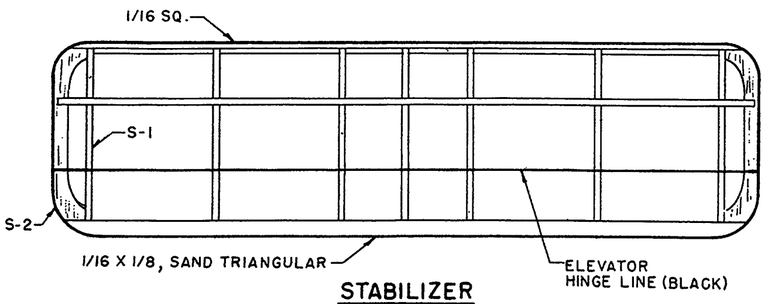
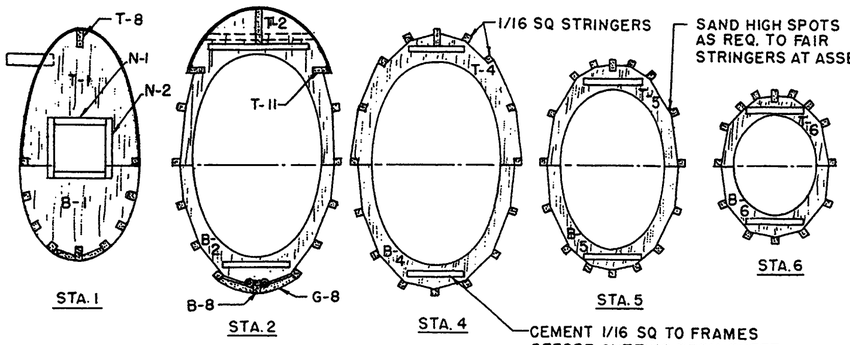
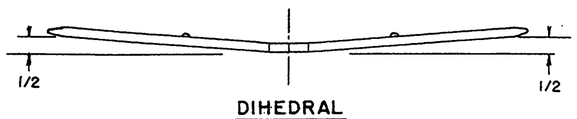


