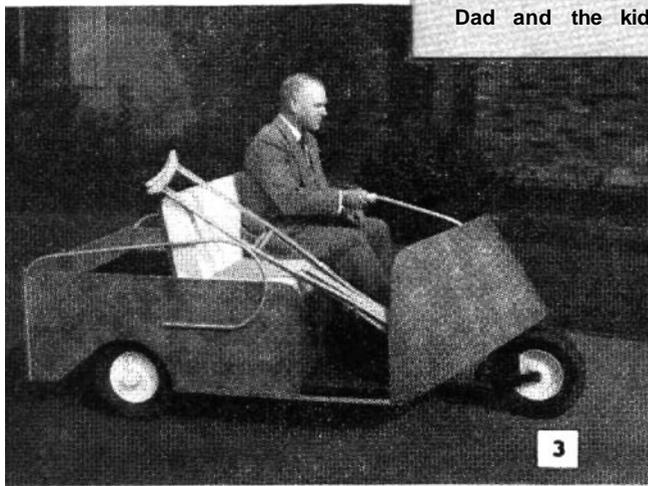




Versatile is the word for this golf-cart-runabout. Grandmother, Mother, Dad and the kids all find use for it



# GOLF CART-OR FAMILY RUNABOUT

*First, it's a golf cart powerful enough to carry two adults and equipment up steep slopes. But it's also a heart-saver for the aged, "legs" for an invalid, and a "school bus" or shopping "car" for Mom. It features twin-motor drive, four speeds forward and reverse, coil-spring suspension, 2-wheel brakes and tricycle steering, plus a built-in battery charger*

## PART I

*By Tom Riley*

**SPEEDS UP TO 20 m.p.h. and 30 to 40 miles on a single charging of the batteries make this cart an ideal utility vehicle for any home, farm or business. The cart is wide and low, both to assure stability on any terrain and to provide ample room for any of several combinations of motors and batteries.**

First step in the construction is to make the main frame, Figs. 7 and 10, of steel channels and angles. Arc welding is required in this assembly. The next step after the main frame is assembled is to assemble the drive-unit frame, Figs. 7 through 11. The rear cross member of this frame is a length of 3/4-in. pipe that pivots

in two U-shaped brackets bolted to plates that are welded to the rear cross member of the main frame. The brackets are a loose fit on the pipe. Strips of inner-tube rubber then are wrapped on the pipe under the brackets to provide a "snubbing" pivot. Stub axles for the rear wheels are welded to a length of pipe to produce a complete axle, that will give a width of 41-1/2 in. between the outer sides of the tires. This leaves a clearance of 3/4 in. between the tires and the outer edges of the cart's main frame. The drive-unit frame is made narrow enough to clear the brake drums on the wheels. Coil springs used in the rear suspension are kept aligned by 3/4-in.

pipe caps bolted to spring plates at the front of the drive-unit frame and to the 2-in. cross member of the main frame. A long 3/8-in. bolt with fuller balls at each end is used to "snub" the frames together and to prevent sideway of the drive-unit frame. The lower right-hand detail in Fig. 7 shows the snubber bolt, springs and pivot-bracket setups. A piece of 3/4-in. plywood is bolted to the drive-unit frame to support the motors. Slotted holes in the plywood permit the motors to be moved to allow adjustment of chain tension. Heavy turnbuckles are attached to the frame and to the motors near the shaft ends to "hold" this adjustment.

