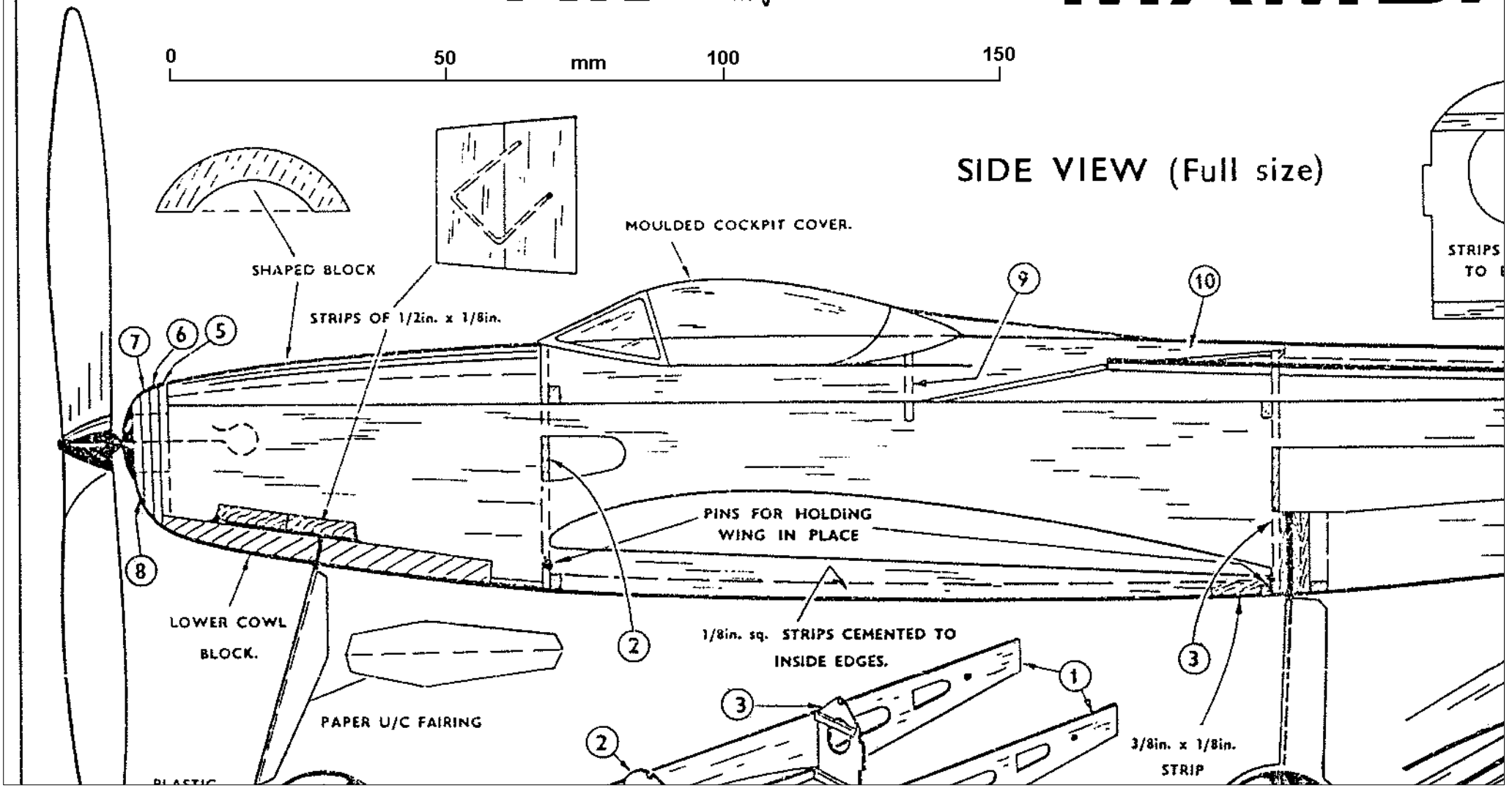
Cat. No.
649 FK

FROG TRADE MARK

"MAMBA



AMBA"

19" SPAN
RUBBER-POWERED

Full size)

