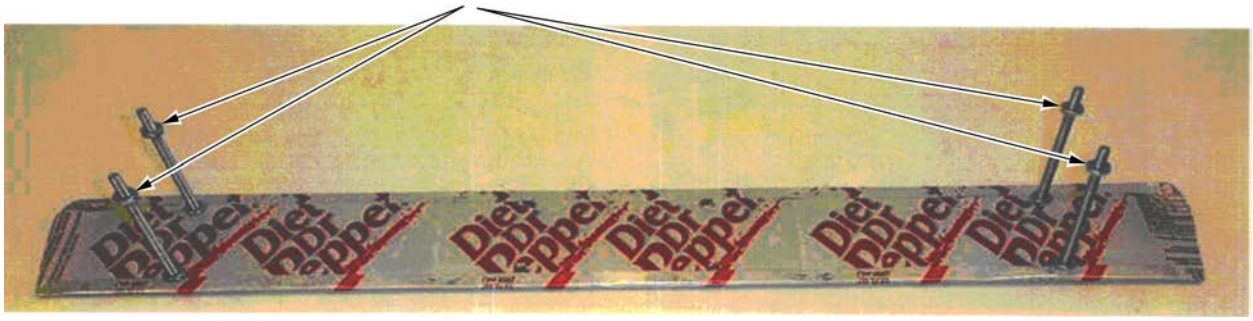
FINAL ASSEMBLY

Each cadet will receive a full set of aluminum model biplane assemblies and parts, to include:

- one completed empennage assembly,
- one completed fan propeller assembly,
- one completed top wing assembly,
- one completed fuselage with bottom wing assembly,
- one landing gear wire,
- four 3-1/2-inch 10/24 bolts c/w 12 nuts to act as interplane struts,
- four 2-1/2-inch 10/24 bolts c/w eight nuts to act as cabane or centre-section struts,
- one metre of heavy-duty black thread to act as flying and landing wires,
- a length of 3/32-inch wire 18 inches long to act as the propeller shaft, and
- a length of 1/16-inch wire 6-3/4 inches long for a landing gear support wire.

1. Place four 3-1/2-inch 10/24 bolts through the outer holes in the top wing and secure snugly with a nut under the top wing and place another nut near the bottom of the bolts.

