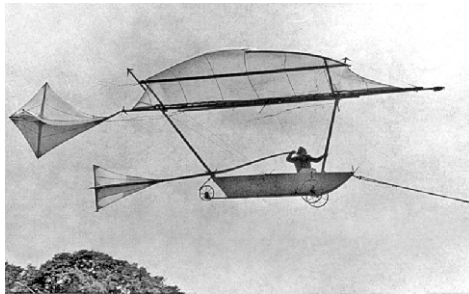




Historic Wings

1:72 Metal Kit of the



1853 Caley Glider

History, Notes and
Assembly Instructions

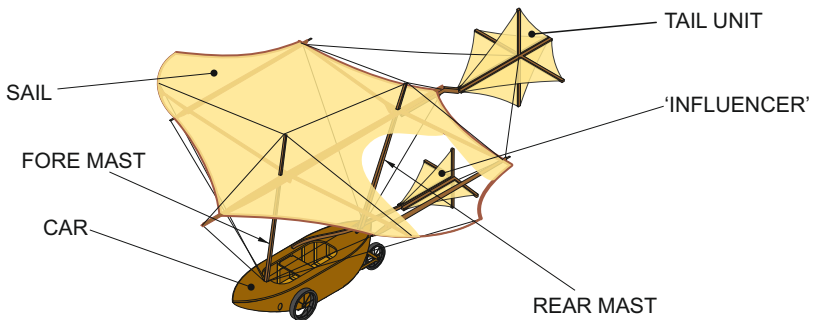
History

Sir George Cayley (1773 to 1857) is one of the most important people in the history of aeronautics. Many consider him the first true scientific aerial investigator and the first person to understand the underlying principles and forces of flight.. He did the initial research in fluid dynamics. These scientific experiments led him to develop an efficient cambered aerofoil and to identify the four vector forces that influence an aircraft: thrust, lift, drag, and weight. He built an earlier glider which was intended to carry a boy, but the subject of this model was the glider which carried Sir George's coachman (possibly named John Appleby, but not confirmed) aloft in 1853 at Brompton Dale near Scarborough in Yorkshire, England.

After the flight, the coachman is reported to have said “*Sir George, I wish to offer my resignation. I was hired to drive, not to fly*”.

The form of the model is based on the drawings in Sir George Cayley's patent application for a ‘*Steerable Parachute*’, together with the Anglia Television/Derek Piggot and BAE SYSTEMS/Sir Richard Branson replicas. Because no dimensions for the aircraft are known to exist, the dimensions of the replica built for the anniversary of the flight in 2003 have been used.

Aircraft In Miniature Limited wish to acknowledge the invaluable help of Ian Wormald in producing this kit. Some of the terminology used is shown in the drawing below.



Introduction

This Historic Wings kit is made from etched brass for the main structure, with cast metal and etched nickel silver detail parts. The flying surfaces can be covered with the Litespan film supplied, although many modellers may prefer to leave the structure uncovered to show the details.

Brass components can be soldered together, or joined with cyanoacrylate (super glue - **CA adhesive**) or 5-minute epoxy (**epoxy adhesive**). If you have the skills and equipment we recommend soldering for the brass parts.

To remove parts from the etched fret, you can use a pair of side cutters, or put the fret on a ceramic tile, and press down on each attaching tab with a sharp knife. If you use the ‘knife & tile’ option, put the attaching tab with the half-etched side of the tab face down. Whichever method is used, it may necessary to remove the burr of the attachment tab with a needle file afterwards.

The wings are etched with integral ribs. Hold the leading or trailing edge in a vice or clamp, and then hold each rib in turn with a pair of fine flat-nosed pliers, and twist that rib through 90 degrees. When all three ribs have been turned, clamp the trailing edge, and do the process again.

Where etched parts are joined with two inter-locking slots it may be necessary to enlarge a slot with a needle file. This is because photo-etching is not an exact process, and sometimes the etching is slightly uneven across a sheet.

