Build the Hawk 75

SURPASSING ALL PREVIOUS PRODUCTIONS IN THE FAMOUS CURTISS HAWK PURSUIT CLASS, THE NEW HAWK 75 IS ONE OF THE MOST FORMIDABLE MILITARY SHIPS OF ITS TYPE EVER TO TAKE THE AIR. A WELLARMED, ALL-METAL LOW-WING MONOPLANE, THIS FAST FIGHTER CAN HURTLE THROUGH THE SKIES AT A SPEED CLOSE TO 300 M.P.H. AND DIRECT FROM THE OFFICIAL PLANS OF THIS DEADLY CRAFT, JESSE DAVIDSON HAS DEVELOPED FOR YOU A REALISTIC MODEL THAT IS EASILY MADE. FIRST READ BELOW ABOUT THE REAL SHIP, THEN TURN THE PAGES FOR HIS PLANS FOR THE MODEL.

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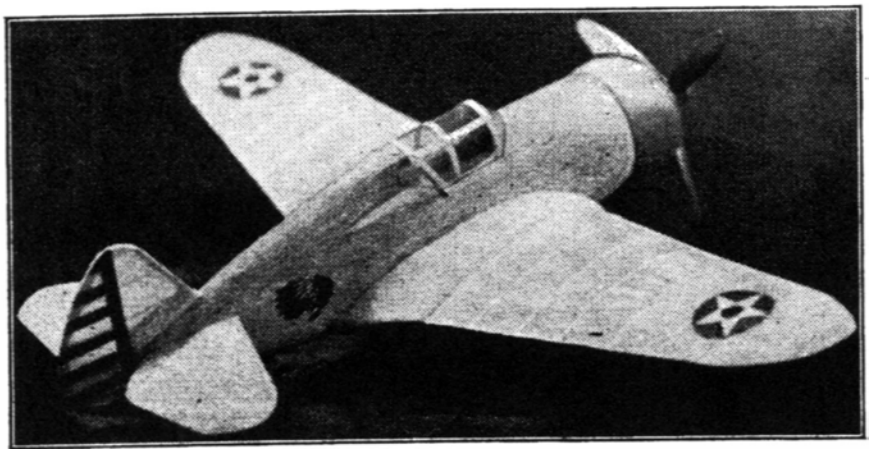
By Jesse Davidson

THE NAME Curtiss is synonymous with United States military aviation, for during the past twenty years this organization has maintained an enviable position as one of the most important sources of aircraft for the air services of our Army and Navy alike. And for years the Curtiss Hawk enjoyed the distinction of being the standard pursuit ship of the U. S. Army Air Corps.



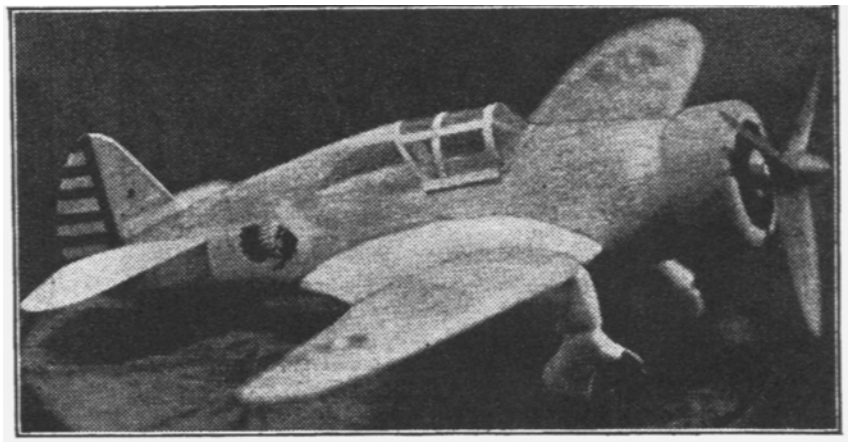
Since 1924 when the original Hawk was designed and built, the ship has undergone constant change resulting in the still greater speeds and the still more exacting performances demanded by our Army air force.

Several months ago the design of the old Curtiss Hawk underwent an absolute transition, and from the biplane type

it developed into an all-metal low-wing monoplane, modern in every detail and phase of construction.