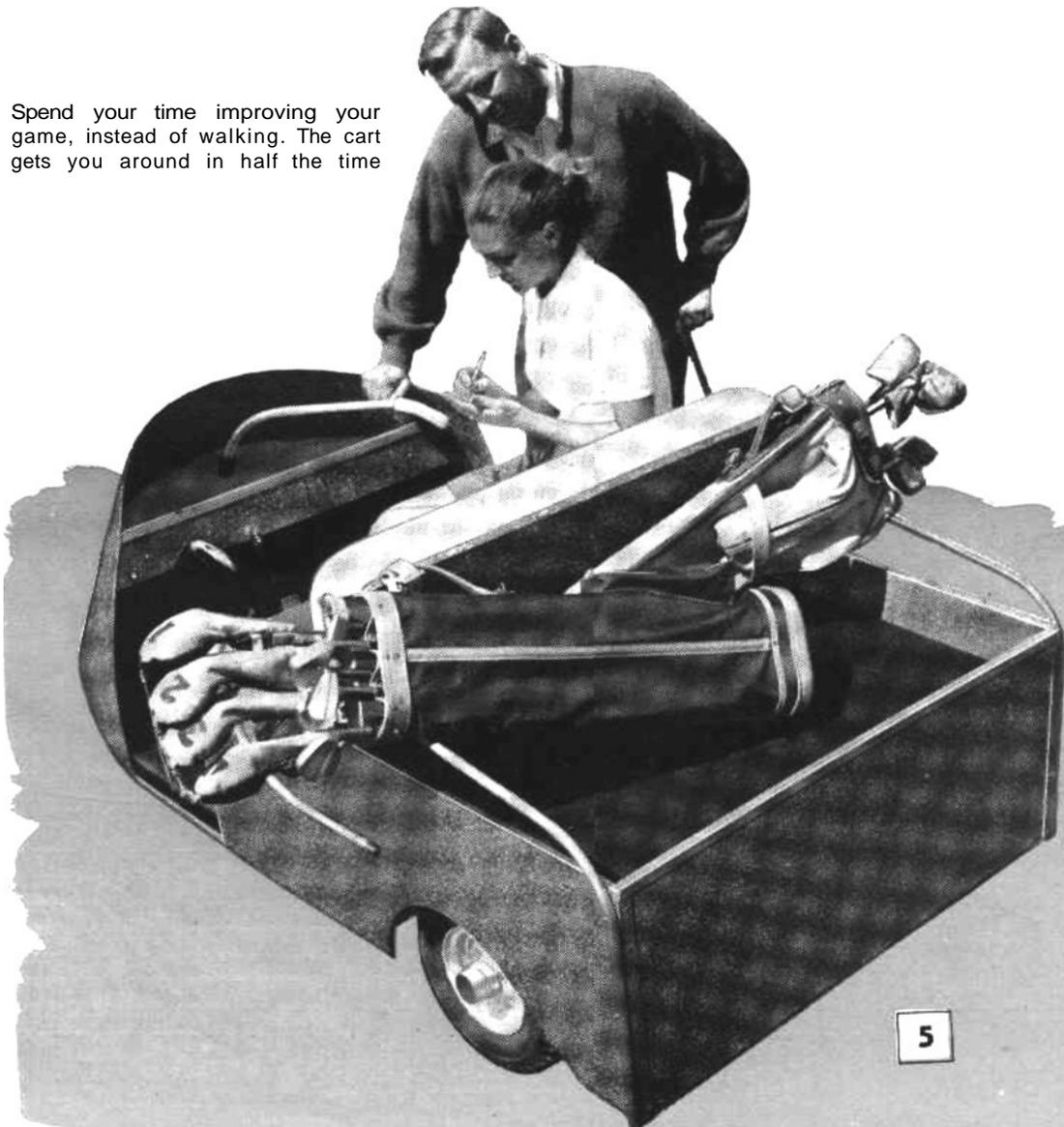
Wheels, which should be purchased before assembling the drive-unit frame because of the need for measurements, can be of several types. For the rear, the wheels should have 4.80 or 5.50 x 8 turf-type tires, such as used on most golf carts. A less ex-

pensive substitute are wheels torn light aircraft, which are available as war surplus. These have tires with a channel tread, and are complete with bearings, hubs, and spindles. Also available are 6-in. brake drums and sprockets drilled to fit the wheels. For the front wheel of the cart a rounded tire is best. A 14-1/2-in. balloon aircraft tire or a 16-in. standard industrial tire should be used.

The fork assembly is made as shown in the left-hand detail, Fig. 7. Either turned brass bushings or ball bearings can be used, pressed into a counterbored length of pipe or tubing. The latter then is welded over a hole drilled in the 3-in. frame channel, Figs. 6 and 10.

Three types of d.c. electric motors can be used for the cart. Sprockets and chains from light motorcycles are used with each to deliver a speed of from 350 to 400 r.p.m. to the rear wheels. Aircraft starter motors,

Spend your time improving your game, instead of walking. The cart gets you around in half the time



