MI Super

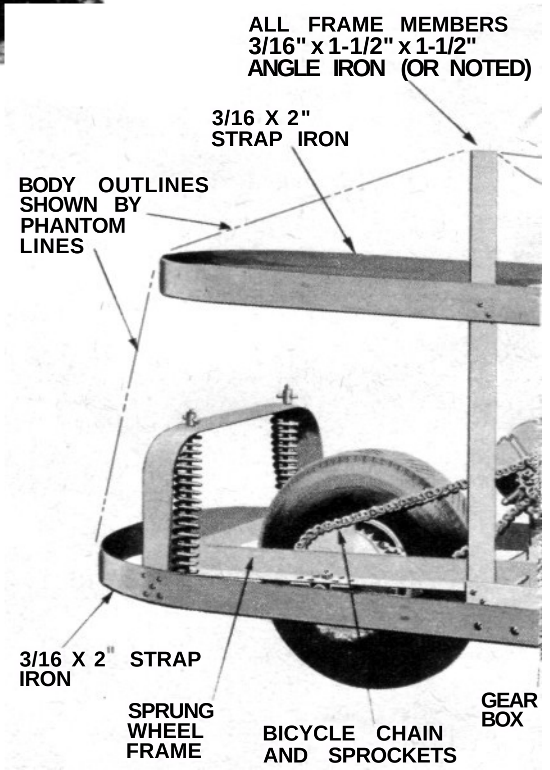
PART I

For one-third the price of a commercial unit you can build this 60-plus miles per gallon motor scooter.

BY MARYLOU AND PETER GERLACH

DESIGNED expressly for readers of MECHANIX ILLUSTRATED, the Super Scooter can be constructed by anyone who has access to the average number of metal-working tools. The power Unit in the original is a 1½-hp. Briggs & Stratton Series "N" air-cooled gasoline engine. This was considered to be sufficient power for Jacksonville. Florida, its home, because that area is so flat that hill-climbing ability isn't required. For hilly country—or if you like to "get away" with a zoom—we suggest you install the larger Series "B" Briggs & Stratton power plant or an engine of comparable size. The interior of the MI Super Scooter is sufficiently large to permit easy mounting of the bulkiest ¾ hp engines on the market.

Although somewhat larger than the popular commercial units, you'll find the MI Super Scooter as easy to ride as it is to build. The leatherette upholstered seat and sprung wheels will make riding soft while the rear compartment will easily accommodate a fair sized assortment of groceries, picnic lunch, tools or the like. And don't forget the 60 plus miles to the gallon

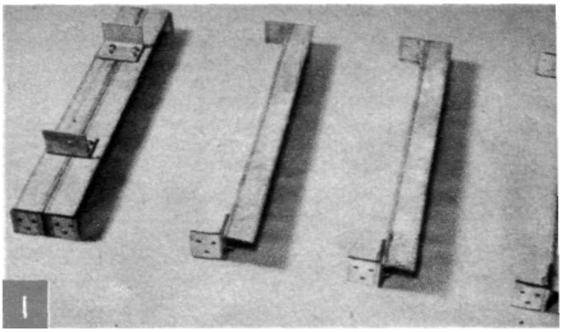


Scooter

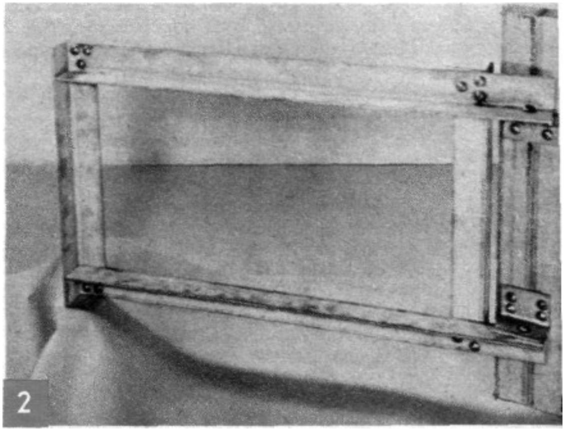
The frame is built up entirely of angle iron and does not require any welding, which is unusual for a project of this type. The frame is covered with sheet aluminum and contains simple, easy to develop, curves- Large working drawings of this project will be available after Part II appears in the July issue of MECHANIX ILLUSTRATED, which goes on sale about June 20. Building the frame will be described this month; installation of the motor and all finishing touches, next month.