Now known as the Curtiss YIP-16 in the Army Air Corps, and listed as the Curtiss Hawk 75, the new ship has been described as one of the deadliest and most formidable flying weapons ever to take the air. In short, it is a new and swifter Hawk with sharper talons—a menacing antagonist in any form of combat.

In keeping with the Army's rigid specifications for pursuit planes, the new Hawk is also adapted to attack assignments by virtue of its optional armament equipment. As a pursuit plane, it is equipped with one .30 and one .60 caliber Colt machine gun, concealed beneath the engine cowl and synchronized to fire through the propeller. With an additional machine gun mounted inside within each wing, the Hawk becomes a four-gun pursuit or attack ship of tremendous power.



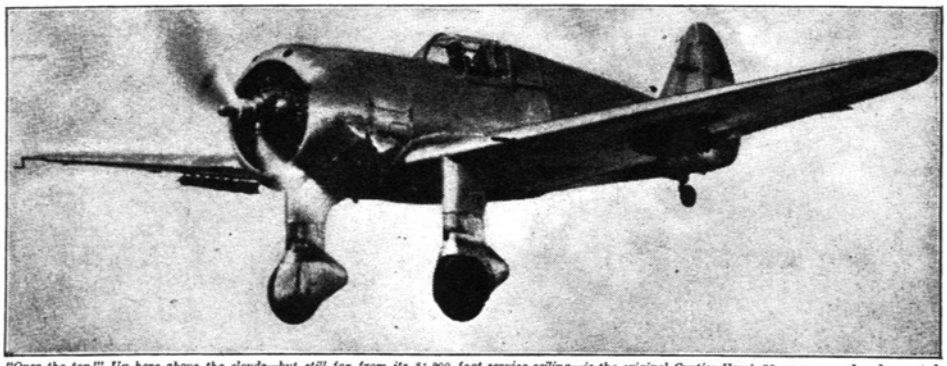
Bomb racks mounted flush with the lower surface of both wings are designed to carry any of the following bomb loads: Ten 25-lb. chemical bombs, ten 30-lb. fragmentation bombs, or six 50-lb. demolition bombs. Additional racks may be attached for demolition bombs of 100 to 500-lb. size.

The new Hawk is powered with a Wright Cyclone G-3 engine of 1,000 h.p. output. She has a maximum speed of close to 300 m.p.h. at 10,700 ft. Cruising speed is 240 m.p.h. Rate of climb is 2,500 feet per minute, and service ceiling 81,800 feet.

A BRIEF description of the Curtiss Hawk 75 follows; the fuselage is of semi-monocoque design covered with Alclad stressed skin. The windshield is made in one piece, non-

shatterable Plexiglass, which gives unobstructed visibility. Directly behind the windshield there is a sliding Plexiglass hood over the cockpit which when closed helps form a complete cabin. The landing gear is of cantilever construction, which aerodynamically is the most efficient type of fixed gear that can be used. Its long stroke oleo strut and streamlined tires adequately absorb the shocks imposed in landing and taxiing.

The tail surfaces, constructed with aluminum alloy beams and ribs, are fabric covered. The rudder trim tab, controlled by the pilot, is used to counteract the changing engine torque in climbing, level flight and diving maneuvers.



"Over the top!" Up here above the clouds—but still far from its 31,800 foot service ceiling—is the original Curtiss Hawk 75, as approved and accepted by Uncle Sam's Army air experts. Not only is this "the perfect pursuit ship" but it can also be adapted to attack work merely by placing a gun in each wing in addition to the pair of prop-synchronized weapons concealed in the cowling. Keep this picture handy for reference while you are building your Hawk 75 model.

A Curtiss constant speed three-bladed prop is the normal airscrew-equipment of the Hawk 76. And now that you know all about the big ship, let's see about our little model of it.

FUSELAGE

THE hollowed-out type of fuselage (Plate 1 and 2) used in our Hawk model has been chosen simply to simulate the metal skin used on the actual ship. The fuselage is made in halves and thereby necessitates the use of stiff paper templates of top and side views. The fuselage blocks should be of soft balsa, free of knots.

Your first step is to cement both fuselage blocks together very lightly, since they must later be separated. Trace the side-views of the fuselage on both sides of the block, then with a sharp knife remove all excess wood. Use sandpaper to smooth out the shaved surfaces and then trace the top view of the fuselage onto your block. Again remove the excess wood.

