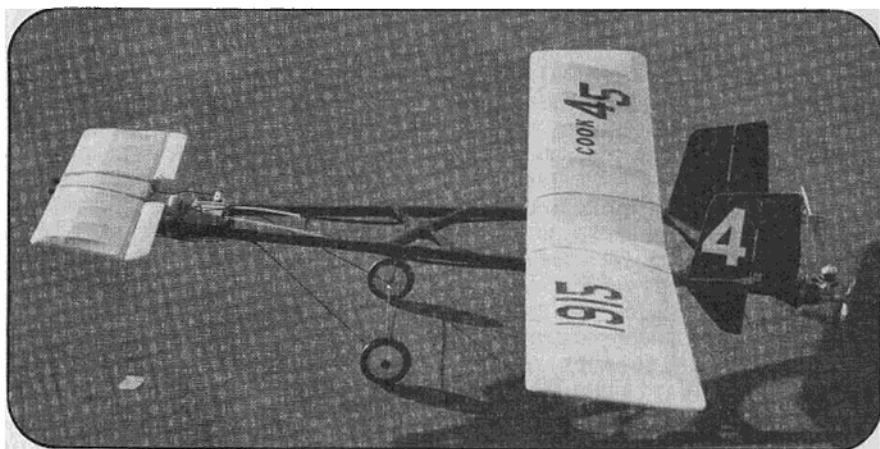


COOK 45 RISER



Introduction by Dick Tichenor

Some of us senior citizen types have fond memories of building and flying 'A' frame rubber powered twin pushers back in the early 1930's. To commemorate the 50th model airplane Nationals in 1977, Bert Pond published a dandy historical book on the Nats, AMA, Etc. Included in the book were several blue print style plans for antique models. Among them was the Cook 45 Riser.

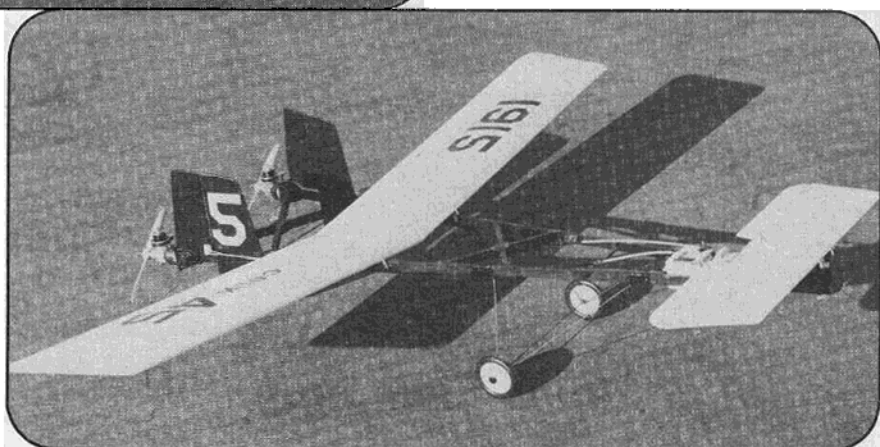
The Cook 45 established a duration record of 134.4 seconds and a distance record of 1698 feet in 1915. It was one of the few twin pushers that featured a landing gear. Since receiving that book there has been a gnawing desire to see an R/C version of the Cook 45. For the purists, we admit taking several liberties in the interest of practicality. For instance, the original used 39" long frames and we used 36" length because it was handy from our local hobby shop. Rudders were added for directional control, the original flew in a straight line. At any rate this R/C version represents the general style.

Jack Headley sort of did a number on us. For reasons known only to Jack, instead of shooting black and white photos of the Cook 45 in flight, he chose to shoot movies. He has shown us the movies, which thoroughly excited us, but we have no flight shots for our readers. Believe me, it flies great and I promise that you will be a sensation at the field when you take yours out to fly.

This whole project began during one of my irregular visits to H.Q. in Sierra Madre, when I was trying to convince Dick Tichenor that the next issue of R/C Modeler couldn't possibly be published without my latest project being included. Somehow the splendid arguments I put forth regarding my single channel version of the Dornier Do. X (with 12

By Jack Headley

Jack's twin pusher will set you aside from the rest. Once it's airborne, everyone will want in on the act. Be the first at your field with the "Cook 45."



