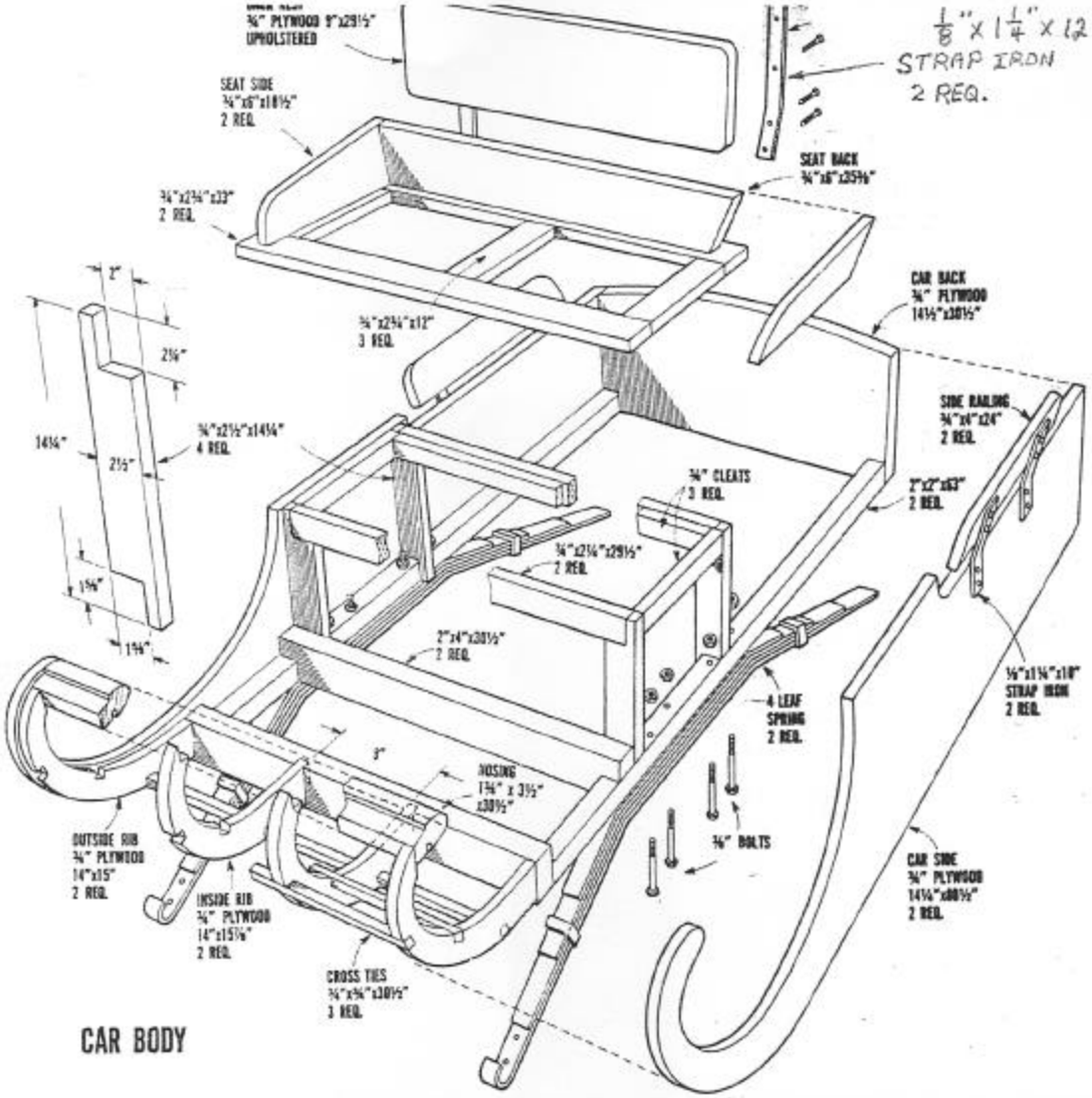
Build This 1901 OLDSMOBILE!

Elegant styling • Four horsepower • 30 miles per hour • 70 miles per gallon. Boy, oh boy, this is the car to own!

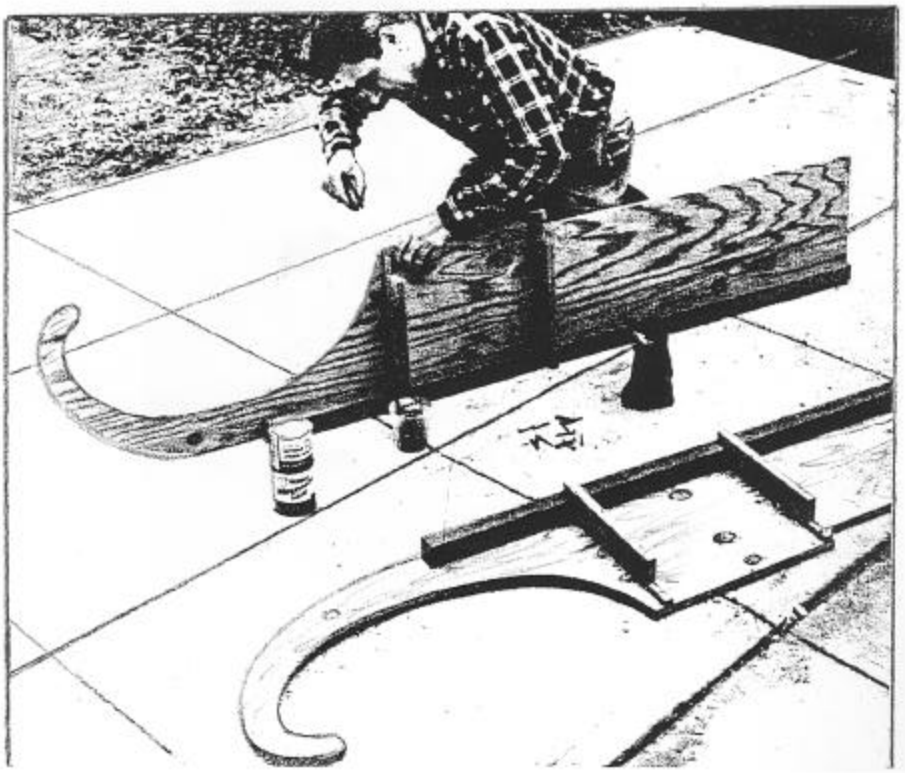
By John and Ro Capotosto

"THIS graceful and practical Automobile will do the work of six horses at an average cost of $35 a year (10,000 miles). Board alone for one horse costs $180 a year, so the economy is very evident. . . . Price $650." That, friends, is quoted from an advertisement circulated in 1901 by the Olds Motor Works of Lansing, Michigan on behalf of their 1901 Oldsmobile.

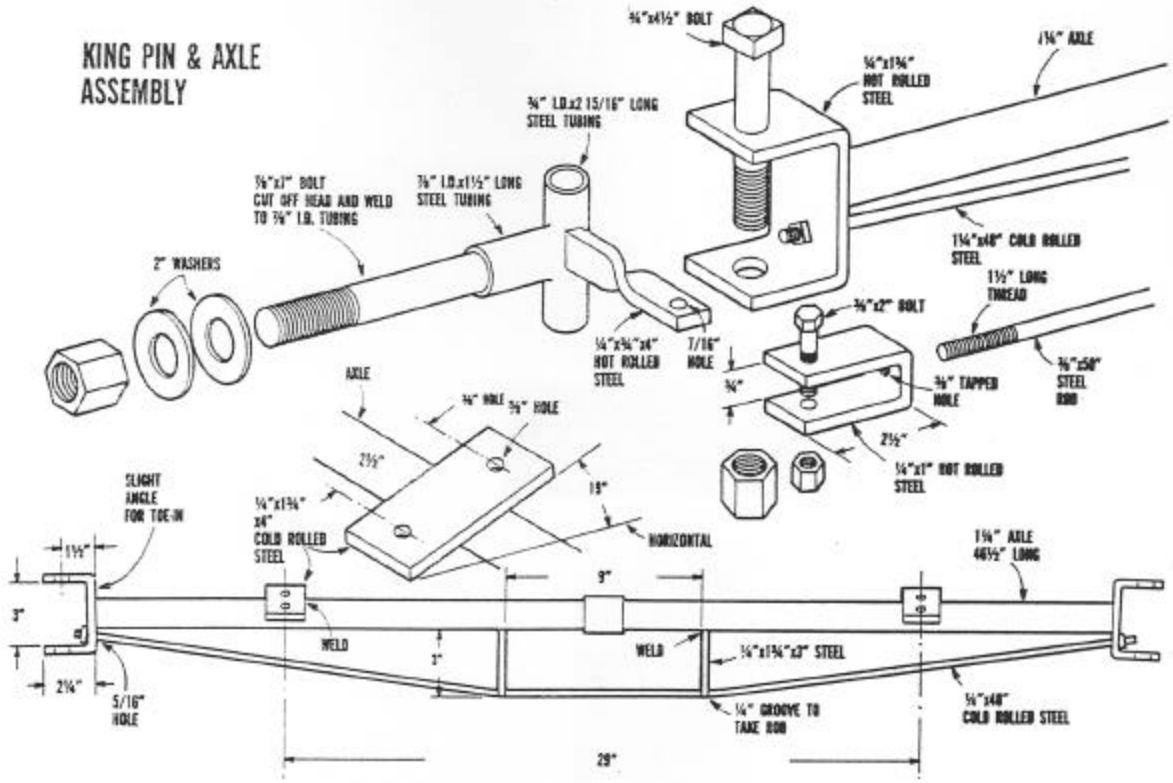
Well, Detroit (and horses, too) take notice! Fifty-nine years later MI is



CAR BODY



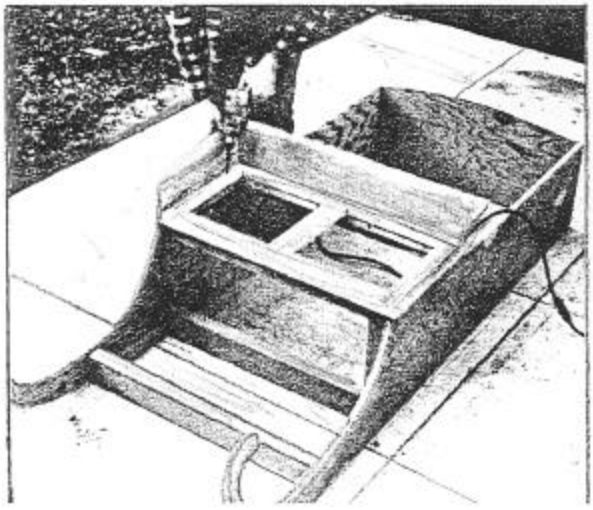
WATERPROOF glue and screws are used to fasten the framing cleats to the plywood body.



