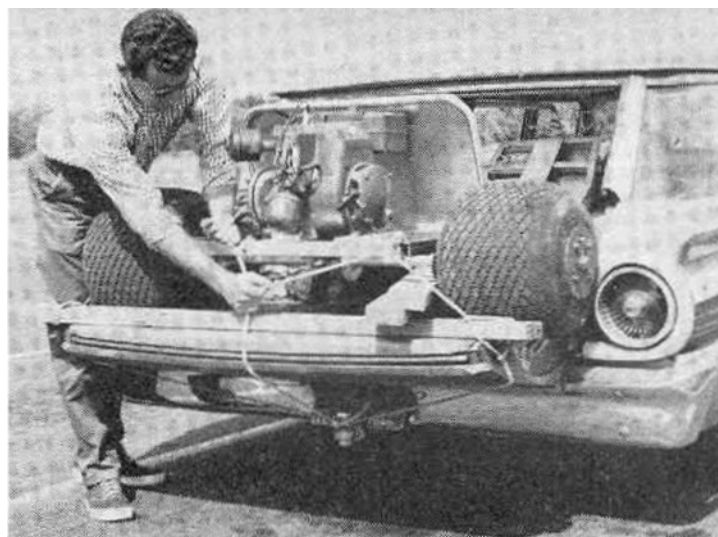


*How to build a vehicle
that will let you ride in
comfort where even walking
would be difficult—*

The Three- Wheeled Desert Scout

By V. Lee Oertle



THE one place it makes no sense to drive this handy little vehicle is on the road. When the load ends, it comes into its own. Unload its 200 pounds from station wagon or trailer, crank up the geared-down, 4-1/2-hp. engine, and it'll carry you just about anywhere you want to go—through country lanes, cow pastures, swamps and bogs, over out-of-the-way beaches, or deep into the desert.

New fat tires are the secret of its go-anywhereness. They're a full 12" wide across the tread, 16" in diameter. This broad, flat footing gives the buggy a sure grip wherever you go. For sand or soft earth, you carry only two pounds of air in each tire. Where you need greatest traction, fill them with water to add weight.

Goodyear dealers can order the Terra-Tires for you at about \$35 each. Price is expected to drop. Wheels are available from Hadco Engineering Co., Los Angeles, Calif., or from Geneva Wheel Co., Geneva, Ohio.

Gelling ready to roll. The two rear wheels are keyed to a 1" axle. 60" long, to provide a wide tread for stability on hills. The ends of the axle are shouldered to 3/4", threaded and slotted for the keys that lock the wheels in place.

The front wheel is mounted on a yoke—as on a tricycle. The three wheels stay in contact with the most uneven ground, eliminating any tendency for the frame to twist. The single front wheel simplifies construction and handling.

Chalk the outline of the frame on a smooth floor, and sit down where you've drawn the seat. If the dimensions given



LOAD THE BUGGY into a station wagon to carry it over the road. A couple of two-by-fours serve as an unloading ramp at road's end. A sprocket-and-chain drive (below) steps up the 4-1/2-hp. engine's torque, enabling it to haul two people with ease.



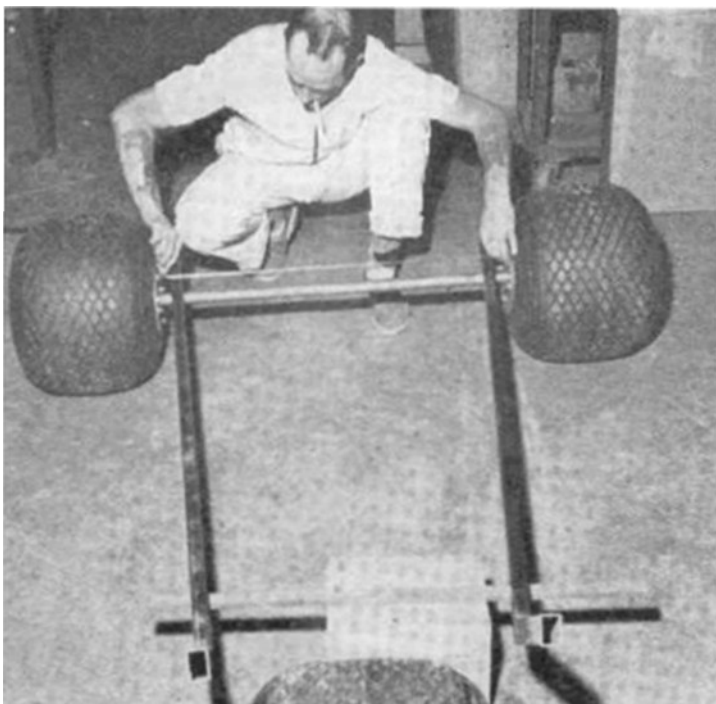
don't suit your leg length, tailor the buggy to your size by making the side members shorter or longer.

