



Now!-Build Your Own ATV

SPECIALIZED vehicles can be a ball but all of them bring to mind one immediate drawback—cost. For something you may not use too often, justifying the expense could prevent your having a lot of fun. The MI Marauder licks this cost problem and adds safety features not found on other ATVs at the same time.

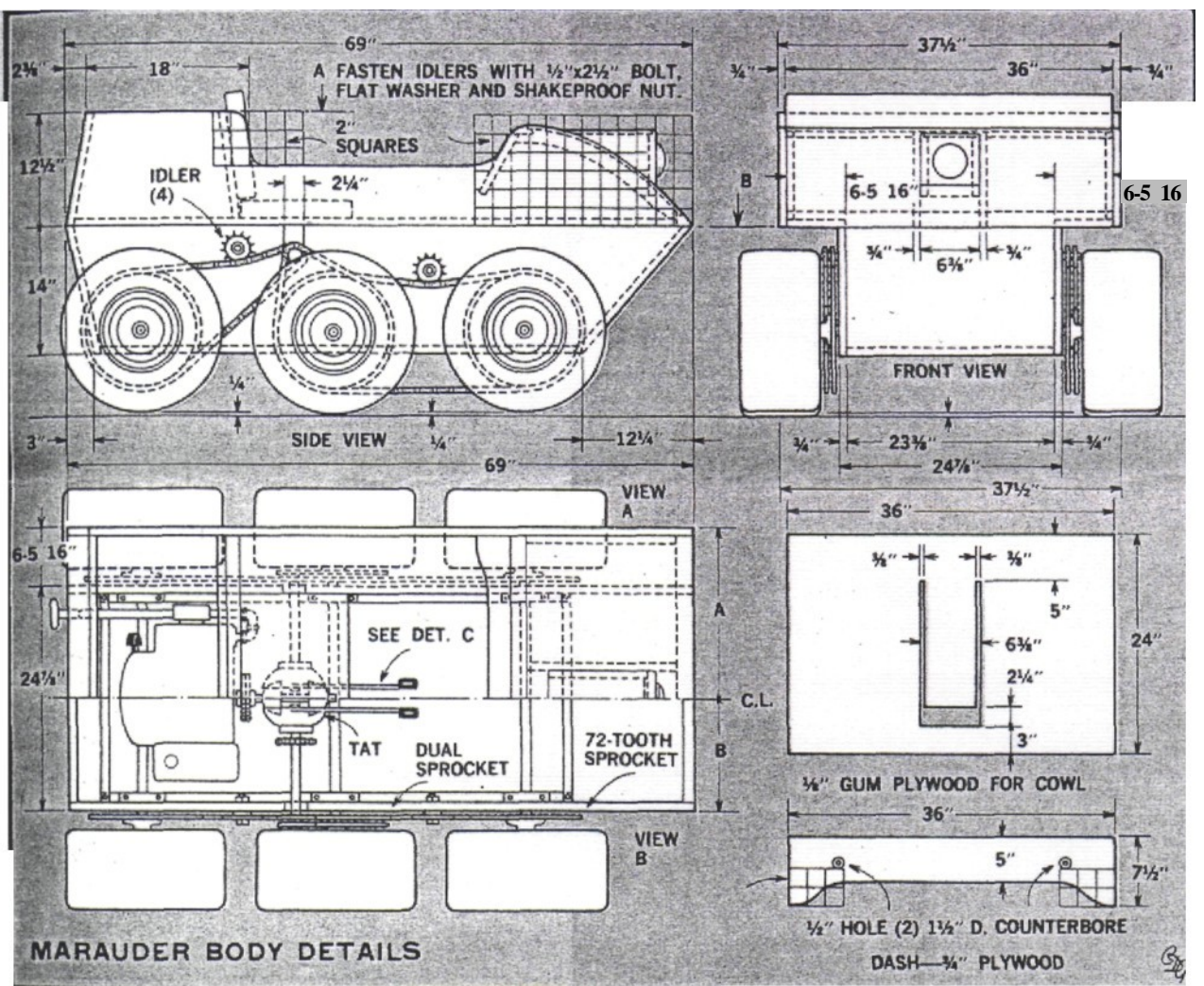
\$1,500 is par for the course for an ATV, but you can build this one for less than \$500. If you have some usable parts on hand, it can cost a whole lot less, but about \$500 is tops.

