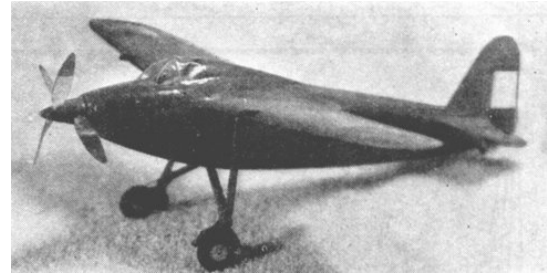


A speedy ship with tandem "props" revolving in opposite directions

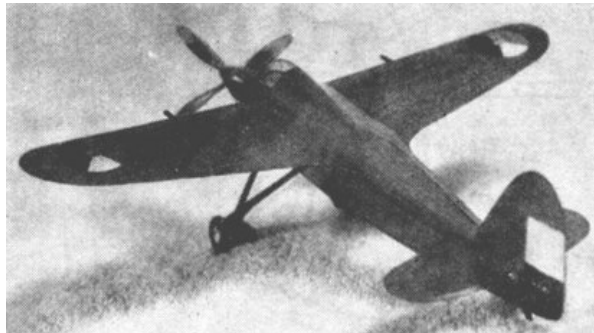


A clean streamline job with a unique power plant

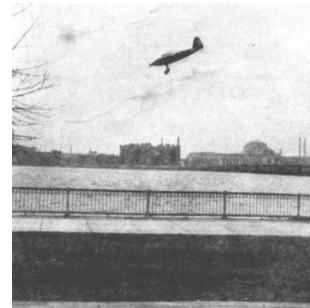
The Koolhoven "Pursuit"

Unusual Looks and Flying Qualities Grace This Exact Scale Model of the World's Fastest Pursuit Plane-Don't Miss the Joy of Building and Flying This Ship

By ROBERT VAIL SMITH



The finished model, just like the large plane



The model in actual flight coming in for a landing

MR. FREDERICK KOOLHOVEN has fashioned an entirely new and novel weapon of war at his factory in Rotterdam. It is novel in the fact that the engine is placed inside the body between the main spars of the wing, so that it is placed just about on the center of gravity, and that it drives through the use of a long shaft and gear box two oppositely-revolving propellers. This co-axial system of propellers abolishes the old enemy torque, so that the machine is extraordinarily easy to maneuver. As Fritz Koolhoven remarked, "Politicians are so maneuverable because their brains are in their centers of gravity instead of in their heads-so why not the same with the airplane?"

This model is a perfect reproduction even to the retractable landing gear and oppositely revolving propellers. If it is built carefully to the following plans, the builder will find himself with a model indeed worthy of anyone's collection.

Fuselage

Begin the fuselage by joining together Drawings 1 and 2; this will give the accurate layout of the body. The body bulkheads are cut from 1/32" sheet balsa and are assembled by the use of 1/16" x 1/8" main longerons cut to the shape shown. This structure is later strengthened by adding 1/16" sq. strips as shown. The nose is most easily

carved and hollowed from two blocks of soft balsa. The leading and trailing edges of the wing stubs are carved from soft blocks to the size shown; these are cemented and faired in very carefully as the wing must join the body in a streamlined intersection.

While we are making the fuselage, we may as well install the retractable landing gear which works efficiently yet simply. The main struts are 3/32" x 5/16" hard balsa, and the other struts are 1/16" x 3/16" and these struts are joined by the use of 1/16" aluminum tubing and .014 wire hinges. Hinges "W" and "Y" are cemented in position in the body and wing stub. The placement of the struts and landing gear as a whole is shown by the dotted lines in Drawing 4. Eyelets in struts "B" and lockpins form a suitable lock to keep the struts straight at the right time.

The wheel covers are 1/32" sheet material and are cut and hinged as noted. Fillets can best be made by using a solution of balsa sawdust and cement. The shape of the wire axle (.028 wire) is such that the wheels dish out instead of in and that they also are forward of the strut. The wheels are 1-3/8" in diameter.

Before we can really call our fuselage finished, we must put in the motor arrangement for driving the coaxial propellers. Two blocks should be laid out as shown on drawing 5, and right and left-handed propellers are carved

as noted in the isometric sketches. Even though the spinner part of the propeller arrangement is carved integral with the respective propellers, it should be carefully finished off and shaped so that when the propellers are put together the contour of the spinner will be smooth. For scale purposes the individual builder may find it advantageous to cut scale blades from sheet aluminum and insert them into carved spinners. A 1/8" hole should be drilled in spinner S' to accommodate the tube which is used for driving the forward propeller.

