WOODEN MODEL SHIP KIT

Shackleton's JAMES CAIRD 1916

SCALE 1:20









LENGTH: 345mm HEIGHT: 250mm WIDTH: 110mm

ITEM CODE: KTMS1023

Modellers Shipyard

www.modellersshipyard.com

BUILDING INSTRUCTIONS

Version 1.2

1.0 Introduction

Modeller's Shipyard is proud to present another wooden model ship in our range of kits that have significance to maritime history. Our model of the *James Caird* is expertly designed and built by John Staib - master model ship designer and builder.

2.0 Historical Notes

The voyage of the *James Caird* was a journey of 1,300 kilometres (800 mi) from Elephant Island in the South Shetland Islands through the Southern Ocean to South Georgia, undertaken by Sir Ernest Shackleton and five companions to obtain rescue for the main body of the stranded Imperial Trans-Antarctic Expedition of 1914–1917. Polar historians regard the voyage of the crew in a 22.5-foot (6.9 m) lifeboat through the "Furious Fifties" as one of the greatest small-boat journeys ever completed.

In October 1915, pack ice in the Weddell Sea had sunk the main expedition ship *Endurance*, leaving Shackleton and his 27 companions adrift on a floe. They drifted northward until April 1916, when the floe on which they were camped broke up, then made their way in the ship's lifeboats to Elephant Island. The rigours of an Antarctic winter were fast approaching; the narrow shingle beach where they were camped was already being swept by almost continuous gales and blizzards, which destroyed one of the tents in their temporary camp, and knocked others flat. The pressures and hardships of the previous months were beginning to tell on the men, many of whom were in a run-down state both mentally and physically.

In these conditions, Shackleton decided to try to reach help, using one of the boats. The nearest port was Stanley in the Falkland Islands, 570 nautical miles (1,100 km; 660 mi) away, but made unreachable by the prevailing westerly winds. A better option was to head for Deception Island, 200 nautical miles (370 km; 230 mi) away at the western end of the South Shetland chain. Although it was uninhabited, Admiralty records indicated that this island held stores for shipwrecked mariners, and was also visited from time to time by whalers. However, reaching it would also involve a journey against the prevailing winds - though in less open seas - with ultimately no certainty when or if rescue would arrive. After discussions with the expedition's second-in-command, Frank Wild, and ship's captain Frank Worsley, Shackleton decided to attempt to reach the whaling stations of South Georgia, to the north-east. This would mean a longer boat journey of 700 nautical miles (1,300 km; 810 mi) across the Southern Ocean, in conditions of rapidly approaching winter, but with the help of following winds it appeared feasible. Shackleton thought that "a boat party might make the voyage and be back with relief within a month, provided that the sea was clear of ice, and the boat survive the great sea.

Shackleton's first choices for the boat's crew were Worsley and Tom Crean, Shackleton was confident that Crean would persevere to the bitter end, and he had great faith in Worsley's skills as a navigator, especially his ability to work out positions in difficult circumstances. Worsley later wrote: "We knew it would be the hardest thing we had ever undertaken, for the Antarctic winter had set in, and we were about to cross one of the worst seas in the world". Shackleton requested volunteers for the remaining places. Many came forward - he chose two strong sailors in John Vincent and Timothy McCarthy. He offered the final place to the carpenter, McNish. "He was over fifty years of age", wrote Shackleton of McNish (he was in fact 41), "but he had a good knowledge of sailing boats and was very quick". Vincent and McNish had each proved their worth during the difficult boat journey from the ice to Elephant Island.

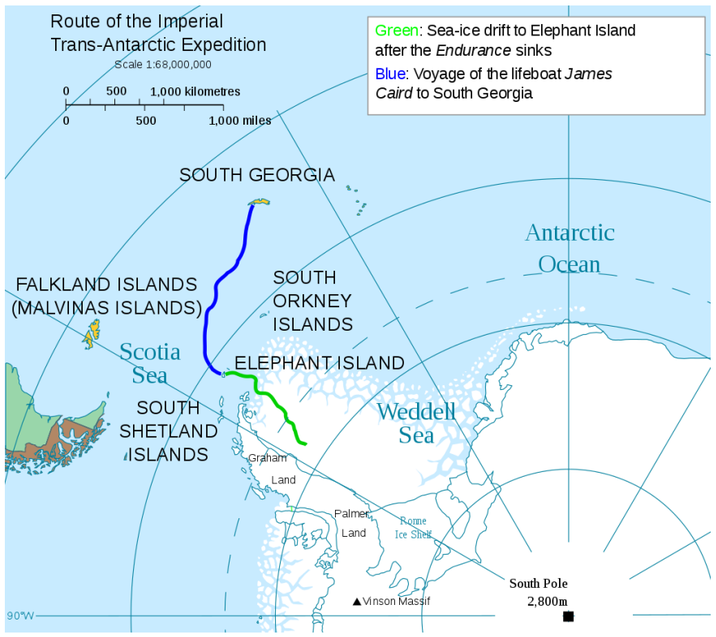
The South Georgia boat party could expect to meet hurricane-force winds and waves - the notorious Cape Horn Rollers - measuring from trough to crest as much as 18 m (60 ft). Shackleton therefore selected the heaviest and strongest of the three boats, the 22.5-foot (6.9 m) long *James Caird*. It had been built as a whaleboat in London to Worsley's orders, designed on the "double-ended" principle pioneered by Norwegian shipbuilder Colin Archer. Shackleton had named it after Sir James Key Caird, a Dundee philanthropist whose sponsorship had helped finance the expedition. Knowing that a heavily-laden open sea voyage was now unavoidable, Shackleton had already asked the expedition's carpenter, Harry McNish to modify the boats during the weeks the expedition spent at Patience Camp. Using material taken from *Endurance's* fourth boat, a small motor launch which had been broken up with this purpose in mind before the ship's final loss, McNish had raised the sides of the *James Caird* and the *Dudley Docker* by 8–10 inches (20–25 cm).

Now in the primitive camp on Elephant Island, McNish was again asked if he could make the *James Caird* more seaworthy. Using improvised tools and materials, McNish built a makeshift deck of wood and canvas, sealing his work with oil paints, lamp wick, and seal blood. The craft was strengthened by having the mast of the *Dudley Docker* lashed inside, along the length of her keel. She was then fitted as a ketch, with her own mainmast and a mizzenmast made by cutting down the mainmast from the *Stancomb-Wills*, rigged to carry lug sails and a jib.

The weight of the boat was increased by the addition of approximately 1 long ton (1 tonne) of ballast, to lessen the risk of capsizing in the high seas that Shackleton knew they would encounter. Worsley believed that too much extra ballast (formed from rocks, stones and shingle taken from the beach) was added, making the boat excessively heavy, giving an extremely uncomfortable 'stiff' motion and hampering the performance for sailing upwind or into the weather. However he acknowledged that Shackleton's biggest concern was preventing the boat capsizing during the open-ocean crossing.

The boat was loaded with provisions to last six men one month; as Shackleton later wrote, "if we did not make South Georgia in that time we were sure to go under". They took ration packs that had been intended for the transcontinental crossing, biscuits, Bovril, sugar and dried milk. They also took two 18-gallon (68-litre) casks of water (one of which was damaged during the loading and let in sea water), two Primus stoves, paraffin, oil, candles, sleeping bags and odd items of spare clothing.

After surviving a series of dangers, including a near capsizing, the boat reached the southern coast of South Georgia after a 17-day voyage. Shackleton, Tom Crean and Frank Worsley crossed the island's mountains to a whaling station on the north side. Here they organised the relief of the three men left on the south side of the island and of the Elephant Island party. Ultimately, the *Endurance* crew returned home without loss of life. After the First World War, in 1919, the *James Caird* was moved from South Georgia to England. It has been on regular display at Shackleton's old school, Dulwich College, since 1922.



Source: Wikipedia: Voyage of the *James Caird*
Source for Pennant: James Caird Society, Dulwich College, London 2022
References: 1. Shackleton, Sir Ernest edited by Peter King: The Story of Shackleton's Last Expedition 1914-17. Published by Pimlico 1999
2. Worsley, F.A. *Shackleton's Boat Journey.* Published by Wakefield Press 2007.

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SHEET 1

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3.0 General Instructions

These instructions and kit are designed to make the construction of the model as trouble free as possible. Everyone who completes their model in accordance with these instructions and using the materials supplied will have good cause for pride and satisfaction in their achievement.

These written building instructions are to be followed to build your model.

1. It is essential the modeller study these instructions and associated photos and drawings thoroughly before commencing construction. While reading these instructions, familiarise yourself with the contents of the kit.

2. Parts are numbered in the approximate order of assembly - note there are some minor variations in this numerical order. Parts are identified as, for example P25 — means Part No 25.

3. Few, if any, parts can be simply glued in place without some preparation. Always dry fit parts and if necessary reshape the parts before final gluing.

4. Don't hurry. Take your time. If you are uncertain of anything take the time to study the instructions, the diagrams and photos and your kit parts. Most problems will be overcome with a little time spent pondering the issue at hand.

5. Check the contents of the kit against the Parts List. Note that some parts need to be made by the modeller from the stock of timber supplied in the kit.

THERE ARE A FEW POINTS TO NOTE WITH BUILDING THIS MODEL

1. **There are many small parts - only remove parts from the laser cut boards as they are required - make sure to identify them and store carefully.**

2. **When sanding parts take particular care as some parts are small and fragile.**

3. **Use a range of sandpaper grades, sanding board and a grinding tool to remove laser burn marks on the edges of the parts and the front and rear faces - this is referred to in the instructions as "Prepare the Parts".**

4. **Dry fit all parts before gluing in place with white wood glue.**

5. **Use glue sparingly - be sure to quickly remove any excess glue with a damp cotton bud.**

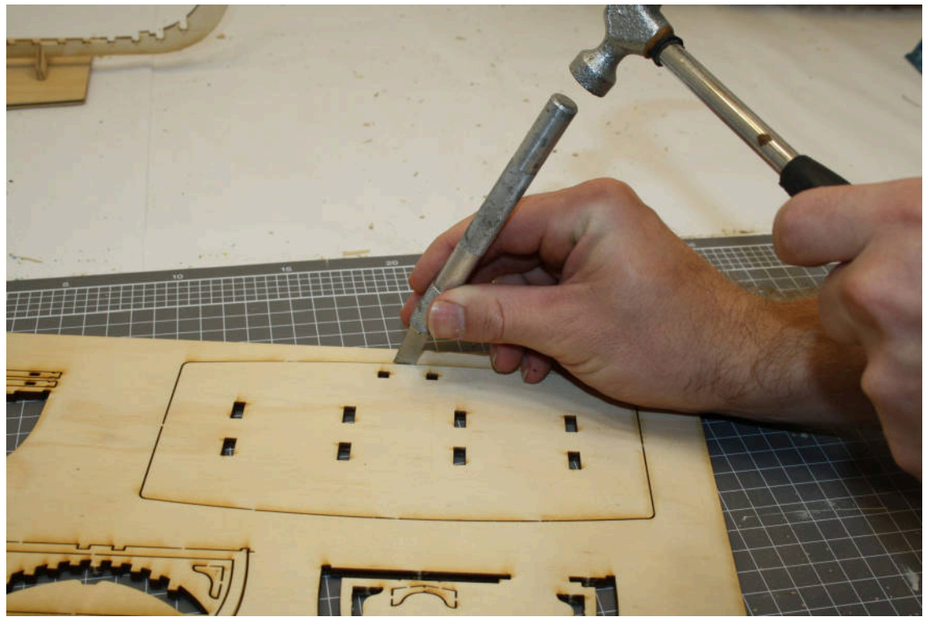
6. **Some frames, bulkheads and parts are marked with a laser score line - these are pre-fairing lines. On these parts you will need to chamfer the parts from the score line to the opposite face edge of the frame. Use a grinding tool, sanding board and sandpaper to shape the chamfer.**

7. **Many parts have a laser score mark to identifying and locate the part - these are noted in the instructions.**

8. **The sails, deck covering and sleeping bags are cut from calico cloth provided.**
   The templates for each of these items are presented on Sheets 49 & 50.
   It is recommended the modeller cut these templates and position each on the calico cloth so that all items are accommodated on the cloth.

Removing Parts from Boards

Use a chisel knife blade and a pointed blade knife to cut the tabs holding the parts in place on the laser cut boards - take care when performing this task.



Selected Finishes

A range of acrylic antique paints are used on the model presented - you may wish to use other finishes as desired. A cotton bud and/or a cloth is used to apply these finishes. Shellac (French Polish) and Tung Oil are also used.



Dark Brown



Honeycomb



Smoky Jade



Sterling Blue



Gunmetal Grey



Wicker White



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4.0 **Parts List** (Modeller's Shipyard reserves the right to make changes to the instructions, components &/or kit contents at any time without notice)

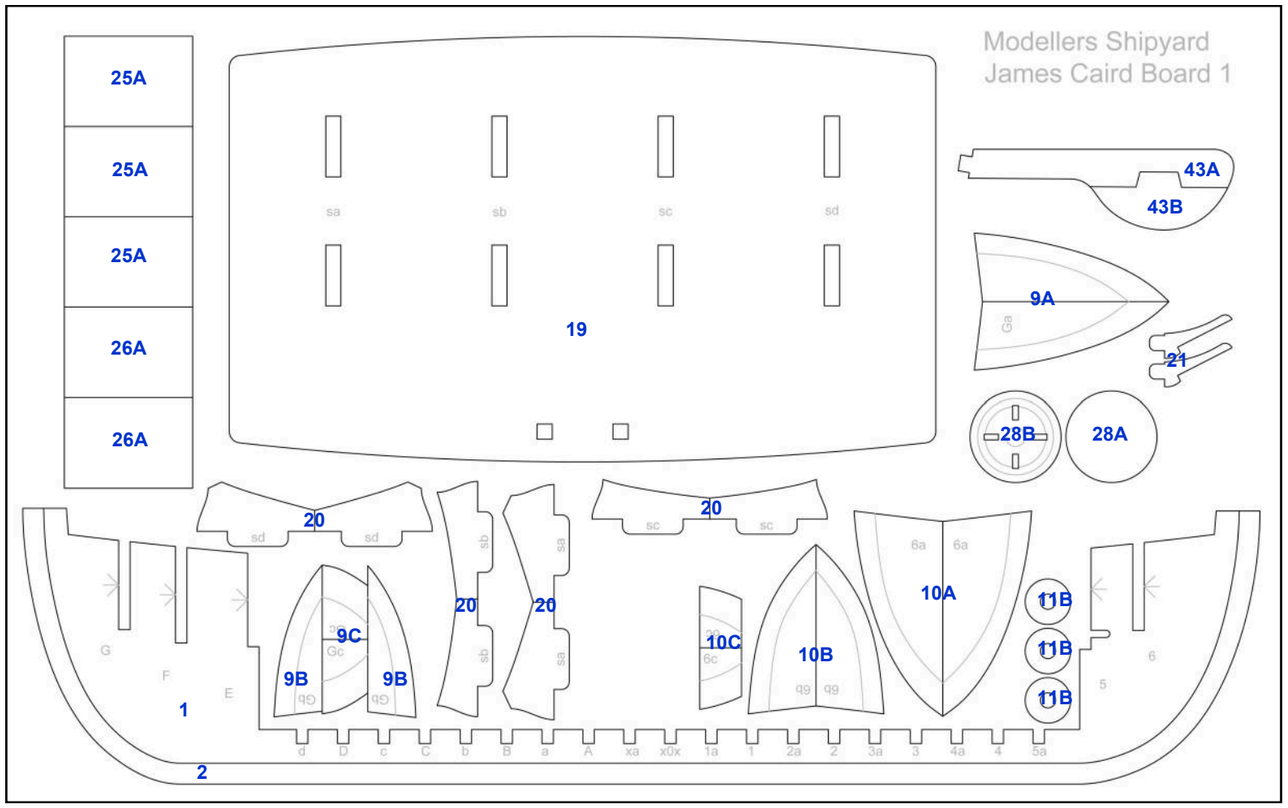
Part No	Description	Quantity	Location
1	False Keel	1	Board 1
2	Keel	1	Board 1
3A-E	Bulkheads 5&6 and E,F & G	5	Board 3
4A-D	Frames A, B, C & D	4	Board 3
5A-D	Frames 1, 2, 3 & 4	4	Board 3
6A	Frame x0x	1	Board 3
6B	Lower Frame xa	1	Board 3
7A-D	Lower Frames a, b, c & d	4	Board 3
8A-E	Lower Frames 1a, 2a, 3a, 4a, 5a	5	Board 3
9A-C	Fore Filler Blocks Ga, Gb & Gc	6	Board 1
10A-C	Aft Filler Blocks 6a, 6b & 6c	6	Board 1
11A-E	Mizzen Mast Heel Assembly	8	Boards 1 & 2
12A	Fore Storage Panel	1	Board 2
12B	Aft Storage Panel	1	Board 2
13	Eye Pins 3x12mm	Pkt	Parts Card
14	Rings - 3mm	Pkt	Parts Card
15	Frame Braces	2	Board 2
16	Bulwark Cap	1	Board 2
17	Limewood 1x4x400mm	25	Timber Stock
18	Dowel 6mm x 400mm	1	Timber Stock
19	Display Board	1	Board 1
20	Cradle Parts	8	Board 1
21	Name Plate Supports	2	Board 1
22	Tanganika 0.5x4x400mm	25	Timber Stock
23	Limewood 1x2x400mm	10	Timber Stock
24	James Caird name stencil	1	Board 4
25A-B	Storage Case - Large	4	Boards 1 & 2
26A-B	Storage Case - Small	3	Boards 1 & 2
27A-D	Cooking Pot	6	Boards 2 & 3
28A-D	Stove	8	Boards 1 & 2
29	Nails	Pkt	Parts Card
30A-C	Compass	3	Board 3
31	Barrels	2	Parts Card
32	Ballast	Bag	Parts Card
33	Calico	40x40cm	Parts Card
34	White String	400mm	Parts Card
35	Side benches	2	Board 2
36A-O	Deck frames	19	Board 2
37A-C	Deck central supports	3	Board 2