The MI Marauder is built like a tank and has similar controls. Two sticks start, shift and reverse the six wheels. To go, you push both levers forward. Pull back on them and you reverse. Push one and pull the other to change

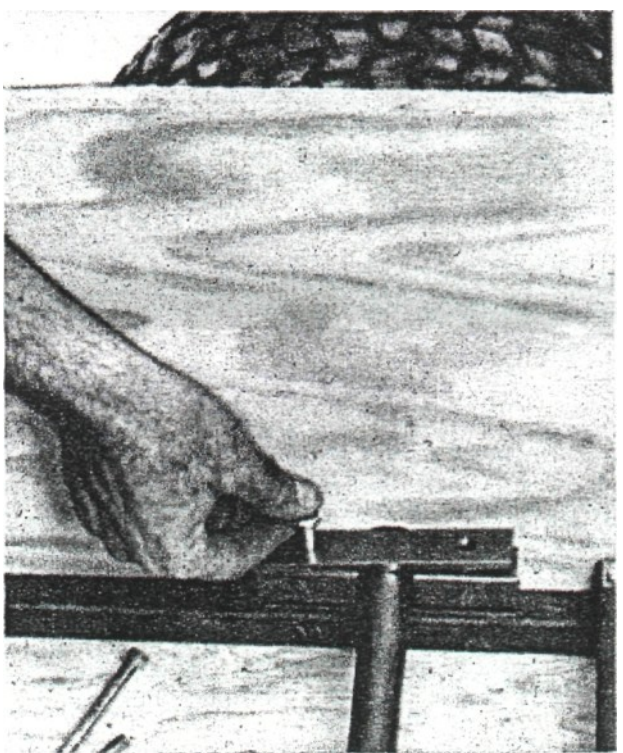
What's an ATV? it's an All-Terrain Vehicle, that's what. And the most popular now fun vehicle on the scene. Here are complete plans for building your own.

direction in the length of the machine as one set of wheels goes forward and the opposite set go backwards. Let go of both handles and you come to a stop automatically.

Transaxle Automatic Transmission or TAT as it's called, works this magic with an infinite number of gear ratios from High to Low. The TAT's cone-shaped drive discs hold the secret that makes it a clutch, variable speed transmission, and differential all in one. You don't have to build or assemble the TAT

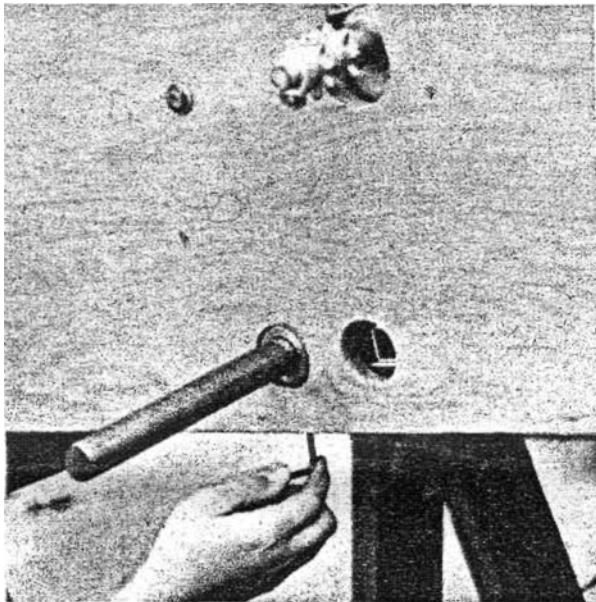


DRILL EXTENSION makes it easy to transfer axle bolt holes from chassis to Marauder's Plywood body within 1/2-in. of vertical side.