Reverting to the fuselage plans for a moment, notice the section starting at the front of the windshield (Plate 1) and which extends as far back as the black strip, above which is the letter B. This portion is to be removed. Simply make a complete tracing of this part and outline it on both sides of the body. Then with a sharp knife remove the wood carefully.

Just aft of this section running onto Plate 2, a shaded area is shown. Sand this carefully in a concave manner. See fuselage section BB for depth and side view of fuselage for length.

The next step is to separate the block with a thin bladed knife. Do not try to force the halves apart too suddenly. And now another inside view template must be traced and cut to shape by following along the series of dotted lines which indicates the wall thickness throughout the fuselage.

This template is then traced onto the inner side of each fuselage half, to indicate the portion to be scooped out. You'll find that the walls are about 1/16" thick all around with the exception of the nose, tail and upper cockpit portion. Use extreme care and take your time.

When nearing the bottom of each shell use coarse sandpaper to clean out with and finish with smooth sanding. Both shells are given three outside coats of dope, with a smooth sanding between each coat.

A swinging door is cut out from one side of the fuselage only. The same piece of wood cannot be used for the door, so shape another piece to fit snugly. Use small pins for the hinges. A pin head may be used for a door knob.

The next step is to apply cement generously along the inner edges of both shells and then press the halves firmly together. Use a few thick rubber bands tightly wound around the body to help keep them together while drying.

COWLING AND COCKPIT COVER

THE cowling is made in three parts. The two bulk-heads shown on Plate 1 are carefully shaped from hard balsa, then joined together by inserting four 1/16" sq. stringers each 13/16" long in their respective notches. See side view of cowl on Plate 1.

The cowling is then covered with 1/32" sheet balsa. The front piece is carved to shape from balsa 5/16" thickness. The inner circle of this piece, which measures 1-15/16", is

discarded. Round off the front edge with sandpaper as shown by the aide view of the cowling on Plate 1. When this has been done, cement the cowling flush to the fuselage nose.

Shape the cockpit cover by bending thin sheet celluloid as shown on the plans, with a slight overlap resting on the body sides. To these over-lapping parts apply cement. Then with the aid of a few small pins press firmly into position.

The black strips are paper strips blackened with India ink. In placing these into position use the cement sparingly. The forward part of the windshield is made in the conventional manner, and cemented into position first, the curved top following as soon as cement holding the front has hardened.

FILLETS AND WINGS

FILLET pieces are shaped from soft balsa blocks each measuring 1 ¼" by 1 3/4" by 6 3/4". These form a very important part of the model and care must be exercised in their shaping. The inner portion of each block fits against the fuselage sides and is completely shaped first. Then, using a generous amount of cement, attach each fillet piece to the body sides and allow a couple of hours to dry. Next shape the pieces as shown by the front, side and top views shown on Plates 1, 2 and 4.

A plan of the left wing is shown on Plate 3. Take each rib measurement directly from this plan. The ribs, indicated in black on Plate 4, are shown with the trailing edge spar attached. If desired, cut out ribs of the exact sizes given on Plate 4 but remember to remove the extreme tips when ready to attach the trailing edge spar.

The wing tips are made from 1/16" flat balsa. As a reinforcement for landing shock, a piece of 1/16" sheet balsa is cemented to the under surface of each wing panel between the first and second rib.

The wings are covered with fine jap tissue. Before applying a single coat of dope, water-spray lightly with the aid of an atomizer.

TAIL AND UNDERCARRIAGE

THE horizontal stabilizer is made entirely from 1/16" sheet hard balsa. The rudder is made in the, same manner also. Both surfaces are covered on each side and water-sprayed. It is not necessary to dope these parts inasmuch as they are so thin and the tendency to warp is ever-present.

The rudder is mounted on a piece of balsa shaped as shown on Plate 2, and is then cemented in position at the rear-most end of the fuselage.

Make the landing gear legs of balsa, cross-grained laminated. Cut them to shape (Plate 1), and stream-line and sand them smoothly. The wheel pants are made in halves (Plate 2). To the inner coverings cement the wire shock absorbers, bent to shape from .020 wire. Both wheel pants are then firmly cemented to the landing gear legs.

The prop blades are cut individually as shown on Plate 4. All three are then cemented together and re-inforced by adding the small triangular pieces between each blade.