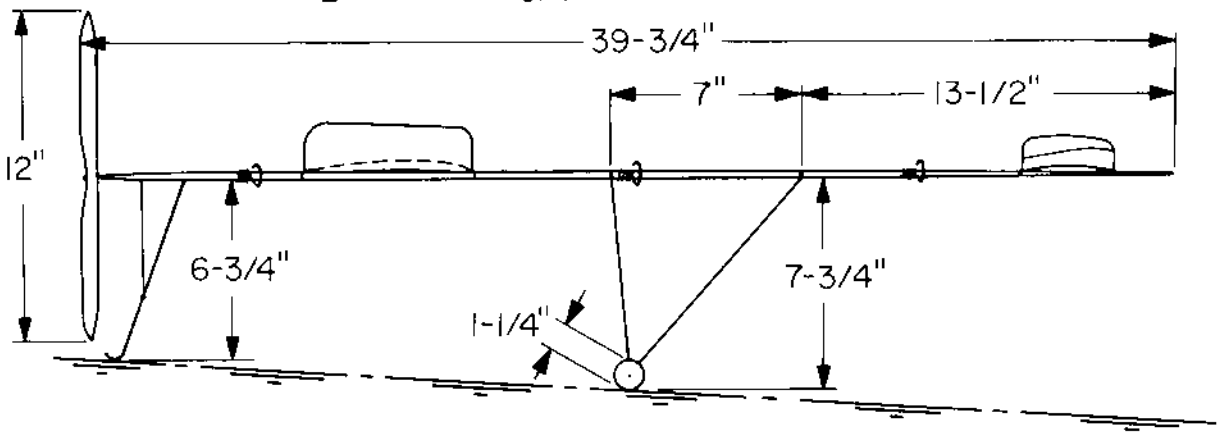
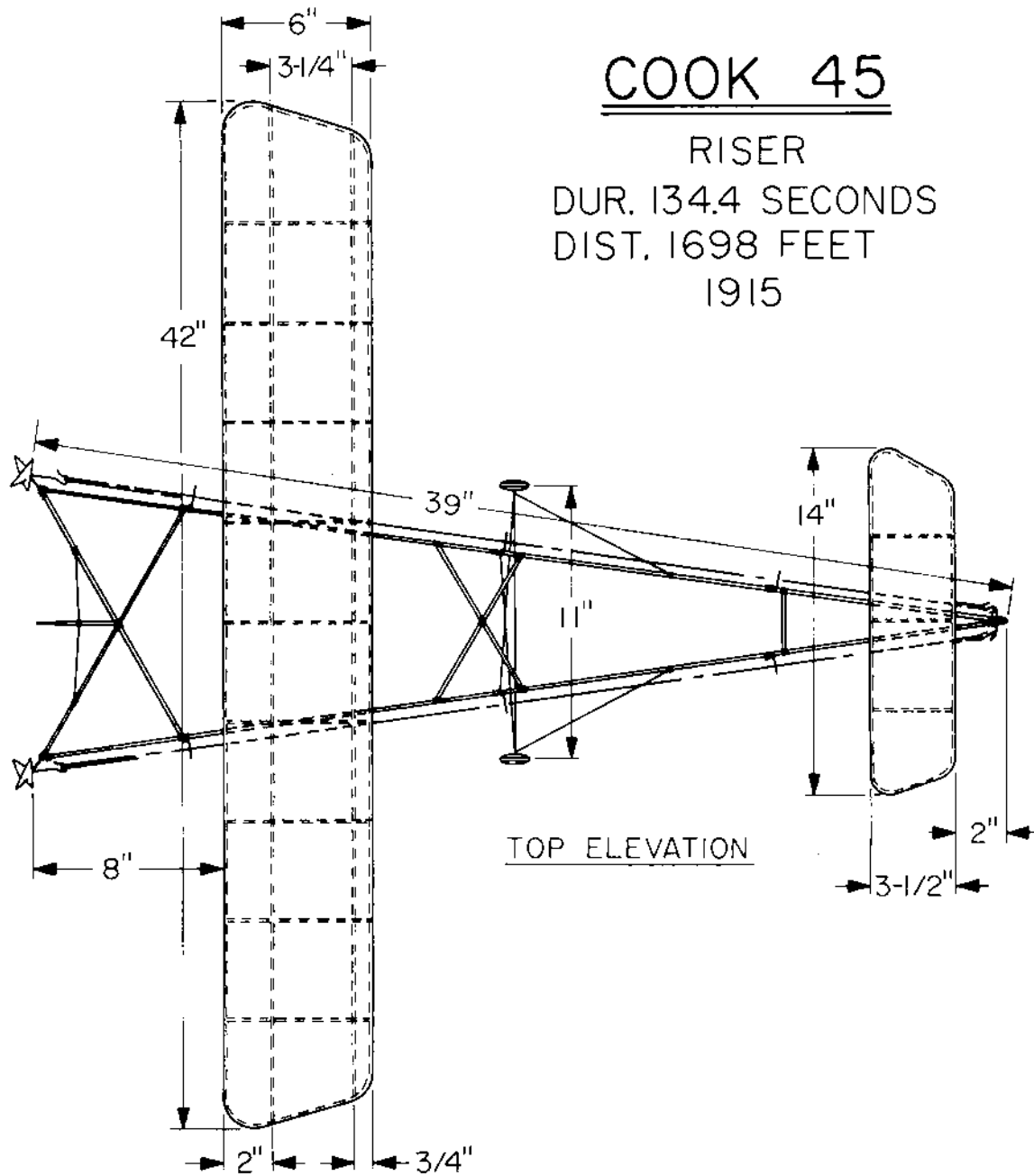
COOK 45