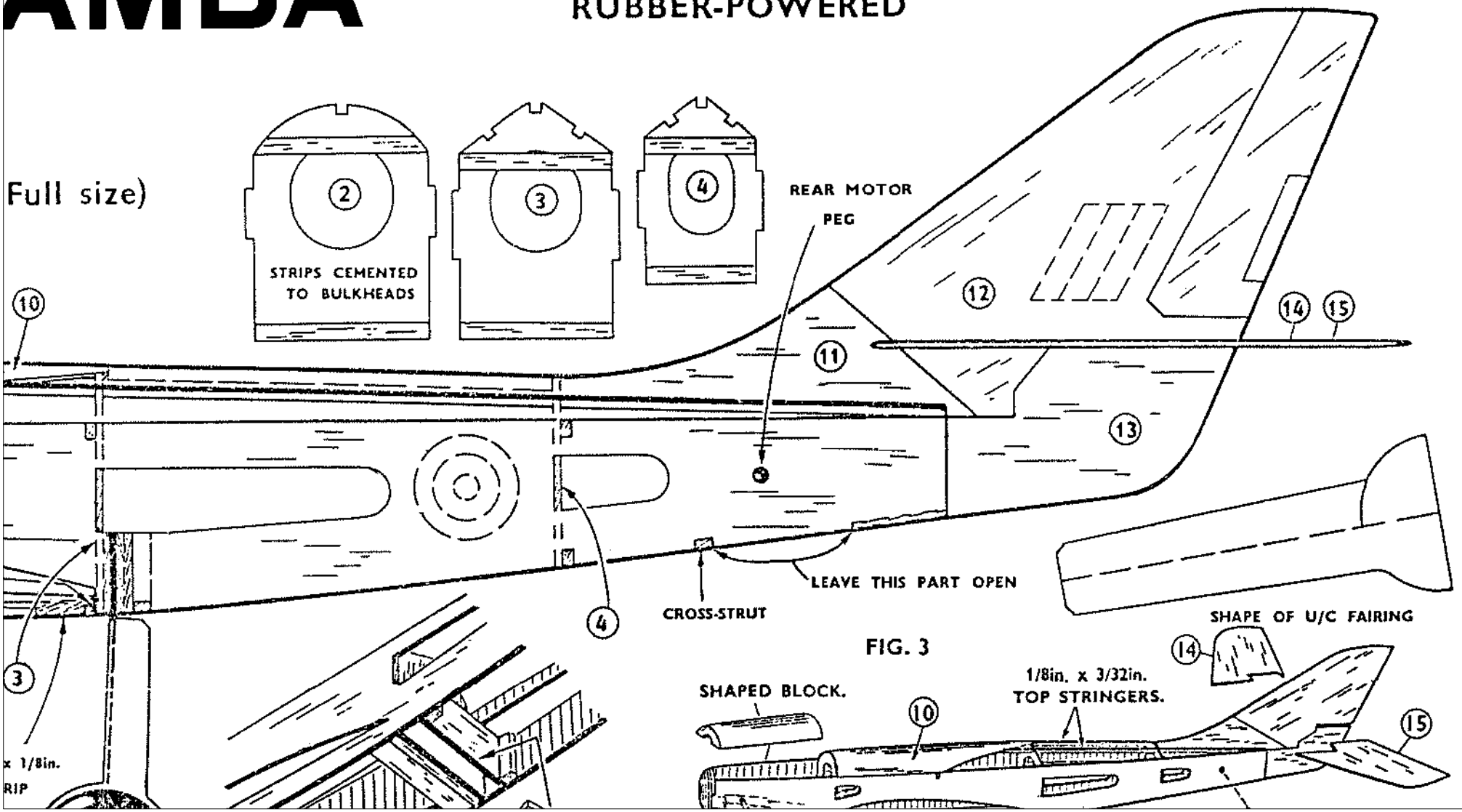


FIG. 3

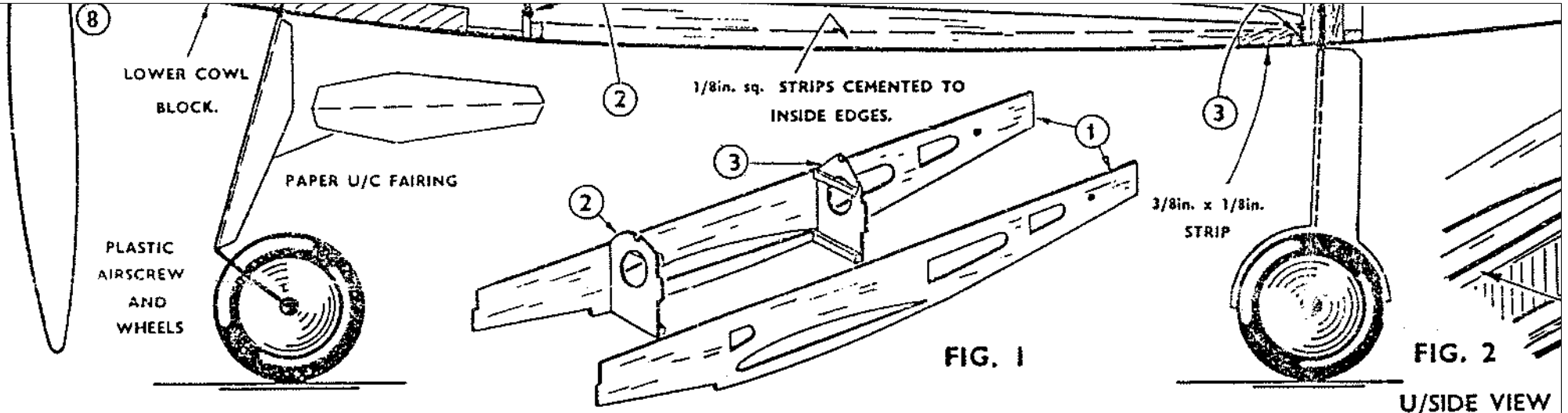


FIG. 1

FIG. 2

U/SIDE VIEW

INTRODUCTION

This is a model of a modern fighter aircraft, based on the latest military jet aircraft to go into service with the R.A.F., and is airscrew-driven (by elastic bands) to simulate a prop-jet drive.

It possesses such features as a Swept-back wing and tail, detachable tricycle undercarriage, and a bubble cockpit canopy.

The model is quite simple to build, incorporating novel constructional features, which also make it very robust when completed. All the main parts are ready-cut to shape and numbered to correspond with the drawings, as in all Frog Kits.

To ensure a satisfactory job, study the plan and check the parts with it before commencing. Assemble the model step by step as described.

Cement and dope are not included in this kit, but they can be bought at any model shop. Use quick-drying balsa cement such as Frog Universal. You will also need a balsa-cutting knife or a razor blade, and a few pins.

When you have built this model, remember there are many other Frog models equally attractive, which you will enjoy building.

BUILDING INSTRUCTIONS.

FUSELAGE ASSEMBLY.