A wire shaft is then inserted through the center of the hub, but is not bent until the detachable balsa nose plug has been shaped. This is shown in detail on Plate 1. Slip the prop shaft through the plug and bend it with a pair of pliers. A thin coat of cement is applied over the area where the shaft has been bent.

For motive power use six strands of 1/8" flat rubber well lubricated.

THE wings are cemented flush to the root fillets and are given a dihedral angle of 1 3/4". Mount the tail surfaces with cement, aided by small pins. A tail wheel is attached as shown.

When the wings have hardened sufficiently to be handled, cement the landing gear into position.

Paint the ship entirely aluminum and use the regulation stars on both surfaces of the wings and the Army Air Corps markings on the tail.

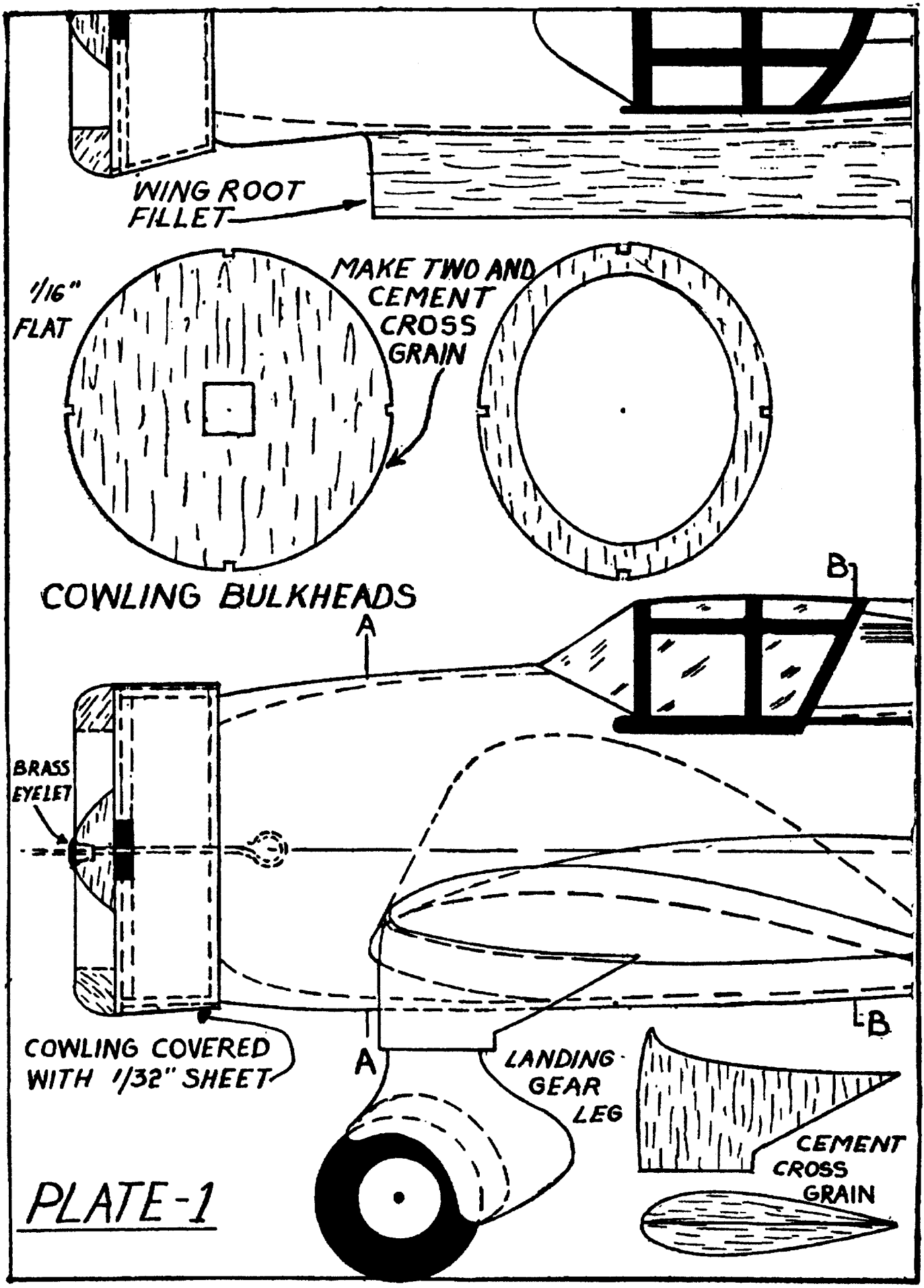
For teat hopping give the prop about fifty winds and let it R.O.G.