Begin construction by fabricating the rear-wheel frame, which is detailed in Fig. 1. It is made from eight pieces of 3/16 x 1½ x 1½-in. angle iron and fastened together with machine screws. The rear-wheel axle, which is a length of 1-in. standard steel pipe, is secured to it, as shown in Photo No. 3, by means of two easily removable bolts. Two collars, made of 1¼-in. pipe, slide on the axle between the frame and the wheel to keep the latter properly centered.

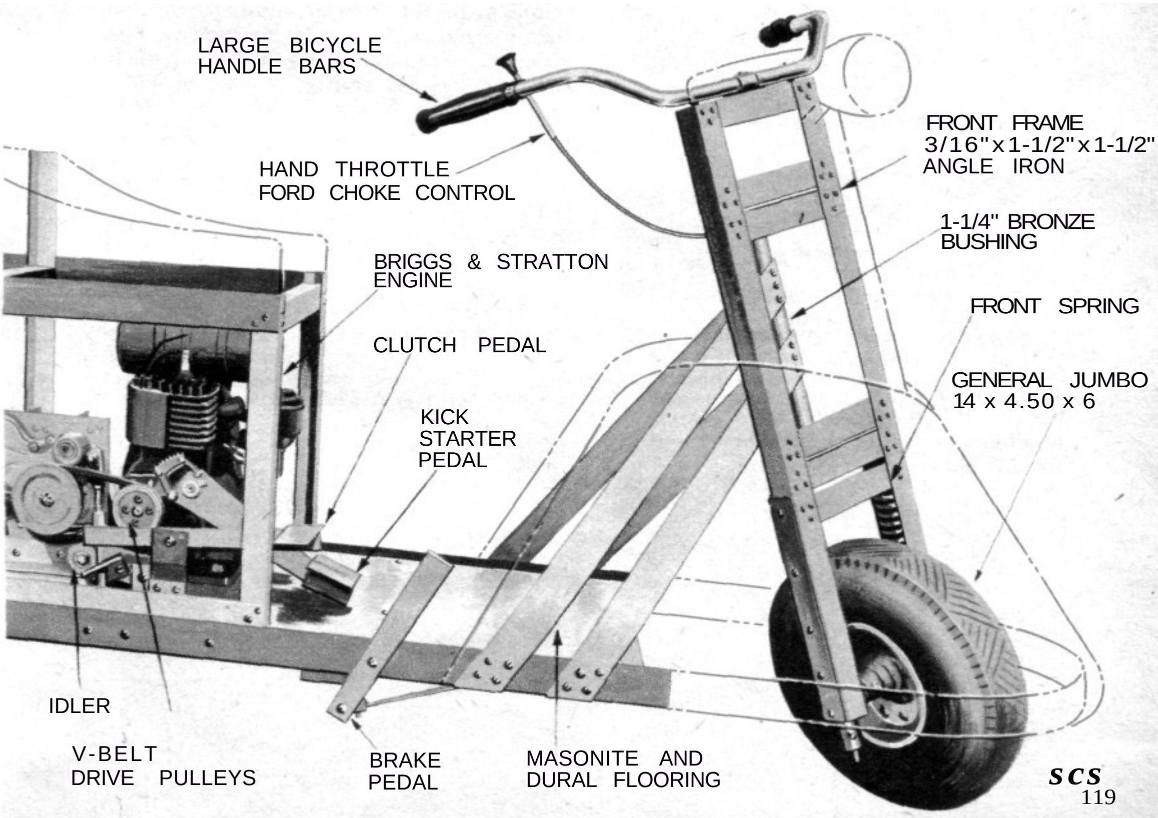
The main frame. Fig. 2, consists of two longitudinal members, six cross pieces.

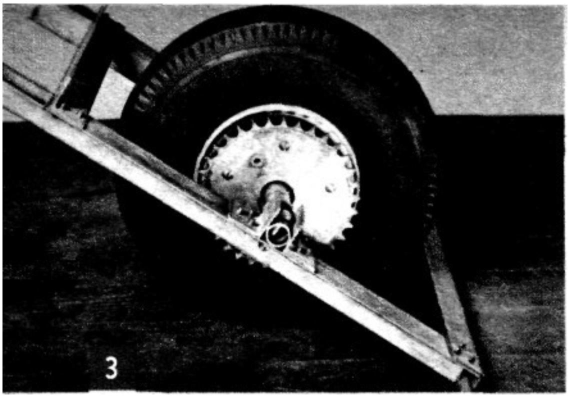


Here, ready for final assembly, are all but the forwardmost angle-iron main-frame cross members.

