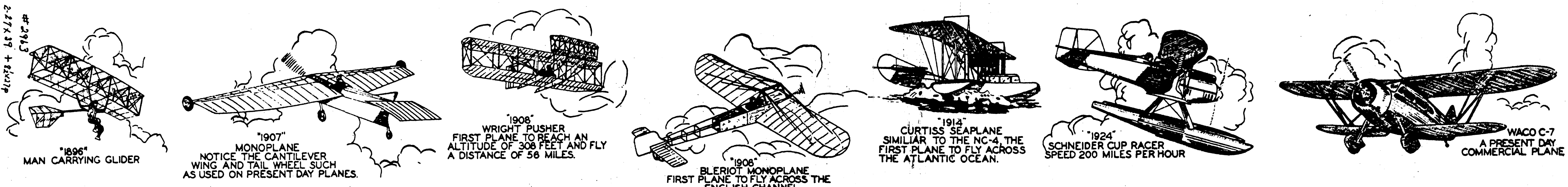
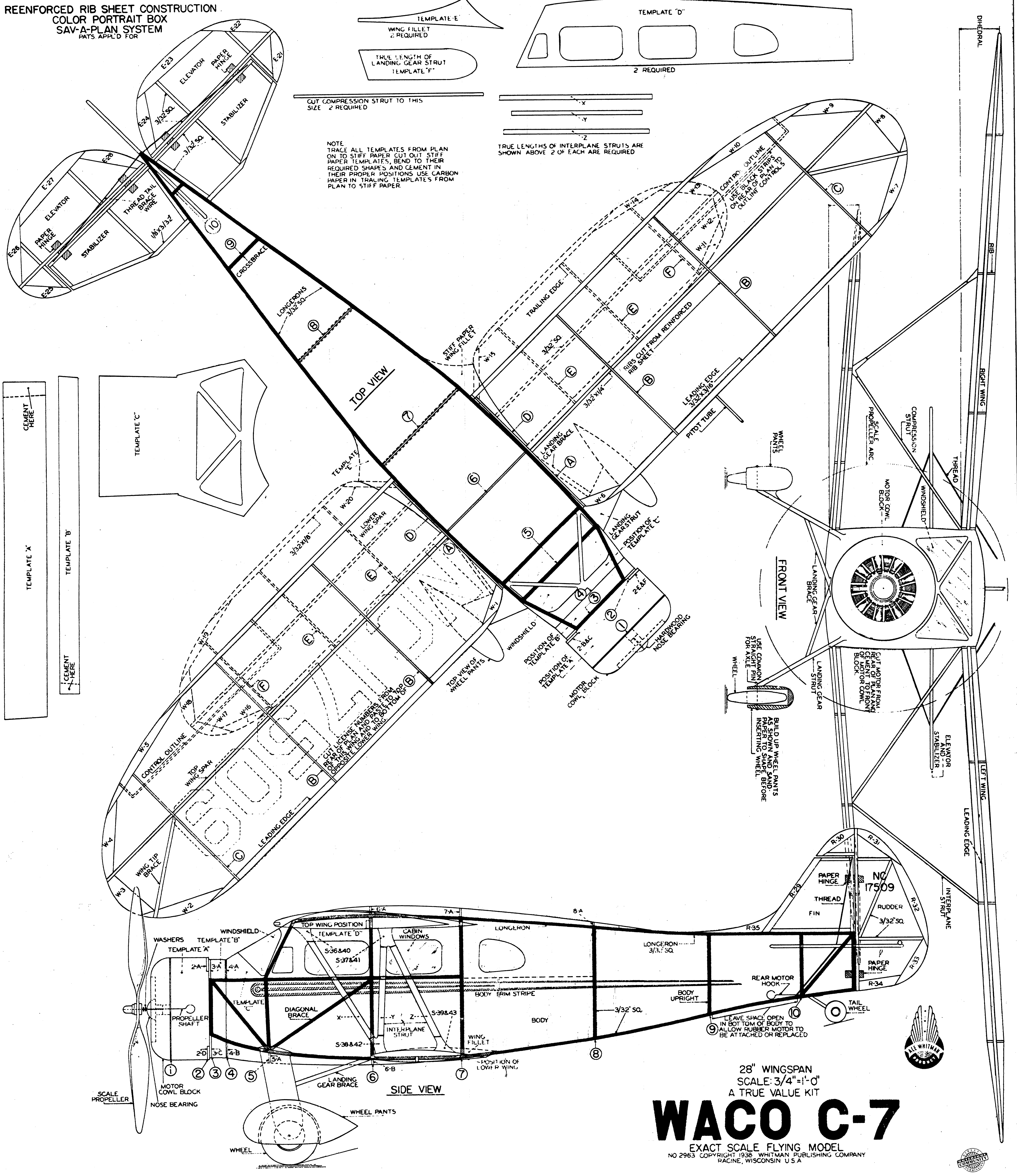
