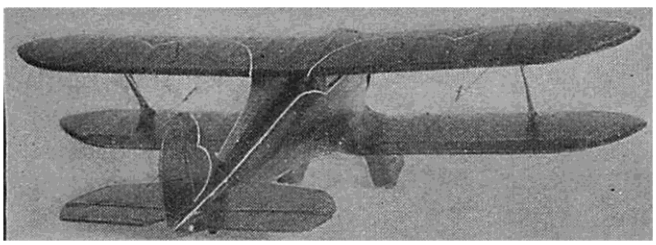
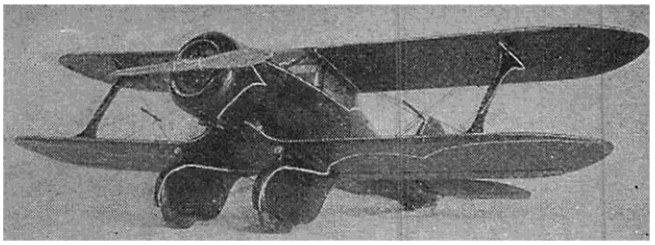


The completed model ready to fly. Span 20"



It is characterized by accuracy of detail. Wt. 1¾ oz.

Build a Flying Model Beechcraft

How You Can Build a Model of a Unique Commercial Plane That Will Give Fine Performances

By R. V. GROVER and F. T. ROBERTS

THE model given here is a scale model of the Beechcraft, a new biplane having negative staggered wings. The large ship is exceptionally well streamlined and the model faithfully duplicates this feature. The model is a fast flier and very rugged, the test model making over fifty flights before a weak I-strut broke. Five or six flights later, a hard landing fractured a wing spar.

The order of construction as given here, while unconventional, has been carefully worked out to allow use of the plans to the greatest advantage. Do not cut out any patterns unless the written instructions so indicate; all others should be traced on thin paper and pasted to light cardboard, then cut out for patterns. If all instructions are followed, there will be no part of the drawings cut up that will be needed in future construction of the model.

This ship when at rest has a very large groundangle which helps, from a standing R. O. G. start, to get the model off the ground within four feet (with only 100 winds in the motor).

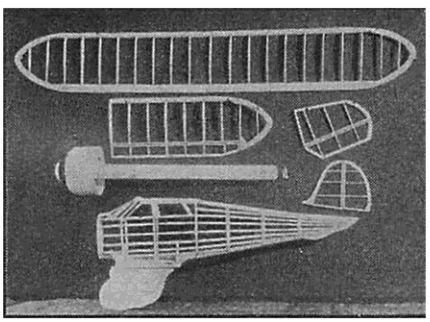
Wing (Plate No. 1)

Construction should begin with the wings, due to the fact that the bulkheads for the fuselage, printed on the reverse side of the page, must be cut out after the wings are built.

Begin the top wing by tracing right half from the left half given and joining at the center line. Now trace rib pattern No. 1 and cut fifteen from 1/32" balsa and two from 1/16" balsa. Next trace rib patterns No. 2 and No. 3. (Do not cut rib patterns from drawings as this will spoil bulkhead patterns).

Cut four of each of these ribs from 1/16" stock, two of each of these are to be used for the bottom wing.

Place the whole wing layout on a smooth board with waxed paper over it to prevent the finished wing from sticking. Pin leading and trailing edges in place and glue in ribs, leaving the center rib out. (Note position of the two No. 1 1/16" thick ribs).



The uncovered framework shows clean lines and strength

Cut, tracing patterns first, the wing tips from 1/8" stock. These are fastened in place with a 7/32" block under the tip and with the top of wing tip piece even with the top of the leading edge. Glue rib No. 2 in place with a 3/32" block underneath and No. 3 ribs with a 5/32" block. The top of the wings should be level, all taper of the tips being on the bottom of the wings. A ruler laid across the ribs at their highest point should touch all ribs and the outer point of the tips.

When wing is dry, sandpaper wing tips and leading and trailing edges to shape. (A small block-plane when handled right, is fine for shaping leading and trailing edges. Now cut at center line for dihedral. Place a 7/32" block under each outer No. 1 rib and glue spars (leading and trailing edges(at center. Glue center rib in at this time. When first coat is dry, give this joint a coat of cement.

Bottom wings are constructed in like manner with the addition of an aileron, the construction of which is clearly shown. Leave these wings in separate halves as they are joined to fuselage after its completion.

At this time, construct details shown on Plate No. 3 as Plate No. 4 must be cut to join side view of fuselage. You will find that building these details now will seem to hasten construction later.