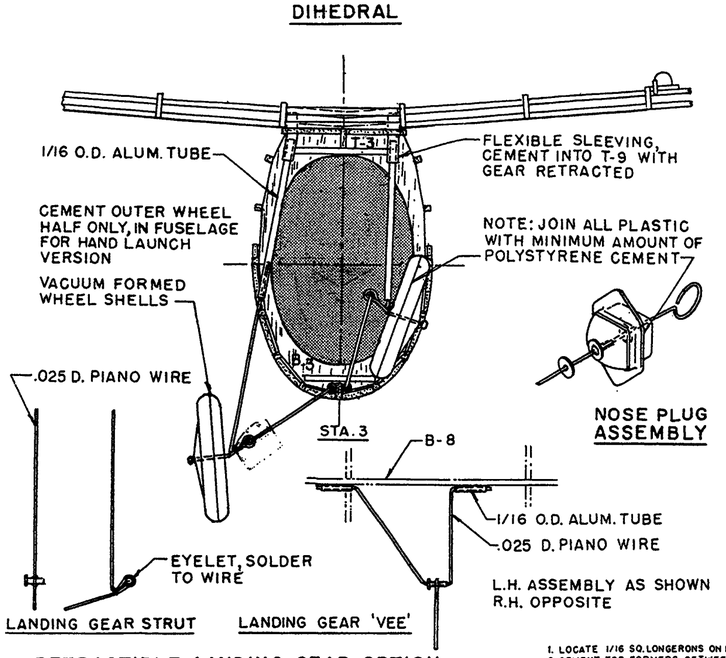
STABILIZER



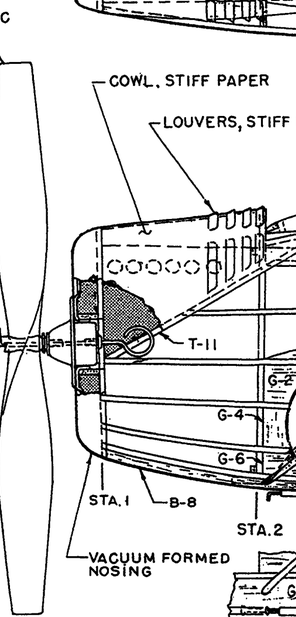
FUSELAGE FRAMES

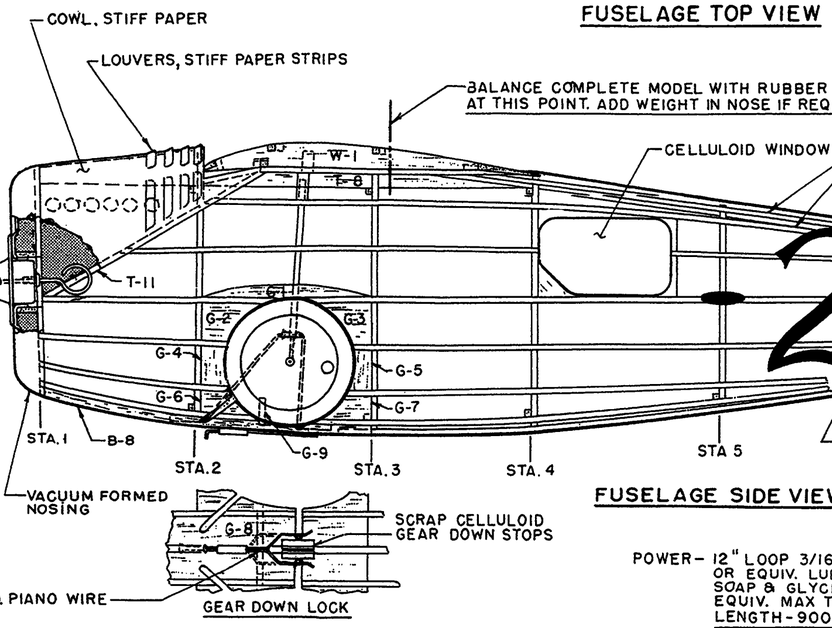


DIHEDRAL

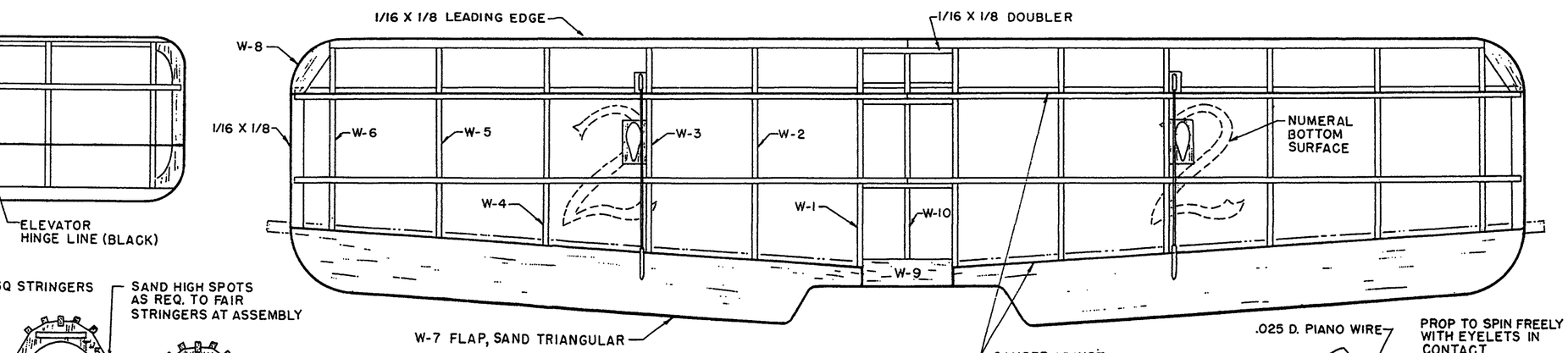


RETRACTIBLE LANDING GEAR OPTION

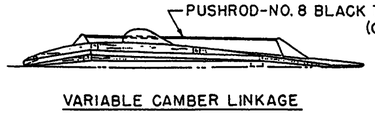




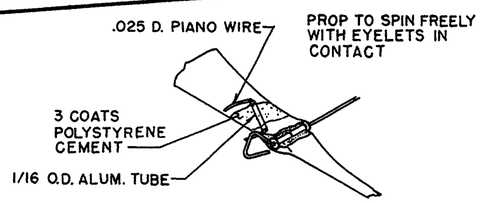
FUSELAGE SIDE VIEW



WING

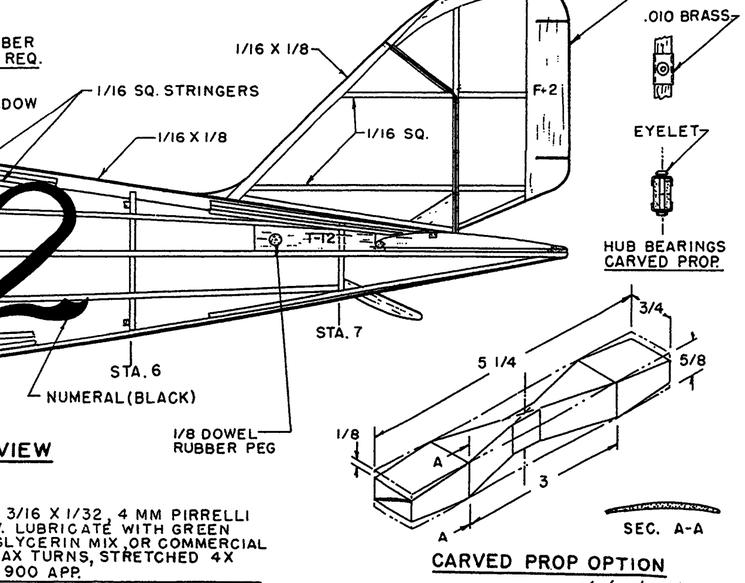


VARIABLE CAMBER LINKAGE



FREE WHEEL OPTION

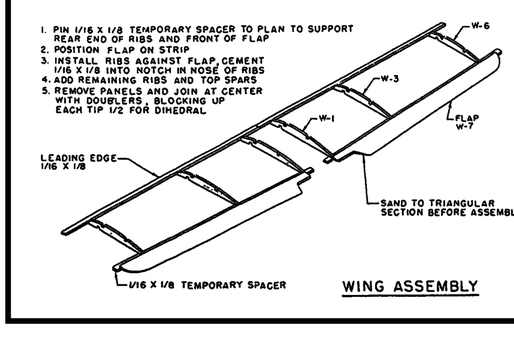
FUSELAGE TOP VIEW



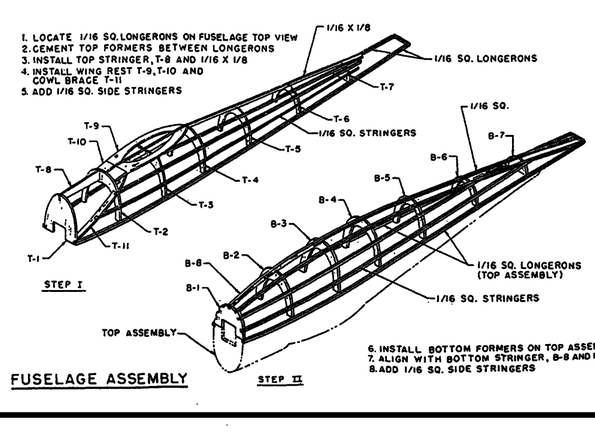
CARVED PROP OPTION

3/29/77 Ed Lindsey mwr

POWER – 12" LOOP 3/16 X 1/32, 4 MM PIRRELLI OR EQUIV. LUBRICATE WITH GREEN SOAP & GLYCERIN MIX, OR COMMERCIAL EQUIV. MAX TURNS, STRETCHED 4X LENGTH – 900 APP.



WING ASSEMBLY



FUSELAGE ASSEMBLY

THE DAYTON WRIGHT, (BAUMANN RB-1)

Designed for the 1920 James Gordon Bennett Cup Race by Milton C. Baumann and built by the Dayton Wright Co., of Dayton, Ohio, the RB-1 was a truly advanced aircraft for its day. The wing was built of solid balsa, with areas cut out for lightening, and covered with plywood and linen fabric. The leading and trailing edges could be drooped to change the thin racing airfoil to an undercambered high lift section for takeoff and landing. The landing gear was fully retractable into the smooth, fish-like fuselage. Completely enclosed in the fuselage, the pilot had no forward visibility other than that afforded by the hinged side windows, a limitation endlessly commented upon at a later date in descriptions of the famous Spirit of St. Louis flown by Charles A. Lindbergh.

As a model the RB-1 has excellent proportions for flight. A retractible optional landing gear is detailed, but for simplicity and maximum performance, hand launched, the outer wheel halves only can be cemented into the fuselage. Much thought has been given to assembly of the oval sectioned fuselage. The upper half is built up on the top view, and the lower half is then constructed directly on the inverted upper assembly. The wing is built in the partial flap position to form an efficient endurance airfoil section.