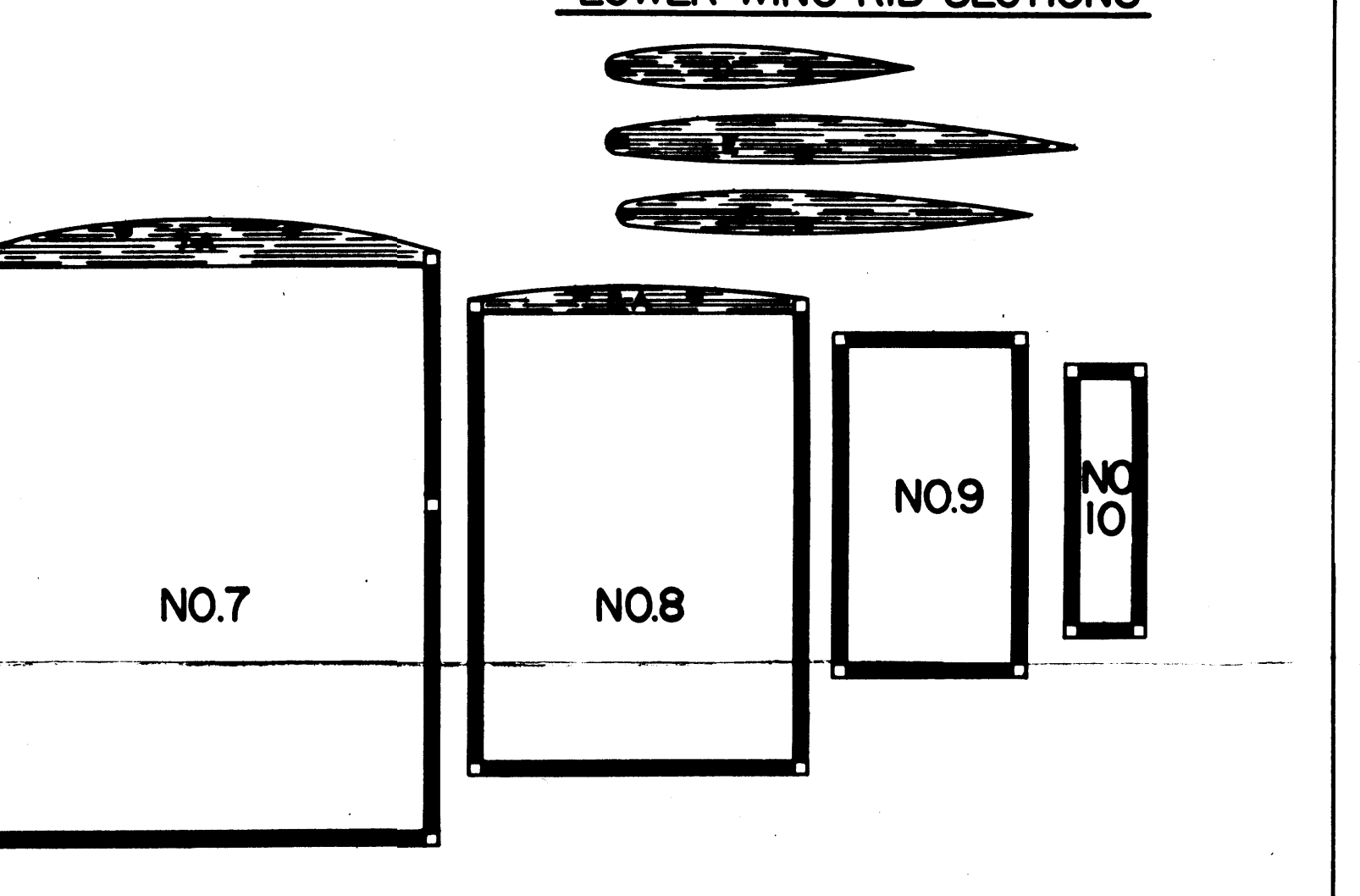
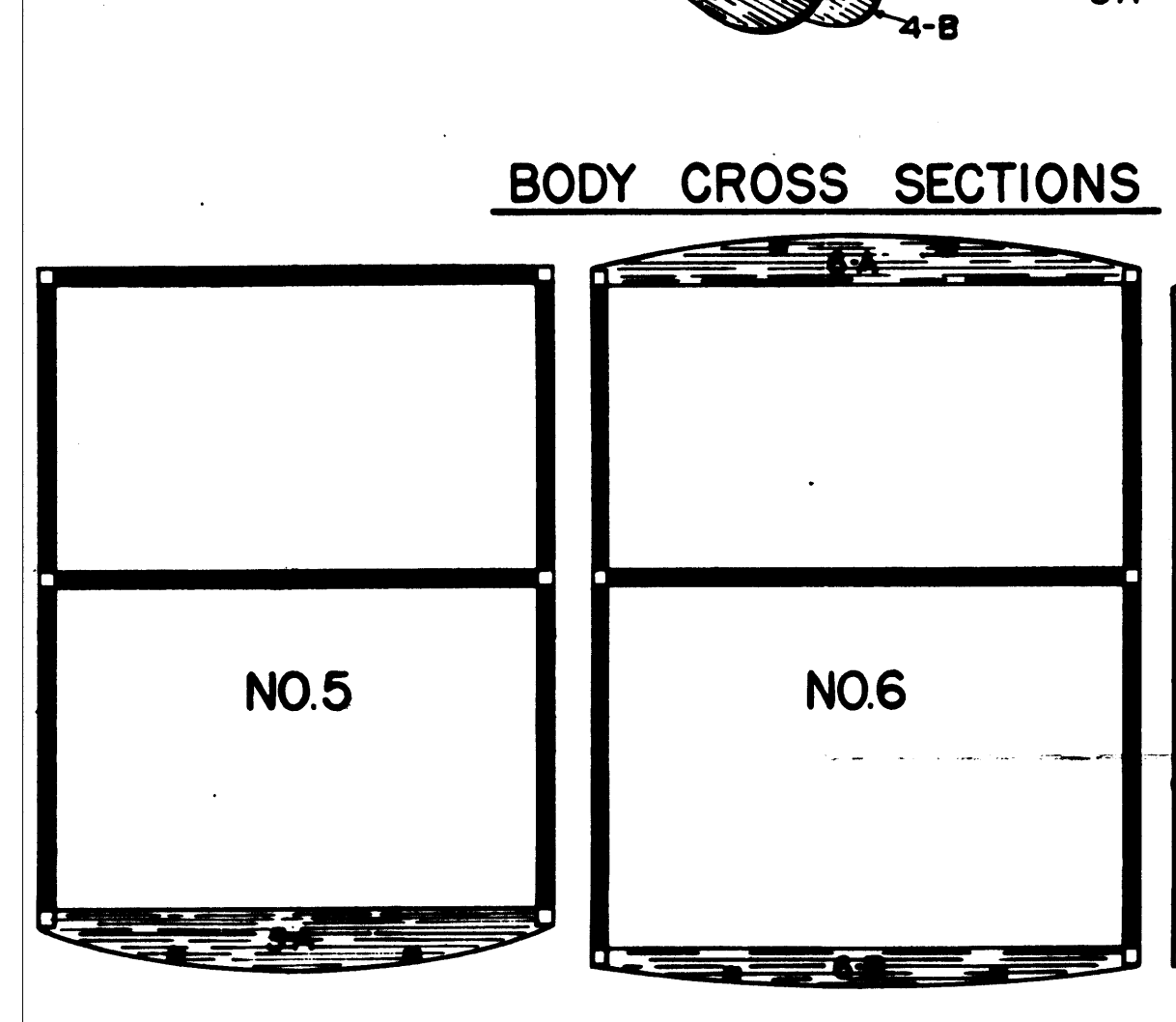