Carefully remove all the parts from the balsa sheets, using a balsa knife or a piece of razor blade to separate them with a clean edge. Start by cementing strips of balsa 1/8in. x 3/32in. to bulkheads 2, 3 and 4. Then cement bulkheads 2 and 3 to one of the side panels 1, as shown in fig. 1. Make sure they are upright, then cement the other side in place. When these are set, assemble the other bulkhead 4, and the front piece 5, then cement the rear ends of the fuselage together.

Cement the two pieces of 1/8in. sq. strip to the inside lower edges of the panels, together with the cross struts, and triangular gusset at the rear.

UNDERCARRIAGE.

This can be fixed permanently in place as in the side view drawing, or made detachable as detailed in fig. 3. The wire for the rear legs is already formed to shape, but the front one needs bending. Refer to the side view for the shape. If it is to be fixed, first bend the top part of the wire as shown in the small sketch, and assemble it to the lower cowl block, through a hole made in the centre, with two pieces of 1/2in. x

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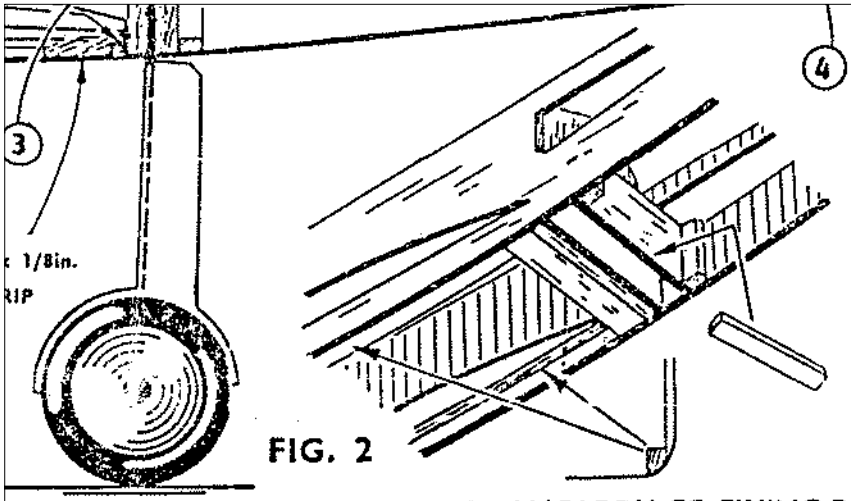

FIG. 2

U/SIDE VIEW OF U/CARRIAGE FIXING-BOX.