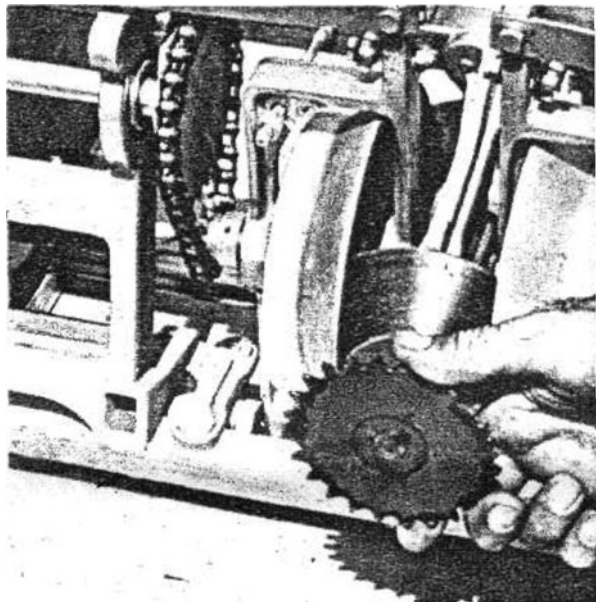


STEEL STRAPS on square steel tubing spacers hold dead axles securely in place. Out-board chains make the dead axles possible.

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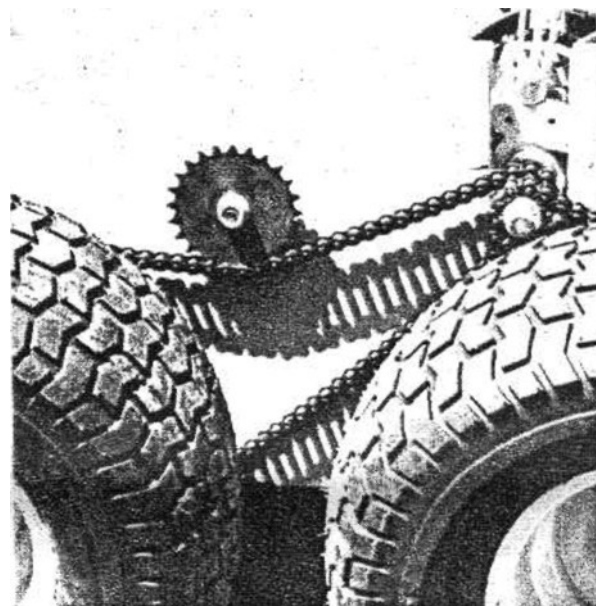
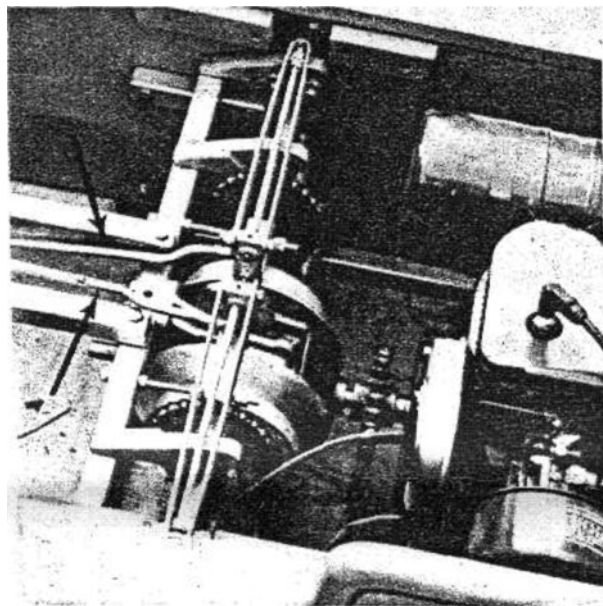
ALLEN KEY tightens axle locating collar working through access hole in plywood.



FLEXIBLE COUPLING at rear of TAT hooks up to front of 8-hp engine output shaft.

TAT (left) coupled to engine (right) is controlled by rods from hand lever (arrows).

IDLER SPROCKET keeps drive chain under the correct tension to prevent slipping.

