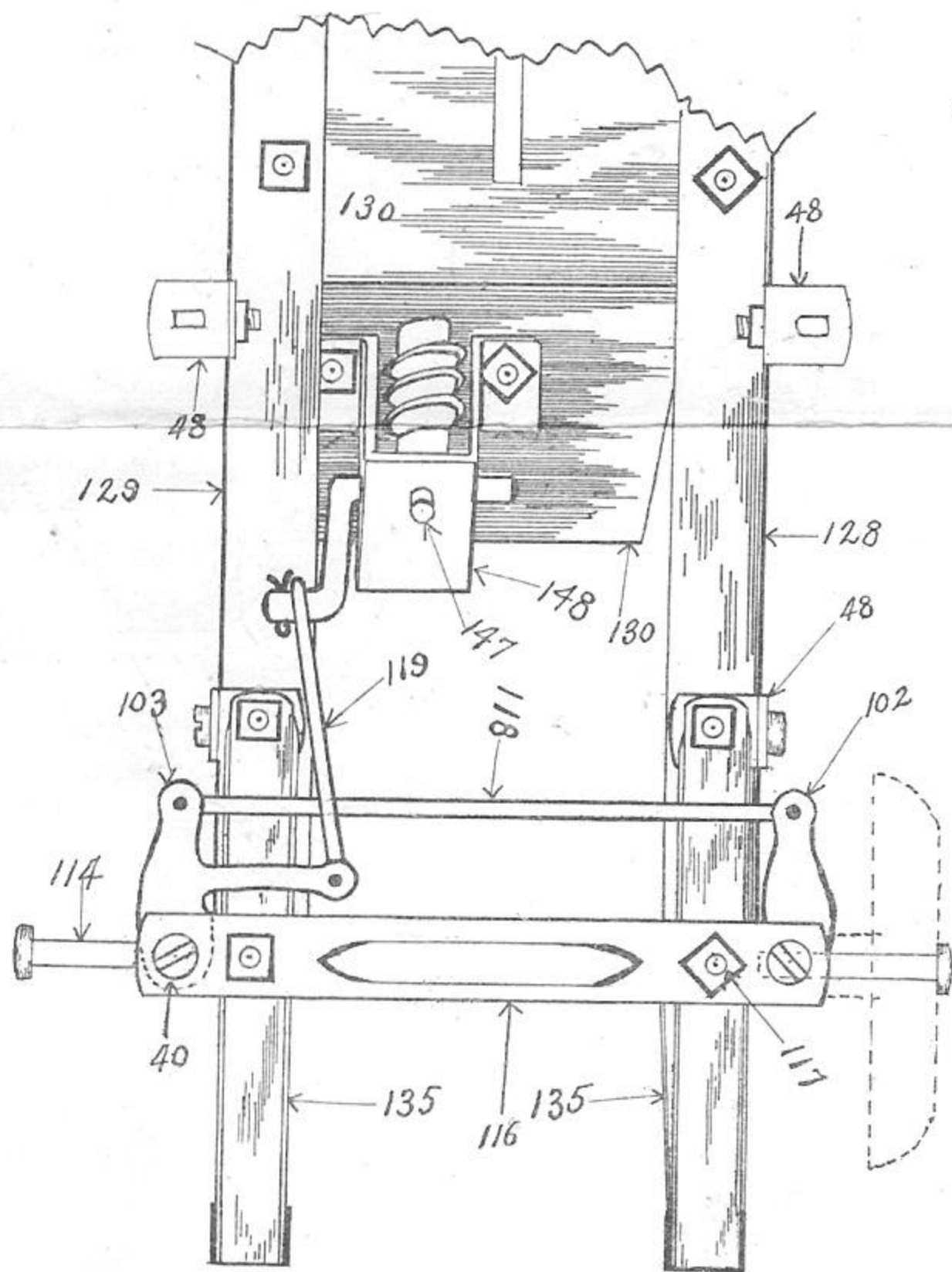


ILLUSTRATION "F"

Assembly of Propeller Shaft, Gear Housing and Rear Axle.

Thrust small end of propeller shaft through hole in bent piece on No. 167, and couple shaft to motor by attaching coupling on end of propeller shaft to drive shaft D, projecting from motor, and fasten with cotter pin.

Place collar No. 60 on shaft, but do not tighten set-screw at this time.

Gear Housing No. 169 is now placed on shaft as shown in illustration "G." Place bevel gear No. 74 on end of shaft and tighten set-screw.

