

# WING

*for sailing*

This 13-foot skimmer built easily with no difficult joints then sails with only one finger needed on the tiller

Craft Print Project No. 67



**E**XTREMELY fast, safe, and able on smooth water, the scow or skimming type of sailing boat is perhaps the most efficient hull form known, and one readily adaptable to home construction.

The 13-foot skimmer "Wings" described and pictured here is a true scow sailing craft. It has shown an excellent turn of speed, the ability to point closely, and is easily handled with one finger on the tiller. It is especially adapted to sailing wherever sheltered waters abound.

Designed to build easily, difficult joinery work has been eliminated. Anyone with the aid of ordinary carpenter's tools and a few clamps can build this sailboat and it will furnish incomparable sport and compare favorably with other fast hulls. The cost would be comparatively low. You can, of course make your own sails in the fabric of your choice. Professionally fabricated sails will raise the total cost, but they are generally worth the additional price. All materials and parts for building this boat are readily available from any lumber yard and hardware store.

Parts requiring sawing and planing can be made cheaply at any mill.

To begin the construction, first make full-size paper patterns of frames including transom and stem piece. The framing material, which is merely straight planking, is laid upon these patterns so as to conform to outline, the adjoining surfaces daubed with casein glue and joints fastened together with  $1\frac{1}{2}$ " No. 8 F. H. screws. Center of frames No. 1-2-3 are joined together with floor pieces which are glued and screw fastened to frames as shown. When inserting these and all other screws and fastenings, lead holes should be first drilled to prevent split and weakened joints.

The paper pattern of the stem is laid upon the stem material, the outline pricked through and stem marked and sawn to shape. The two pieces of the stem are joined in the center with a wedge shaped block, the joints being coated with casein glue and stem bolted together with four  $\frac{1}{4}$ " x 8" carriage bolts, heads of bolts cut as shown and inserted towards the top surface of stem, so that the bottom of this stem may later be beveled without interfering with these bolts. Lay the stem aside and proceed to saw the side planks to shape.

Mark on planks designated for sides the proper measurements as indicated upon the plans. Then draw the curved outline a light batten is sprung around, so as to touch all measurements, the marks connected to show the outline, and plank is then sawn to shape.

The frames Nos. 1-2-3-4 are now notched for keel and chines, notching through No. 4 transom frame only. As the planking fits against the sides of frames at different angles it is necessary temporarily to align frames at intervals indicated upon plans. Bend a light batten around frames and mark along sides of frames the correct bevel and plane the edges. The keel and chine notches must also be beveled slightly so these parts fit nicely when assembling. Fasten cross-pieces temporarily to tops of side frames