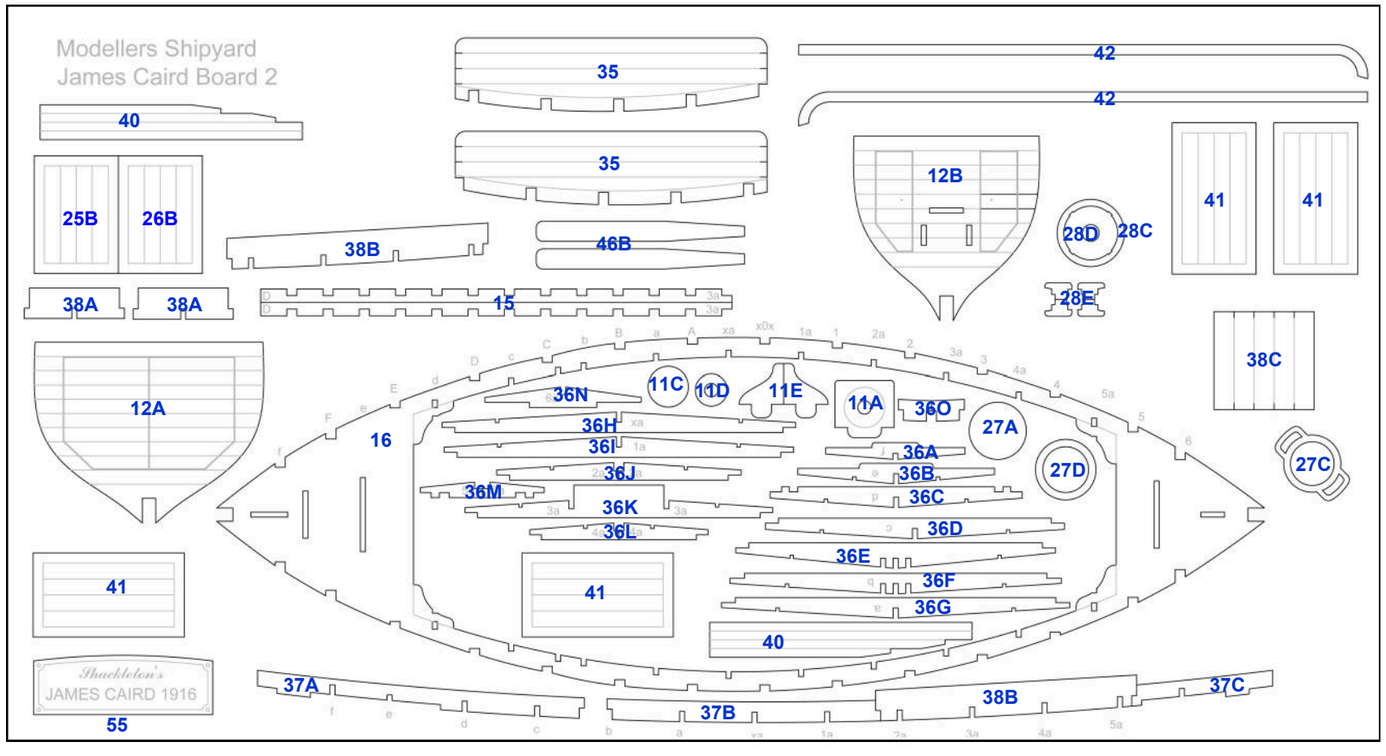
Part No	Description	Quantity	Location
38A-C	Cockpit assembly	4	Board 2
39A-B	Rowlock bases	4	Board 3
40	Cockpit stiffeners	2	Board 2
41	Box lids	4	Board 2
42	Sledge runners	2	Board 2
43A-B	Rudder	2	Board 1
44	Yoke	1	Board 3
45	Rudder Hinges	2	Parts Card
46A	Oar shank	2	Board 3
46B	Oar blade	2	Board 2
47	Dowel 4mm x 200mm	1	Timber Stock
48	Dowel 3mm x 330mm	1	Timber Stock
49	Cleats	9	Board 3
50	Brass wire 1mm x 30mm	1	Parts Card
51	Cord - fawn/grey - 0.5mm	1	Parts Card
52	Block 1 Hole 5mm	2	Parts Card
53	Copper Tube 1.5 x 50mm	1	Parts Card
54	Pennant	1	Sheet 50
55	Name Plate	1	Board 2

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5.0 Laser Cut Boards

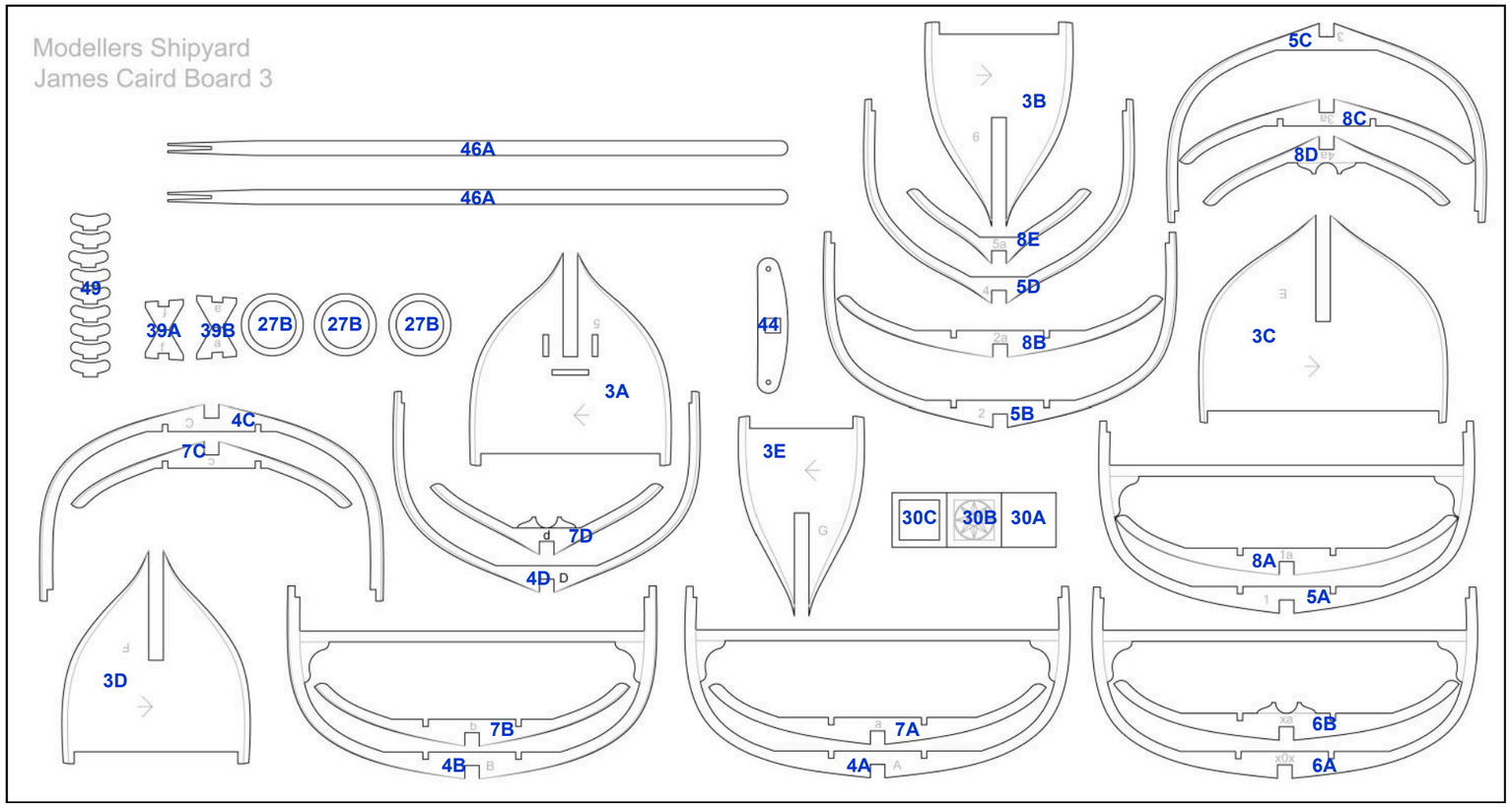




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5.0 Laser Cut Boards continued



Modellers Shipyard
James Caird Board 4

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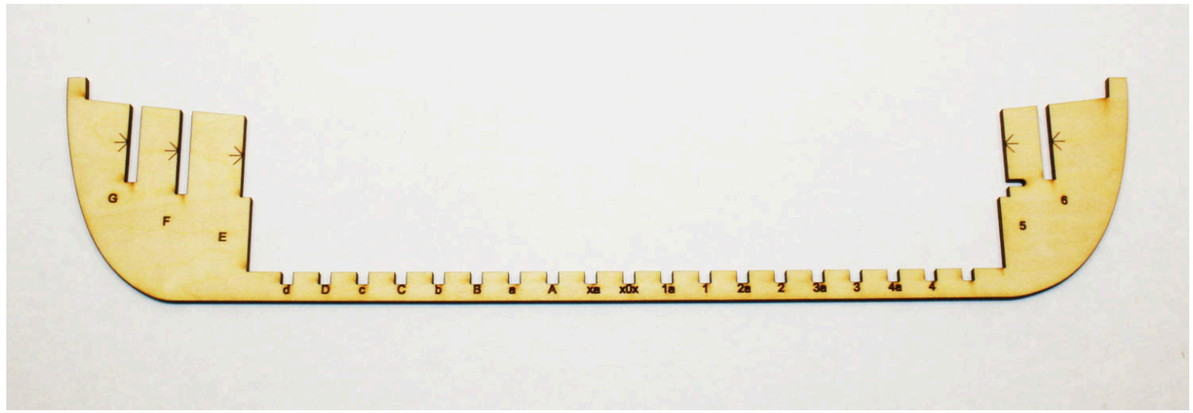
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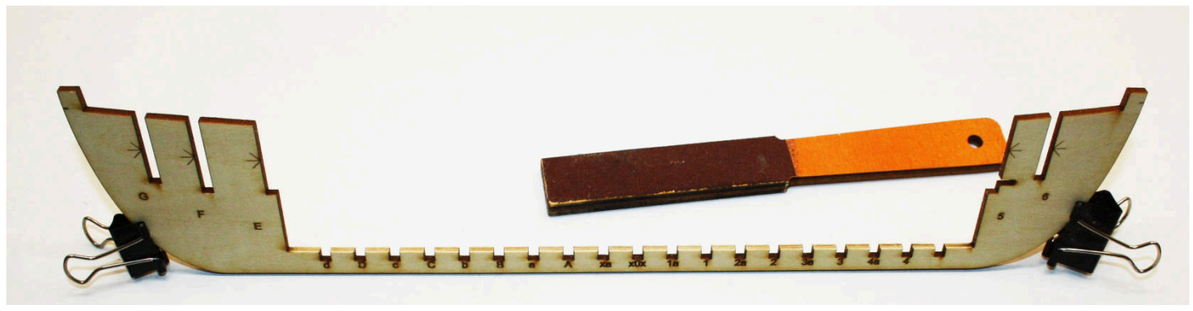
6.0 Keel, Bulkhead and Frame Construction

6.1 Keel

Identify the false keel P1.Take note of the slot markings on the keel. The centre slot is oXo and the slots going to the fore (left) are marked with alternating upper and lower case letters xa, A to d. Slots going to the aft (right) are identified as 1a, 1, 2a, 2 etc through to 5a. These markings represent the slot identification for the bulkheads and frames.



Prepare the part - take care not to break it. Do not remove the laser score markings on the front face of the keel.



6.2 Bulkheads and Frames

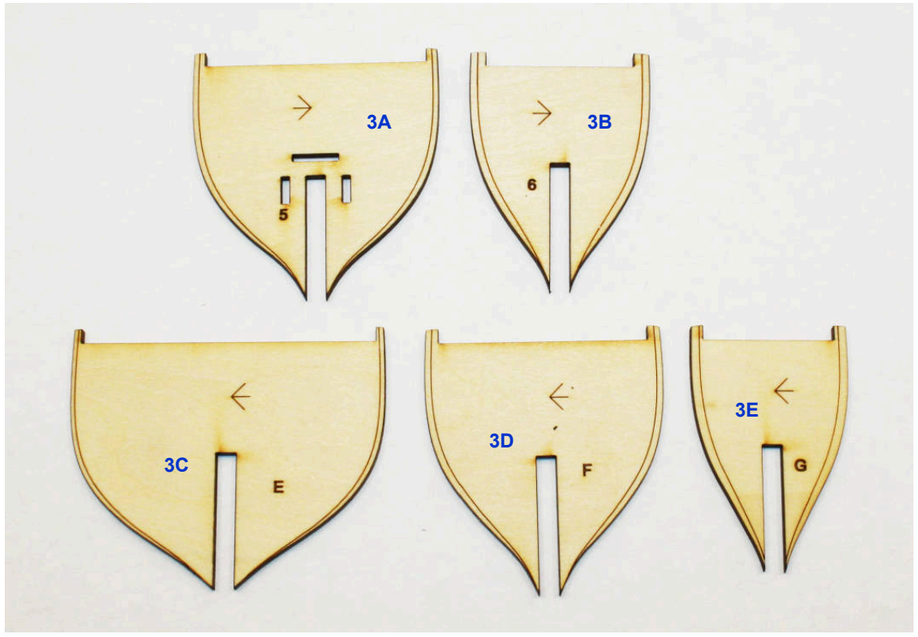
On the bulkheads, filler blocks and some frames you will see score marks on the front face just in from the edge of the part.

Where you see these score lines you will need create a chamfer from the score line to the reverse face edge of the part. Use a grinding tool, sanding board and a small piece of fine grade sandpaper to create this chamfer - take your time during this process. Some parts only require a light sanding.

This is called pre-fairing and will ensure any planks to be fitted will rest on the full face of the part.

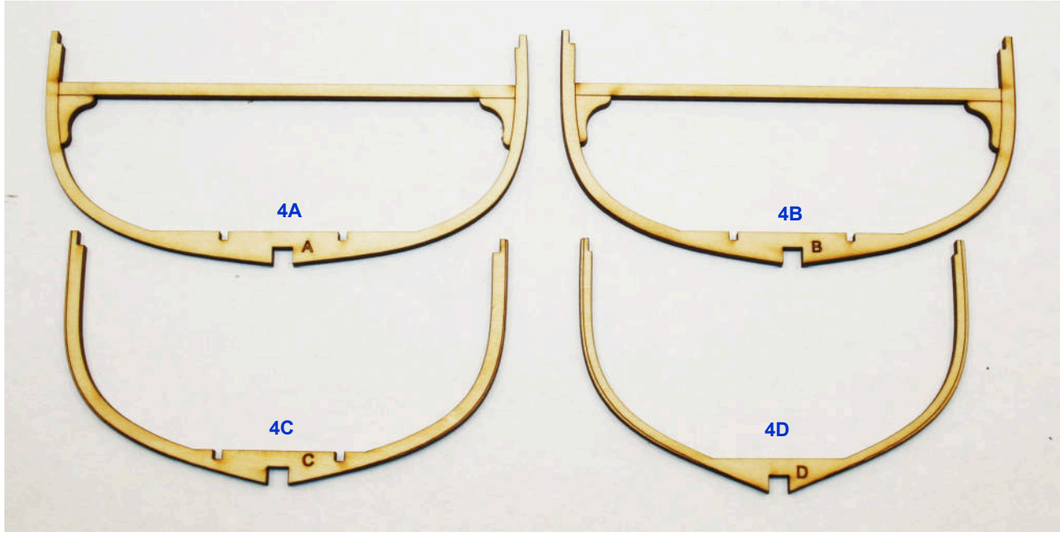
6.2.1 Bulkheads

Identify the bulkheads P3A to P3E. Note the pre-fairing score marks on the edges of each bulkhead. Create a chamfer from the score line to the opposite face edge - this will ensure the planks to be fitted will rest on the full face of the bulkhead. Prepare the parts.



6.2.2 Frames - take care when sanding the frames

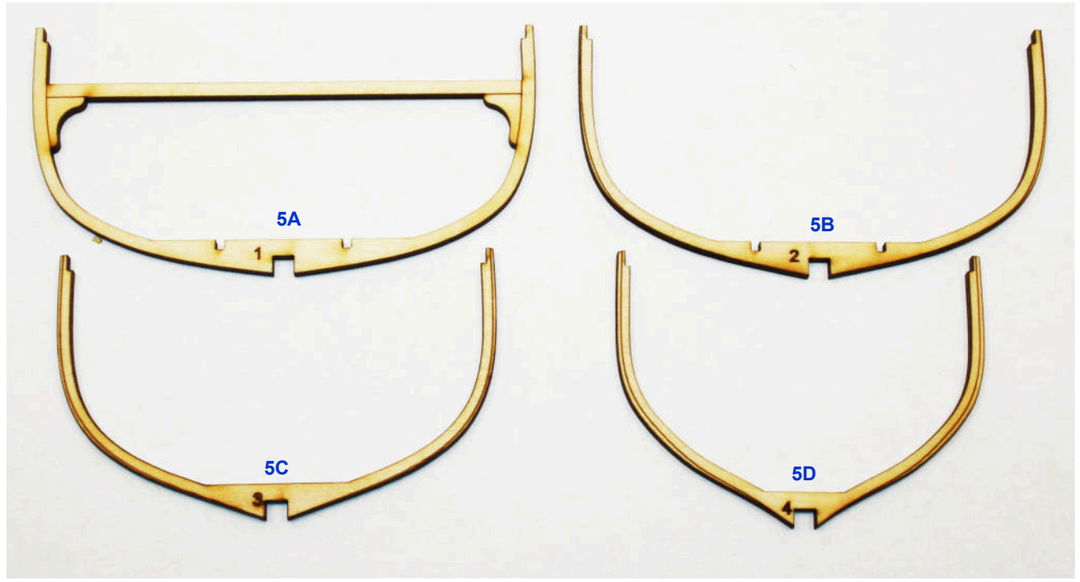
Identify the frames P4A to P4D. Note the pre-fairing score marks on the along the edges of frames 4C & 4D. Create a chamfer from the score line to the opposite face edge. Prepare the parts.



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6.2.2 Frames continued

Identify the frames P5A to P5D. Note the pre-fairing score marks on the along the edges of frames 5B, 5C & 5D. Create a chamfer from the score line to the opposite face edge on required parts. Prepare the parts.



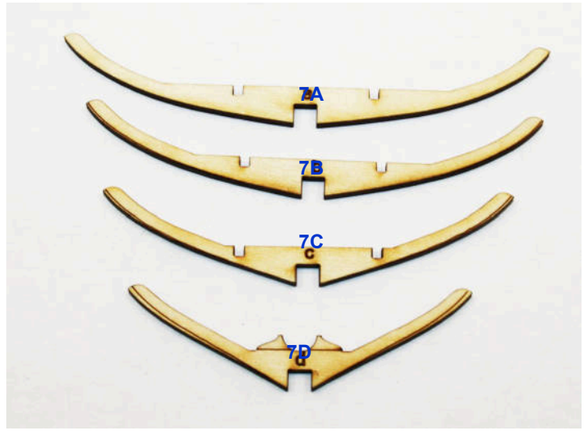
6.2.2 Frames continued

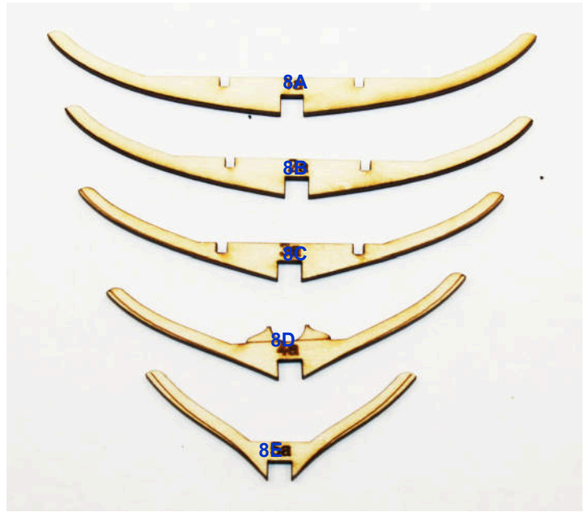
Identify the frames P6A and P6B. Note neither of these two frames require any pre-fairing. Prepare the parts.