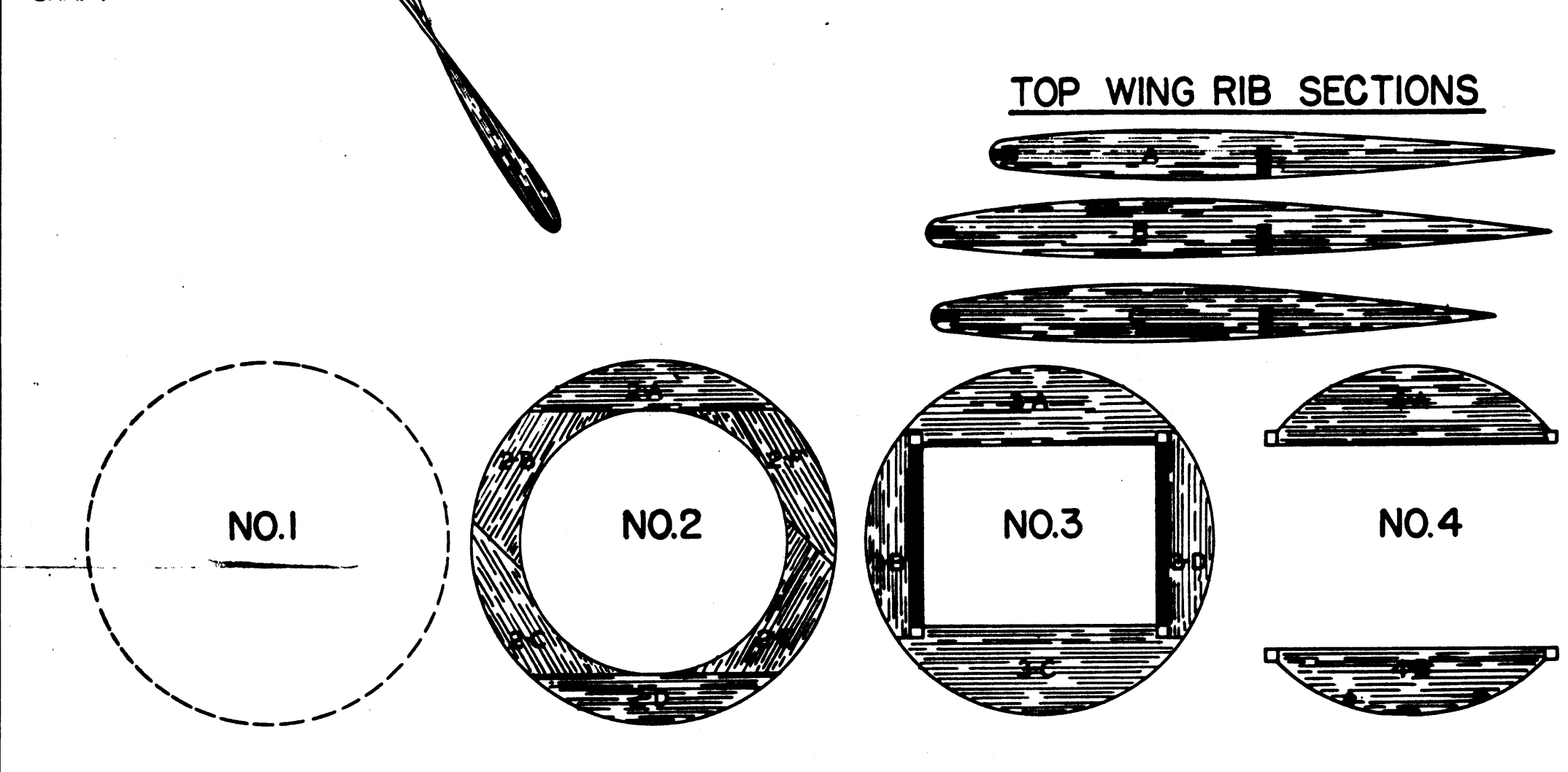
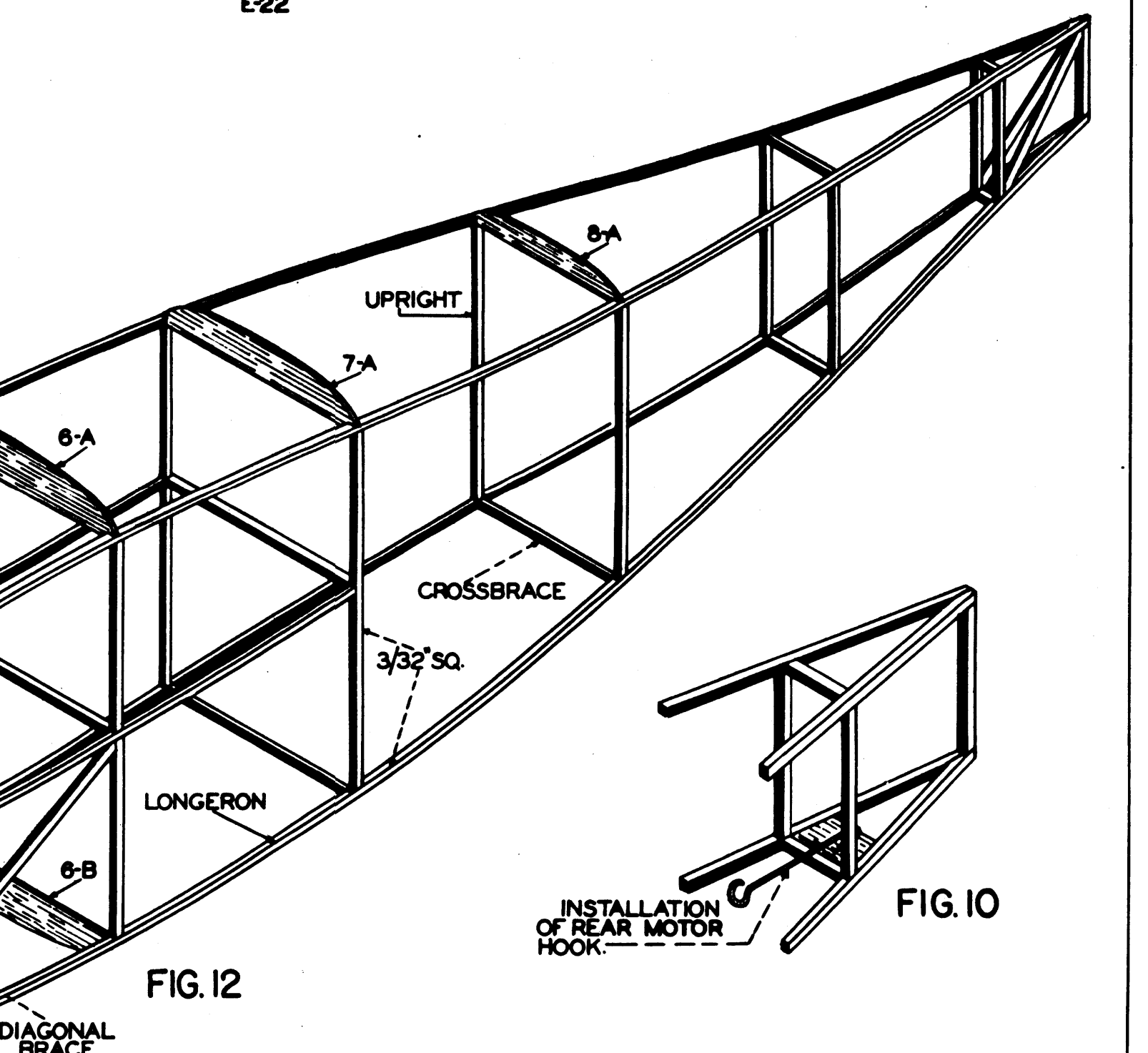
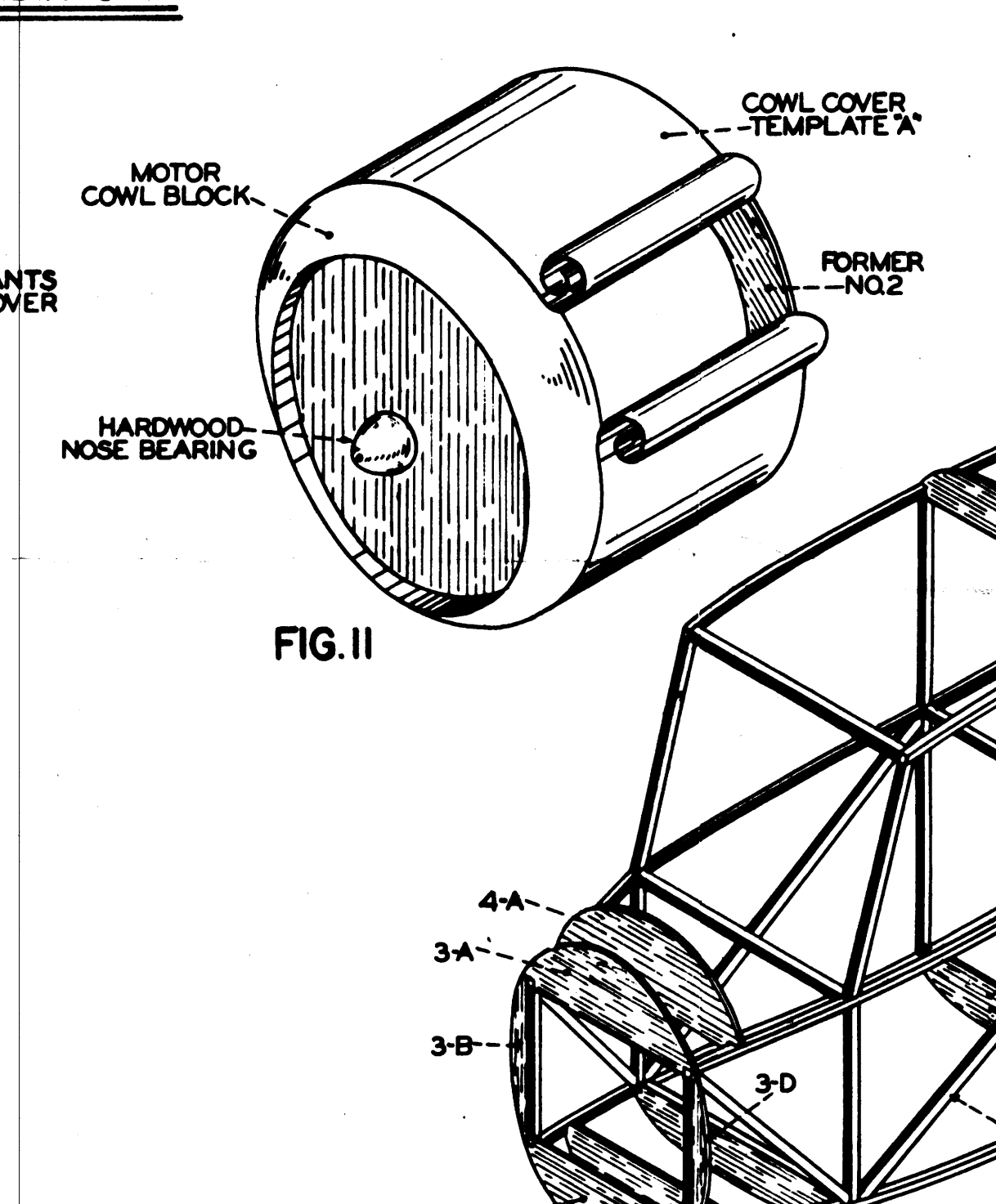