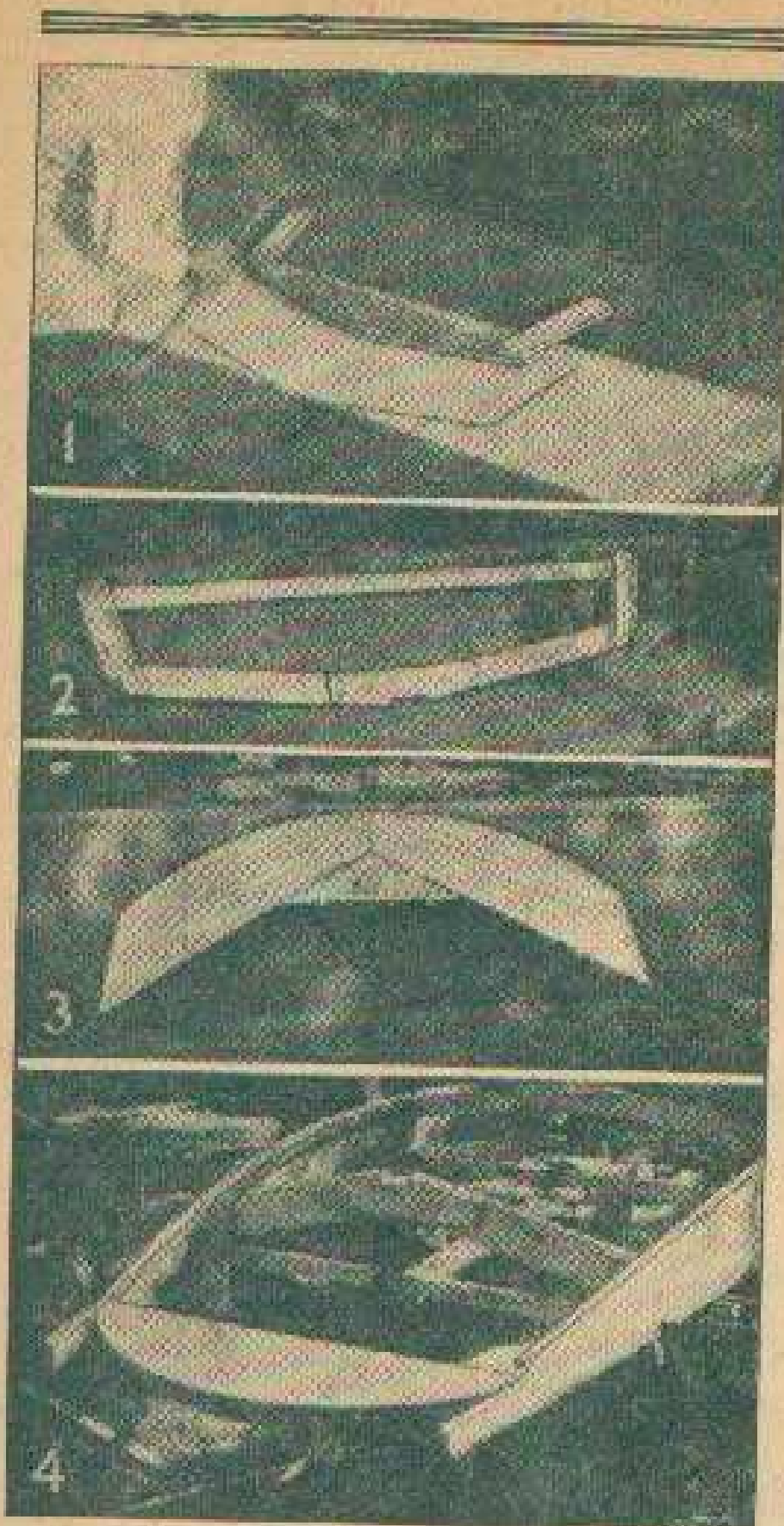


Fig. 1. Making full size patterns of frames.  
 Fig. 2. A finished frame with floor attached.  
 Fig. 3. Finished stem piece.  
 Fig. 4. Bottom showing framework and stem.

to prevent misalignment and proceed to assemble.

The shaped side planks are now attached to frames. Align frames at the proper frame measurement, and fasten plank to frame sides with 1½" No. 9 F. H. screws spaced about 3 inches apart, double spacing at transom No. 4. The forward ends of planks are merely tied temporarily and the chines sprung into chine notches and fastened through planking into chine and frames with 2½" No. 8 F. H. screws. Do not fasten planking along chines until later.

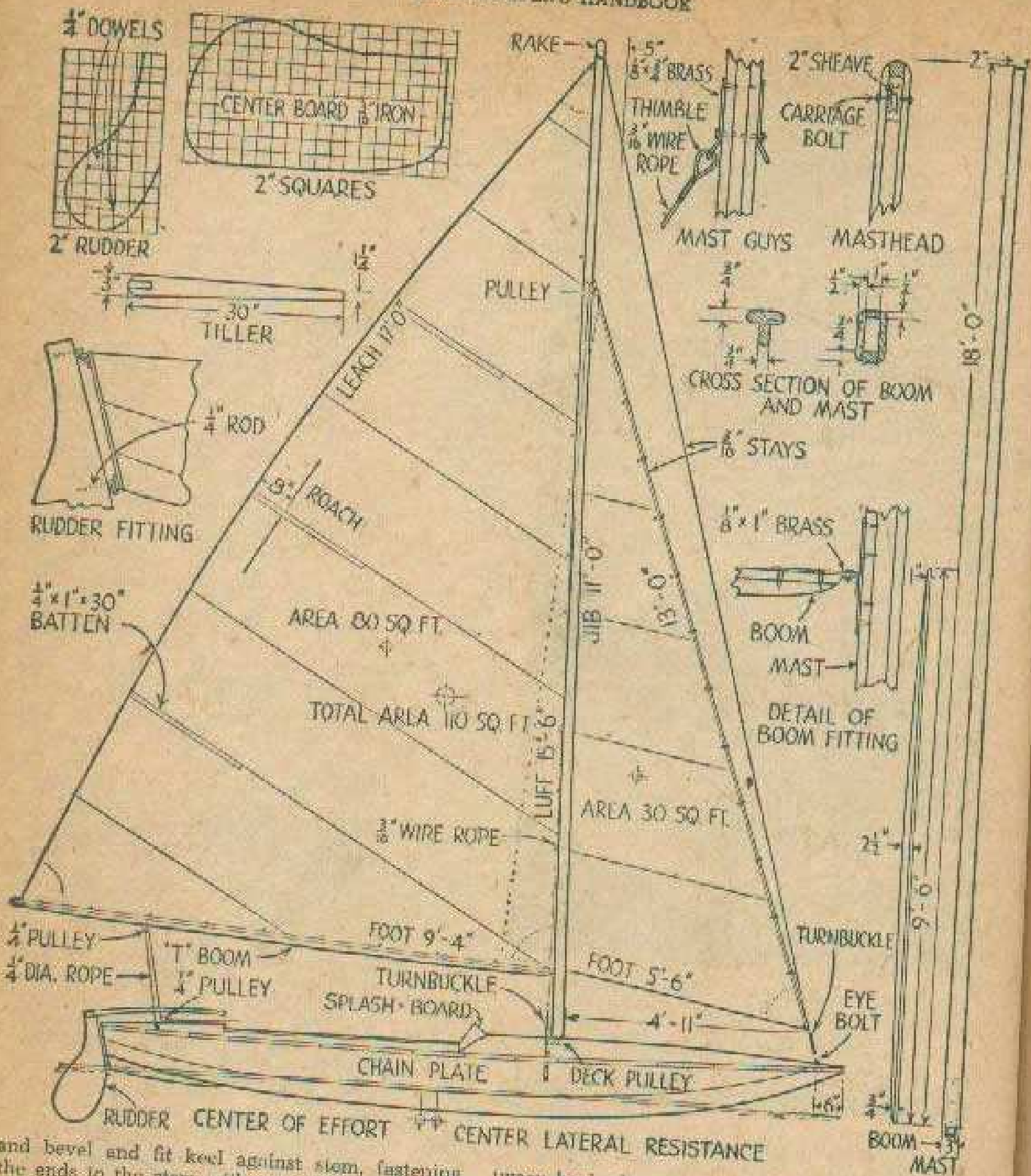
The ends of the shaped stem piece are now notched so chines fit flush in stem and chines fastened to stem notch with two 2½" No. 8 F. H. screws to each joint. The side planks are now screw fastened, first trimming the edges along

BILL OF MATERIAL FOR "WINGS"