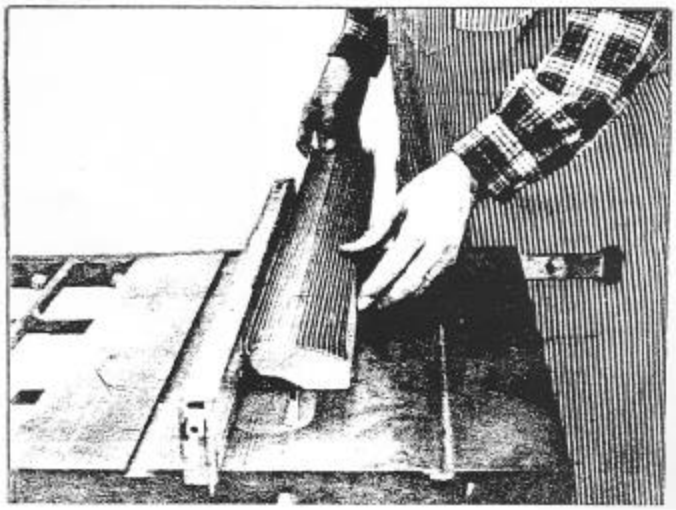
going to show do-it-yourself enthusiasts how to build their own modern ¾-size reproduction of the 1901 Olds. Authentically detailed, this job is not a toy or plaything but an honest-to-goodness horseless carriage sparing none of the quaintness or character that was embodied in the original.

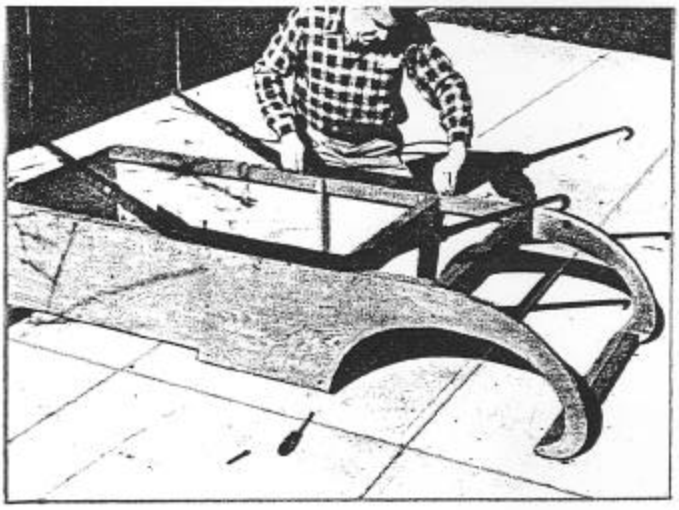
Not meant for heavy driving, of course, but ideally suited as a second car, this rig is excellent for those weekly

DRILLING pilot holes through seat framework. Seat is screwed in place, no glue.

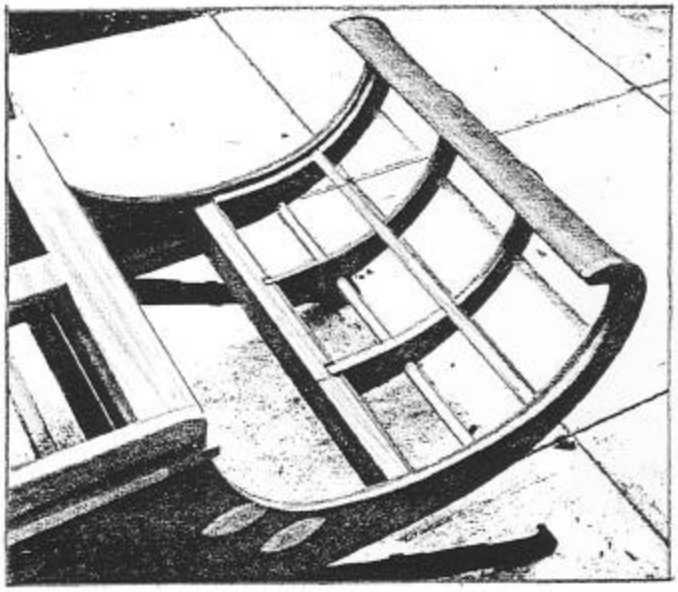


COMPLEX shape of the body crown is made by progressive grooving on circular saw.



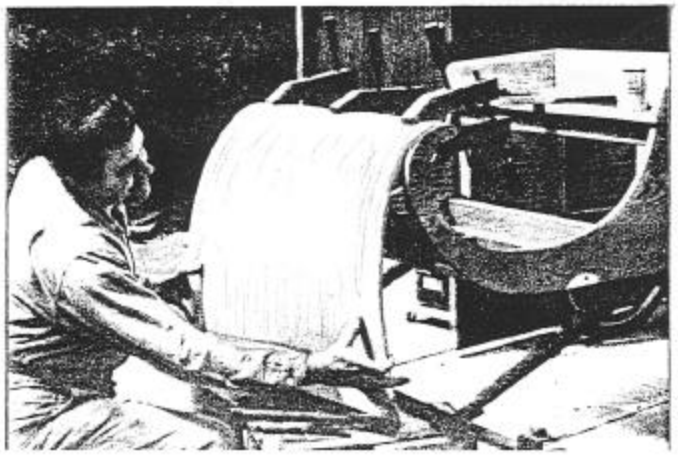


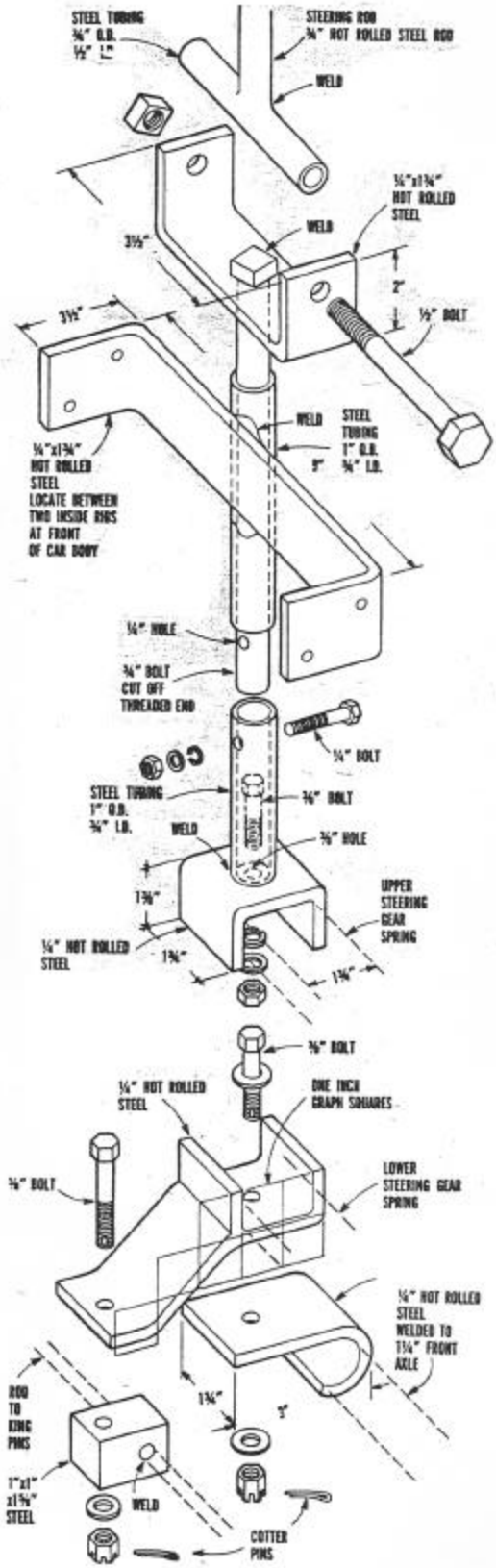
WITH BODY upside-down, springs are positioned for location of holding bolts.



