

Scale Soaring Forum

<http://scalesoaring.co.uk/cgi-bin/yabb2/YaBB.pl>

General >> Build Threads >> SPALINGER S25a 1:3.5 SCALE

<http://scalesoaring.co.uk/cgi-bin/yabb2/YaBB.pl?num=1363959516>

Message started by chris williams on 03/22/13 at 14:38:36

Title: **SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on 03/22/13 at 14:38:36

Thanks to this awful weather I've had the time to tidy up my rough working drawings for S25a. Although not up to full publication specs, most of the info needed will be there, and they will be freely available from SSUK. To complement them, I will also use this build log to document the full construction sequence...

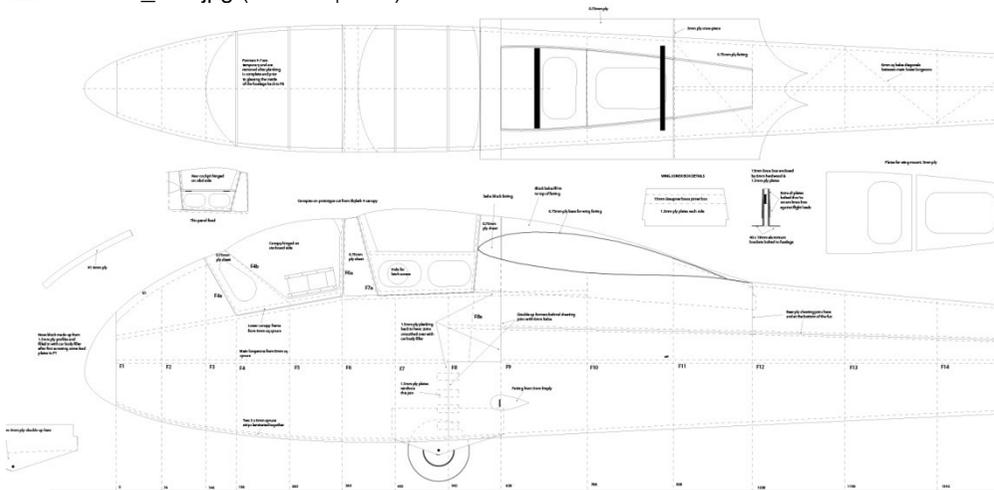
UPDATE

The FREE plan for the Spalinger S 25a can be found on our website:-

http://www.scalesoaring.co.uk/VINTAGE/Documentation/Spalinger%20S25a/Spalinger_S25a.html

A short kit is also available from Cliff Evans (cliff.evans@blueyonder.co.uk)

 Untitled-1_013.jpg (315 KB | 112)

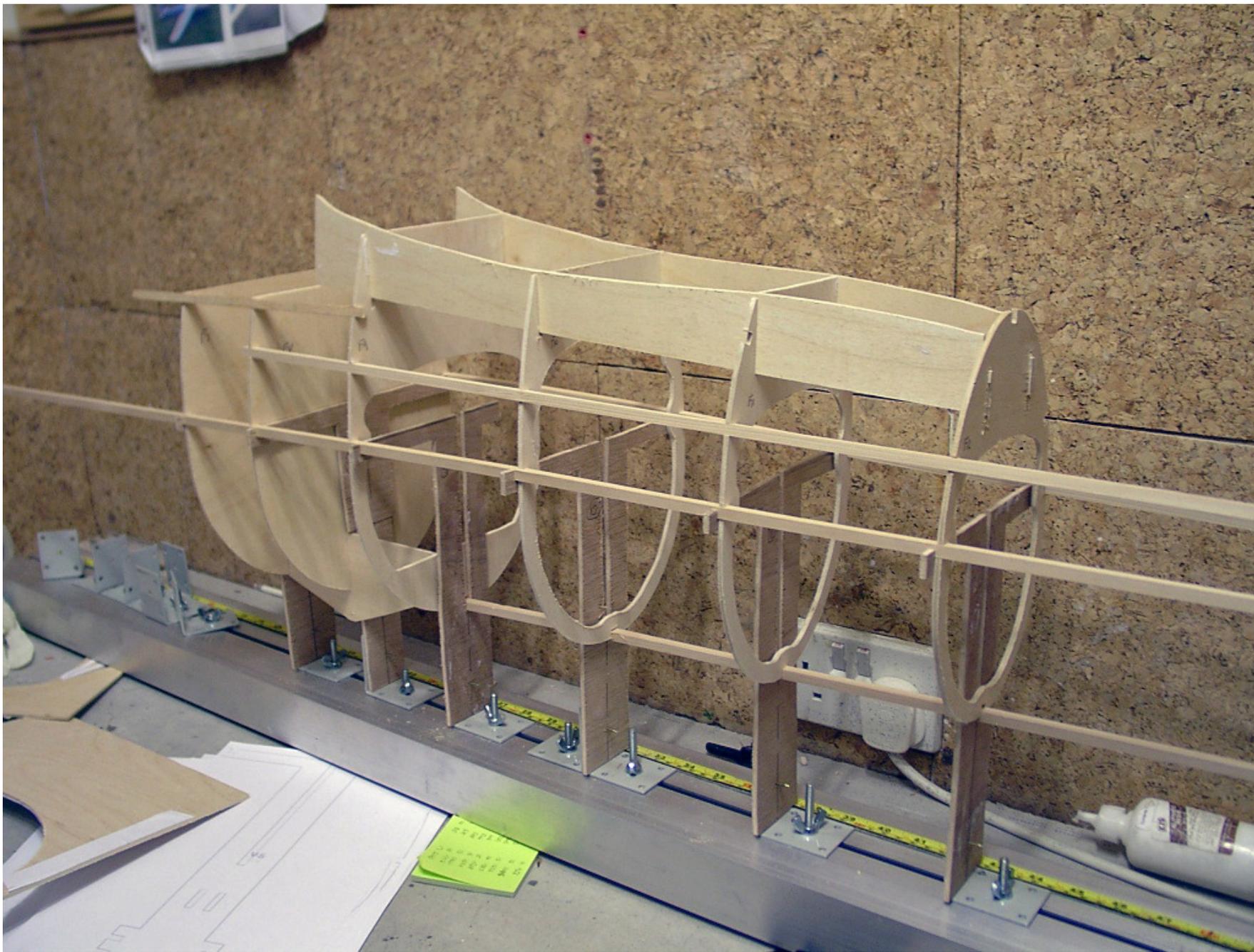


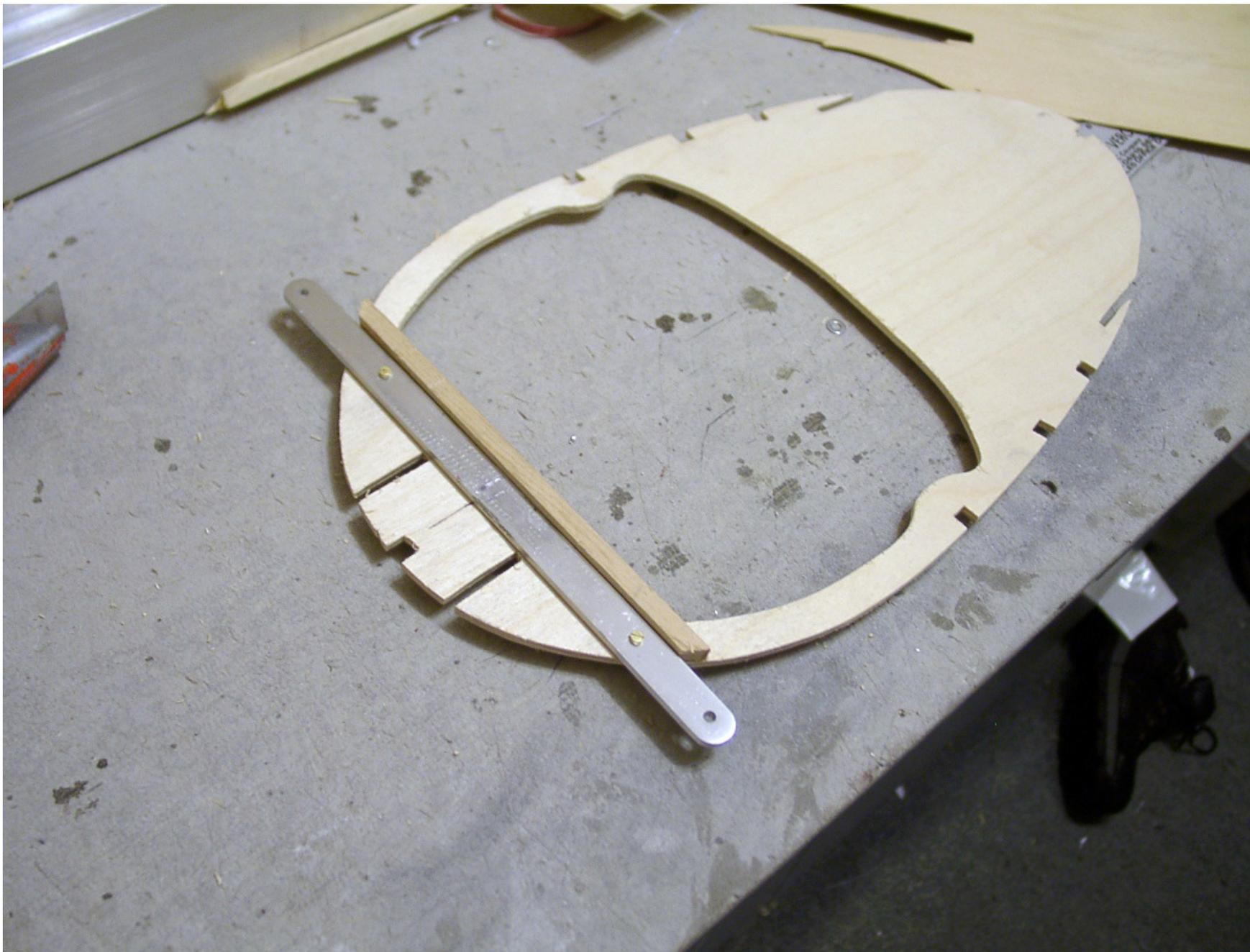
Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **03/22/13 at 19:12:17**