The driving tube for the rear propeller is made from a 1/32" balsa sheet which has been soaked in boiling water and then rolled around a rod of suitable diameter and cemented. Round end plugs "P" are attached to the tube and this tube is attached to the hollow bearing RTR. Parts H, R and R' are made of .045 brass and part T is cut from brass tubing 1/8" diameter. The center hole in hanger "H" is drilled so as to accommodate tube T, and the plates R and R' are drilled to fit the prop shaft.

Assembly of these parts is made thus: solder R to T, slip spinner S' and bearing H on T, placing a set of washers Q behind H. Next solder R' in place and cement to plug P. In the rear end of this assembly, the pin X and washer X' form a free bearing which is attached to the fuselage by means of a cross-piece V which slips through two hangers V' which are cemented to former I. The rear hook Z. is cemented to plug P'. In assembling the motor, lace three loops of 3/32" flat rubber through the rear hook Z and tie the ends in a square knot, making the loops about thirteen inches long. By means of a long wire hook, pass the rubber through the tube and cement the plug P' in place. Reinforce the rear face of spinner S by cementing to it a large washer U. The propeller shaft is then passed through the hollow bearing T and secured to the front spinner S, placing another washer on the shaft. Hook the rubber through the shaft and cement plug P in place at the front end of the tube. This entire arrangement is now put in the fuselage and secured in the rear as noted above and the hanger H is fastened securely to the front of the nose block.

The fuselage is now complete but for the covering. The original model, like the real one, is covered entirely with wood, but some of you may find it easier to cover it in the conventional way with paper. I advise a covering of 1/64" sheet balsa, which when on will improve its looks 100%. Recesses for the retractable landing gear should be cut in the body as noted on the plans. After this covering is on, the whole should be sanded and coated several times with wood filler, etc.

Surfaces

The tail surfaces can now be constructed and the procedure is very simple; in fact the drawings contain all the information except for the sizes of the wood used. The spars are tapered from 1/16" stock and it is advisable to continue the tail spar through the body. Ribs are 1/32" material. The tail and rudder are covered with paper, but for a real scale model, balsa of .01" thickness will look good. Cement the empennage in the position shown on the drawings and let dry.

The wings are built in the usual manner. End ribs are 1/16" thick and the others are 1/32" stock. Cut the end ribs so that the wheels will fit all right; notice that the main spar doesn't continue all the way but that a shorter one is in the larger end of the wing. Likewise these wings can be done in similar fashion as the tail surfaces. Cement the wings on the wing stubs as shown making sure that the proper amount of dihedral is given them.

