

and cut and planed at one time. They must match exactly and the edges must be square to the sides so the bottom will lie flush on all three. Notice that there must be a cutout at the bottom for the 1/2-in.-thick plywood bottom. Next, dado the sidepieces at each end. Since the center section is 1 in. shorter than the sides it is not dadoed. This piece slips into a 1/2-in.-deep dado on the front and backpieces. Beef up the center section with 1/4-in. plywood glued and nailed to each side where the cranks are fastened. You can cut out the section for the cockpit area immediately, but leave the seat section for later.

The 1/2-in.-thick bottom section is glued and nailed in place with the 1 1/2-in. No. 13 boat nails. Place the setup on a pair of sawhorses and fasten the endpieces in place. Now flip it over and, with glue and 3/4-in. No. 16 nails, fasten the 1/4-in. plywood bottom. To make bending easier,

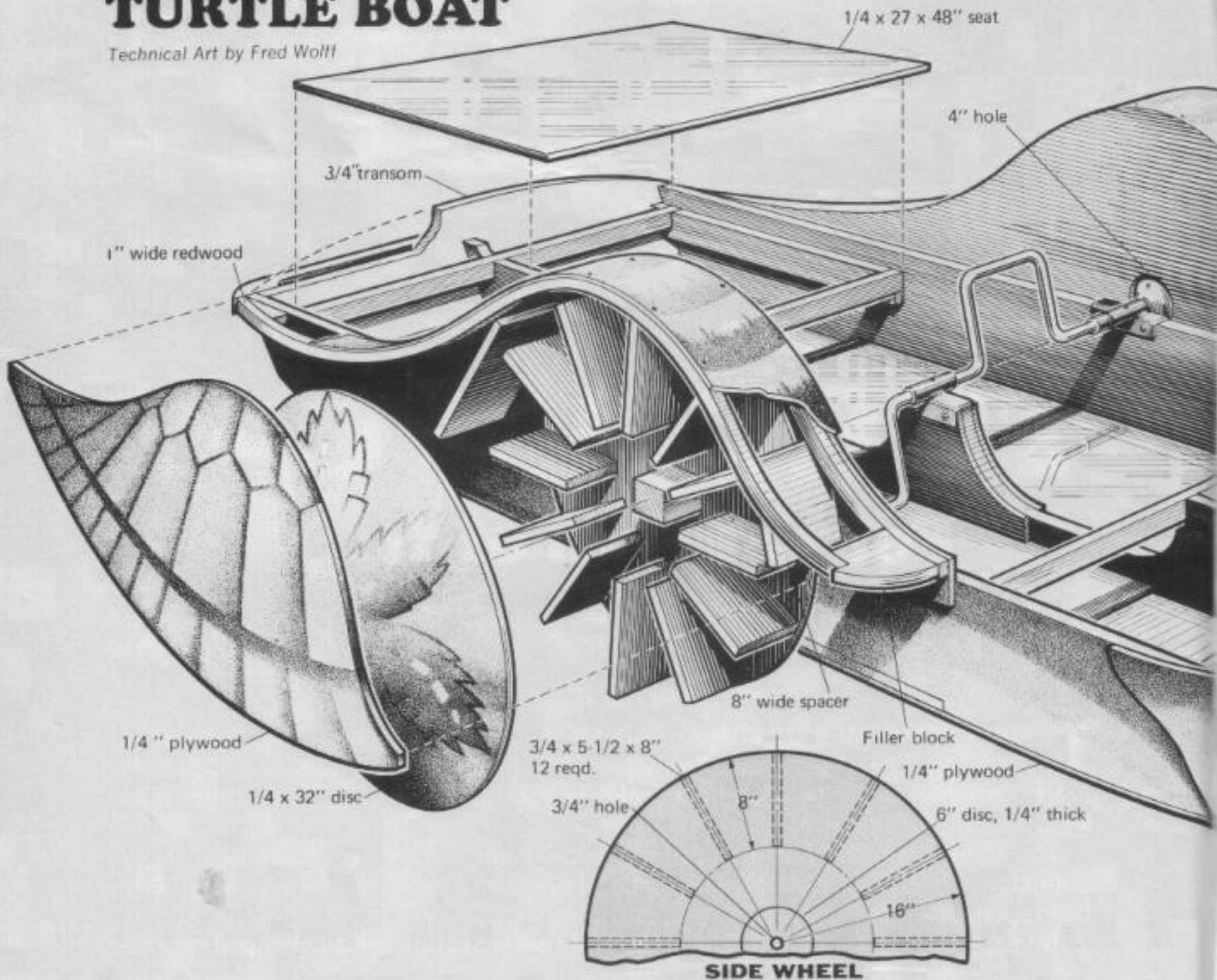
soak the ends of the plywood with hot water. Flip again and trim the center section to correct depth for the seats.

