

# DINGBAT: An 8-ft.



There's some flashy performance in your small outboard motor that will surprise you when running it on Dingbat.

**You can build this most-fun-per-horsepower waterscooter on Saturday and have it in the water for a full day of boating thrills on Sunday**

**By WILLIAM D. JACKSON**

**Craft Print Project No. 323**

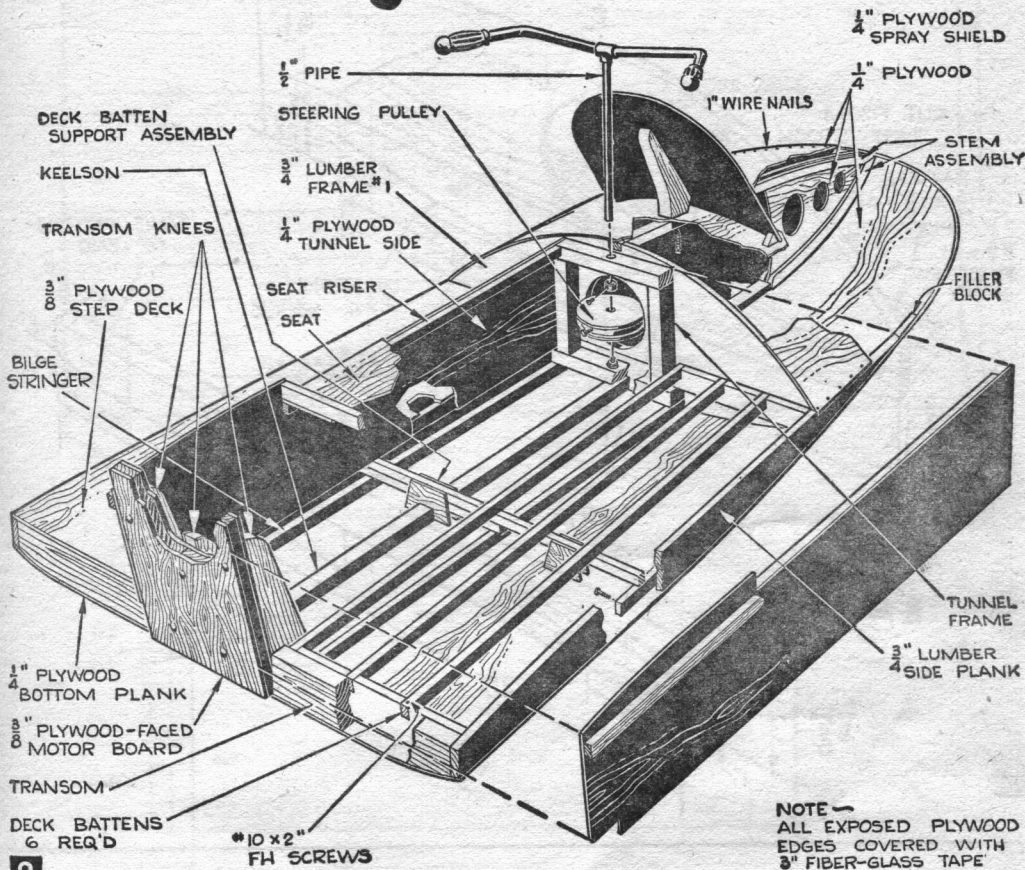
**W**ATER-SCOOTER rodeos, slalom races, and obstacle courses—well, the old pond just won't be the same again when you and your friends show your skill at these and other water sports with a fleet of *Dingbat* scooters.

With motors up to 10 *hp* and semi-mono-coque hulls that are built with space-age techniques but use ordinary lumberyard materials, you can have your share of safe boating fun without putting a strain on the budget or missing another day of the boating season.

**Bottom Plank** is laid out by first drawing a centerline lengthwise on a 4 x 8-ft. sheet of A-C fir exterior plywood (Fig. 4C). Then draw in the 21½-in. bow radius, the tapering sides, and the gore that is cut to form the plank. Use a piece of 1 x 4 lumber as a straightedge and a flexible ½ x ¾-in. wooden batten to draw the curves. Bend the batten against finishing nails partially driven at the layout points for the gore.