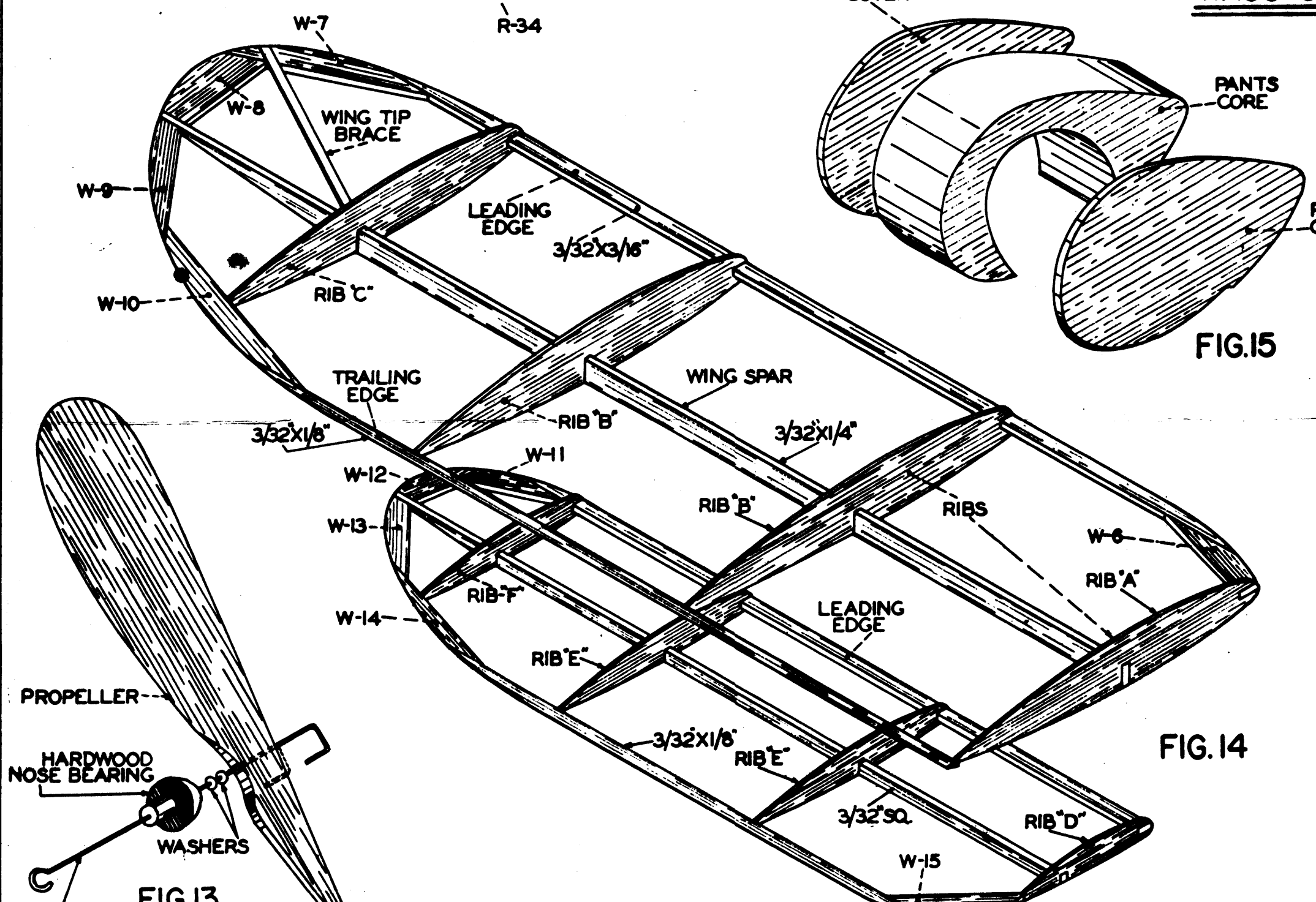
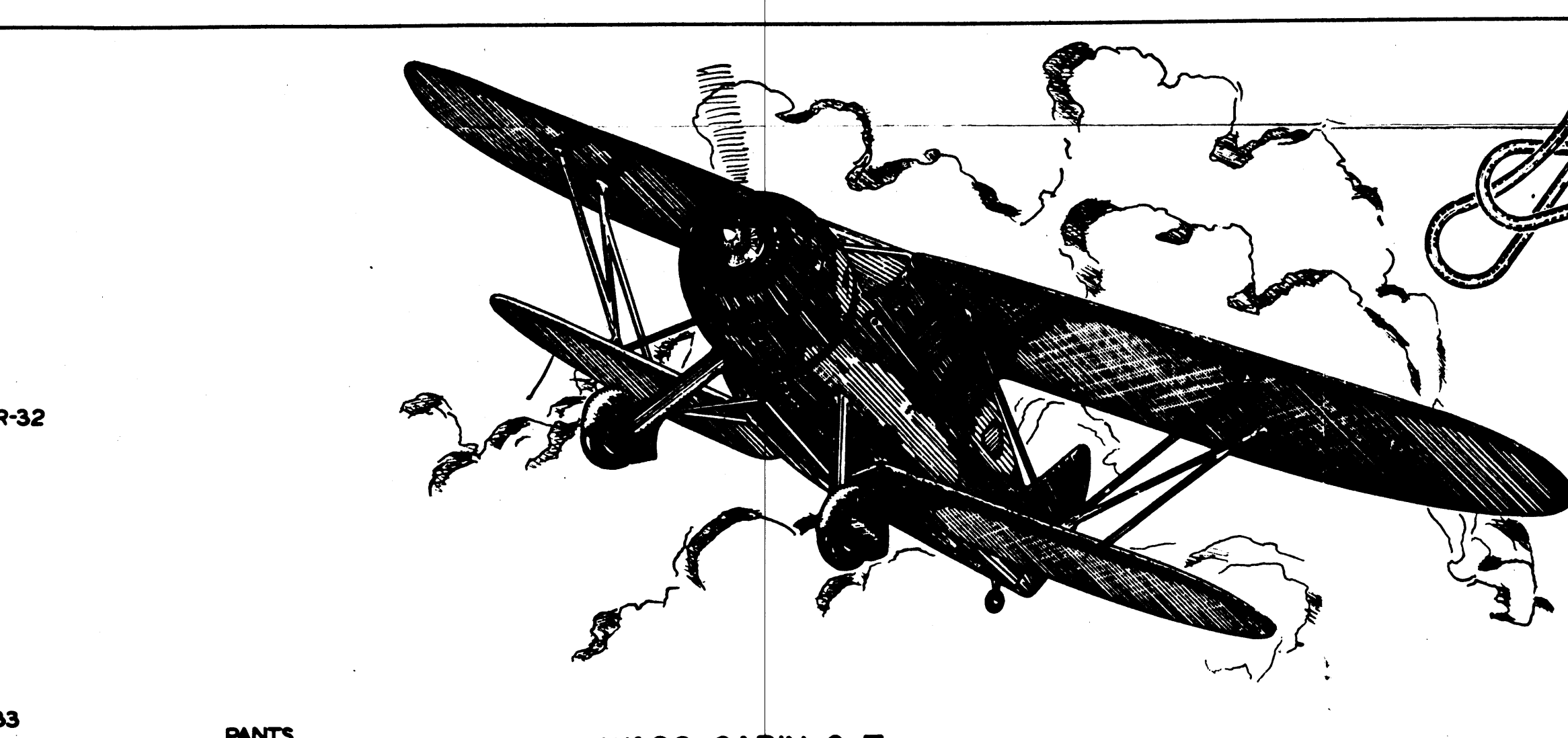