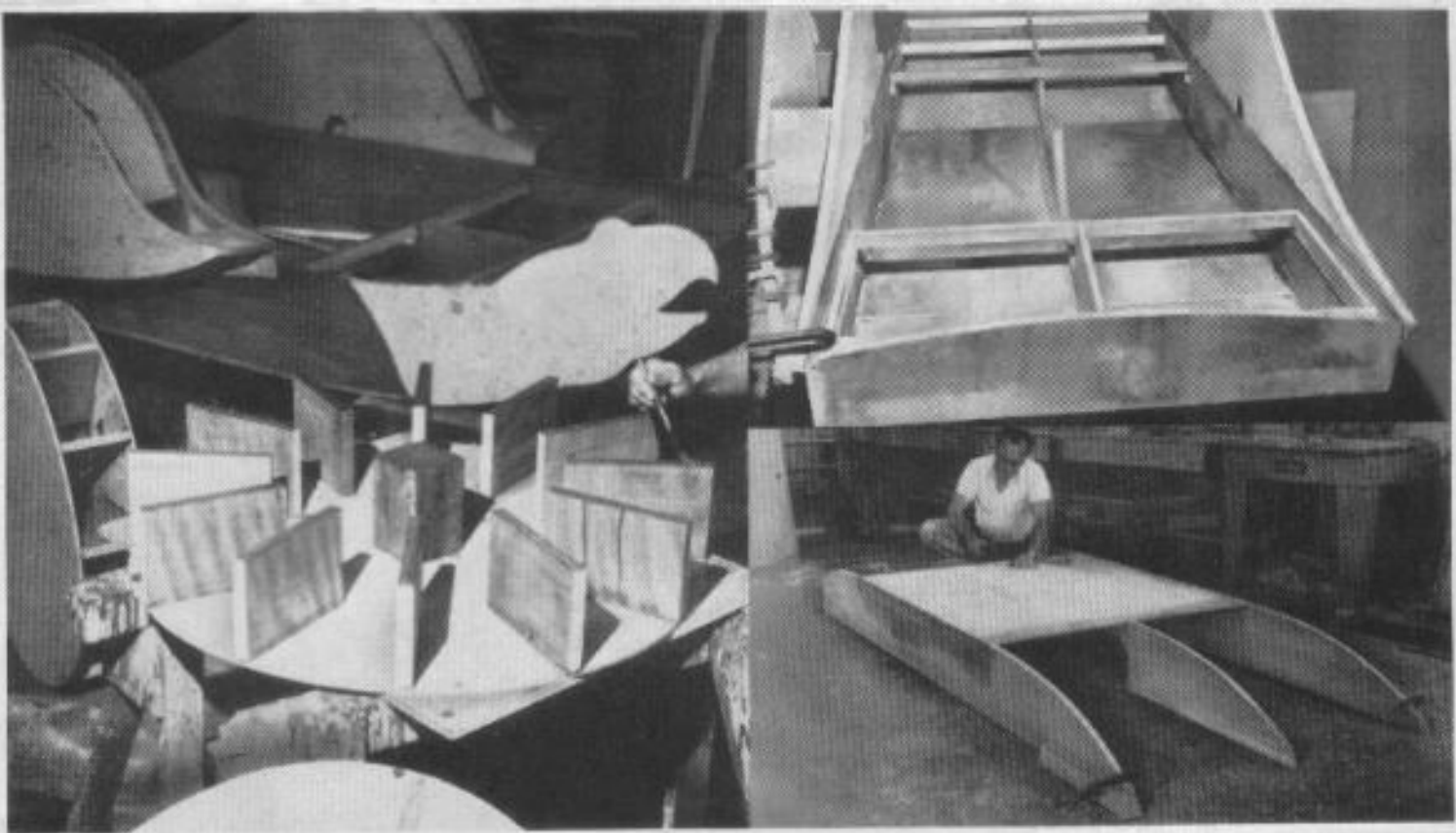
The inside of the paddle-wheel housing is of 1/4-in. plywood glued and nailed to the outside of the boat. Next, cut scraps of 1-in.-wide redwood for the top edges of both inside and outside of the housing. Glue and nail the plywood sides to these pieces. The insides are glued and nailed to two pieces of wood 8-in. wide; the outside, in turn, is fastened to them. Since the outside piece is attached to the side of the boat at the transom, the housings almost come to a point at the back. It is an easy bend. At the front the sides are brought in to approximately 7 in. of the sides where a filler block is used. A Stanley Surform works fine for fairing the top of the paddle housings. I used 1/8-in. plywood for the top; if this is not readily