Decking	2 Pcs.	¼"x46"x94"	Tir Plywood
Planking—			
sides	2 Pcs.	¼"x18"x14'	Mahog.
bottom	10 Pcs.	½"x8"x12'	Cedar.
			Cypress.
			white pine.
			redwood.
			spruce, fir or
			yellow pine.
Chines	2 Pcs.	¾"x1½"x14'	
Ilgin Battens	2 Pcs.	¾"x1½"x14'	
Keel-Inner	1 Pc.	¾"x3½"x14'	
Keel-Outer	1 Pc.	¾"x3½"x14'	
Frames & Floors	3 Pcs.	¾"x3"x12'	Spruce,
Deck Beams	1 Pc.	¾"x12"x12'	cedar.
Transom	1 Pc.	¾"x8"x4'	mahogany.
Cockpit Supports	1 Pc.	¾"x2"x12'	cypress, fir,
Carlins	1 Pc.	¾"x2"x10'	white pine,
Bed Legs	2 Pcs.	¾"x3"x8'	or yellow
Center Board Case	1 Pc.	¾"x12"x8'	pine.
Coussing	2 Pcs.	¾"x2"x8'	
Moulding	2 Pcs.	¾"x1"x14'	
Budder	1 Pc.	¾"x8"x10'	
Tiller	1 Pc.	¾"x3"x36'	
Mast	2 Pcs.	1½"x3"x18'	Spruce,
	1 Pc.	¾"x1"x18'	cedar, white
	1 Pc.	1½"x1"x18'	pine fir or
			cypress.
Boom	2 Pcs.	1½"x3"x10'	
Mast Step	1 Pc.	1½"x6½"x18'	Oak,
Partner	1 Pc.	1½"x8"x18'	mahog.,
Slam	1 Pc.	1½"x8"x18'	fir or yellow
			pine.
5 Gross	1½"	No. 9 Flat Head Screws	
4 Gross	1¼"	No. 9 Flat Head Screws	Brass,
4 Dozen	1¾"	No. 10 Flat Head Screws	galvanized
3 Dozen	2½"	No. 8 Flat Head Screws	or cadmium
1 Dozen	3"	No. 10 Flat Head Screws	plated.
4		¼"x8" Carriage bolts	
6		1¼"x3½" Carriage Bolts	
6		1¼"x1½" Carriage Bolts	
1		1¼"x2½" Carriage Bolt	Galvanized
1		1½"x1½" Carriage Bolt	or iron.
3		1¼" Pulleys or blocks	
2		1¼" Deck Blocks	
1		2" Sheave	
3		1½"x8" Turnbuckles	
2		Chain Plates	
5		1½" or 2/18" Thimbles	
100 ft.		1/4" Manilla Rope	
85 ft.		1/4" or 3/16" Gal. Rigging wire	
2		Finlin & Gudgeons (Optional)	
3		6" Cleats	
2		1/4"x2" Eye Bolts	
21 ft.		3/4-in. Sail Track	
20		5/8-in. Sail Edges	
11		Baby Scaup for jib	
14 Yds.		4½-oz. 38-in. width Sail cloth	
1 Qt.		Spar Varnish	
4 Lb.		Elastic Seam Composition or putty	
2 Balls		Cotton Lamp Wicking	
1 Lb.		Casein Glue	
1 Qt.		Marine Glue & 1-gal. Fardico Canvas Cement	

chines even and securing plank to chines with 1½" No. 9 F. H. screws spaced about 3 inches apart.

So that the ¾"x5½" inner keel will bend more readily, it must be tapered forward and aft as shown on plans and the outer ¾"x3½" keel tapered accordingly. Spring the inner keel into keel frame notches and fasten with two 1¾" No. 10 F. H. screws to each joint. Bevel the stem to fit upward slope of bottom planking.



and bevel and fit keel against stem, fastening the ends to the stem with two 1 1/8" No. 9 F. H. screws. The outer keel is now attached in the exact center of the inner keel with 1 1/2" No. 9 F. H. screws spaced about 8 inches apart.

