

Cliff Weirick's

candy

70" Span for proportional or reeds

Full Size Timely Plan Available



Cliff and prototype at '63 Nat's. Patch on wing from woman's shirt at Mexican Nationals!

Candy was conceived shortly after the Larks annual contest in October 1962. Up until two weeks before this event, I had been flying a Stormer, when, as sometimes happens, I suddenly found myself without an airplane! In talking with Jerry Pullen, designer of the proportional system I am using, it was suggested that I use a Viscount kit which he had won at a local event. The Viscount was easy to build, and a week later was in the air, going on to place third in the Larks Annual.

Two things were very impressive about the Viscount — one was its ground-handling characteristics, and the other was its smooth inverted flight. At this point I took a good look at the symmetrical airfoil, and decided to design a ship around this section. This new plane was created in order to take advantage of the full potential of the Kraft proportional system which would be used with it. In addition, certain other design criteria would have to be met, including excellent ground-handling characteristics (even in high winds), ala Viscount, plus completely smooth inverted flight and outside loops. Add to this the requirements of a good-looking ship that

would be easy to construct, and you have the formula which evolved for Candy.

I might explain at this point that the name "Candy" was brought about by being bankrupted by Aero Gloss Candy Apple red dope. Pactra had just released their line of candy colored dopes and I scouted all of the Los Angeles area for enough of the little three-ounce cans to finish the prototype. Believe it or not, it took 32 of these three-ounce cans to get three coats of color! That just about broke me up — in more ways than one! Uncle Sam's sailors don't get wealthy at their jobs!

The first Candy had full-span ailerons and two degrees of incidence in the wing and stab. This left something to be desired, however, so the present configuration was tested and proved to be more than satisfactory. This can be attested to by the fact that three of the four existing Candy's qualified for the finals at the 1963 Los Alamitos Nats. The fourth model was not flown.

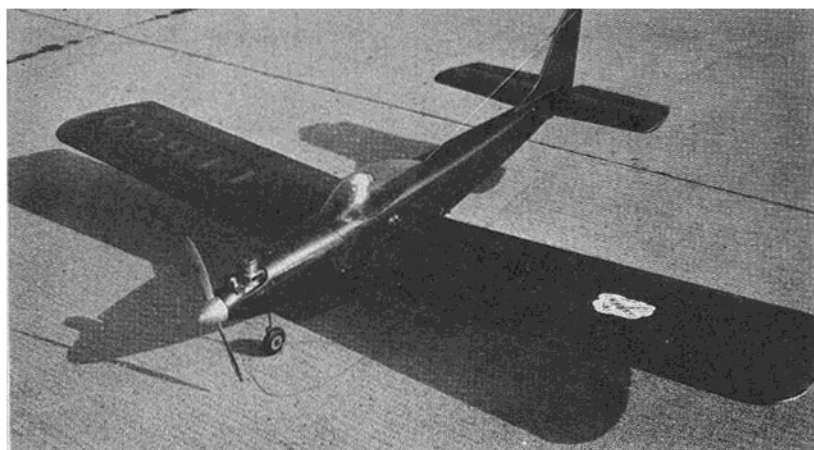
Before getting into the construction of the model, it might be worthwhile to bring up a few points for the begin-

ner who is thinking about building this ship. First of all, Candy is not a beginners airplane — the construction alone dictates this fact. The wing, as you will notice, is imbedded in the fuselage and will not take any hard knocks without severe fuselage and wing damage. If Joe Tyro insists on building this ship, it is suggested that he devise some method of allowing the wing to slide fairly easily off the fuselage, so that in the event of a wingtip digging in on a rough landing, damage is held to a minimum. Experienced fliers can construct Candy according to the plans, for everyone knows that experienced fliers don't have rough landings.(?)

Fuselage

Start the fuselage construction by first cutting out the motor mounts, using rock-hard maple stock, then the two forward bulkheads A & B. Assemble the mounts and bulkheads with white glue and let dry, making sure the bulkheads are perpendicular to the mounts, and that you have an equal taper on each side. Drill the motor mounting holes and install 4-40 blind nuts. Drill the holes for nose gear mounting and for the two push rods (nose wheel steering and throttle). Next, cut the fuselage sides from 1/8" x 4" x 48" medium hard balsa, making sure that the wing and stab cutouts are 0 degrees to the thrust line. Make a template of the sides and mark the location of the bulkheads, wing dowels, motor mounts, and doublers. Glue the 1/16" plywood doublers in place on the sides, then the 1/4" balsa wing mounts, followed by the 3/8" square stiffeners that serve as corner supports. Glue the sides to the motor mount assembly, making sure that they are properly aligned. When dry, pull the tail end together and glue in the tail block. Again, be sure of proper alignment, then glue in the stab support block.