Cut the gore away and, beginning at the aft corners, start sawing the plank to shape. When you reach a point 8 in. from the gore, make a cut in from the edge of the panel. The remaining extensions will be used while form-

# Water-Going Motorscooter



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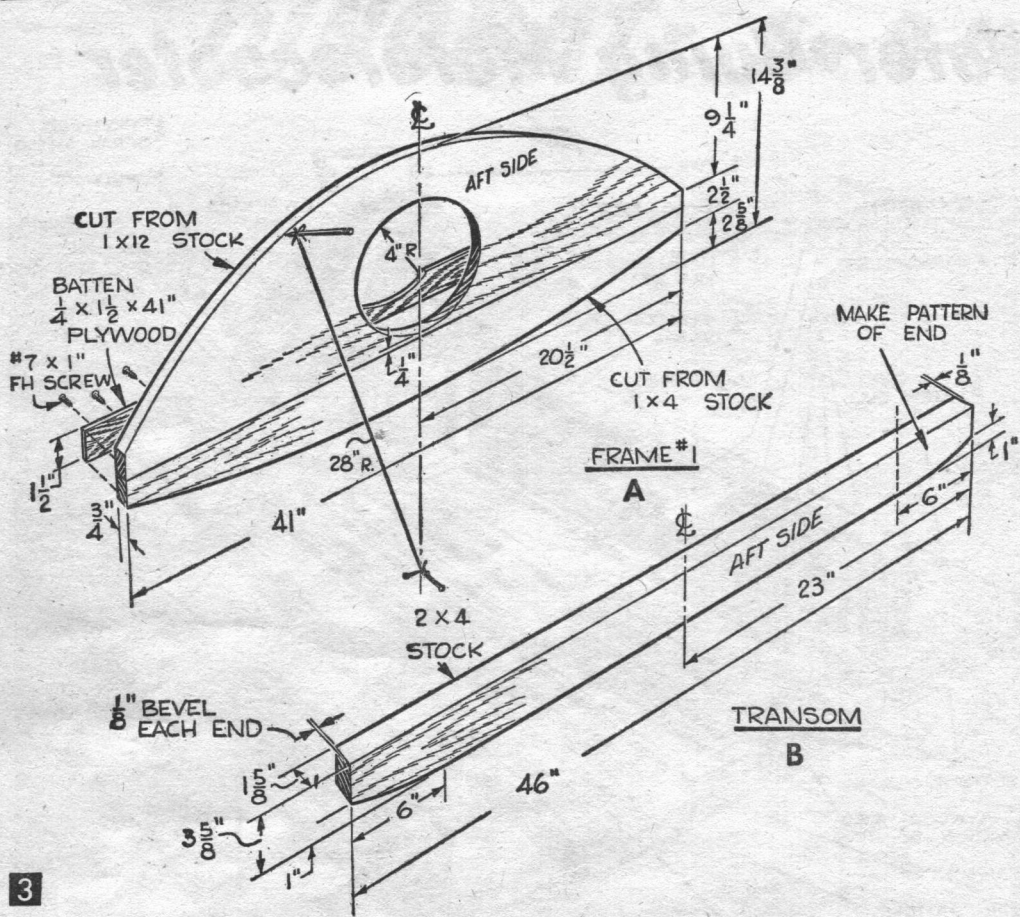
ing the plank and are cut away later. Before further assembly, rip the stock you will need for the keelson and stringers as in Fig. 6H. Also cut the transom (Fig. 3B) from 2 x 4 stock and then, making a full-size paper pattern, shape its ends on a bandsaw.

**Frame #1.** Make up the stock for the frame (Fig. 3A) by joining 41-in. lengths of 1 x 4 and 1 x 12 with a plywood batten, using glue and #7 x 1-in. fh (flathead) screws to secure the batten. Then lay out the centerline and locate the sides of the frame 20 1/2 in. on each side of it. Next draw the arc for the deck and locate the tops of the side-plank flats where this arc connects the sides of the frame. Also draw in the clearance hole for the steering drum and the 2 5/8-in. curve for the bottom of the frame. The frame is now ready to be bandsawed to shape.

Next rip the four piece for the tunnel frame from 2 x 4 stock and trace their outlines on frame #1 (Fig. 5A). Then glue these parts in place and drive #8 x 1 1/2-in. fh screws into them through #1 frame. When finished, drill a 1/4-in. hole through the lower framepiece to take the 1/2 x 4-in. steering post mounting bolt.