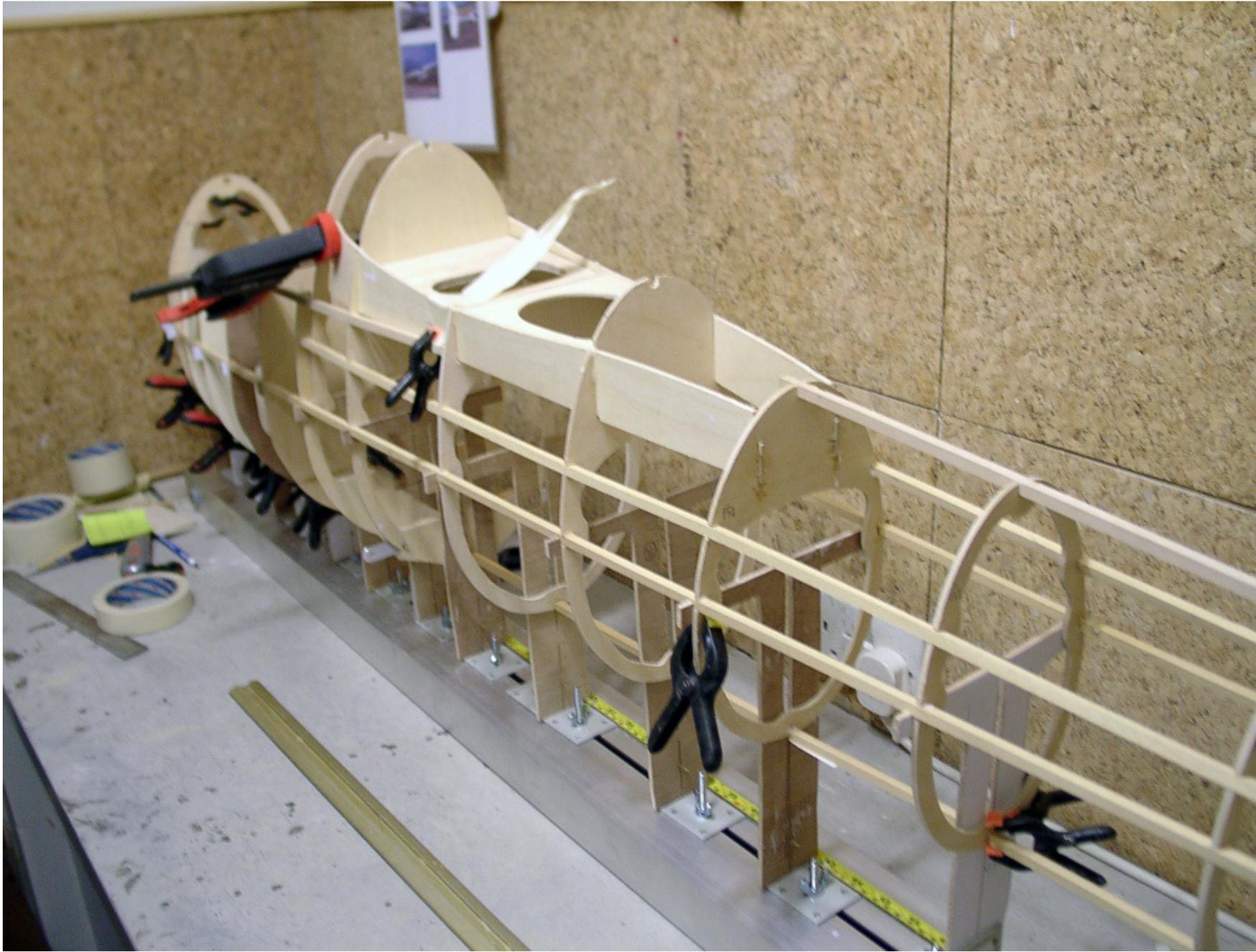
In the beginning... I used my 'Bridson' jig for the S25a, but there's no reason why a simple wooden base won't do the job. Also, as I discovered with the Topaze, you don't really need to jig every former, and on that build I left every other one out except where it was really necessary to have one...











Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/23/13 at 08:32:08**

A quick reminder of what I'm talking about (Wookies are easily confused)...

The slots for the ply plates are retro-cut with the aid of the power file. The plates reinforce the join between the front ply planking and rear ply sheeting.







Title: **Re: SPALINGER S25a 1:3.5 SCALE**

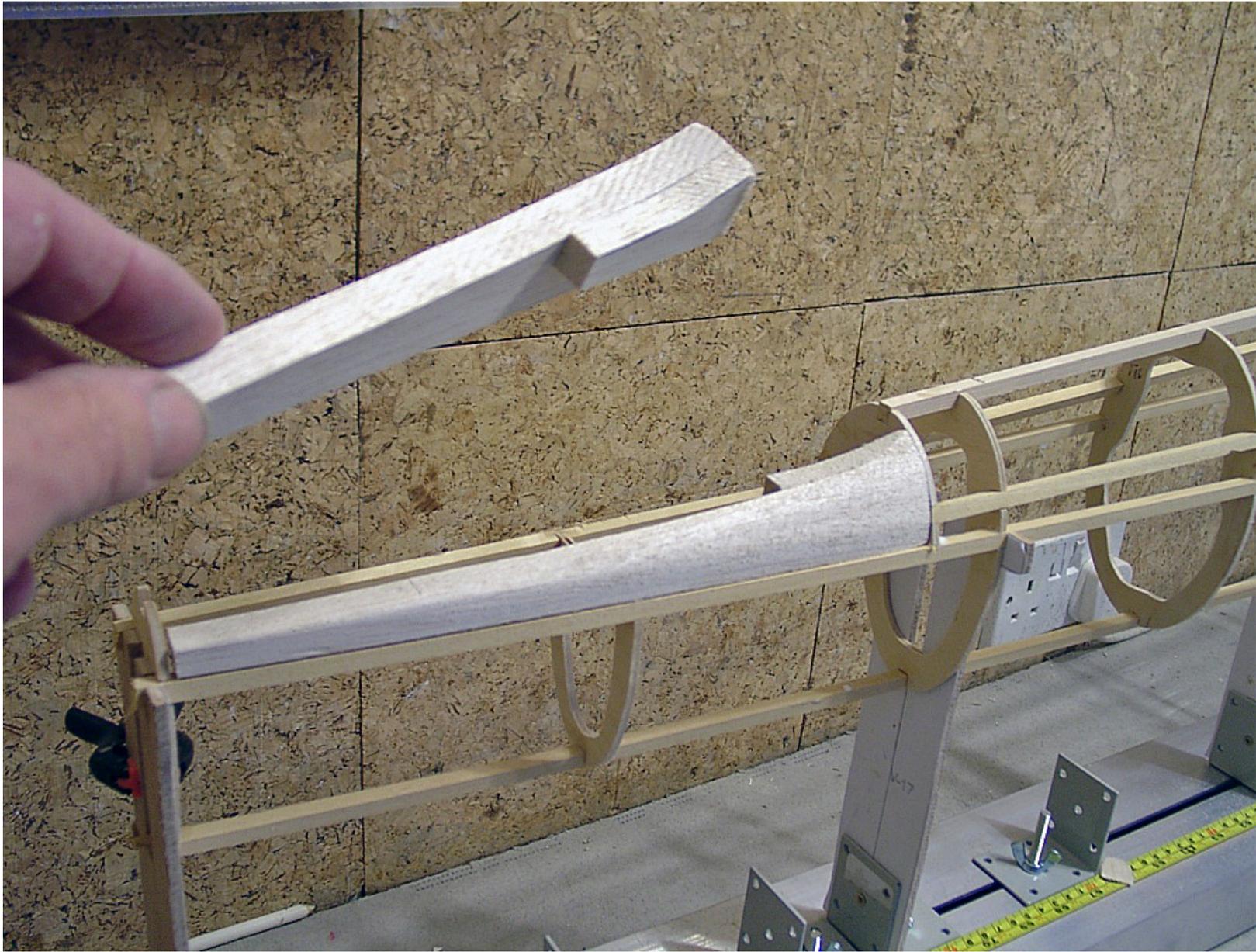
Post by **chris williams** on **03/23/13 at 21:29:28**