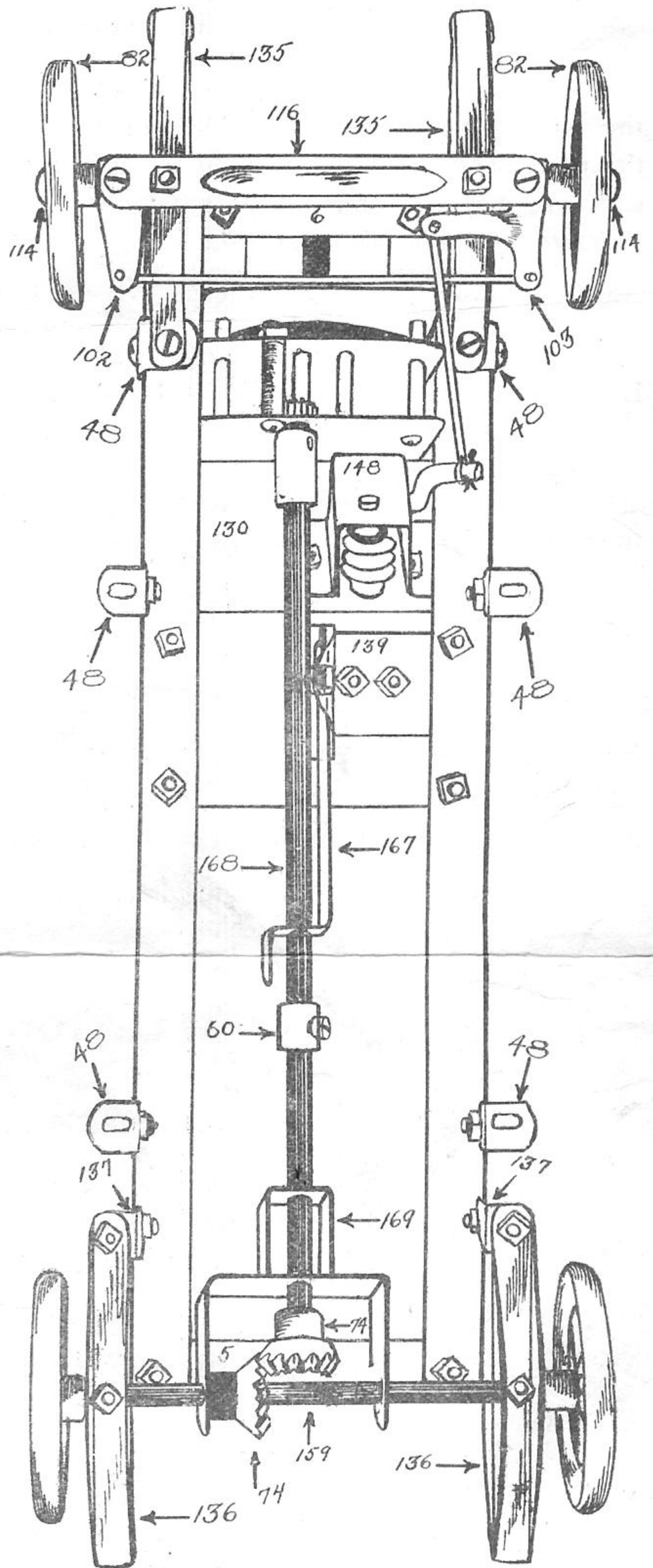


ILLUSTRATION "G"



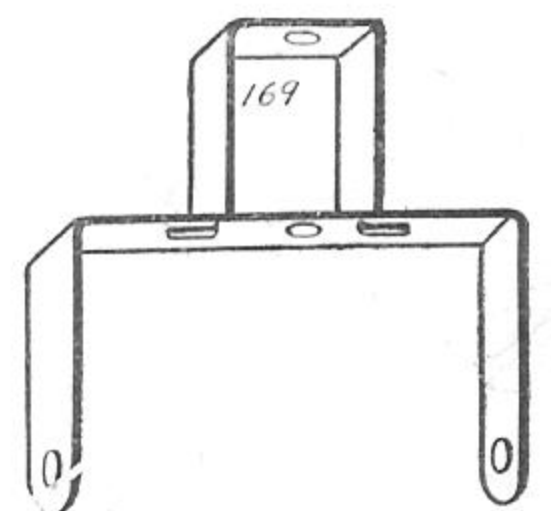
BEVEL GEAR



74



60



169

ASSEMBLY OF CHASSIS—Continued

The Rear Axle is now placed in position by thrusting the axle through bearing bracket in rear spring from the right hand side, then through hole in rear gear housing No. 169; place the remaining bevel gear on the axle at this time, but DO NOT tighten the set screw. (Be sure to place this bevel gear on the right hand side as the car stands right side up on the floor, otherwise the car will run backwards.) Now; thrust the axle on through the opposite hole in housing and bracket.