When the transom and #1 frame are complete and notched as in Fig. 5, position them on the bottom plank as in Fig. 6A and trace their outlines on the plywood. Then remove them and drill 5/32-in. holes to locate #7 wood-screws at 3-in. intervals in the center of each outline. Coat the mating surfaces with glue and secure the parts with #7 x 1-in. fh screws. Drive enough screws to hold the parts in place and then turn the assembly over to drive the rest.

Cut the bilge stringers (Fig. 6A) to length



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and slide them through the notches in the frame so their ends are flush at the aft edge of the transom. Then locate screw holes and attach the stringers with glue and #7 screws as you did the transom and frame.

When this is complete, you are ready to begin shaping the bottom plank, borrowing a few tricks from aviation metalsmiths. First wrap several turns of light rope around the extensions and tighten them with a smooth bar (Fig. 7). As the gore closes, you will find spots that need trimming to allow the plywood to join tightly. This trimming is done by inserting a handsaw in the slit to remove equal amounts of material from each side.

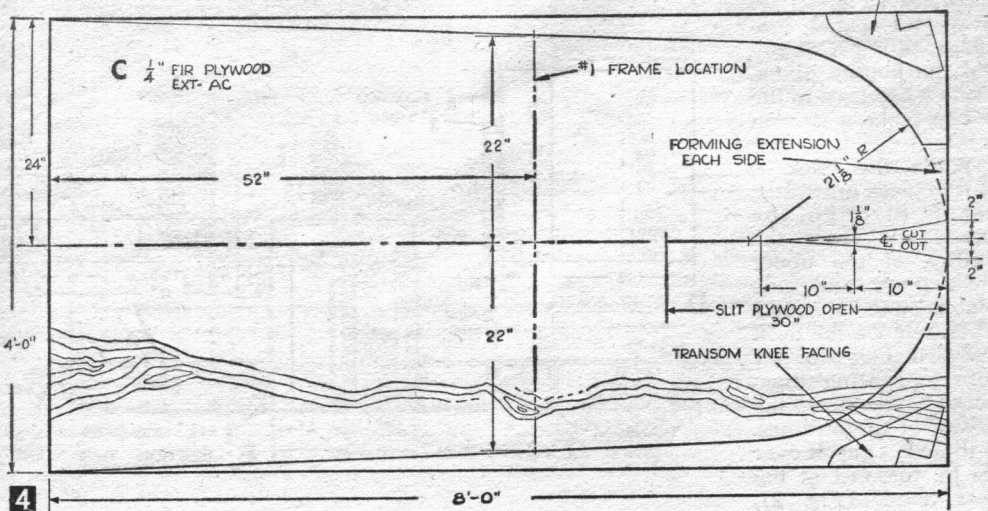
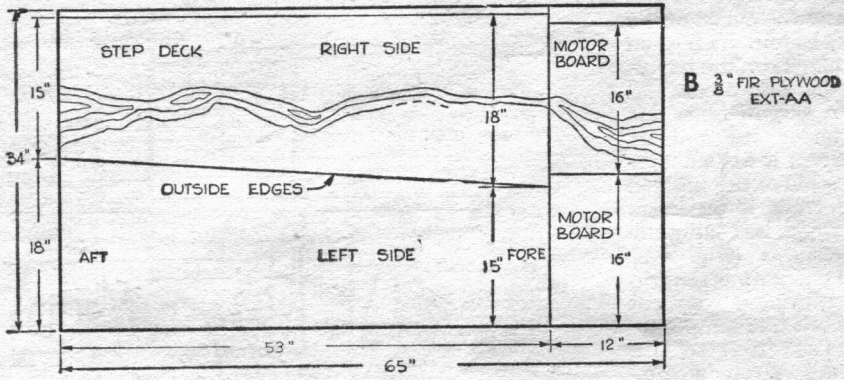
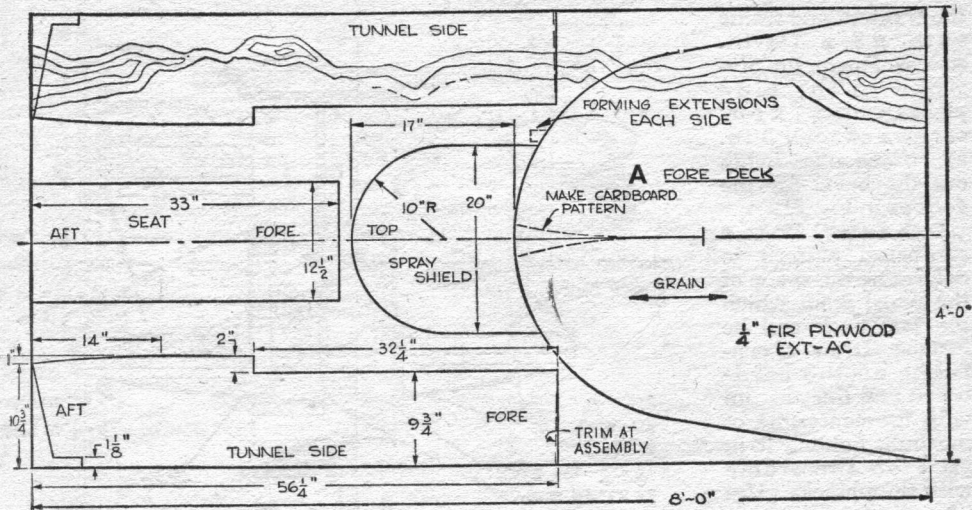
When the slit is joined so no gaps of over 1/16 in. remain, slide the keelson through the transom until it meets the curve of the stem. Shape the keelson (Fig. 6K) to fit this curve and then install the keelson, using glue and a double row of #7 x 1-in. screws where it meets the slit joint.