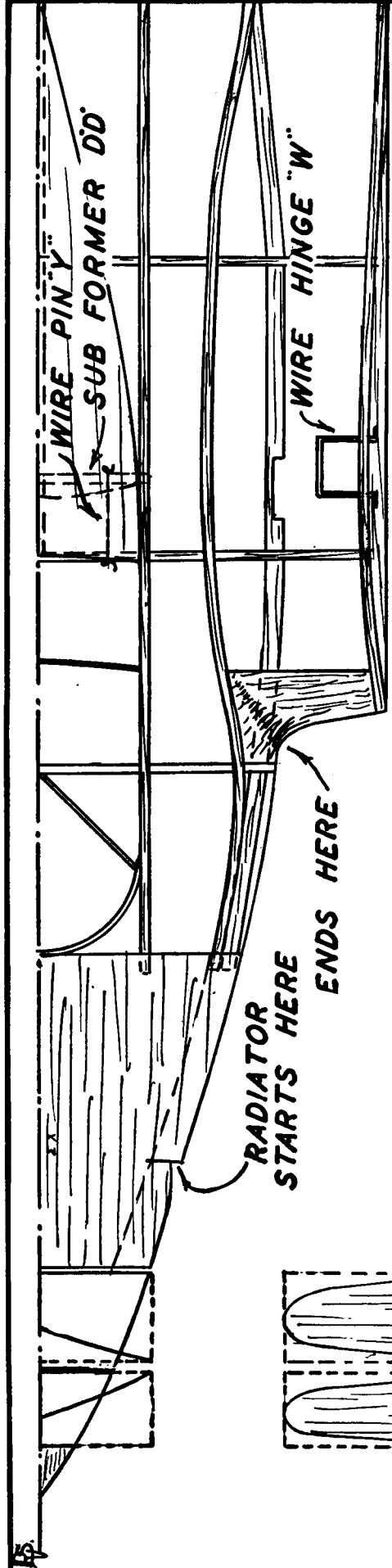
Finishing and Flying

There are a few details which have to be attended to such as the cooling gills or which are better known as radiators. Slits can be cut in the nose block as seen in the plans or bilges made of sheet balsa and cemented on the block will prove to be good radiator;. The headrest, which also forms the rear of the enclosure, is roughed out of soft balsa and then sanded carefully to the shape shown and cemented on the body. Filleting for several parts of the model can easily be accomplished by mixing up a little balsa dust and dope. The whole assembly should be gone over with very fine sandpaper and then doped with such a color as the builder sees fit. The original model is red and is trimmed with the characteristic Dutch insignia which is red, white, and blue. Bamboo hoops of the correct shape will serve nicely for formers in the enclosure which is then covered with cellophane. Air intakes, guns, a navigation light, dummy exhaust stacks, etc., will enhance the model's looks, but these various details are up to the individual.

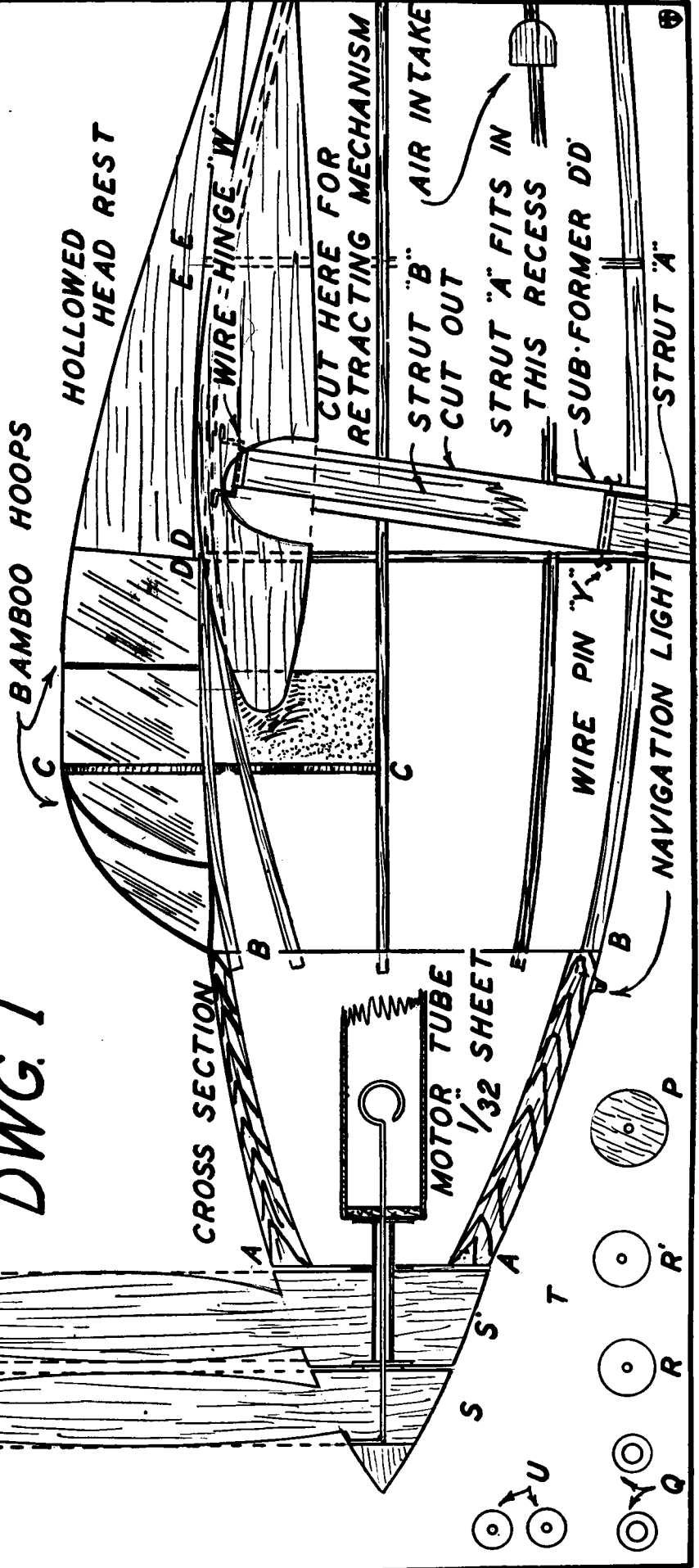
The model should now be balanced; its center of gravity ought to be approximately on the main spar of the wing. Either the tail position may be changed or weight may be added to give this desired quality. The model can be wound by holding the rear propeller and winding the front one in the usual way; this motor will take about 700, turns, but if lubricated it will stand more.