6.2.2 Frames continued

Identify the frames P7A to P7D. Note the pre-fairing score marks on the along the edges of frames 7C & 7D.
Identify the frames P8A to P8E. Note the pre-fairing score marks on the along the edges of frames 8C, 8D & 8E. Create a chamfer from the score line to the opposite face edge on required parts. Prepare the parts. Identify P15 frame braces.

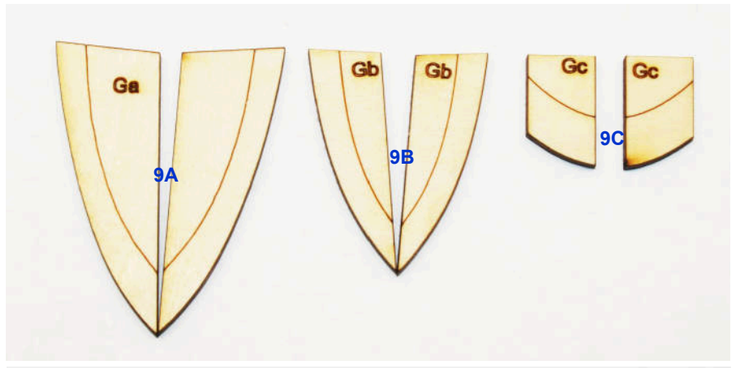


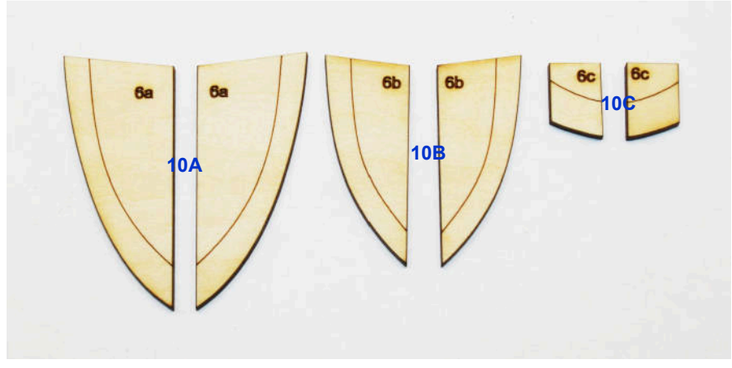




6.3 Filler Blocks

Identify the filler blocks P9A to P9C. Note the pre-fairing score marks on each part.
Identify the filler blocks P10A to P10C. Note the pre-fairing score marks on each part.
Create a chamfer from the score line to the opposite face edge on each part. Prepare the parts.



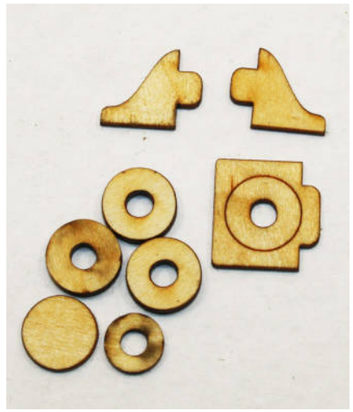


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6.4 Mizzen Mast Heel

Identify the mizzen mast heel parts P11A-E. Glue the parts together as shown. Once glue has dried stain as shown using a cloth and cotton bud.







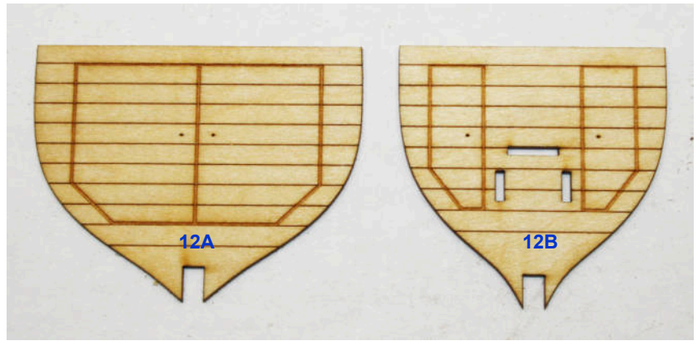






6.5 Fore & Aft Storage Panels

Identify fore & aft storage panels P12A and P12B. Apply the antique brown finish to the panels. Identify bulkhead E and bulkhead 6. Glue the P12A and P12B to the relevant bulkhead as shown - note - glue the panels to the reverse face of the bulkheads. Identify P13 eye pins and P14 brass rings - fit rings to the 4 eye pins - drill 0.7mm holes at the score marked locations and glue the assembled eye pins and rings in place as shown.





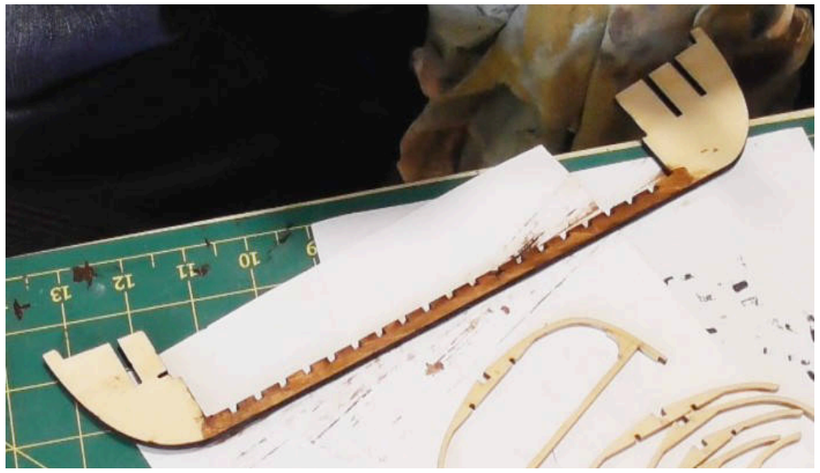


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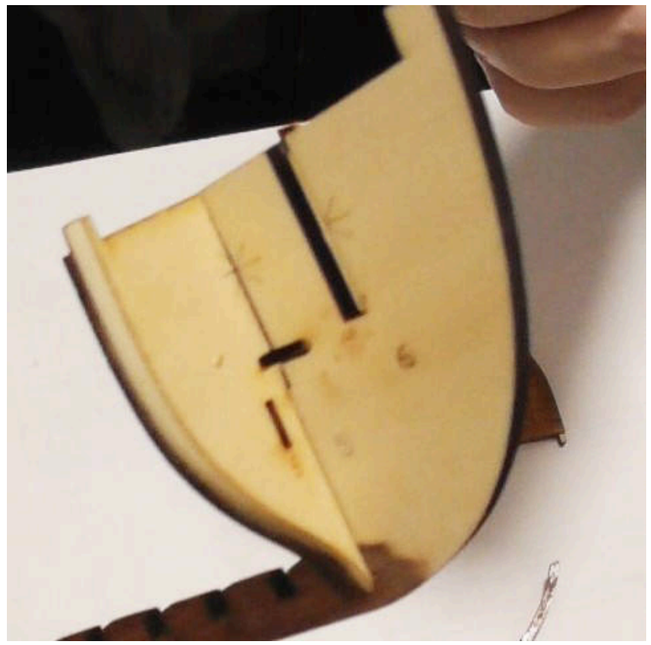
6.6 Stain False Keel, Frames and Braces

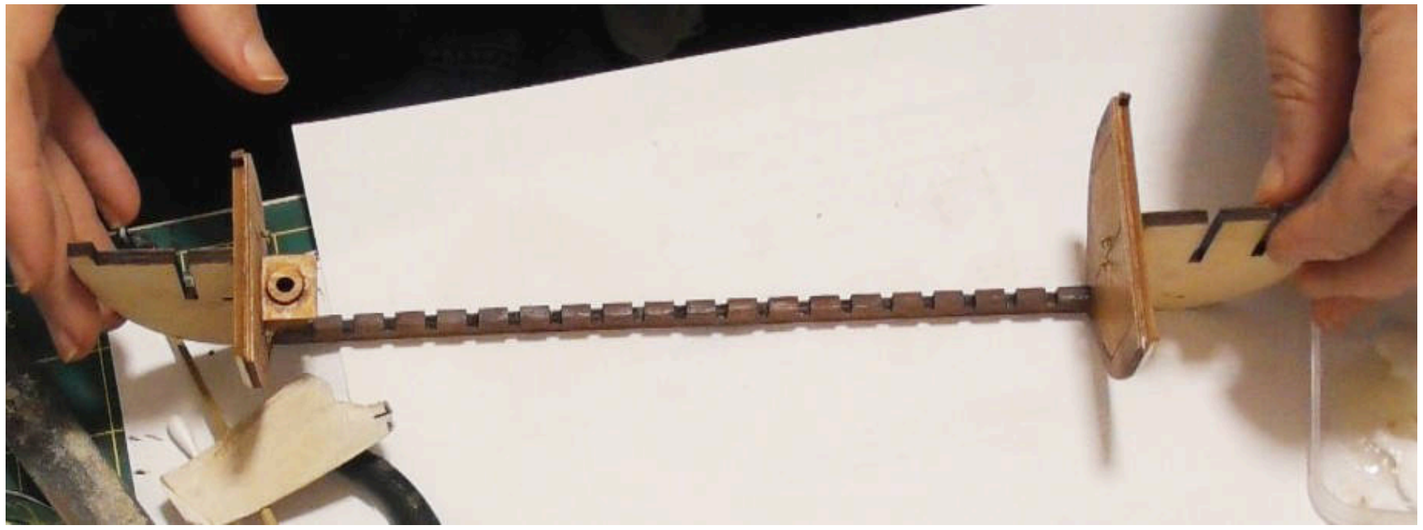
Apply an antique brown finish to the parts shown using a cloth and cotton bud. When finished trial fit the bulkheads E and 6 - fractionally adjust as needed to achieve a firm fit. Once satisfied glue the bulkheads in place as shown. Note the bulkheads are correctly placed and aligned when the arrows on the bulkhead and false keel align as shown.











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6.7 Fit Frames and Bulkheads - take care when fitting the frames

Trial fit each frame - fractionally adjust false keel slots as required. Once satisfied glue the glue the frames in place starting with frame x0X and continuing with xa through to d. Once complete glue the frames 1a through to 5a. Trial fit the frame braces P15 in place as shown - fractionally adjust as required. Once satisfied glue the braces in place as shown.



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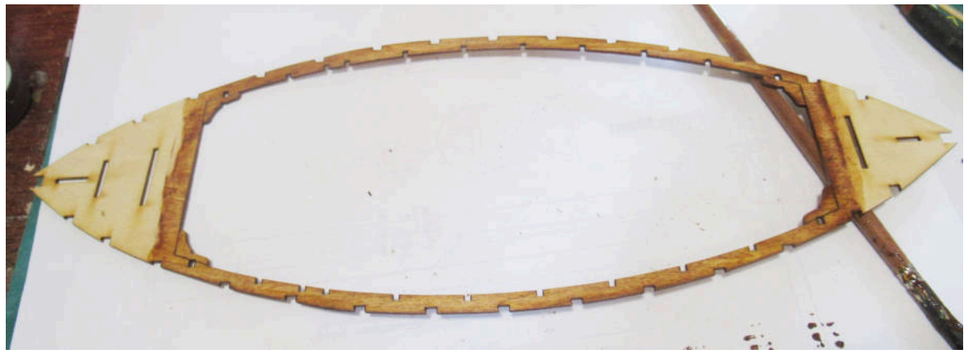
6.8 Bulkheads, Bulwark Cap and Filler Blocks

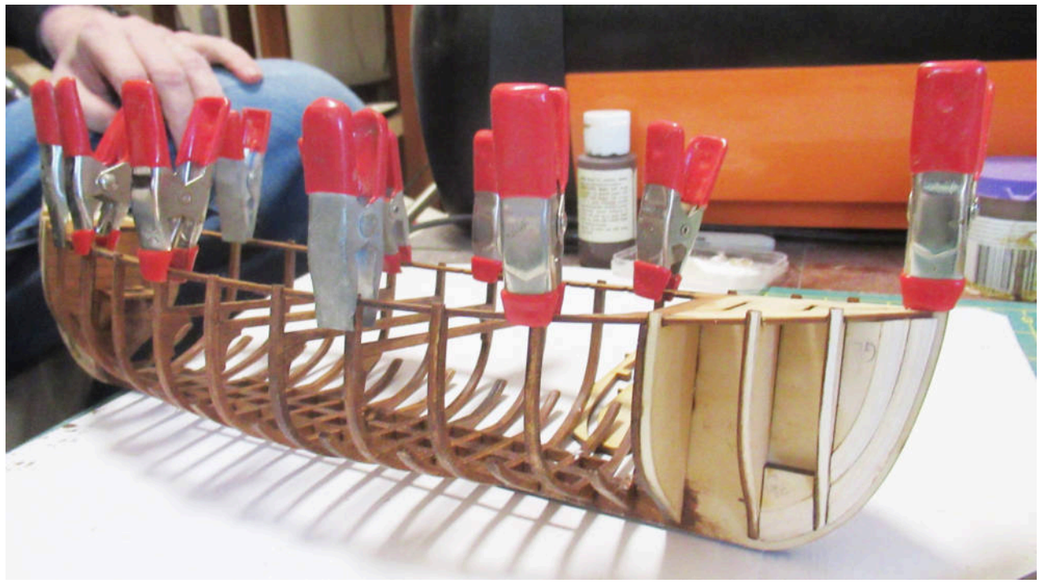
Retrieve bulkheads F & G - glue in place at the fore end as shown - make sure to align the arrows on the keel and each bulkhead.

Retrieve bulkhead 6 - glue in place at the aft end as shown - note the front face of the bulkhead faces aft - make sure to align the arrows on the keel and bulkhead.

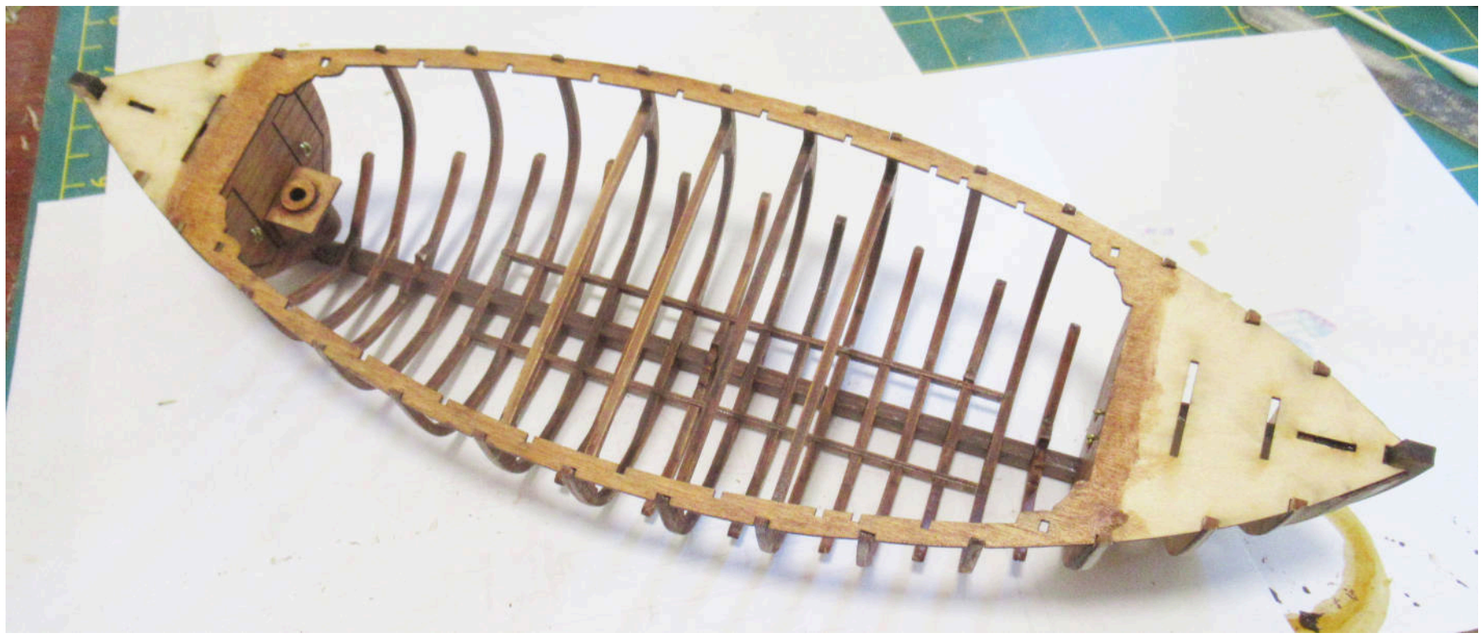
Retrieve the shaped fore and aft filler blocks - glue in place as shown.

Identify the bulwark cap P16 - apply a antique brown finish as shown. Once dry trial fit in place - fractionally adjust as required, Once satisfied glue and clamp in place as shown.







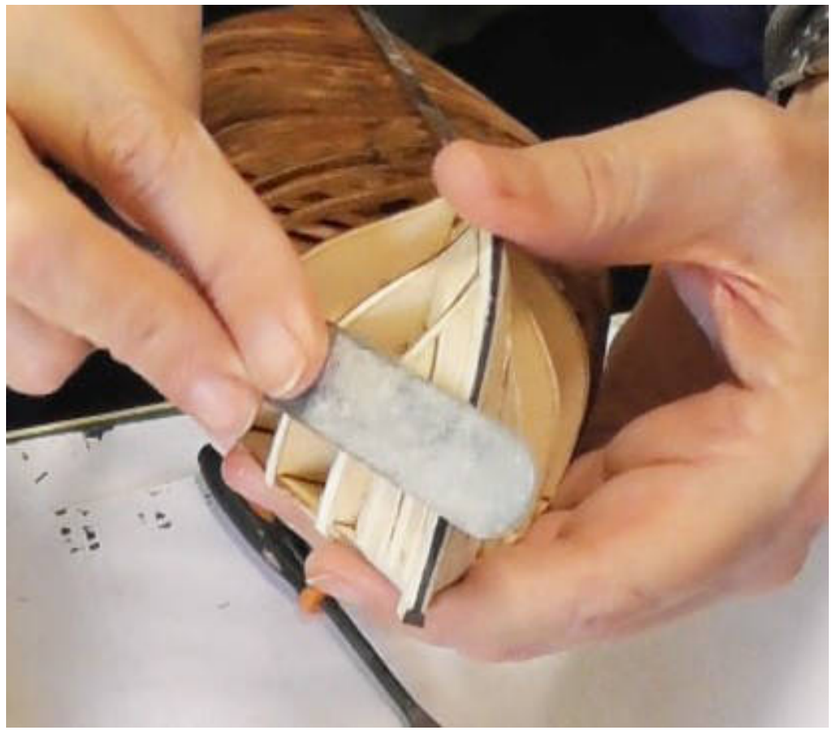


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6.9 Fairing the Bulkheads and Filler Blocks

The bulkheads and filler blocks need to be shaped along with the fore and aft keel area. Use a sanding block to run across the bulkheads and filler blocks as shown. In this process also reduce the thickness of the false keel at the bow as shown.