For maximum endurance the model must be built as lightly as possible. The 1/16 sq. strips and the sheet balsa may be sanded to 1/32 thick. Install the strips on edge for stiffness. An optional carved balsa propeller and low friction free wheeling system is also detailed to increase duration.

Study the plans to become familiar with the parts and construction methods. Carefully cut out all parts from the printed sheet wood with a sharp single edge razor blade, or a model knife. Cement 1/16 sq. strips on the fuselage frames before cutting out to prevent splitting.

FUSELAGE—Locate 1/16 sq. longerons on the Fuselage Top View, between pins on each side of the former. Install thru the wood. Cement top frames between longerons, and insert T-8 and 1/16 x 1/8 spine in top of frames. Note that T-1 frame is inclined forward to provide 2 deg. down thrust, all the other frames should be square to the plan. Cement wing rest T-9, 10 and diagonal cowl strip T-11 in place. Add the remaining top stringers in matched pairs to avoid pulling the assembly out of shape. When thoroughly dry remove from the plan and erect the bottom frames on the top assembly. Install B-8 and 1/16 sq. keel strip to steady frames. Add remaining bottom stringers in pairs as on top.

Fit fill-in pieces G-1 to G-8 between stringers to form wheel well. Locate these so that an opening slightly smaller than the wheel results, to allow some material for fitting. Form the wire parts for the retractible landing gear, accurately to the plan. Hinge the landing gear 'vees' to the keel B-8, with short pieces of 1/16 d. alum. tube cemented in place. Swing the 'vees' downward, notching G-6 and G-8 to allow full extension. Slip the strut end into 1/16 d. alum. tube sleeves. Install short flexible sockets in T-9 and push upper end of alum. sleeves into them. Cut away stringers from wheel opening and check retraction, with wheel in place on strut. Trim out opening to fit wheel. Cement socket into T-9 with gear in retracted position. Extend gear and cement celluloid scraps on G-8 as a stop to avoid over extension. For the simple hand launched version, cement outer wheel halves into openings after fuselage has been covered.

Drill rubber support T-12 to fit 1/8 d. dowel and fit between stringers at T-7. Cement nose plug support frame of 1/4 d. x 2 to face of Station 1. Trim vacuum formed nosing from vacuum formed panel and fit Station 1 nose frame, to inside.

Sand fuselage smooth to blend filled in areas with stringers.

FLYING SURFACES—Cut stabilizer strip of 1/16 x 1/8 to plan to support the front edge of flap W-7 and the wing rib ends. Sand the flap to a triangular cross section and pin in place on the plan. Position ribs W-1, 3, 6 against flap and cement 1/16 x 1/8 leading edge into notch in nose of ribs. Add remaining ribs, 1/16 sq. top spars, and rips W-8.

Remove from plan when dry and block up each rib at rib W-6, 1/2" for dihedral. Join spars at center with short pieces of 1/16 sq. Fit W-9 at trailing edge and reinforce leading edge joint with 1/16 x 1/8. Add 1/16 sq. bottom spar and center rib W-10.

Sand stabilizer trailing edge of 1/16 x 1/8 to triangular cross section and pin on plan. Set rib and center ribs S-1 in place and cement 1/16 sq. leading edge in nose notch. Add remaining ribs, 1/16 sq. spar and tips S-2.

Assemble the fin directly on the plan, pinning the outline of F-1, 2 and the 1/16 x 1/8 leading edge in place first. Fit the internal members of 1/16 sq.

COVERING—Sand all surfaces with fine sandpaper, rounding leading edges and tips to blend with airfoil sections. Apply two coats dope thinned 50/50 dope/thinner to frame and sand with 400 grit paper. Cover the fuselage with narrow lengthwise strips of tissue as required, to minimize wrinkles due to the curved sections. Cover the underside of the wing first to be certain the tissue is pahered to the bottom of the ribs, the spar, and to the forward portion of the flap to maintain the shape of the wing section. Use dope thinned 75/25 dope/thinner for adhesive. Lay the tissue in place, smoothing it into contact with the frame, without attempting to pull out every small wrinkle.

Spray lightly with water to shrink covering. When dry moisten again any local areas where small wrinkles persist, until these have been removed. Finish with two coats 50/50 thinned dope on wing and fuselage. One coat is sufficient for fin and stabilizer.