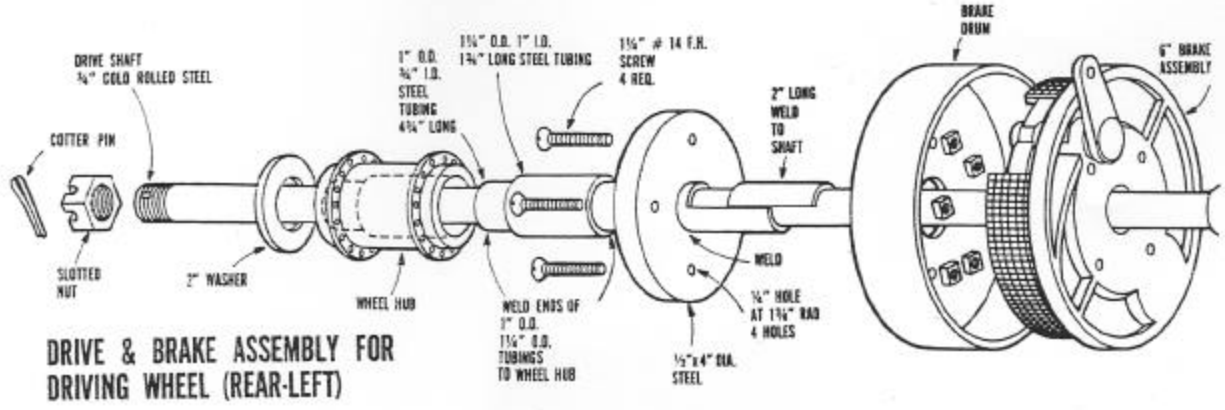
RIBS and braces, screwed and glued in place, prior to attaching curved bottom.

PLYWOOD, ⅛-in. thick (plus screws and glue) is used to make up curved buckboard.

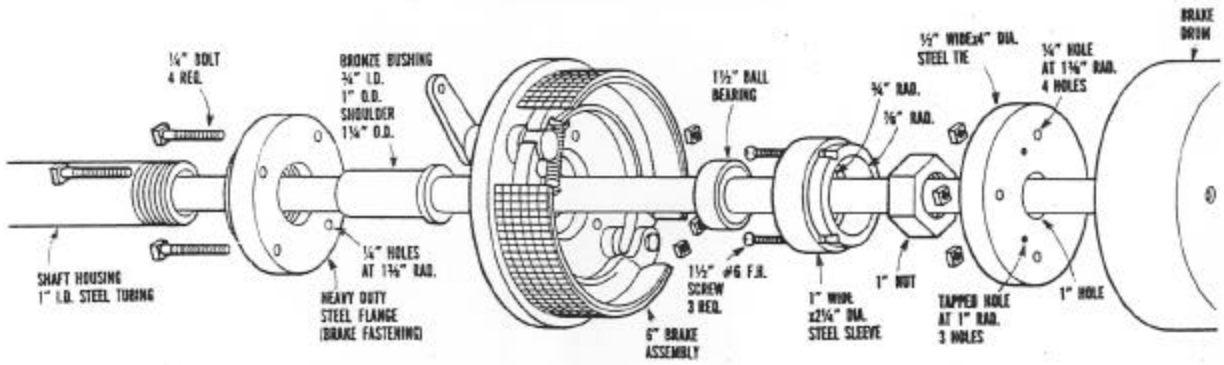




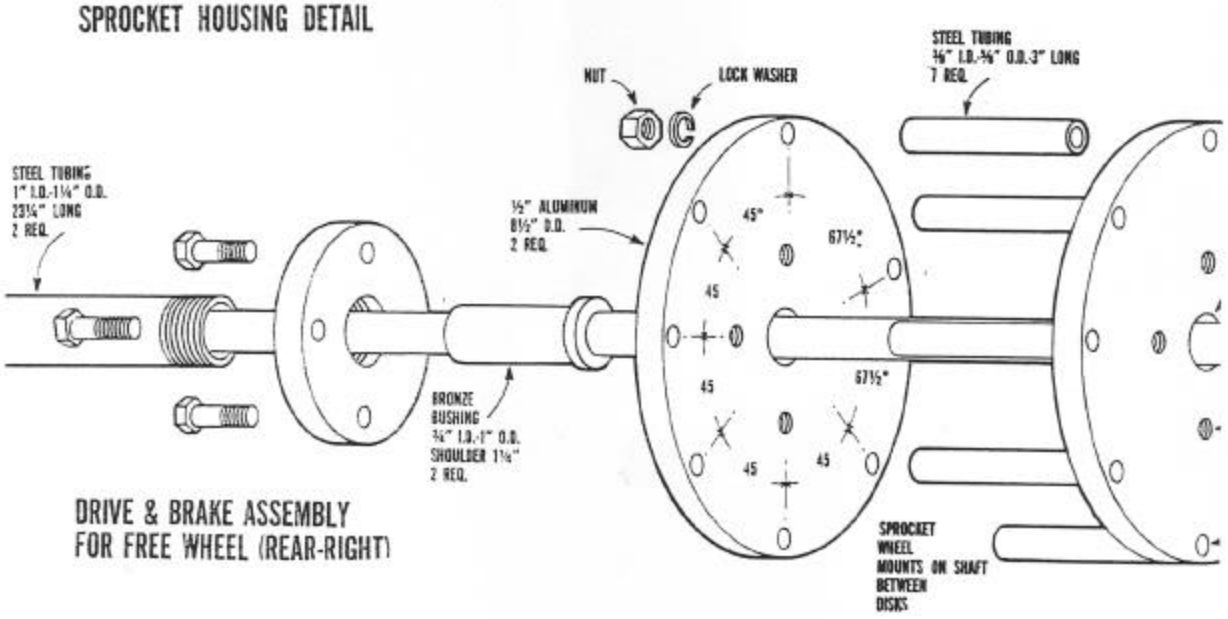
STEERING GEAR LINKAGE DETAILS



DRIVE & BRAKE ASSEMBLY FOR DRIVING WHEEL (REAR-LEFT)



SPROCKET HOUSING DETAIL

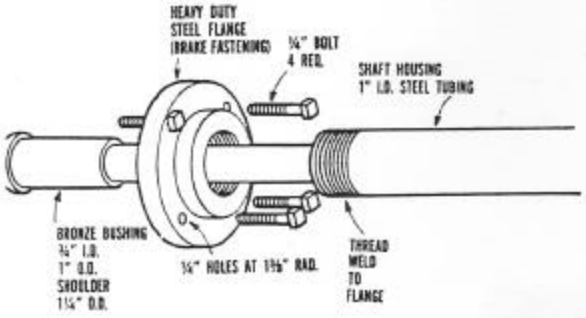


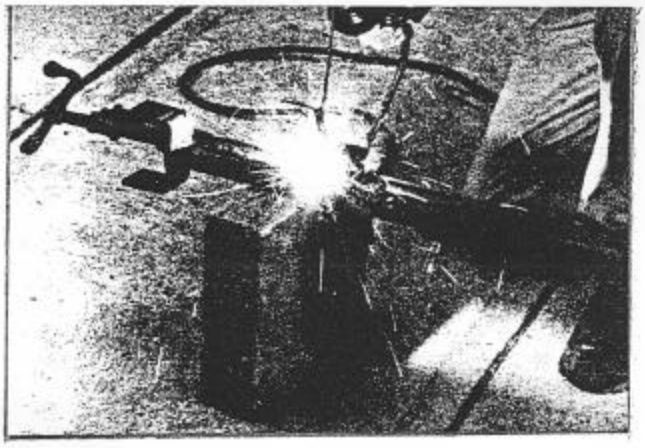
DRIVE & BRAKE ASSEMBLY FOR FREE WHEEL (REAR-RIGHT)

super market trips, short-hop errands and just perfect for Junior's date operations.

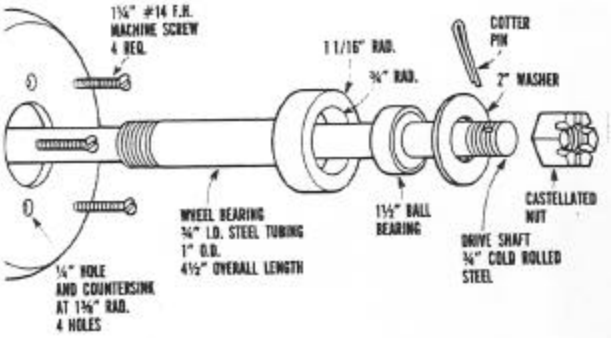
Sure, today's sleek metal mastodons will get you there and back in such extreme comfort you will hardly know the car was in motion. That's okay if boredom doesn't get you. But if you're hankering for an old-fashioned, *enjoyable* car ride, then hop aboard this buggy and take off—adventure awaits you!

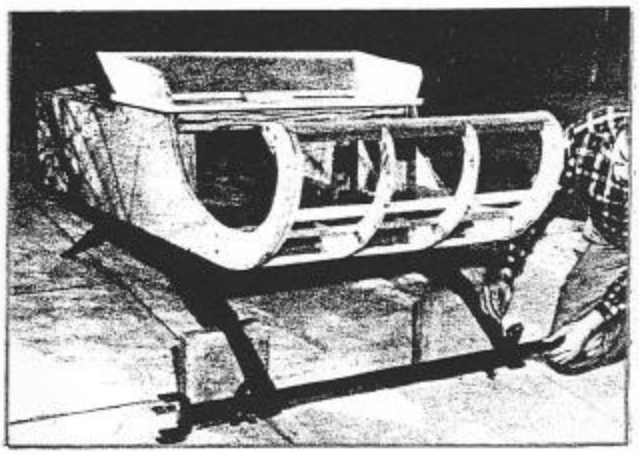
The first difference you'll note is that you climb *up* to get in the MI Olds, not down. Then notice the luxury of ample



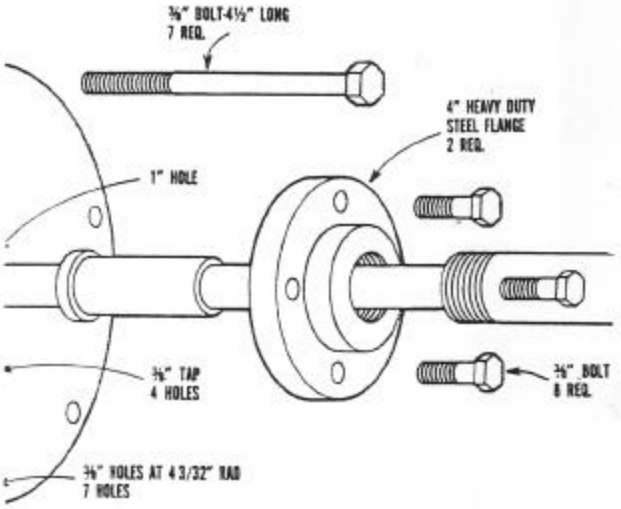


WELDING the kingpin arms and the spring supports. Note the use of the pipe clamp.