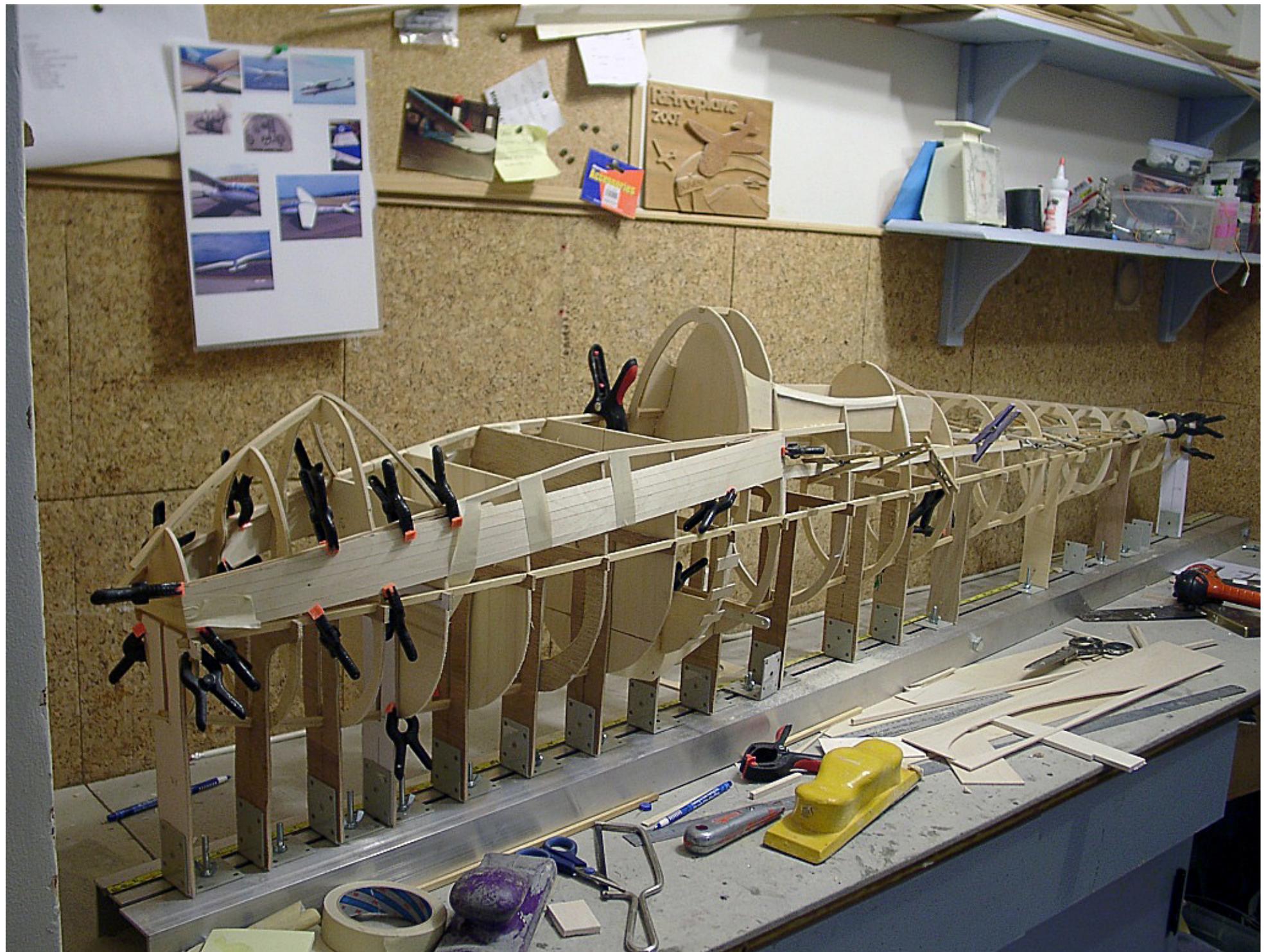
The tailplane seating is made up initially from 12mm balsa sheet in order to easily accommodate the curves.

The 1.5mm ply planking at the front of the fuselage has started.

The tailplane receives all of its 1.5mm balsa sheeting.







Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/24/13 at 09:46:43**

The tailplane is now fully sheeted...
The fuselage mount is shaped up to receive it...
More planking on the front and top decking added...
Filling in with scrap balsa to increase the glueing area for the ply sheeting...







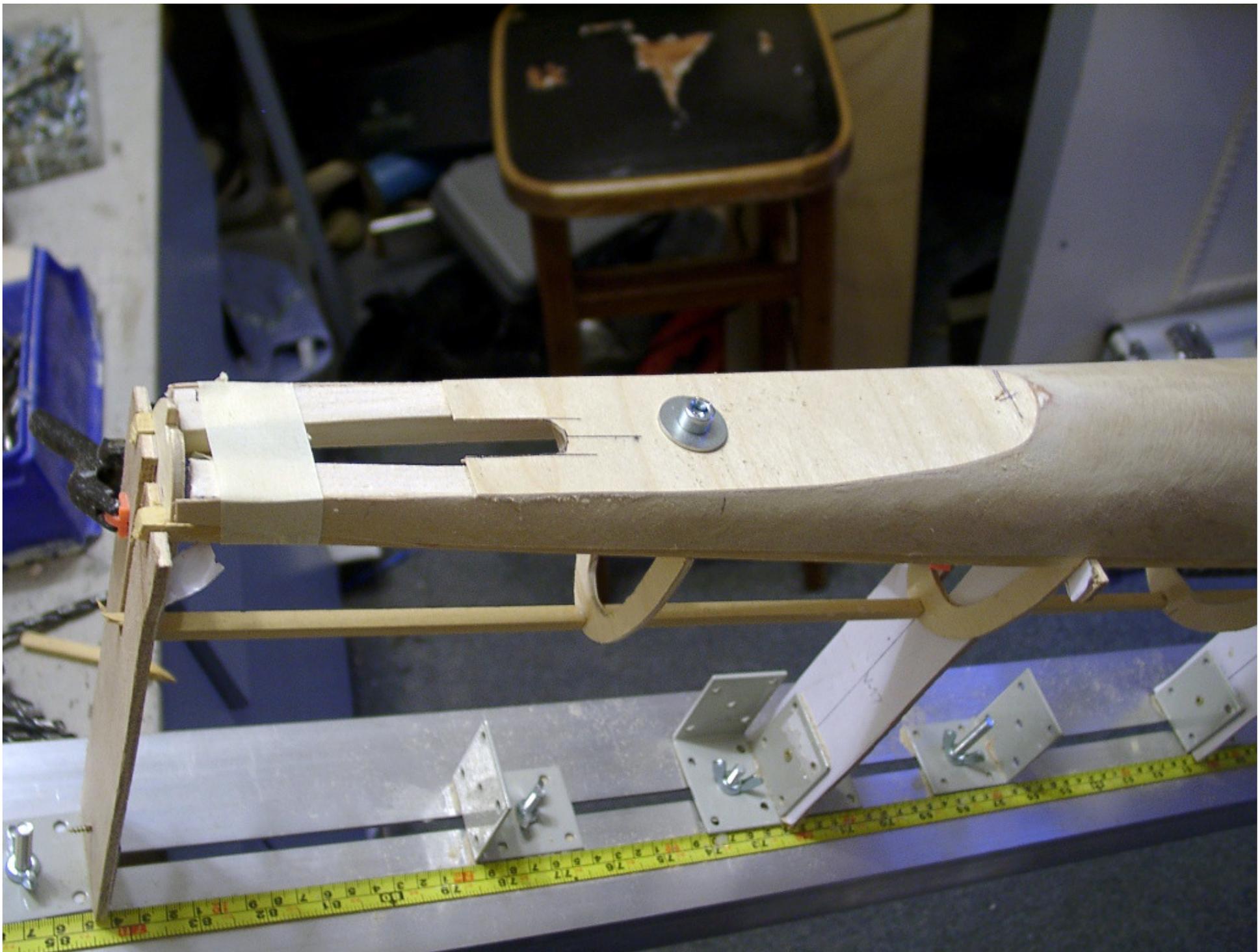
Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/24/13 at 23:55:38**

More planking, more sheeting and setting up the tailplane relative to the jig...









Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **03/25/13 at 08:32:12**

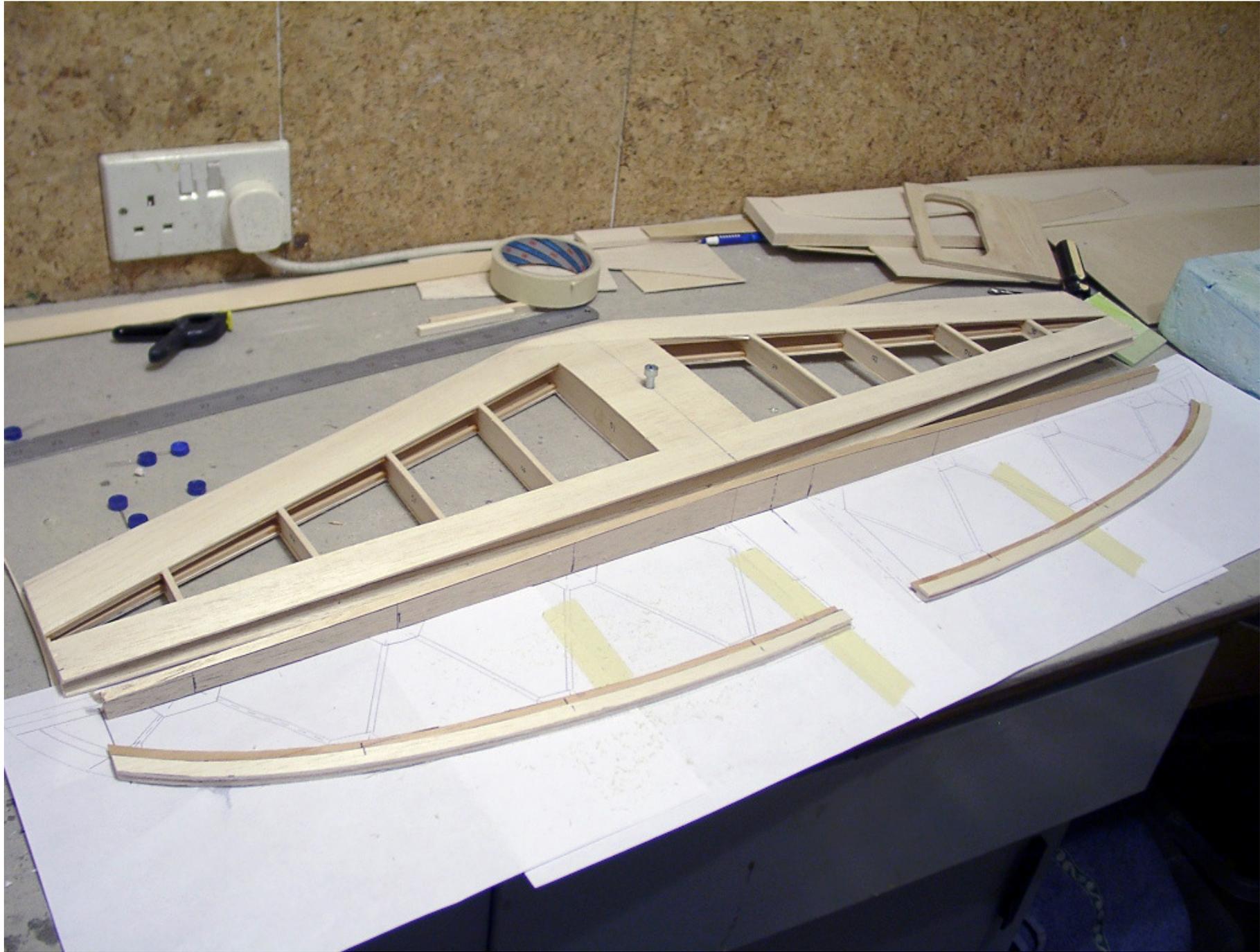
Setting up the elevator parts: the LE is marked out from the tailplane TE...

Getting at the inside of the top of the front of the fuz for glassing purposes whilst it can still be seen...

10mm ali tube forms the core of the wing struts...

The elevator ribs are made up full depth from simple triangles of 3mm balsa. Like the tailplane, the elevator is 'built in the hand'. Care is needed to keep it straight, but it's simpler than building flat on the board...









Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/25/13 at 16:44:57**

The elevator is deliberately made over-size so that it can be sanded back for a flush fit. Tip view shows elevator ready to have the LE sanded off before adding tips...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/26/13 at 10:30:44**

Front planking now complete.
Temporary formers removed
Reinforcing spruce strips added to the cockpit aperture.
Card templates made up for the glass cloth panels





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/27/13 at 09:05:24**

Inside of fuselage now glassed with chopped mat & polyster resin

The 1st stage of making the rudder is to fabricate the LE and hinge it up to the fin...

Then the TE and ribs can be added

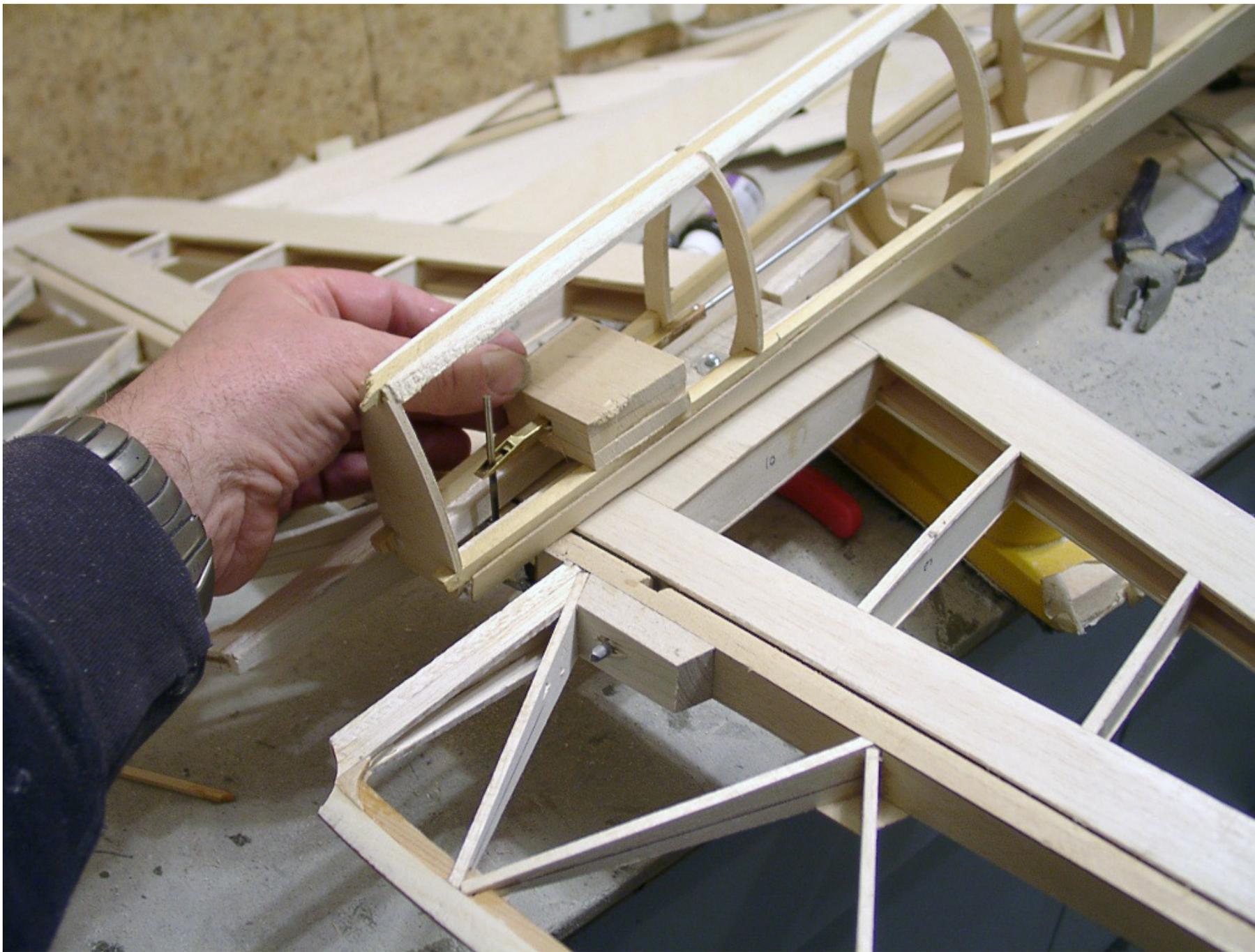


Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/28/13 at 08:55:29**

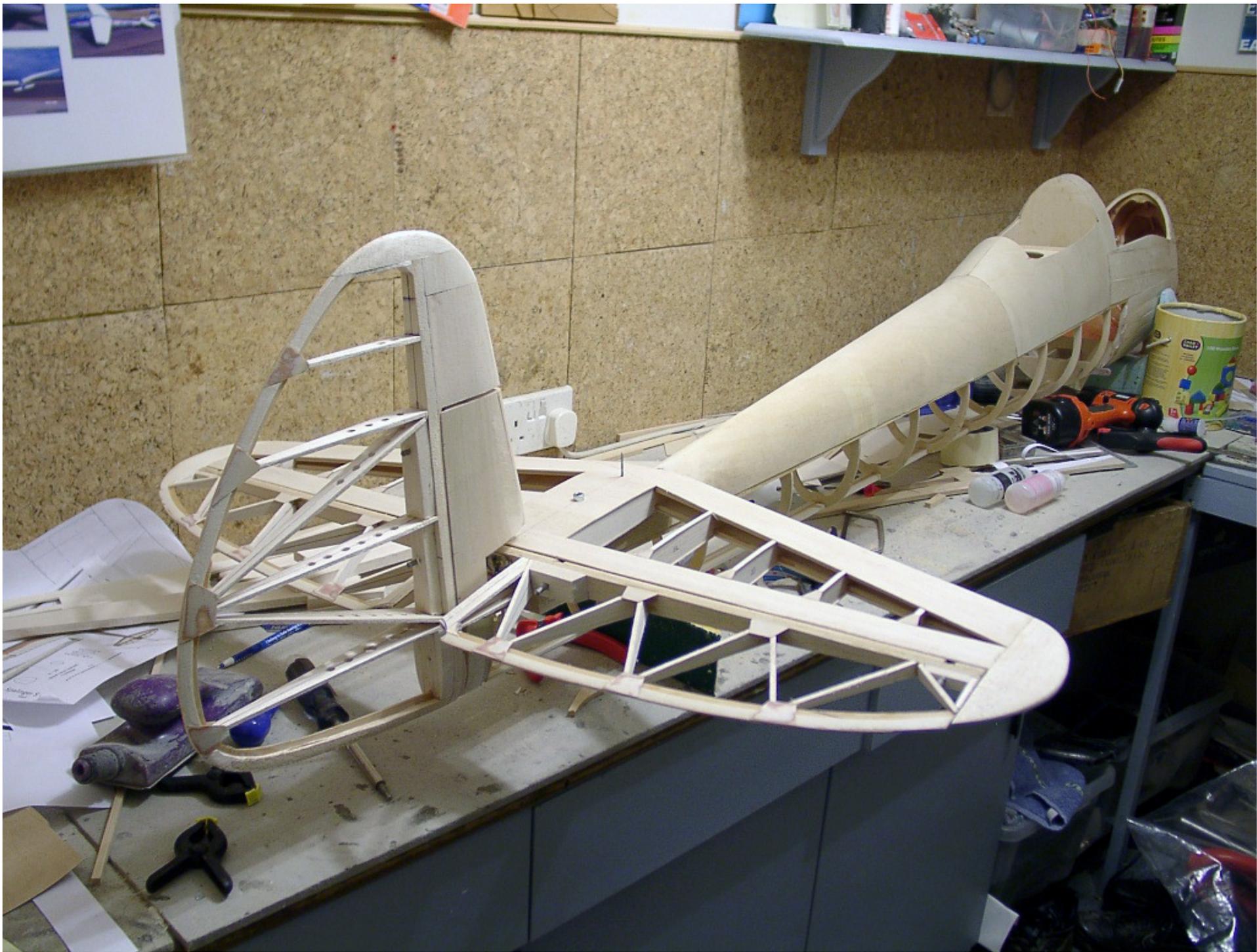
Setting up the elevator actuating mechanism...