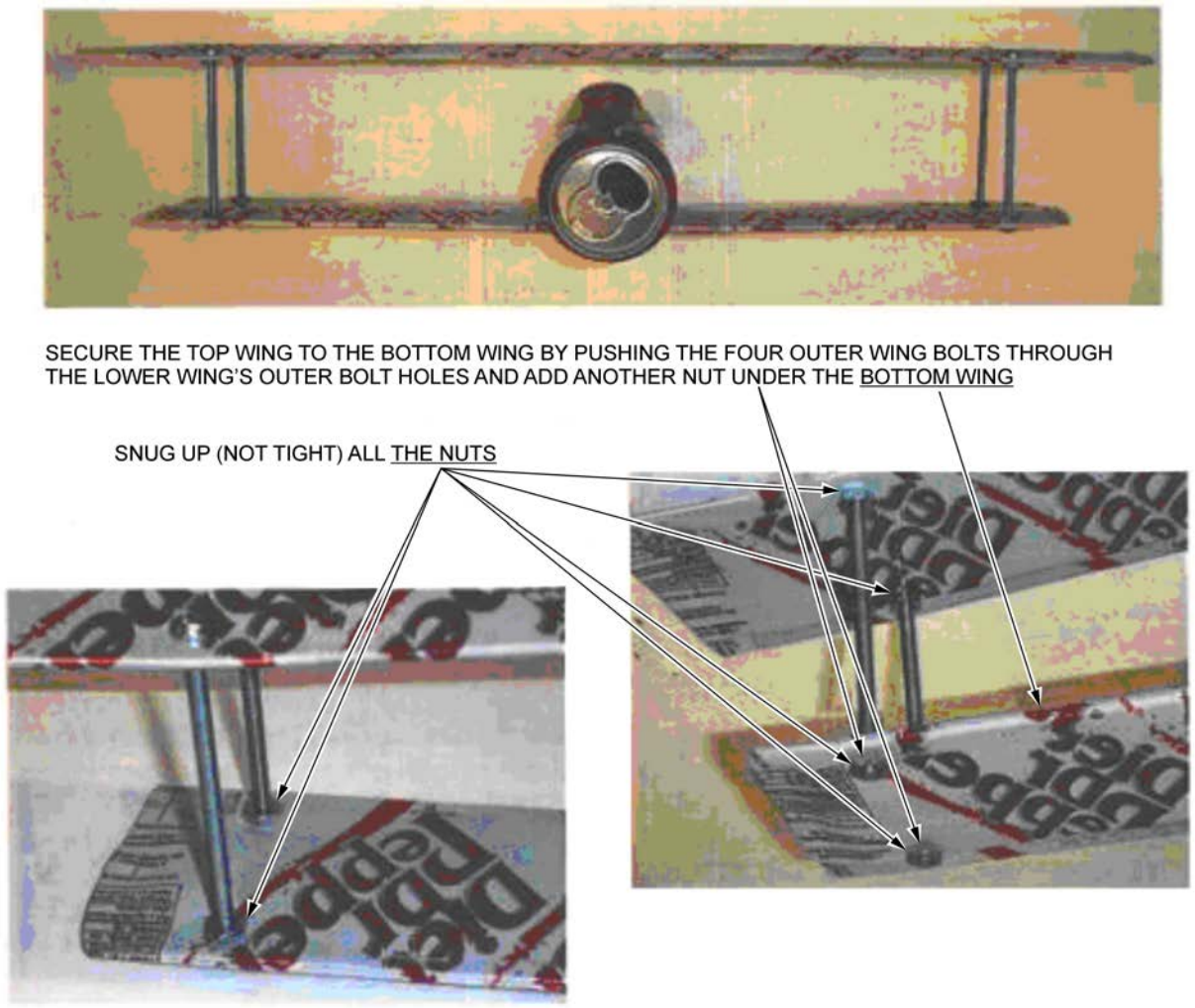


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Figure AG-1 Interplane Struts

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2. Secure the top wing to the bottom wing by pushing the four outer bolts through the bottom wing outer holes and threading the nuts down the bolts until they touch the upper surface of the bottom wing.

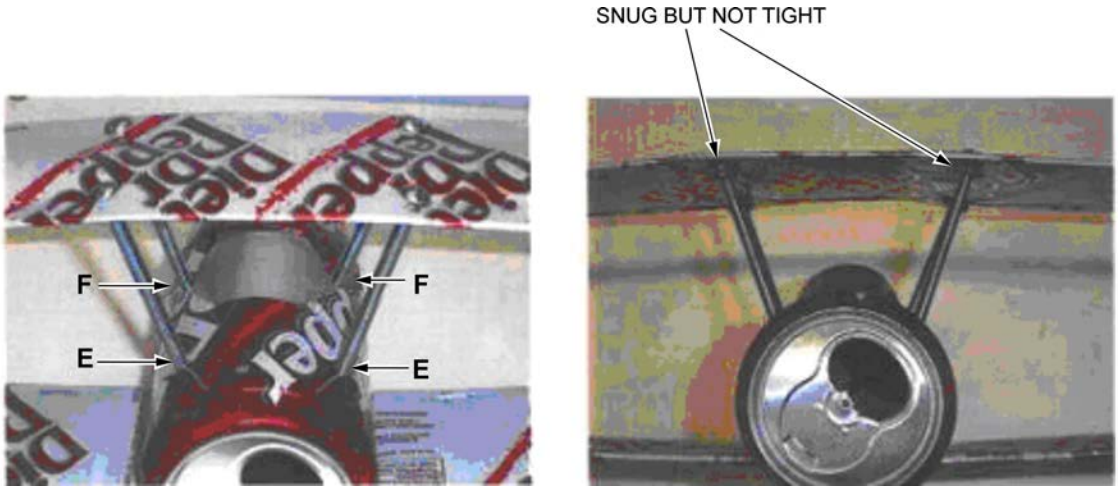


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Figure AG-2 Top Wing

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3. Secure the top wing to the fuselage by inserting four 2-1/2-inch 10/24 bolts through the top wing and threading two nuts on the ends of the bolts; then thread the bolt ends into the two front holes E and the two back holes F in the fuselage, making the nuts snug against the underside of the top wing and also the fuselage.