Pants (Plate No. 3)

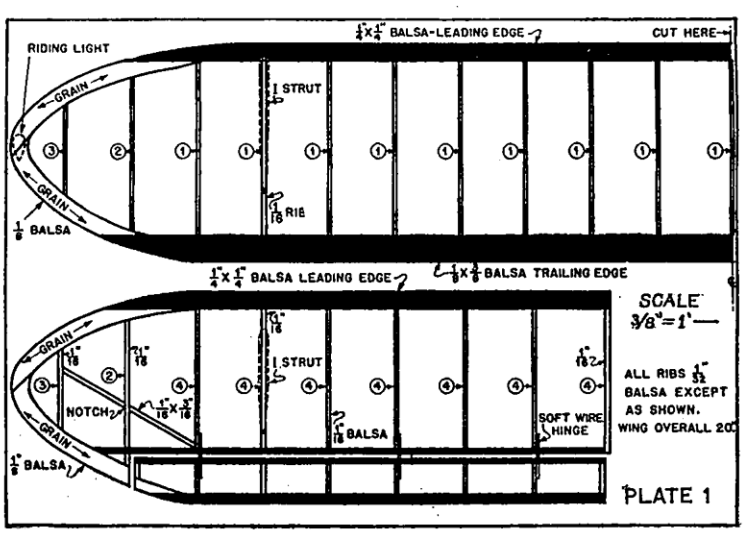
Trace outline of pant core and cut four from 1/8" medium hard balsa. Glue together in pairs. Trace and cut pants' sides from same balsa. Glue sides to core as shown, first slightly hollowing the sides to give wheel clearance. Pants are now cut and sanded to streamline shape, sand smooth, give a coat of banana oil and again sand smooth. They are now covered with tissue.

Cut front discs and sides of landing lights shown on pants drawings, from 1/16" stock. Glue to pants as shown and shape with knife and sandpaper. After model is colored, a disc of silvered paper is glued to front of lights to give a realistic appearance.

Wheels

Wheels are made of pine or other hard wood. The weight of these balance the model. (The test model balanced exactly right without other weights when pine wheels were put on in place of the balsa ones first tried). Fasten wheels in pants, after doping black with red centers, using short pieces of No. 12 music wire for axles. Tail wheel is cut from 1/8" balsa sanded to shape. Dope black.

(Continued on page 43)



Build a Flying Model Beechcraft

(Continued from page 17)

I-Strut

Make two I-struts as shown from HARD balsa 1/8″ thick, sanding to a streamline shape.

Cowl and Motor Tube

We believe we are the first to use in plans for public use, a motor-tube in this type of model. While the tube is about twice the weight of the motor stick, it more than justifies its use by the protection it affords the fuselage from rubber breakage, which happening in a fuselage using a motor stick, it is sure to break the covering or bulkheads. It also improves the appearance of the inside of the model and perhaps the rubber, being enclosed and thus protected from dirt, light and air, will last longer than when in the open.

Construct motor-tube of 1/16″ stock. (Note 1/16″x1/8″ inside rear end). Cut cowl bulkheads No. 1 and No. 2 from 1/4″ balsa. Glue together with grain crossing. The round hole in No. 1 should first be sanded smooth and round and the square hole in No. 2 should fit the front of motor-tube snugly. Glue this unit on the front end of the tube with the end of the tube flush with the front of No. 2. (Make sure the unit is at right angles to the tube).

Cut No. 3 from 1/16″ stock and glue to motor-tube in position shown. Next cut four cowl covering pieces and glue around the bulkheads. Sand smooth to size and shape. Glue one-half of a dress snap (large) to rear of bulkhead No. 3 (cowl), as shown.

Front and rear motor plugs are made as given, of HARD balsa. The wire hooks are made now and the rear one placed and glued to the rear plug while the prop shaft is laid aside for a while. Make the six riding lights. The exhaust ports are left flat, top and bottom.

Fuselage (Plates No. 4 and No. 5)

First cut Plates No. 4 and No. 5 and join at A-A and B-B respectively. Make upper and lower keel as shown by heavy lines on side view. Glue half of tail wheel enclosure to keel and after keel is dry, remove from layout and glue other half of enclosure in place. Cut out patterns for bulkheads. (Whenever patterns are used it is best to paste the whole sheet to heavy paper or light cardboard and then cut the pattern out). Cut the bulkheads from 1/16″ stock, gluing two pieces together whenever necessary to get the proper width.

Place balsa braces across bulkheads where indicated and see that square holes in No. 1 and No. 5 fit motor for a sliding fit. Mark position of bulkheads upon the keel in soft pencil. Glue them in places marked, starting with No. 9 and working forward to No. 5, making sure they are perpendicular. From No. 5 forward, there is no upper keel so bulkheads must be glued to lower keel only, being certain they are lined up properly.