Rear end nearly complete: must confess to a cockup, though. The rudder was fouling the elevator, and the fin had to be extended. They possibly had a similar prob on the full-size, as you can just see the corners cut out of the elevators in this pic...









Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/29/13 at 11:04:41**

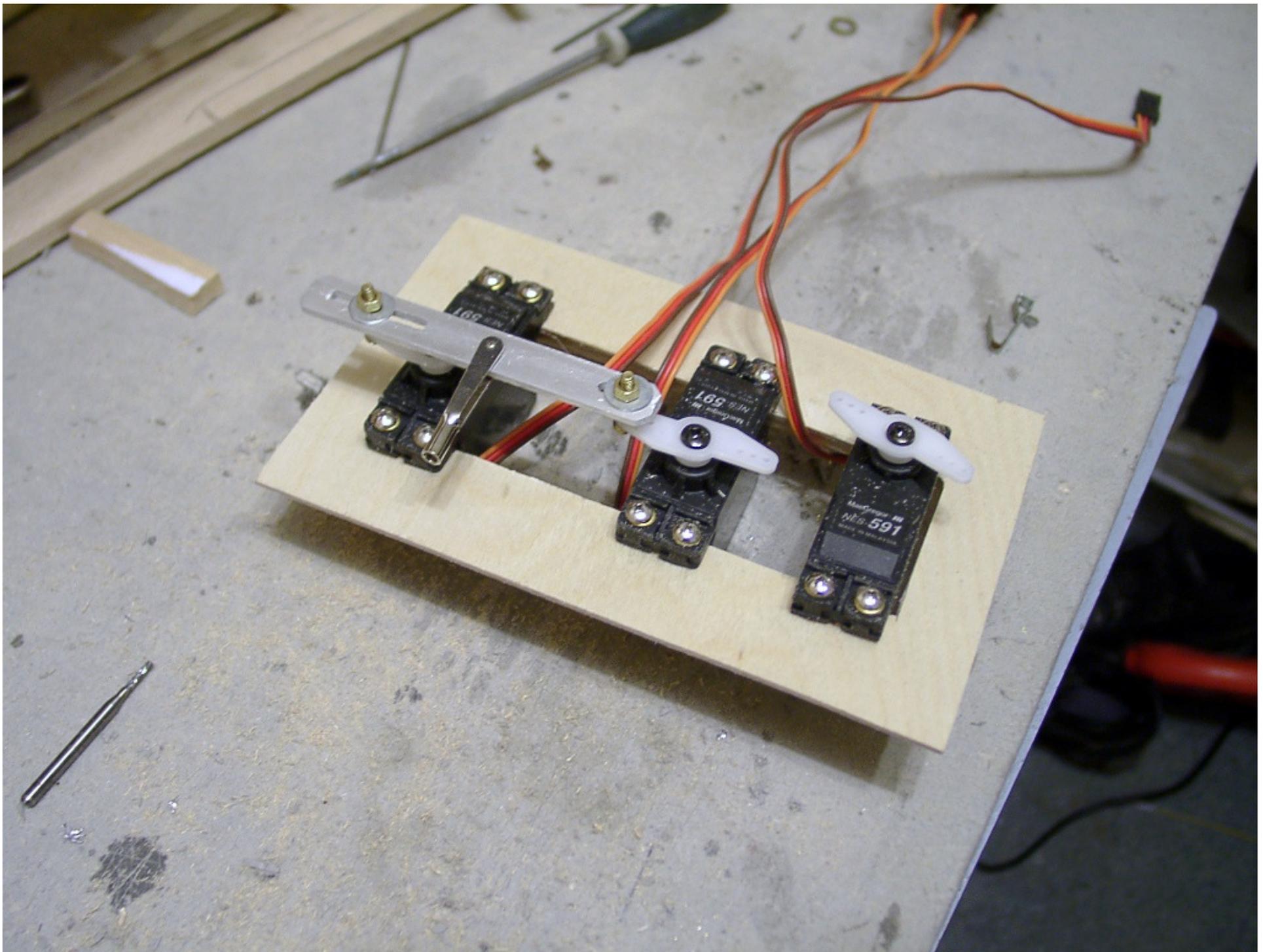
Time to sort the servos out. JR 591's used throughout, two on the elevator...

Due to the length of the fuselage, another join is necessary on the lower sheeting

Wooden pushrod consists of 12 x 3mm spruce core, laminated on two sides with 6mm sq balsa for added stiffness

Ply sheeting held in place with masking tape, clamps and helped by a few tiny screws (Tape removed here)





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **03/30/13 at 21:15:34**

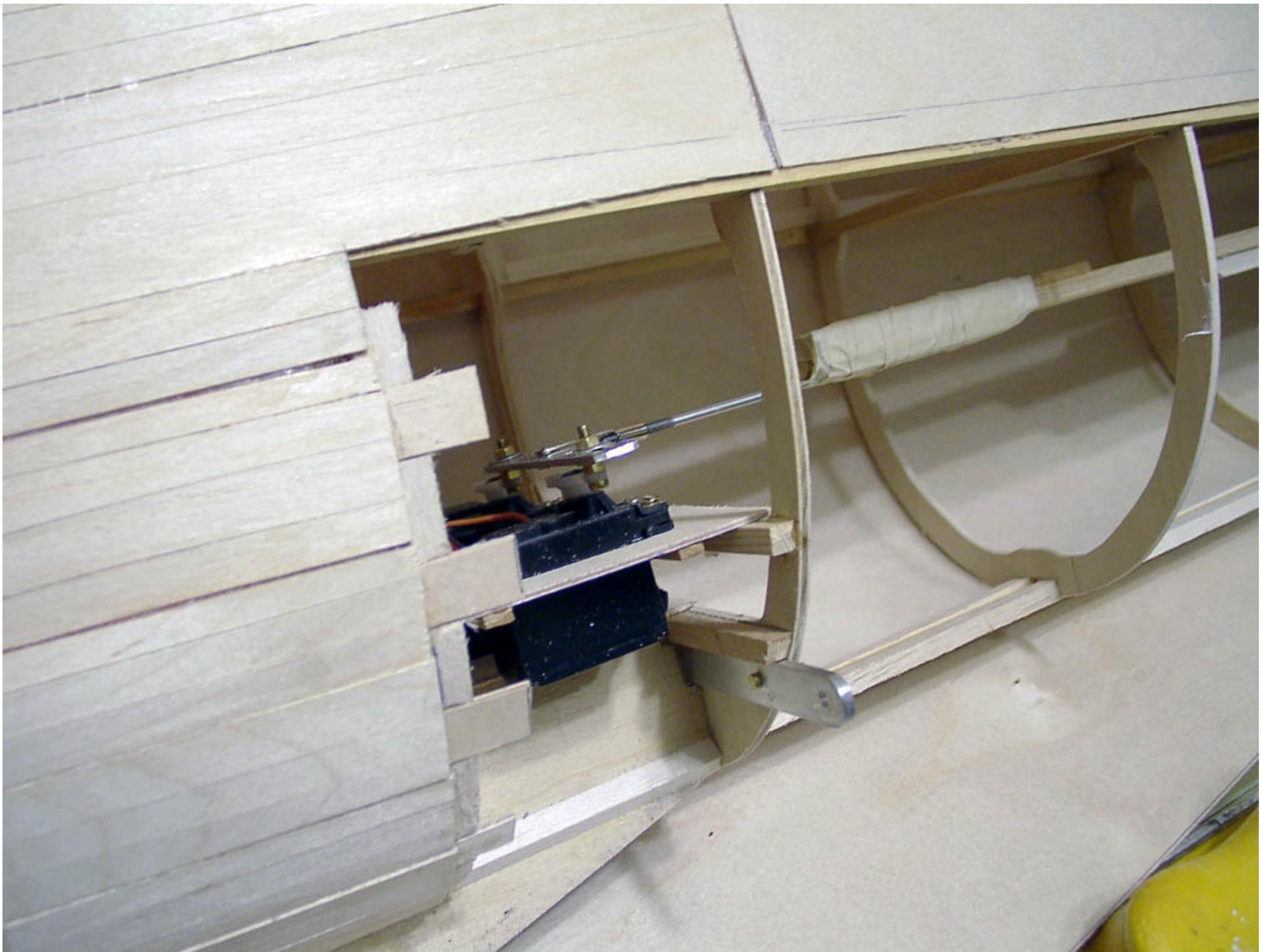
Elevator and rudder servos installed...