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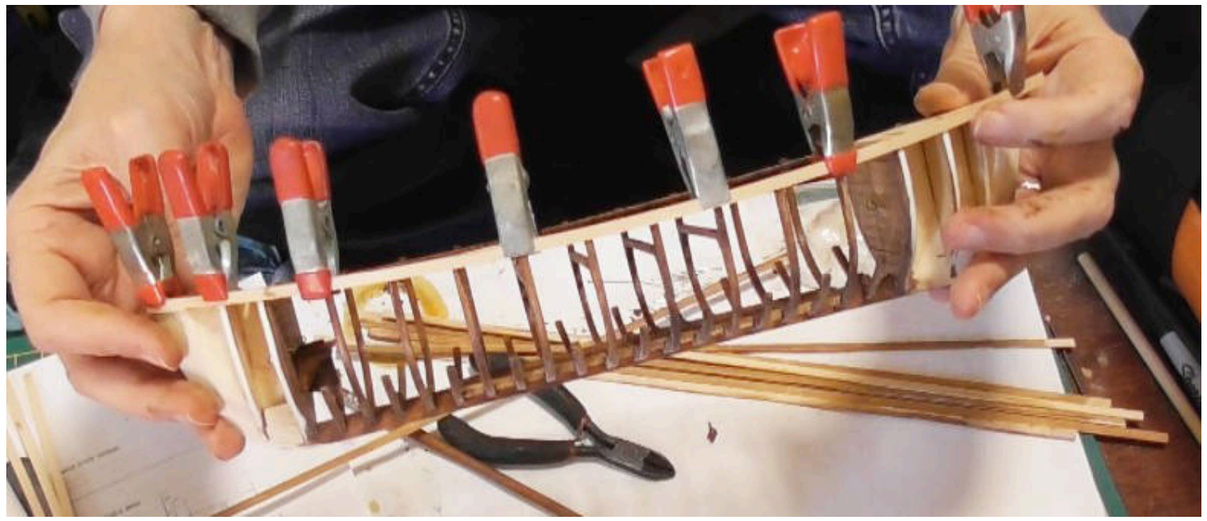
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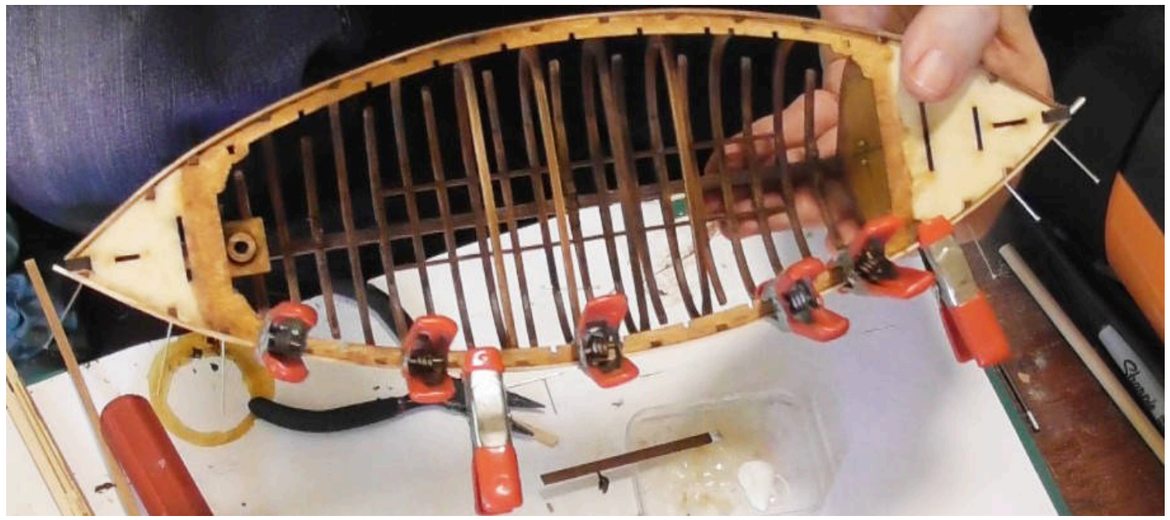
6.10 First Layer Planking

Identify the 1x4x400mm limewood planking P17. Apply a antique brown finish to one face of the planks as shown - use a cloth and cotton buds to apply the paint. Trial fit the first plank along the hull length **aligned with the top of the frame horns as shown - remember to fit the planks with the stained face against the frames**. Once satisfied glue, pin and clamp this first plank in place as shown. Repeat for the other side of the hull. Always apply glue sparingly to each frame and the bulkheads and filler blocks. Use a cotton bud to remove any excess glue from each plank-frame junction.







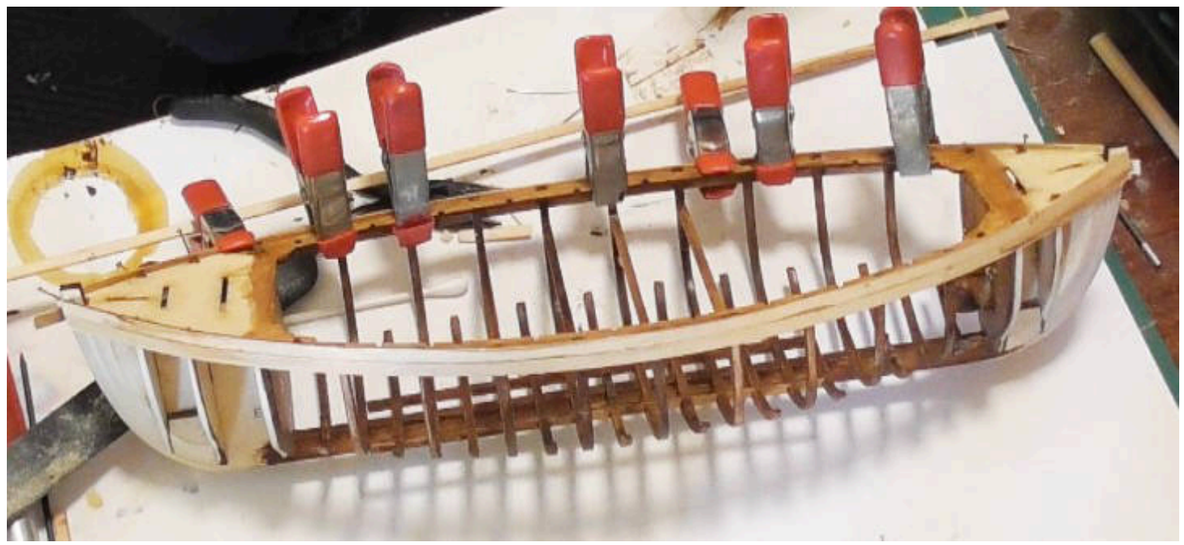


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6.10 First Layer Planking continued

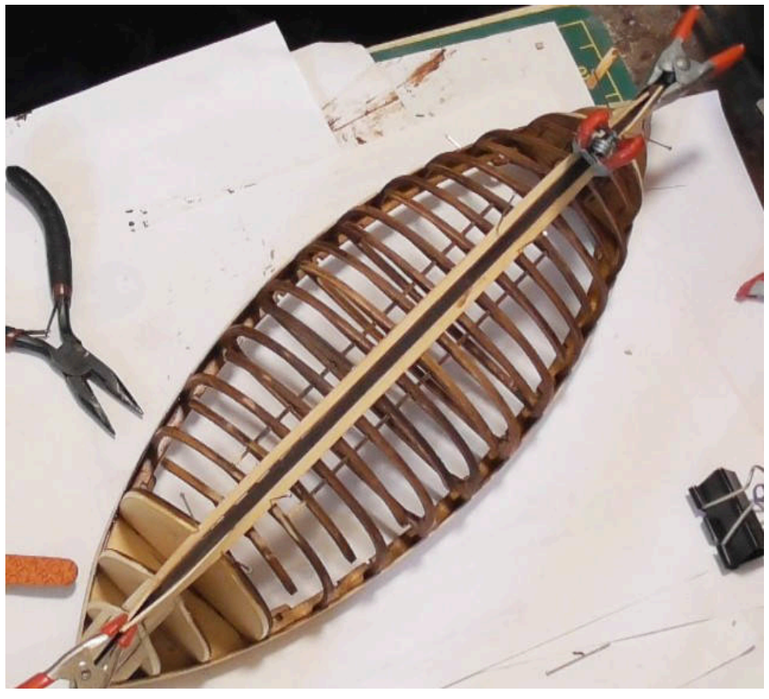
Trial fit a second plank P17 immediately below the first plank - glue, pin and clamp in place as shown. Apply glue sparingly to the underside of the first plank as well as the plank contact points on the filler blocks and frames. Repeat for the other side of the hull. Use a cotton bud to remove any excess glue from each plank-frame junction. Repeat for a third plank on each side of the hull as shown. Do not taper these planks.





6.10 First Layer Planking continued

Trial fit a plank adjacent to and along the length of the false keel - this is called the garboard plank - do not taper this plank. Once satisfied glue, pin and clamp the plank in place as shown. Repeat the process for another two planks on each side of the hull as shown.

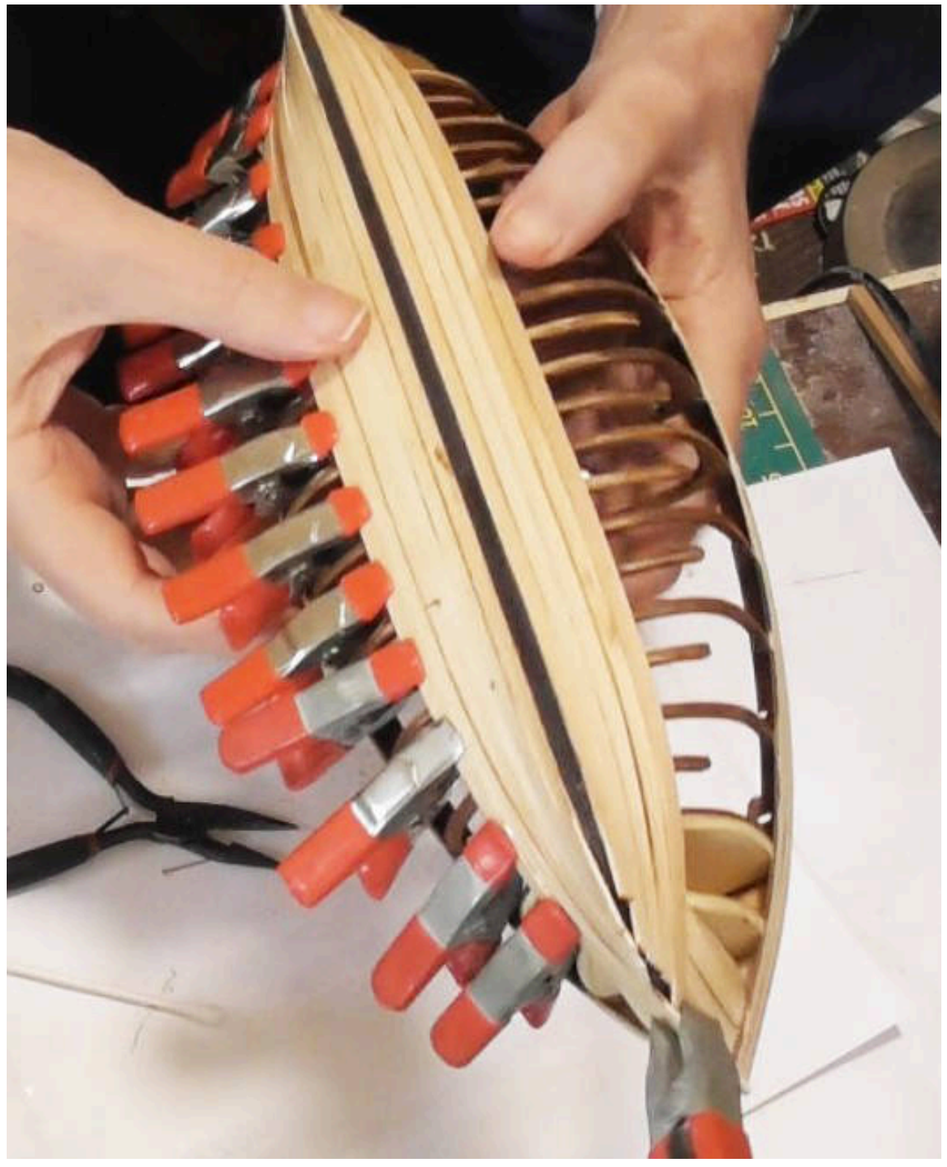




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6.10 First Layer Planking continued

Repeat the steps until a total of six (6) planks have been fitted on both sides of the hull. Do not taper these planks - push each plank into position against the previously placed plank.

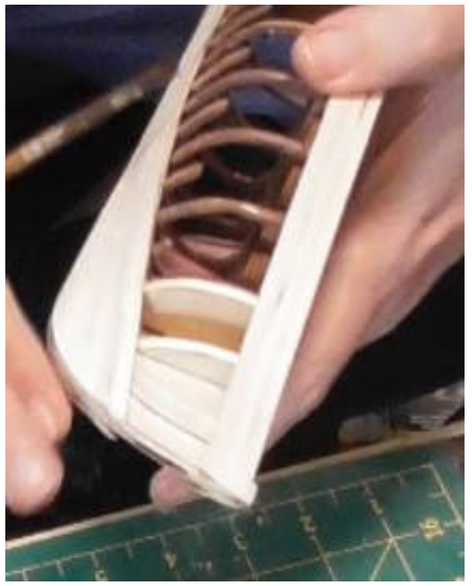


6.11 Creating the Hull Opening

The hull is open between frames D and 4. The gap between the top 3 planks and the bottom 6 planks and from frames D & 4 to their respective keel/bow end needs to be planked.

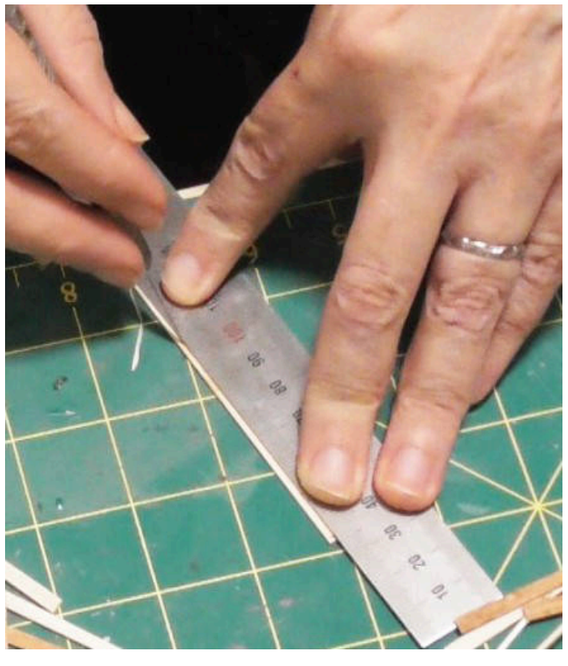


Fore keel/bow view



Aft keel/bow view

Wedges will be glued in place over these areas. Identify the 1x4x400mm limewood P17 - cut lengths to fit from the relevant frame to the keel end allowing for approximately 5mm over hang at the frame end. Use a pointed blade knife and a steel rule to taper these lengths to a minimum of 2mm at the keel end. Fit these shaped planks into the gap as shown over page.





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6.11 Creating the Hull Opening continued

Glue, clamp and pin these planks in place as shown. Some fractional adjustment of the plank width may be needed as the gap starts to close.







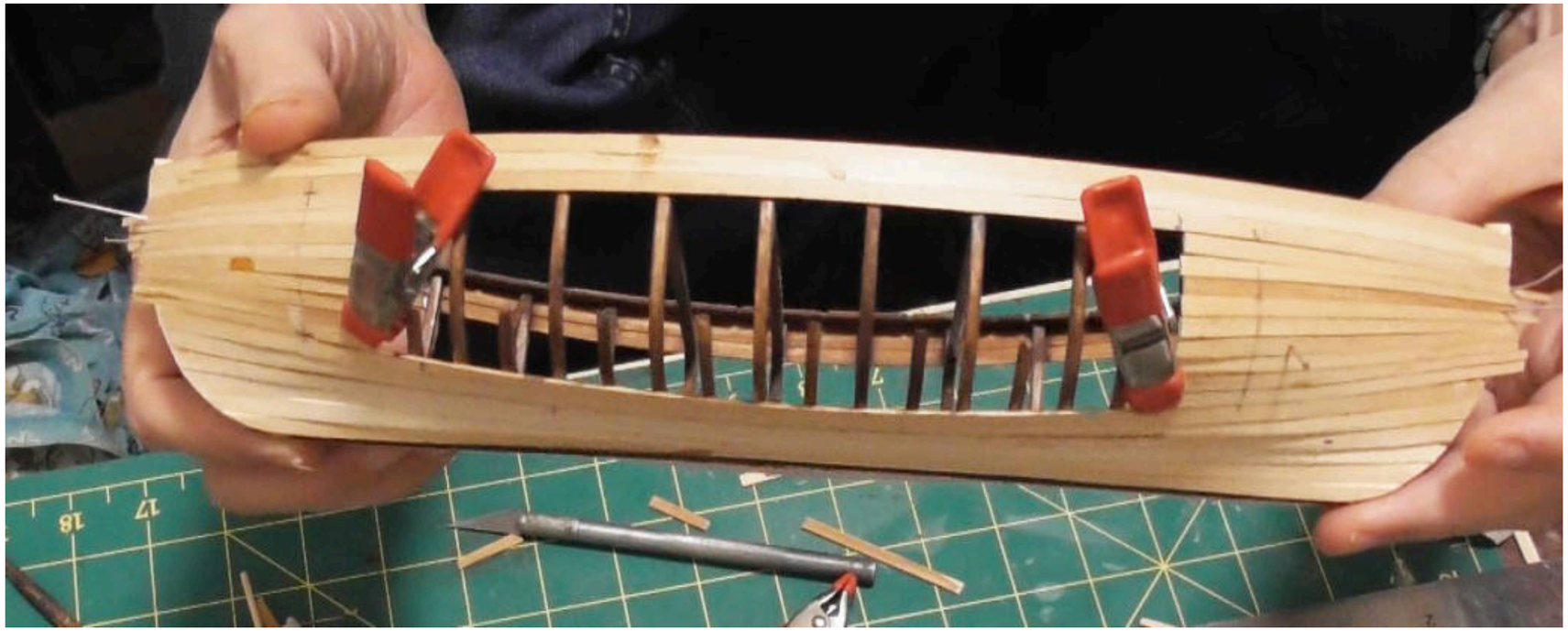


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6.11 Creating the Hull Opening continued

Repeat process on the other side of the hull. Once both sides have been planked as shown trim-off any excess lengths of planking at the bow and the frames. Then use sandpaper to create a smooth finish to the hull as shown - take your time with this process.