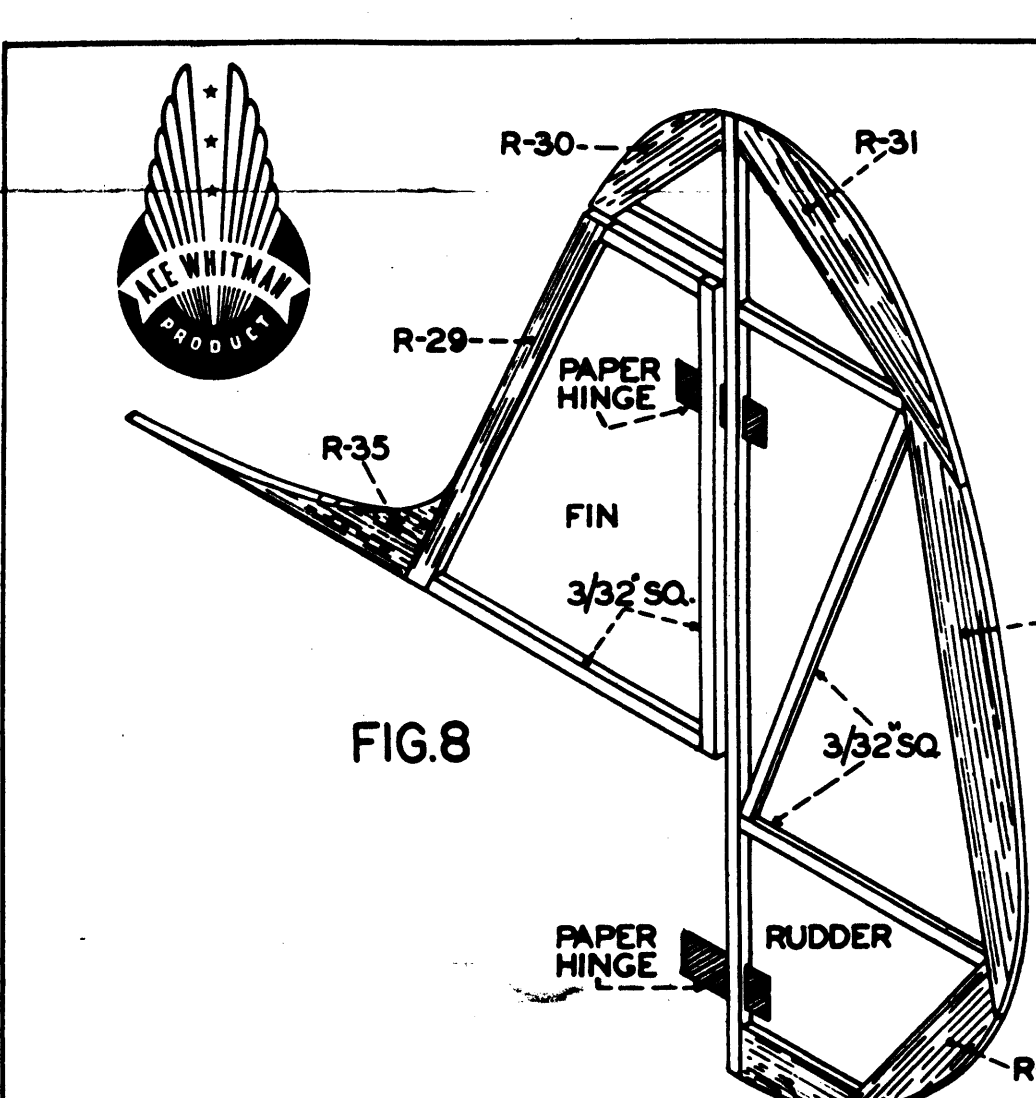
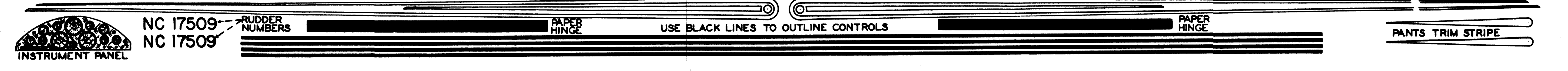