Bags of avoidupois as far forward as possible

A piece of flexible ply to follow the curve of the fuselage eases the job of applying the filler

After that, it's down to the elbow ;)





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on 03/31/13 at 21:34:08

Initial sanding with 40 grit to quickly get the shape, than 80 grit for a finish suitable for Solartex...

 12310004.JPG (614 KB | 25)







Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **Chris Wynn** on **04/01/13 at 11:38:57**

(Pssst, you missed a bit at the back) ;)

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/01/13 at 11:56:32**

Thank you for that, Chris...(Thinks: there's one in every crowd)

Closing off the bit at the back: Bowden Cable outer used as rudder cable guide...

View of strut fairings and u/c

View of tail group...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **Chris Wynn** on **04/01/13 at 16:28:53**

Not doubting you Chris but 80 grit gives a good enough finish? I suppose the coarse surface texture gives the adhesive something to grip. Do you prime the surface with Balsaloc or similar before covering? I'm fed up with these Easterlies now, the only East facing ridge anywhere near to me is at Old Sarum (castle) but I don't think the Flying Club would be too amused to find the Plank obstructing their finals!

Ho Hum,
CW2. :(

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/01/13 at 18:50:11**

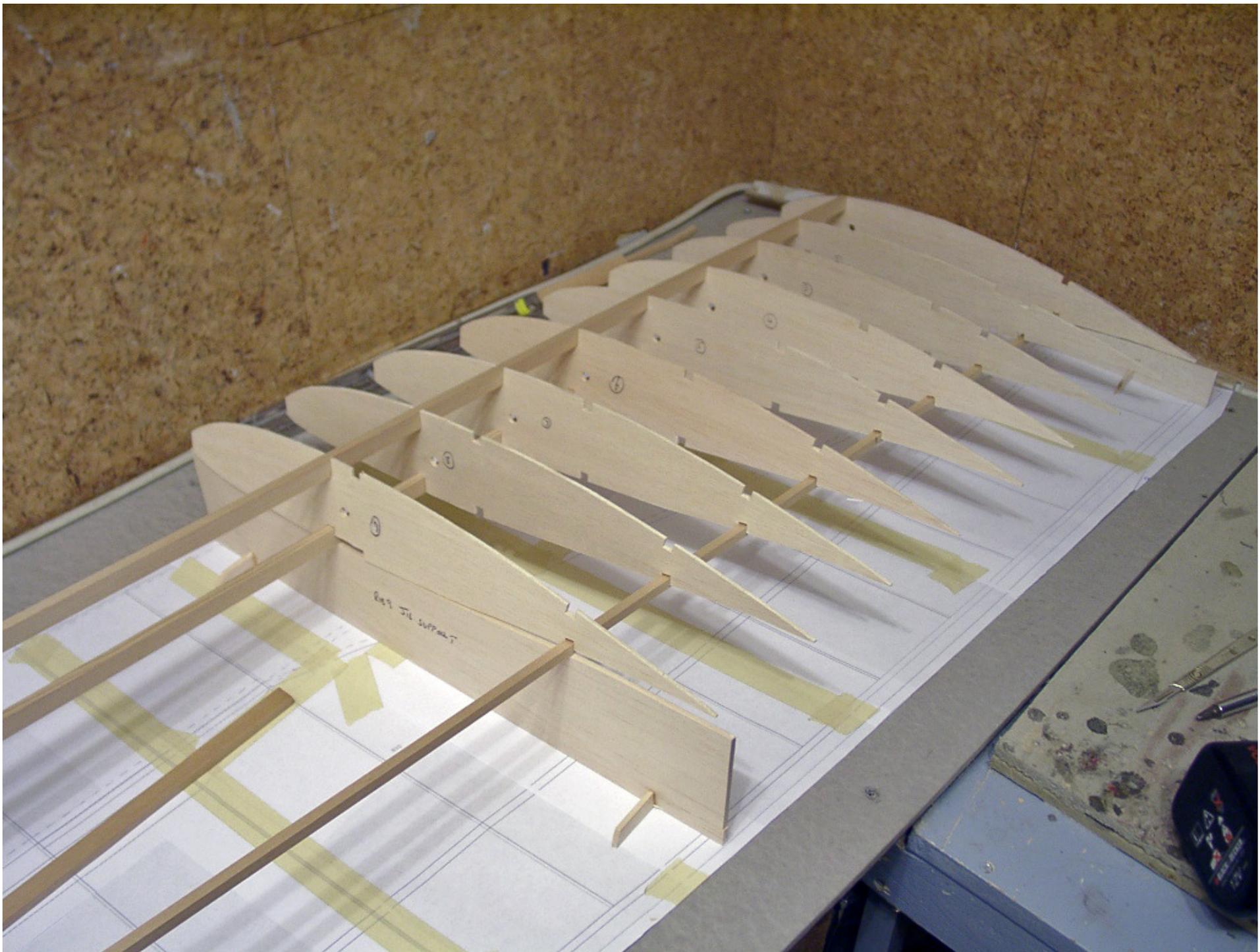
Balsaloc not required, Chris...

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/02/13 at 17:42:02**

Now for the wings... The inner panel is placed on its jig supports so that the spars can be trimmed for the gull join...

The wing joiner box is short and there's only one of 'em: the struts will take all the flight bending loads (You will notice in the videos that the wings don't flex at all)





Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **B Sharp** on **04/02/13 at 20:12:23**

Slow up for Pete's sake Chris! How are the rest of us mortals supposed to keep pace with your rate of construction. I think we need to mention to your missus that the garden needs doing and the house needs painting.

Brian. :)

Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **04/02/13 at 21:43:22**

Brian, in the immortal words of generations of Blue Peter presenters: 'this is one I made earlier'

Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **04/03/13 at 18:54:16**

View of the brass box between the spars...

Filling in between the spars for the ali strut bracket mount...

Note: wing plan printed out in several sheets of A4

Trial fit of the inner wing panels...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/04/13 at 11:22:15**

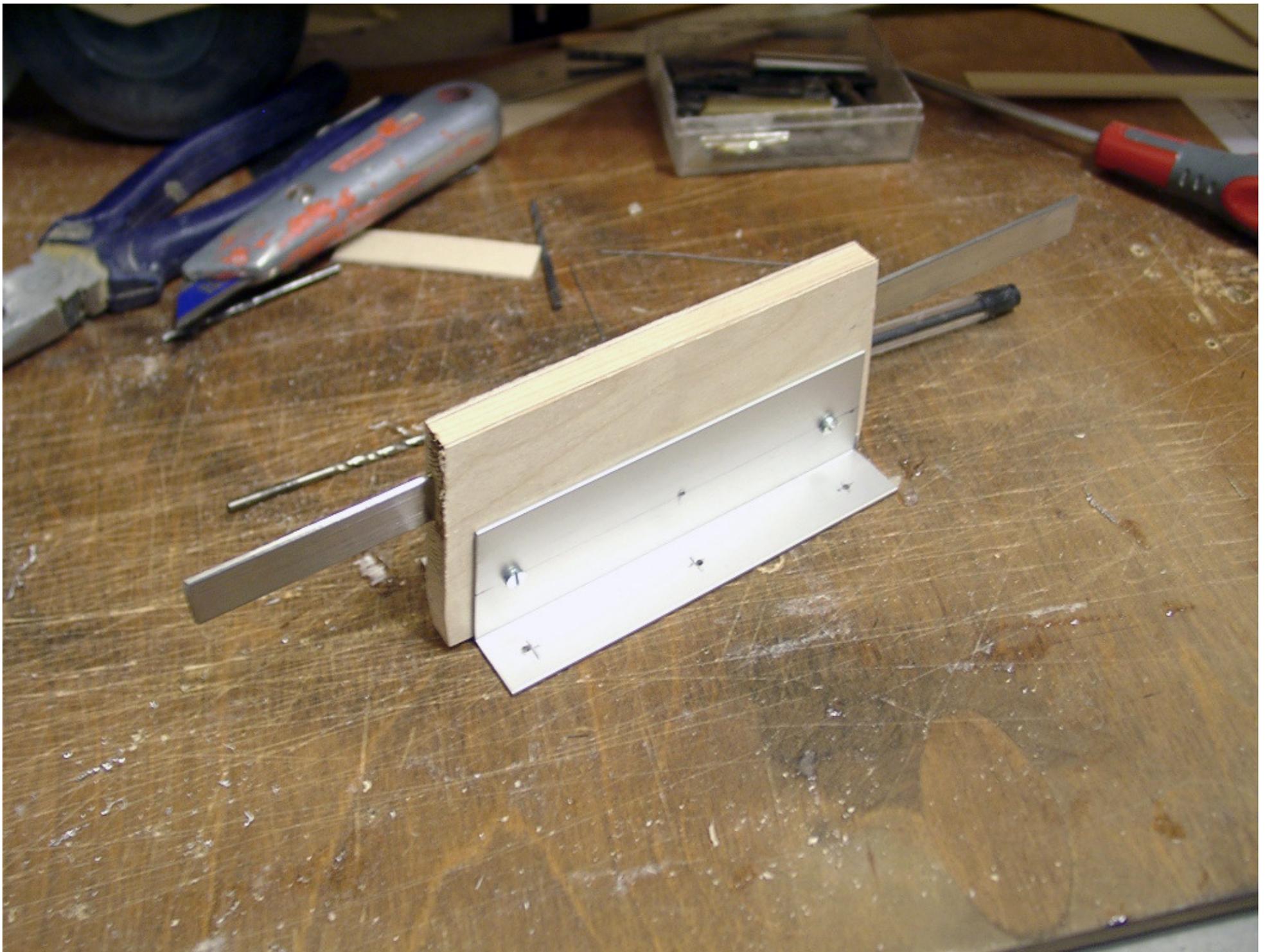
Wing joiner box held to fuz with Ali extrusion from B & Q

Note: There still wasn't enough dihedral, and eventually the 14mm blade in each wing had to be ground off slightly to achieve it...

