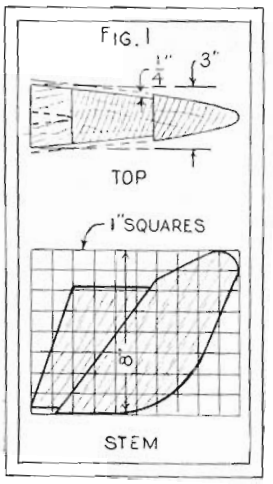
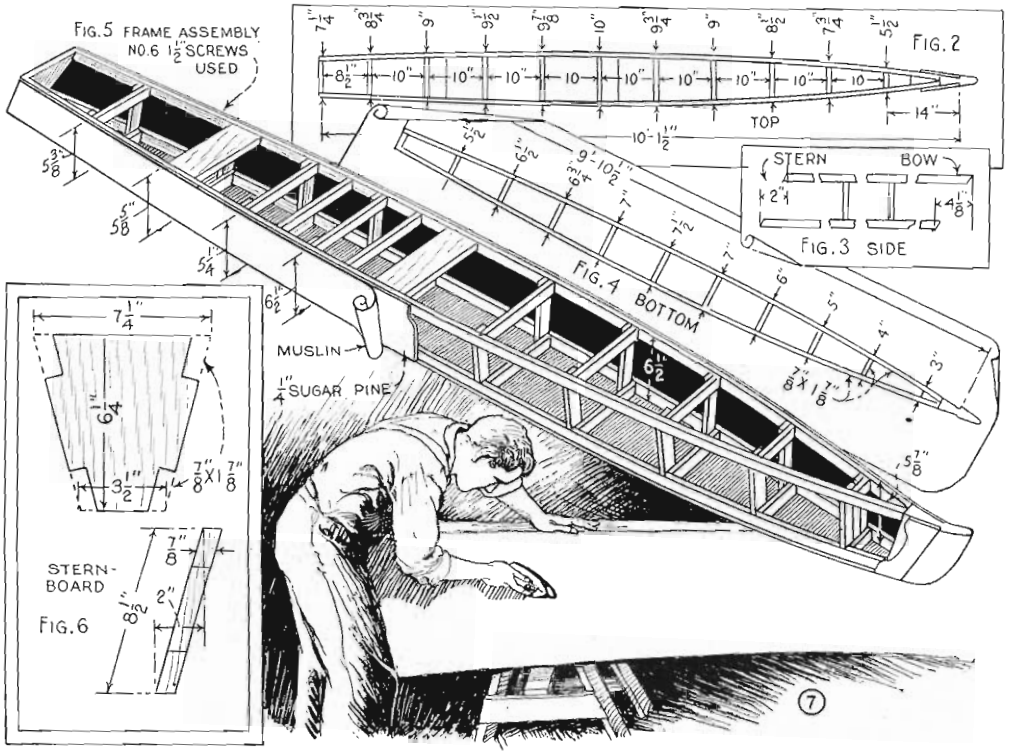
TREAD THE WAVES

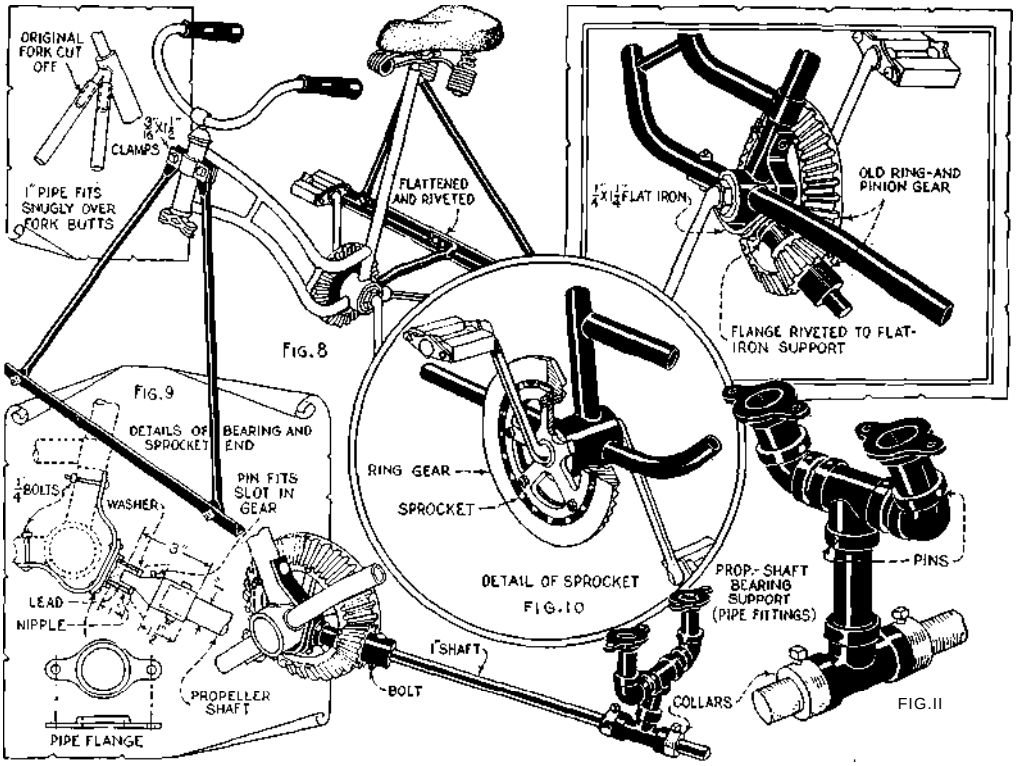
On This Bicycle Boat!

