ARROW . . . a fast outboard runabout

Length—13'-1" ***Beam—4'-10"*** ***Weight—about 450 lb.***

Power—10 to 33 hp. ***Speed—20 to 35 m.p.h.***

ARROW is fun to build and use. Fast, safe, highly maneuverable, and sporty looking, she is designed to be used with any outboard motor from 10 hp. up to one of the big 33-hp. jobs. With 10 hp. she does 20 m.p.h. and with 33 hp., about 35 m.p.h.

The first step in building her is to study the accompanying bill of materials and collect the various items listed. For a really attractive job, use mahogany plywood on the deck and sides. The increase in over-all cost will be slight, but the added beauty of the boat will be great. This material is available from the Ipik Plywood Co., Kenner, La. Fir, birch, or gum plywood should be used for the bottom (only the resin-bonded, waterproof variety is to be employed).

Saw the building form to shape from a piece of two-by-ten. If future boats are to be built from this design, retain the building form—any number of boats can be erected on it. Mount it upon sawhorse-like legs at any convenient working height.

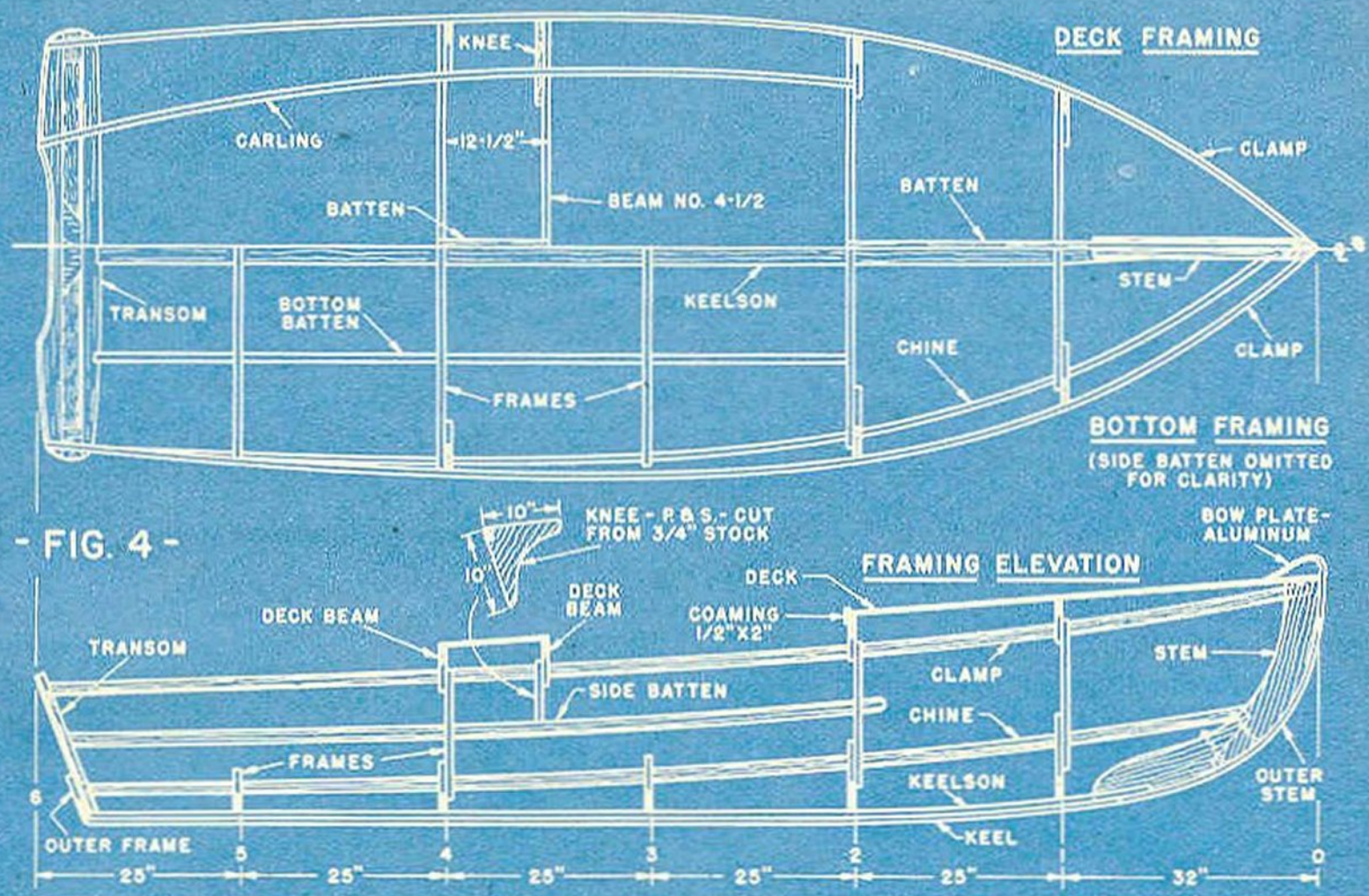
Continue by drawing full-size paper patterns of the stem, the transom, and all the frames. Shapes are transferred from these patterns to the stock by laying the paper on the material and, using a large pin, pricking along the outlines.