Parts List

Cast Metal

- Main wheel rim 2 off
- Tail wheel rim 1 off
- Wheel hub 3 off
- Figure - coachman 1 off
- Figure - Sir George Cayley 1 off
- Figure - Sir George Cayley's right arm 1 off

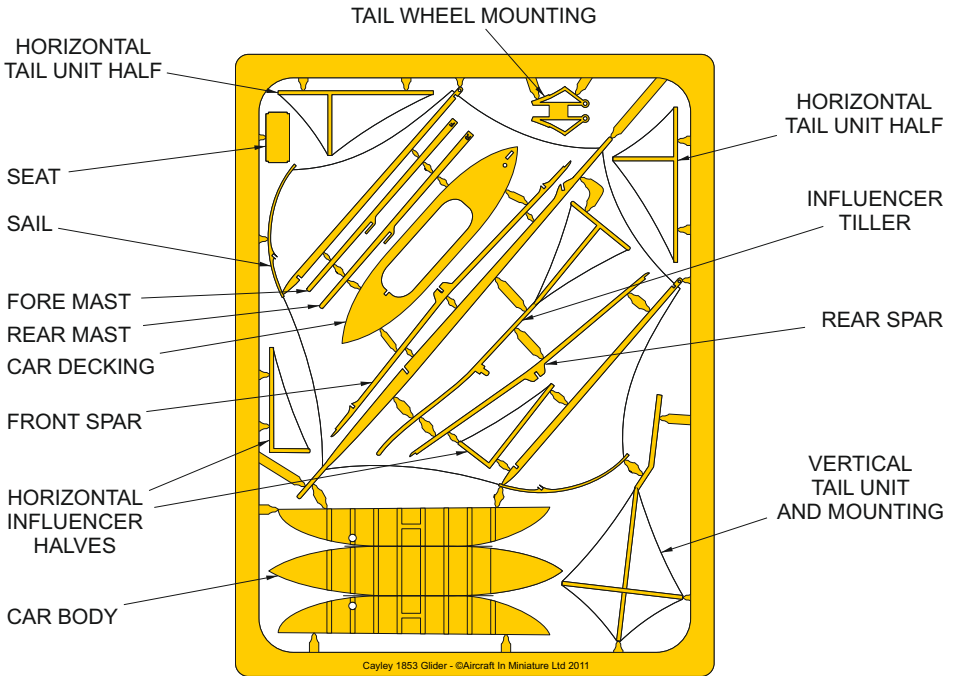
Etched metal

- Fret 1 - brass 1 off
- Fret 2 - nickel silver 1 off

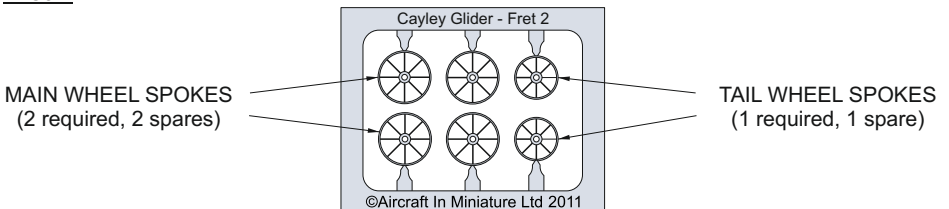
Miscellaneous

- Cream Litespan film 1 sheet
- Decals 1 sheet
- Instructions 1 set

Fret 1



Fret 2



1 ASSEMBLE THE SPOKED WHEELS

- A Remove two large and one small spoke disc from the fret and remove any burrs from the attachment tabs.
- B Attach a spoke disc to the rim of each wheel with CA adhesive .
- C Align the pip on the end of the hub with the hole in the spoke disc, and attach the hub to each wheel with CA or epoxy adhesive.

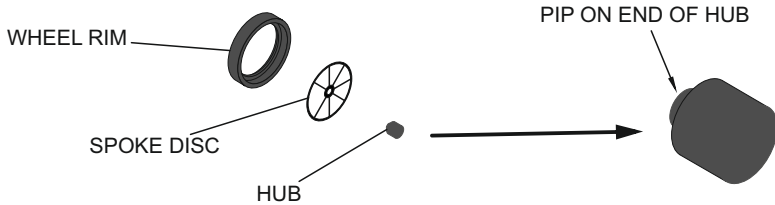


Figure 1

2 ASSEMBLE THE CAR

- A Remove the car body, car decking and seat from the fret and remove any burrs from the attachment tabs.
 - B Roll or form the ends of the car body into curves (see Figure 2) before you fold the sides up.
- Note - If you clamp them flat during folding, the curved ends will spring back into shape when they are released.

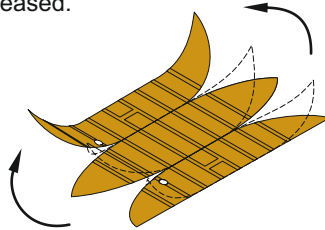


Figure 2

- C Fold the sides up until they are at 90° to the bottom of the car body (see Figure 3).
- Note - Use the seat as a gauge to make sure it fits on the supports
- D Make any final adjustments to the curvature before you join the edges of the curved sections, then solder or bond these curves.
 - E Put the seat in position and attach it.
 - F Paint the inside of the car body to resemble wood. Do not paint the upper edges of the car body or the car decking now.
 - G Put the car decking in place and attach it.
 - H Fold the tail wheel mounting and attach it to the underside of the car body as shown in Figure 3. The lugs on the tail wheel mounting fit into two slots on the outside of the car body.