The Rear Wheels are now placed on the axle and the set-screws tightened.

Move the Start and Stop Lever 167 backward as far as possible and shove Collar 60 up to and touching the lever then tighten the set screw. This gives you the correct position of the Collar on shaft.

The position of Start and Stop Lever when car is in operation is the same as shown in Illustration "G"

The Bevel Gear located on rear axle is the main point of adjustment. By moving this gear from right to left, the true running position of Propeller Shaft can be regulated, and this part **MUST TURN FREELY**.

Gears should be meshed properly, too deep a mesh causes a binding.

Rear wheels should not be set too tight against bearings.

The car is now in a condition to be tested. Oil all working parts well, especially the motor, run the car back and forth by hand and see if it runs freely, adjusting parts if not.

Set Start and Stop lever in rear position, this locks the rear wheels. Wind the motor up tight, set car on floor, moving lever forward as far as possible, and away she goes like a real live car.

Never release lever after winding, until you have the car on the floor and ready to operate.

COMPLETION OF AUTOMOBILE

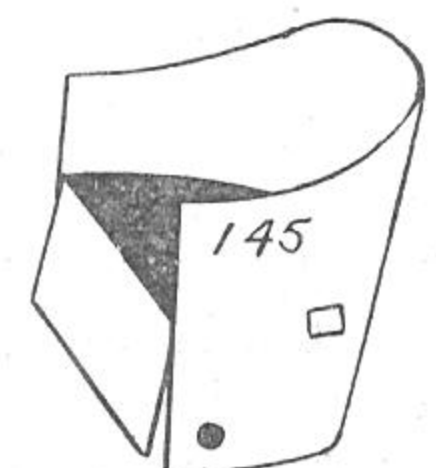
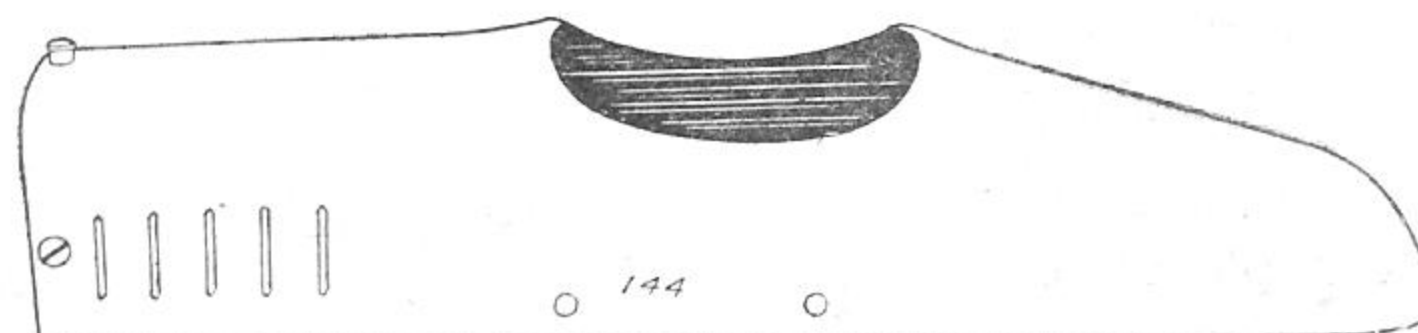
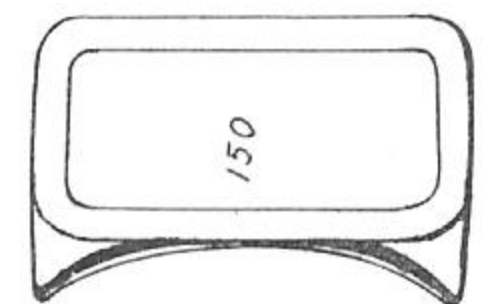
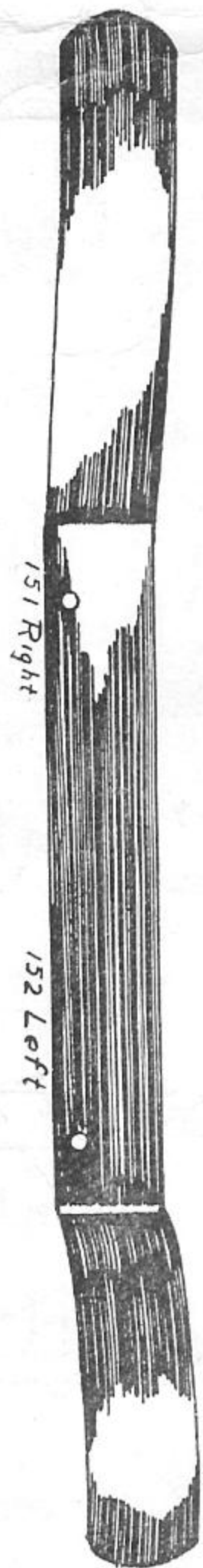
Assemble seat 145 in body 144 and bolt together.