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Figure AG-3 Cabane Struts

4. Install the landing wires.

   a. To rig the plane, start by loosening the nut under the top wing outer front bolt (position 1 above).

   b. Wrap the line twice, between the nut and the aluminum, then tighten the nut.

   c. Now draw the line down to where the front wing spar goes into hole A in B-1 (position 2 above).

   d. Thread the line around the front wing spar, then draw it to the back wing spar (position 3 above).

   e. Thread the line around the back wing spar where it goes into hole B in B-1, then draw it up to the nut under the top wing outer back (position 4 above).

   f. Loosen this nut, wrap the line twice around the bolt between the nut and the aluminum, then tighten the nut.

   g. Repeat this on the other wing of the biplane.



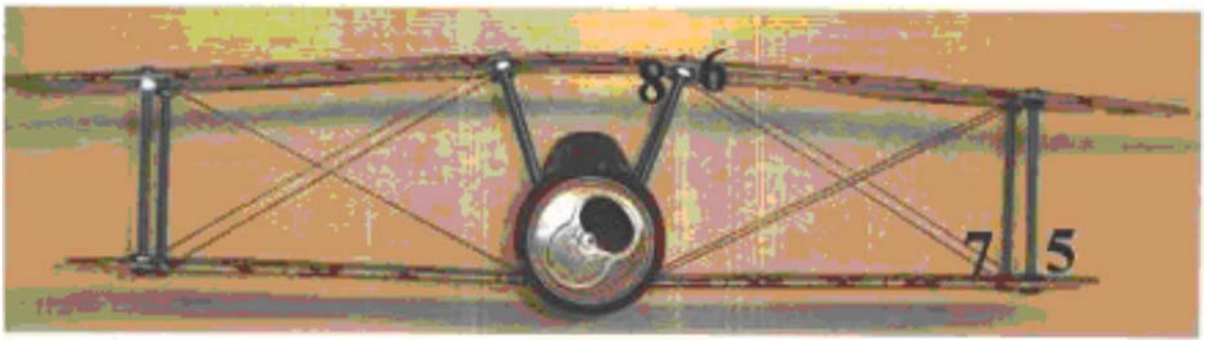
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Figure AG-4 Landing Wires

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5. Install the flying wires.

   a. Loosen the outer front nut on the top of the bottom wing (position 5 below) and wrap the line twice around the bolt, between the nut and the aluminum, and then tighten the nut.



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Figure AG-5 Flying Wires

   b. Draw the line up to the inner front nut on the top wing (position 6 above).

   c. Loosen the nut, wrap the line twice around the bolt, between the nut and the aluminum, and tighten the nut.

   d. Repeat this on the other wing of the biplane.

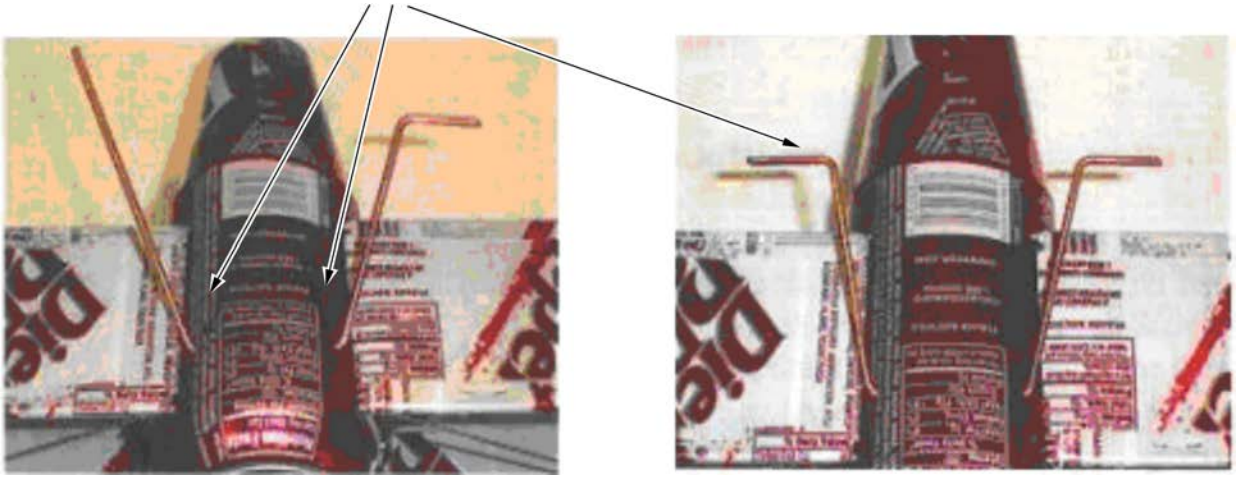
   e. Loosen the outer back nut on the top of the bottom wing (position 7 above) and wrap the line twice around the bolt, between the nut and the aluminum, then tighten the nut.