Starting the buggy. Cut the frame pieces from rectangular steel tubing. Fit them together on the floor, mark them, and take them to a welder. It cost me only \$18 to have the frame expertly heli-arc'd together. The seat back, armrests,

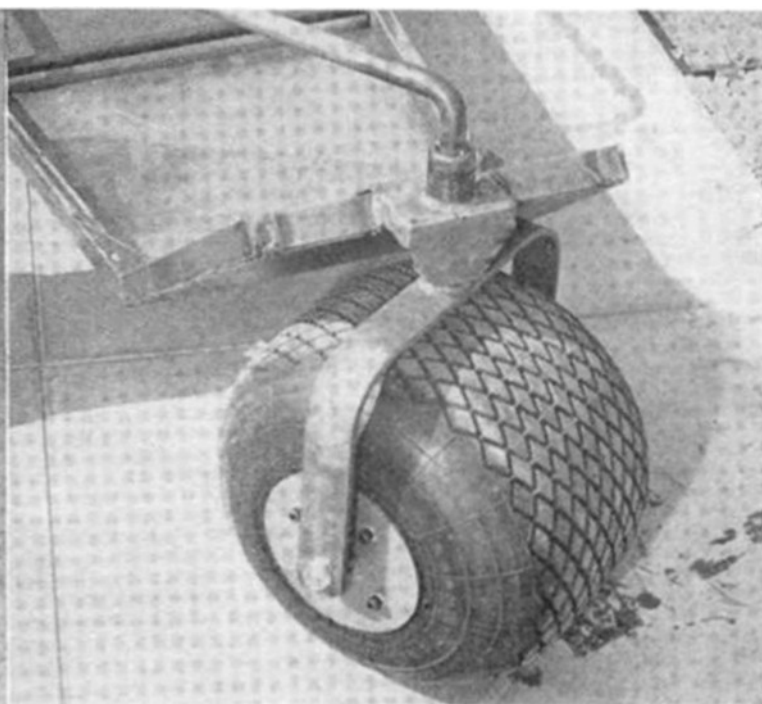
rear-axle bearings, motor-mounting plate, and jackshaft supports were also welded in place at this time.

On a second visit, I had the floor pan, steering sleeve, and bushings for the brake and throttle arm welded to the frame. These had been cut and fitted between visits to the shop.

I also had the welder bend the front-



MOUNT REAR WHEELS on axle and check inside clearance before cutting frame parts. Rectangular steel tubing was chosen for maximum rigidity, but round tubing could be used.



SIMPLE TILLER steers front wheel. Sleeve is welded in vertical position to front of frame, braced securely with steel gussets. Telescoping steering arm fits over tiller shaft.

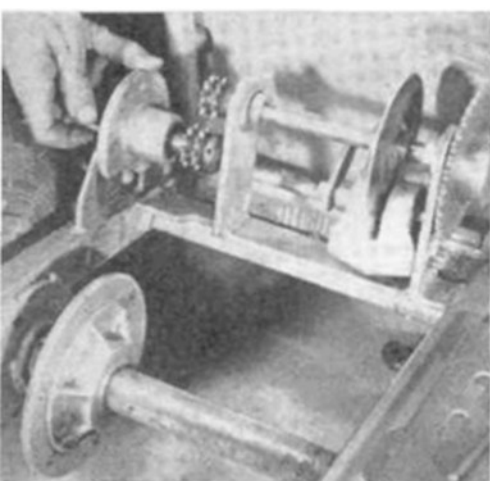
wheel yoke from a length of husky 3/8"-by-2" hot-rolled steel. I held the 1" tiller rod in position while he butt-welded it to the center of the yoke. A steering arm of 1"-i.d. steel tubing is pinned to the tiller with a bolt and wingnut. Bolt holes spaced at intervals along the tiller permit adjustment of steering-arm length.

