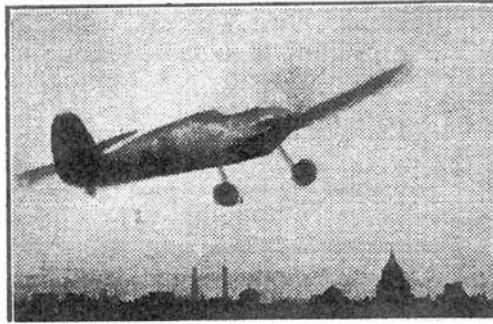


Will she fly? Well, just cast your eyes at this picture of Sid's own model of the Messerschmitt as she heads happily for the clouds.



GERMANY'S DEADLIEST FIGHTER!

Classed as the world's fastest landplane, the Messerschmitt Bf-109 recently established the official speed record of 379.65 m.p.h. Its high speed, however, seems not to affect the manoeuvring qualities of the ship. For in the sky-fighting in Spain, the Messerschmitt has been the only ship capable of out-flying the tricky Russian "Chato." And now Sidney Struhl, ace model designer, has obtained plans for the Messerschmitt fighter direct from Germany, and he presents them to you here with complete instructions on how to build a flying scale model of this latest German craft.

Construct the Messerschmitt Bf-109

By Sidney Struhl

In the sleek, record-smashing Messerschmitt Bf-109, the German Air Force has acquired a truly excellent pursuit job. Powered with a 960 h.p. inverted V-12 Mercedes-Benz engine, this ship has a high service ceiling and an economical cruising speed.

Its maximum speed was recently demonstrated when Dr. D. Wurster, chief test pilot of the Bavarian Airplane Works, flashed through the skies in a specially groomed stock job to establish a world's landplane record of 379.65 m.p.h.

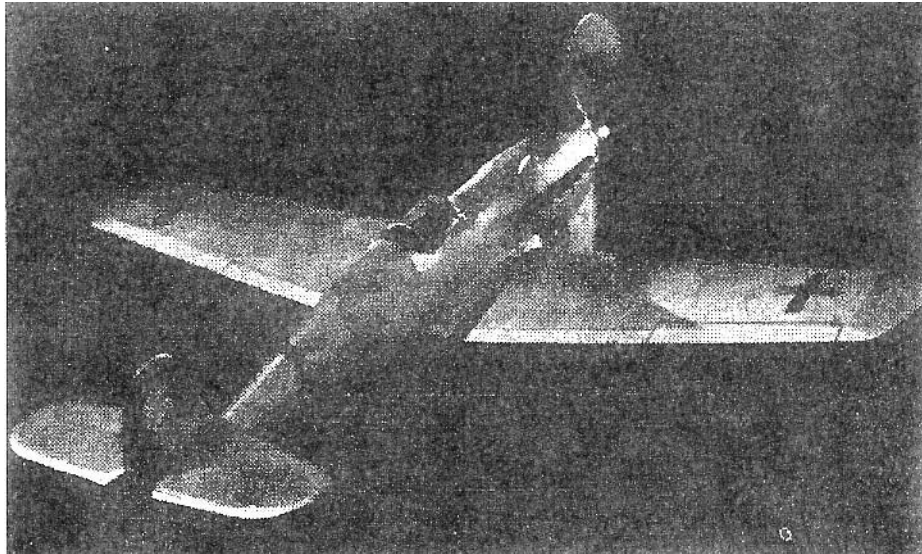
And despite the recent commotion caused in England when an Army pilot jockeyed his Hawker hurricane up to a speed of 408.7 m.p.h., the Messerschmitt record still stands (at this writing). For the Hurricane figure cannot be accepted as "official," its run having been made cross-country rather than on a speed course, as is required.

Highly manoeuvrable, the Messerschmitt seems to have been the only ship in the Spanish conflict capable of out-flying the "Chato" pursuit ships of the Russian flyers.

And another asset of the Messerschmitt-to Germany, at least-is the fact that its design readily lends itself to speedy production in large numbers

And now from production of the full-size ship, we'll turn our thoughts to the actual production of our model. You'll find the job quite easy to build if you'll follow the plans carefully, and she'll turn out to be a swell flyer, too. The original model incidentally, weighs only two ounces ready to fly

The fairly small prop not only increases the stability by cutting down on the torque somewhat, but it also increases the climb and glide propensities of the ship. Lateral stability is insured by a low centre of gravity and heavy airwheels-which also serve excellently as shock-absorbers in rough landings.



Complete with authentic swastika on the rudder and black cross insignia on the wings, this model of the Bf-109 shows what your own job will be like if you if you carefully follow the accompanying instructions. And be sure the tips of your swastikas are aimed in the right direction.