Make a cardboard template of the curve

along the slit joint from the tip of the keelson to the stem and use this to lay out the lower edge of the bottom stem piece (Fig. 60G). Saw this piece to shape on a bandsaw and then saw it again lengthwise to provide two pieces of the same shape and size.

**Lay Out Upper Stem (Fig. 1)** to extend from frame #1 to the fore end of the lower stem, and cut a slot in this for the 1/4-in. stem knee (Fig. 6G). The top and bottom edges of this assembly are faired with a wood rasp and block plane and, when the lower edge fits, coat the contacting surfaces with glue and attach the stem to the plank with #7 x 1-in. fh screws. Space these 2 in. apart on each side of the slit joint.

Next cut the side planks to shape as in Fig. 6L and set them in position on the ends of the transom and frame. Use a bevel gage to determine the shape of the lower edges where they meet the bottom plank, or simply trial fit them to the plywood. Then coat the mating surfaces with glue and fasten the planks to



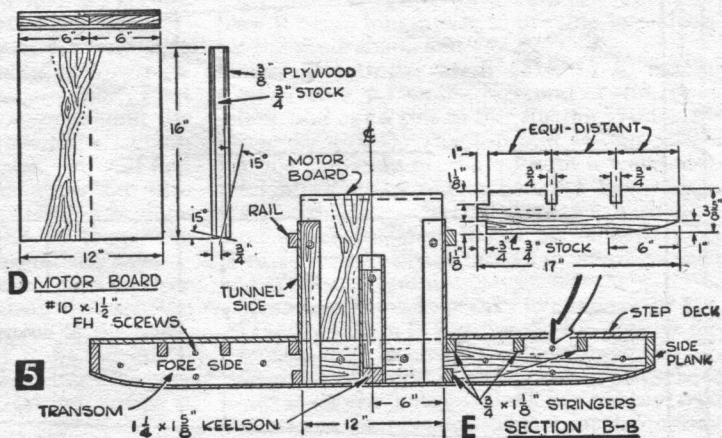
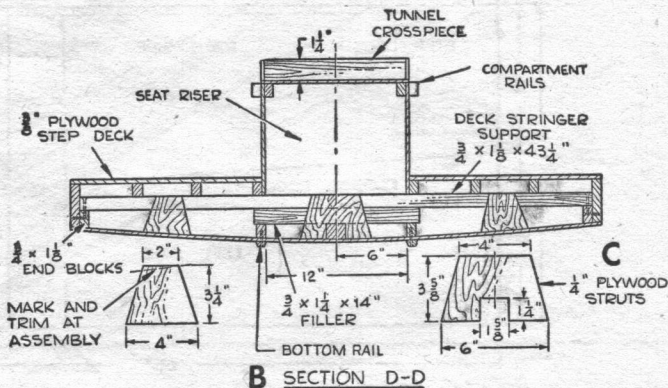
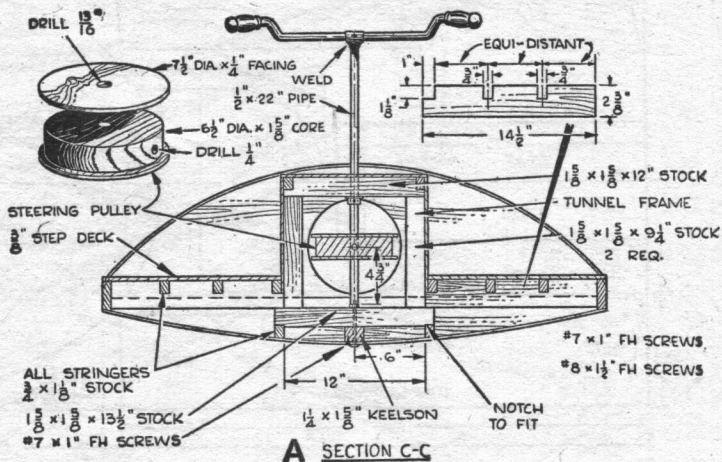
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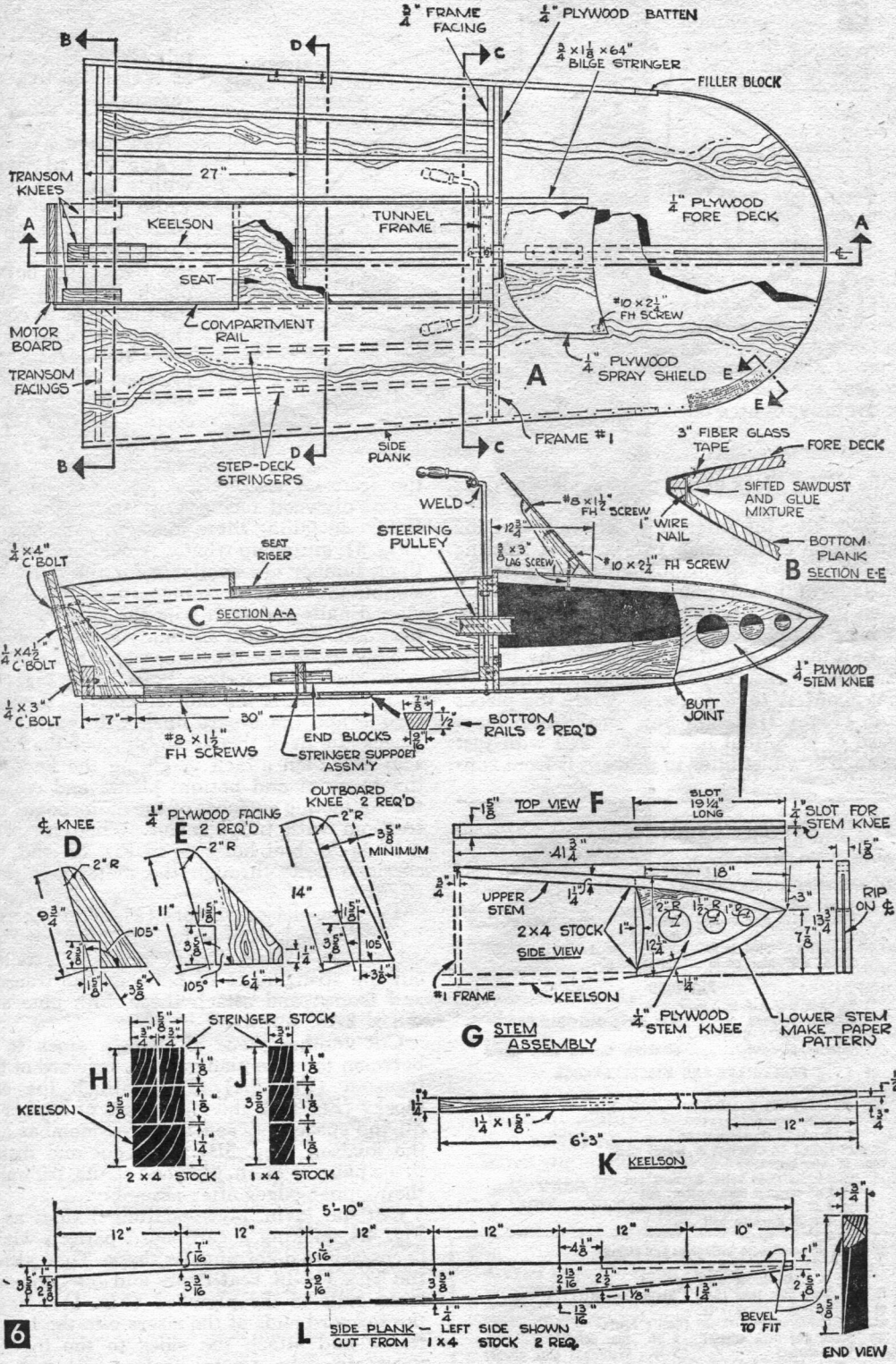
the transom and frame with #8 x 1½-in. screws. Fasten the plywood to the side planks with #7 x 1-in. screws spaced 3 in. apart, and then rough out the bevel for the deck as in Fig. 6L.