Assemble body on chassis by inserting bolts through remaining holes in body and then through brackets on footboard. Spring body as much as may be necessary to insert bolts. Bolt windshield to Body.

Fasten steering wheel 142 on steering post by means of set-screw in hub.

Bolt right fender 151 and left fender 152, (picture at side of page shows the right fender 151) to brackets already fastened to frame side members, short curves over the rear wheels.

Set the finished auto on floor or table and see if all wheels touch; if not grasp auto by ends and twist to true up frame.



OPERATION OF AUTOMOBILE No. 10

THE WINDING KEY for the No. 10 Auto, screws on to the winding shaft of the motor and may be left on the car all the time without danger of coming off and being lost.

Car may be run in a circle or on a straightway course, by the operation of the steering wheel, the same as a large automobile.

GENERAL SUGGESTIONS

Keep motor and all working parts well oiled at all times, with good grade oil, sewing machine oil will serve the purpose.

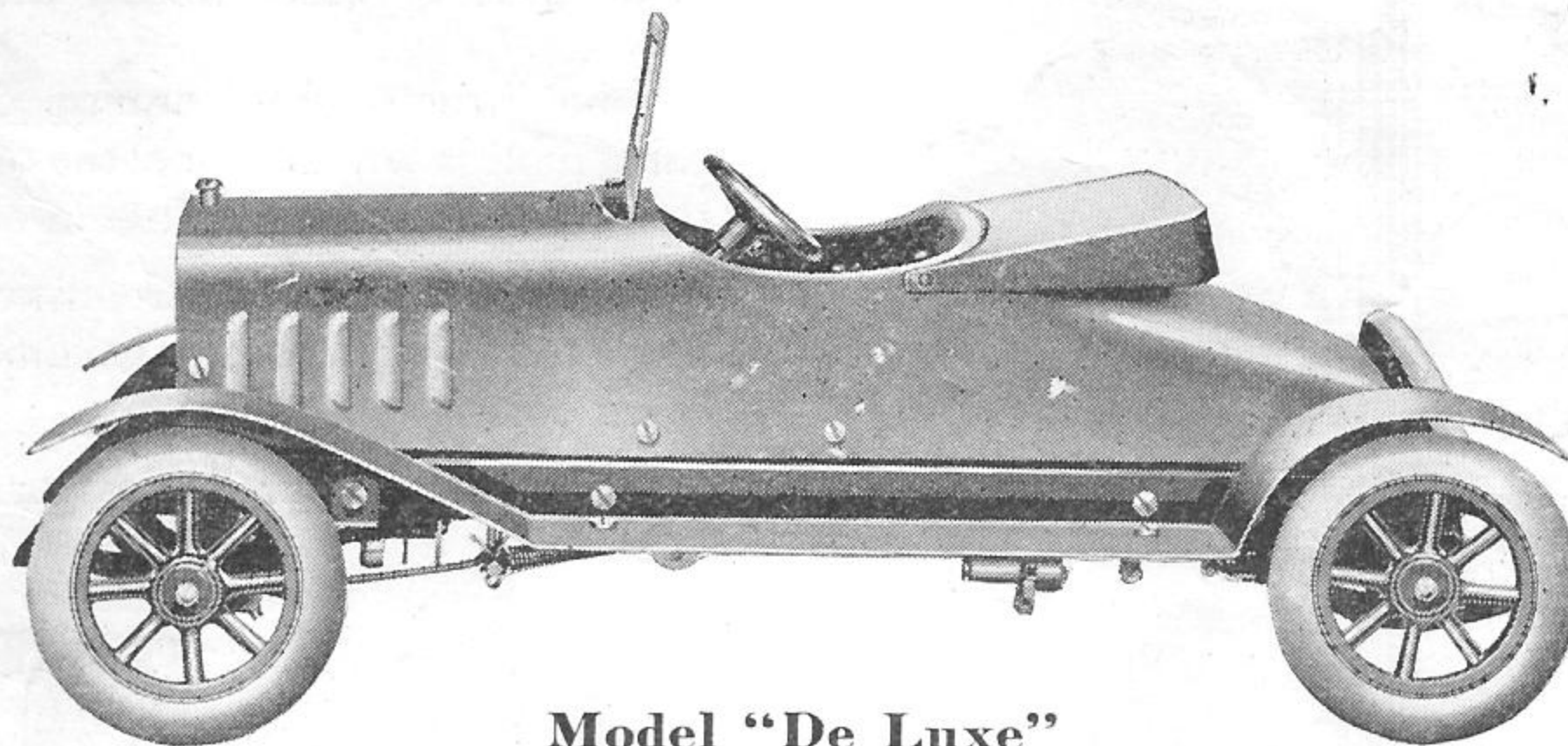
All big Automobiles have to be cleaned so they will look bright and new. Structo cars, after continued use may be made to look just as bright as new.