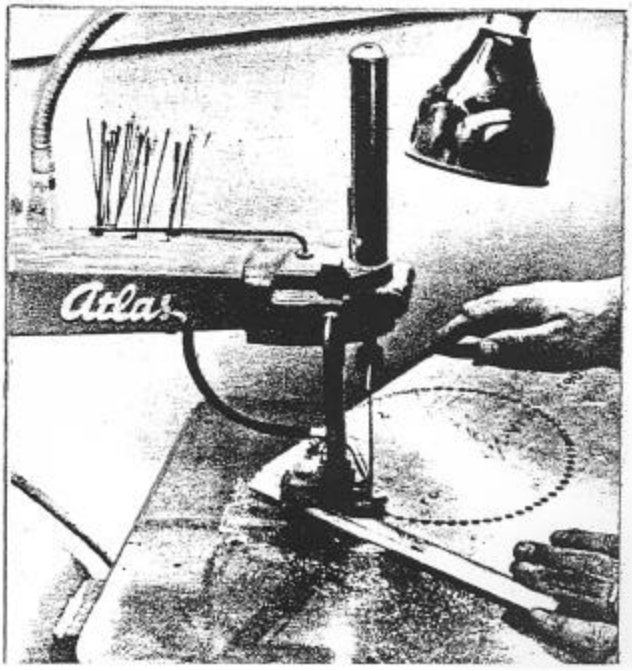




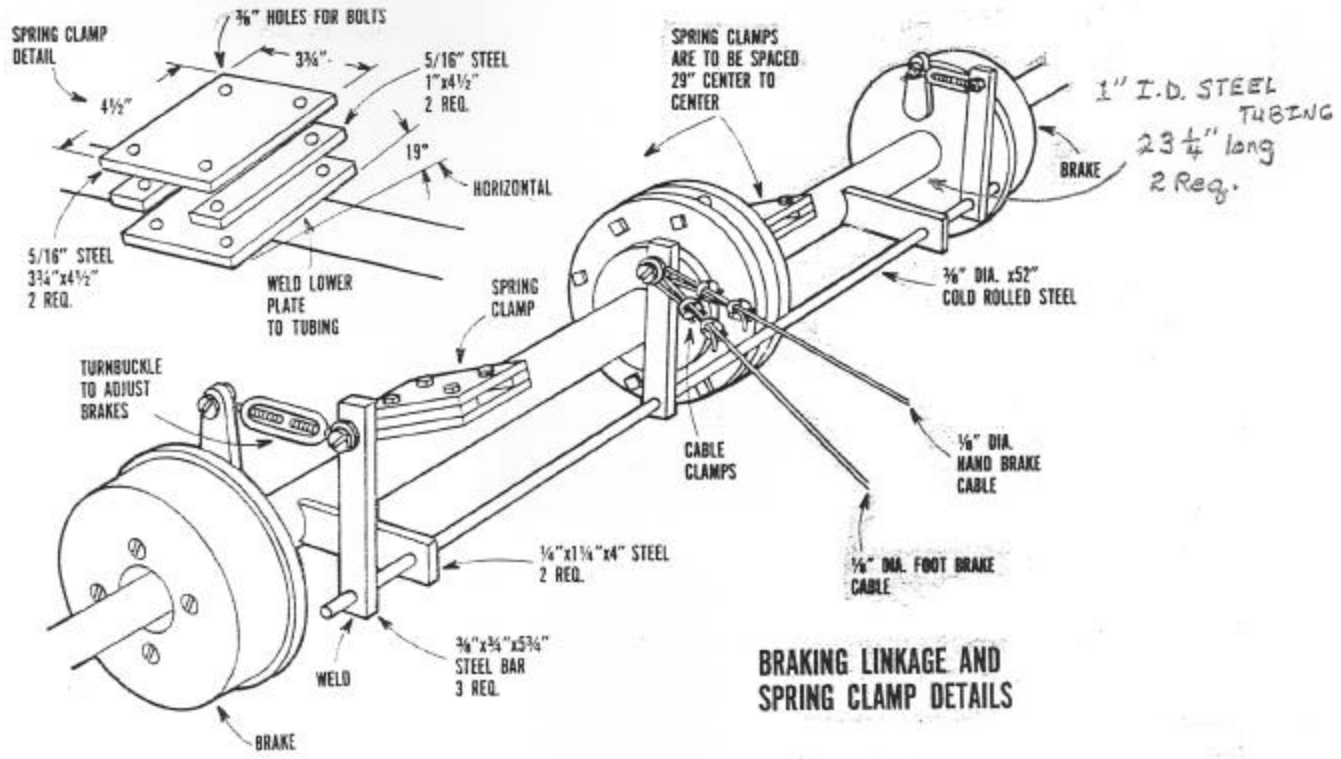
CLAMPS hold the axle in place as it is positioned in place at front of the car.



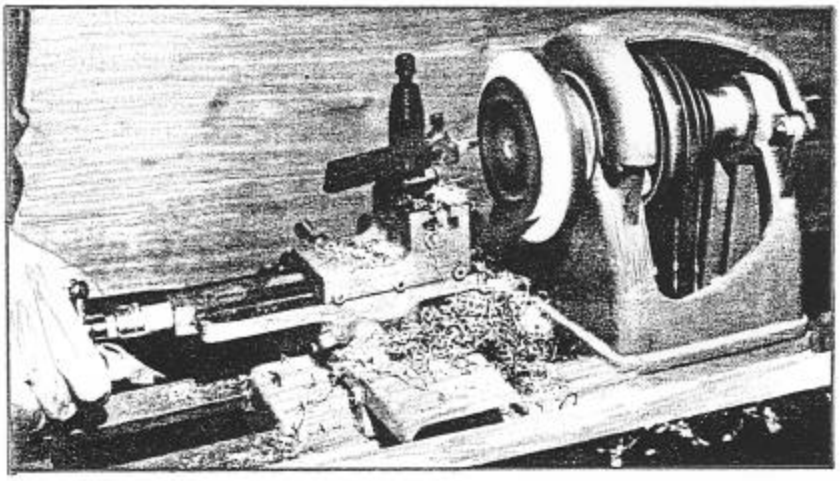
DRILLING holes in the aluminum plate for sprocket housing eases cutting job.



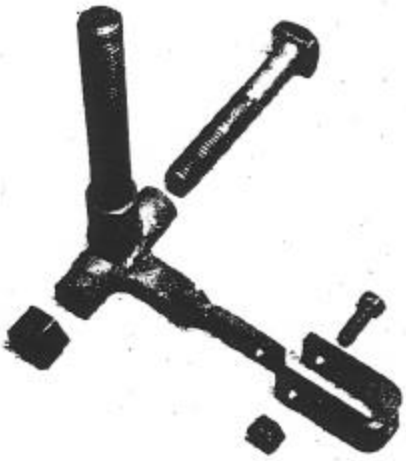
headroom. Step on the gas, steer with the tiller and away you go. You can feel motion, there's a lilting springiness in the ride. You're in another age! Air conditioning comes without push buttons as you chug along in this graceful job which will do 30 mph and deliver



BRAKING LINKAGE AND SPRING CLAMP DETAILS

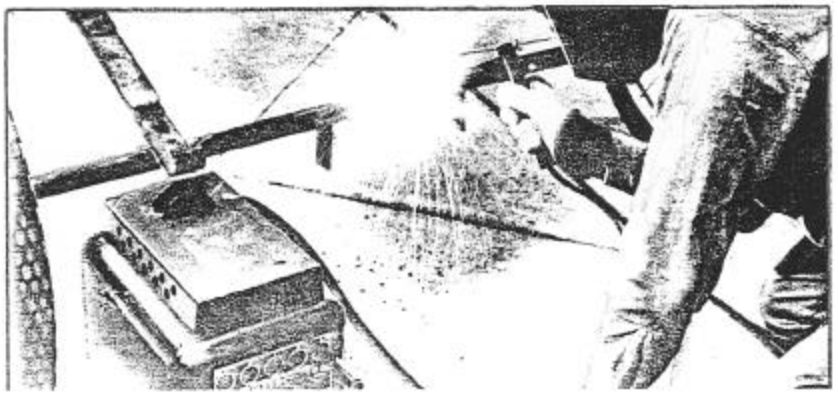


FACE PLATE TURNING on the lathe will bring the blank to its final diameter.