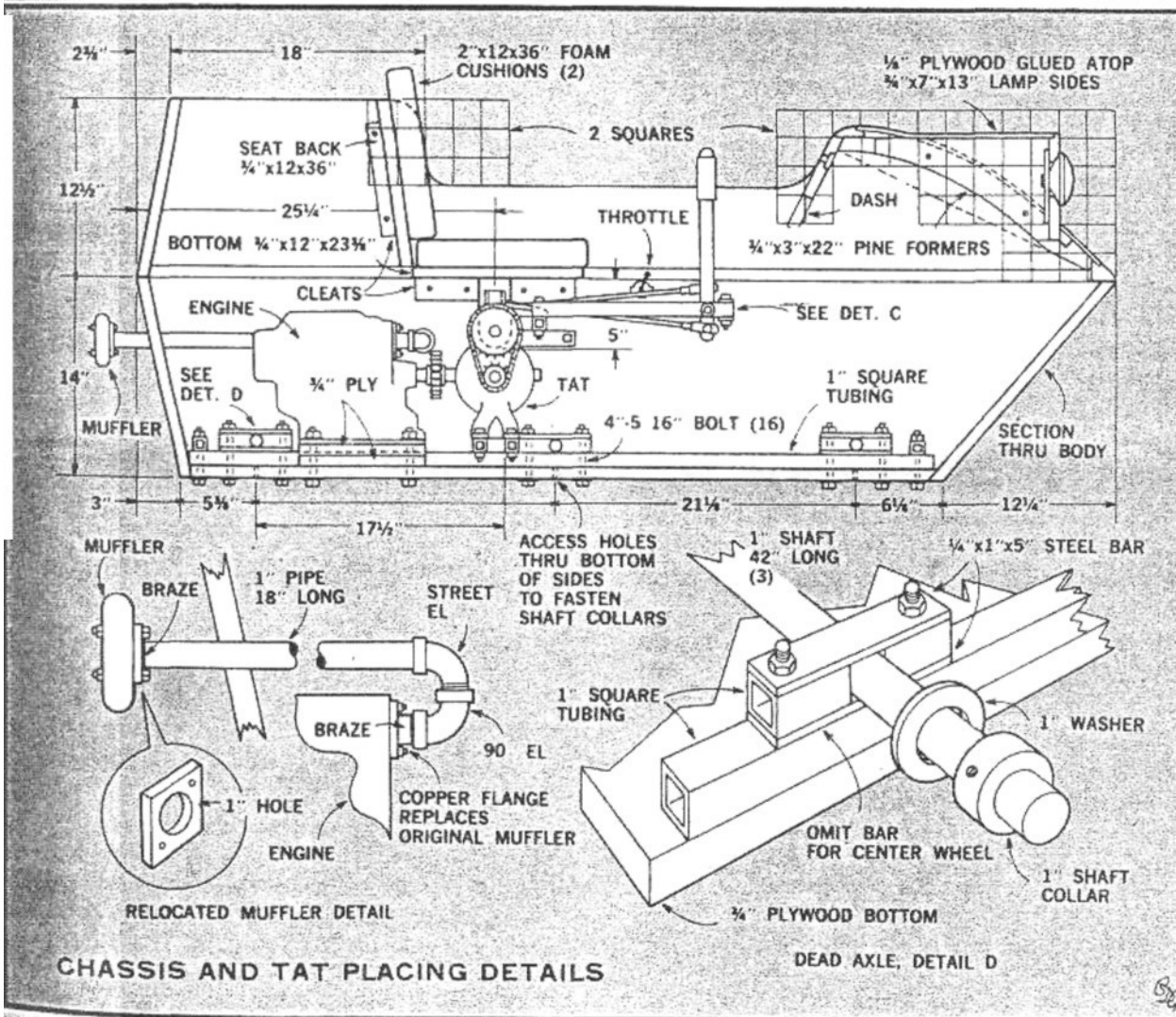