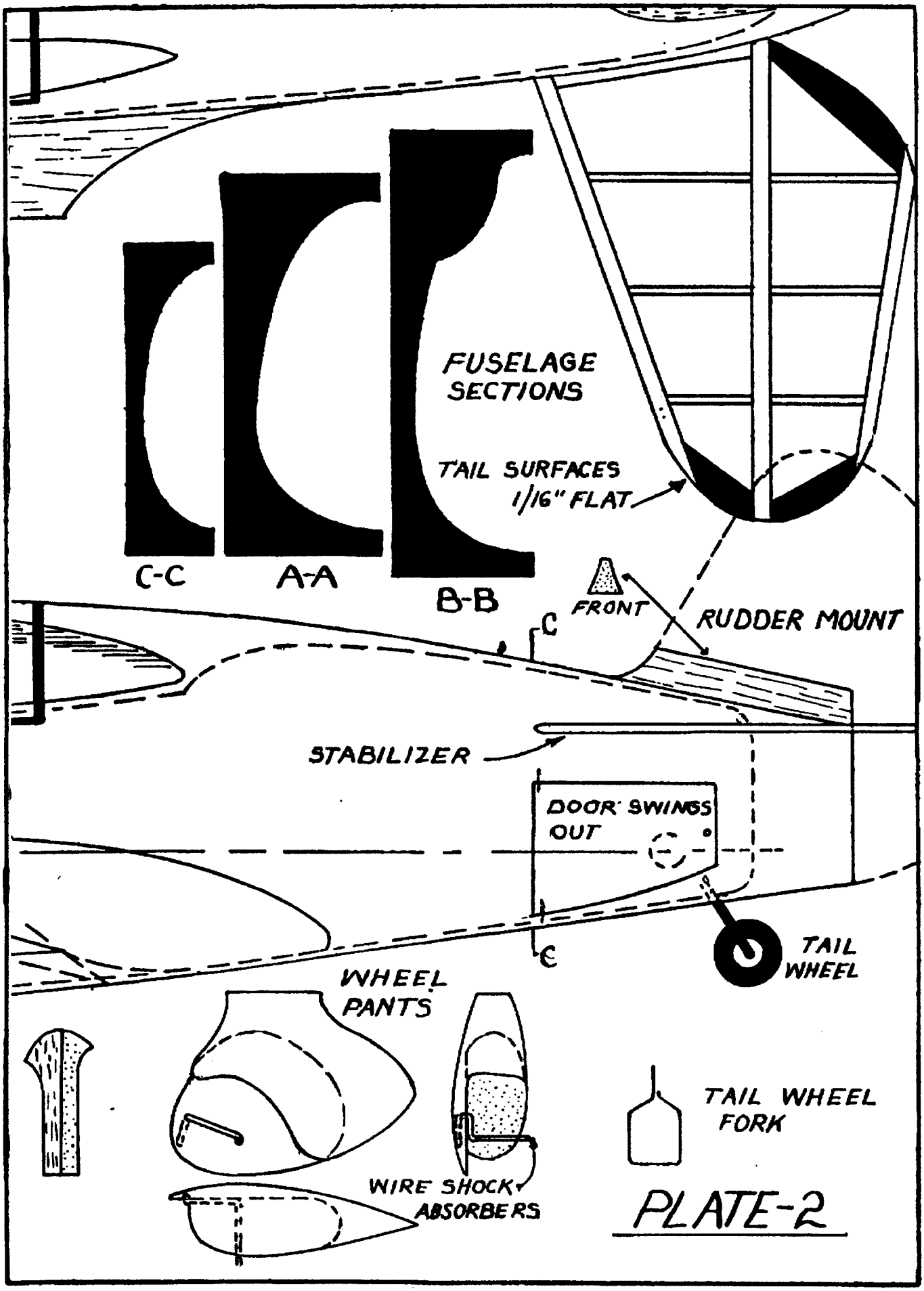
Note any "trick" characteristics and counteract them by warping wing tip or tail surfaces.

For free flights choose a locality free of obstruction and wind the rubber to its maximum.