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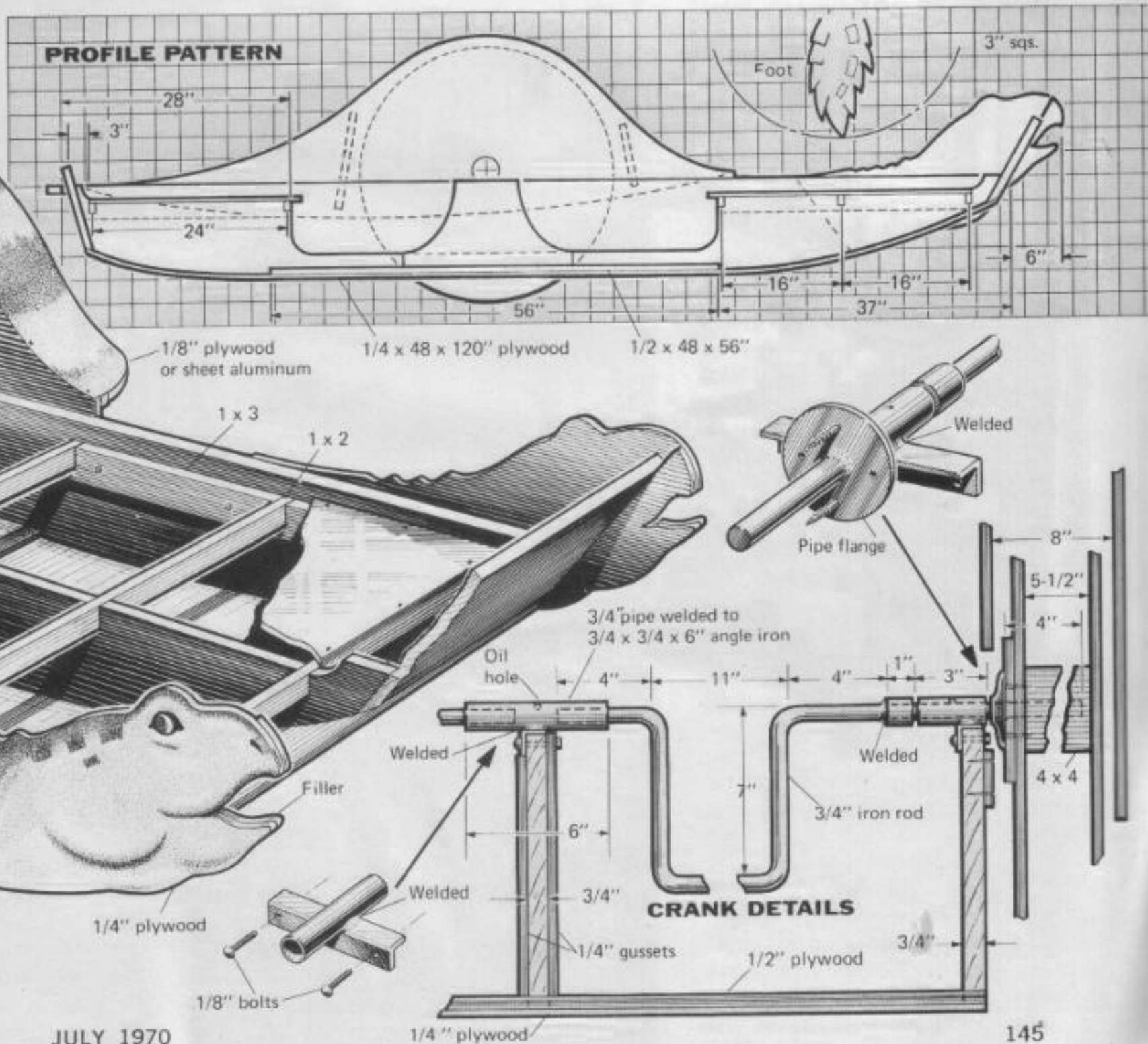
TURTLE BOAT