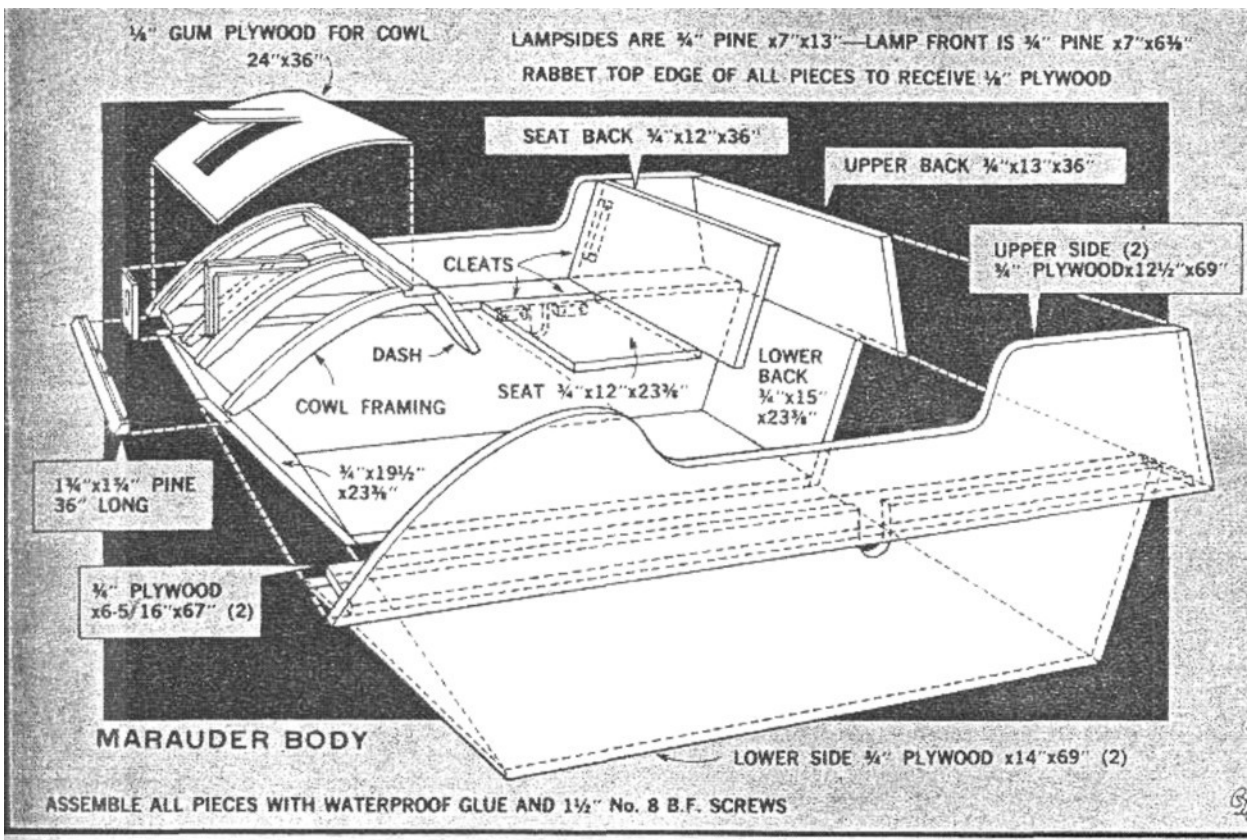