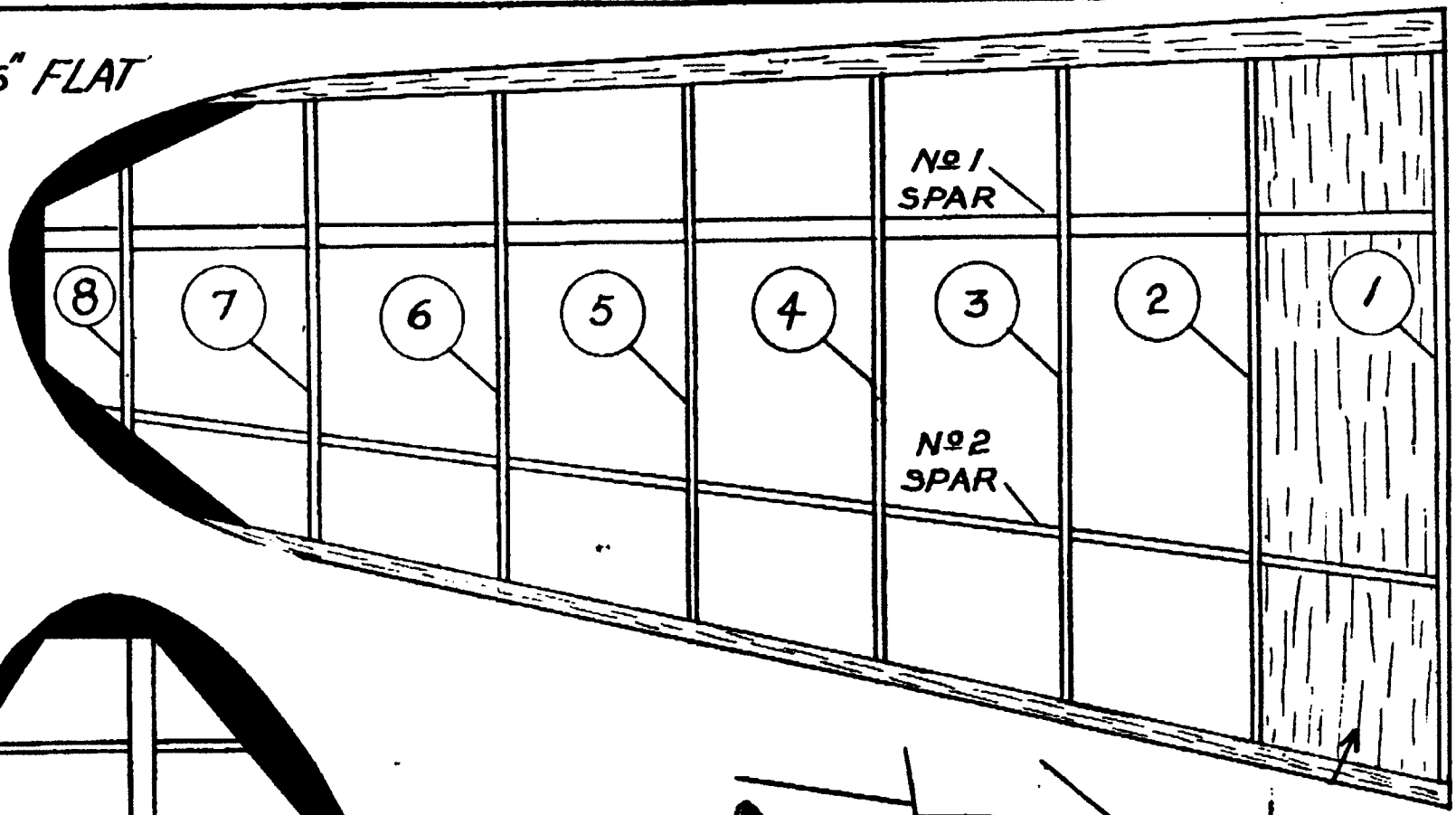
BILL OF MATERIALS

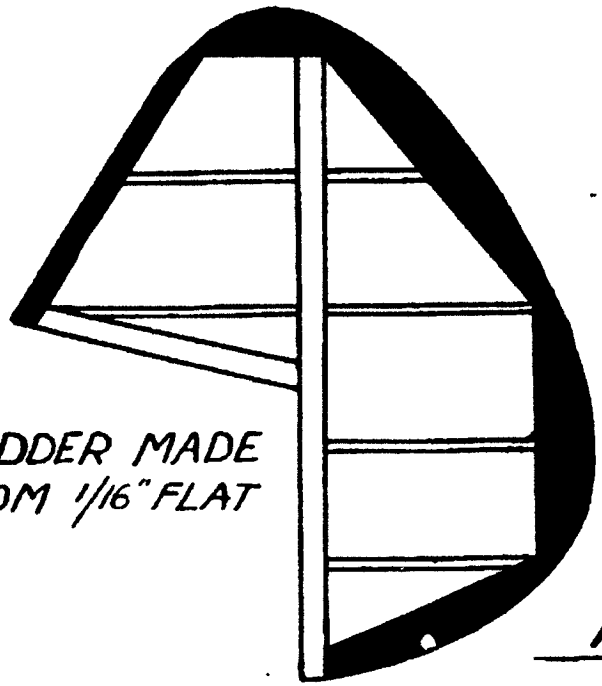
Two blocks soft balsa, 1" by 3 ¼ by 12" for fuselage;
Two strips balsa, 1/8" by 1/2" by 8 1/4" for No. 1 spar;
Two strips balsa, 1/16" by 1/4" by 8" for No. 2 spar;
Two strips balsa, 1/4" by 3/8" by 7 1/4" for leading edge;
Two strips balsa, 1/16" by " by 7" for trailing edge; One piece sheet balsa, 1/16" by 3" by 36" for ribs, tail surfaces, bulkheads, etc.;
Two pieces balsa, 1 1/4" by 1 3/4" by 6 3/4" for fillet pieces;
One piece balsa, 6/16" by 3" by 3" for cowling front;
One piece balsa, 1/2" by 1" by 1" for nose plug;
Four pieces balsa, 1/8" by 1 1/4 by 2 1/8" for landing gear leg;