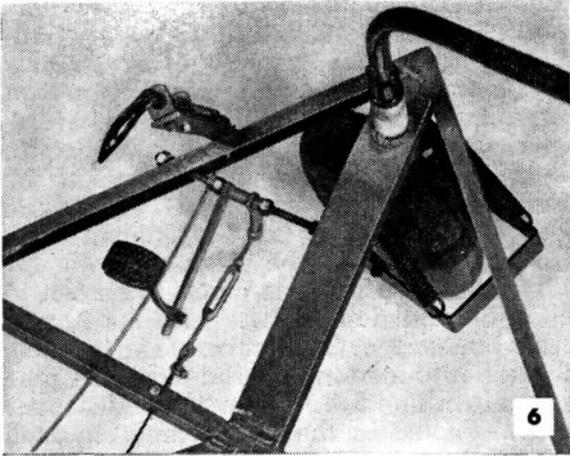
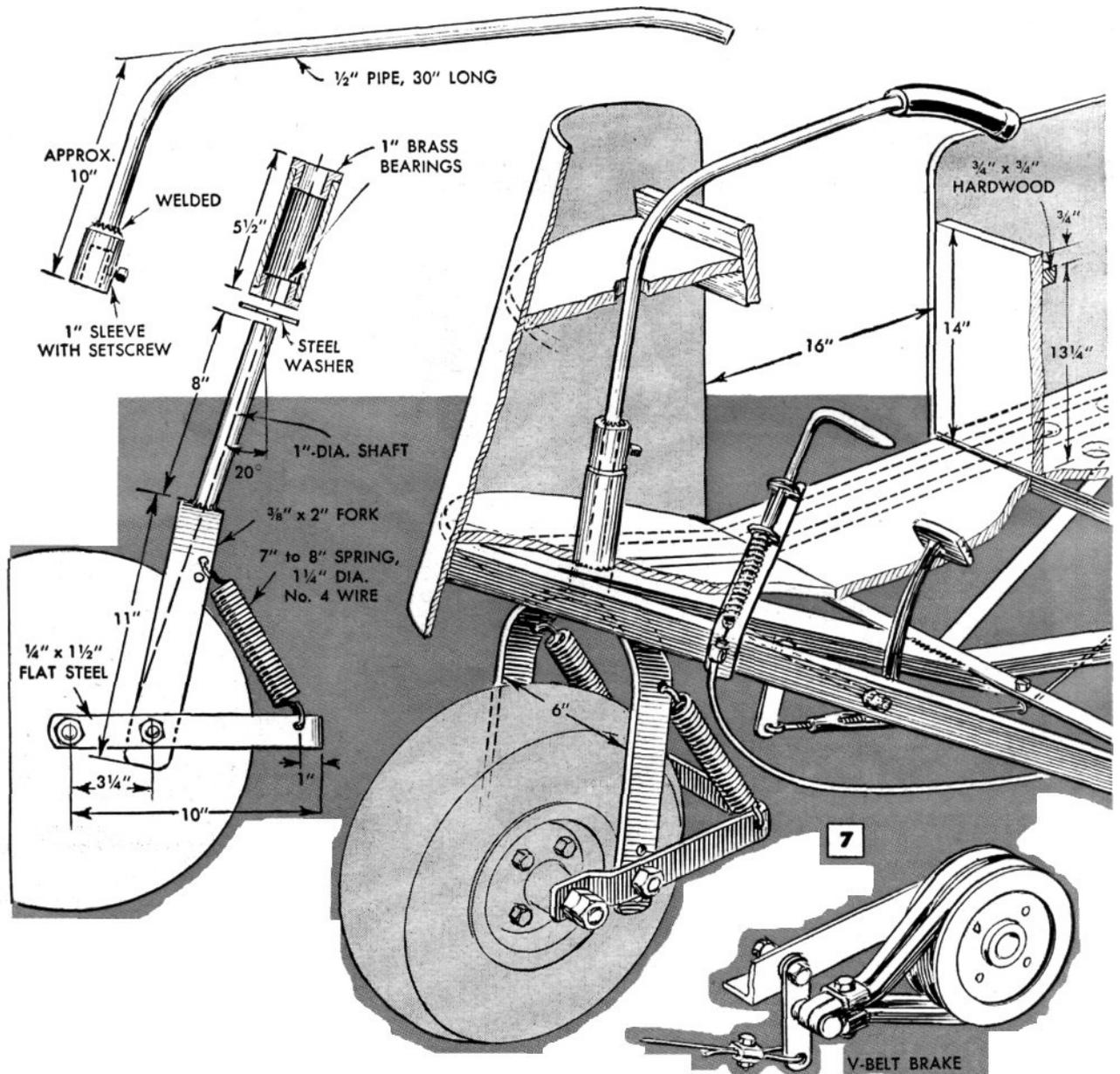