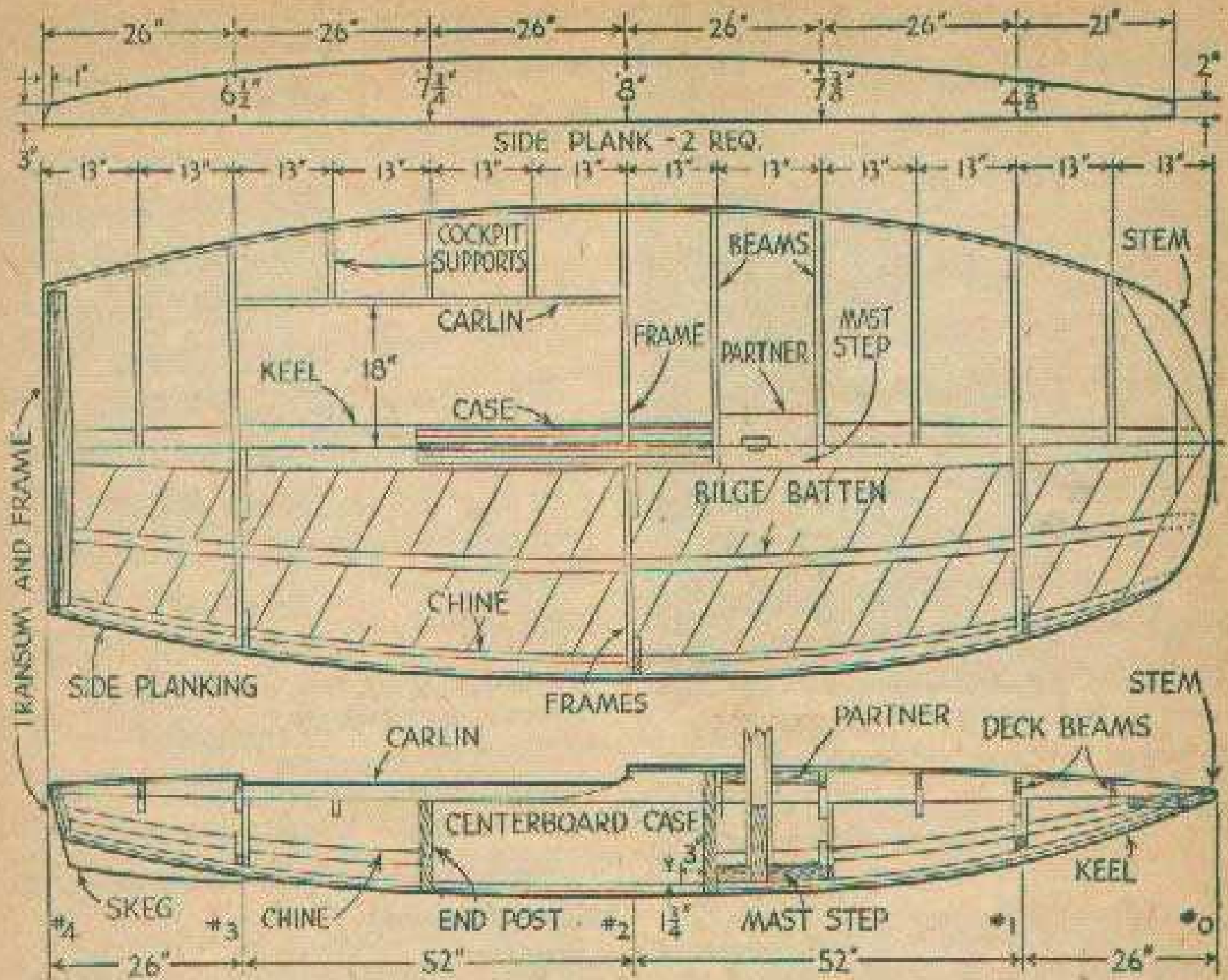
Before going any further with the construction, clamp lengthwise pieces to the tops of frame cross-pieces and force and clamp frame work each way to make certain it is exactly aligned and one side does not have more bend than the other, as otherwise a lop-sided, poorly appearing and performing boat will result.

With the hull aligned the 3/4" x 1 1/2" bidge battens are now notched into frames midway be-

tween keel edge and chine edge. These prevent edges of planking from twisting and leaking and contribute considerably to the strength of the hull. Bevel the ends to fit the stem and fasten with one 1 1/4" No. 9 F. H. screw to each joint.

The entire framework is now trimmed and faired so all planking later applied will lie evenly. A light batten laid over frames, keel, chines, and stem will show the amount of beveling or trimming necessary to insure closely fitting, strong joints.

Apply the bottom planking diagonally or at a 60 degree angle. A little experimenting will indicate the correct angle. Start from the tran-



stem and work forward. Before fastening each plank is planed along one edge for a calking joint or Vee joint which allows both planks to fit tightly on the inside but remain open on outside  $\frac{1}{8}$ " , this seam is later calked. Before planking is attached, coat all adjoining surfaces such as chines, plank edges, and keel with marine glue. Lay cloth strips upon glued area, and proceed to fasten planking in place. Fit, saw to shape each of the bottom planks and fasten in place with  $1\frac{1}{2}$ " No. 9 F. H. screws, spaced about 3 inches apart along chines and frames while planking is secured to keel and bilge battens with  $1\frac{1}{4}$ " No. 8 F. H. screws. The edges of the planking along the chines are now trimmed even and flush.

Turn the hull right side up and proceed to fasten and fit deck beams, carlins, and cockpit supports in place. Dimensions are given for Nos.

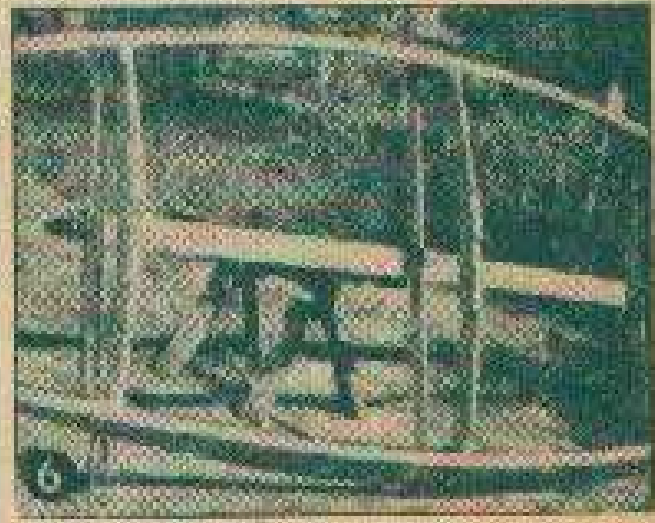
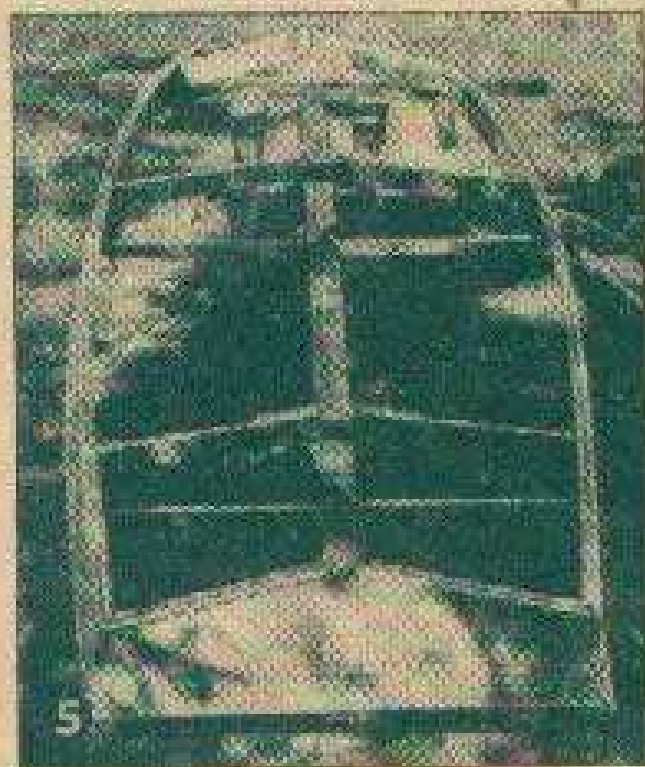


Fig. 5. Bottom before keels are attached.