Remove body and fenders from chassis when washing so that water will not get into machinery. Slightly dampen a soft cloth with water and Ivory soap and rub over parts to be cleaned. Rinse with clear water and dry with another soft cloth. Now rub parts with a cloth very lightly, dampened with oil. The parts will then be bright and glossy like new.

If you have any difficulty in assembling or operating your car, write direct to the Structo Co., as Dealers do not have facilities for helping you.

STRUCTO AUTOMOBILE No. 12

This is our Model "De Luxe," Roadster Type. The mechanism of this car is wonderful. Many features and mechanical details found on a large car, are used in construction of Structo Auto No. 12. A powerful Triple Unit Motor, three speed Transmission, complete Differential Gear, which operates exactly as the Differential on a larger car.



Model "De Luxe"

Structo Manufacturing Company

Freeport, Illinois, U. S. A.

STRUCTO TOYS

MAKE MEN OF BOYS



No. 12 Auto Outfit

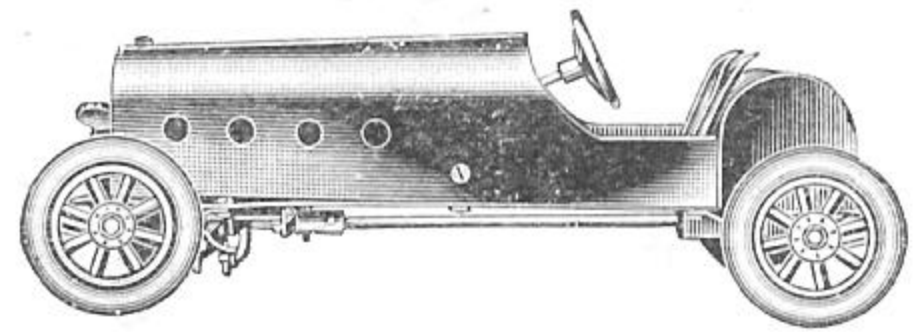
Auto-Builder Toys

Construction Outfits
Ready to Build

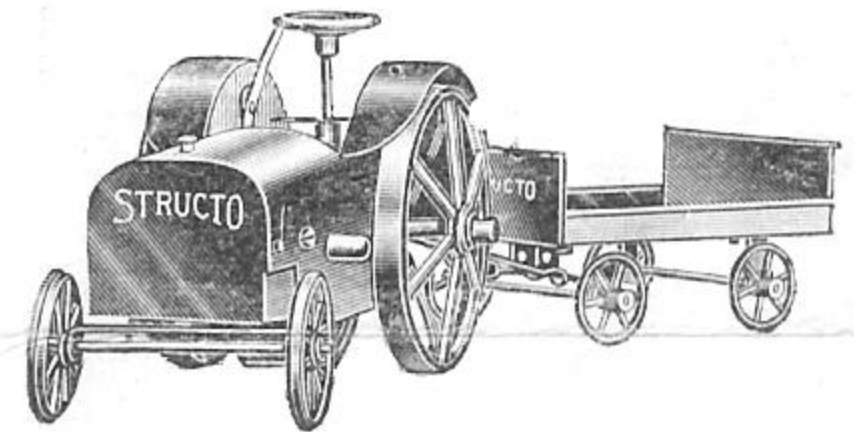
The Structo Auto and Tractor Outfits consist of a variety of outfits from which many different models may be constructed some of which are here illustrated.