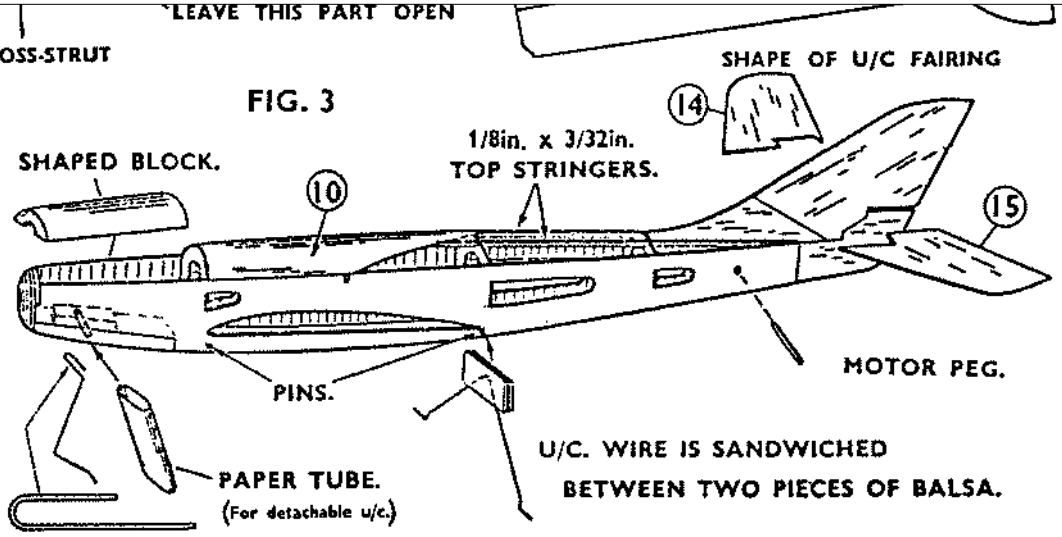

FIG. 3

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1/8in. strip cemented over it. When it is set, bend the lower part of the wire to shape. The gap behind the block can be filled in with a piece of 3/8in. wide strip.

If a detachable U/C is required, bend the top of the wire as shown in fig. 3, and make a paper tube of the same shape by wrapping a strip of note-paper around the shaped wire, cementing as you roll it. This is then cemented into a hole made in the lower block.

The rear wire is sandwiched between two pieces of 1/16in. balsa cut from spare sheet, and bound with a strip of tissue, cemented on. The unit can then be cemented to bulkhead 3, or a small compartment built behind this to allow it to be detachable as shown in fig. 2. The compartment is made from a strip of 1/2in. x 1/8in. or a piece of spare sheet, reinforced with a strip of 1/8in. x 3/32in. Well cement round these joints.

Fit the wheels at a later stage.

Cement the other pieces 6, 7 and 8, to bulkhead 5, lining them up with the hole in the centre.

Trim the shaped block to length, cut away the centre part as shown in section, and cement it in place between bulkheads 5 and 2.

Cement the half bulkhead 9 into the notches in the side panels, then cement the top stringer in place. It extends from bulkheads 2 to 4.

The cockpit cowling pieces 10 are then fitted into place over bulkheads 2, 3 and 9. They are easily bent to shape by damping them on the outside first. The other two stringers are then fitted between the notches in the rear edges of part 10, and the end of the fuselage.

Round off the nose and lower part of the fuselage back to bulkhead 3, and sandpaper the whole fuselage to obtain a smooth finish. Apply a light coat of dope or clear lacquer before covering.

The canopy should be fitted after covering.

Fit the wheels in place, and bend over the ends of the wire, or glue small paper washers to the axles to hold them on. Cut the three fairings from paper to the shapes given, 2 large ones required for the rear legs: fold them, and glue them to the wire legs.

TAILPLANE AND FIN.

The fin is built up with three pieces 11, 12 and 13; assemble these together first, on a flat surface, and when they are set, sandpaper the complete fin smooth, round off the edges and cement it to the fuselage.

Cement the two parts of the tailplane 14 and 15 together on a flat surface. When it is dry, sandpaper it smooth and cement it to the fin.

WING.

This is built over the plan, in two halves, as shown in fig. 4. It is advisable to pin a sheet of grease-proof or tracing paper over the plan to prevent the cement sticking to it.