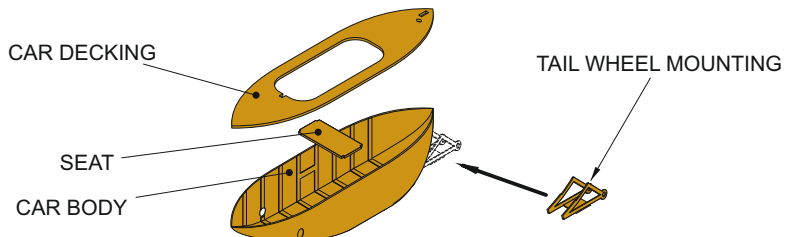


Figure 3

3 ASSEMBLE THE SAIL, TAIL UNIT AND INFLUENCER

- A Remove these parts from the fret and remove any burrs from the attachment tabs:
- The sail, and the front and rear spars.
 - The vertical tail unit and mounting, and the two horizontal tail unit halves.
 - The influencer tiller and the two horizontal influencer halves.

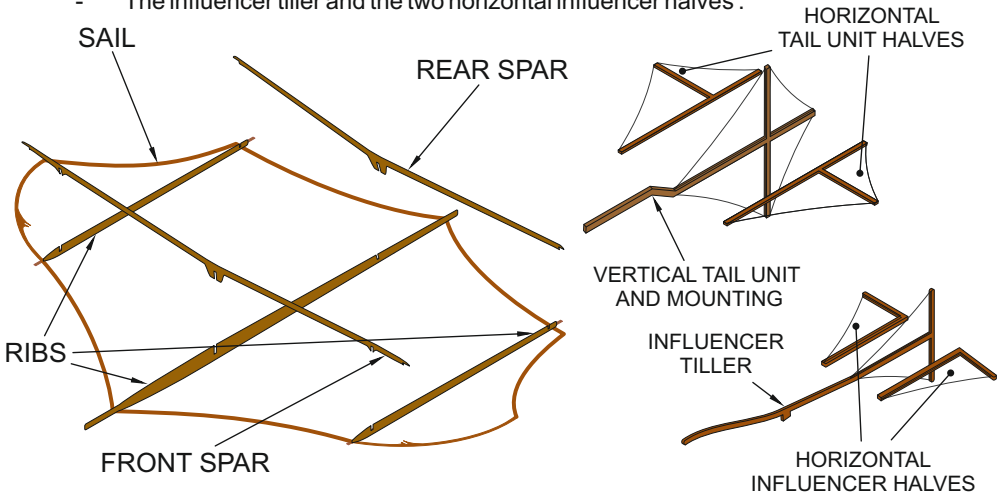


Figure 4

- B The assembly procedure is the same for the tail unit and the influencer:
- (1) The joints between the vertical unit and the two horizontal surfaces are simple butt joints. If you are soldering these items together, it is best to tin the surfaces before putting them together.
 - (2) When they are tinned, put them in position, then apply heat to one end at a time, until the tinning melts and fuses together.
- C Twist the ribs of the sail through 90° . The structure will deform less during the bending if you clamp the tip of the rib while you twist that rib, and also hold the tip at the other end of the rib at the same time.
- D Engage the slots of the ribs in the slots in the spars and attach the tips of the two spars to the sail structure.
- E Attach the tail unit to the centre spar of the sail as shown in Figure 5.