FUSELAGE

Start work on the fuselage by cutting out all the bulkheads. Use 1/16" sheet balsa. Note on Plate 4 that Bulkhead G5 is laminated from two pieces of hard 1/16" sheet stock, glued together cross-grain. This bulkhead serves also as a retainer for the rear hook. Bulkhead G1 is shown on Plate 1, while the remaining outlines are given on Plate 2.

For the master stringers, marked MS on the drawings, cut two 13" lengths of 1/8" sq. balsa. Lay them on the plan and mark on them the correct positions for the bulkheads.

Cement Bulkheads G1 and G2 on the master stringers. When these are quite dry, add the remaining bulkheads. Bend the rear hook from .034 music wire and glue it as indicated on G5. Now add all remaining stringers, which are of 1/16" sq. balsa. Note that these stringers are not glued into notches, but are set on the outer edges of the bulkheads-the reason being that the fuselage will remain free from untidy ridges after the tissue sags from doping.

Now carve the nose block, using a very soft, light block of balsa 2 3/8" by 1 7/8" by 4" for the purpose. Carve it to the outline and cross-section as shown on Plate 1. After the block has been sand papered to shape, hollow it to the thickness shown by the dotted line, and then cement it in its proper place.

Carve the radiator in the same manner, but do not glue it in place until the wing has been installed.

Now cut the cockpit from soft 1/32" sheet balsa. Follow the design shown in the side and top views of the fuselage on Plate 1.

TAIL SURFACES

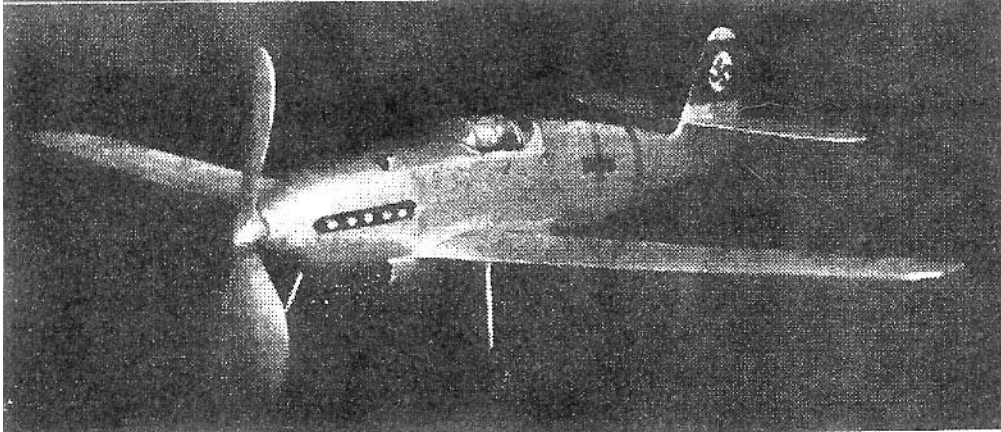
First carve the stabilizer mount from a piece of 3/16" sheet balsa to the shape shown near the tail on Plate 2. Make sure that the grain runs vertical. Sand it to a streamline cross section as seen in the perspective, and glue it firmly in place.

From a sheet of balsa 3/32" by 3 1/4" by 8 1/2", cut the stabilizer to shape (Plate 2). Now lay the stabilizer outline on the plan, and insert

and glue the ribs (of 3/32" sq.) in their proper locations.

The rudder is constructed in exactly the same manner as the stabilizer.

Bend an axle from an ordinary straight pin. Slip the balsa tail wheel, 3/8" diam., on the end, and then cement the axle to the position indicated on the plan.



Being interested in appearance as well as superb flying qualities, Sid Struhl covered his original model with superfine tissue and finished it with one coat of clear and two of coloured dope. If flying is your primary interest, a lighter job can be made merely by using silver tissue for covering, thus avoiding the extra weight of the dope

WING AND LANDING GEAR

The type of construction employed in our Messerschmitt wing is the lightest and strongest method used in flying scale models. The ribs, you will notice, are built in sections. But first make a tracing of the wing.

The wing spar is next. From a sheet of 1/16" balsa, slice out two spars to the shape shown by the dotted lines on Plate 4. Lay them on your bench so that the roots fit evenly with 5° angle under each bottom-allowing 11/4" of dihedral under each extreme tip. Apply cement to the joint and allow to dry. Repeat several times for strength.

While the spar is drying, slice out the ribs. First make a rib template out of Bristol board or thin metal to the shape of the top part of the root rib. Then, from 1/16" sheet balsa slice sixteen top ribs. For the bottom ribs, strips of 1/16" square balsa may be used.