Pin down the leading and trailing edges over the drawing, then remove the ribs W1 to W4 from the printed sheet and cement these into place, together with the tip pieces. Then take two 1/8in. sq. strips for the spars, trim the ends as shown in the plan and cement them in place. When both sides are set, raise the tips 3/4in., and build up the centre section with short pieces of strip, add the front spar, and well cement round the joints.

When it is quite set, remove the wing from the plan, and shape the leading and trailing edges as shown in section. Round off the tips, smooth down the whole wing and apply a coat of dope before covering.

COVERING.

The fuselage and wing require covering with tissue paper supplied. Start with the fuselage and cover each side separately. Cut strips of tissue wide enough to allow a small overlap. Use dope or paste for sticking it to the farmework. Apply some to one side of the fuselage, stretch a strip of the tissue over it and smooth out any wrinkles. Trim off any excess, and smooth down the edges. Repeat this for the other sides, leaving a gap on the bottom surface below the rear motor pin.

When the paste is dry, lightly spray the tissue with water to shrink it, and when it is thoroughly dry again, apply a coat of dope. This will also help to tighten the paper. Apply a thin coat of clear lacquer to both sides of the tailplane and fin.

Cover the wing with four separate pieces, starting with the bottom surface ; apply the paste to the outer edges only. There is no need to stick the paper to each rib. When covering the top surface start at the centre-section, and work towards the tips, remembering to keep the paper taut from end to end, to help preserve the airfoil shape.

Water shrink and dope each half-wing separately, and pin it down to a flat board when it is half-dry, to prevent it warping.

COCKPIT CANOPY.

Trim the surplus material from the embossed shape, then lay it in place on the fuselage, mark the outline, and paint the inside area black. Then carefully cement the canopy into place. The fairing at the rear is made from a piece of scrap 3/32in. sheet.

DECORATING.

The appearance of the finished model can be improved considerably by the addition of a little cellulose paint. This should be restricted to the fuselage, to save weight, unless it is sprayed on lightly. If it is painted by hand, apply it quickly and evenly with a soft brush. Do not put it on heavily or the model will not fly well.

The suggested colour scheme for this model is all silver, with black markings and coloured transfers, but any other colour could be used if desired.

The FROG transfers can be affixed to the wing, the roundels on the fuselage, and the strips on the fin. Black lines can be put on with Indian ink to represent ailerons, rudder, etc.

MOTOR.

This is composed of two 12in. elastic bands which are supplied. Lubricate them with Frog Rubber Lubricant or Castor Oil, and insert them

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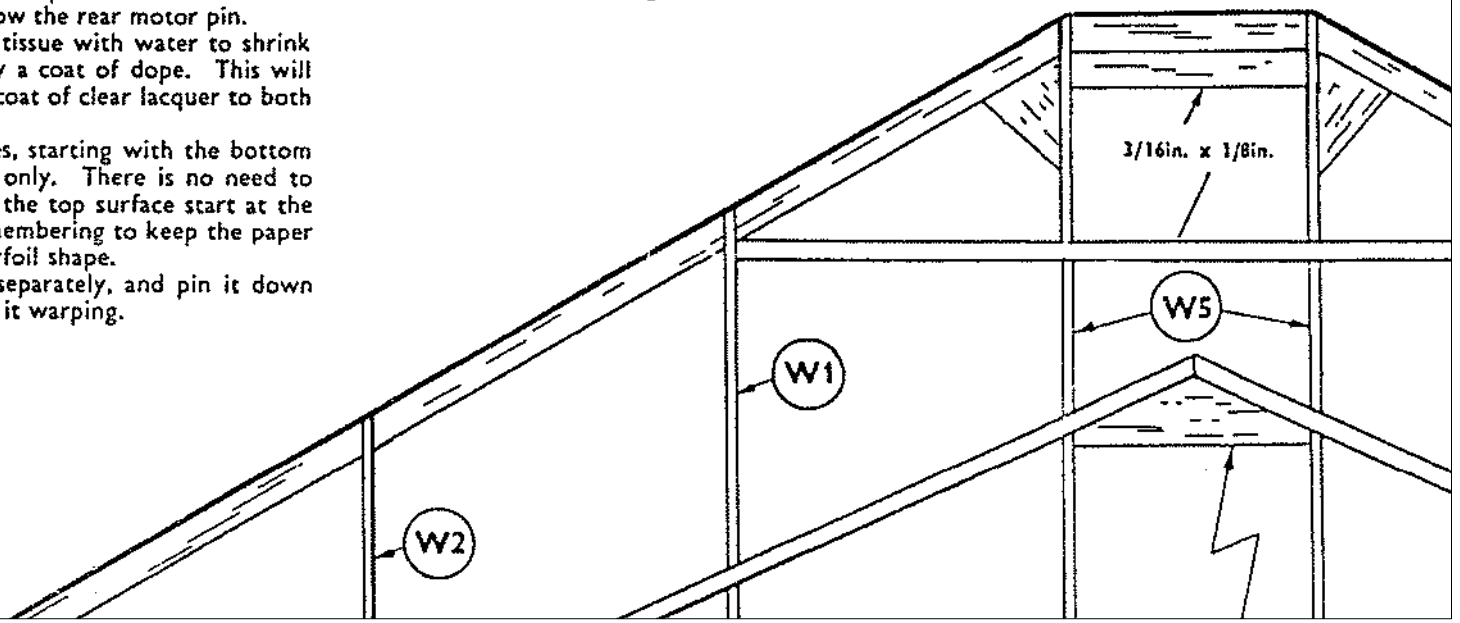