for your Marauder, you buy it and install it as a unit.

Throttle control is only used when starting up the 8-hp, 4-stroke engine. The TAT takes care of all speed and direction change requirements.

Chain drive units *outside* the body of the vehicle mean that you can't get a hand or even a pants leg caught in the works—a safety feature not found on

PLANS AVAILABLE
A 30x40-in. plan, describing the construction of the MI Marauder is available for \$5. It contains a complete list: of materials, plus extra photos detailing construction. For your copy, send \$5 to **MECHANIX ILLUSTRATED Plans Service, Greenwich, Conn. 06830.** Please ask for Plan No. **MATV-1-70** when sending order and be sure you include payment (check or money order).



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all other ATVs. Outside chain drive also permits large diameter gears for greater power through increased gear reduction. Outboard sprockets mean you can use dead axles eliminating the need for ball-bearing axle shaft supports. Turf saver tubeless tires fitted on offset wheels cover and protect the drive chains.

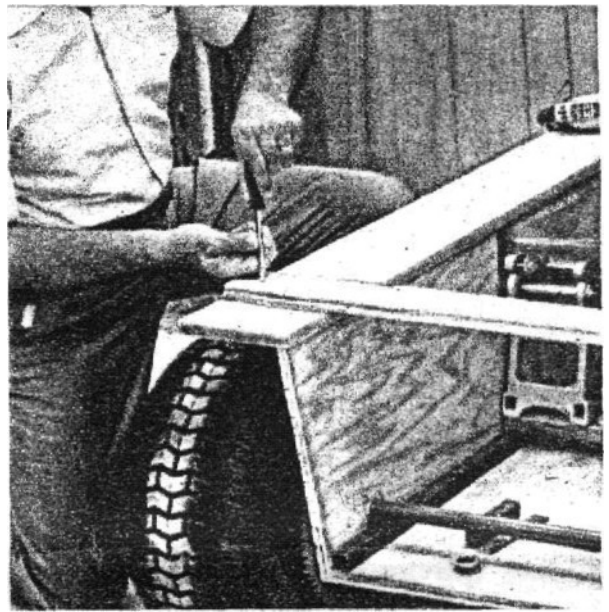
Body and chassis are built from 3/4-in. plywood and square section steel tubing. These materials are easy to work and available locally. All mechanical parts including engine, wheels and drive units come from one source (The Armor Co., Box 290, Deer Park, N.Y. 11729) which simplifies parts procurement.

The lower body section is built first. Cut plywood to size, bore the holes, and assemble using screws and waterproof glue. Follow the plans and pictures. When locating holes, note that those through the sides for the center axle are a little lower than the ones for front and rear axles. This slight seesaw effect gives longer tire life and increased maneuverability, especially on dry pavement as the vehicle tends to pivot on the two center wheels.

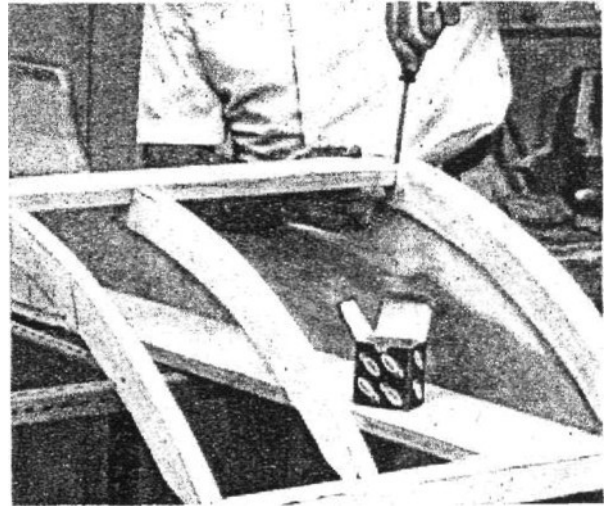
Steel tube framing goes in when the lower body section is completed. Cut, drill and mount it in place using 5/16-in. bolts with washers under the bolt heads where they bear on plywood. You need lock washers on all nuts to keep them from vibrating loose.

Spacer blocks and 1/4x1-in. bar stock hold the 1-in. dead axles to the chassis. The holes in the spacer blocks are a little larger than those in the chassis so you can shim the spacers to set up chain tension correctly. Chain idlers for the runs to the four outer wheels take up more slack. Adjust chains to the two center wheels by shimming the TAT unit to raise or lower the drive sprockets as required. Once you get the chain tension properly set up, you should find little further adjustment required.