Shape the leading and trailing edges to their proper cross-sections, and pin them in their proper places on the plans. Now cement the bottom parts of the ribs in place.

After the bottom ribs are dry, carefully lay the spar in position on the bottom ribs and between the leading and trailing edges.

Put a drop of glue at each spot where the ribs meet the spar, and allow to dry. After the glue has set, add the top ribs, cutting their trailing edges so that they will fit in the taper.

Cut the wing tip out of 1/16" sheet balsa. Glue it in place. Make the second half of the wing in the same manner.

You will notice that a small spar runs from the root to the second ribs of the wing. This spar is the landing gear base. Cut it from very hard 1/16" sheet balsa and cement it securely in place.

Bend two landing gear struts to shape (Plate 3) then cement and thread them to the small spar. Slip a 2 1/4" length of 1/8" outside diameter aluminium tubing over each strut before bending the axle outward. The 1 3/8" air wheels are now put on the axles and retained with a drop of glue.

When the landing gear assembly is dry, cover the wing. The author used superfine tissue with one coat of clear dope and two coats of coloured dope. Use this system for appearance, but if a super light job is desired, ordinary silver tissue may be used.

After covering, spray the wing with water to tighten the tissue.

When the water has evaporated, cement the wing to the fuselage. The three points of contact are: the leading edge to the nose block, the two root ribs to the bottom of Bulkhead G1, and the trailing edge to Bulkhead G2. Now the radiator may be glued in its proper location with relation to the wing.

PROPELLER AND DETAILS

From a hard block of balsa 7/8" by 1 1/4" by 7 7/8", carve the blank to the design shown on plate 3. Shape the prop in the usual way, leaving the blades about 1/8" thick at the hub and tapered to about 3/64" at the tips. Keep a camber of 1/16" the entire length of the blades.

The spinner (Plate 1) may either be carved from the same block as the prop, or from another small balsa block. The nose plug is now cut from a block to the design shown on Plate 1. Make sure that the plug fits tightly in the hole provided in the nose block. A small disc of sheet brass is used for the bearing.

Bend a prop shaft from .034 music wire, slip it through the nose plug, and cement it to the prop.

The rest of the fuselage may now be covered, and also the tail surfaces. After the job is doped the air scoop and the exhaust ports may be cemented in their proper locations. Make these from scrap balsa. Use short lengths of soda straw or hollow reed for the ports in place of balsa, if you wish.

Paint or transfer the German insignia onto the wing panels, fuselage, and rudder.

FLYING THE MODEL

String four strands of 3/16" brown rubber between the prop shaft, and rear hook. Leave about 1 1/2" slack.

Take your Messerschmitt out to your favourite flying field, and starting it no more than two feet above the ground, glide it into the breeze. If the model stalls, add a bit of modelling clay to the nose, and vice versa, until you have a flat glide.

Now Wind the rubber to about 50 turns and let it out of your hands. The ship should climb about 10 feet and then assume a glide to the ground. If the model stalls, bend the rear of the stabilizer a trifle downward. Do not give the prop any down thrust-which is the popular remedy for stalling. In this ship, such a cure might kill the climb.

With the use of rubber lubricant and a winder on your motor, you can depend upon getting your Messerschmitt Bf-109 up in the thermals for long cross-country flights.

If any bugs are found that you can't eliminate, either in construction or flying, write the author in care of this magazine. Please enclose a self-addressed, stamped return envelope. Good luck!

BILL OF MATERIALS

All wood is balsa.

Two pieces of 1/8" sq. by 13" for master stringers;

Twelve pieces of 1/16" sq. by 13" for fuselage stringers;

One piece 1/16" by 2" by 36" for bulkheads, ribs, and spar;

One soft nose block 2 1/2" by 1 3/4" by 3 1/4";

One block 7/8" by 1 1/4" by 8" for prop;

One block for radiator 5 1/2" by 1 3/4" by 3/4".