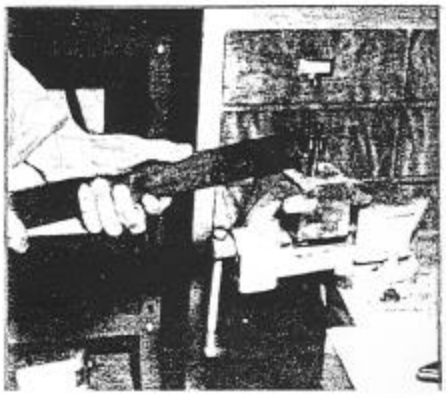


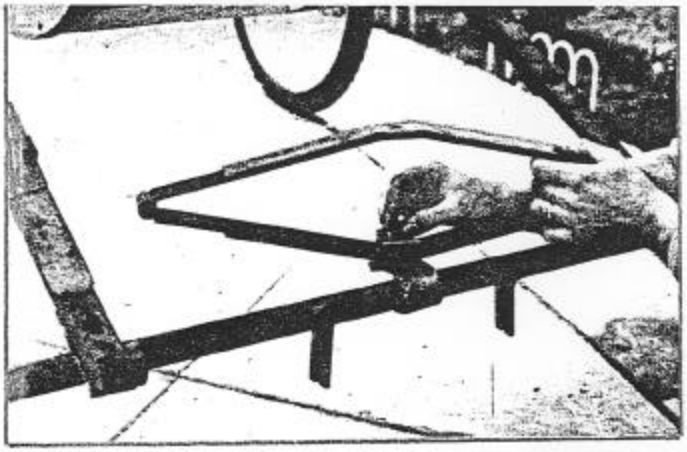
THIS is the kingpin assembly, ready for installation on the chassis of the Olds.

A LINCOLN ARC WELDER, 100 proved to be of great help in making the car's chassis.

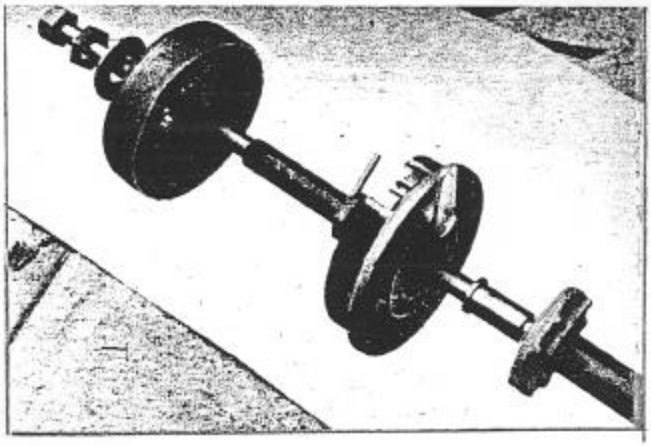


JIG for bending the eyes in the spring is made with two rods in a steel block.

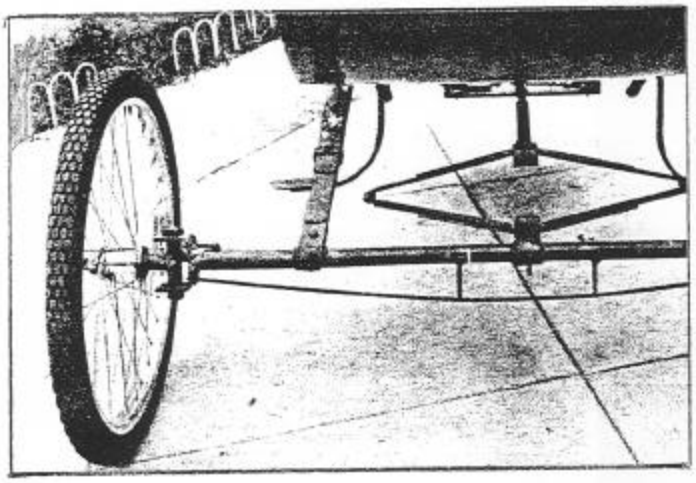




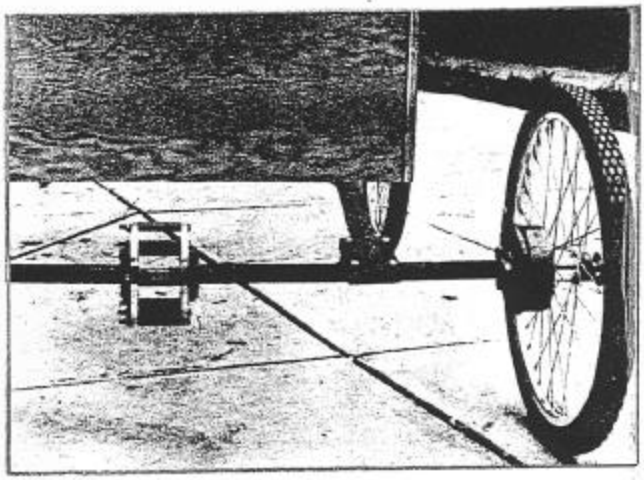
ASSEMBLING the front-end spring in the chassis in order to check its alignment.



EXPLODED VIEW of the rear brake assembly. The brake is of internal expanding type.



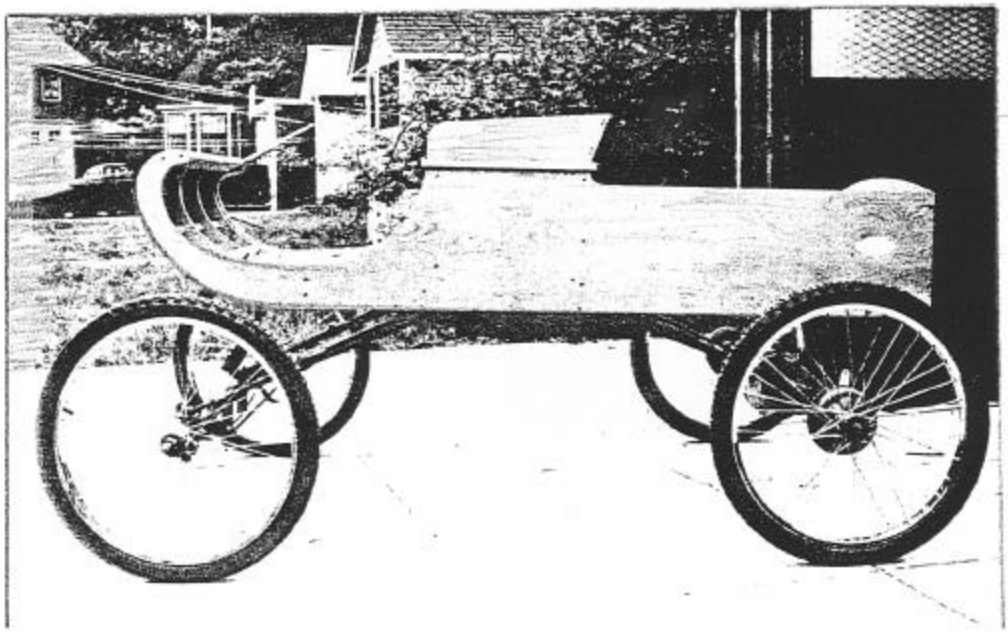
HERE is the completed front end of our car. The car uses 2.125x26 inch tires.

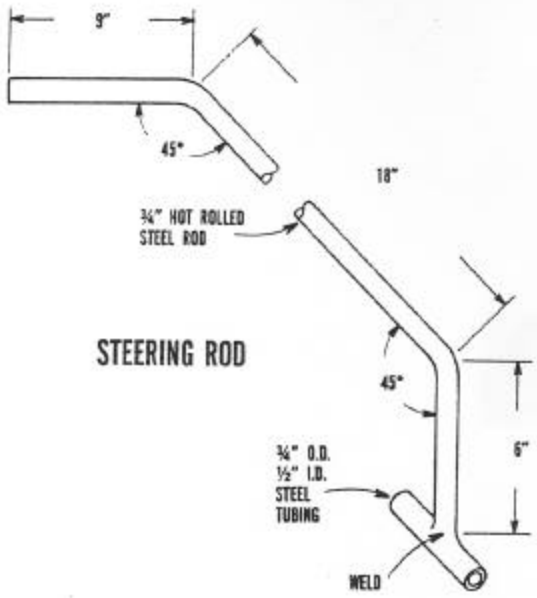


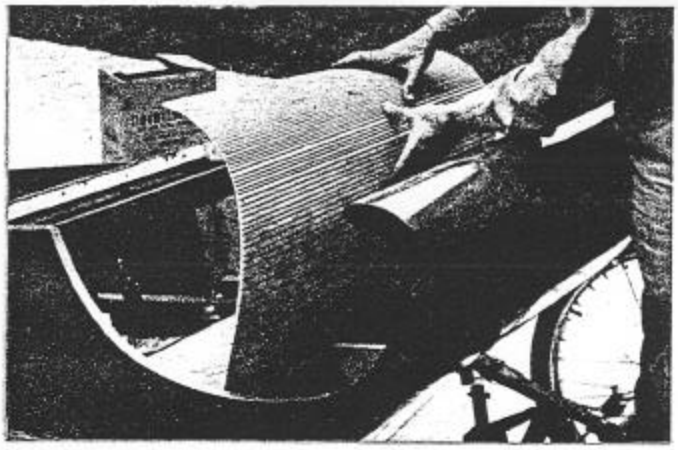
AND HERE is a progress view of the rear end. Bottom of shackles are welded to axle.

SIDE ELEVATION of partially completed car. Okay to admire car at this point!

FLOOR VIEW showing pedal assembly. Note stoplight switch is connected to brake.