The 1" tiller rod turns in a sleeve welded through a hole in the front of the

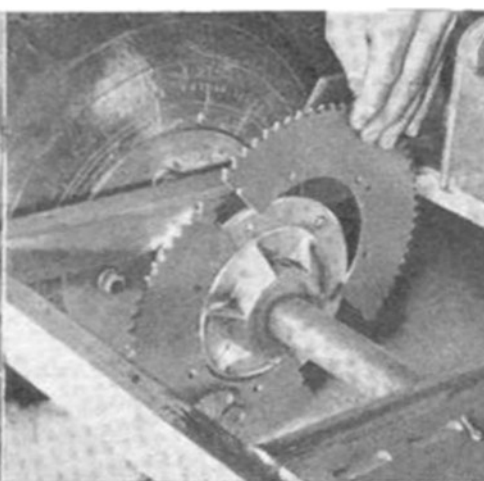
frame. Bearings were setscrewed to the rod at each end of the sleeve.

The front wheel rolls on sealed bearings pressed into the hub. It is mounted on a 1" axle bolted across the open end of the yoke.

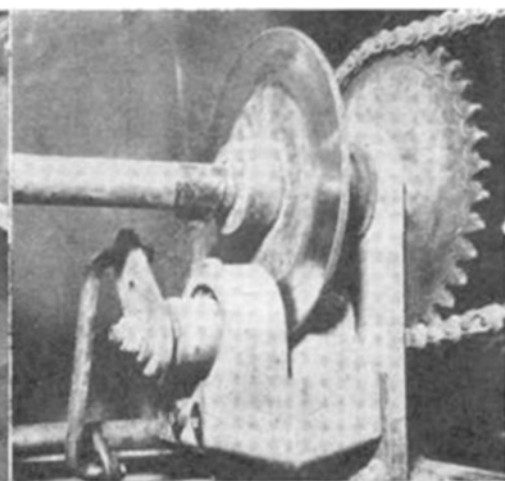
Adding the horses. Any four-cycle engine in the 4- to 7-horsepower class will drive the buggy efficiently. I found a good used 4-1/2-hp. engine for \$50.