Spruce wedges were used at the gull join to increase the glueing area...

The TE was cracked at the gull join and reinforced with epoxy & piano wire...

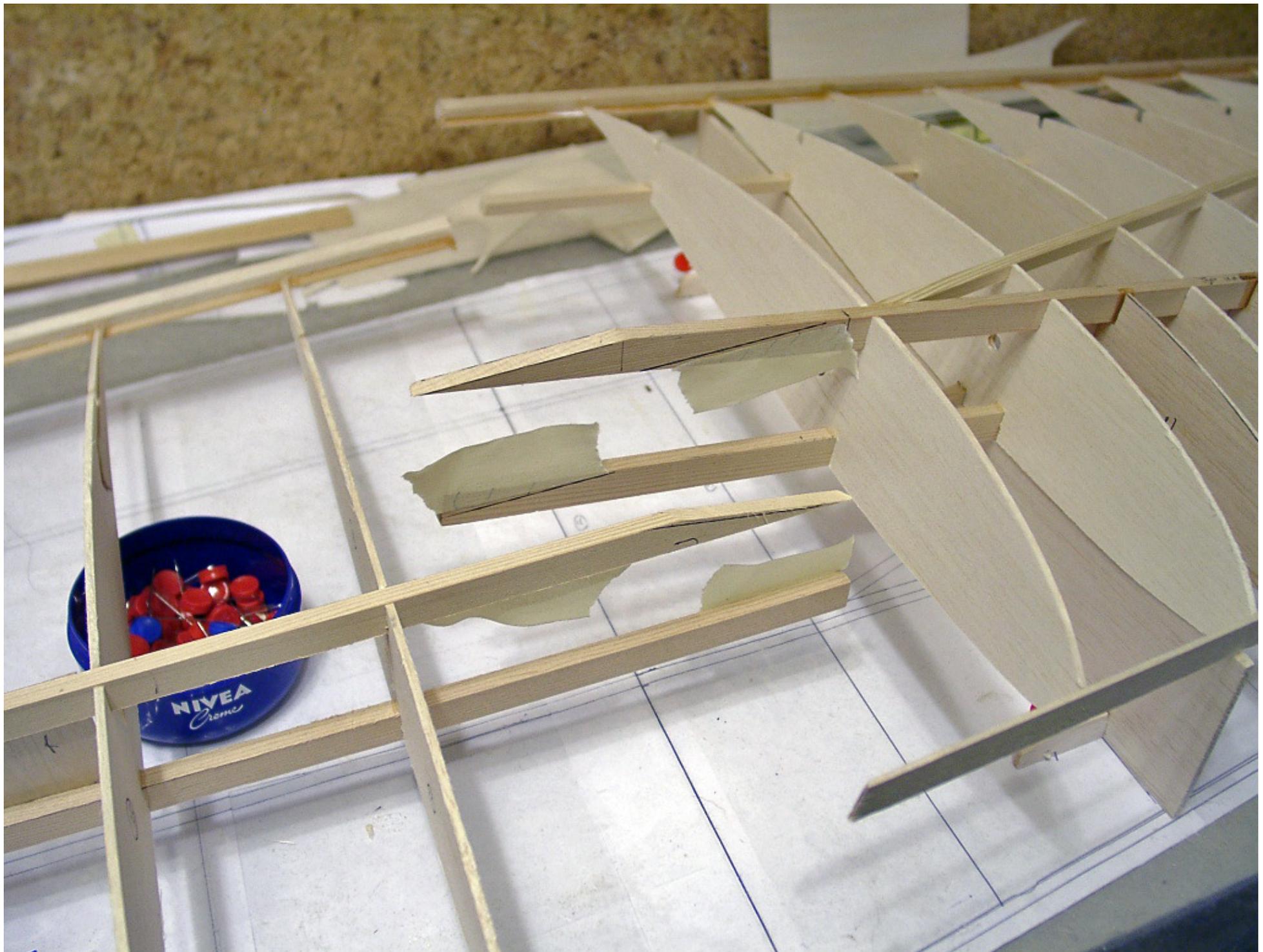




Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/05/13 at 08:43:16**

Ooops, a bit out of sequence...let's look at the gull join again.





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/06/13 at 10:18:30**

Outer panels now joined to the inners...

After fitting the bottom 1.5mm balsa sheeting, it's time to add the top sheeting. Because this will lock the wing into its final shape, the wing is supported on jiggling supports that ensure that it will remain flat & straight...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **Robbie_B** on **04/06/13 at 11:10:49**

Chris,

How do you do your ply thickness transitions on the fuz - 1.5 to 0.8? Do you sand and/or fill the 1.5 to blend in or do you pad out the 0.8 at the former and blend out the longerons? I've always done the latter and it does seem a bit of a faff especially if you have three to do - 1.5 to 0.8 to 0.4.

The Skylark is stalled - finished and covered but I can't spray until this confounded weather warms up. Not wasted the time though, drawing up the next one.....

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/06/13 at 21:29:16**

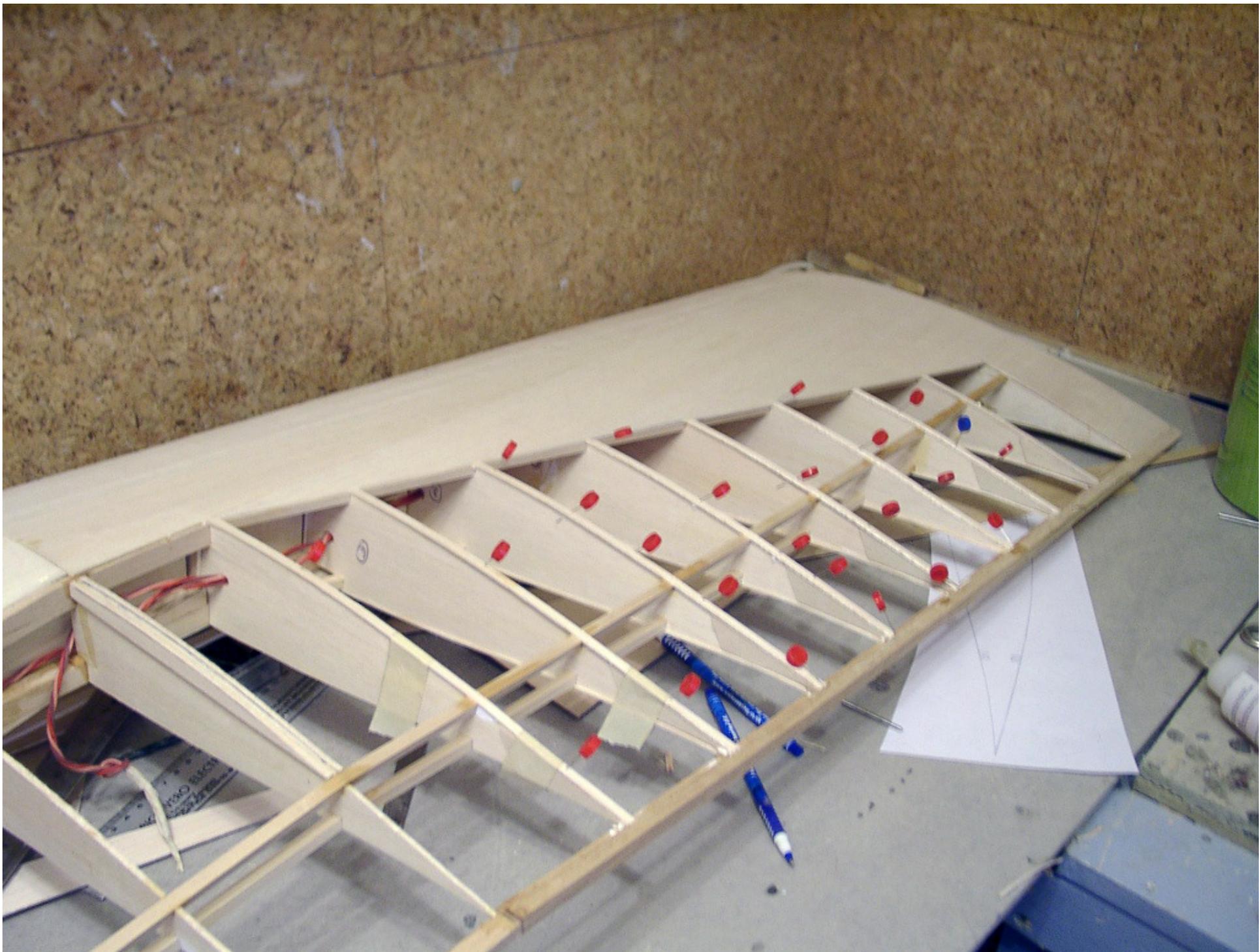
No, a skim of filler does the job, Robbie, especially if, like me, you're faking the scale fuselage sheeting joins with strips of Solartex...