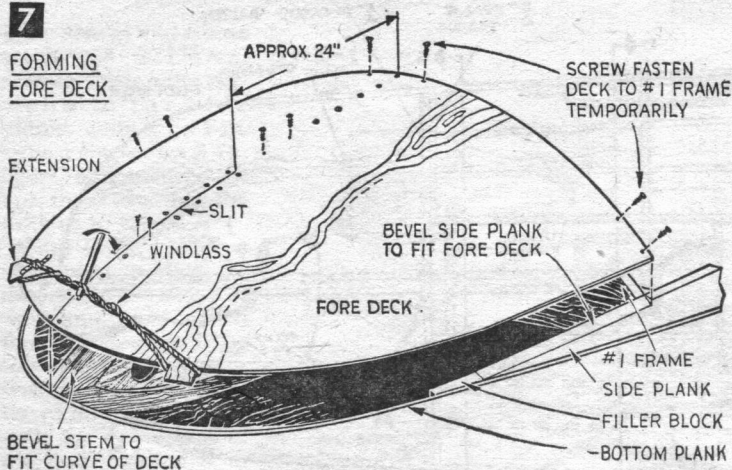
**Fore Deck.** Make a cardboard pattern to determine the shape of the panel from which the fore deck will be formed. Draw a centerline on the cardboard and line this up with the centerline of the hull, holding it in place on the frame with thumbtacks. Use a heavy shears to gradually cut away the pattern along the centerline (Fig. 7) so it can follow the curve of the stem to join the bottom plank. Trim the bevels on the side plank and stem as you form this pattern.

When it fits smoothly, remove the pattern and trace it on ¼-in. plywood, including the extensions (Fig. 4A) and a generous margin for trimming. Now cut this out and temporarily fasten it to the frame with wood-screws spaced about 6 in. apart. Use the rope windlass (Fig. 7) to draw the panel into shape, fitting it as you did the bottom plank, using a handsaw in the slit to make a smooth joint.

While the deck is still in place for fitting, reach through the frame and trace the outline of the upper stem piece and side planks on the plywood. Then remove the deck and drill holes for #7 screws, spacing them about 3-in. apart in the center of the outlines. If there is a gap of over ¼ in. forward of the side plank (Fig. 2),





FORMING  
FORE DECK

glue a filler block at this point before the deck is fastened.

Now give the interior of the hull and the underside of the deck two coats of sanding sealer and let it dry. Apply glue to the mating surfaces of the side plank, frame, and stem and then attach the deck with #7 x 1-in. screws, using a double row along the slit joint.

Join the deck and bottom plank by inserting a wood rasp between them and cutting a flat about  $\frac{1}{4}$  to  $\frac{3}{8}$  in. wide where the pieces join (Fig. 6B). Use a putty knife to place a bead of glue, that has been mixed with just enough sawdust filler to prevent it from run-