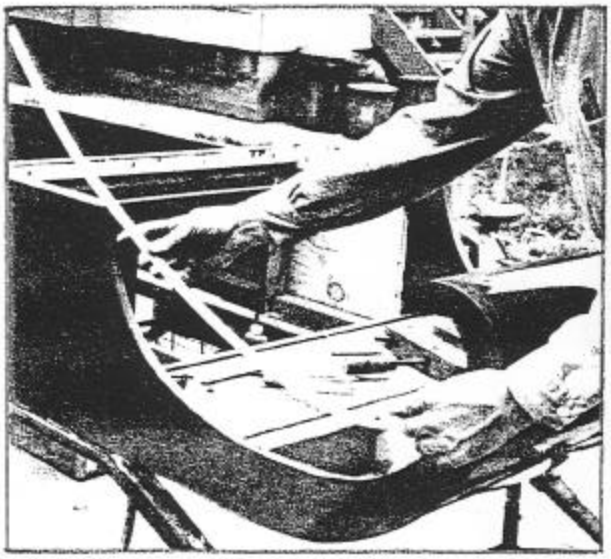




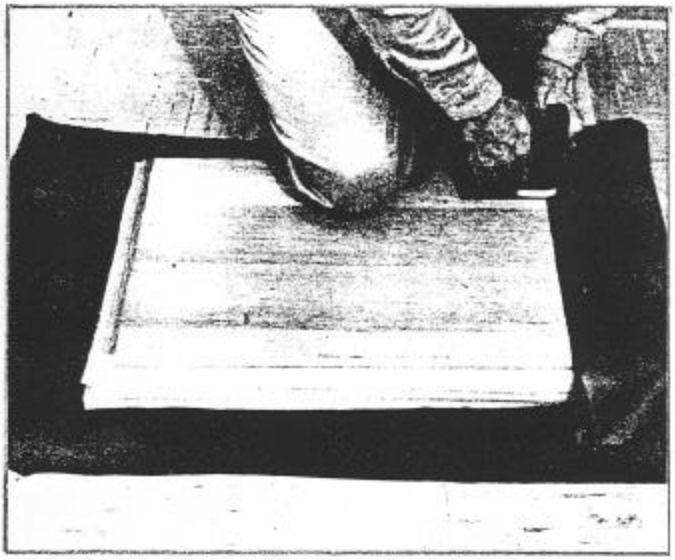


HEAVIER quarter-inch plywood used for inside floor board is grooved for bending.

The power plant consists of a Clinton B 1290-1230 air-cooled single cylinder, four hp engine. The drive is through a Mercury GW 12-30 centrifugal clutch and thence through a Cushman Transmission No. 0802 which provides two speeds forward and one reverse. A



ANODIZED aluminum molding is used as a trim and to hide raw edges of plywood.



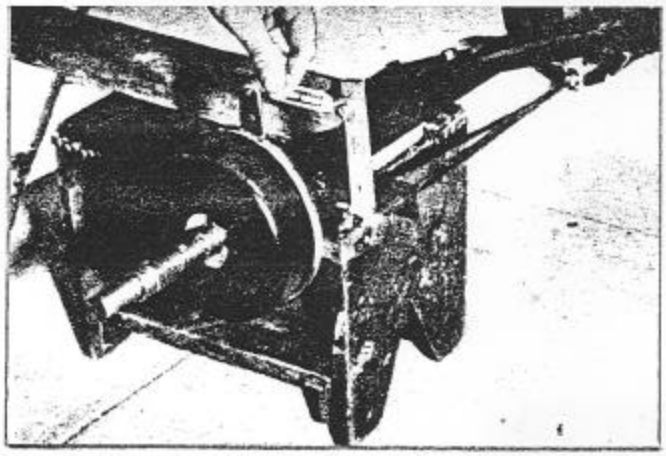
POLYUTHERANE pad and black Boltaflex stapled to baseboard make up the seat.

round 75 mpg at half-throttle opening.

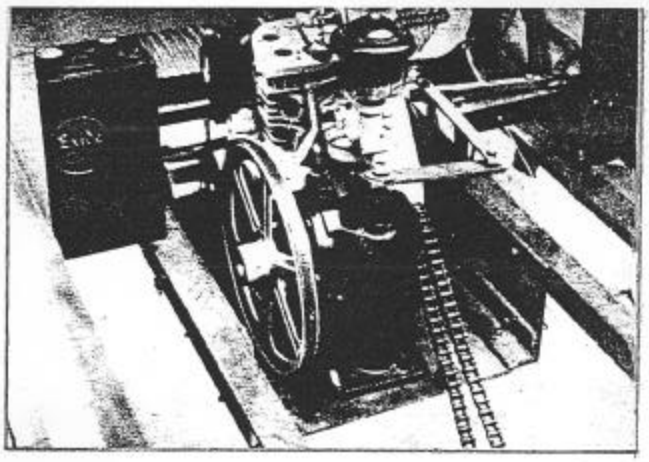
You can build this dream for less than $500. Study the following pages, then get right with it. The pleasurable hours you spend recreating this nostalgic bit of Americana will be as rewarding as the joys of riding in it.

sprocket and chain drive delivers power to the rear wheels. One wheel does the driving; the other is free-wheeling to eliminate the need for a differential. Thus costs and complication of construction are kept to a minimum.

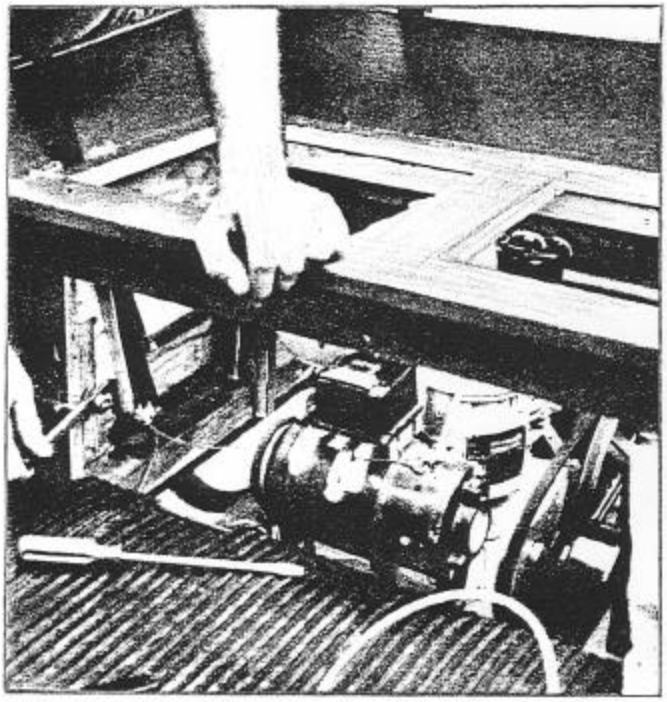
Specifically, power transmission is as



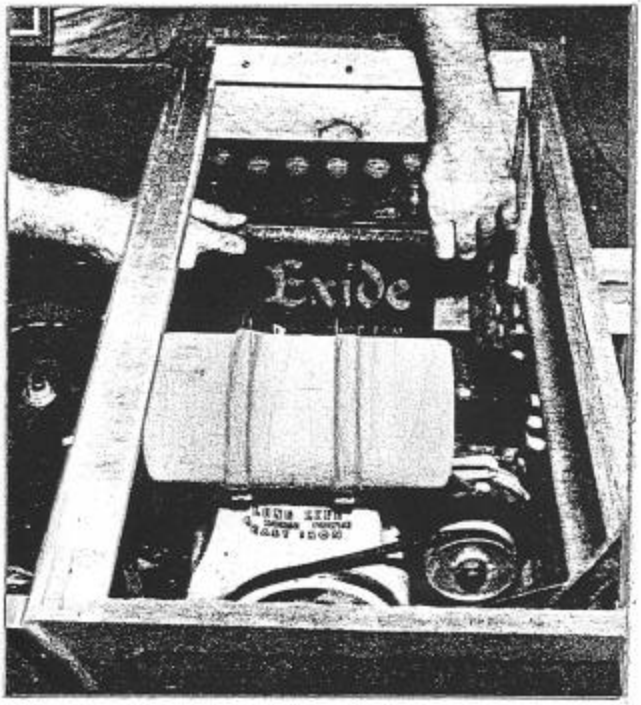
A TURNBUCKLE is used for adjusting the brake; it is then locked in place with wire.



VIEW from the rear showing placement of the three-horsepower Clinton engine.

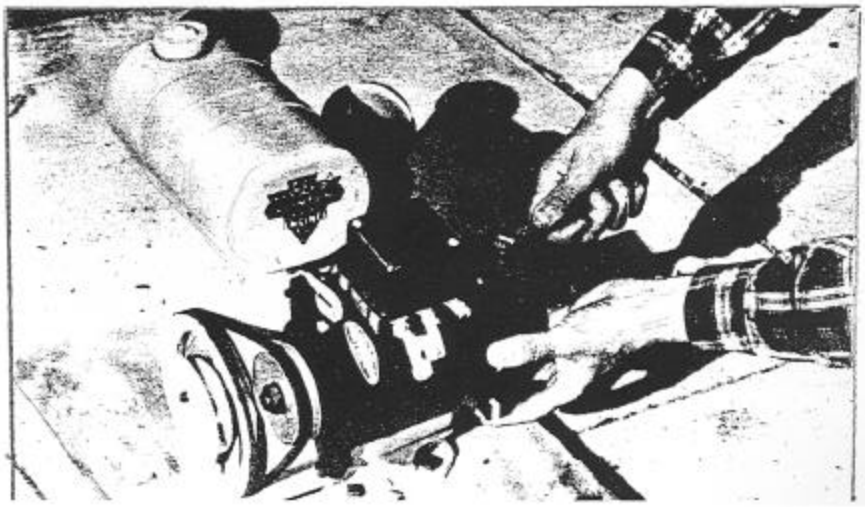


HAND BRAKE is applied by lifting lever at far left. Spring snaps it into place.