The two-piece stem is sawed to shape and assembled with two ¼x4½-in. carriage bolts. Counterbore the forward edge to take the heads of these bolts.

After sawing the transom from ½-in. plywood, cut out the pieces that make up the transom framing and secure the plywood to the framing with resin glue and 1-in. No. 8 flathead wood screws. The outer bottom frame shown in the drawing (Fig. 3) is not attached until later.

Cut out all the frame members and assemble Frames 1, 2, and 4, using resin glue and 1¾-in. No. 8 screws at the joints. Don't add the deck beams yet.

Next, cut the notches in the frames and transom for the keelson, chines, and clamps, and in the stem for the keelson. The notches in the transom for the clamps go through the framing but not through the plywood:



- FIG. 4 -

those for the keelson and chines go all the way through both framing and plywood.

When the hull is completely framed, the exposed transom notches are covered by the previously mentioned outer bottom frame, which is glued to and screw-fastened through the plywood.

All frames, the transom, and the stem are now placed in their respective notches atop the building form. Square the frames and transom up and hold them in position with wooden strips nailed in place. Secure the stem to the building form with two short pieces of one-by-four and clamps.

Bend the keelson into place and attach to the stem, transom, and frames with two 1¾-in. No. 8 flathead wood screws at each joint. To keep the structure from twisting out of shape, install the two chines simultaneously, starting at the transom and working forward. Bevel the ends of the chines to fit the sides of the stem. Secure with one 1¾-in. No. 8 flathead wood screw at each joint. Using the same procedure, install the clamps.

Clamp the side and bottom battens in place roughly where shown and mark the frames and transom for the notches. Remove the battens and cut the notches; then secure the battens with one 1¾-in. No. 8 flathead wood screw at each joint.

Using a plane and a wood rasp, the entire framework is now trimmed and faired so the plywood covering will lie evenly at all points.

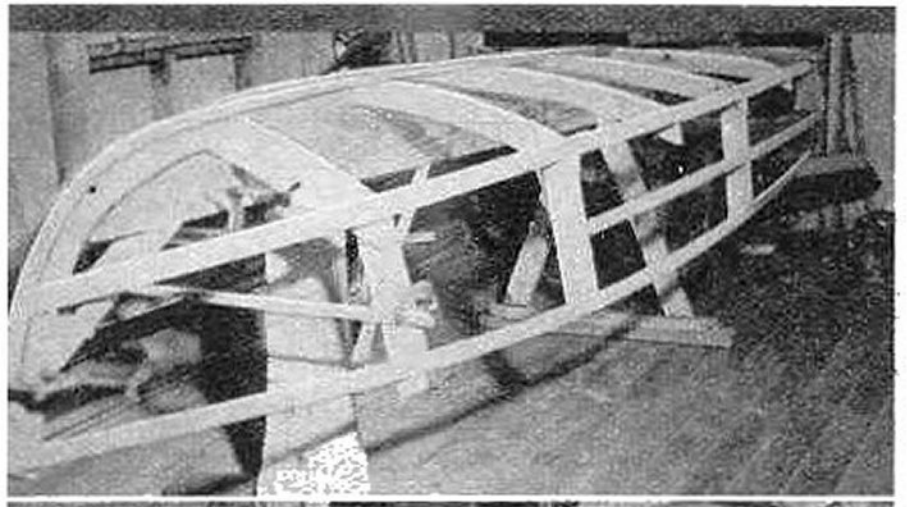
When applying the planking, use non-hardening marine glue at the keel, chine, and transom joints and resin glue at the planking butts, at the stem, and along the clamps.