One sheet 3/32" by 3" by 12" for stabiliser and rudder;

One piece of 3/16" by 1/4" by 24" for leading edge;

One piece of 1/8" by 1/2" by 24" for trailing edge;

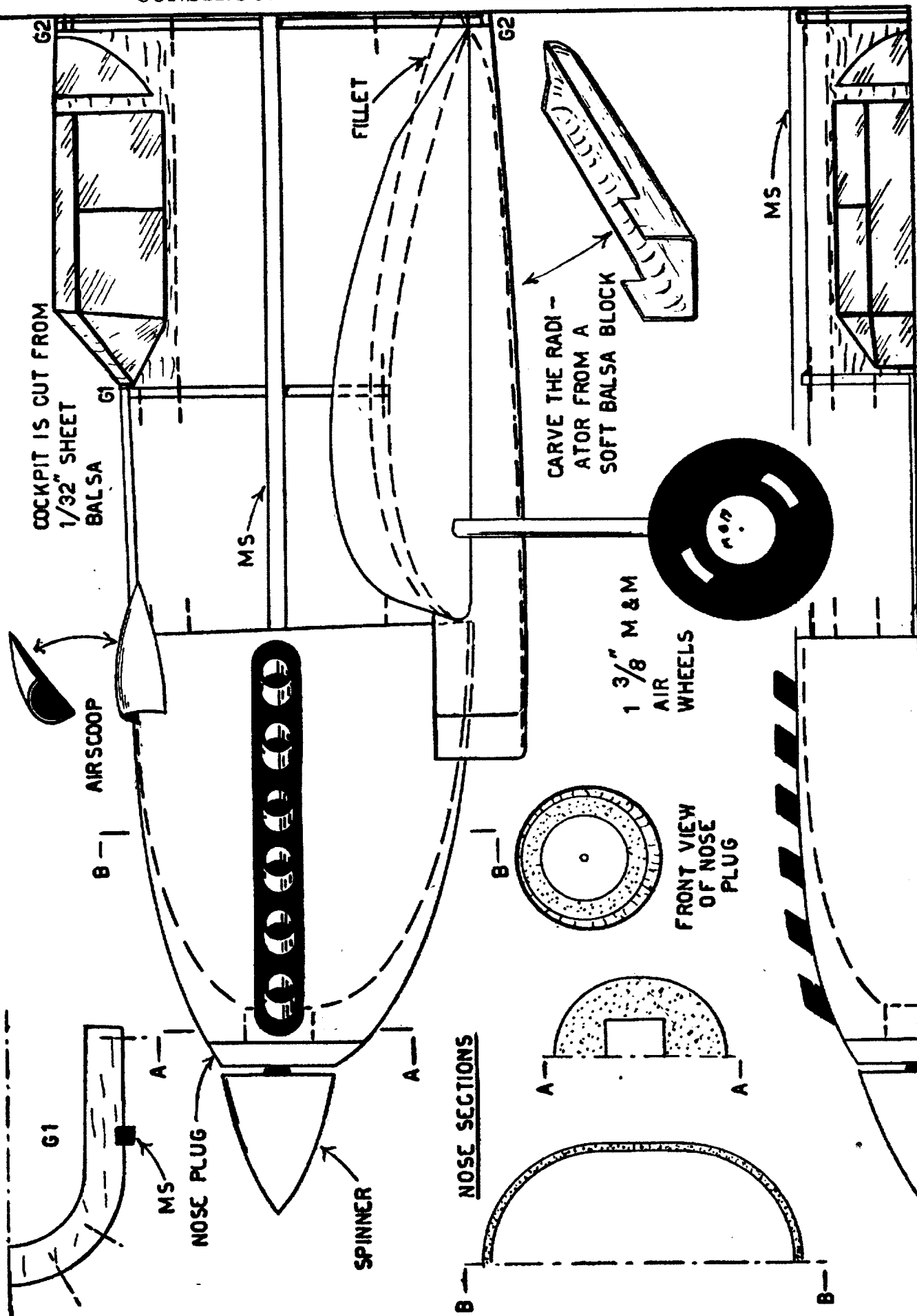
One pair 1 3/8" air wheels;

Two pieces 2 1/4" by 1/8" O.D. aluminium tubing;

One 18" length of .034 wire;

One sheet superfine tissue;

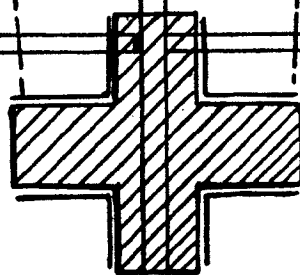
Cement, silver dope, celluloid, bamboo, scrap balsa.



ALL STRINGERS ARE 1/16" SQUARE EXCEPT MS, WHICH IS 1/8" SQUARE

G3

POSITION OF
STRINGERS



G4

MAKE FROM
SHEET
3/16"
BALSA

MS

STAB.