Fig. 6. Attaching plank to tops of frames to align and true up framework.

1-2-3 deck beams only. These are sawn to shape and fastened to their respective stations. Fasten the carlins in place and it is then an easy matter to measure for the remainder of deck beams and cockpit supports. Bend a light batten from stem to No. 2 beam, the beams between are then calculated by measuring across and up to this batten, transferring the measurements to plank and sawing to shape. As every boat varies slightly the intermediate beam measurements are not



Fig. 7. Keel and bilge battens attached to stem.  
Fig. 8. Frame completed. Board attached to center of frames to align hull before planking.

given but must be individually estimated. Secure beams to frames and sides of hull with  $1\frac{1}{2}$ " No. 10 F. H. screws.

### Center-Board Well Construction

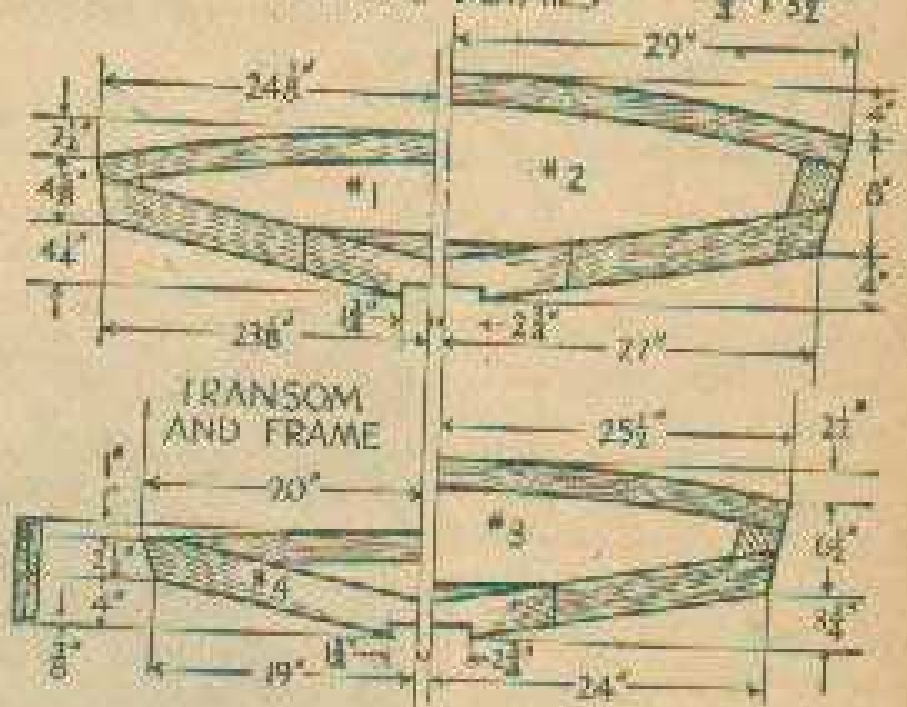
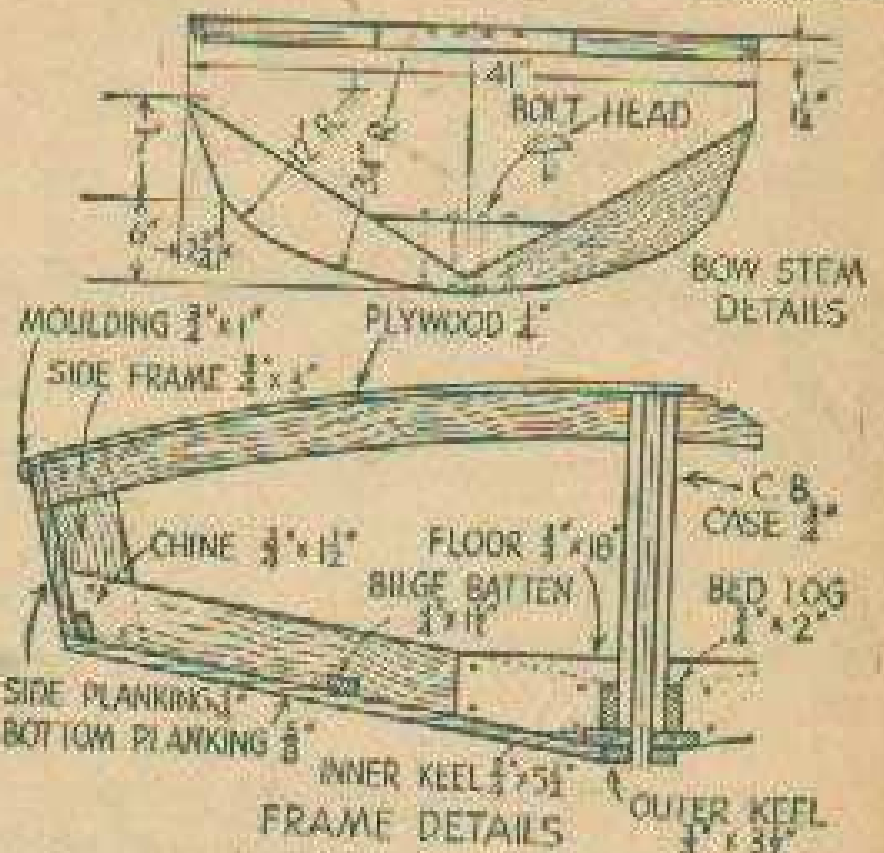
Fastening the center-board well is next. A slot  $\frac{3}{4}$ " wide the length indicated upon the plans is sawn through the exact center of the two keels. Two  $\frac{3}{4}$ "x $1\frac{1}{2}$ " end posts are now coated with glue on the ends and inserted each end of the slot. The top end of the forward post fits flush with surface of deck beam and is fastened to beam with  $1\frac{1}{2}$ " No. 9 F. H. screws. The after post is left long enough to trim and we are ready to attach the center-board well case. The well boards are trimmed to fit the keel and the edges of the well boards adjoining keel liberally coated with glue. Paint the inside surface of the well boards. Coat each side of the slot with glue. Lay strips of cloth upon the glued area. Clamp well boards in place and fasten to well posts with  $1\frac{1}{2}$ " No. 9 F. H. screws. The well boards are fastened through keels from the outside with 3" No. 10 F. H. screws. The well is filled solid up to deck beams with surplus stock as shown upon the plans. To tie the whole construction together,  $\frac{3}{4}$ "x2" bed logs are attached to each side of the well along the keel and fastened with  $1\frac{1}{2}$ " No. 9 F. H. screws.