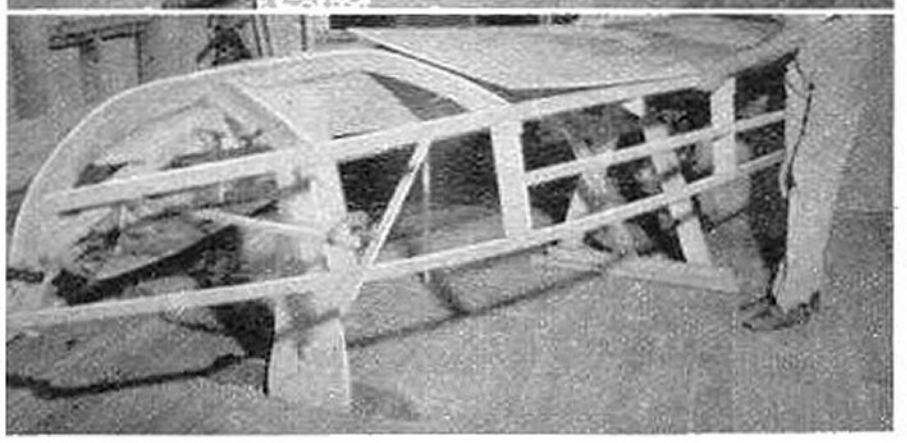
The bottom is planked first. Lay the plywood sheets in place, butting them at the center line. Mark along the chines, remove, and cut to shape. Coat the edges of the transom, keelson, and chines with glue, lay cotton wicking in the glue, and secure the plywood with 1-in. No. 8 flathead wood screws on 2-in. centers.

The two pieces at the forward end must be carefully shaped to fit the stem. A seam batten, as shown in Fig. 5, is installed to back the joint between these pieces and the after ones. To aid in bending the plywood in place at the stem, soak it in hot water before applying.

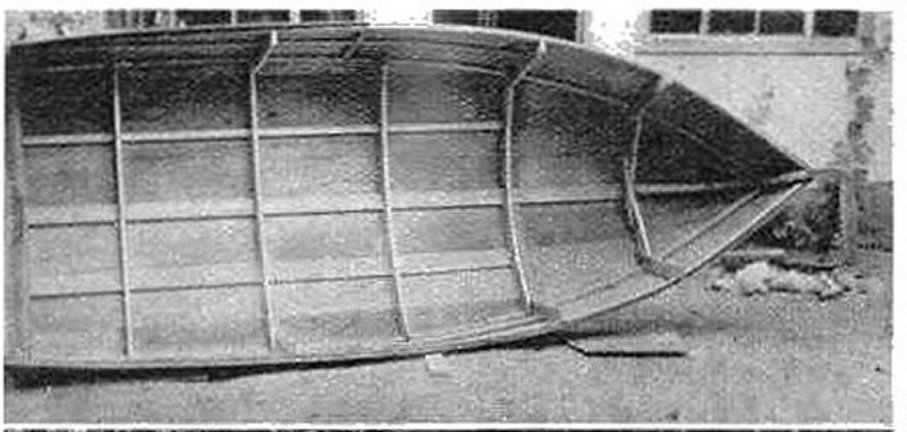
With the bottom planked, trim all edges, clamp the side planking in place, mark it, remove, and cut to shape. It is secured with glue at all joints and screws at all joints except those along the clamps, where shingle nails are driven and clinched inside the clamps.

The exposed edges of the plywood along the stem are covered with a screw-fastened