The top of the fuselage is carved from a soft piece of 3/4" x 4" x 36"



balsa. It is cut to proper length, then tapered from 3/4" at the front to 1/2" at the front of the stab. Lay it on the fuselage and draw lines along the outside and inside of the fuselage sides. Hollow out the block to the point shown and then carve to the outside shape. When complete, secure the block to the top of the fuselage.

A couple of cross pieces are installed on the bottom of the sides and then the 1/8" sheet bottom is added. The top and bottom nose blocks are pretty straightforward in construction. The top one must be hollowed to fit your own particular tank and engine. Install the plywood insert for the cowl hold-down screw. Back up the cowl and the front of the fuselage top block with 1/32" plywood. The bottom block should be hollowed out to accept your battery pack and the slot cut for the nose gear strut. The inside of this slot should be faced with 1/32" plywood to take the side loads of the strut. Carve the entire nose assembly to fit a Veco 2" spinner and blend in with the rest of the fuselage.

Make the tank support out of 1/8" plywood. The wing dowels will be added after covering with silk. Make the servo platform and install 4-40 blind nuts. Glue servo mount into position shown. Make the cut-outs in the rear of the fuselage for elevator and rudder push rod clearance. Set the fuselage aside until the stab and elevator assembly is completed.

Stab and Rudder

Cut the stabilizer ribs from 1/16" balsa sheet. Butt glue two pieces of 1/16" x 3" balsa sheet stock and let dry. Two of these will be needed for the top and bottom. Cut them to the shape of the stab and mark all rib locations. Use contact cement to glue the ribs in place, automatically forming the lower airfoil shape. Mark the rib locations on the top sheet. Again, use contact cement to hold the top sheet in place. Make absolutely sure

it is located properly, as once it is in place you can't relocate it.

When dry, sand the leading and trailing edges smooth and straight. The leading edge is formed from two pieces of 3/4" trailing edge stock contact cemented together. The trailing edge is formed from 3/8" square stock. The tips are soft balsa, carved and sanded to shape. Attach both the leading and trailing edges and the tips with model cement. When dry, sand to airfoil shape and cut out the notch for the fin support.

The elevators, fin and rudder, are self-explanatory and are hinged with mylar or nylon hinge material. Attach the stab and elevator assembly to the fuselage with white glue, making sure it is at 0 degrees incidence with the thrust line and 90 degrees to the fuselage sides. A crooked stab can render the best airplane almost useless.

When dry, install the fin and rudder assembly, making sure of proper alignment. Let dry, then fair in the top of the fuselage to the stab and fin with soft balsa block. For nice, smooth contours, I use thin leather strips to fillet the tail assembly.

Wing

Cut wing ribs from 1/16" and 1/8" sheet as shown on the plans. I cut them all at once on a band saw so that all ribs are identical. Use whatever method is easiest for you. Cut the spar stock to proper length and join together with the 1/4" dihedral braces. Now you should have two spar assemblies — front and rear. Slide the ribs on these assemblies, and glue in place with white glue. Lay a piece of 1/16" x 4" x 36" on a flat surface, applying glue to the lower rear spar of one panel and also to the ribs at the rear of the spars. Lay this on the piece of 1/16" to form the lower half of the trailing edge and pin in place. Now install the 1/16" plywood false rib for the aileron horn support, along with the 1/8" balsa aileron root rib. Let dry.

Taper the rear edge of the lower sheet and glue the upper sheet in place. While this is drying, glue the 1/4" square leading edge in place. Install all webbing. Let dry and glue the top leading edge sheeting in place. Apply this procedure to the other half of the wing.

We now have a wing with no lower leading edge sheeting. Turn the wing over and install the lower leading edges. Install 1/16" plywood doublers and landing gear mount. Make sure the wing is in perfect alignment (no warps, etc.) because once this last piece is installed, the wing cannot be straightened.