## MATERIALS LIST—DINGBAT

Amt.	Req.	Size and Description	Use
<b>LUMBER</b>			
3		(2x4) x 8' pine or fir	Keelson, transom, stringers, stem
3		(1x4) x 10' pine or fir	framing, stringers, side planks, motorboard
1		(1x12) x 4' pine or fir	upper frame half
1		(2x8) x 8' pine or fir	pulley core
<b>PLYWOOD</b>			
1		$\frac{3}{8}$ " x 3' x 6' A-A fir exterior plywood	step decks, motorboard
2		$\frac{1}{4}$ " x 4' x 8' A-C fir exterior plywood	planking, tunnel, seat, shield
<b>FASTENINGS AND MISCELLANEOUS</b>			
1	pr.	#7 x 1" fr woodscrews	
6	doz.	#6 x $1\frac{1}{2}$ " fh woodscrews	
4		#8 x 2" fh woodscrews	
12		#10 x $1\frac{1}{4}$ " fh woodscrews	
1	lb.	1" ringed (Anchorfast or Maze) nails	
3	doz.	1" wire box nails	
1		$\frac{1}{4}$ x 4" carriage bolts, washers, nut	
1		$\frac{1}{2}$ x 4" carriage bolt, washer, nut	
2		$\frac{1}{4}$ x 3" carriage bolt, washer, nut	
1		$\frac{1}{4}$ x $3\frac{1}{4}$ " machine bolt	
1		$\frac{3}{8}$ x 3" lag screw	
1	pr.	bicycle handlebars with grips and clamp	
1		$\frac{1}{2}$ " dia. x 22" iron pipe	
1		$\frac{1}{16}$ " I. D. collar with setscrew	
4	ft.	$\frac{3}{4}$ " glass fiber tape (Sear's Elgin Tape Kit)	
1	qt.	butyl sealer (Stay Tite)	
2	qt.	pentachlorophenol sealer (Sear's Penta)	
1	qt.	porch and deck enamel	1 pt. spar varnish
$\frac{1}{2}$	pt.	trim enamel	3 lb. Weldwood glue powder

ning into the joint. Use a flour sifter to get fine, clean sawdust and mix this in a glue such as *Weldwood* that will remain somewhat flexible after it has cured.

Now have a helper brace the plywood with a piece of 2 x 4 while you drive 1-in. wire nails, 2 in. apart  $\frac{1}{2}$ -in. from the edge of the deck and bottom plank (Fig 6B). Turn the hull over to clinch the nails and then dress the edges of the plywood with a wood rasp to provide a cross section as in Fig 6B.

**Transom Knees.**

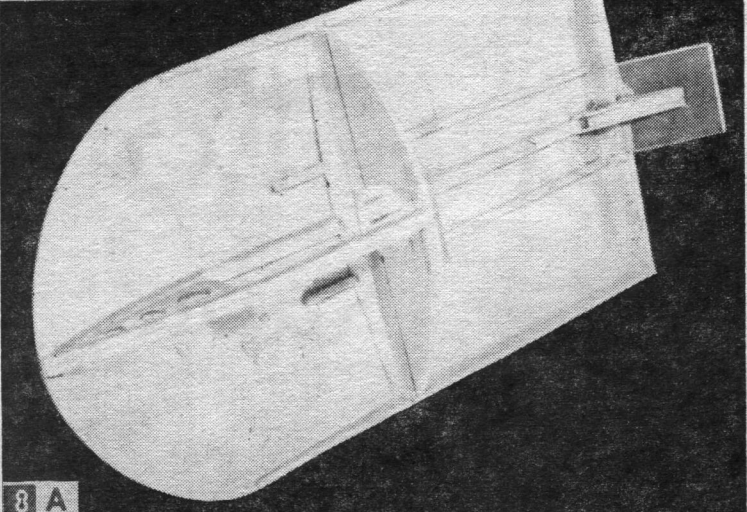
Next lay out and cut the transom knees (Fig. 6) and a pair of  $\frac{3}{8}$ -in. plywood facings for the center knee. Before installing these make the motorboard (Fig. 5), gluing up whatever widths of  $\frac{3}{4}$ -in.-thick lumber are available for the core. Assemble the core and facing with glue and 1-in. ringed nails and then trim the core to fit the plywood. Bevel this assembly as in Fig. 5D.

Now assemble the knees and motorboard with glue and carriage bolts as in Figs. 5B and 6C, locating the shorter knee on the centerline and the others flush with each edge. Check the fit of this assembly over the transom and then attach it, gluing the knees to the transom and bottom plank, and coating the contacting surfaces of the motorboard and transom with butyl sealer. When in place, drill  $\frac{1}{4}$ -in. blot holes as in Fig. 5E and run carriage bolts through the motorboard and transom.