Trace and cut wing stub rib as shown on side view, marking in pencil the position of the bulkheads; then glue ribs in place. (This must be done with care or the wings will not line up properly). Next glue center side stringers in place, beginning at No. 1 bulkhead and working aft. Now glue all stringers in place (stringers are all 1/16″ sq.), putting first one on one side, then one on the other. This will keep fuselage from going crooked. After all stringers are in place, glue diagonal braces in place.

Glue instrument panel to a piece of 1/16″ stock, cut to shape and glue in place in fuselage. Cut from 1/16″ stock door frames and top of cabin and cement in place. Cement windshield visor (so called for want of a better name), into proper position and then cement 1/16″ windshield frames in place.

Before gluing second half of dress snap in place on No. 1 bulkhead, be sure that motor tube slides in place and lines up correctly. If it does not, the bulkheads should be cut away or filled with thin pieces of balsa until a correct fit is obtained. Now place two pieces of tissue over the half of snap on cowl and push other half of snap over this paper. (The paper prevents the two halves from being glued together). Coat the rear half of snap liberally with cement and push cowl back into position against fuselage and set aside until dry.

Make front and rear wing fillets. (These are on bottom wing only). These must be cut to fit your model and when dry they are cut and sanded to a nice streamline shape. Now take a piece of 5/0 sandpaper and sand the whole fuselage, taking all bumps and hollows out. This leaves the fuselage ready for a nice covering job.

Tail Surfaces (Plates No. 4 and No. 5)

All details for the construction of tail surfaces are shown on drawings. The larger tail is recommended for a flying model and it can be built of the same size materials as the exact scale tail, or it can be made of 1/16″ sq. (the rounded parts cut from 1/16″ stock). Before covering fuselage the stabilizers should be glued in place. Glue No. 8 and No. 9 jig patterns to scrap 1/16″ balsa and cut out. Pin No. 8 jig directly over No. 8 bulkhead and No. 9 jig over No. 9 bulkhead, being sure they are centered on the top stringer of fuselage. Glue stabilizer against fuselage side (all necessary trimming of stabilizer for a good fit against fuselage should be done before gluing), putting top of stabilizer against bottom of jigs. This is a simplified and successful method worked out for lining up the empennage on oval or round surface.

Covering

Cover all surfaces with a medium weight tissue, using banana oil as the cement. Do not try to cover too large an area with one piece of tissue as this leads to a wrinkled covering.

If a nice finish is wanted, cover the cowl with tissue as you did the pants; the motor-tube should be covered with a single piece of tissue wrapped tightly around it. In covering balsa parts, a liberal quantity of paper cement should be used and all wrinkles smoothed out with the fingers.

The side cabin windows should be put in place at this time; these are of light celluloid glued in place on the inside. The windshield is put in place after all coloring is finished.

When attaching wings, etc., whenever paper intervenes, it should be removed before gluing, otherwise the joint will not hold well.

Assembly

Glue upper wing to top of top cabin frame and then attach lower wings to wing stubs, placing I-struts in position. (Cut paper from points of wing ribs that glue to struts). If you built the fuselage correctly, the wings will line up perfectly.

Pants are attached in position shown by dotted lines in side and top view of fuselage, using a liberal amount of glue.

Wherever two surfaces meet and make a sharp corner, paper or balsa fillets can be made if wanted. Fasten rudder in place. Run brace threads for tail as shown in side and top view.

For wing bracing, run two threads 1/8″ apart, from top of I-strut, in front, through bottom wings through spot marked "X" on pants, to top of pant on opposite side. Then run two threads from fuselage at top of No. 3 bulkhead to bottom of I-strut, one at front and one at rear. (These are the landing wires and are single not double as are the flying wires).

The riding lights are now colored and placed. Color two red, two green and two white and place them on the right wing tip, left wing tip and rear of fuselage respectively in dotted position.

Propeller

We used a C-D fibre propeller on the test model as we believed it to be the best type for this kind of model. However, if you wish to carve a prop. from balsa, a block 1½″x¾″x7″ will be about right. No two models fly the same with the same propeller, so we suggest you try several different ones on your model.

Power the model with about 8 strands of 1/8″ flat rubber. This amount was found to be best on this model.

The scale propeller is clearly shown on plans.

Doping

The model photographed was doped with two coats of C-D enamel dope, being colored red with black scallops and a thin line of white between the two colors. The design for this is almost impossible to give on the plans so you should follow your own ideas in the matter of coloring.

Flying

Would advise you to allow the model to R.O.G., as in this way, the model gets a perfect start. Model should be flown on calm days only. You will find that with the scale tail surfaces, the model is rather tricky. The flying tail surfaces are much better in this respect. The model is extremely sensitive to the controls.