BUOYANCY and speed are two features of this bicycle boat. It consists of two pontoons and an old bicycle frame, held centrally above and between the pontoons. Propulsion is obtained by the use of a ring-and-pinion gear, bolted to the pedal sprocket, and a small three-blade propeller connected to the gears by a suitable shafting. The frames of the pontoons, both of which are exactly alike, are made of 1 x 2-in. white pine, which, when dressed, is exactly 7/8 x 1 7/8 in. Dimensions for the top and bottom crosspieces and



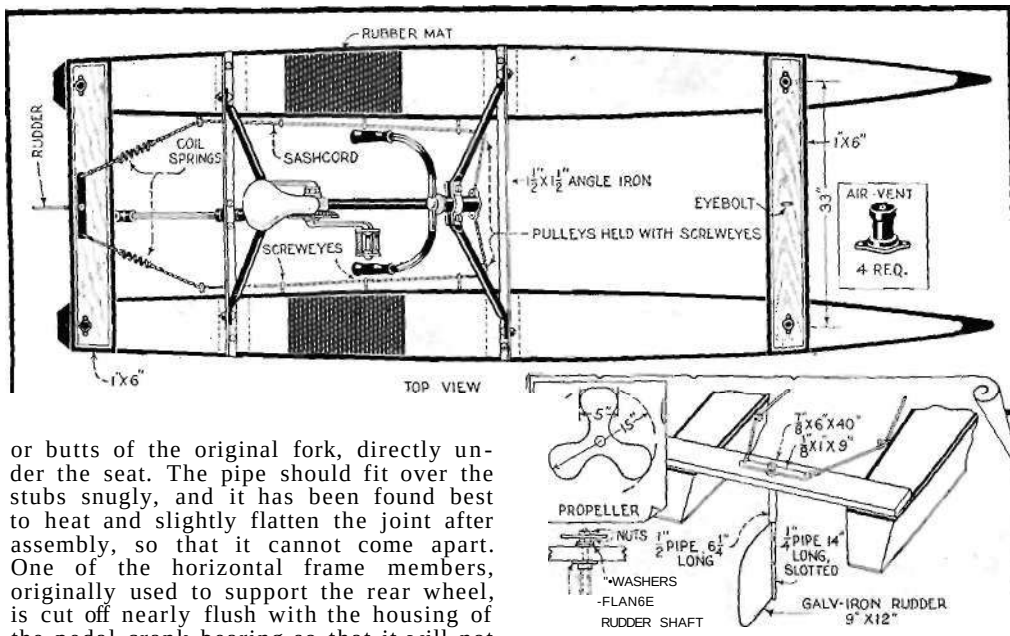
Pontoons for your bicycle boat can be made as shown or adapted from war-surplus airplane belly tanks