The author is indebted to Bob Levis of the Massachusetts Institute of Technology for his invaluable assistance in making this article possible, and it is our sincerest hope that the builders of this model will derive as many pleasures and thrills as we did. It's a fine stable flyer and if built as per instructions, it will be a real asset to anyone's fleet of models.

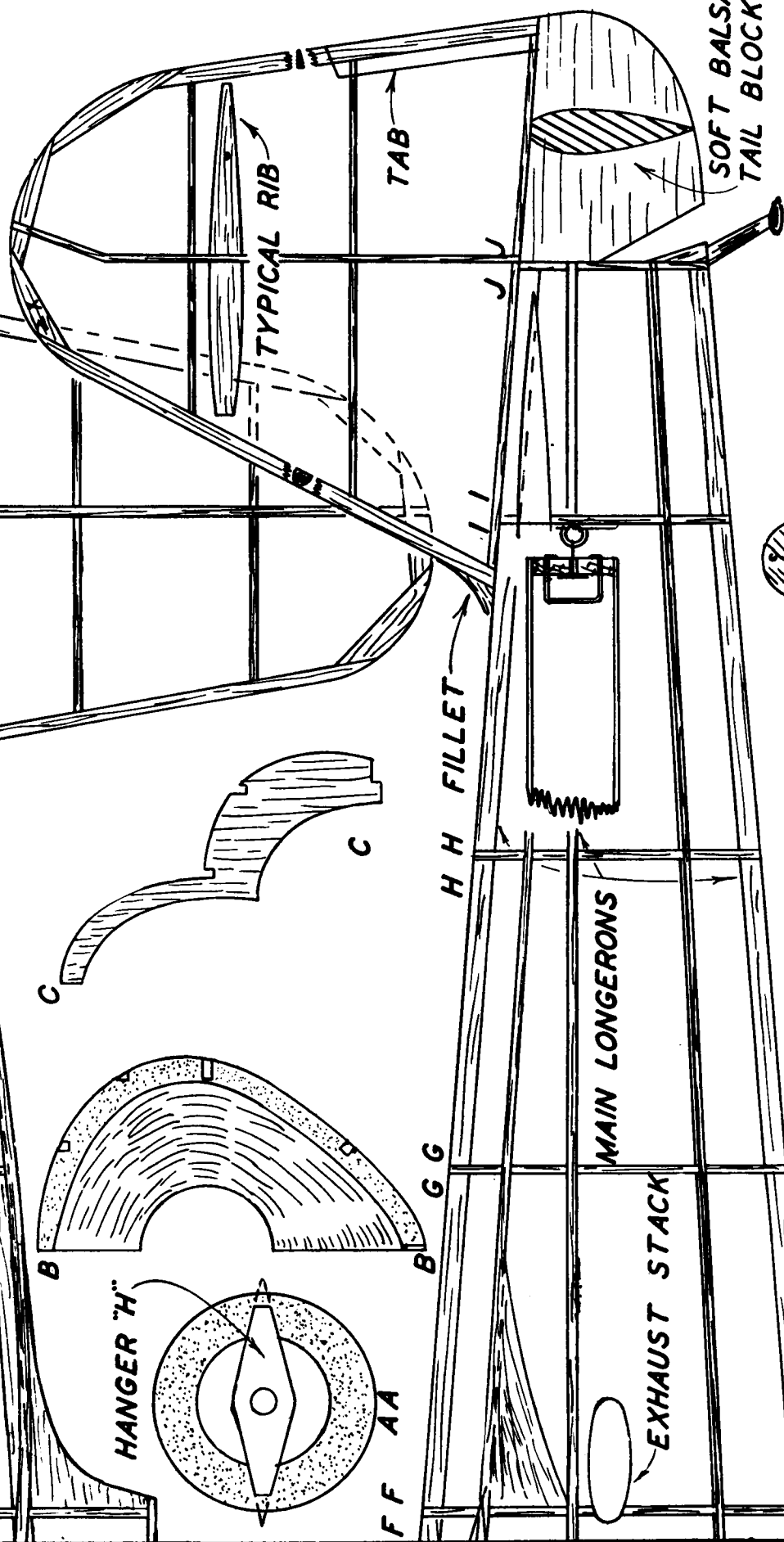
***Scanned from June 1937
Model Airplane News***