These toys when assembled represent in many details the latest and most modern designs of Autos, Trucks, Tractors and Trailers. All toys highly finished in many brilliant colors.

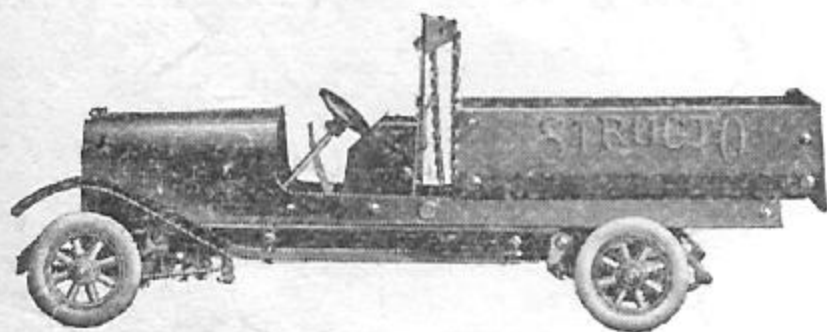
See them at your dealers or write us direct for information.



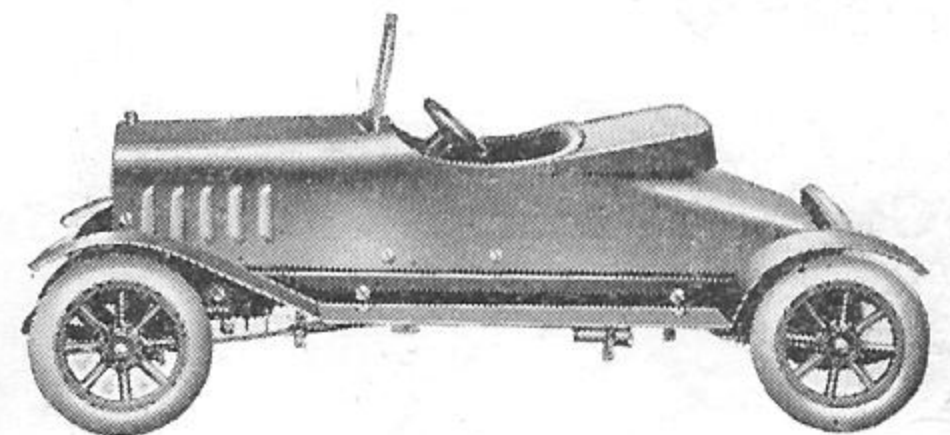
No. 8 Speedster Auto



Structo High-Wheeled Tractor with Trailer Model No. 11.