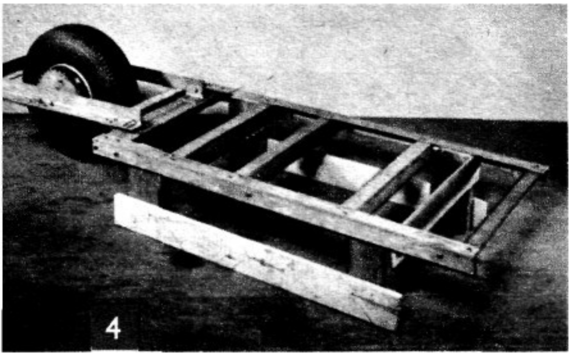


The rear set of main-frame cross members and the rear-wheel frame are temporarily bolted together.

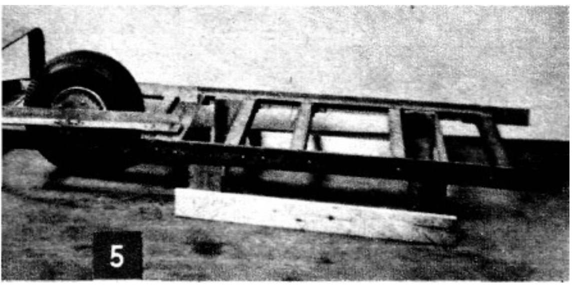




Secure the rear-wheel axle, which is made of steel pipe, to the frame with bolts and nuts.



Construct a jig of scrap lumber to support the main frame while you go on with the assembly.



Three layers, of different materials, make up the flooring. On the bottom is a full-length piece of Masonite. in the middle is a sheet of boiler plate, and aluminum or dural is on top.

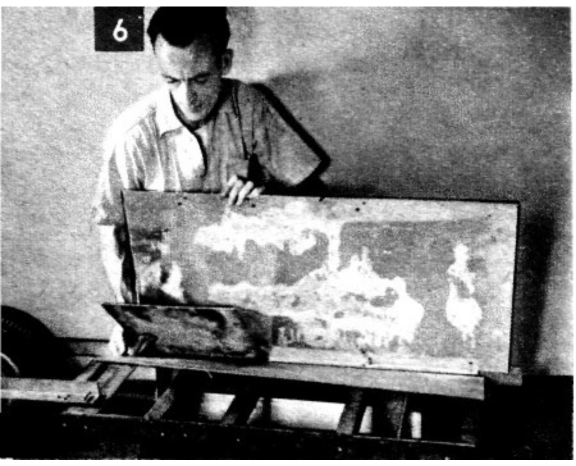
and 12 clips, all made of angle iron. The two aftermost cross pieces are bolted together to form a single unit, as detailed in Fig. 1. Mounted atop this unit are two additional angle-iron clips. These have holes drilled in them to take the piece of ¼-in. drill rod about which the rear-wheel frame pivots. Photo No. 2 shows this cross member and the rear-wheel frame temporarily bolted together so you can check clearances and alignment.

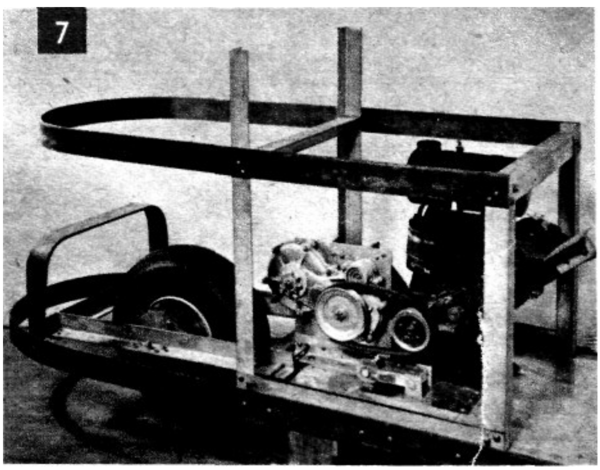
At this point, your work will be made easier if you construct a wooden jig to support the framework while you assemble it. The jig, which is made of two-by-fours and other scrap lumber, is shown in Photos No. 4 and 5. When bolting the component members of the frame together, the three intermediate cross pieces are positioned to suit the engine selected, the two rear ones being placed under the mounting lugs on the engine to take the hold-down bolts and the other one being secured about halfway between the forwardmost engine-bearing cross piece and the front end of the frame.