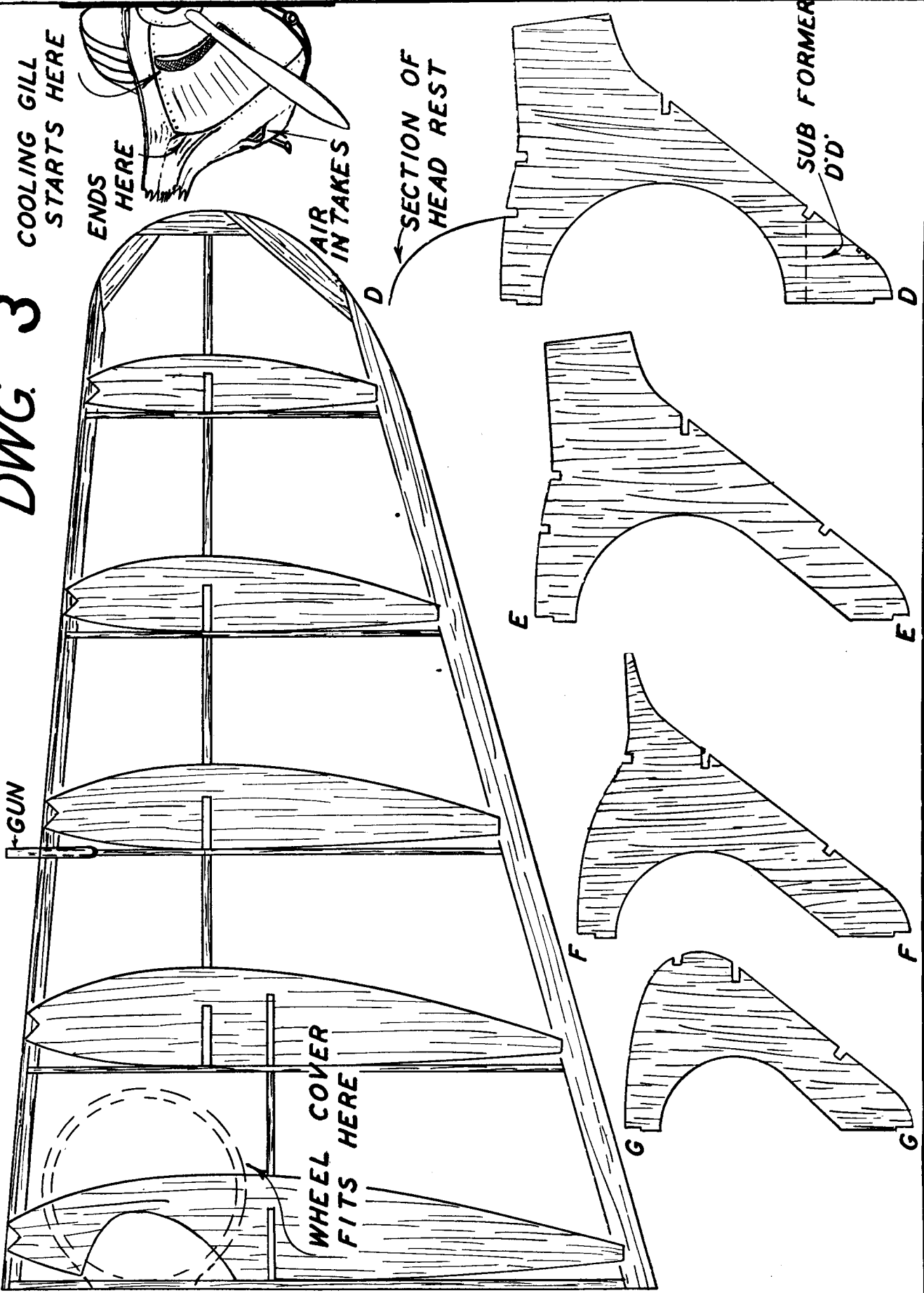
DWG. 1



DWG 2

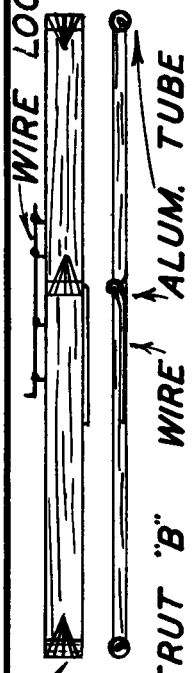


DWG. 3

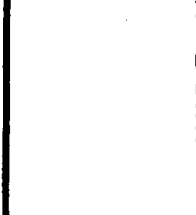


DWG. 4

WIRE LOCK

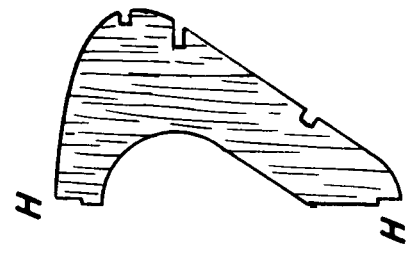
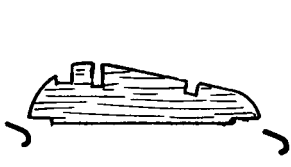
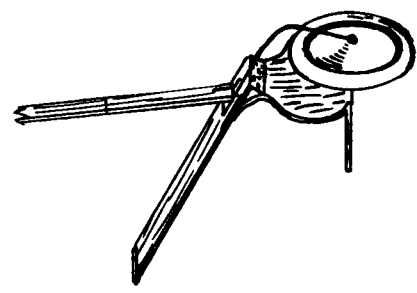
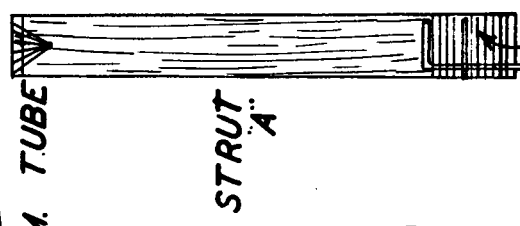