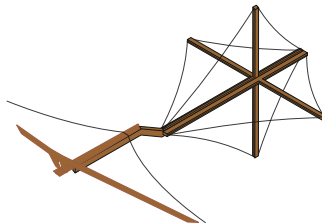


Figure 5

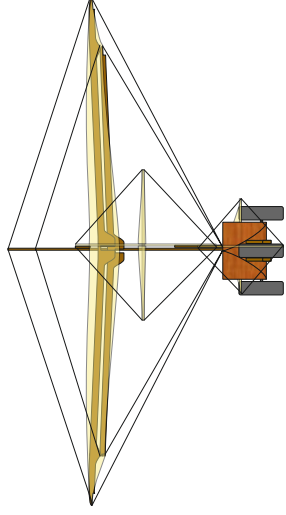
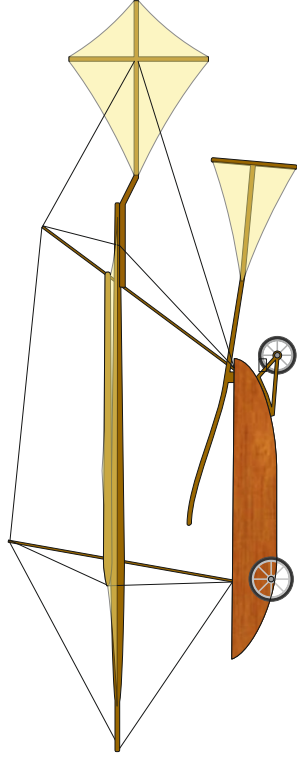
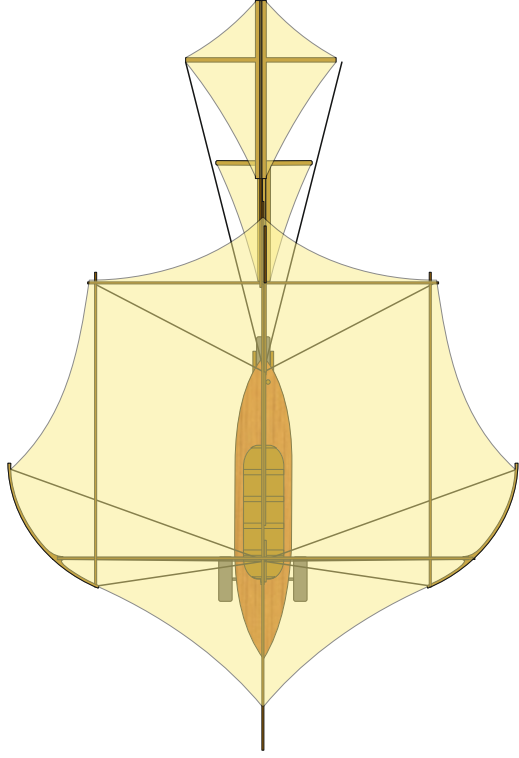
4 INITIAL PAINTING AND DECALS

- A Paint the car gloss white, to give a good surface for the woodgrain decals supplied, together with a white background for the decals.
- B Carefully trim the carrier film from the decals and apply them to all external surfaces of the car.

5 FINAL ASSEMBLY, PAINTING AND RIGGING

- A Enlarge the hole in the decking until the pin of the influencer tiller fits easily.
- B Attach the masts
 - (1) Put the forward mast through the decking of the car, with the sweep-back as shown in the 3-view drawing.
 - (2) Put the rear mast in position in the slot in the decking and engage the spars of the sail with the hooks of the masts. This will give the correct relative positions of the two masts.
 - (3) When you are happy with the positions of the masts, attach the rear mast to the decking.
- C Cover the sail, tail unit and influencer with the Litespan film if desired. For each area:
 - (1) Cut a piece of the film which is larger than the panel.
 - (2) Apply a continuous layer of CA adhesive to the structures where the film will be attached.
 - (3) Attach the edge of the piece of film to one long edge of the bay and press it down so that it is smooth, and without creases.
 - (4) When the CA adhesive has attached the film securely, apply more CA adhesive to the other sides of that bay.
 - (5) Pull the film smooth and attach the other sides of the panel of film, so that it is smooth and not slack.
 - (6) When the film is securely attached, use a sharp blade to trim off the excess film.
 - (7) Do this procedure again for all the other panels to be covered.
 - (8) Make small slits in the film of the sail for the two masts.
- D Attach the wheels.
 - (1) Remove the decal film where the main wheels are attached.
 - (2) Attach the hubs of the main wheels at the two holes in the fuselage sides.
 - (3) Attach the tail wheel in the tail wheel mounting.
- E Paint the masts, tail unit support and influencer tiller to represent wood.
- F Put the masts through the slits in the Litespan film and engage the hooks of the masts with the spars of the sail.
- G Rig the model as shown in the 3-view drawing. We find black monofilament gives a near scale appearance.
- H Attach the right arm to the figure of Sir George Cayley.
- I Paint the figures of Sir George and his coachman, then sit the coachman in the car.
- J Put the pin of the influencer tiller in the hole in the car decking, and attach it.

Historic Wings
Sir George Cayley's
'Coachman Carrier' of 1853
Kit HW72-02-001



NOTES

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*The manufacturers reserve the right to alter parts; add to, or delete parts without prior notification
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This kit is manufactured in the United Kingdom by

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