Your next chore is to add the piece of 3/16x2-in. strap iron, 148 in. long, to the main frame. Make a mark at the center point of its length and bend it about that point into a "U" shape, using one of the tires—which are 14.30 in. outside diameter—as a jig. Since the main frame is wider than the outside diameter of the tire, the part of the strap iron falling between the frame and the "U" bend, each side, should be gently curved to "fair into" both the frame and the bend. This will give a tail that is semielliptical in shape.

Next, install the rear-wheel spring support, which is shown in Photo No. 5, bending it from a piece of 3/16x2-in. strap

Clearly shown here are the two semi-elliptical tail pieces and the rear-wheel spring support. The engine has been temporarily set in place to make sure that it will clear the framework.

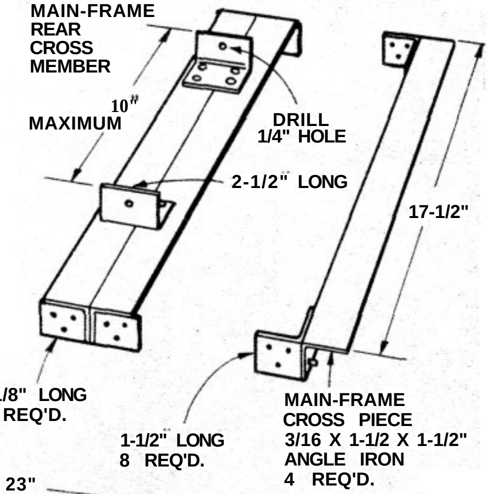


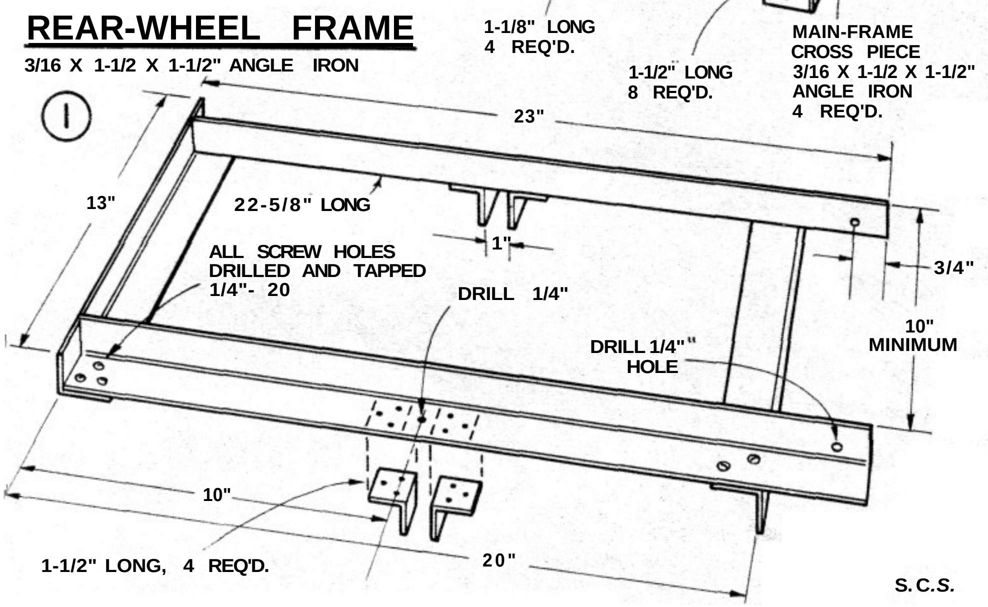