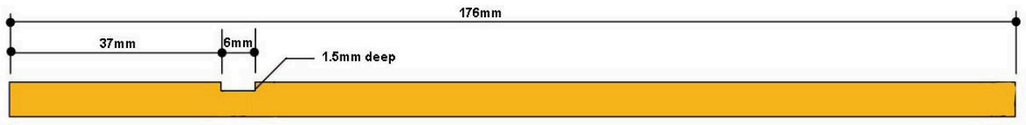


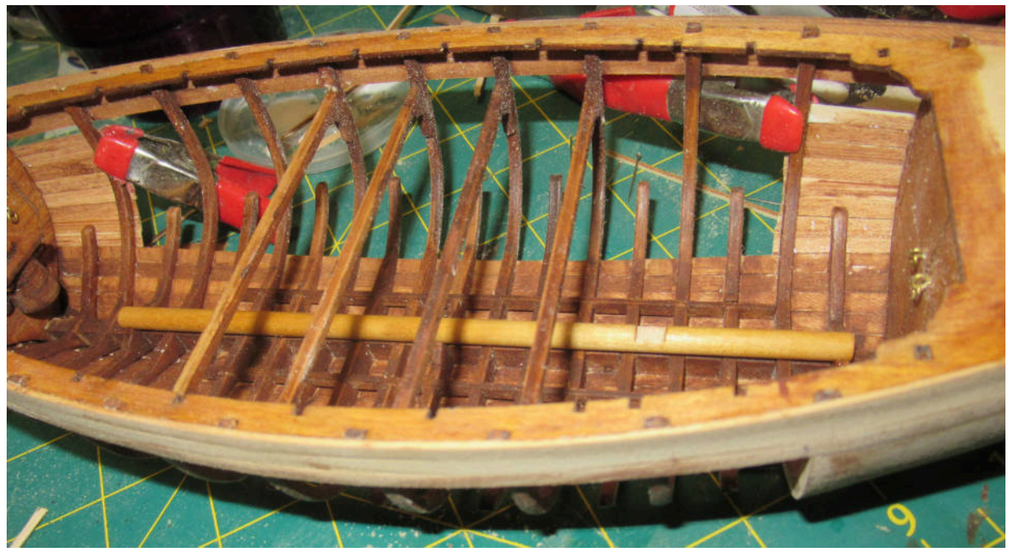


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6.12 Hog-back

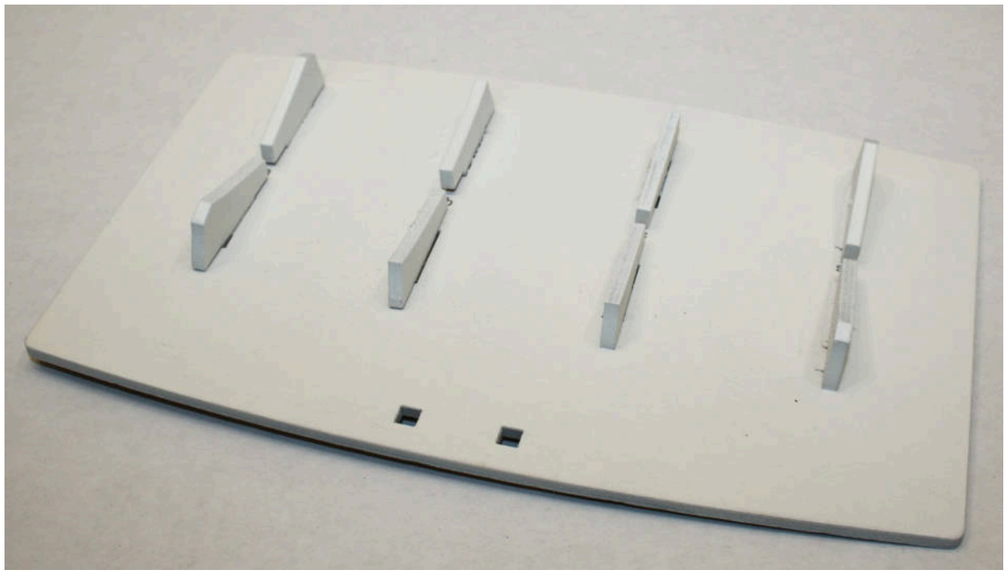
Identify the 6mm dowel P18. Cut to length and shape as shown. Stain with shellac. When dry glue in place along the keel as shown. The hog-back was fitted fore and aft to strengthen the keel to prevent it buckling in heavy seas.





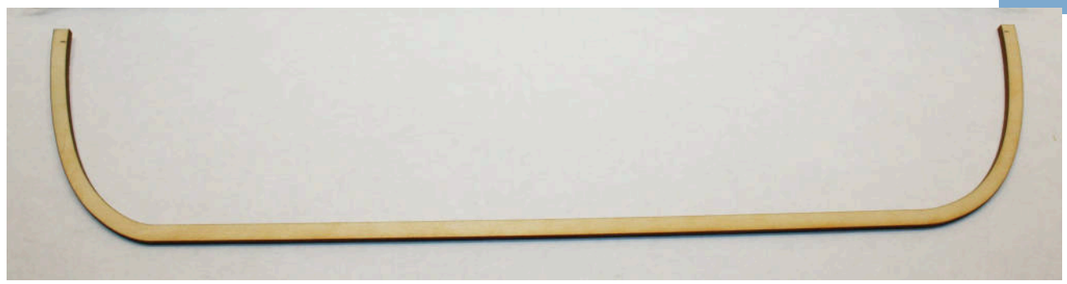
6.13 Display Board

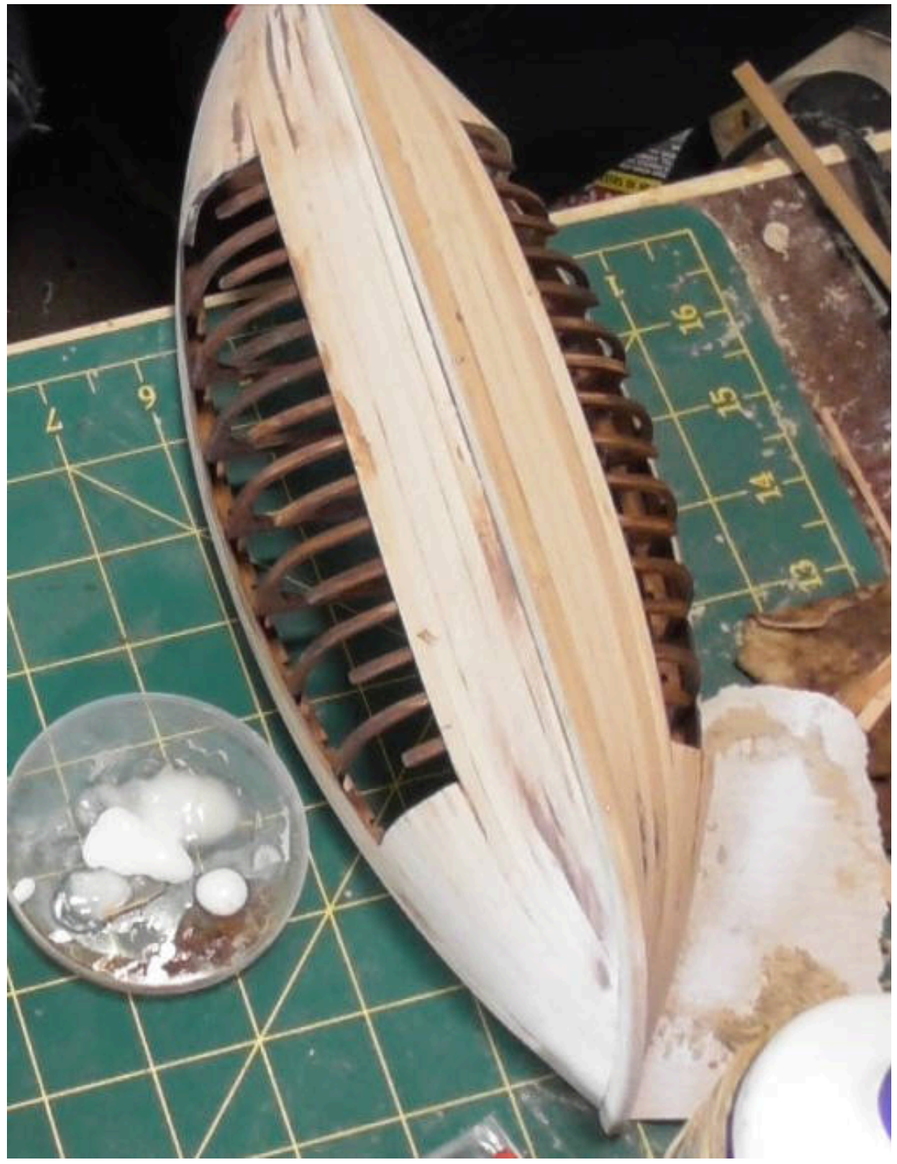
Identify the display board P19. Identify the cradle parts P20. Trial fit the supports into their identified slots - fractionally adjust as required. Once satisfied glue the cradle parts in place as shown. Use a white matt paint to spray the assembled display board



6.14 Keel

Identify the keel P2. Use a sanding board to remove the sharp outer edges. Trial fit the keel in place - once satisfied glue, pin and clamp the keel in place as shown.





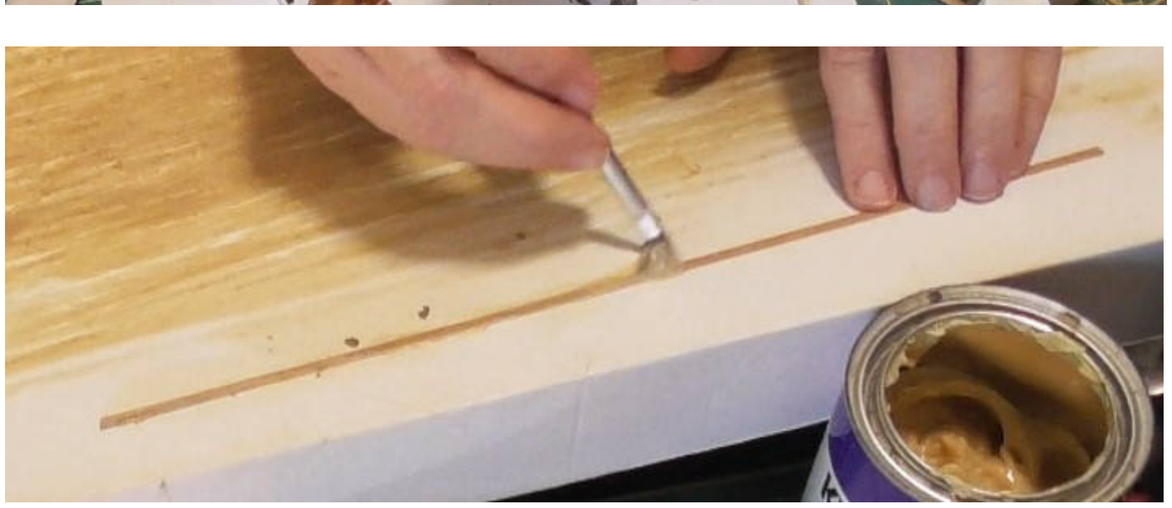
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6.15 Second Layer Planking

Identify the 0.5x4x400mm tanganika timber P22. Trial fit a plank in place over the length of the hull - trim ends to fit snuggly at the bow ends against the keel. Use a contact glue to fix the plank in place. Apply the glue to one face of the plank and the area where the plank will fit on the first layer of planking. Once the glue is touch dry on both surfaces fit the plank in place - carefully and slowly move along pushing the plank into position. Once finished run the round handle of your pointed blade knife along the length of the plank to remove any air bubbles.







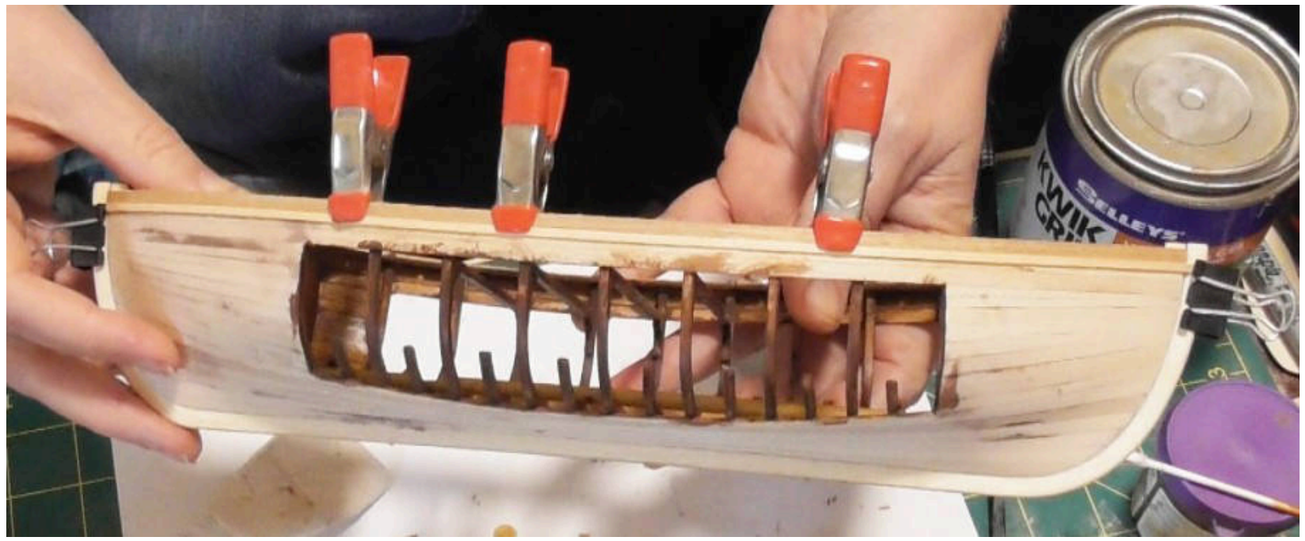


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6.15 Second Layer Planking continued

Identify the 1x2x400mm limewood P23 timber. Using white wood glue and a clamp fit one (1) length of this timber **immediately below the first plank just fitted as shown**. Glue a second plank of 0.5x4x400mm tanganika P22 immediately below the limewood strip as shown. **Now glue in place a second 1x2x400mm length of limewood** in place immediately below the second tanganika plank as shown.

Cut and shape the tanganika timber strips P22 to cover the bottom section of the hull. Cut lengths of P22 and shape as wedges to cover the first layer of planking at the fore and aft sections as shown. Repeat for the other side of the hull. Take care to ensure the planking at the bows on each side of the hull are symmetrical.









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6.16 Finishing the Hull

Mix some water with a water based wood filler to make a soft paste - apply the wood filler to the hull using a brush as shown - spread evenly over the hull and allow to dry.





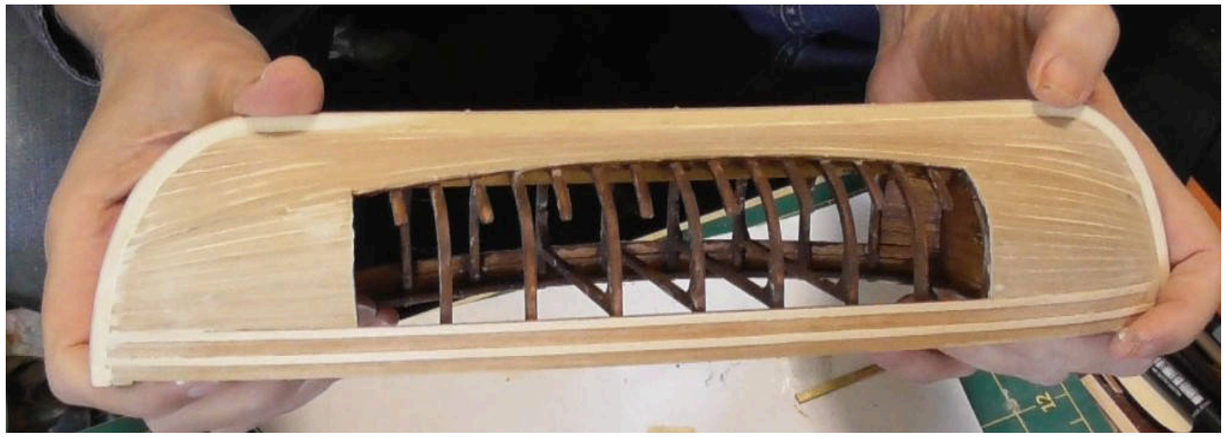


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6.16 Finishing the Hull continued

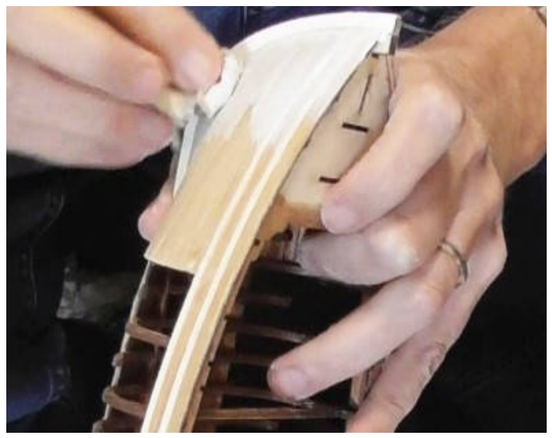
Use a sanding block to sand the two raised 1x2mm limewood strips to be flush with the other planking. Use fine grade sandpaper across the whole hull to remove excess dry wood filler - take your time to remove any minor imperfections. Once satisfied use a power tool with a buffing pad to create a smooth finish over the hull.



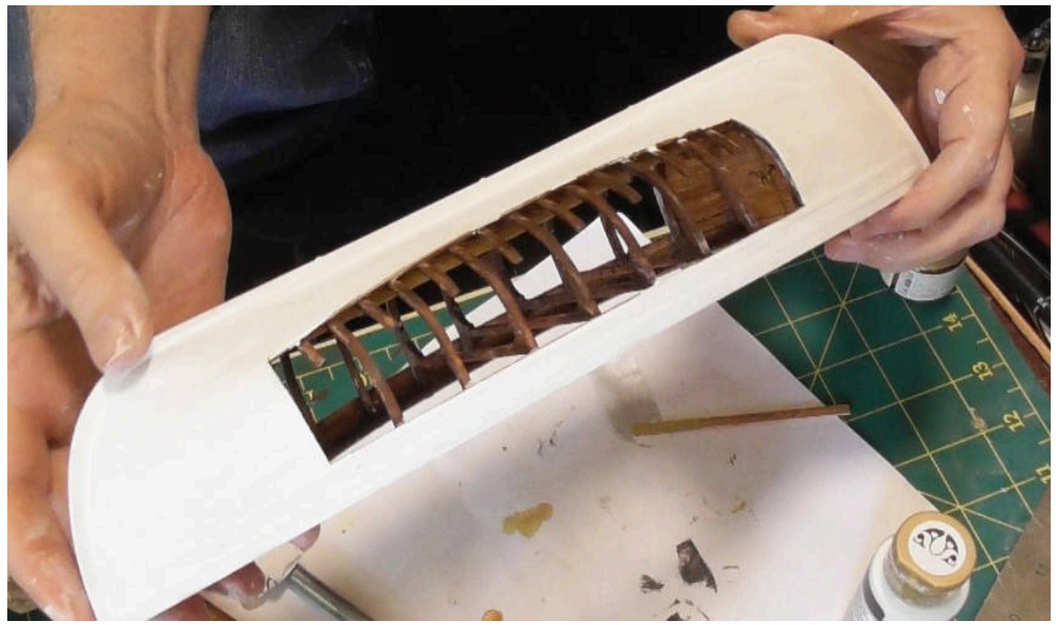


Next use a white matt acrylic paint to paint the hull - the technique is to apply the paint with a brush to an area then immediately use a lightly dampened cloth to rub the paint into the timber and remove any excess - you will see most of the paint is removed. Repeat this process several times across the whole hull - you will notice after several applications the paint becomes opaque on the hull. Continue the process until the hull is finished as shown.