   f. Draw the line up to the inner back nut on the top wing (8). Loosen the nut and wrap the line twice around the bolt and tighten the nut.

   g. Cut off all excess line.

   h. Repeat this on the other wing of the biplane.

6. Insert the landing gear wire through holes C and have the instructor make the final bend.

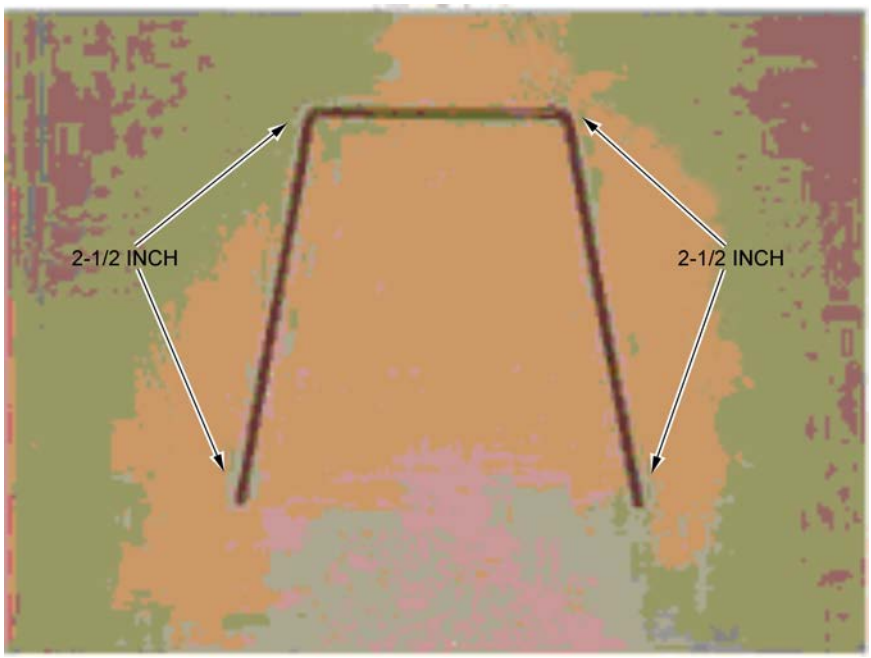


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Figure AG-6 Main Landing Gear

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7. Bend the 1/16-inch wire that is 6-3/4 inches long into shape as a support wire.