Four pieces balsa, 5/16" by 1 1/2" by 2" for wheel pants;
Three pieces balsa, 3/8" by 1" by 3" for propeller blades;
Cement, dope, jap tissue;
Small pins, wire fittings;
Eyelet bearing, rubber wheels;
Five-and-a-half feet of 1/8" flat rubber;
Celluloid.


WING ROOT FILLET
1/16" FLAT
MAKE TWO AND CEMENT CROSS GRAIN
COWLING BULKHEADS
A
B
BRASS EYELET
COWLING COVERED WITH 1/32" SHEET
LANDING GEAR LEG
CEMENT CROSS GRAIN
PLATE-1

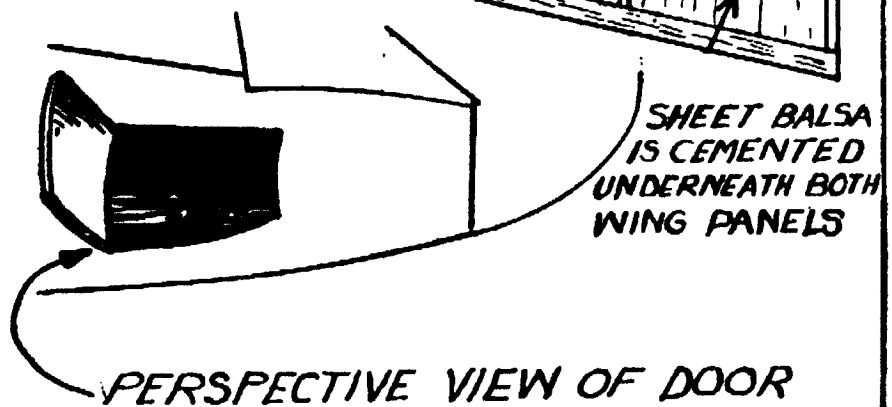

FUSELAGE SECTIONS
TAIL SURFACES 1/16" FLAT
C-C
A-A
B-B
FRONT
RUDDER MOUNT
C
STABILIZER
DOOR SWINGS OUT
C
TAIL WHEEL
WHEEL PANTS
WIRE SHOCK ABSORBERS
TAIL WHEEL FORK
PLATE-2