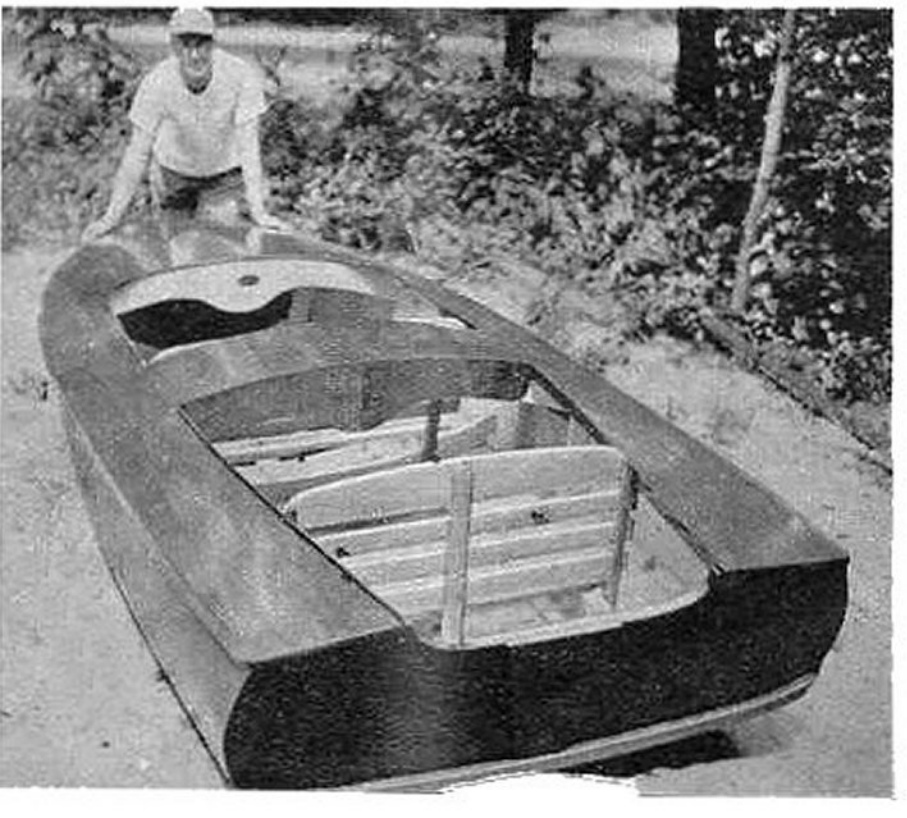




Using a plane and a wood rasp, carefully trim and fair the entire framework so the plywood planking will lie evenly and touch all the frame surfaces.



After adding the plywood planking, turn the boat rightside up and complete by installing the deck beams and battens, carlings, decking, and trim.



BILL OF MATERIALS

(Approximate Quantities Required)

Waterproof Plywood

Deck: 3 panels, 1/4" x 4'-0" x 7'-0"
Sides: 2 panels, 1/4" x 4'-0" x 8'-0"
Bottom: 3 panels, 3/8" x 4'-0" x 8'-0"
Transom: 1 panel, 1/2" x 20" x 5'-0"

Common Lumber

Building Form: 1 piece, 2" x 10" x 12'-0"

Specify that all wood listed below is to be used for boat-building and is to be air dried to a maximum of 15% moisture content. All hardwood is to consist of first, second, and select grades only. All softwood is to consist of A and B grades only.

White Oak or Longleaf Yellow Pine

Strips: 4 pieces, 1/2" x 3/4" x 14'-0"
Outer Stem: 1 piece, 1/2" x 1 1/2" x 4'-0"
Deck Batten: 1 piece, 1/2" x 2" x 6'-0"
Carlings: 2 pieces, 3/4" x 1 1/4" x 10'-0"
Clamps and Moldings: 4 pieces, 3/4" x 1 1/4" x 14'-0"
Side Battens: 2 pieces, 3/4" x 1 1/2" x 10'-0"
Keel: 1 piece, 3/4" x 1 1/2" x 12'-0"
Bottom Battens: 2 pieces, 3/4" x 1 3/4" x 10'-0"
Chines: 2 pieces, 3/4" x 2" x 14'-0"
Keelson: 1 piece, 3/4" x 3 3/4" x 12'-0"
Frames, Deck Beams, and Knees:
1 piece, 3/4" x 3" x 24"
1 piece, 3/4" x 4" x 5'-0"
1 piece, 3/4" x 5" x 5'-0"
1 piece, 3/4" x 5 3/4" x 5'-0"
4 pieces, 3/4" x 12" x 6'-0"
1 piece, 3/4" x 14" x 2'-6"
Stem: 1 piece, 2" x 8" x 3'-6"

Mahogany or White Pine

Cockpit Coamings: 2 pieces, 1/2" x 2" x 12'-0"
Seats: 3 pieces, 3/4" x 2 1/4" x 12'-0"
2 pieces, 3/4" x 3 3/4" x 8'-0"

Fastenings

2 gross galvanized 3/4" No. 6 flathead wood screws
5 gross galvanized 1" No. 8 flathead wood screws
6 dozen galvanized 1 3/4" No. 8 flathead wood screws
1 pound galvanized 1 1/4" shingle nails
2 galvanized 1/4" x 4 1/2" carriage bolts

Miscellaneous

1 ball cotton wicking
1 pint resin glue
1 pint nonhardening marine glue
Paint and varnish to suit