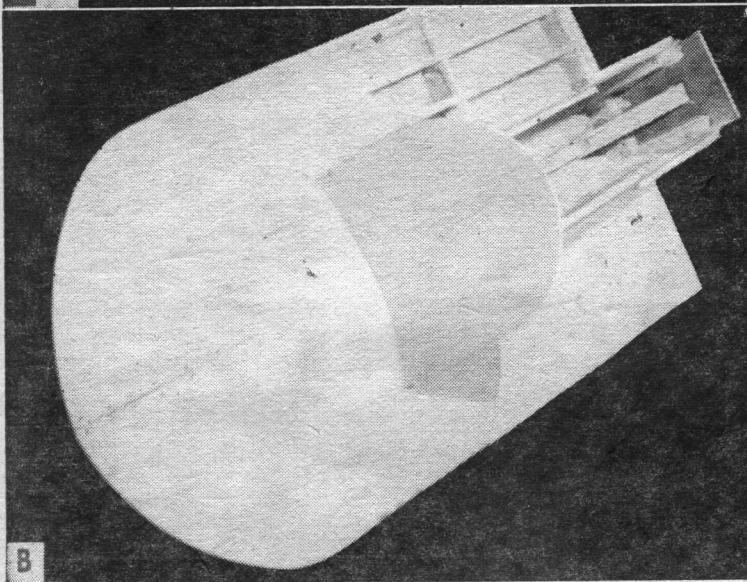
The step-deck stringers (Fig. 6 are carried in  $\frac{3}{4}$ -in.-thick lumber facings cut as in Figs. 5A and 5C. When the facings are installed cut the stringers to fit between the transom and frame, and attach these with glue and #8 x 2-in. screws.

Cut another piece of stringer stock to fit between the side planks 27 in. forward of the transom (Fig. 6A). Then attach the end blocks (Fig. 6C) and rip a piece of lumber to fill the space between this crossmember and the keelson (Fig. 5B). Also cut and install three pairs of  $\frac{1}{4}$ -in. plywood struts, trimming their upper edges after assembly.

Cut the  $\frac{1}{4}$ -in. plywood tunnel sides as in Fig. 4A, making a cardboard pattern where necessary to determine its shape. Then attach the  $\frac{3}{4}$  x  $1\frac{1}{8}$ -in. seat risers and the compartment rails to the plywood (Fig. 11). Notch the forward ends of the risers into the tunnel frame and attach the sides to the inboard deck stringers, tunnel frame, and transom



8 A



8 B

Semi-monocoque hull, featuring techniques used in aircraft production, provides strength and an efficient underwater design for Dingbat without resorting to heavy, time-consuming framework and planking.

knees, using glue and 1-in. ringed nails.

Before attaching the seat, weld a 22-in. length of 1/2-in. pipe to a bicycle handlebar clamp, cutting the clamp so its cross section most nearly matches that of the pipe. Insert this steering assembly in the pulley (Fig. 1) and drill and tap the pipe for a 1/4-in. machine bolt. Then drill the upper tunnel framepiece to line up with the mounting bolt and assemble the steering post, collar, and pulley (Fig. 5A).

Next cut the spray shield and knee (Fig. 1) to shape. Saw off the forward corner of the knee and cut this into two pieces to be used

as side brackets for mounting the shield. Then drill a 3/8-in. hole through the upper stem and deck to mount the knee with a 3/8-in. lag screw. Fasten the shield to the knee with glue and #7 x 1-in. screws, and through the end brackets with #8 x 1 1/2-in. screws.

Now install the steering cable and clamps, looping the cable around the steering pulley twice before leading it aft around the motorboard to keep it taut until ready for use.

Then coat the underside of the seat and step decks with sanding sealer and, when dry, attach them with #7 x 1-in. screws spaced 4 in. apart. Use butyl sealer at the step-deck joints, but leave those at the seat dry and place flat washers under the head of each screw to allow the seat to be removed when installing or working on the steering cable.

**Before Painting the Hull**, apply 3-in. widths of fiber-glass tape to the seam between the bottom plank and deck (Fig. 6) and at all exposed plywood edges. Follow the manufacturer's instructions when applying this and, when it has cured, give the entire hull one coat of porch-and-deck

enamel. Trim Dingbat in a contrasting color to make it highly visible and waterproof it with a coat of spar varnish.

When the motor is in place, run the cable ends through the tiller bar of the motors. Secure these with cable clamps.

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