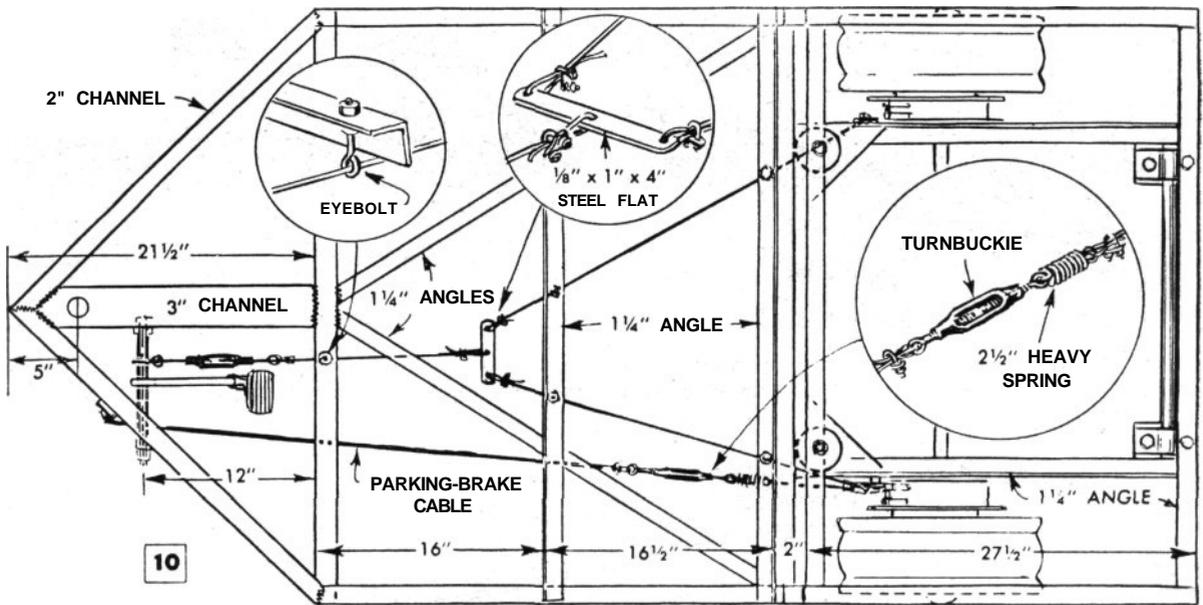