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/08/13 at 15:56:04**

With the wing sheeting completed, and the rear wing joiner tubes fitted, attention moves to the struts. These are simple 10mm Ali tube cores. (I tested the strength of the system by suspending my entire weight from the workshop door using a test piece).

Once the struts are sorted, the wing retention system can be tested. Those with a long memory might remember the video of the drop-test. With a total force of around 60lbs being exerted by the rubber bands, the system has worked very well in the rough-and-tumble of slope flying.





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **Paul-williams** on **04/08/13 at 17:31:34**

Chris,
can I ask what your main wing/fuselage aluminium brackets are bolted into - in the fuselage - is it just the horizontal plate below the wing and what sort of thickness is that material ?

As always, these illustrated builds are most useful and contain many good (and proven) ideas.
Paul

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/08/13 at 21:02:21**

Yes Paul, the bracket is bolted to the 3mm ply plate. All it has to do is carry the weight of the fuselage in flight.
It's worth noting the difference between a cantilever and strutted wing. The latter, thanks to the struts, does not suffer adversely from the side loads that might be experienced from a hurried crosswind landing on the slope. The former, as in the case of the Rhonadler, is a different matter!

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **Paul-williams** on **04/08/13 at 23:19:32**

Thanks for that Chris, hope the Rhonadler is fixed soon.
I was (pleasantly) surprised that you find the struts helpful if hitting a tip as I found on my little 1/6 Grunau that the strut ends took quite a beating, being bent out of line - I take it that at a larger size its not a problem ?
Paul

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/09/13 at 15:43:17**

With 12 x 6mm spruce either side of the 10mm ali tube, Paul, the struts are plenty strong enough in compression...

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/09/13 at 19:50:28**

A good time to check the decalage...around 1.5-2 degrees...

The spars that support the airbrakes are now dropped in. It's much easier to retro-cut the slots for the 6 x 6mm spars rather than make the slots at the rib cutting stage, especially as you have to cut the centre of the ribs away!

Th usual basic Williams airbrake...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/10/13 at 22:23:06**

Once the brakes are installed, the sheeting can be finalised. Note the aileron shroud on the wing for the knuckle joint. In reality, I think the S25 probably has Frise ailerons...
The brake arm pivot screws are accessible from the rear in case of trouble... ;)







Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **04/13/13 at 17:05:06**

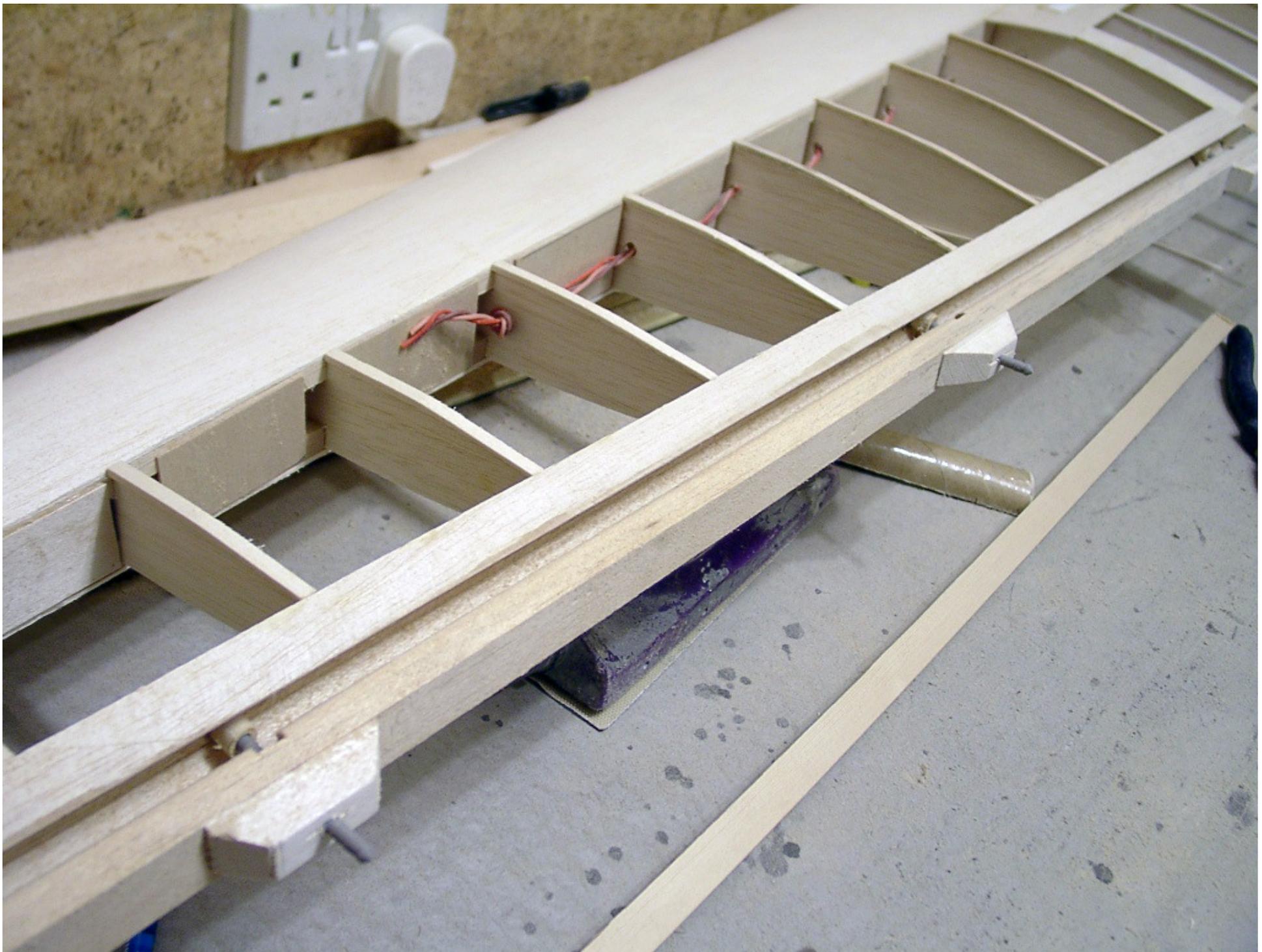
Ailerons, now... first, the LE is made up from 2 lams of 6mm balsa. It's hinged to the wing and the LE rounded off.

Now the templates used for jiggling the wing are also used to set up the aileron TE

Once it's all jiggged up correctly, the ribs can be cyanoed in place...







Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/14/13 at 15:12:35**

With the ailerons complete, time to get to grips with the tricky centre section fairing...

Ply base at rear, and ply front former held in place with foam whilst the epoxy sets







Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/16/13 at 19:06:56**

Having made up the little fairings at the LE's, it's on to the rest of the main fairing...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/18/13 at 09:24:42**

View of the underside of the wing fairing... (Over block balsa)

Then, body filler and a bit of the old elbow grease

Note: remember to cut slots in the sides of the fairing to allow the hooks to clear in the event of the wings moving.





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/21/13 at 16:57:41**

Time to sort the canopies... first the frames, then the secondary formers...

Test fitting two parts of the same Skylark 4 canopy





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/22/13 at 19:18:10**

Canopies now completed & painted. Starting to apply the Solartex...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/24/13 at 08:19:31**

With the wings covered, the areas of deepest undercamber are pricked through with a pin and penetrating CA applied. Then, the holes are covered with ironed-on rib tapes...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/25/13 at 19:16:50**

Now for the tricky bit, the painting process.

The fuselage is masked up, ready for priming

The 2-pack primer is applied thickly enough to be able to flat out the joins in the 'tex...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **orionis** on **04/26/13 at 18:18:49**

Chris, did you put the CA before or after having the fabric tightened?

Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **04/26/13 at 20:09:22**

The procedure is: run the iron over the rib's undercamber and immediately follow with a cloth in the other hand, pressing the fabric on to the rib as the adhesive in the 'Tex cools. Then, out with the pin and the CA

Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **orionis** on **04/27/13 at 16:17:52**

ok, thanks for your answer!

Title: **Re: SPALINGER S25a 1:3.5 SCALE**

Post by **chris williams** on **04/29/13 at 21:53:22**

Here are some of the few available pics of the full-size...





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on 04/30/13 at 16:28:32

More...





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Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **VinceC** on **04/30/13 at 19:23:26**

I just came across these photos





Spalinger_s-25a_wing_1.jpg (86 KB | 7)

Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **04/30/13 at 21:11:03**

...and the last





Title: **Re: SPALINGER S25a 1:3.5 SCALE**
Post by **chris williams** on **05/01/13 at 19:15:47**

To mark the end of this thread, here's a previously unseen video of the beast in action...<http://youtu.be/qRBWch4psCI>