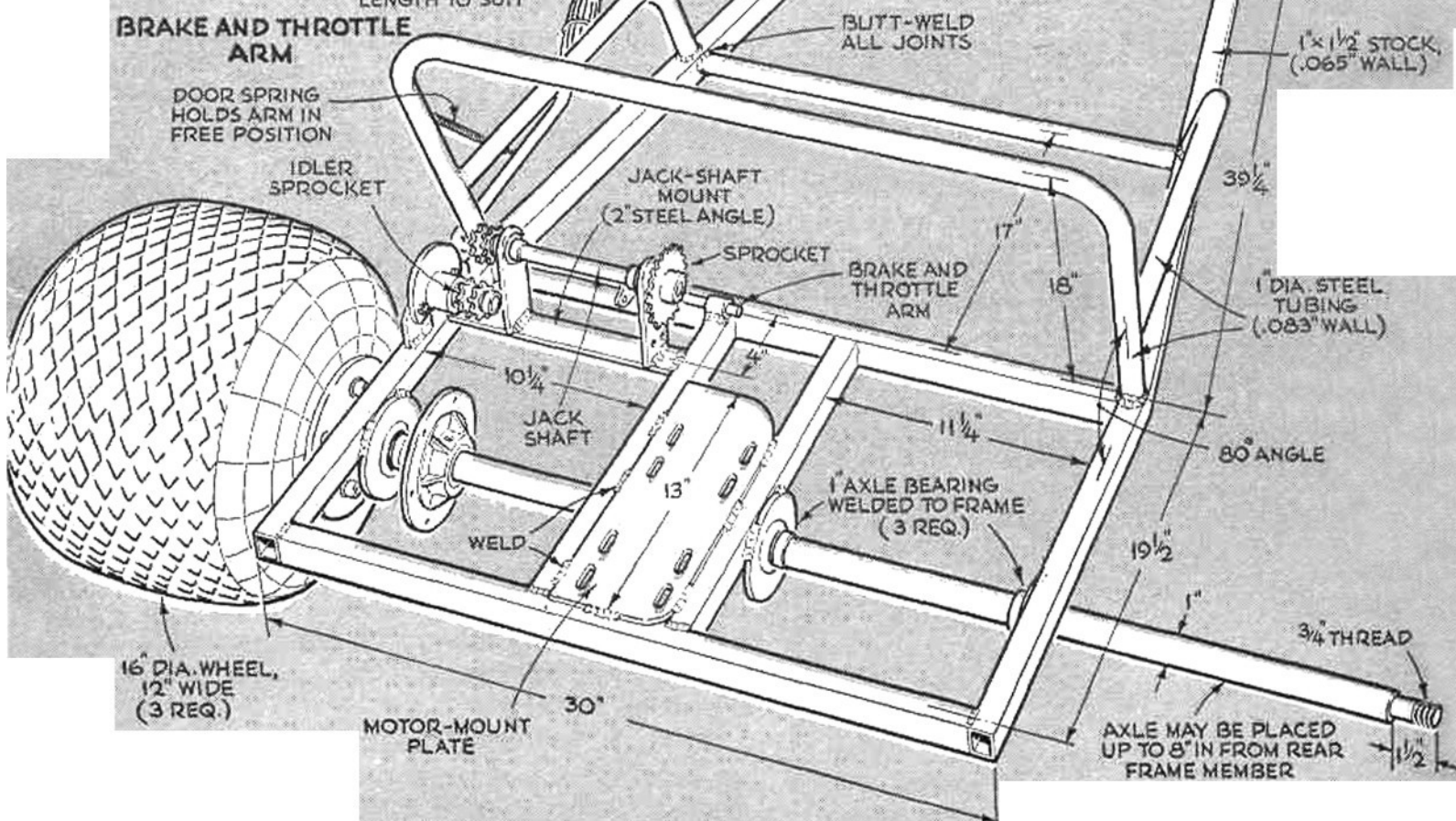
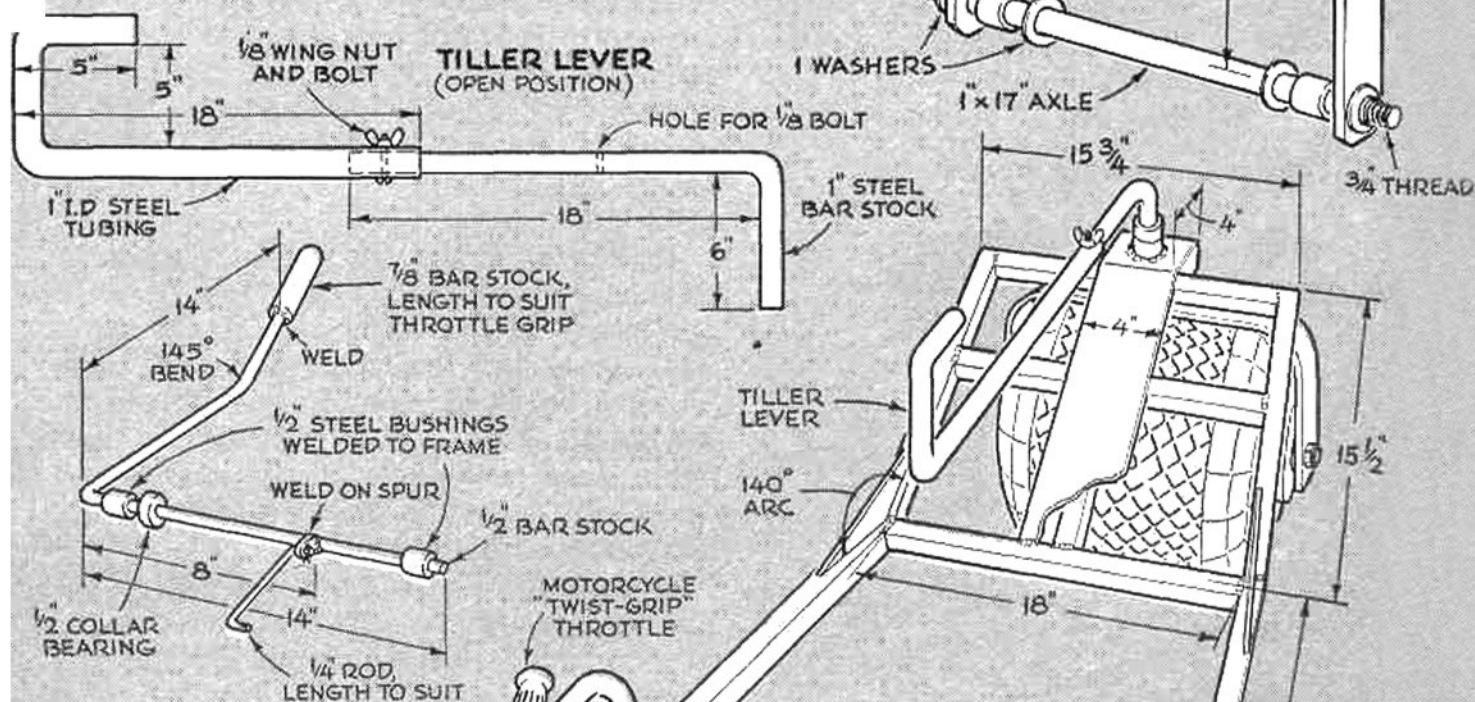
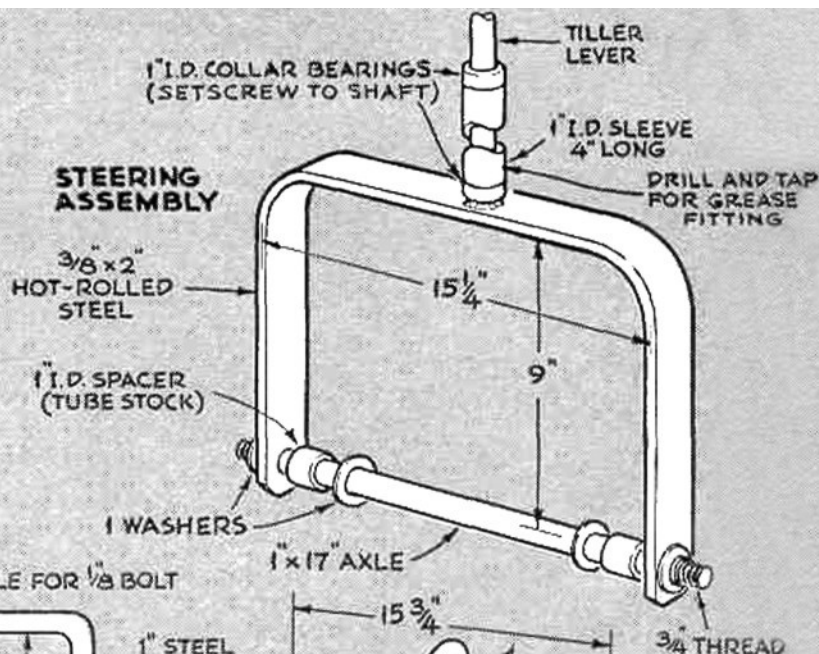
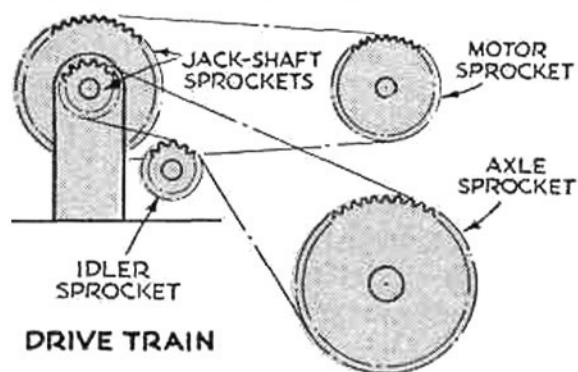
JACKSHAFT between the engine and rear axle allows fast changing of sprockets to suit a variety of operating conditions. Disk for the caliper brake is also mounted on this shaft.