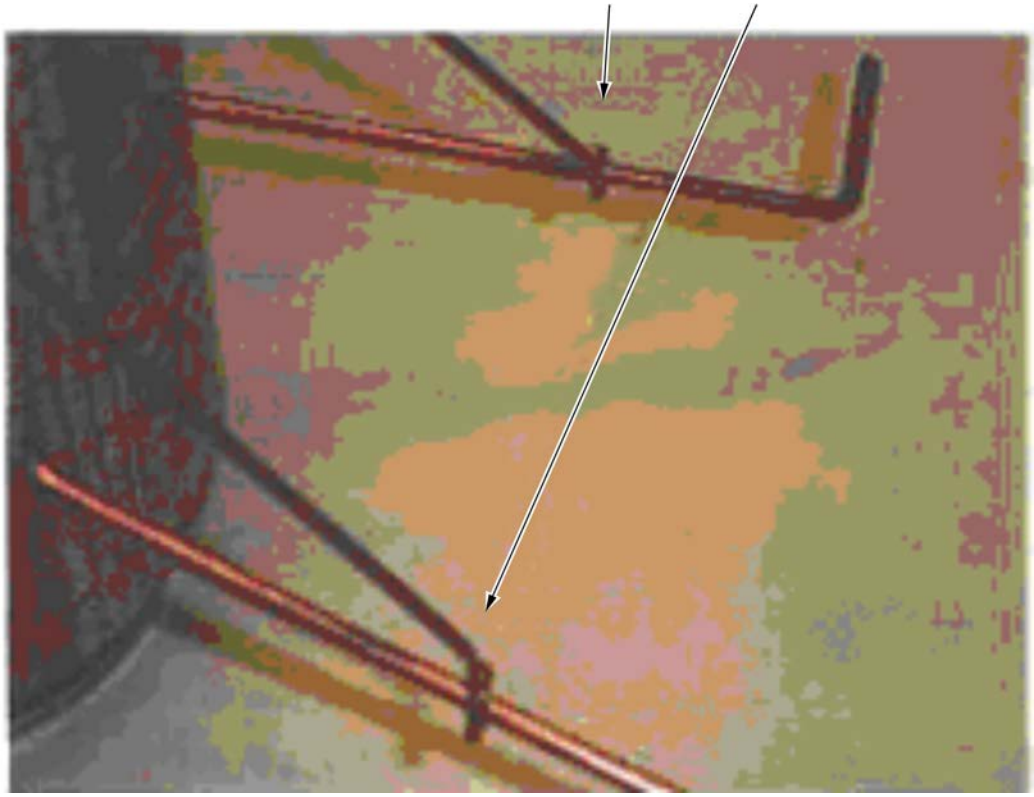


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Figure AG-7 Main Landing Gear Support Structure

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8. Insert the support wire through holes D in the fuselage and crimp it around the main landing gear wire.



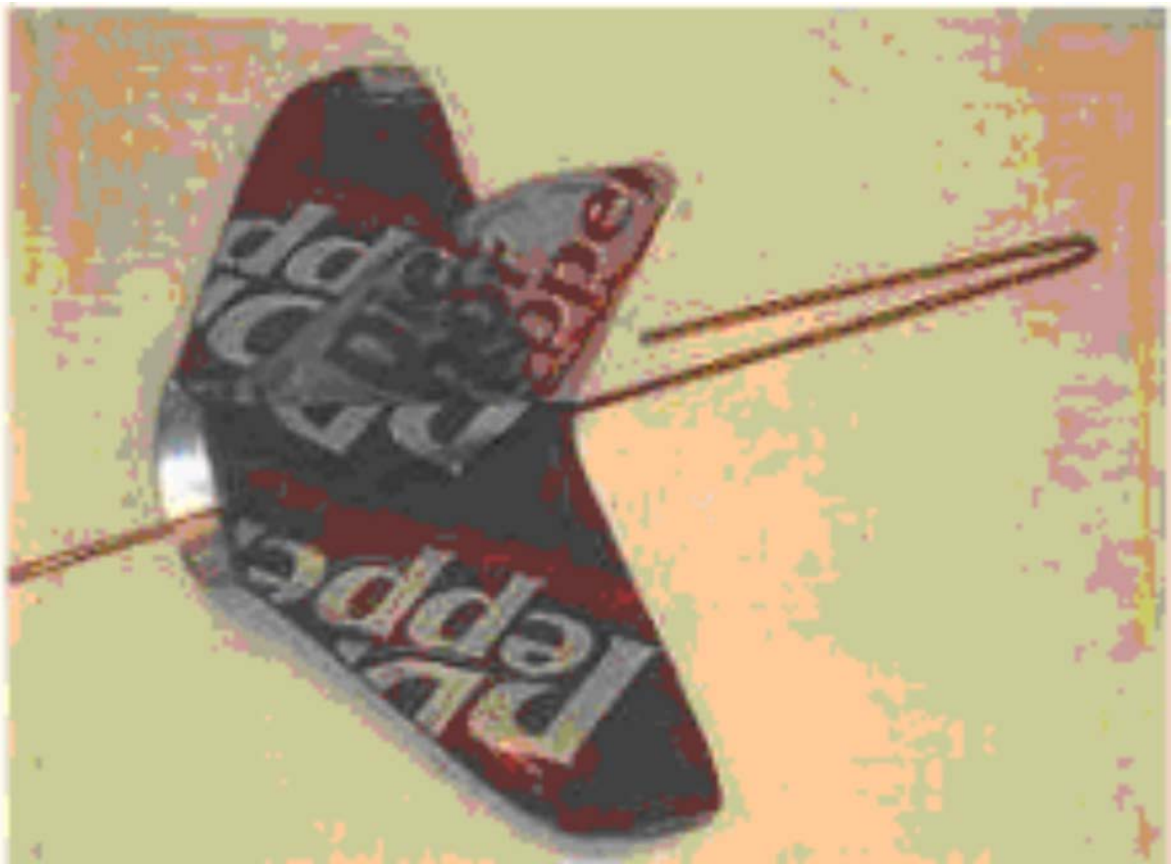
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Figure AG-8 Crimping the Landing Gear Support