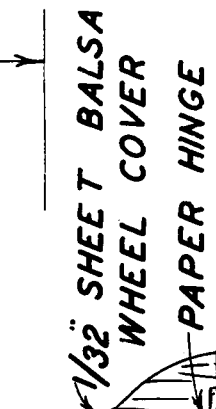
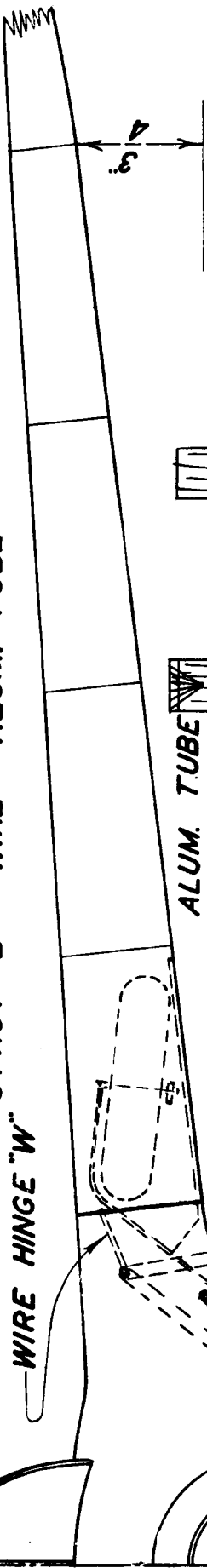


THREAD BINDING



STRUT "B" WIRE

ALUM. TUBE



STRUT "A"

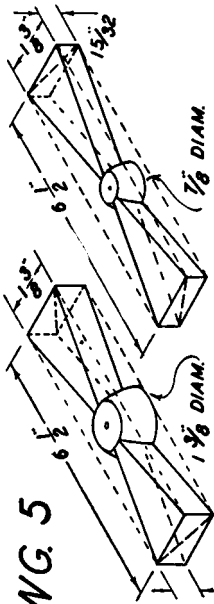
STRUT "B"

FILLET

PAPER HINGE

TOP VIEW OF WIRE AXLE

DWG. 5



REAR PROP.
LEFT HANDED

FRONT PROP.
RIGHT HANDED

Rev. 1