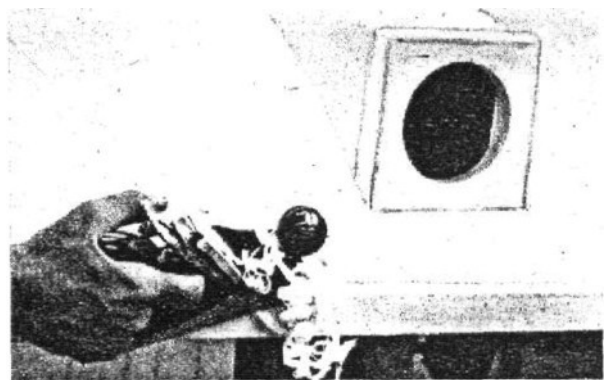
To compensate for any slight inaccuracies in the body, it's best to drill axle bolt holes *after* the TAT is in place and the chains are tensioned.



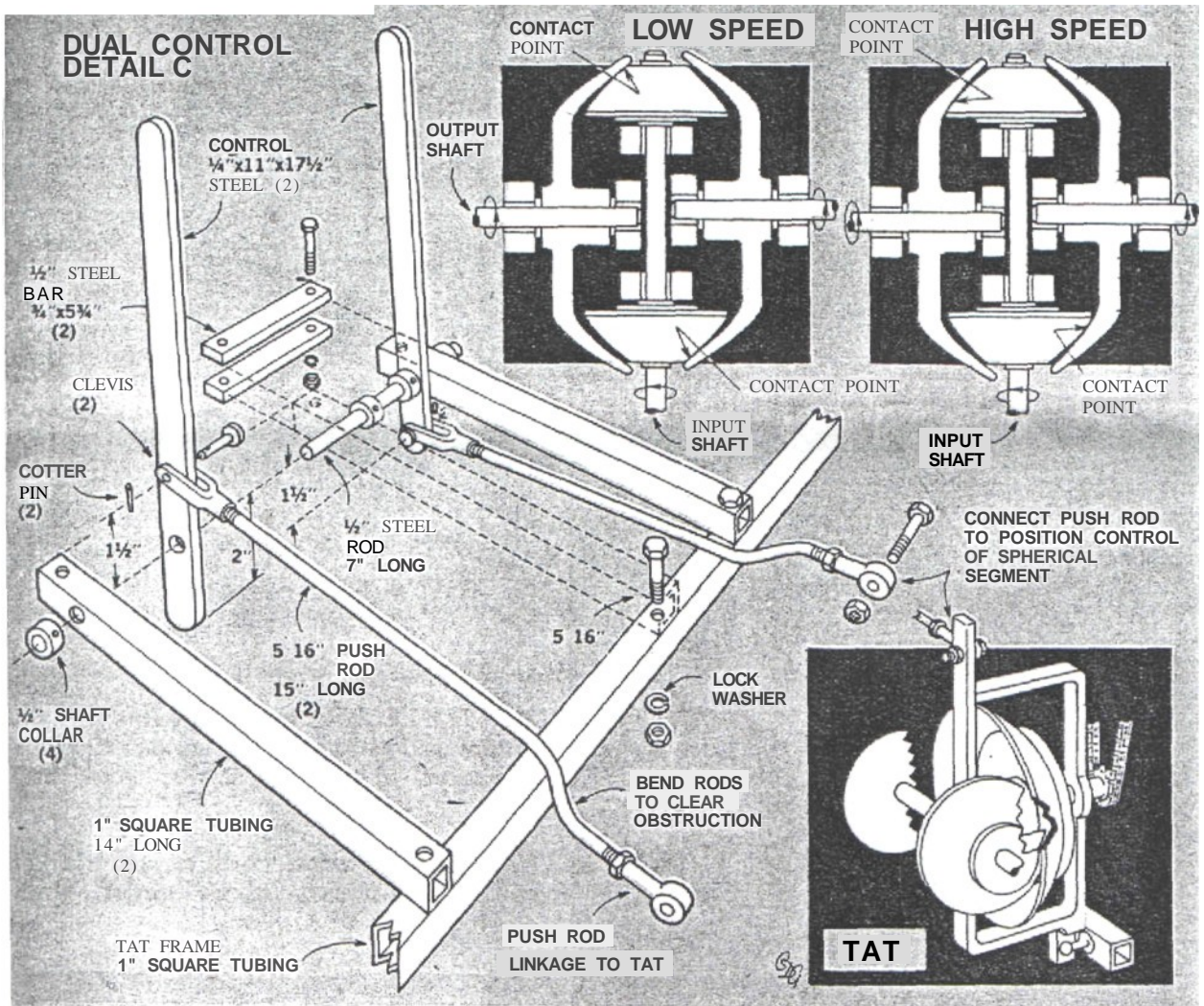
TEMPORARY CLEATS keep body sides aligned while installing engine and drive.