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9. To attach the empennage to the fuselage, take a piece of 3/32-inch wire 18 inches long and make a 4-inch hook on one end to make the propeller shaft:

a. insert the propeller shaft through the hole in the back of the empennage under the horizontal stabilizer cardboard and the smaller section of wire goes over the horizontal stabilizer cardboard; and



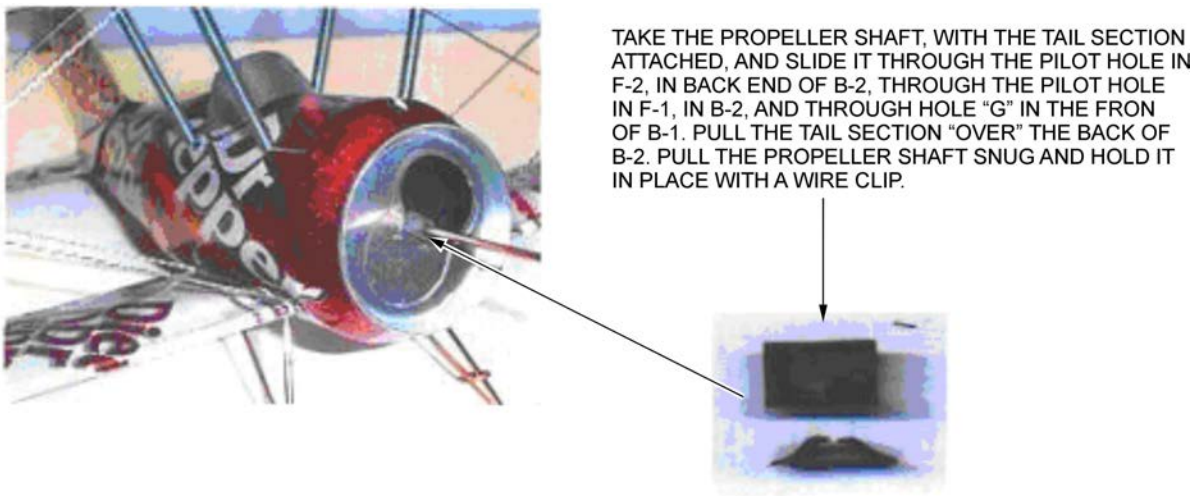
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Figure AG-9 Propeller Shaft Installation

b. insert the propeller shaft, with the empennage attached, through the pilot hole in the wood piece F-2, through the pilot hole in wood piece F-1 and through hole G in the front fuselage section part

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B-1. Pull the empennage over the rear of part B-2 at the rear of the fuselage. Pull the propeller shaft snug and hold it in place with a wire clip at the front of the fuselage part B-1.