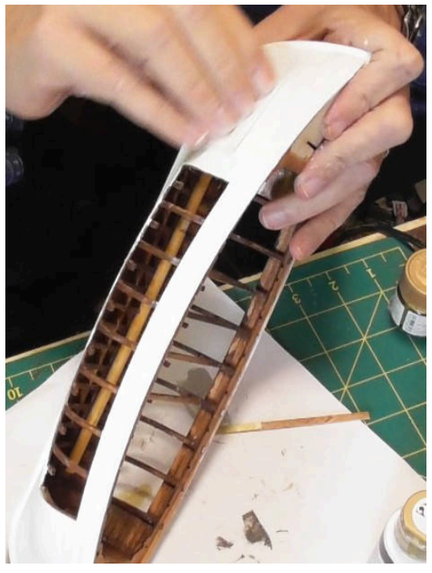




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6.16 Finishing the Hull continued

To create a weathered and worn appearance on the hull use a fine grade sandpaper to lightly sand the hull as shown. Use a lightly dampened cloth to remove the dust. Use a fine grade sandpaper to remove any white paint on the frames - apply the brown wood stain to the frames as required.



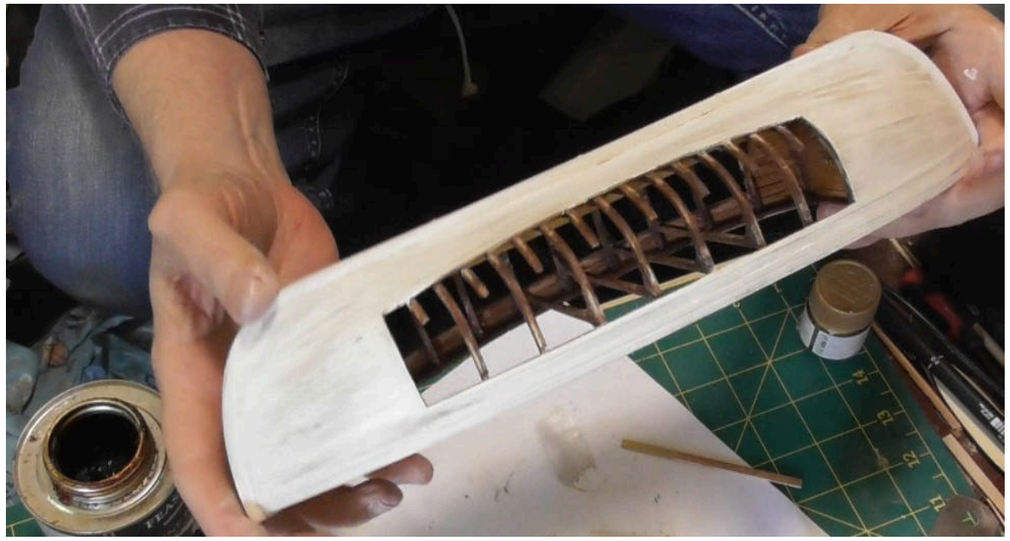




To extend the weathered effect next apply tung oil using a cotton bud to areas of the hull. Immediately use a dry cloth to rub the oil into the hull and remove any excess. Repeat this process over the whole hull until you are satisfied with the effect created. Focus on the bows and the keel.







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6.16 Finishing the Hull continued

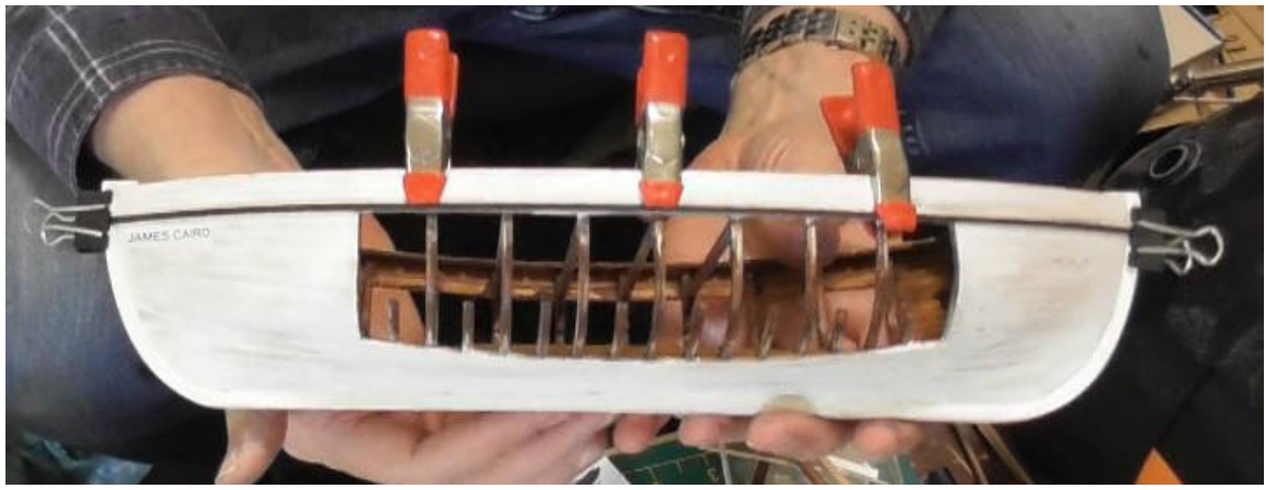
Identify the James Caird stencil P25. Use a 0.4mm black felt-tip pen to trial tracing the name onto paper to familiarize yourself with the technique required. Once satisfied drill 0.7mm holes into the top corners of the board and into the hull - pin the board in place as shown. Next use the pen to carefully trace the letters onto the bow - leave the stencil board in place for a few minutes to allow the pen ink to dry. Then carefully remove the pins and board. Repeat for the other side of the hull.







Next identify the 1x2x400mm limewood P23. Fit and cut two lengths to fit over the previously fitted strips. Once cut to length paint each gunmetal grey. Once dry glue and clamp in position as shown - repeat for the other side of hull.





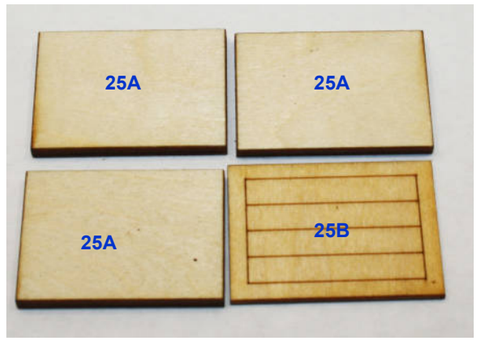
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6.17 Equipment

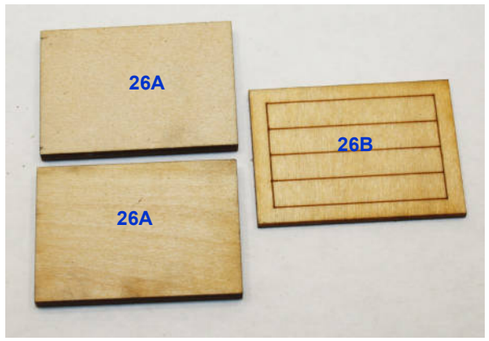
6.17.1 Storage Boxes

Identify the larger storage box P25A-B. Glue 3x25A on top of each other and then glue P25B on top. Cut lengths of tanganika P22 to cover the sides - once satisfied glue in position as shown. Stain the assembled box with diluted dark brown paint applying sparingly - use a damp cloth to rub the paint into the tanganika - repeat a couple of times. Lastly, use a cotton bud to apply shellac - repeat until satisfied with the finish.

Identify the small storage box P26A-B. Glue 2x26A on top of each other and then glue 26B on top. Cut lengths of tanganika P22 to cover the sides - once satisfied glue in position as shown. To finish the assembled box repeat the steps as for the large box.



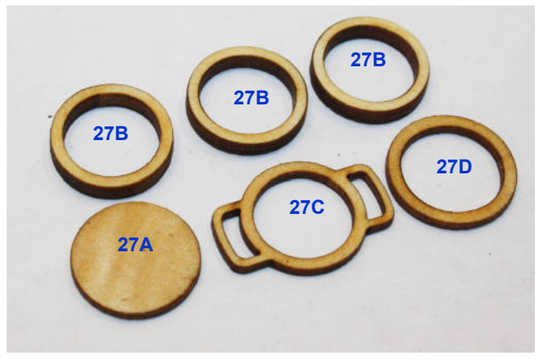






6.17.2 Cooking Pot

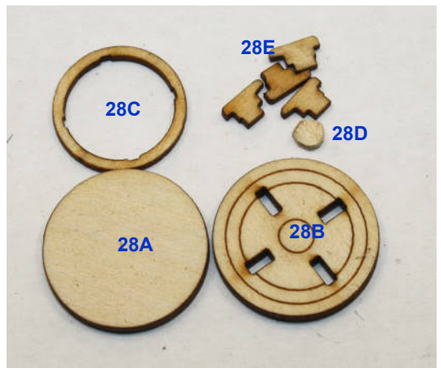
Identify the cooking pot parts P27A-D. The base is 27A - glue 3xP27B on top of each other and then glue to the base. Glue the handle P27C to the assembled pot and the glue the rim P27D to the top as shown. Sand the assemble pot shaping the rim as shown. Sparingly apply gun metal grey paint to the pot using a cotton bud to work into the plywood.





6.17.3 Stove

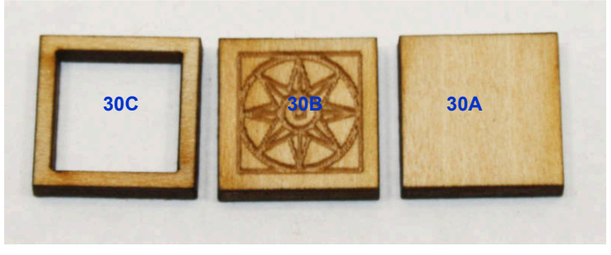
Identify the stove parts P28A-E. The base is P28A - glue P28B to the top of the base. Sand and sparingly apply gun metal grey paint to these parts using a cotton bud to work the paint into the plywood. Fit two brass nails P29 to the side as shown to represent the stove controls. Paint P28C-E black. Glue P28C in place then 28D followed by the four parts P28E as shown.





6.17.4 Compass

Identify the compass parts P30A-C. The base is 30A - glue 30B to the base. Sand the edge faces and stain the assembled parts with diluted dark brown paint applying sparingly. Paint the frame P30C gold. If you wish cut a piece of clear cellophane to fit inside the frame.





6.17.5 Barrel

Identify the barrels P31. Stain each with diluted dark brown paint applying sparingly. Once dry apply black paint to the rings around the barrel as shown.

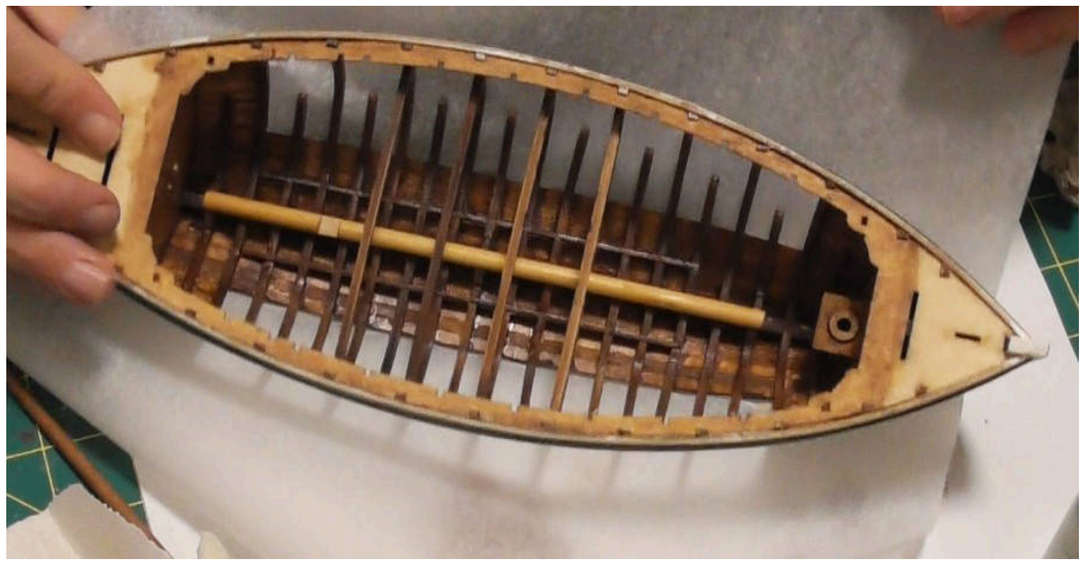


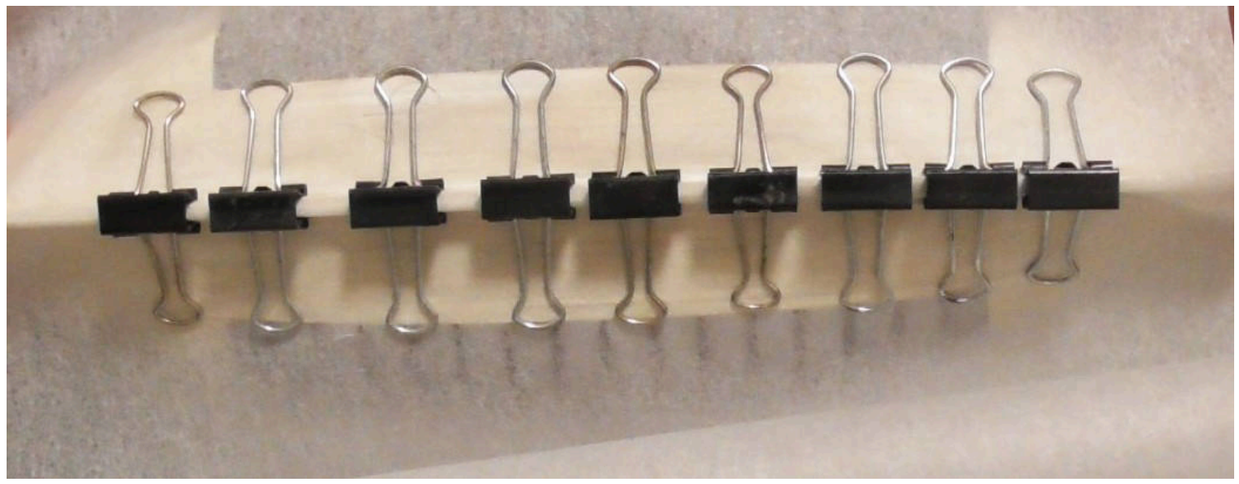
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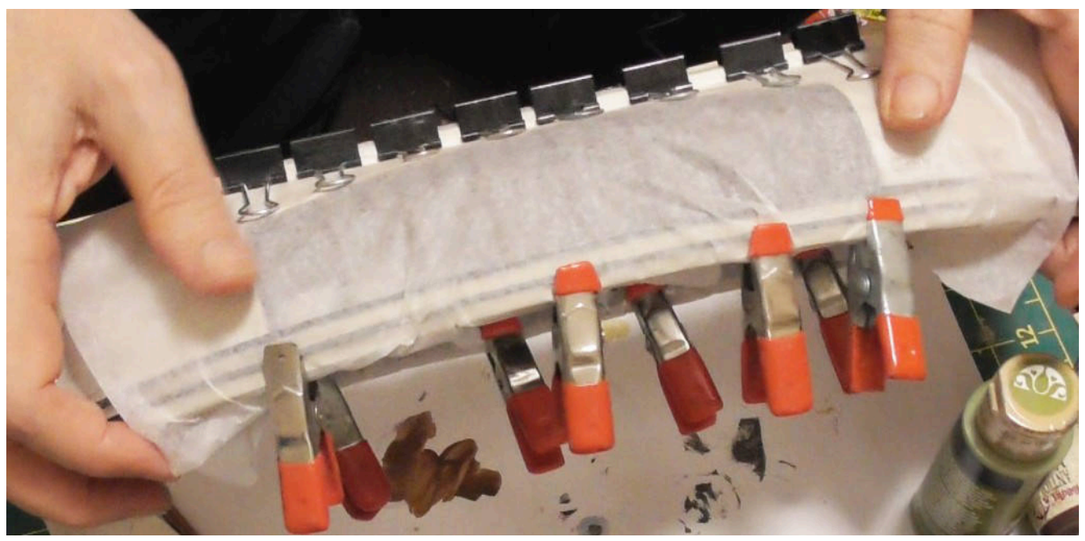
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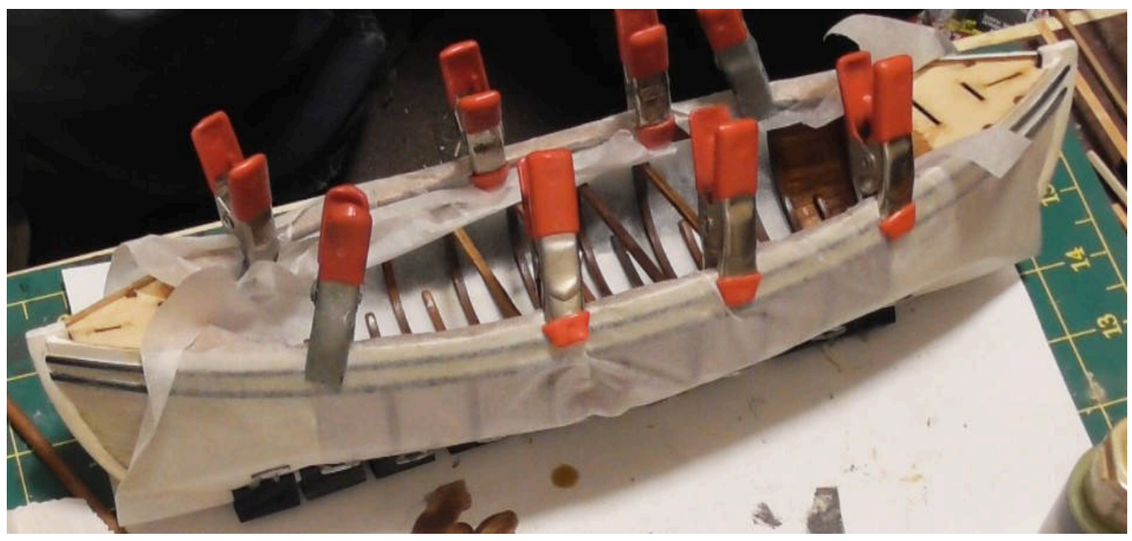
6.18 Ballast

Fit baking paper around the hull as shown - clamp along the keel as shown. Wrap the sides around the hull and clamp in place as show.