### Mast Partner and Step

Fastening the mast partner and mast step in the correct position depends upon the sail used. If the mainsail only is to be used, locate mast, and this means partner and mast step 3'9" from the bow. But if the jib and mainsail together are to be used, locate the mast 4'11" from the

end of the bow stem. The mast step is bolted to the keel with two  $\frac{1}{2}$ "x $3\frac{1}{2}$ " carriage bolts while the mast partner piece is screw fastened to the deck beams, directly over the mast step with  $2\frac{1}{2}$ " No. 8 F. H. screws.

Applying the plywood decking is the next step. First trim and fair all joints so plywood lies evenly at all points. The plywood is applied in



two 4'x7 sheets, and the under side should be painted before applying. As a piece of plywood will not cover the entire deck, provision must be made for jointing the edges together. A batten  $\frac{1}{2}$ "x $1\frac{1}{2}$ " notched into the center of the stem and deck beams secures the edges of the plywood forward. The plywood aft or on the after deck is also jointed in the center of the deck and also at sides of cockpit. In each case a batten secures the joint while edges of plywood are fastened with screws or nails clinched on under side of batten. Coat batten with casein glue before fastening plywood and drill lead holes for all fastenings. Fasten plywood to beams and sides with  $1\frac{1}{2}$ " No. 8 F. H. screws. Trim all edges of plywood flush and cut hole for the mast into the mast partner. The entire deck is next covered with canvas.



Fig. 9. Attaching bottom planks.

This is accomplished by cementing canvas to the deck with canvas cement. Stretch canvas in place temporarily to see that it fits well, now roll canvas back and coat about 3 or 4 square feet of the deck with cement using an old brush for the purpose. Lay canvas on the cemented area and

rub the surface of the canvas well with a pad to insure complete adhesion of the canvas to the deck and cement. Continue in this fashion until the deck is finished, then turn the edges along the cockpit and the sides over about  $1\frac{1}{4}$ " cement and tack in place, spacing tacks about 2 inches apart. To present a surface suitable for painting, the surface of the canvas is filled by thinning a sufficient quantity of the cement with wood alcohol to the consistency of paint and brushing it into the canvas. Allow to dry and sand smooth.

A  $\frac{3}{4}$ "x1" sheer moulding conceals the edges along the sheer. The moulding should be screw fastened in place with  $1\frac{1}{4}$ " No. 10 F. H. screws, spaced 6 inches apart. The edge of the canvas along the cockpit is concealed and trimmed with

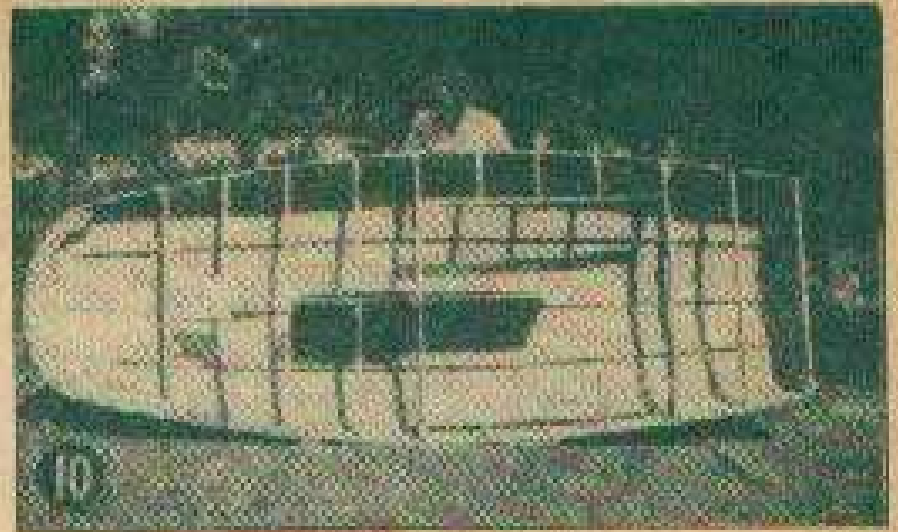


Fig. 10. Finished hull before plywood decking is applied.

the coaming boards which are screw fastened to the carlin. To secure rudder a skeg is made from  $\frac{3}{4}$ " waste and screw fastened to keel.