Technical Art by Fred Wolff





WATERPROOF GLUE and marine nails are used throughout to assemble the Turtle Boat. Photo at left shows finished paddle wheels and cranks ready for assembly. In picture at top right, paddle-wheel assemblies are ready to receive the tops of the wheel housings. Below: Bottom is fastened to keelson and gunwales





ROLLER IS QUICKEST WAY to apply resin. While it's still wet, apply cloth and second coat of the resin

BUILD THIS TURTLE BOAT

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available, you can substitute sheet aluminum.

The paddle-wheel sides require one 4x10 sheet of $\frac{1}{4}$ -in. plywood. Rough-cut the sides initially and temporarily fasten the four sides together. With a simple jig, all four sides can be cut perfectly round on a bandsaw. To do it, set up a pivot point (nail) at right angle to the blade's cutting edge 16 in. from the blade. Drill a small hole in the center of the four pieces of plywood and set them on this pivot. With the bandsaw running slowly, turn the plywood until you complete the circle.

Twelve $5\frac{1}{2}$ x 8-in. scuppers are used in each wheel. The centerpiece is 4 x 4 x $5\frac{1}{2}$ in. Glue and nail the sides to the scuppers and the centerpiece. On the inside of the wheels, I glued and nailed a 6-in. round piece of $\frac{1}{4}$ -in. plywood to which the cranks are attached by screws. It also holds the paddles a bit farther from the hull. Don't forget to drill the $\frac{3}{4}$ -in. diameter hole in each paddle for your crank.

For protection when beaching the craft, you're well advised to fiberglass the bottom. You'll need a 50-in. wide cloth about $10\frac{1}{2}$ ft. long and three quarts of resin. I used Boat-Armor resin (Glass Plastics Div., Valspar Corp., 200 Sayre St., Rockford, Ill. 61101) and Blu-Sheen fiberglass marine cloth on the craft shown.

The best approach to building the cranks is to have your local metal shop make them. It will usually have scraps of angle iron, steel rod and small pieces of pipe on hand which can be welded together. Simply supply the drawing to follow.

Painting is simple. Your best bet is to consult your marine supplier. Ask him to recommend a high-grade marine paint that is water soluble. Some are available in white only, but colors can be added for tint.

★★★



Build This **TURTLE BOAT** For the Fun of It!

Its paddle wheels are propelled by hand cranks, and it's as safe a kids' boat as you'll ever find for ponds and streams

By HAL KELLY

THERE'S A SUMMER OF FUN AHEAD for young skippers who step aboard this exciting paddle-wheel boat. Propulsion is by hand cranks and the rudderless craft is steered by its two paddle wheels. To turn around, one crank is turned forward, the other backwards.

The flat-bottom 4x11-ft. hull is light enough for even a six-year-old skipper to outdistance dad in a rowboat. The turtle shells over the paddle wheels keep water from splashing into the boat.

No jig is needed to build it. The sides and center section are all clamped together