RISER

DUR. 134.4 SECONDS

DIST. 1698 FEET

1915



Angeles, dumping hail, snow and rain all over everything. My favorite flying site Sepulveda Basin, filled up and no one could find the plug. And so it was back to the Dornier for a while, until Ma Nature regained her senses, and sent a little sunshine to dry up all that wet stuff.

Sunday, the 11th of February, is famous as the Anniversary of the Foundation of the nation of Japan, Thomas Alva Edison's birthday, and the day the first Radio Controlled 'A' frame pusher took to the air over Palos Verdes (Sepulveda Basin being still full of water).

The day dawned beautifully with no signs of rain, and a quick tour around the hill showed a handful of glider pilots sitting on the slope watching flaccid frequency flags for any signs of movement. In short it was the beginning of a perfect day for a prototype's first flight. The model was assembled, the radio checked and found to be okay, so there was nothing left to do but start the motors. These proved to be on their best behavior, started with a flick of the starter, and the model was then lined up into the non-existent wind.

For this auspicious occasion I had assigned myself the task of historian, to document the event photographically with my movie camera. This left the task of flying the beast to Kevin, who usually gets stuck this way, and so with Kevin on the sticks, I yelled "Action," and reached for the camera. In doing this I inadvertently let go of the model and before either of us realized it the plane trundled down the runway and took off, climbing strongly. By the time the camera was in action the model was passing through the 300 foot level, and all I managed to capture of the first flight was a few feet of film until the model became a fly speck in the view finder.

The rest of the flight was spent feeling out the controls, (elevator a bit too sensitive), and waiting for one engine to quit. This happened after awhile, but the loss of half the power seemed to have little effect on the controllability, and only caused the model to descend gently, for a trouble-free landing.

With the model on the ground we were finally able to breathe, and shower congratulations on ourselves for an ideal first flight.

We made several more flights that day, taking full advantage of a perfect day, and finally quit as the sun slowly sank into the Pacific.

All in all it was a great day, many flights, and no problems, the biggest worry --- what would happen with one engine out --- seemed to be "not much." Controllability was good with both one and two engines out, and the model in general behaved in an exemplary manner.

Sounds too good to be true? Well, if you want to come around and see the movies, feel free to do so. It may look like

a fly speck, but it's a real 'A' frame fly speck.

If, in a weak moment, you decide to duplicate my model, the following notes may be of some use. The model consists of three basic pieces, the main wing, the foreplane or front wing, and the 'A' frame fuselage.

CONSTRUCTION

Fuselage:

The fuselage, which is built from hardwood, and mainly uses 1/4" x 1/2" strips. Pin down the two long side strips onto the plan, then cut and epoxy into place the various cross members. Note that the 'X' shaped cross members are jointed in the center, with a half lap joint. One of the small sketches on the plan illustrates this. Dry sand the area of each joint flat, then add the 1/32" ply reinforcing pieces on both the top and the bottom of each joint.

The foreplane mounting structure consists of the side frames, which are first made on the plan. Be sure to make both a left and right hand frame. When dry, these two frames can be epoxied onto the main 'A' frame, making certain that both frames are set at the same angle of incidence.

You will have seen on the plans a note regarding the space needed for the servos. Make sure that you position the aft cross member here to suit the servos that you intend to use.

The various pieces of 1/8" dowel can now be installed. The short dowels at the back are for the wing attach bands, and the full length dowel aft of the servo location is used as an anchor for the rudder NyRod outer cover. This is seen on some of the photos, and will also be discussed further in the section on radio installation.