TYPICAL OR GENERAL METHOD OF HOLDING VARIOUS PARTS INTO POSITION DURING FIRST STEPS OF CONSTRUCTION

REINFORCED RIB SHEET CONSTRUCTION
COLOR PORTRAIT BOX
SAV-A-PLAN SYSTEM
 PARTS APPLIED FOR





DETAILED INSTRUCTIONS

Study plans, perspective sketches and instructions carefully and thoroughly before attempting model construction. Time and patience are required to make this exact scale model. Always bear this in mind. As only one part of the plan will be used at a time, the remaining portion can be folded over for future reference and study during the process of assembly. The following few additional tools and materials, other than those supplied, are necessary to build this airplane model: A razor blade (preferably one with a heavy rounded back); a small drawing board upon which to work and cement parts; about fifty small thin pins; a pair of pliers for bending shaft; some small pieces of sandpaper; one-half cup of ordinary flour; and a piece of waxed paper 12x36 inches.

Step No. 1
Re-enforced Printed Sheets and Balsa Block.
Make a thick paste from flour and water. Cut the Sav-A-Plan strips from top and bottom of plan. Cut rib and motor block sheets from Sav-A-Plan strip, apply paste (or rubber cement) to back of each and to balsa wood surface. Mount paper strips on corresponding balsa pieces, press together and carefully smooth out all wrinkles. While drying, place between two flat surfaces and put a weight on them (some old magazines or books) to prevent warping. Let these parts dry thoroughly before removing weights. DO NOT remove paper re-enforcements from various pieces after they have been cut from rib sheet. A plain paper re-enforcement sheet can be cemented to bottom or backs of rib sheets when even stronger models are required.

Step No. 2
Sandpapering. Material: Wood Block and Sandpaper (not furnished).
For sandpapering obtain a small block of wood and fold sandpaper tightly around it. Rub sandpaper covered block with an outward motion on all parts of the model. Rub on all balsa strips. Avoid rounding edges of square longitudinal pieces.