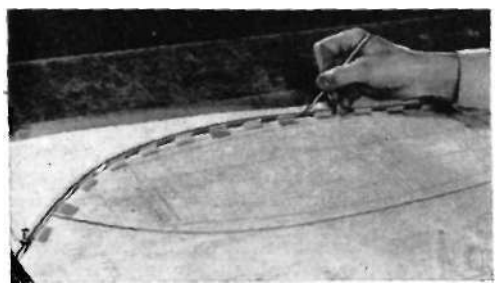
their spacing are clearly indicated in Figs. 2 and 4. Each frame consists of four pieces glued (marine glue) and screwed together, and notched to receive. the longitudinal members—sheer and chine battens. Both stem and stern are set at an angle, which should be taken into consideration when building the frame (see Fig. 3). Details of the stem or nose block, which is cut from a piece of 2 x 8-in. spruce, are given in Fig. 1, part of the side being recessed *Vi* in. to take the side planking. Exact dimensions and method of cutting the stern from %-in. ash are given in Fig. 6. Note the additional reinforcing pieces provided across the top for the braces that support the bicycle frame, besides those that reinforce the deck directly under the rubber mats. When the frame has been finished, the side and bottom planking, which is cut from 12-ft. lengths of *V4* x 12-in. sugar pine, is screwed on after the contacting portions of the frame have been covered with marine glue. Then, with the top off, the inside of the pontoons is given an application o£ paint, and the top, also o£ %-in. sugar pine, is glued and screwed on, using %-in. flat-head brass screws. The heads of the screws should be countersunk, and the resulting holes filled with hard water putty. After sanding each pontoon smooth, it is given a liberal application of airplane cement, and heavy muslin is stretched over the surface. A hot iron is used to press the cloth securely to the wood as shown in Fig. 7. The seam should be made along the upper edge, where %-in. half-round molding is applied, this being screwed on. A spruce keel of % x *lVi*-in. stock is screwed to the center of the bottom of each pontoon. It is neatly joined to the stem, after which a strip of brass is run over the stem and a few inches along the forward part of the keel. Each pontoon is provided with two air vents made up of pipe fitting's, to prevent the pontoon from bursting when the air inside expands in the heat of the sun. Be sure to apply glue to the fittings before screwing them in place over small holes drilled through the deck, to make them watertight. The pontoons are finished with a priming coat of shellac, four coats of good-quality exterior paint and finally a coat of spar varnish. Any desired color scheme may be followed.

Next comes the adaptation of the bicycle. A girl's bicycle is best, since the lack of a crossbar affords more convenient mounting. Cut off the front and rear forks as shown in Fig. 8. The bracing consists of lengths of pipe, flattened at the ends and bolted to angle-iron crosspieces. At the front end, flat-iron clamps are used to hold the braces to the steering post, while the rear pipes are slipped over short stubs



or butts of the original fork, directly under the seat. The pipe should fit over the stubs snugly, and it has been found best to heat and slightly flatten the joint after assembly, so that it cannot come apart. One of the horizontal frame members, originally used to support the rear wheel, is cut off nearly flush with the housing of the pedal-crank bearing so that it will not interfere with the ring gear which is to be added later. The corresponding frame member is cut off about halfway from the end, after which the cut portion is flattened and riveted to the rear angle-iron crosspiece. Fig. 10 shows how an automobile ring gear is bolted to the original pedal sprocket. It may be necessary to cut off the teeth of the sprocket to fit inside the recess of the gear. If desired, however, a brass disk may be substituted for the sprocket, in which case the disk should be the same thickness as the sprocket. A heavy piece of % x *IV4*-in. flat iron, bolted to the frame as shown in Fig. 9, holds a bearing that supports the end of the 1-in. propeller shaft. This bearing is made from a pipe flange and short nipple filled with melted lead and drilled to receive the machined fitting on the end of the shaft. If you have no metal lathe, this fitting can be turned out quickly at any machine shop. The tapered portion should make a snug fit in the pinion gear, and a small pin, driven into the tapered portion, serves as a key for the gear. A bolt holds the fitting on the shaft, while the latter runs through a bearing provided directly under the rear angle-iron crosspiece. This bearing and its hanger are made up of pipe fittings as shown in Fig. 11.

The angle-iron crosspieces are fastened to the pontoons with lag screws in the approximate positions indicated in the detail above, and additional crosspieces of 1-in. stock are provided at the front and rear. The pontoons should be placed perfectly parallel, 33 in. from center to center. Steering is accomplished bj' means of a small sheet-metal rudder, connected with sashcord to the front-fork stub of the bicycle. If a commercial propeller is not available, one can be made from fairly heavy sheet metal. It should have a 15-in. diameter, with a hole drilled centrally to fit the shaft, end of which is threaded so that the propeller can be held securely between two nuts. Corrugated rubber mats are tacked to the deck of the pontoons on each side of the bicycle, and the craft is then ready to go.



Boat-Drawing Aid

When fairing lines on a boat drawing, an inexpensive substitute for a naval-architect's spline and ducks can be improvised frem a strip of plastic which is held in place on the drawing with tabs of masking tape. The plastic strip should be approximately *Via* x % x 30 in. and the tabs are spaced 2 in. apart as shown in the photo. A pin pressed into the drawing board at each end of the strip helps hold the shape of the curve.