The entire hull should now be sanded smooth and all fastenings puttied smooth. Before calking the seams on the bottom, brush thin point into the seams and roll (a large washer attached to the end of a stick with a screw serves for this job) or tamp lightly the cotton lamp wicking, which is purchasable from any plumber's or hardware store, into the seams to within  $\frac{1}{8}$ " of the surface. Don't calk too tightly or disastrous results will ensue. With the seams calked apply a light coat of paint to seams and fill flush to surface of planking with elastic seam filler or equal parts whiting and white lead.

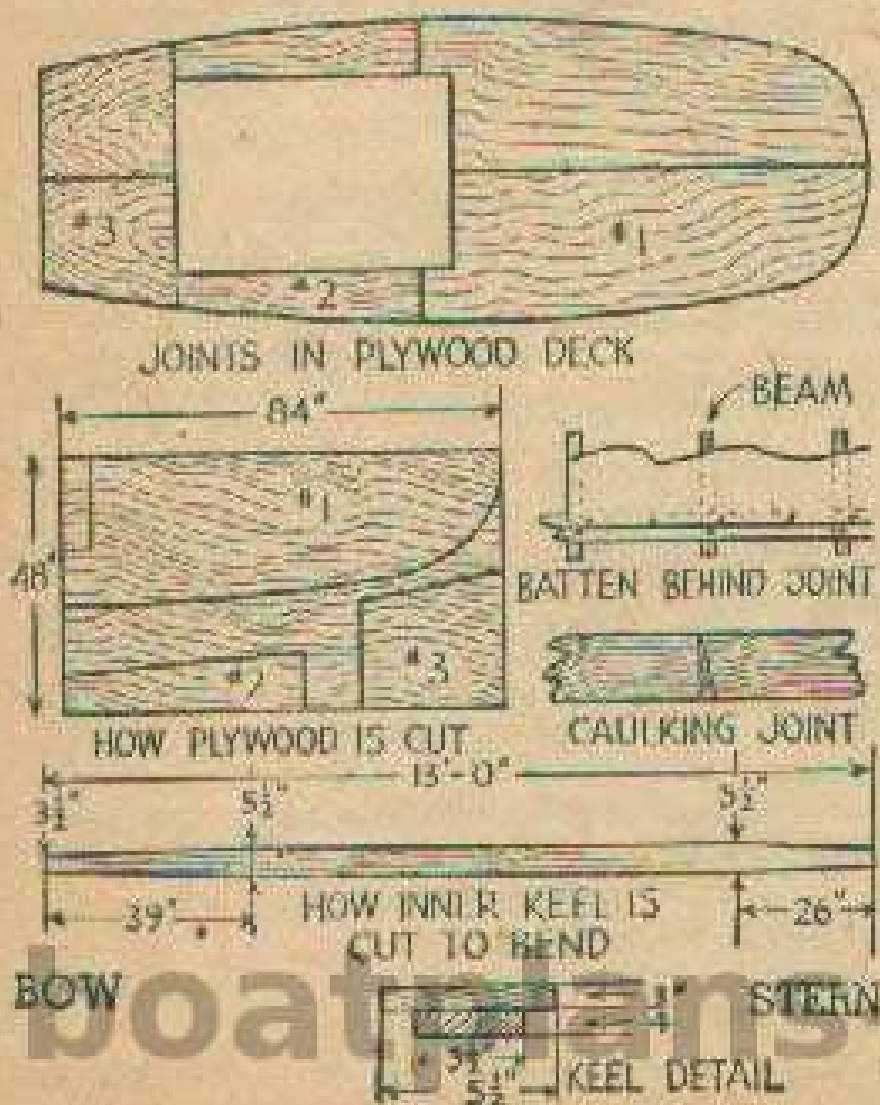
The hull should now be painted three coats of porch and deck enamel or three coats of flat paint followed by one or two coats of spar varnish. At this point all manner of fancy paint jobs will suggest themselves, although red or green for the bottom and varnished or painted sides of a contrasting color is neat. Buff decks, yellow sides, and green makes an attractive appearance, although individual preference will govern this point.

### Rudder, Mast, and Sails

The rudder is hung with regulation pintles and gudgeons or the easily made fittings shown will answer nicely. Most of the fittings are easily made from strip brass or if desirable may be purchased from marine outfitters.

The mast is built hollow, as shown, the pieces should be glued with casein glue, clamped together until dry, and the corners rounded off with a plane and spoke shave. Sand smooth and apply three coats of spar varnish. A wood plug is set in the bottom of the mast, glued, and screw fastened providing a means of securing the end of the mast to the mast step. The "I" shaped boom is both glued and screwed together, shaping the pieces as shown.

It is recommended that a cardboard pattern of the center board be made first and fitted into the well, it is then an easy matter to transfer the outline to the sheet metal and have it cut with an acetylene torch, later grinding edges smooth. This may be done at almost any garage. Hang the board in the well with a  $\frac{3}{8}$ "x4 $\frac{1}{2}$ " car-



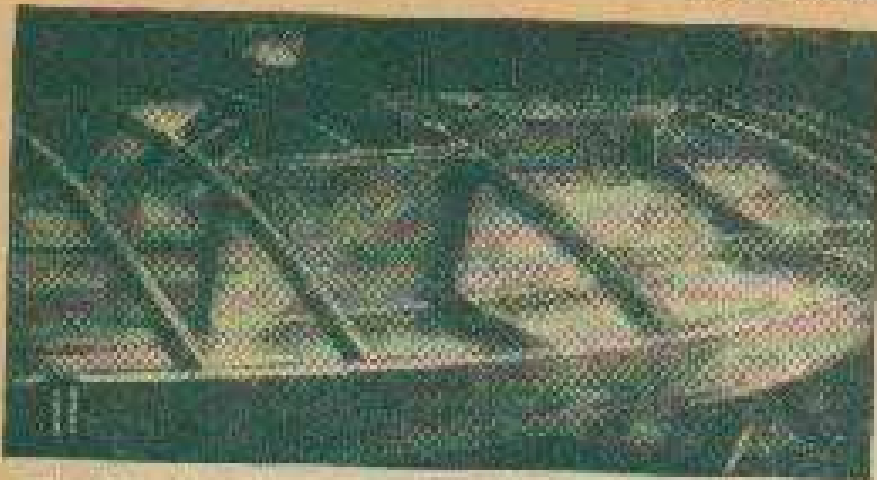


Fig. 11. Showing construction of center board well.

riage bolt, utilizing large washers on each side of the well while a few rubber washers cut from an old inner tube will prevent leaks at this point.