G5

G3

ALL BULKHEADS
ARE CUT FROM
1/16" SHEET
BALSA

MS

G4

JOIN TO RUDDER

POS. OF STRINGERS

MS

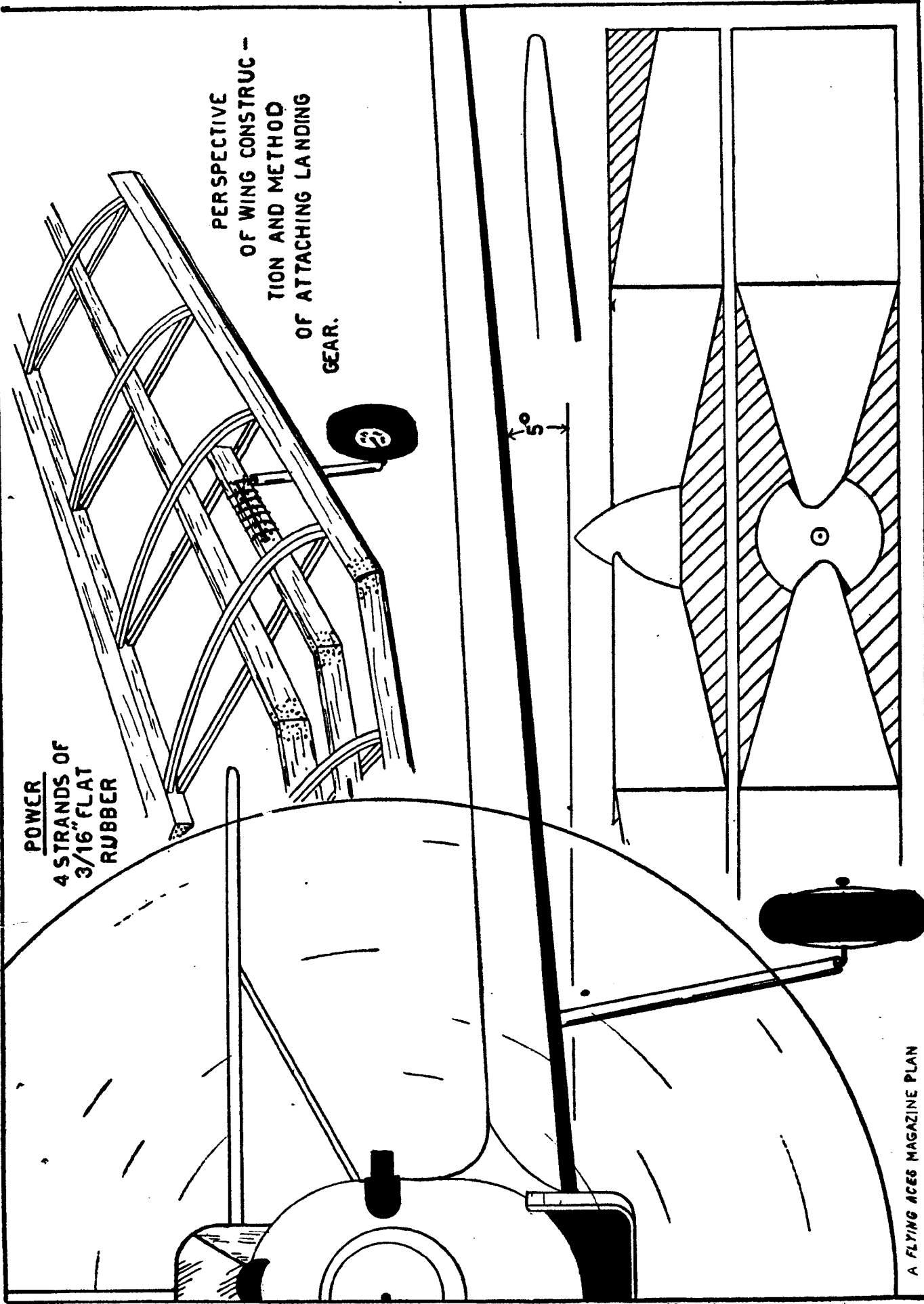
G3

MS

G2

RUDDER AND
STABILIZER
OUTLINE IS
3/32"
SHEET
BALSA





POWER
4 STRANDS OF
3/16" FLAT
RUBBER

PERSPECTIVE
OF WING CONSTRUCT-
TION AND METHOD
OF ATTACHING LANDING
GEAR.

5°

LEADING EDGE IS $3/16" \times 1/4"$ BALSA →

BLACK PAPER

SIZE OF SPAR

OX →

RIB AT WING ROOT

RIB AT WING TIP

TRAILING EDGE IS $1/8" \times 1/2"$ AT ROOT, TAPERED TO $1/8" \times 3/8"$ AT TIP

.034 WIRE HOOK

STABILIZER STRUT—BAMBOO

LAMINATED $1/16"$ SHEET

A FLYING ACES MAGAZINE PLAN

GS