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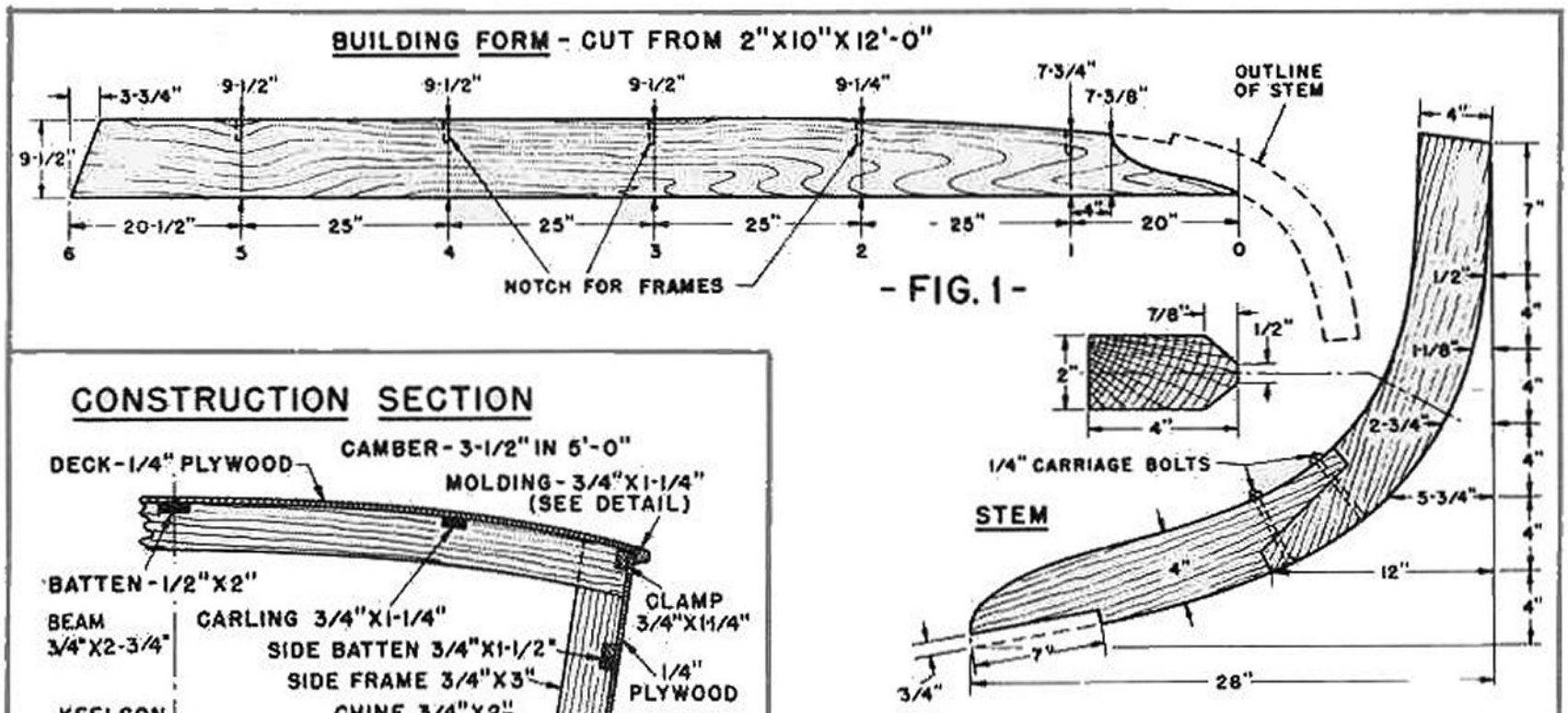
outer stem. Secure the keel in place with 1 3/4-in. No. 8 screws on 8-in. centers. The four strips go on next, fastening the upper ones from the inside and the lower ones from outside with 3/4-in. No. 6 screws on 8-in. centers.

Remove the hull from the form, turn rightside up, and install the deck beams. Beam 4½ is supported by screw-fastened sawed knees. Continue by notching the carlings and deck battens into the beams and securing with one 1 3/4-in. screw at each joint.

Mark the plywood decking to shape, cut out, and secure with 3/4-in. screws on 3-in.

Apply at least three coats of paint or varnish inside and out. The finished boat will surprise you with its speed, maneuverability, and looks.



centers. Trim the cockpit openings with coamings and the exposed edges along the sheer with the moldings detailed in Fig. 2, fastening them with 1¾-in. screws on 8-in. centers. Add the seats and flooring and you're ready to paint and varnish. This depends upon individual preference, but be sure to apply at least three coats inside and out. •