Engine Installation:

The two Cox .049 engines are attached to 1/8" ply plates, F1, which are epoxied to the ends of the side members. Note the direction of the thrust is along the longeron, and not pointing directly forward. This "toeing-in" of the engines doesn't reduce the thrust too much, but is helpful in reducing the yawing moments during the single engine flight. Next add the support plates F2 on top and bottom of the longerons, then the F3 fairing blocks, after which the spaces left between the longerons and F2 can be filled with scrap balsa.

The fuselage is completed with the addition of the balsa nose block.

Undercarriage:

Make the axle, U1, and the main U/C legs from 3/32" piano wire to the profiles shown on the plans, then assemble on the fuselage, using carpet thread to bind into place. (The carpet thread bindings were mainly used to preserve the vintage look of the model.) Bind the axle to the U2's with copper wire, then solder together. With the gear assembly symmetric, smear epoxy all over the

carpet thread joints to lock the unit into place.

The tail skid U3 is epoxied into a hole drilled vertically in the center of the aft X member, and braced with item U4, which is also bound to the fuselage with carpet thread. Solder U3 to U4, then smear epoxy over the carpet thread as previously done with the main gear.

Wings:

The wings can either be built in two separate sections, a left and right hand panel, or as a single piece, using 48" long strips of balsa. Whichever system you choose the construction sequence is the same, beginning with pinning down, onto the building board, the leading and trailing edge pieces, and the main spar. Cut out the wing ribs from 3/32" sheet balsa, and cement all but the two central ribs into place. Add the wing tips, made from 1/4" x 1/2" balsa, and trim the main spar, as shown on the plan, to the thickness of the wing tip.

While all this assembly is drying, the dihedral braces W1 and W2 can be cut out from 1/16" plywood. If you've made the single piece wing, the next step is to cut this into two at the center section, then bevel these spar ends to suit the dihedral angle. Pin one half of the wing down to the building board, prop up the other end 5" at the end rib, then cement together, with the dihedral braces.

Make the center section ribs, enlarging the slots in these for the wing joiners, and glue into place. Adding the top spar completes the wing construction. Sand the leading edge to shape, then lightly sand the wings all over, and prepare for covering. I used white Solafilm for the covering material, but any of the current plastic films should be suitable.

Foreplane:

This item is built in a similar way to the wing, and so the construction sequence will not be repeated here. The only additional points worth mentioning are to use a hard piece of 1/4" square for the trailing edge, so that when the cut-outs are made, the strength of this item is not reduced too much. These cut-outs incidentally are for the rubber bands which attach the foreplane to the fuselage. The elevator is made in two pieces, joined with a "U" shaped piece of 1/16" piano wire. Epoxy this wire into the elevators.

On my prototype, the elevator was hinged to the foreplane with Solarfilm hinges. Make sure that when the foreplane is attached to the model, the elevator can move freely. If some friction exists between the attachment bands and the elevator joining wire, make the trailing edge cut-outs a little bigger (or use smaller rubber bands!)

Radio Installation:

The radio is used to balance the model, and so once the fuselage is basically completed, and the wings and

foreplane covered, assemble the model, and move the radio pieces until the C.G. is around the location shown on the plans (within plus or minus 1/2").

The photos show the arrangement of the Cannon radio that I installed, the servos fitting between the forward cross members, and the battery, wrapped in foam rubber, is held into the battery tray with a couple of rubber bands. A similar arrangement should be suitable for most other small radios. If a satisfactory balance cannot be reached in this way, a small amount of lead can be used to correct the C.G. position.

Connect the rudder to the servo with flexible NyRods, taping or lashing the outer cover to the framework at suitable points. The 1/8" dowel cross member is used as a final anchor point for the NyRod casing. Don't tie down the control runs finally until some checks have been made to assess the friction level in operating the controls.

The elevator is hooked up to the servo with a length of 1/16" wire. Since the tail is up front, the elevator must work backwards. Down elevator makes the nose go up and vice versa. Be sure to connect the elevator to the servo so that the elevator goes down when you pull the stick down on the transmitter.

That's about all I have to say --- the flying has been covered during the first bits of the article. The only thing I would like to add is to remember that this is a sport model, so treat it as such. No pylon racing (or maybe this would make an interesting challenge for a different type of pylon race!)

I'd like to write more on possibilities such as this but I have this Dornier project I want to get back to, so good luck with your 'A' frame, and may both your engines keep running! □

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