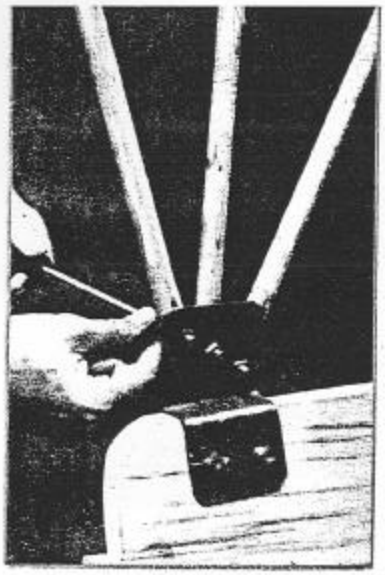


INSTALLING the battery. Housing for battery is made of ⅛x1-inch strap iron.

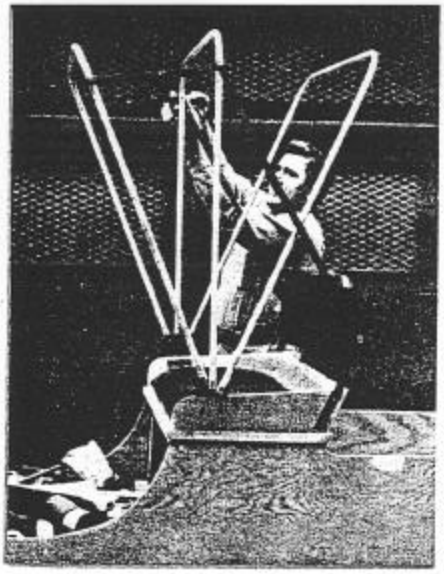
TIGHTEN all bolts on the engine before installing it in the chassis.



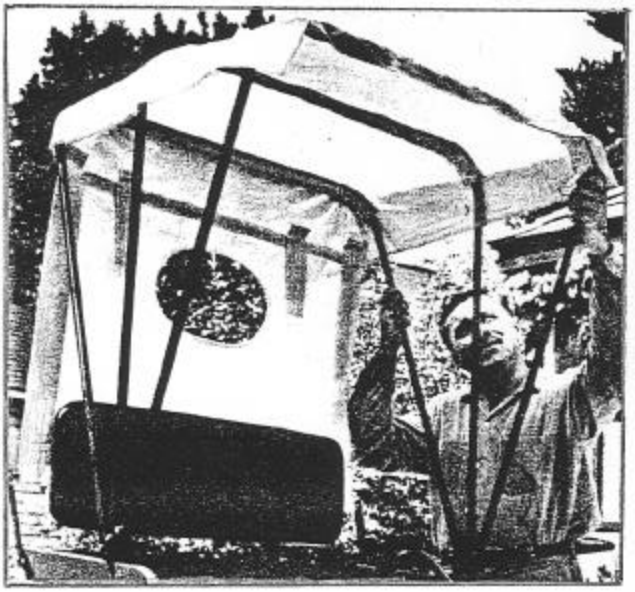
THE CANOPY FRAMING is made of electrical conduit tubing. It's bent with a hickey.



SHEET METAL brackets with offset holes, permit canopy frame to be tilted to rear.



THE BRACKETS for holding canopy are made of 3/16x-¾-inch hot rolled steel.



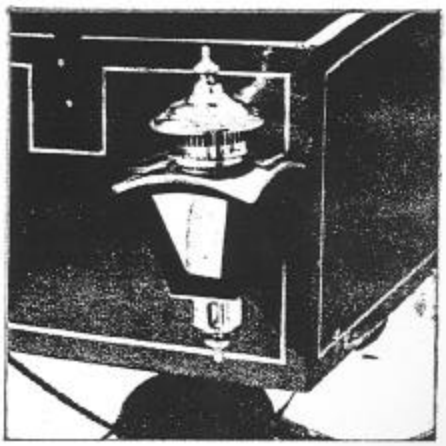
LIGHT WEIGHT CANVAS used for making the top can be made on a sewing machine.

follows: At idling speed the clutch is designed to slip, resulting in no power transmission. As engine RPM are increased, centrifugal force causes the clutch to engage. A belt from the clutch drives a ten-inch pulley on the input shaft of the transmission. The output shaft drives a 12-tooth sprocket and roller chain. Shifting of gears is accomplished by a hand lever located at the right of the driver's seat to obtain reverse or forward speeds.

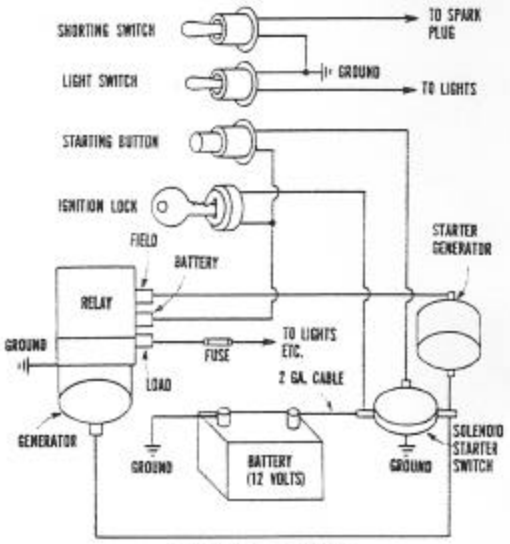
Brakes are of the internal expanding type with bonded linings. (Note: Our

TWO sealed beam lamps from Eveready lanterns are used to make lighting system.

ASSEMBLING "headlamps" on front of car. Old car lamps were used as the prototypes.

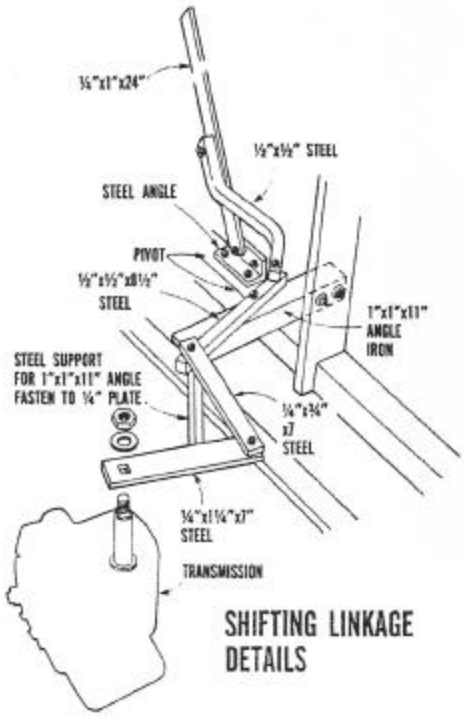


ONE double and one single filament bulb are required for each of two rear lamps.

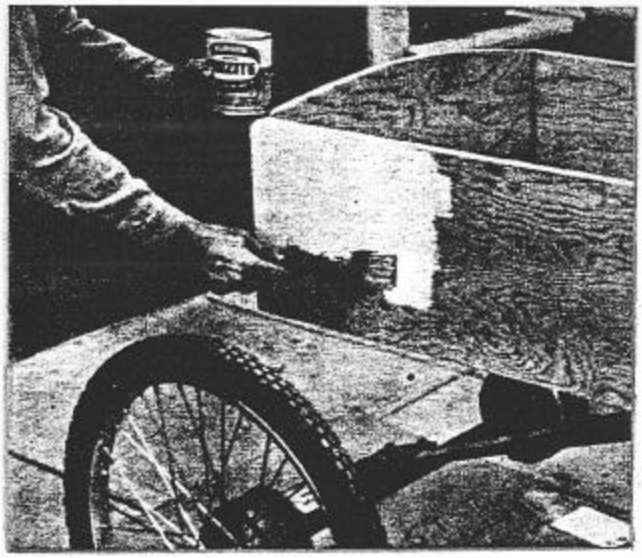


WIRING DIAGRAM

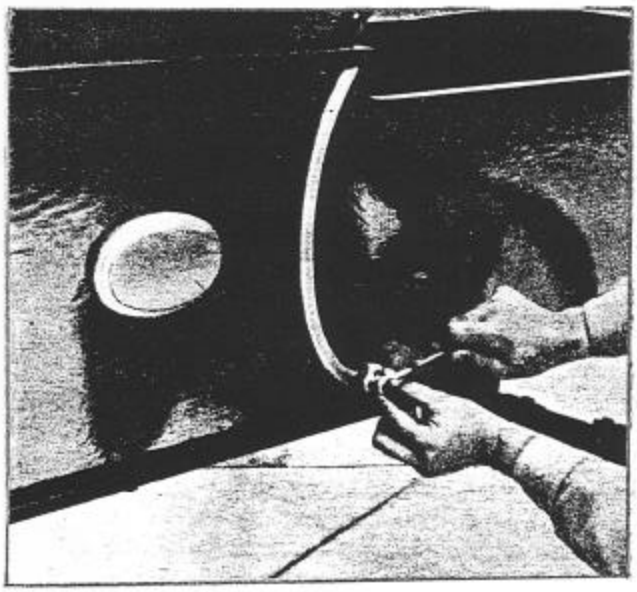
model only has rear wheel brakes. Some states require a four-wheel braking system so check with the Bureau of Motor Vehicles in *your* state.) The parking brake is operated by hand and is located at the lower right of the driver's seat. The simple lever hook-up provides positive braking action with little chance of failure. Foot and hand brakes are connected to the [*Continued on page* 13]



SHIFTING LINKAGE DETAILS

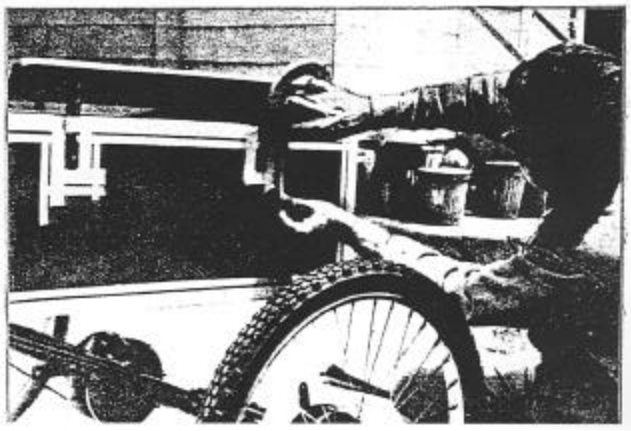


WHITE FIRZITE is used as an undercoat on the plywood. Next flat paint, then enamel.