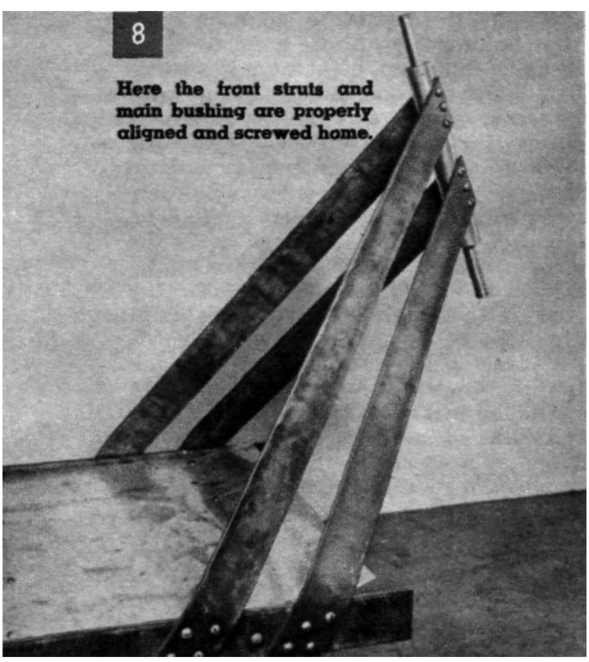
iron and securing it in place, at the point indicated in Fig. 2, with ¼-in. No. 20 machine screws.

The flooring is now added. It is made up of three layers. On the bottom is a full-length piece of 1/8-in. Masonite. Next, extending from the rear cross piece to the middle one, is a sheet of 1/8-in. boiler plate. And finally, on top is a layer of 1/16-in. aluminum or dural (see Photo No. 6).

The next step is to install the upright pieces of the framework. Cut them to length, as shown in Fig. 2: then drill and







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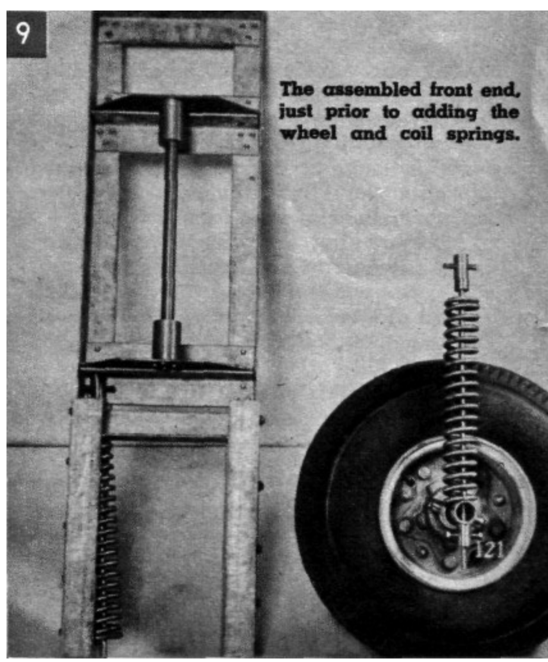
Here the front struts and main bushing are properly aligned and screwed home.



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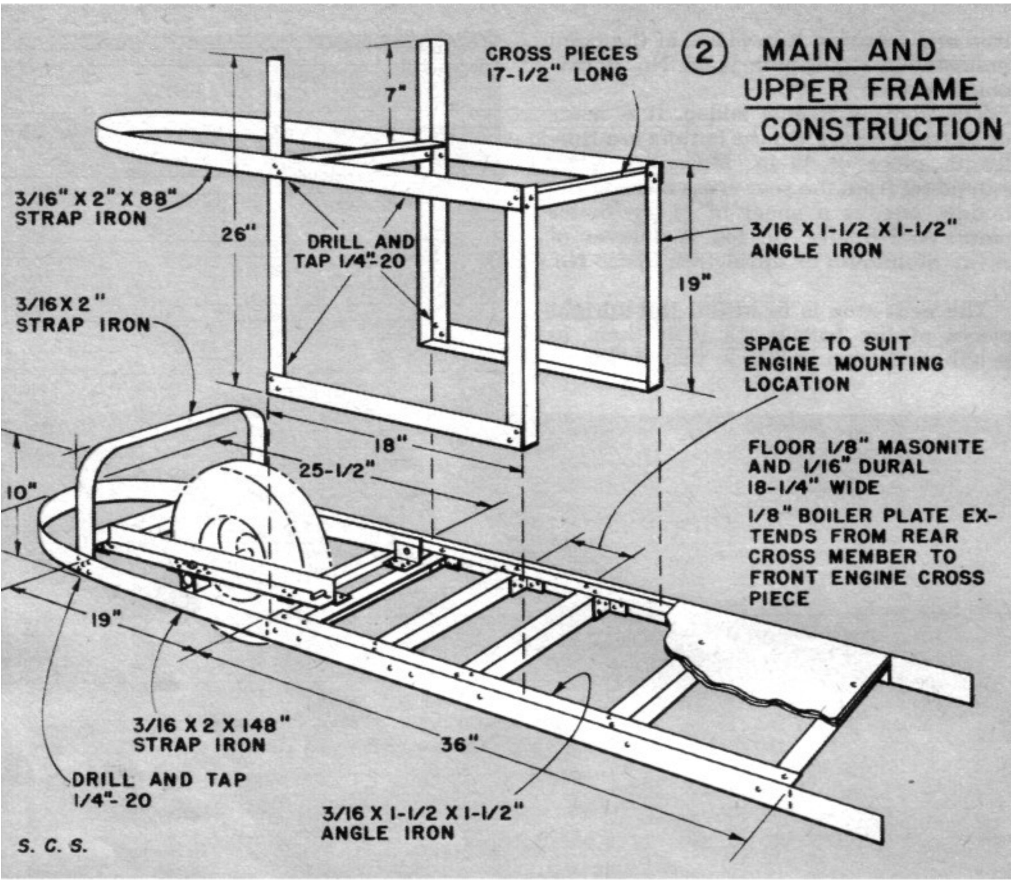
The assembled front end, just prior to adding the wheel and coil springs.