The sails are attached to the boom and mast with sail track and slides. The track is screw fastened to spars enabling the ready removal of sails for safe keeping and also excessive mildewing. If desired, easily made sail covers may

be made for this purpose also.

The sails are made from closely woven, heavy weight muslin or sail cloth of  $4\frac{1}{2}$  oz. weight. Allow two inches around all edges for the hem, tuck edges under twice and hem allowing an inch wide seam. A  $\frac{1}{4}$ " manilla rope should be sewn around each sail to prevent excessive stretching and grommets inserted at intervals so sails may be attached to spars.  $\frac{1}{8}$ "x1" battens sewn in pockets along the after edge of the mainsail hold that edge smooth and straight.

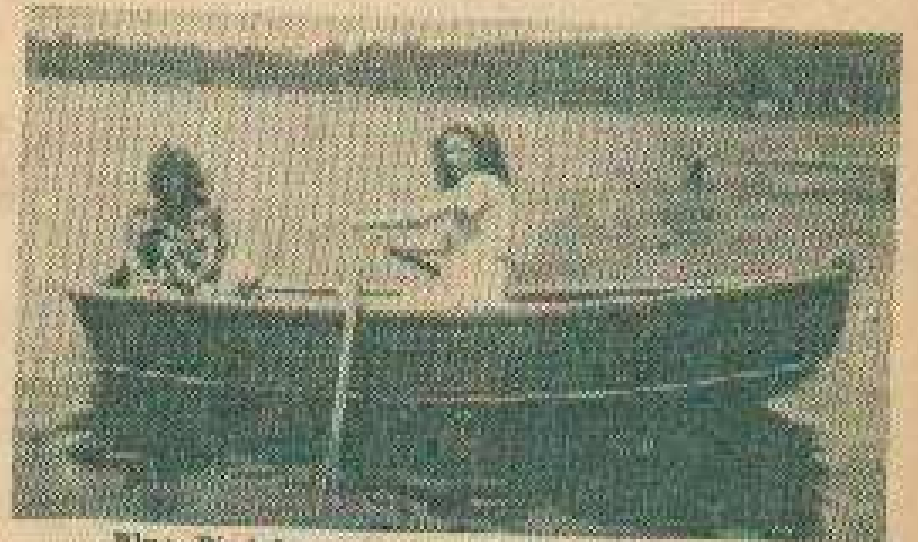
● Craft Print No. 67 in enlarged size for building Wings is available at 50¢. SPECIAL QUANTITY DISCOUNT: If you order two or more craft prints (this or any other prints), you may deduct 10¢ from the regular price of each print. Hence, for two prints deduct 20¢; three prints, deduct 30¢, etc. Order by print number, enclosing remittance (no C.O.D.'s or stamps) from Craft Print Dept. B-156, Scribner and Mechanical, 450 East Ohio Street, Chicago 11, Illinois. See caption on page 192.

## BLUE BIRD

*is a sailer*

Here is a small fast-traveling dinghy that can be equipped with oars, sails or motor

By WILLIAM D. JACKSON, N.A.



Blue Bird is an easily-handled utility boat.

### Craft Print Project No. 20

**Uses:** A sailing dinghy for rowing and general sports use on protected waters. It is adapted to car-top carrying and can be used with long shaft outboard motors of not over 3 hp.

Length: 13 ft.

Beam: 53 in.

Depth: 18 in.

Weight Complete: 110 lbs.

Seating Capacity: 2 passengers.

Construction: Exterior (waterproof) plywood planking over a longitudinally-stressed frame.

Type: Combination convex and V-bottom for utmost seaworthiness and sailing abilities. Outboard motors may be used but this boat gives its best performances under sail or oar power.

stem on wrapping paper. Now make mold frames #1, #2 and #3 by laying material for these molds on full-size outlines, marking and cutting to shape, and fastening joints with nails or stove bolts (for more permanent molds or where more than one boat will be built from the same molds). Next lay mold frames aside and cut transom #4 to shape, coat contact surfaces with Weldwood resin glue and screw fasten a  $\frac{3}{4}$  in. frame to outer edges of plywood transom with 1 in. #8 fh (flathead) screws.

Prick outline of stem through paper onto the stem material, then mark this outline and cut it to shape. If you lack full-width stem material, make this stem from 2 pieces scarfed together as

**M**OST small dinghys do not sail well but this 10-ft. long Blue Bird is fast and points fairly high. It makes an excellent utility boat, and, if sailing equipment is not available, you can use the boat with a pair of  $6\frac{1}{2}$  ft. oars or with a long shaft Evinrude outboard motor of not over 3 hp. (If you use a standard shaft length outboard motor, you'll have to cut the transom down, and injure the boat's performance.) The difficult joinery work of construction is eliminated, but you should try hard to produce close accurate joints. Use mahogany, birch or maple plywood of exterior type, formerly called waterproof. Fir plywood can be used if it is treated with first coater such as U.S. Plywood's Firzite, and then painted or varnished.

First saw the form to shape and mount it on saw-horse legs at a convenient working height. Draw full-size outlines of all frames and the