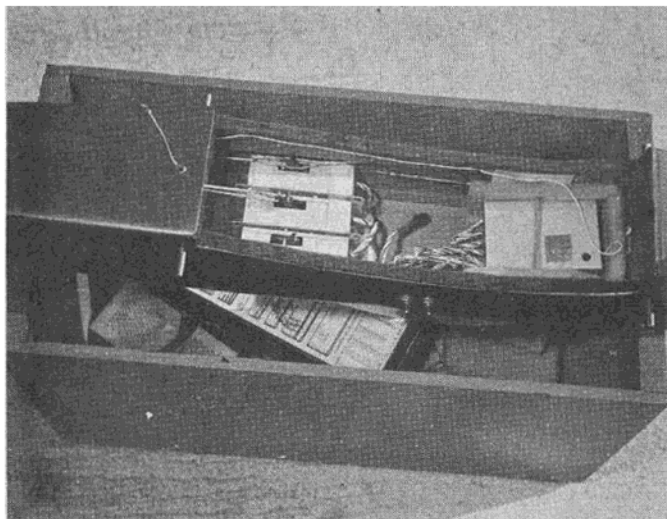
Install the tips, bellcrank supports, servo mount, and also the aileron linkage. Sheet the center section and glue on cap strips. Box in the servo compartment. Cut out ailerons. Taper the leading edge. Install hinge support blocks, then sheet with 1/16" balsa. Cut the aileron horn from 1/16" fibre-glass and use epoxy to secure to the aileron. Cut a slot in the lower cap strip for aileron push rod clearance. Sand the wing and aileron smooth and cut slits for the nylon hinges. Place the ailerons in place, then drill 1/16" holes through the upper rear spars for round toothpicks which will secure the hinges.

The wing is now ready for covering. Fit the wing and fuselage together making sure it is properly aligned (0 degrees incidence and square with the fuselage). Hold in place with pins and install the lower fairing on the wing so that the fuselage flows smoothly into the wing. When dry, sand smooth. Be sure to allow about 1/32" for a seal between the wing and fuselage.

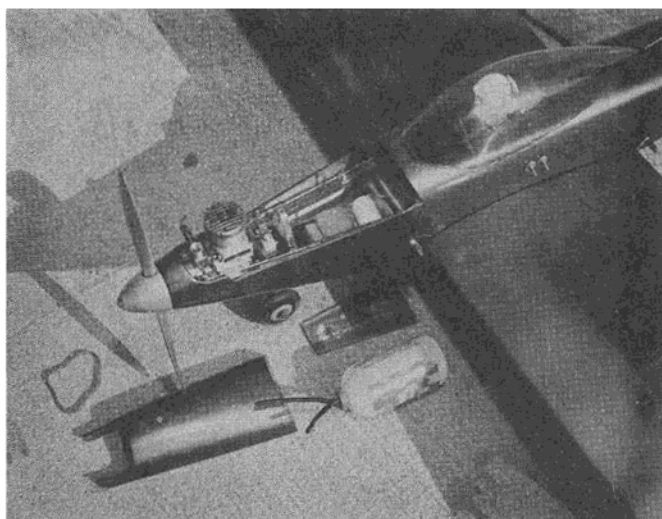
Covering

Dope all wood surfaces which come in contact with the covering material. Use 3 coats of clear dope, sanding between each coat. Apply the silk by your own method, wet or dry, then

Candy interior showing equipment installation.



Cowl removed. Neat, serviceable compartment.



install wing dowels. Apply approximately 5 coats of clear dope over the entire plane. Fuelproof the inside of the nose compartment with clear epoxy. Finish to suit yourself, but it is suggested that you use spray cans larger than three ounces!

Radio Equipment

As mentioned, this ship was designed around the Kraft-Pullen proportional system; however, any radio equipment should work equally as well. It has never been flown on reeds, but I believe it would be just as suitable although not as smooth in the maneuvers. The reed installation is shown on the plans, along with the proportional data. There are so many different systems available, the final details will be left to the discretion of the builder. One of the prototypes of Candy has had over 600 successful flights using the first production model of the Kraft-Pullen system. All of these flights have been made without any failure of the system itself. I have suffered minor mechanical difficulties with a couple of the components, plus battery failure during one flight, however this in no way throws a bad reflection on the system itself. The Kraft system as used in the Candy is a triple proportional unit with trimmable throttle. For those of you intending to order this system, a quadruple proportional unit is almost ready for the market. I have flown this unit and it works as well if not better than the triple proportional system, and should prove to be an excellent system for use in the Candy.

The all-up weight of the finished model should not exceed 7 pounds. The prototype weighs $6\frac{1}{2}$ pounds. Make sure all control surfaces are neutral and that there are no warps, and Candy should fly right off the board. It does not have any particular quirks except that it does demand plenty of speed for the rolling maneuvers, and does land fairly fast. It should track perfectly on the inside and outside loops. One note about the attitude of the plane while sitting on the ground: It should have a negative angle of attack of about 1 degree, or as it is called, a "rake." The idea here is to dump all left as soon as the nose wheel touches down. If this is done properly, Candy will glue herself to the ground on landing.

I hope you will enjoy building and flying Candy. If anyone has any questions or suggestions on the plane, drop me a line in care of R/C Modeler Magazine. Good luck with your new ship—she's a winner!

**From
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