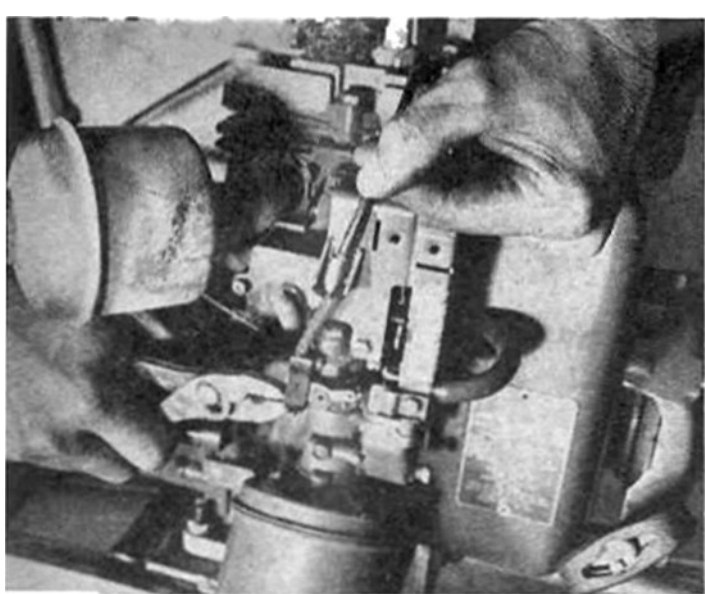


SPLIT-AXLE SPROCKETS speed drive-ratio change-over. Segments of various diameters bolt on hub keyed to axle. Two sprockets can be mounted on hub for use with double chain.