TIPS 1/16" FLAT



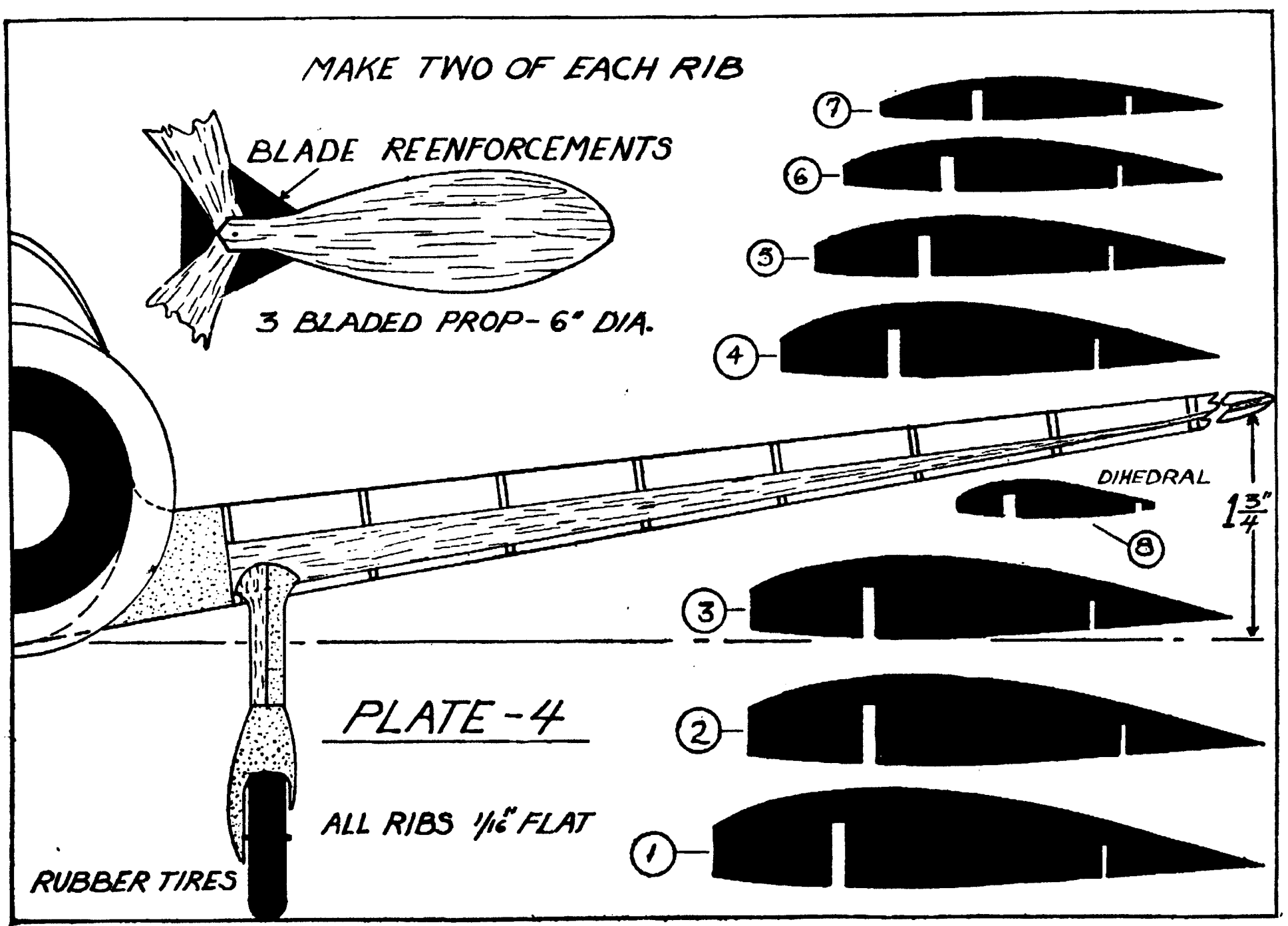


RUDDER MADE
FROM 1/16" FLAT



PERSPECTIVE VIEW OF DOOR
ARRANGEMENT

PLATE-3


MAKE TWO OF EACH RIB
BLADE REENFORCEMENTS
3 BLADED PROP- 6" DIA.
7
6
5
4
DIHEDRAL
1 3/4"
8
3
2
1
PLATE - 4
ALL RIBS 1/16" FLAT
RUBBER TIRES