



F. F. CONTESTAR

A beautiful streamliner that's ideal for free-flight newcomers

by **Chuck Giessen**

● Up to the time this article was written, our F. F. Contestar had racked up two Firsts, two Seconds and a Third in local contests. Originally weighing 24 ounces and powered by an Ohlsson .23 glow-plug engine, it was later changed over to ignition power, using a Torpedo .29 engine. The increased power and rate of climb more than compensated for the higher wing loading.

The first step in building this contest-proven free-flight ship is to scale up the plans to full size. Then, check the Bill of Materials, gather together all the necessary material, and let's get going!

FUSELAGE: Start by building the $\frac{1}{4}$ " x $\frac{3}{8}$ " crutch directly over the top view of the fuselage. While this is drying, cut out the bulkheads. All of these are made from $\frac{1}{8}$ " hard sheet balsa—with the exception of the firewall, front former, and F-14, which are cut from $\frac{1}{8}$ " plywood.

Now, cement all the bulkheads in position on the crutch, making certain they are aligned perfectly. Then add the top and bottom stringers, along with the sub-rudder.

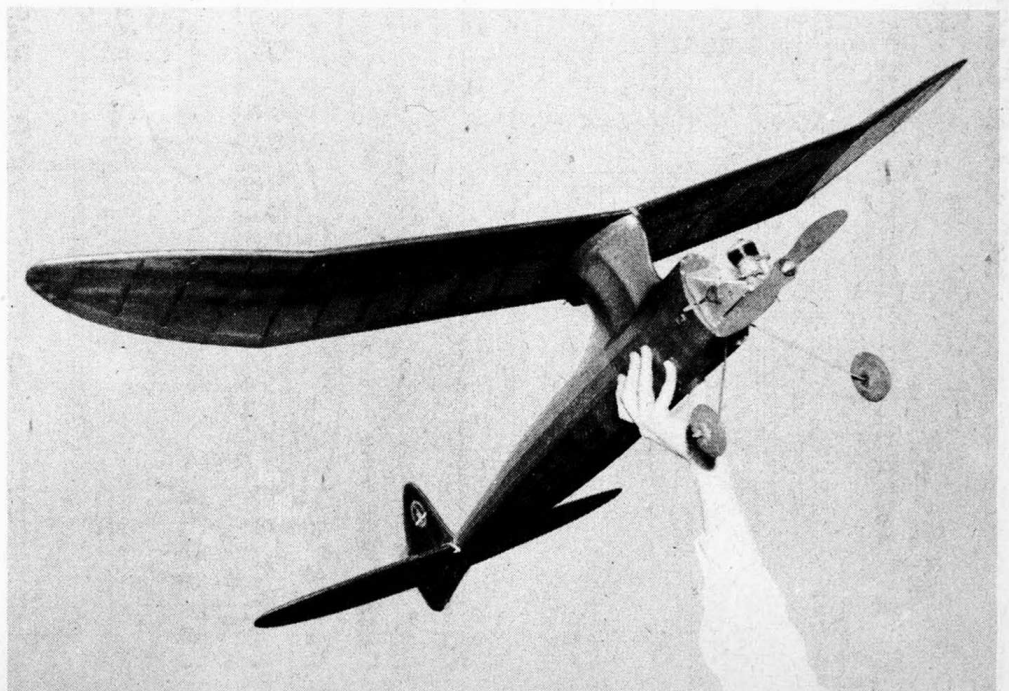
Next, construct the pylon and pylon platform, using a hard

grade of balsa for the pylon. The wing rest is laminated from $\frac{3}{16}$ " sheet, having the grain of the top piece run across the fuselage and the grain of the bottom sheet run front and rear. Cement the pylon and platform into position and set aside to dry.

Then the rest of the stringers are added. To avoid any possible warping of the structure, it is wise to add one stringer on one side, then the one opposite, fol-

lowing this procedure until all stringers are in place. It will be necessary to taper the bottom stringers at the rear so they will blend into the sub-rudder. Add the $\frac{1}{8}$ " sheet fill-in at the front of the fuselage and then begin work on the wing.

WING: Cut the ribs from $\frac{1}{16}$ " sheet stock. This done, pin the leading edge, trailing edge, and tips in place on the plans. Don't run the leading and trailing



edges in one continuous piece, break them at the dihedral points. Due to the undercamber of the wing, the front of the trailing edge must be blocked up with small pieces of 1/16" sheet balsa.

Next, add the ribs. Be sure to allow for the capstrips at the leading and trailing edges. When the assembly is thoroughly dry, take each section from the plans and add the spars. It will be necessary to taper the spars in the outboard panels.

The wing sections now should be joined together at the proper dihedral angle, as shown on the plans. Cut the spar joiners from 1/16" plywood and cement them securely in place.

Now shave the leading edge to the top airfoil contour and add the 1/16" leading edge covering. This should be rather soft stock, so as to take the bend easily. Add the center planking and capstrips, taper the leading and trailing edges, and lay the wing aside.

STABILIZER & RUDDER: The stabilizer is made by pinning the leading and trailing edges, the

spar and the tips in place on the plans. Add the ribs and allow the assembly to dry. While you are waiting, assemble the rudder as shown in the plans. Then lift the stabilizer from the plans and add the leading edge covering and capstrips.

FINAL ASSEMBLY: Now the wing rest should be carved to fit the under-surface of the wing. With this done, the entire structure should be well sanded, starting with 2-0 and ending up with 4-0 paper.

Our entire model was covered with silk, but Silkspan can be used on the wing and tail surfaces if you prefer.

The power unit is designed to allow for easy thrust adjustment as well as for ease in converting from glow-plug to standard ignition operation.

Cut the firewall from 1/8" plywood and the firewall keys from 5/16" square hardwood. Position and cement the keys to the back of the firewall so they fit snugly in the front plywood former. Place the motor mounts so that

the mounting bolts go through the keys and help hold them in place. Add the motor, gas tank, timer, landing gear and other accessories and the power unit is completed.

Now cement the various wing and tail pegs, power unit hooks and rudder trim tab in place and your plane is completed.

FLYING: First test-glide and adjust the incidence until entirely satisfied that the glide is as flat as possible. Fly under low power at first until the ship is well adjusted. The original model flew well with slight left and down thrust and right turn.

BILL OF MATERIALS

(Balsa unless otherwise specified)

3—1/8"x3"x36" (hard)	Formers, rudder outline
14—1/8"x1/4"x36" (medium)	Stringers
8—1/4"x3/8"x36" (medium-hard)	Crutch, wing spars
2—1/4"x3"x36" (soft)	Pylon, wing and tail tips
1—3/16"x2"x36" (soft)	Pylon
6—1/16"x3"x36" (medium-soft)	Ribs, leading edge covering
12—1/16"x1/4"x36" (soft)	Capstrips
1—1/4"x1"x36" (medium-hard)	Trailing edge
4—1/8"x1/4"x36" (medium)	Leading edge
1—1/4"x3/8"x36" (medium-hard)	Leading edge

Covering; Cement; Dope; 1/8" plywood for firewall and motor unit; 1/16" plywood for wing gussets; Pair of metal mounts; 1/8" piano wire for gear; .045" piano wire for hooks; 3/32" piano wire for wing tie-down; 1/8" dowel for tail tie-down; Nuts and bolts; Wheels, Rubber, Ohlsson .23, Torpedo .29, or comparable engine and accessories.