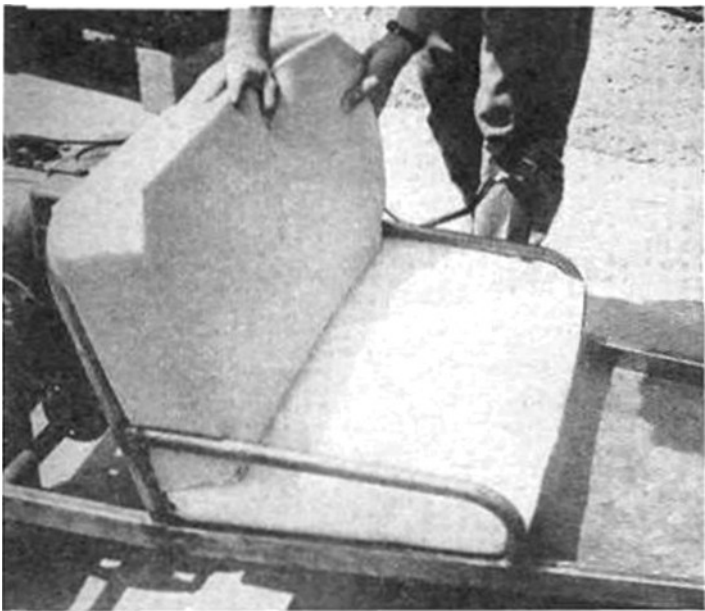


CALIPER BRAKE, sold in kart shops, stops disk on jackshaft, effectively braking both rear wheels. Short linkage actuated by a hand lever at side of buggy operates the calipers.





FLEXIBLE CABLE connects throttle control to carburetor. Compression spring slipped on cable between housing and linkage returns carburetor to idle when throttle is released.



TO CUSHION ANY JOLTS that aren't absorbed by the pillow-like tires, thick foam rubber pads the seat and back rest. Cover foam with plastic or other durable upholstery material.

FOR ROUGH GOING, tires can be filled with water. Use a tractor's valve fitting attached to a garden hose. The extra weight provides greater traction and reduces bounce.



A shoe-type clutch could be used but might overheat when pulling over loose turf and sand. A fluid clutch can be bought from Bowlus Engineering, Pacoima, Calif.

You can run drive chains direct from the clutch to the rear axle, but this isn't advisable. The use of a jackshaft provides more flexibility in setting up drive ratios and lets you mount the brake clear of sand and water.

Kart shops stock a variety of caliper-type brakes. Some work mechanically and some are hydraulically assisted. I chose the mechanical type for simplicity—a narrow disk about 5" in diameter that is mounted on the jackshaft. When the brake is applied, a caliper squeezes against the disk.

Riding soft. To absorb the shocks of driving in rough country, double sprockets and a double-row No. 35 chain were used on the jackshaft and axle. These I obtained from Bug Engineering, Irwindale, Calif. Single sprockets and chain were used between the engine and jackshaft, since the fluid clutch smooths out much of the impact.

By varying the number of teeth on the axle and jackshaft sprockets, you can get a wide range of drive ratios. For flat terrain or beach sand, a 10:1 ratio will push the buggy along at about 18 m.p.h. For climbing and rough-country use, a 20:1 ratio will provide all the power you need; but top speed will be between 8 and 14 m.p.h. Even though speed is reduced, the extra power allows more fun. It's like driving a bulldozer. You feel that no obstacle can impede your progress. To achieve this ratio, I used this combination of sprockets: 13-tooth on the engine. 36-tooth on the jackshaft, 10-tooth on the output end of the jackshaft, and 72-tooth on the axle.

Making it go. Controls are simple and can be operated with one hand. Push down on the lever—or pull it up—to apply the brakes. Twist a motorcycle-type throttle on the end of the lever to gun the engine. The fluid clutch automatically engages and disengages the engine from the drive train.

A guard mounted over the sprockets and chain is good insurance against accidental injury, especially over rough ground. This could be quickly shaped from thin plywood or hardboard. • •