Photo of frame front end shows location of fork, foot and hand brakes, extreme turning angle possible

Fig. 8, available as war surplus, can be used if only moderate power is required. Although rated at 24 volts, they are designed for intermittent service and should be run with four batteries producing 12 volts, or three batteries that will provide 18 volts. Most of these motors turn only about 100 r.p.m., so a large sprocket is fitted on the motor and a smaller one on the wheel. Check the r.p.m. rating of any type motor before obtaining sprockets. A second type aircraft motor, also available as surplus, is a high-speed unit that rotates at about 5000 r.p.m., which makes it necessary to use a gear reducer of from 5-to-1 or 10-to-1 to reduce the speed to a point where chains and sprockets can handle it. A third type motor, the most expensive, is a propulsion or traction motor, Fig. 9, such







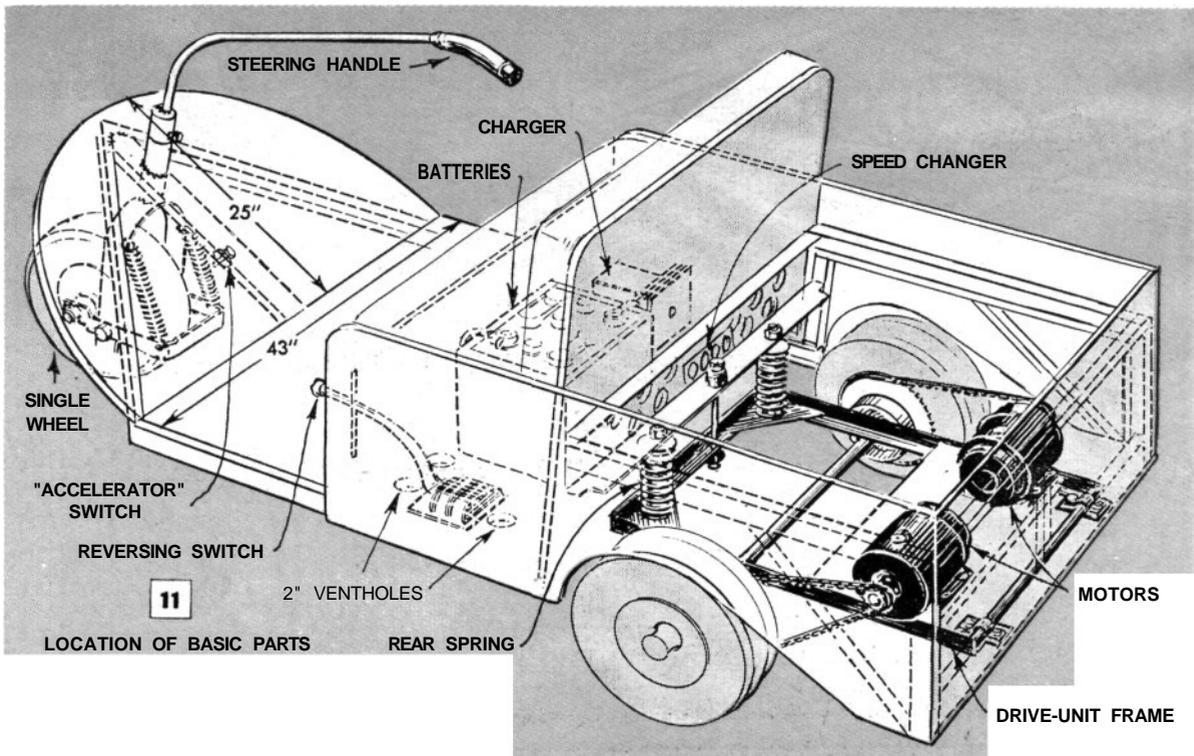
as is used for golf carts, electric lifts and the like. They are available from the larger motor manufacturers.

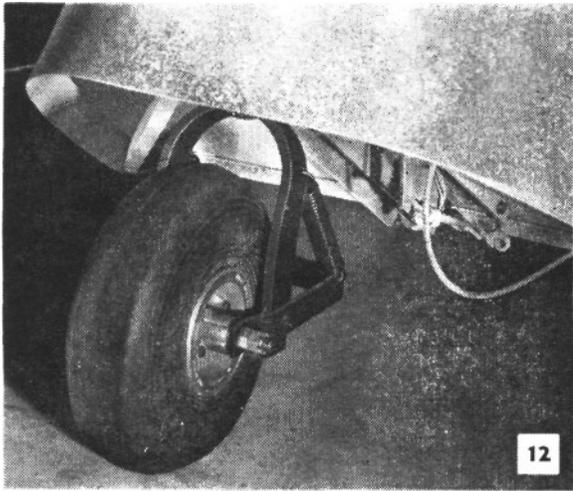
Brakes for the rear wheels of the cart can be made in two ways. If you purchase wheels with 6-in. drums, parking brakes of the external-contracting type, used on the drive shaft of Plymouth cars, can be modified for use as shown in the right-hand detail, Fig. 7. A second type of brake is to bolt a double V-pulley to each wheel and use two V-belts as "brake bands." The latter brake is efficient, but wears rapidly. Arrangement of the cables for both the

hand and foot brakes is shown in Fig. 10. The parking-brake handle can be one picked up in an auto-wrecking yard.

The seat back and three floorboards now are cut from 3/4-in., exterior-grade plywood. Ten 2-in.-dia. holes in the back are located toward the center so mud from the tires will not spatter through. These, and nine holes in the seat floorboard ventilate the charger and batteries. The seat front, cut from 1/2-in. plywood also is attached, Figs. 11 and 13.

Figs. 1 through 5 show just a few of the





Springs used to counterbalance the hoods of some automobiles are strong enough for the fork assembly

many uses for this versatile golf cart-run-about. If it is to be used by an invalid, the cart should be fitted with hand, rather than foot controls. The "accelerator" pedal can be replaced with a lever-controlled switch on the instrument panel or glove shelf. Brakes also can be operated by a long lever projecting upward through the floorboard and positioned for the driver to grasp it easily. An upward-projecting extension handle also will have to be fitted on the reversing-switch. It is important that this switch be handy for any driver, as it can be used to brake the cart in an emergency. If the cart is to be driven on streets or highways, check with city and state officials for types of licenses required before constructing the cart. You may find that your state or city does not permit a vehicle of this type to be driven on the streets or on the highways. Next month will be shown the installation of wiring, battery hook-up and attachment of the body sides, front and seat.

This view of cart shows neat appearance of seat and rear deck. Note reverse lever at front of the seat