No. 14 Structo Giant Dump Truck



No. 12 Auto Car

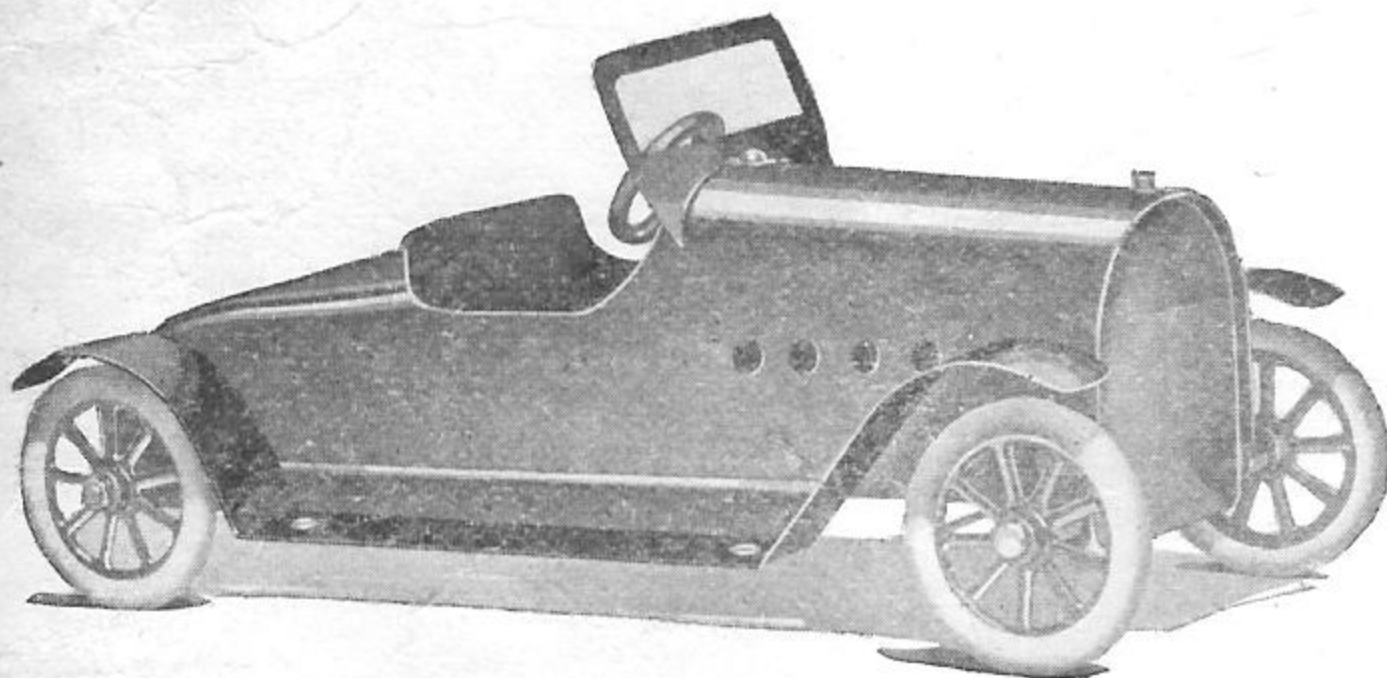
Ready-Built Toys

Completely Assembled and Ready to Run

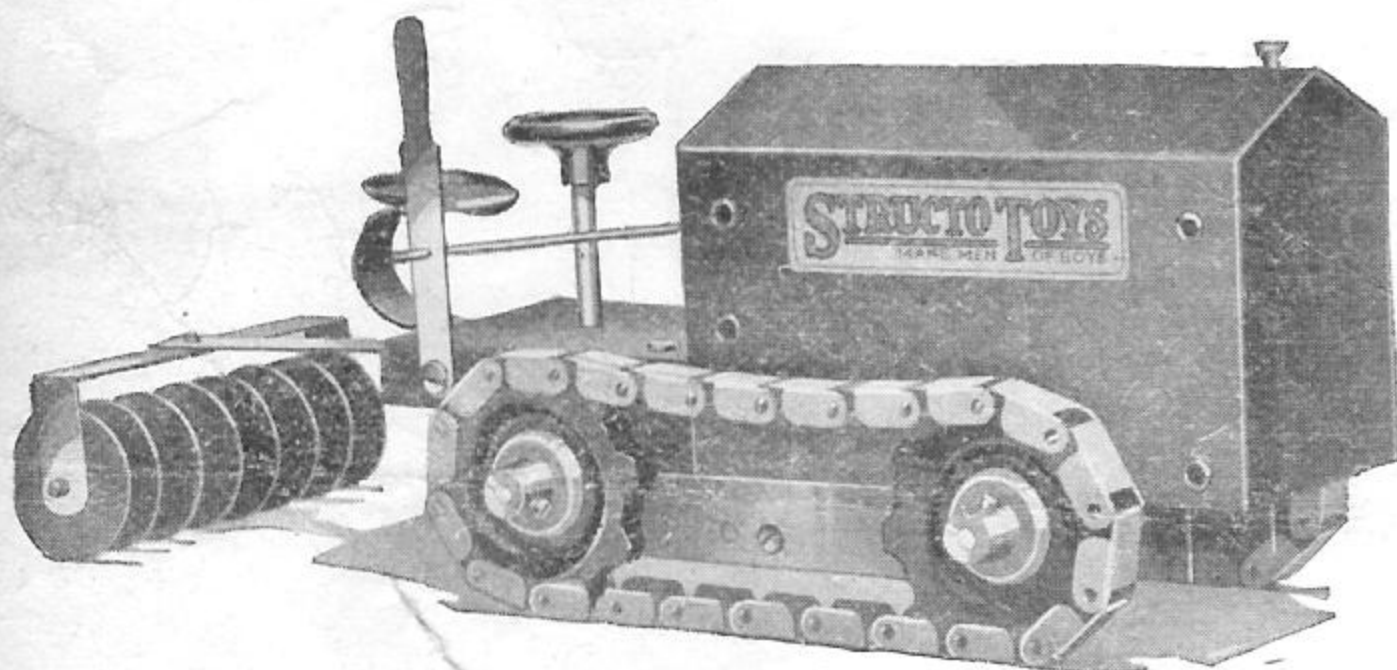
New Structo Toys equipped with powerful long running motors which propel the toys over a long distance at the various speeds suitable to each toy.