NOSE FORMERS are assembled using screws and glue. Be sure glue is waterproof.

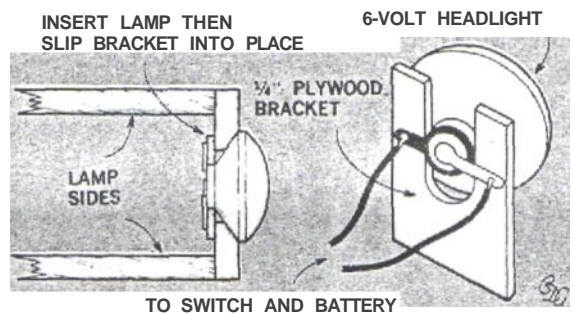


TRIM NOSE to final shape with a plane before filling, finish sanding, and painting.



Bolt the axle mounting tubing to the plywood floor and then install the 1-in. axles. Be sure to use a flat washer as a spacer between the collar and the square tubing so the outside of the shaft collar comes flush with the outside of the body. Tighten the collar set screws with an Allen wrench through the access hole drilled in the floor.

The sprockets for the center wheel must be reworked so a second sprocket can be added. Remove the sprocket from the hub and drill four equally spaced holes on a 6-in. circle. Clamp the sprockets together before drilling to insure perfect alignment even if the hole position varies slightly. Mark both sprockets in each pair. Assemble to the wheel with the new sprocket next to the tire. Spacers 1 in. thick stand the original sprocket off the new one for chain clearance. You may have to let some air out of the tire to make finger room for locating and holding the nut and



HEADLIGHT HOUSING DETAILS

LAMP CONTACTS ARE USED TO FASTEN LAMP

lockwasher. Once the nut tightens, the lock washer will hold it while you tighten the bolt from the top.

The engine, a 4-cycle 8-hp Kohler, mounts on blocks to align its output shaft with the TAT. Two 3/4-in. plywood blocks work fine. Glue these blocks together and [Continued on page 120]

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then locate the four mounting holes using the engine base as a template. To locate the holes in the floor panel, hook up the engine output shaft with the TAT input using the flexible coupling. Make sure the engine doesn't bind on the rear axle.

The exhaust port faces the seat back so you'll have to route it to the rear using pipe and fittings as shown.

Twin control handles are linked to the TAT by a pair of push rods. Note that one rod connects above the pivot on the controls bracket and the other below. A threaded-clevis gives fine adjustment,

Mount idler sprockets only after all drive chains are in place. Locate idler bolt hole by engaging the gear in the chain taking up the slack, and marking the center of the sprocket. Use flat washers on both sides of the wood and shake-proof nuts on the idler bolts.

Throttle control attaches to the side of the body and goes in any convenient position.

The plywood upper body is shaped with curved formers at the front. Formers have a 1/8-in. setback from side panels to allow for thickness of the plywood skin.

Cut the plywood to size making the cut-out for the light housing. Be sure to lay it out so surface grain on plywood runs from side to side so the panel will take the curve. Groove the nose piece to take the plywood cowl. This eliminates the need for clamping when gluing this edge. Clamp the top edge only. Position the lamp housing box before adding cowl, then glue and screw down permanently.

Final finish calls for a plane and router to round all edges. Then sand smooth, seal and apply several coats of exterior enamel. Pick a bright color to make your Marauder easier to spot should you get lost in the boondocks.

Decorative striping adds the final touch to your machine. Do it the easy way with 1/8-in. black plastic tape. Trimmed with a razor blade, tape is almost impossible to tell from painted striping and it's a lot neater than most hand painted stripes.