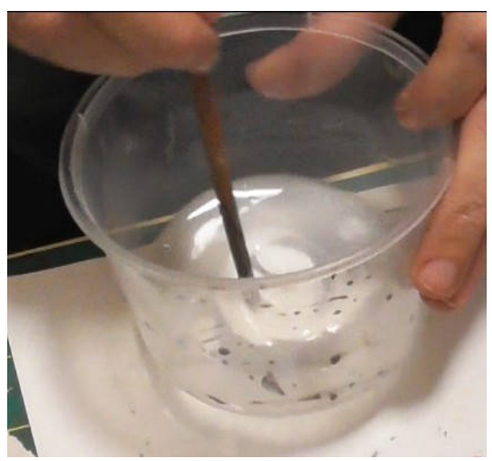


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6.18 Ballast continued

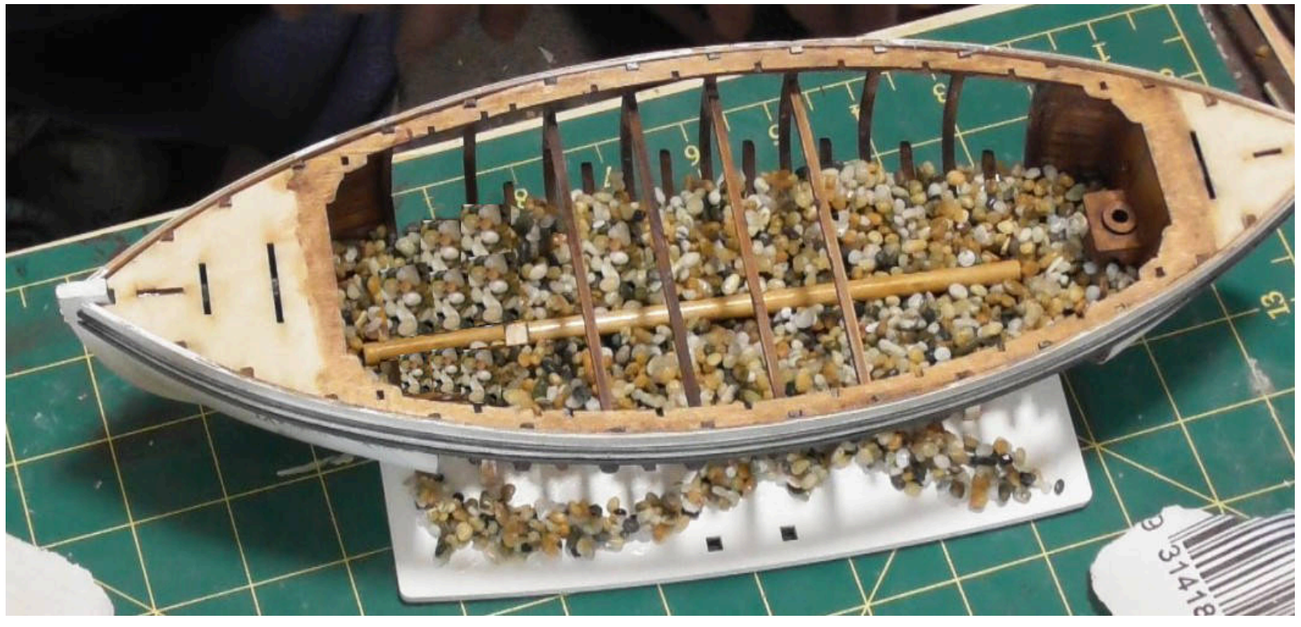
Identify the ballast P32. Partially fill a container with water. Stir a small quantity of white wood glue into the water. Next insert a quantity of the ballast into the water-glue solution - stir to ensure the solution is evenly applied to the ballast. Add more ingredients as required. Once satisfied start to spoon the ballast into the exposed hull as shown - gently move the ballast so it is evenly spread along the length of the hull as shown. If you wish place some ballast along the display board as shown. Set the hull aside for the glue-ballast mixture to dry. Once dry remove the baking paper as shown.







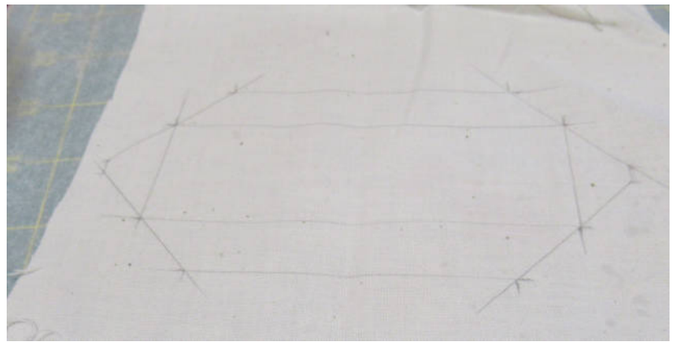


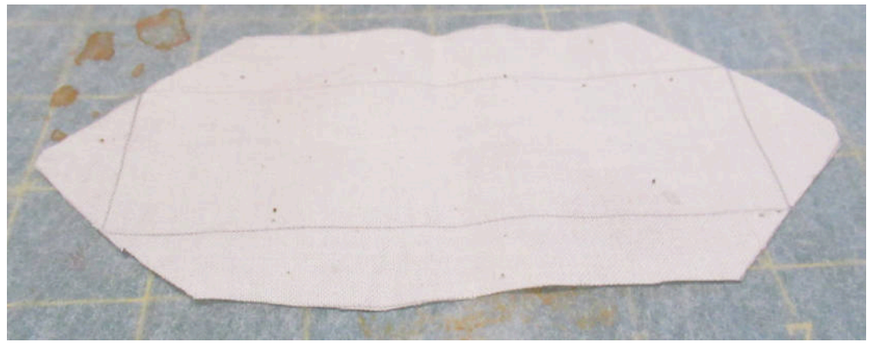


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6.19 Sleeping Bags

Identify the sleeping bag template on Sheet 49. Lay the template onto the calico P33 - use a pencil to mark-out the key points as shown. Cut out the calico as shown. Insert the calico into a container of water diluted white wood glue. Lay the calico out onto a sheet of baking paper and fold the shaped edges over as shown. Roll the calico up along its length as show. Use white string P34 to tie the rolled calico in place. Repeat for another two sleeping bags. Use a combination of dark brown and honeycomb paints to create a weathered and aged appearance for the sleeping bags as shown.

















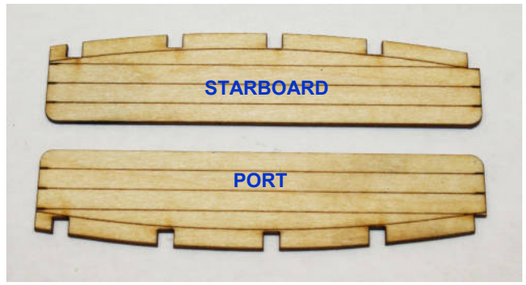
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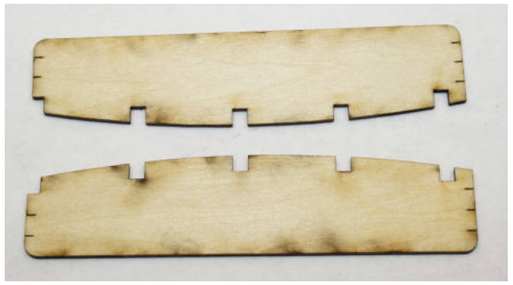
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6.20 Side Benches

Identify the side benches P35. Turn each bench over as shown - lightly sand-off any laser burn marks. As the underside of the benches can potentially be seen through the exposed hull there is the need to replicate the plank marks on the underside. Notice the small cut marks at each end of the benches - using a metal rule as a guide and a pointed blade knife lightly scribe a line between the cut marks - then mark the line with a pencil - as shown.

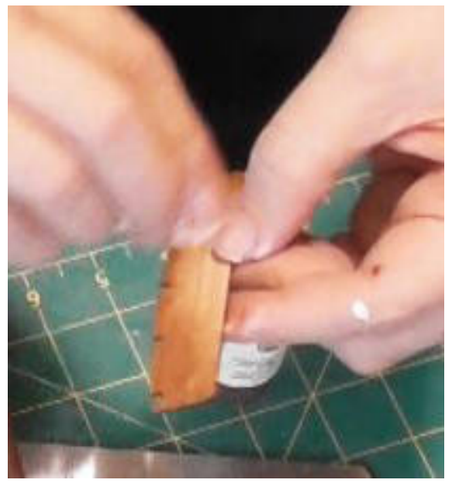
Next, sparingly apply the dark brown paint to the benches - then use a damp cloth to work into board. Repeat for both sides of each bench. Once dry use a cotton bud to apply shellac as shown. Trial fit the benches in place between frames B and 2. Once satisfied glue in place across the frames as shown.













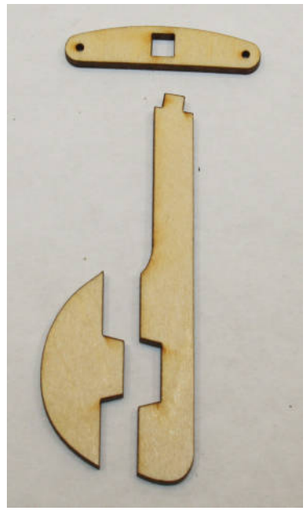


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6.21 Rudder & Yoke

Identify the rudder P43A-B and the yoke P44. Glue the rudder parts together. Next use sandpaper to round all edges and shape the blade to be thinner around the edges as shown. Use sandpaper to round the edges of the yoke. Glue the yoke in place as shown. Use white matt acrylic paint to paint the assembled rudder and yoke. To create a weathered and worn appearance use a fine grade sandpaper to lightly sand the rudder. Use a lightly dampened cloth to remove the dust. Apply the brown wood paint sparingly and use a damp cloth to lightly rub into the rudder. Next apply dabs of smoky jade green to the rudder edges and use a damp cloth to smear across the rudder. To extend the weathered effect further apply tung oil using a cotton bud to areas of the rudder. Immediately use a dry cloth to rub the oil into the rudder and remove any excess.

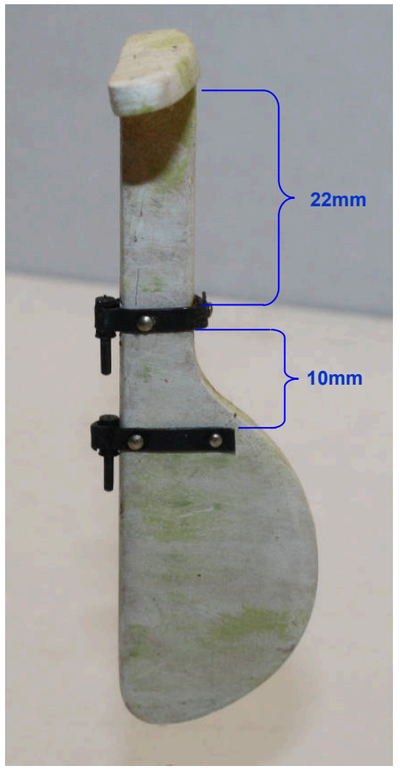
Identify the rudder hinges P45. Fix the gudgeons with pintals to the rudder at the dimensions shown. Use super glue to fix the hinges in place - then drill holes for the nails. Cut the nail P29 shank off leaving approximately 2mm below the head - insert the shortened nail into the hole and apply super glue to hold the nails in place. Fit the gudgeons in place as shown to the top half of the hinges - use a clamp to hold the rudder in place as shown - align the top of the rudder with the top of the stern post as shown. Drill holes into the stern post and hull to accept the nails - super glue nails. Once set remove the rudder and set aside to be fitted permanently later.

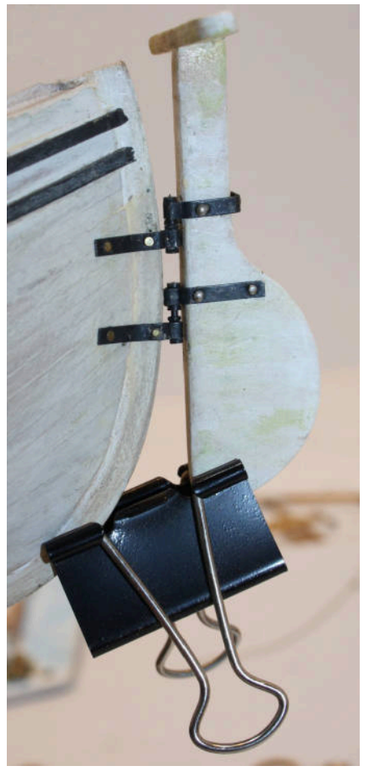










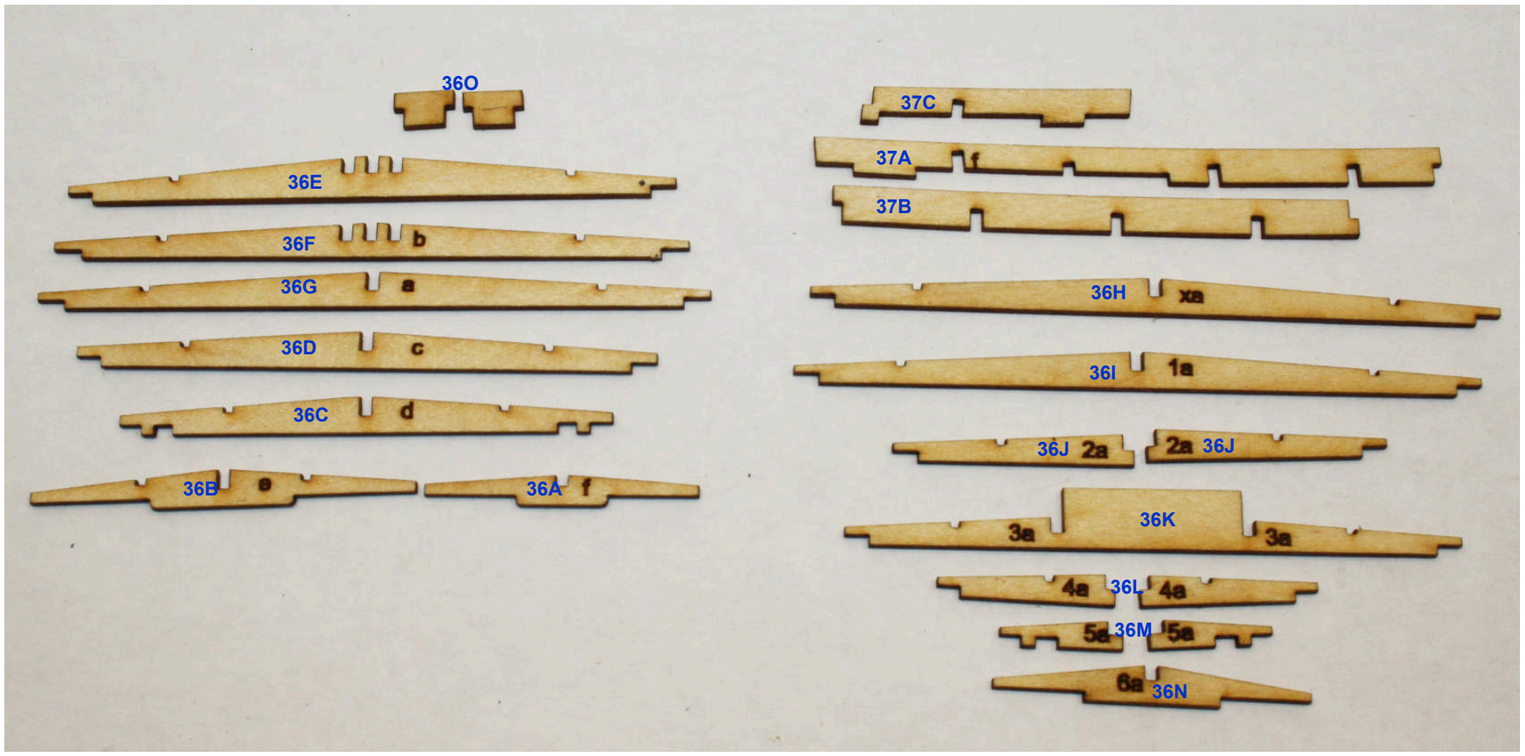


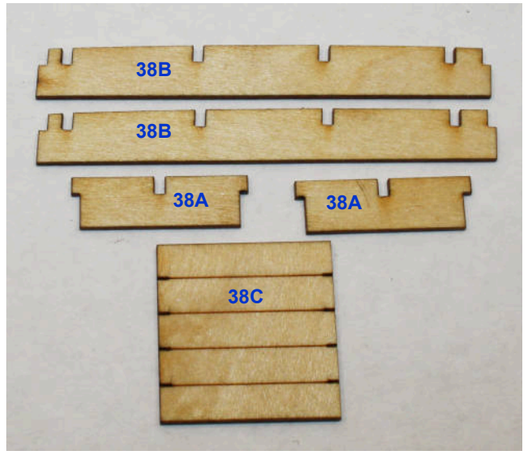
JAMES CAIRD
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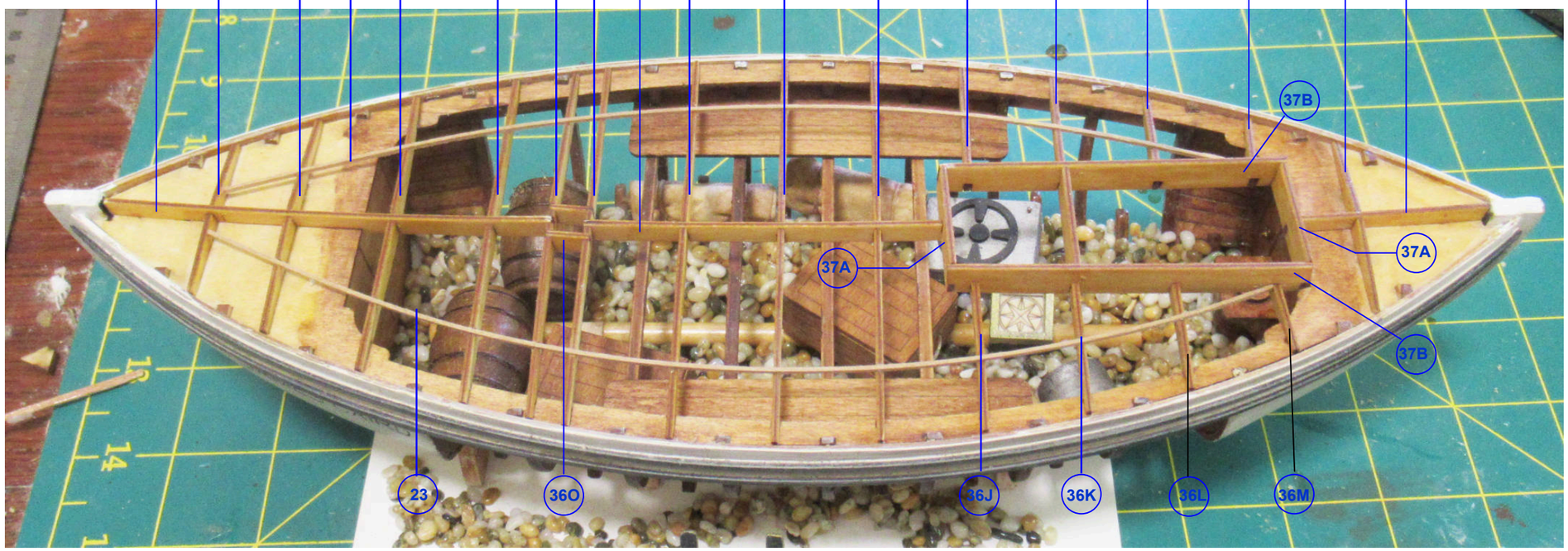
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6.22 Deck Construction

Before starting the deck construction insert the range of equipment into the hull space as shown. Identify the deck frame parts P36A-O. Identify the central supports P37A-C. Identify the cockpit assembly P38A-C.Lightly sand each part to remove any laser burn. Trial fit all parts as shown below - fractionally adjust as required. Once satisfied use a cloth to apply shellac to each part. Once dry glue each part in place as shown. Identify the limewood 1x2x400mm P23 - cut two lengths to fit into the pre-cut deck frame slots as shown - glue in place.