These new toys are realistic in appearance, well constructed and beautifully finished in a variety of brilliant colors.

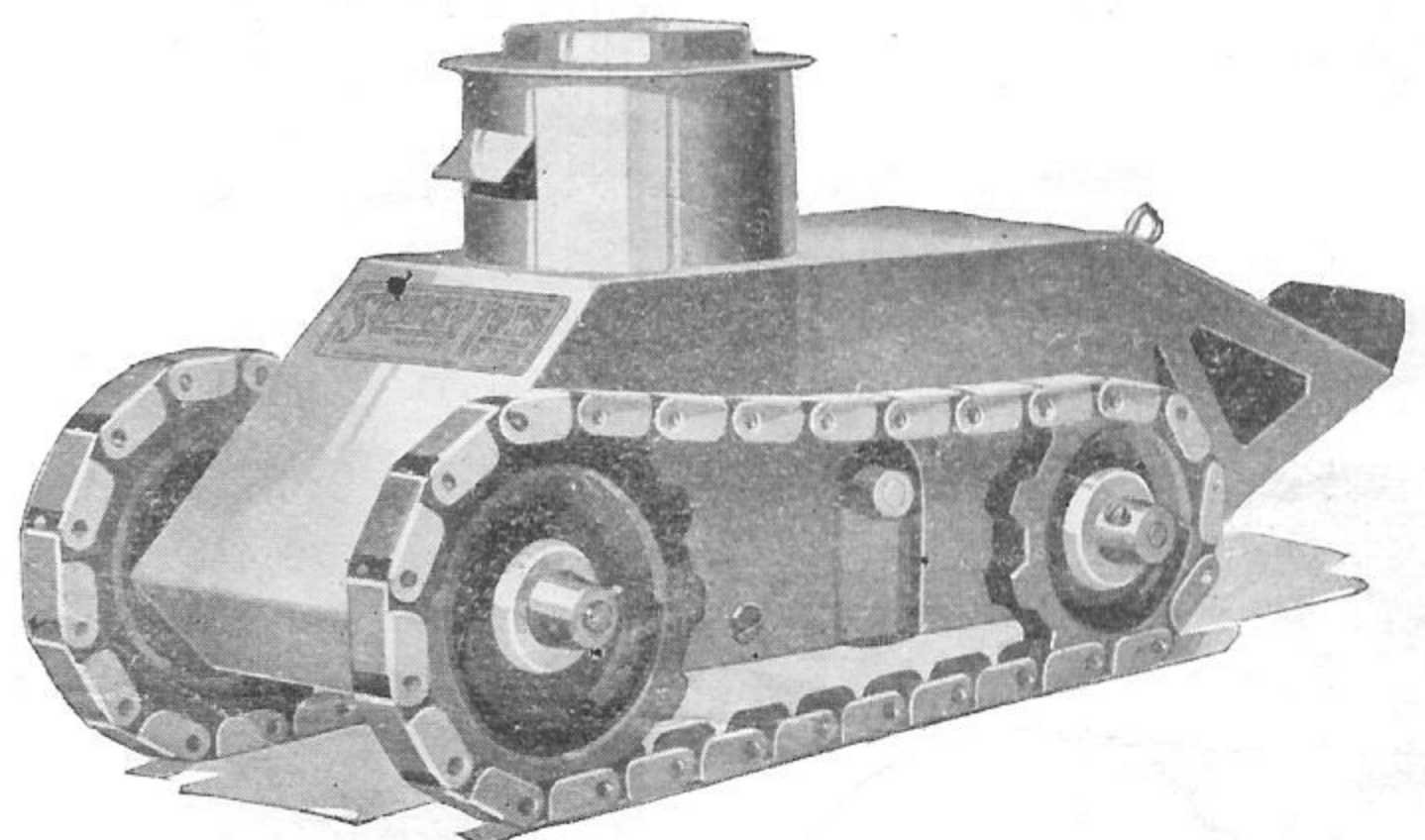
See them at your dealers or write us direct for information.



No. 40 Roadster Auto



No. 44 Caterpillar Tractor



No. 48 Caterpillar Whippet Tank