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into the fuselage with the help of a length of wire or thread. Bend a hook at one end of the wire and insert it into the front end of the fuselage. (If a thread is being used, tie a weight to one end and drop it through).

Hook the bands on to it through the opening at the rear and insert the rear motor pin (cane) through the holes in the fuselage and through the loops of elastic. Pull the bands out through the front, and hook them on to the airscrew shaft (complete with Airscrew).

The wing is held in place with two elastic bands stretched over the centre-section, and hooked onto the pins pushed into bulkheads 2 and 3 in the fuselage.

The model is now complete and ready for flying. A drop of thin oil on the airscrew shaft will improve the running.

FLYING.

This model is intended to be flown out of doors, but choose a calm day for your first test.

Test-glide the model first to check the balance. Hand-launch it in a slight downward direction. If it dives to the ground, carefully bend up the rear edges of the tailplane, known as elevators, or glue a small weight in the rear end of the fuselage. If the model climbs steeply and stalls, bend the elevators down slightly, and/or add a small weight to the nose of the fuselage. A small nail or drawing pin can be pushed into the cowl block for this.

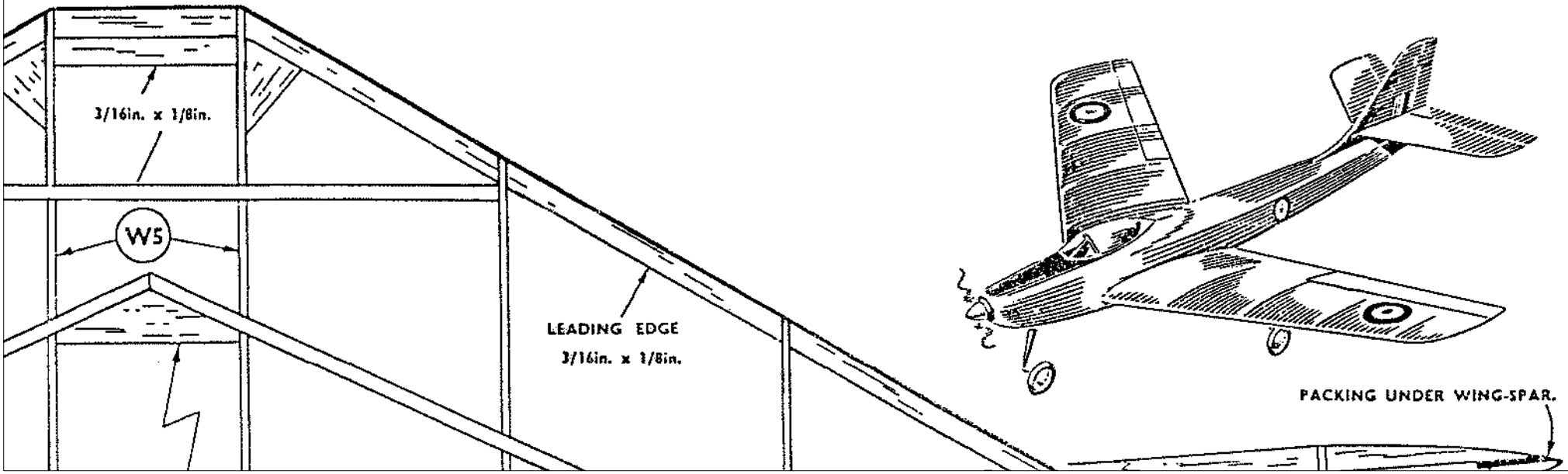
When the glide seems satisfactory, put a few turns on the motor and launch the model into wind (if any). The turn can be adjusted by bending the fin, or by twisting the wing slightly.