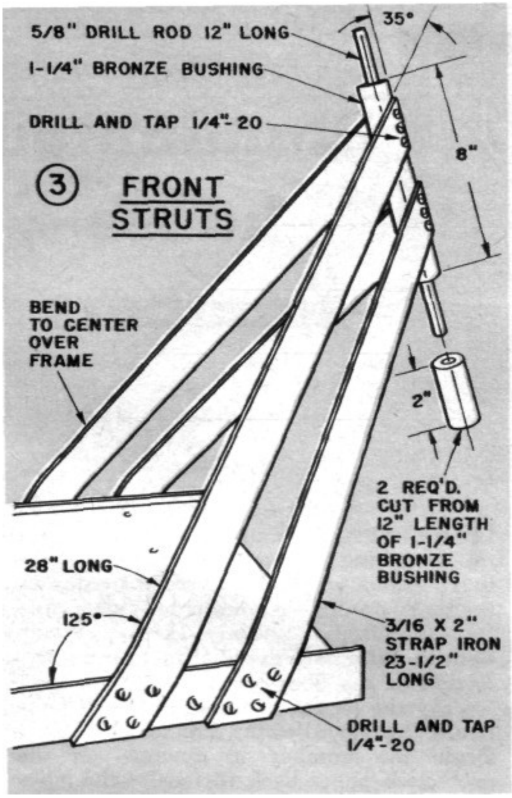
tap the holes and secure the pieces to the lower part of the main frame with screws and 18-in. lengths of angle iron.

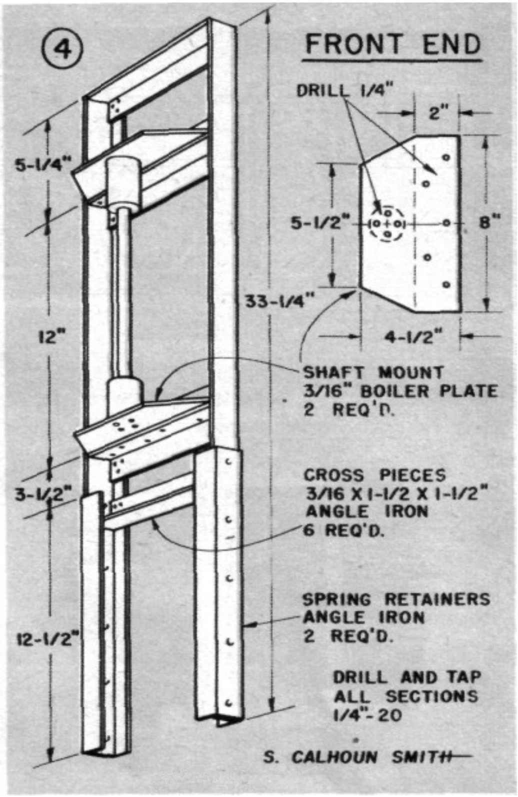
Now is a good time to make sure that the engine that you have selected will fit into the scooter with sufficient clearance all around, especially if you have followed our advice and chosen a more powerful one than was used in our example. Set it on the flooring at the point where it will ultimately be bolted. If it extends above or in front of the forward uprights, you'll have to make them longer or move them farther forward.