Step No. 3
Spars, Etc. Material: Sanded Balsa Strips.
From the rib sheet select the correct spar or required on the plan for leading edge, spar and trailing edge. Do this before any notches are cut in ribs so that it will be very close or tight. A good close or tight fit requires less cement. Consequently, less weight will be added to the finished model.

Step No. 4
Wing-Ribs. Material: Re-enforced Balsa Rib Sheets.
With a razor blade cut out illustrated ribs and wing tips from re-enforced rib sheets as they are needed in the process of building the wings. This will prevent pieces from being lost. Begin assembly by working over the wings in the top view. It is advisable to place a piece of waxed paper over plan to prevent wood parts from adhering to and tearing or soiling plan when they are removed.
While working over plan hold down balsa parts with small thin pins. (See Fig. 1 and 5.)
The wings are assembled in two units, namely, right and left panels. Place spars and trailing edges in position—insert ribs beginning with A, B, C, etc. After all ribs are in place, fit leading edges in position and complete wings by inserting wing tips. (See Fig. 5.) Cement all joints carefully and when they are thoroughly dry remove wings from plan. Proceed to build lower wing panels in the same manner.

Step No. 5
Elevators and Stabilizer. Material: Balsa 3/32" sq., 3/32" x 1/4" and Re-enforced Rib Sheets.
The tail is assembled in two units, namely, stabilizer and elevator. Work over top view. Sandpaper all strips as explained in Step No. 2, before cutting to required lengths. Use waxed paper and pins in assembly. Cut cross-members and cross-braces to required sizes and cut curved re-enforced tips from rib sheets. First, place cross-members and then front and rear edges in position. Pin down firmly. Apply small amount of cement to cross-braces and re-enforced curved pieces before inserting and pinning down into position. (See Fig. 3.) When all pieces are in their proper places, allow cement to dry thoroughly before removing from plan. Two black strips are printed on rear of plan. These are to be used for paper hinges. Cut off hinges to required sizes and slit balsa cross-members to required widths. Cut out hinges and insert into slots. Apply cement only to outer edges of hinges.

Step No. 6
Rudder. Material: Balsa 3/32" sq., and Re-enforced Rib Sheets.
Cut required parts from re-enforced rib sheets. Assemble rudder in two units, namely, first the fin and then the rudder. Work over side view. Rudder is assembled in the same manner as stabilizer. Allow cement to dry thoroughly before removing from plan. Paper control hinges can now be inserted.

Step No. 7
Body-Sides. Material: 3/32" sq. Balsa.
Cover side view of plan with waxed paper.
Assemble body sides over side view. First pin down longerons. Next put in upright members. Start at front and work toward rear. Cut uprights to size and apply cement to ends before dropping into their correct positions. Now put in diagonal braces (See Fig. 4.) When thoroughly dry, remove body sides from plan. As two such sides are required, replace waxed paper over plan and make another similar body side.

Step No. 8
Body-Square. Material: 3/32" sq. Balsa and Re-enforced Rib Sheets.
The second body construction step is the assembly of the two sides into the completed frame. Work over top view. Start construction by cutting out formers and cross-braces to size. Start at rear and work toward front. After or bend longitudinal where necessary. Cement all joints carefully. After all formers and cross-braces are in place and cement is dry, check trueness of body by holding frame so that it can be viewed from front to rear along center line. Check corners to be sure they are at right angles and perfectly aligned.

Step No. 9
Body-Former Notches.
After the body has been assembled into a square frame, cut out stringer notches. Make them a little smaller than the printed outlines to assure a tight fit for the stringers.

Step No. 10
Body-Stringers. Material: Balsa 3/32" sq.
The same kind of materials are used for both longerons and stringers. Smooth with sandpaper, cut to required lengths and cement into positions indicated BY NOTCHES IN FORMERS as stringers are purposely not shown on plan. They run lengthwise along outside of body to help round out body and support coverings.

Step No. 11
Templates. Printed on Plan.
All stiff paper templates are shown in full size on plan. With carbon paper trace these templates onto stiff paper. Cut out traced forms to exact size, bend to required shape and cement into position during the process of assembly. Apply cement to proper edges and hold or pin into position until cement is thoroughly dry.

Step No. 12
Motor Cowl and Cowling Cover. Material: Balsa 1/2" x 3/8" and Template "A".
Cut motor cowl from heavy balsa block. Cut around outside printed circle with razor blade or scroll saw. Sandpaper edge until smooth and circular. Trace four wheel patterns on motor cowl, cut out and remove this inside portion as shown in Fig. 11. This INDENTATION gives a more realistic appearance when dummy motor is inserted. Peel off paper template from front of cowl block and round edge of block to conform to shape shown in top and side views. Trace cowling cover template from front of plan onto stiff paper. Bend into a cylindrical form, overlap one edge until it reaches dotted lines and then cement together. While this part is drying slip it over motor cowl block to check size and attain a snug fit to motor cowl. Cement cowl cover to motor cowl block. DO NOT cement cowling or former No. 2 to front of ship until the entire model has been completely covered with tissue.

Step No. 13
Propeller. Material: Balsa.
A machine cut propeller is supplied. However, it is not completely finished. Sandpaper corners and edges round. Propeller must be balanced. Do this by piercing propeller center with a very thin pin which in turn is stuck in the edge of a board, thus permitting propeller to revolve FREELY. When propeller is properly balanced it will remain stationary, on its shaft, in any position. Sandpaper heavier blade until balance is attained.

Step No. 14
Bearing, Etc. Material: Furnished.
The bearing shaft and washers are all furnished ready to use. Note that the shaft is placed first through the bearing then through the washers and next through the propeller. Bend shaft over into a "U" pull back into hub of propeller and cement securely. (See Fig. 13.) Be sure shaft is aligned properly with blades so they will revolve truly. As tension of rubber motor will hold nose bearing in position, DO NOT cement it to motor cowl. This will permit propeller unit to be readily removable from front of ship. Now insert rear motor hook into position shown in side view. Cement securely.