Increase the turns on the motor gradually, up to a maximum of approximately 450, if the motor is not lubricated, the turns must be limited to 200. An unlubricated motor will wear and break very quickly. Stretching the elastic while winding will enable more turns to be obtained.

When flying the model without the undercarriage, a small ballast weight must be added to the front of the fuselage to balance it. A piece of old cement tube rolled up and pushed into the front undercarriage slot, or a large drawing pin will suffice for this.

This model will take-off from the ground without assistance. Having wound the motor, place the model on a smooth surface, and release it directly into wind.

Designed and Made in England
INTERNATIONAL MODEL AIRCRAFT LTD.
MORDEN ROAD, MERTON, LONDON, S.W.19.



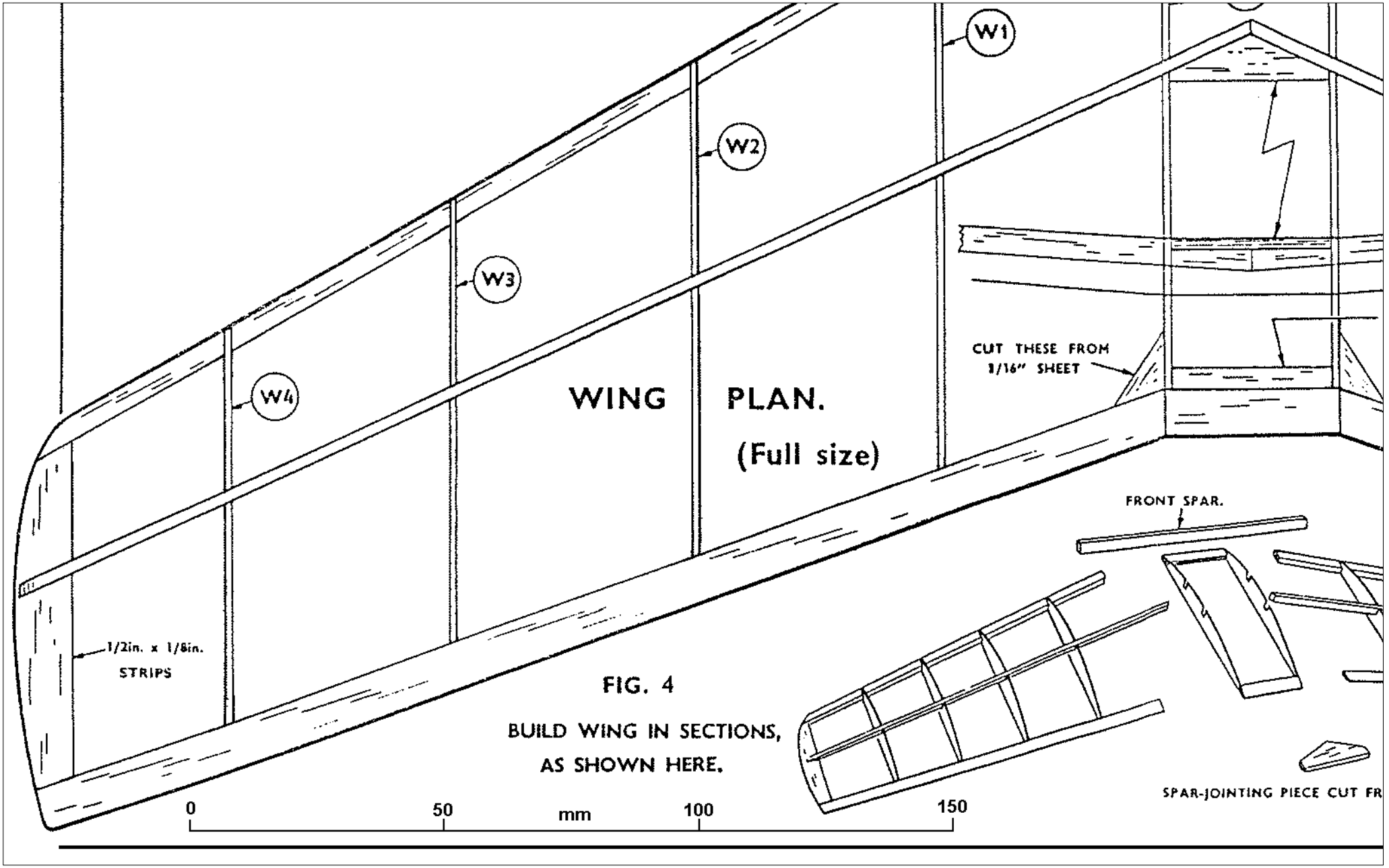
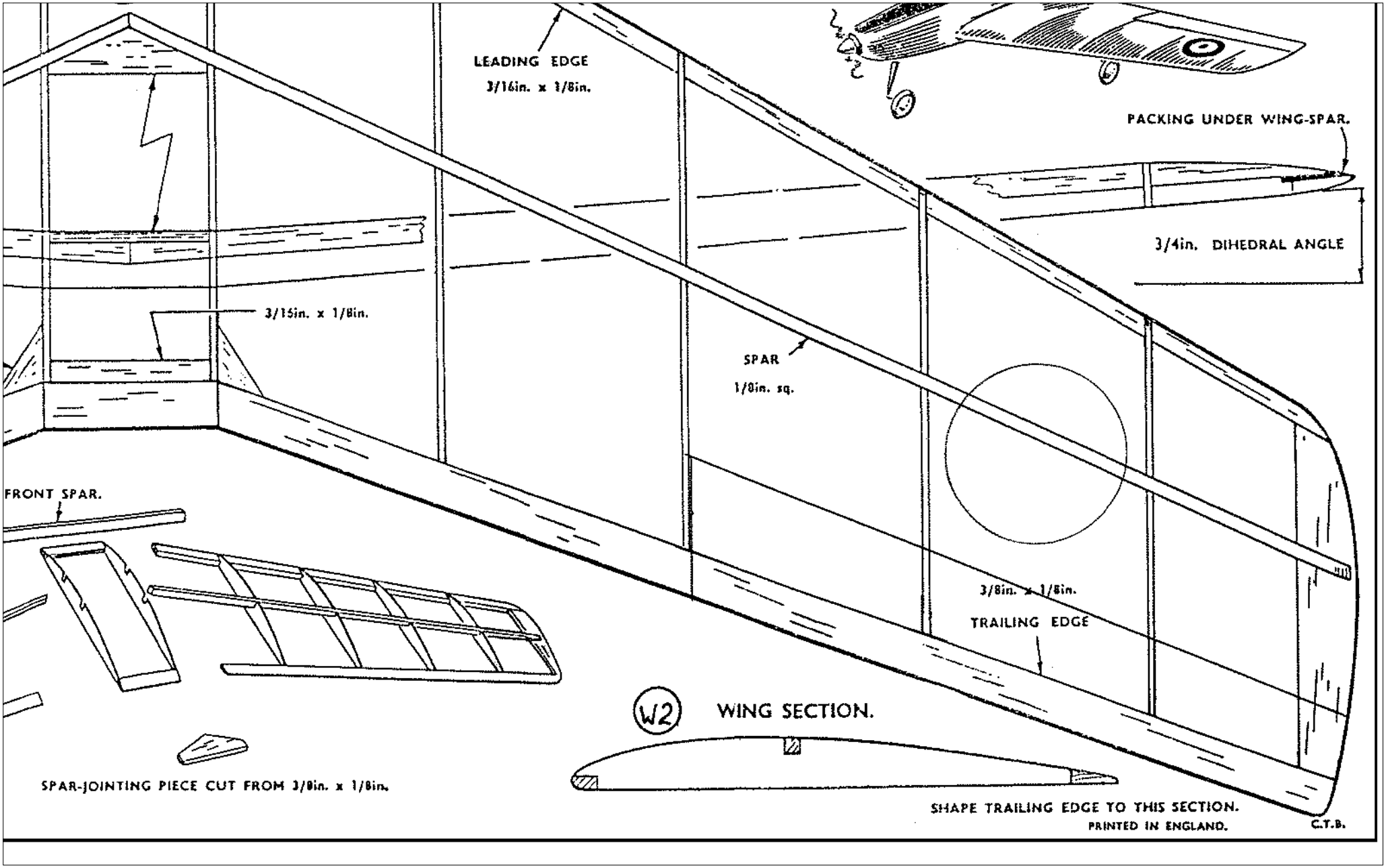


FIG. 4

BUILD WING IN SECTIONS,
AS SHOWN HERE.



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C.T.B.