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Figure AG-10 Propeller Shaft Wire Clip Installation

10. To fabricate the rear skid, take a piece of 3/32-inch wire and form it into the shape shown. Drill a hole through the fuselage into the bottom of wood piece F-2. Insert and glue the tail skid into place.



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Figure AG-11 Tail Skid Fabrication

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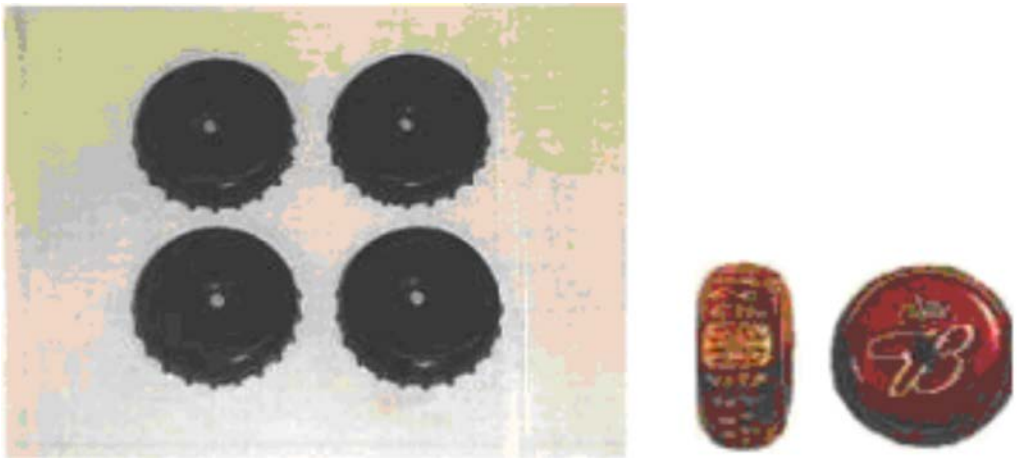
11. Insert two windshield tabs into their slits as shown. Glue the windshield and the cockpit rubber into place.



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Figure AG-12 Windscreen Installation

12. Using four bottle caps with holes through the centre, glue pairs together to make wheels as shown. Place and glue the two wheels on the main landing gear wires.

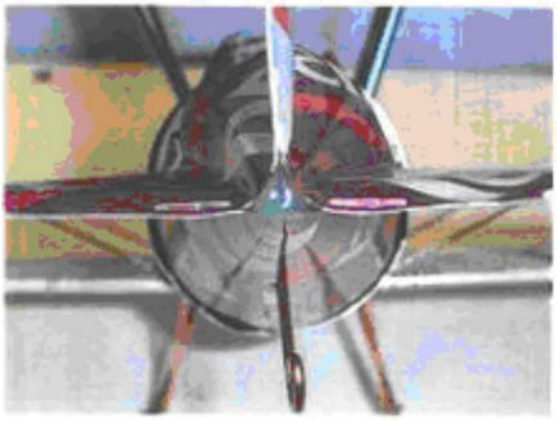


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Figure AG-13 Bottle-Cap Wheels

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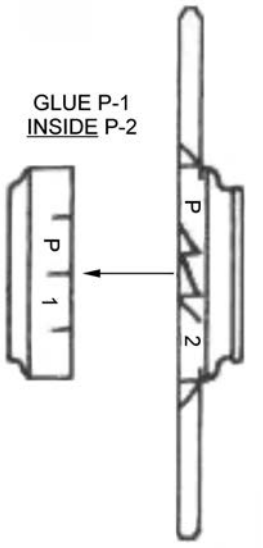
13. Fill the hole at the rear of the empennage with glue.



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Figure AG-14 Tail Light

14. Attach the propeller part P-2 to the front of the fuselage by slipping it over the propeller shaft. Place the propeller cover part P-1 over the face of P-2 and glue it into place inside of P-2.



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Figure AG-15 Finishing Touch

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B.C. Air Originals "FAQ" Biplane. Retrieved November 19, 2007, from http://www.bcair.com/faq/index.htm

Figure AG-16 Aluminum Model Biplane

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