After making this clearance test, remove the engine and prepare and install the upper piece of strap iron, bending it, as you did the lower one, around one of the tires and securing it to the uprights with machine screws. Note that its after end doesn't extend as far to the rear as does that of the lower strap iron. Complete the frame by adding the two upper cross pieces.

You are now ready to proceed with the front-strut assembly. The first step here is to make the bearing. It is in three pieces and is cut from a 12-in. length of bronze bushing, as shown in Fig. 3. Next, obtain a 12-in. length of 5/8-in. drill rod to act as a shaft. The front struts, two for each side, are cut to the lengths shown. After bolting them to the main frame at the angle indicated, bend them inward so their upper ends are directly in line with the center of the frame. This is important because the balance and ease of steering of the finished scooter depend on these struts being accurately centered. Their upper ends are next screwed to the 8-in. length of bearing, taking care to set the bearing at exactly the angle given in Fig. 3. With the shaft inserted in place, the front part of the frame will look as in Photo No. 8.

A glance at Photo No. 9 will show the component parts of the front end, which is detailed in Fig. 4. Made of angle iron, it consists of six 8-in. cross pieces, two 12½-in. spring retainers, and two 32-in. uprights. In addition, there are two 3/16-in. boiler-plate shaft mounts that are cut and





drilled as indicated. With the shaft in place in the 8-in. bearing and the two 2-in. bearings slid onto the ends of the shaft, the boiler-plate shaft mounts on the assembled front end will just slide over the ends of the short bearings, to which they are secured with machine screws. To complete the front end, mount a large bicycle handlebar atop the top-most cross piece and securely bolt it in place.

The front-wheel axle is a piece of 1-in. standard steel pipe, 7¾ in. long. Like the rear one, the front wheel is centered by means of collar spacers. Passing through each end of the axle is a length of ¼-in. drill rod. The front springs go over these rods.

The rest of the story, which will cover installation of the engine and drive, will be described next month. Watch for the July MI! •

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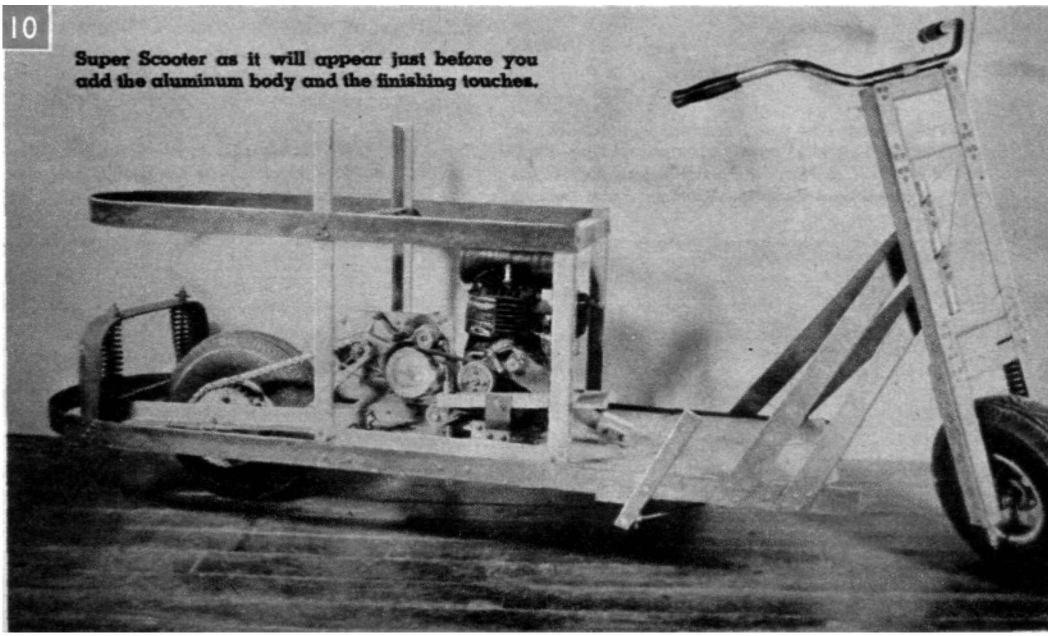

Super Scooter as it will appear just before you add the aluminum body and the finishing touches.