Step No. 15
Landing Gear, Pants, Material: Re-enforced Rib Sheets and Motor Cowl Block.
From the re-enforced rib sheets cut out the various parts needed for pants and tail wheel. Make a pattern by tracing template "P" (on front of plan) with carbon paper on to cardboard. Cut out cardboard along lines traced. Use this form to mark four designs on to strips rib sheet stock (Sheet 3). Grain must run with length of landing gear struts. Out landing gear struts from rib sheet just outlined and cement pieces together in pairs to produce two struts 3/32" thick. Sandpaper front and rear edges to a streamlined shape. Cement landing gear struts to body frame at positions shown on front of plan. Pin into position and allow cement to dry thoroughly.
The wheel pants are constructed in three sections, namely, the pants core and pants covers. (Fig. 15.) With a razor blade or scroll saw cut pants cores from thick block. Next cut pants covers from re-enforced rib sheets

and cement them to sides of pants core. Line up the various pieces so that all edges match as perfectly as possible. Allow cemented pieces to dry before sanding outside edges. Cut to the required shape indicated in the three separate views on front of plan and sandpaper to conform to shape shown.

The tail wheel is made from four separate pieces. Cut them from the re-enforced rib sheets. Cement the various pieces together and "cross-grain" every individual piece. This is done to obtain extra strength and to avoid warping. The two middle pieces have slots or notches for inserting tail wheel strut. These notches or slots must be matched when building up tail wheel as tail wheel strut is inserted into them. After cement is thoroughly dry, round outer edges to a tire shape. Now insert tail wheel strut. The wheel pants and tail wheel are not attached to body until final assembly.

Step No. 16
Covering, Etc.
All individual complete parts are to be covered all around or on all sides. First sandpaper all rough edges and make all corners slightly rounded. Fit the tissue paper first, a section at a time, then apply cement and finally attach tissue and allow it to dry. Cover all parts completely and apply as much tissue in one section as possible without undue wrinkling. Cover body sections, where stringers are used in narrow longitudinal strips applied between each stringer over entire length of body. This prevents wrinkling and produces a much smoother appearance when tissue is tightened by shrinking, as explained. With a very fine atomizer or insect gun, spray entire covering of framework very lightly with water. Allow parts to dry. The tissue shrinks as it dries. This gives the parts a smooth lightly stretched covering.

Step No. 17
Windshield and Cabin Windows. Material: Transparent Stock.
Make windshield and cabin windows from transparent stock supplied. Cut and fit material until proper size and shape are attained. Insert pilot and instrument panel before cementing windshield into position. Apply cement to outer edges of pieces and place into positions.

Step No. 18
Assembling—Thread.
When all individual parts are completed they are ready for final assembly. Cement elevator and rudder into positions shown and allow cemented joints to dry thoroughly. Attach wing panels. After these parts are completely dry attach wheel pants. Apply a liberal amount of cement to landing gear ends to assure proper strength. Line up the wheel pants to correspond with three view drawing. When cement is thoroughly dry, wheels can be inserted. Now cement tail wheel into position. After covering by attaching former No. 2 to front of body. Apply cement to outer edge of former No. 2 and slip sewing into position. With needle and heavy thread put tail bracing "wires" into position as shown in top and side views of plan. The model is now ready for decorations.

Step No. 19
Decorations. Material: Printed on Sav-A-Plan Strips.
Cut various decorations from Sav-A-Plan strips. Apply a thin layer of cement to backs and place in positions.
Rudder numbers are printed in small type at top of Sav-A-Plan strip. Cut out and attach to both sides of rudder. With needle and heavy thread put tail bracing "wires" into position as shown in top and side views of plan. The model is now ready for decorations.

Step No. 20
Wing Struts. Material: 3/32" x 1/4" and Re-enforced Rib Sheet.
From re-enforced rib sheet cut out formers E-26 to E-43 inclusive. Next

sandpaper to streamline shape, two 3/32" x 1/4" pieces. Now make two each of struts "X", "Y", and "Z" shown in THRU length at top on front of plan. Place formers E-26 to E-39 in positions indicated between LEFT wing panels (top and bottom) and cement securely. Formers E-40 to E-43 are inserted into corresponding positions between top and bottom of RIGHT wing panels. After these parts are thoroughly dry place proper interplane struts into position. Apply a liberal amount of cement to ends of each interplane strut. Block up wing tips to proper dihedral and cement COMPRESSION struts into positions.

Step No. 21
Rubber Motor. Material: Rubber 1/32" x 3/16" x 7" (3 Bands).
Two large rubber bands are supplied. Tie them together to form a two strand rubber motor about 14" long. Sketch show how bands are joined. Attach rubber motor between propeller shaft and rear motor hook. Rubber motor can be easily inserted by threading or pulling into position with a piece of string dropped through body if laid in a vertical position. At front of ship nose plug is removable, but at rear of ship a small opening in the covering should be provided for inserting the rubber motor.

Step No. 22
Scale Propeller. Material: Not Furnished.
A view of the scale propeller is shown on front of plan for those who do not wish to use the machine cut propeller supplied.

Step No. 23
Flying.
When model has been completely assembled it must be checked for center of gravity balance before a trial flight is attempted. Place the model at the midpoint of the top wing tips and lift model to see whether it balances. If tail has a tendency to drop it denotes tail heaviness which may be overcome by adding a little weight to nose of ship. If nose has a tendency to point downward, add a little weight to tail. Use this procedure until proper balance is attained. Tacks or pins can be inserted into front or rear of model to produce proper balance. When plane remains horizontal, while suspended on finger tips, it can be considered balanced. A few short trial glides should be made AFTER the model has been properly balanced, (not before). When gliding, if ship has tendency to climb and if it does not make a gradual glide downward, it indicates that tail is still a little too heavy. This must be offset by additional weight at front of model. To be certain that ship is correctly balanced, hold it, unswayed, in position for launching and if the glide after leaving the hand is steady and consistent and goes forward 10 or 15 feet, ship can be considered as making a normal glide. Model is now ready for its trial flight. When gliding the ship do not launch it upward. Launch it with the nose pointed slightly downward which permits gravity to take effect. Before trying a powered flight it is advisable to test motor by winding propeller with right forefinger. Permit rubber motor to unwind completely, two or three times. At this time check trueness of propeller rotation. While turning propeller and thus winding rubber motor, hold model firmly by its noseblock. The proper number of turns for rubber motor is attained when its coils or twists are fairly small and tight.

Step No. 24
Save Your Plan and Colored Portrait on Box.
Although your model is finished your plan PROPER is still complete or intact that is, no parts or templates should have been cut from it. Therefore, it can be looked over for small, possibly forgotten details. Carefully remove the colored portrait from packing box. With razor blade, slit rear of plan along dotted diagonal lines in detailed instruction section. Insert corners of colored portrait into slits as you would a photograph in an album.
Sav-A-Plan can now be filed away for future reference.