CURLYCUES on the body and the edges of the plaque are trimmed with bronze paint.

STRIPING the car (Detroit's lost art!) is simplified by using masking tape as shown.



rear brake rod by means of ⅛-inch steel cables. Turnbuckles provide for fine brake adjustments.

The cost of building this two-seater is a somewhat variable factor. Expenses can be whittled down by eliminating the starter-generator system for a saving of $77. In addition you would save on the cost of the battery. But you are advised against cutting corners in construction details. The sizes and dimensions of the parts are designed to produce a structurally sound machine. You can make it stronger but *don't* make it weaker.

Construction begins with the body which is made of ¾-inch exterior grade (A-A) U. S. plywood. Cut the side panels with a saber saw. Hand tools such as a spoke shave and block plane are used to smooth the curved portions. Waterproof glue is used exclusively to connect all framing sections. Countersink all flathead screws below the surface. The open bottom box for the seat section is rather basic. The curved front section will require a bit of care.

The set of four ribs notched for cross ties are set into dadoed upper and lower frame sections. The nosing is carved from a piece of 2x4 lumber. The circular saw is quite useful in whittling this piece close to the curved cross-section required to follow a counter of the side panels. Run a series of grooves to correspond to the depth of the cross-section, then plane off the protrusions.

To follow the outside curve a piece of ⅛-inch plywood is glued in place over the ribs. Although this was a tough curve it worked out very well without necessity of using screws. Use plenty of clamps, applied gradually, as the wood is bent slowly around the curve. Use glue on both surfaces so the piece will stay put. Screws could not be used because ⅛-inch plywood is too thin to permit countersinking heads. Nevertheless, a good glue will suffice.

The seat section is made up of ¾-inch pine. This is screwed to the body, to permit access to the "mechanical" area below. The inner curved section of floorboard is not covered until the components such as tiller, gas, brake pedals, signal lights and headlamp wiring as well as head lamp connections are made.

The chassis, as distinguished from the plywood body, is the metal section which consists of 2x2-inch angle iron attached at front and rear. The quarter-inch steel plate used for support of the engine and transmission is slung below the chassis to gain clearance for the engine under the seat. The plates are bolted to the iron angle. However, if you prefer you can weld them together. If you decide to use bolts, be sure to employ lock washers.

The cross members of the chassis are temporarily bolted in place. Later when the engine is in place and checked for alignment and fit, then it is advisable to weld the intersections to prevent diagonal shift.

The leaf springs used for this car are not commercially available since they have been especially designed for this particular auto. It would be indeed rare to find proper size springs at a junkie's yard. So, you have two choices: Make up your own, as we did, or have a spring shop make up a set to order. Prices will vary for a custom job, averaging about $35. Homemade they will run about $12 for the metal and 12¢ a pound for heat treating at your local auto spring shop.

Follow this procedure: Purchase floor annealed spring steel cut to length as shown in the drawing. To form the springs to shape, lay out a full size sketch to be used as a guide when bending. If your electric welder has a carbon arc attachment the task is simplified. Chalk-mark the steel where the bend is desired and heat this area to shape. The turned up front end of the main leaf is formed by forging around a ¾-inch steel rod. Check pieces for fit, then proceed to drill the necessary mounting holes as indicated.

Although not yet heat treated, spring steel is somewhat tougher than ordinary steel, due to air hardening, so use high-speed drills. Now you can visit your local spring or heat treating shop to have the springs tempered. Again, be sure to drill all holes *before* the tempering operation.

The front end requires care in assem-

bling, especially when welding the yokes. If available, use a bar clamp to hold the yoke in place and tack weld. Remove clamps and check alignment of kingpins. If okay, complete the weld and don't spare the rod.

The steering arm and spindle are welded directly to the knuckle as shown in the drawings. The spring seat plates are also welded at this time. If you are not equipped to do the welding, farm the job out to a local metal working shop. If you do have the work done outside, it will be wise to clamp all the components in place to insure accuracy.

The steering mechanism consists of the tiller bar, connecting yoke, tiller spring and tie rod. This spring is elliptic in shape and is fashioned from $\frac{3}{16}$-inch spring steel. The same procedure is followed as with making leaf springs. The tiller spring serves to absorb most road shocks.

Rear axle construction is clearly shown in the drawings. The flanges that connect to the brake and sprocket housing should be of the heavy duty type. Since various size flanges are available, it would be wise to purchase the brakes first. Then choose the set of flanges that are most suitable. If you wish, you can make the flanges using half-inch steel plate turned and threaded to fit the axle housing. Be sure to weld the flange to the housing axle. Grease fittings are placed in both rear axles, rear free wheel hub, front wheels and knuckles, and in the steering rod housing.

The shifting linkage is made up of steel bars pivoted to transmit the reciprocating motion of the hand lever into the arcing motion on the transmission shift rod. The shift rod makes an arc of approximately 90° from reverse to high, with neutral and low positions in between. You can vary the amount of the shift lever movement to suit your taste by repositioning the pivot points on the linkage.

The ten-inch pulley and small sprocket will require some slight modifications to adapt them to the transmission. The input and output shafts have square ends and the pulley and sprocket have round holes. To make them fit, we filed square holes in

each. A 39-inch A belt is used from clutch to the pulley.

Ignition wiring and lighting is illustrated in drawings. A 12-volt battery is used with a 12-volt Delco starter-generator unit. The Exide No. 2SM battery which measures 6¾x10x8 inches fits nicely in the nook provided under the seat. The chassis is used as a ground return and the hot wire goes to the power source.

Starter control is by push button on the dash. This is wired to a heavy duty solenoid switch, as the push button would be much too light for the starting load. A voltage regulator controls the starter-generator circuit.

The lighting system on this car is a real conversation piece. Attractively styled brass coach lanterns contain sealed beam headlamps. The rear lanterns combine driving, stop and signal lights in each unit.

The headlamps are the sealed beam lamps from a pair of Eveready hand lanterns (clear fog lamps may also be used). A gum plywood cage is built to house the lamps. The headlamps are held together with ⅛-inch threaded pipe (⅜-inch O.D.) capped at each end with brass finials. The brass pieces butt each other and the cage to form a complete unit. The rear lanterns, of tapered design and slightly smaller than the front, contain one double filament bulb and socket in addition to a single filament bulb and socket. A simple bracket fashioned of sheet metal holds the two sockets in position. The six-volt headlamps are hooked up in series.

A toggle switch in the line controls the lights. A three-position on-off-on toggle operates the signals. In those states where a license plate light is necessary, use a clip-on type wired into the lighting circuit.

The convertible canopy is rather novel in its simplicity. Hoops are made of thin-wall electrical conduit which is bent with an electrician's hickey. Hammered flat on the ends, holes are drilled for bolts. Two of the hoops measure 36¼-inches high while the rear one is 39-inches. All three are 35½-inches across. The bend is of four-inch radius. These hoops pivot from brackets on each side of the seat. Hold-fast brackets are cut from $\frac{1}{16}$x¾-inch stock and drilled to accept ¼x20 bolts. A light canvas cloth obtained at a dry goods counter is sewn up with sleeves which slide over the tubing. The roll-up flap is made to stay in the up or down position by means of Dot fasteners. A celluloid insert in the oval window is optional.

The fir plywood is given a coat of white Firzite to tame the wild grain, followed by an undercoat and finally two coats of Chinese red enamel. Sand lightly between coats. Masking tape is used for striping. The metal work is finished in black enamel.

The big day is here. Fill up the tank and test run the works. If all seems in order you can make a trial run—but keep off public roads until you get proper licensing for the rig. The procedure may vary slightly from state to state so check your requirements. Here's the procedure in relatively strict New York. Assemble all your receipts to prove ownership, get a certificate of insurance and bring everything down to the license issuing office. Some states may require a physical inspection of the vehicle.

MAJOR PARTS LIST

Mechanix Illustrated magazine has made arrangements with the Finecraft Products Company, 189 Griffith Street, Jersey City 7, N. J., to supply readers with the following parts at the prices shown (a brochure is available):

Mercury Centrifugal Clutch	$10.00	
Sprocket wheels, 12 and 36 tooth	11.50	
10-inch pulley	2.50	
No. 40 roller chain	10.00	
Internal expanding Hawk brakes, six-inch	3.00	(set of two)
Schwinn wheels, 26-inch with tires and tubes	80.00	(set of four)
Brass hub caps	3.00	(set of four)
Bushings and bearings	6.00	
Brass lamp parts	15.00	

IN ADDITION YOU WILL NEED:

Clinton 4 hp B 1290 Engine Clinton Machine Company, Inc., Maquoketa, Iowa	$165.00
Cushman Transmission No. 0802 Cushman Motors, Lincoln 1, Nebraska	59.00
Exide 25M 12-volt battery The Electric Storage Battery Company P. O. Box 6266, Cleveland 1, Ohio	31.95
Mercury Centrifugal Clutch, No. GW 12-30 Division of Automatic Steel Products 1201 Camden Avenue S. W., Canton 6, Ohio	10.00