FINISHING—Curve the stiff paper cowl material with fingers to form approximate shape and cement to nose. Form the louvers of narrow strips of stiff paper cemented to cowl on top and left side only.

The original Dayton Wright was first finished in clear varnish and eventually painted aluminum. Any color finish will add a great deal of weight to a small model like a peanut scale. Only the thinnest spray 'dusting' can be applied or the performance will be severely reduced. The natural white tissue is deemed representative of silver for most peanut scale comparisons, and therefore painting is not required.

Slip stabilizer in place and tack leading edge only with small drops of cement to T-12. The trailing edge is left free to permit small shims to be inserted during flight trimming. Set wing in place on fuselage and inspect from front and rear to check alignment with stabilizer. Adjust with thin shims if necessary. Attach wing with drops of cement. Cement fin in place with no offset to center line and square to stabilizer.

PROPELLER—An efficient molded plastic propeller is furnished ready for use. To reduce resistance of the propeller during the glide, an improved free wheeling is shown as an option. Cut away the spiral on the front of the prop hub and drill to fit eyelets freely. These should contact inside the hub without the flanges pinching the prop hub, allowing the prop to spin on the eyelets, even though the rubber motor pulls on the shaft.

For maximum contest performance a block design for a carved balsa propeller is also shown. Shape the blades to the airfoil section shown with a sharp knife and sandpaper. Finish with several coats thin dope and 400 grit paper. Install bearings of thin sheet metal at hub and free wheeling as described for plastic prop.

Cut nose plug parts from vacuum formed panel and join with us as little polystyrene cement as possible to avoid softening the thin material. Cement bearings of washers with eyelets inserted to front and rear of plug, with shaft installed for alignment. Slip washer and propeller assembly on shaft. Bend end into triangular eye for winding and to engage free wheeling.

Grasp a 24" length of rubber strip at each end and twist in about 30 turns. Bring the ends together without releasing and tie with a square knot. Upon release the stored knots will bunch up shortening the motor to fit between the rear peg and prop hook. Engage prop hook in rubber loop and pull through fuselage with wire hook. Slip rear peg thru rubber loop at rear, removing a bit of tissue covering in fuselage bottom for access.

Balance completed model at point indicated, 1 5/8" behind leading edge of wing. Add lead weight to nose, cemented to face of B-1, if required to obtain correct balance. Remove rubber and cement vacuum formed radiator nosing in place. Cut out opening to fit nose plug.

FLYING—Hand launch gently with nose pointed slightly down. Make several glides with each setting to confirm result. If the model persists in diving, increase the shim thickness under the stabilizer trailing edge. If stalling is observed reduce the shim thickness. Warp the rudder tab between the fingers to obtain a gentle right turn. Wind the motor about 100 turns and hand launch level. Adjust the glide to obtain a flat descent in a right circle by shimming the stabilizer and warping the tab in small increments. Adjust the power flight for a right circle by shimming the nose plug to the right slightly if required. Gradually increase the turns in the rubber to check flight trim as the power is increased. The Dayton Wright has a very flat glide and swift climb. For maximum performance winding, the motor must be lubricated and stretched. Engage a gear winder, of the light weight indoor variety, in the winding eye and stretch the motor four times its length. Wind in approximately 1/2 turns without coming in, and then put in the remainder while gradually approaching the nose with the last few right at the nose. With the widely varying grades of rubber now supplied, only test winding outside the model can determine the ultimate turns possible. With 4 mm Pirelli about 600 turns can be stored in the motor.

DETAILS—After testing, add scale details. Exhaust stacks are lengths of dowel, numerals are cut from black tissue adhered with thinner, camber actuators are of scrap material, hinge lines are also black tissue cut in strips. Use flat black plastic model enamel to paint radiator core, wheel tires and landing gear struts.

Information for the Dayton Wright was gleaned from Racing Planes, Vol. I by Reed Kinert, from The Early Air Racers in 3-Views by Charles A. Mondenhall, and from personal studies of photographs and models in Smithsonian Museum. The original aircraft still exists, on display in the Henry Ford Museum in Dearborn, Mich.

DAYTON-WRIGHT RB-1

SPAN 12 7/8 – AREA 38 SQ. IN. – WGHT. .8 OZ. – PLAN, FULL SIZE

Jetco MODELS

C. A. ZAIC CO. INC.

883 Lexington Ave., Brooklyn, New York 11221