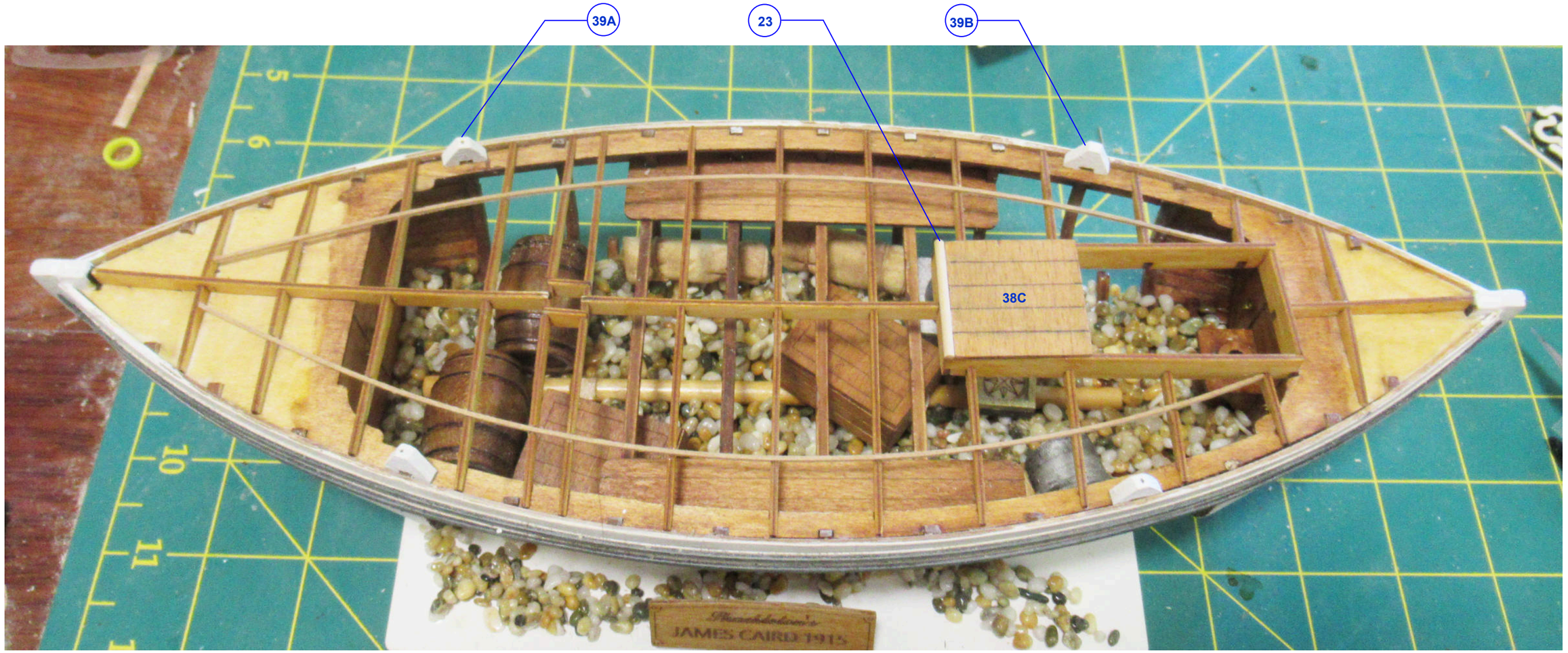
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6.22 Deck Construction continued

Identify the cockpit cover P38C - notice the small cut marks at each end of the cover - turn the cover over and using a metal rule as a guide and a pointed blade knife lightly scribe a line between the cut marks - then mark the line with a pencil. Next, sparingly apply the dark brown paint to the cover - then use a damp cloth to work into board. Repeat for the other side of the cover. Glue the cover in place as shown. Cut a length of limewood 1x2mm P23 to fit across the front of the cover as shown - glue in place. Once dry use a cotton bud to apply shellac to the cover and limewood as shown.

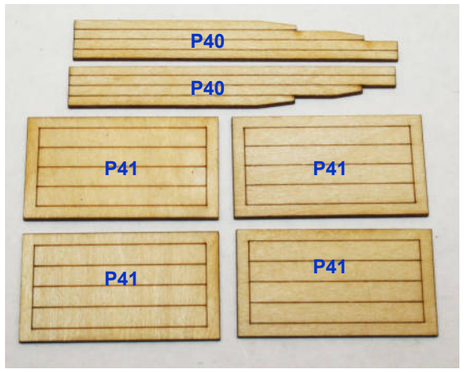
Identify the rowlock bases P39A-B. Note the markings representing fore (f) P39A and aft (a) P39B. Paint the rowlock bases white and as shown. Trial fit in place as shown - once satisfied glue each rowlock in place.

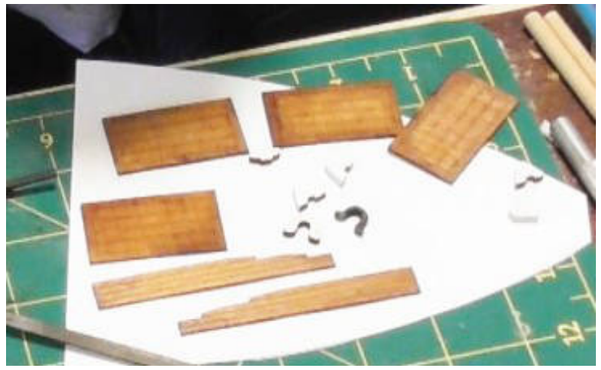


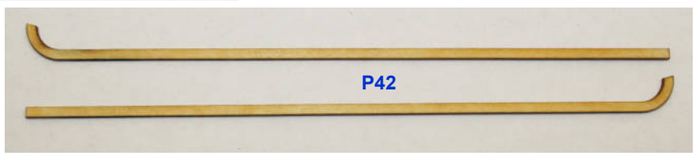
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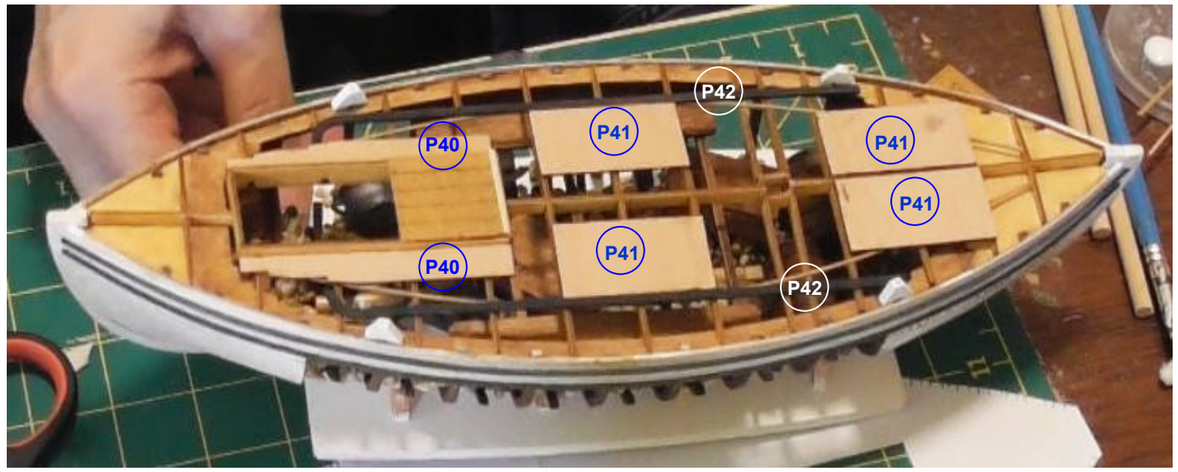
6.22 Deck Construction continued

To provide a base for the canvas covering a patched-up arrangement of box lids, sledge runners and spare boards were fitted across the deck frames. Identify the cockpit stiffiners P40, the box lids P41 and the sledge runners P42. Lightly sand each part to remove any laser burn. For the top side of the cockpit side boards and box lids sparingly apply the dark brown paint to each part - then use a damp cloth to work the paint into the parts. Once dry use a cotton bud to apply shellac as shown. Paint the sledge runners black. Glue the side boards and box lids stained face down as shown. Glue the sledge runners in place as shown.



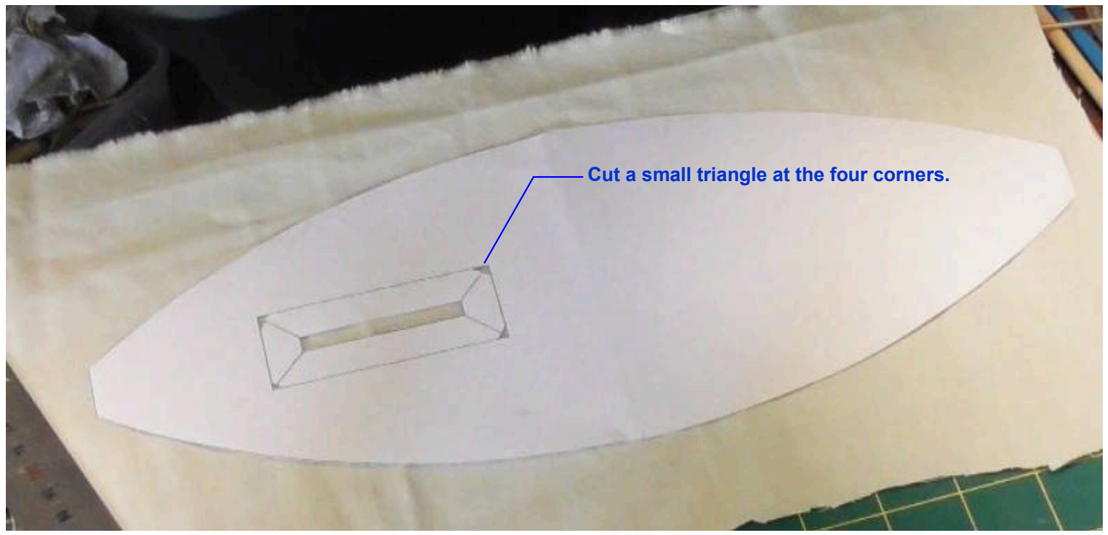


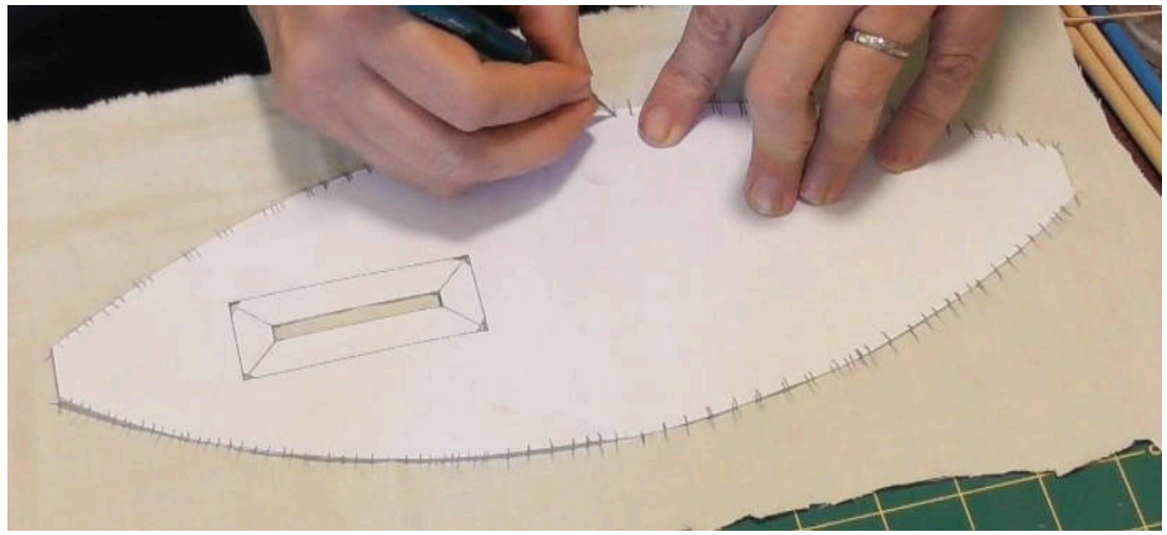




6.23 Deck Canvas Covering

Identify the deck cover template on Sheet 49. Cut the corners of the cockpit outline as shown. Cut out the centre rectangle as shown. Place the template over calico P33 as shown. Use a pencil to mark short lines from the template to the calico as shown. Mark the points of the straight lines at the bow and stern ends. Use a pencil to mark the points of the cockpit corners and central rectangle onto the calico.

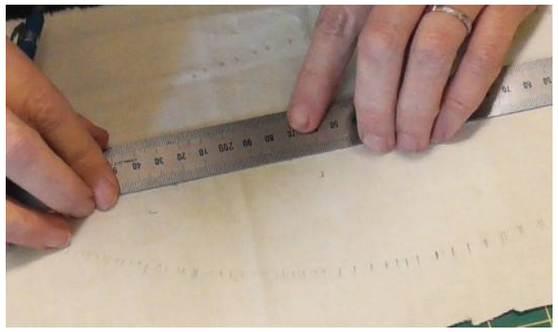


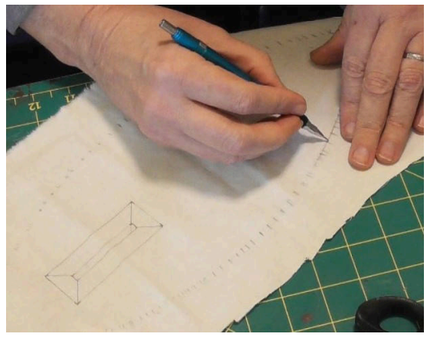


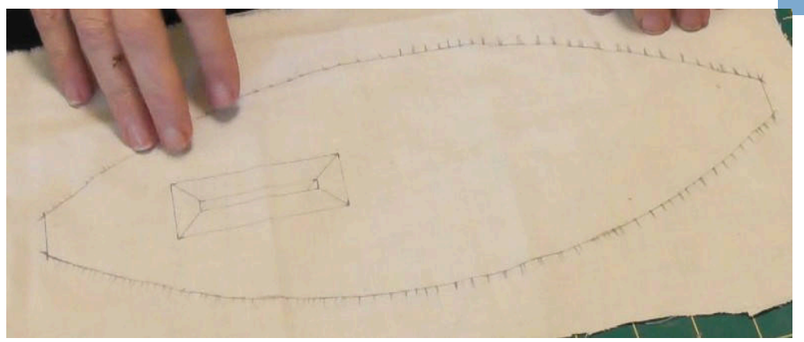
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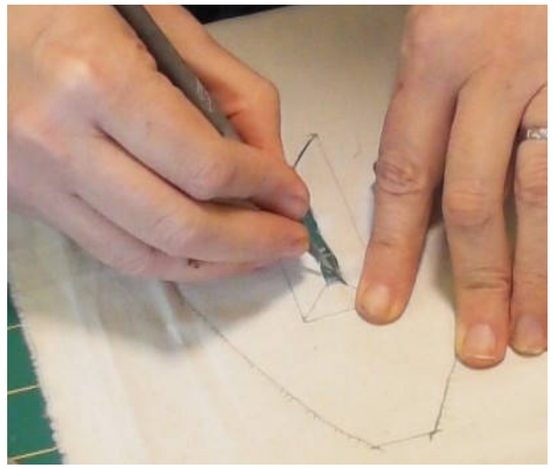
6.23 Deck Canvas Covering continued

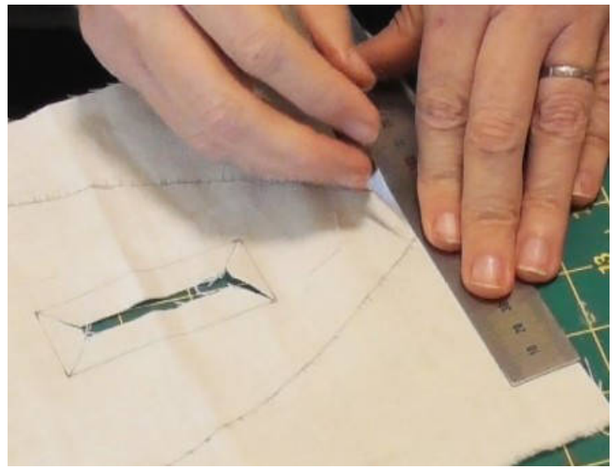
Draw all straight lines of the cockpit and the bow/stern ends onto the calico as shown. Draw the curved lines following the ends of the pencil strokes. Use a pointed knife blade and metal ruler to cut all straight lines on the calico. Use the same knife to slowly and carefully cut the curved outline as shown.

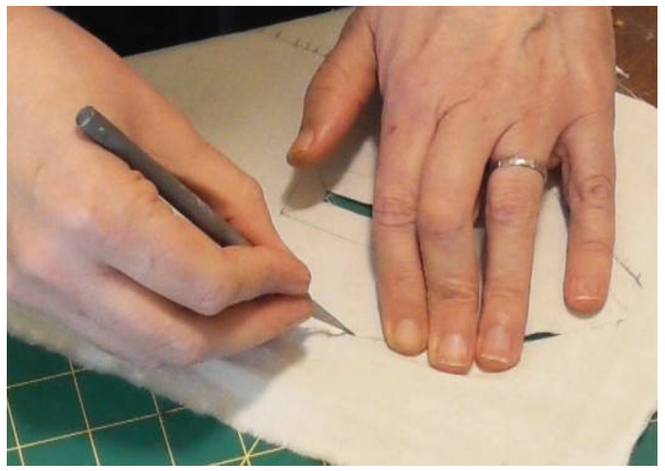


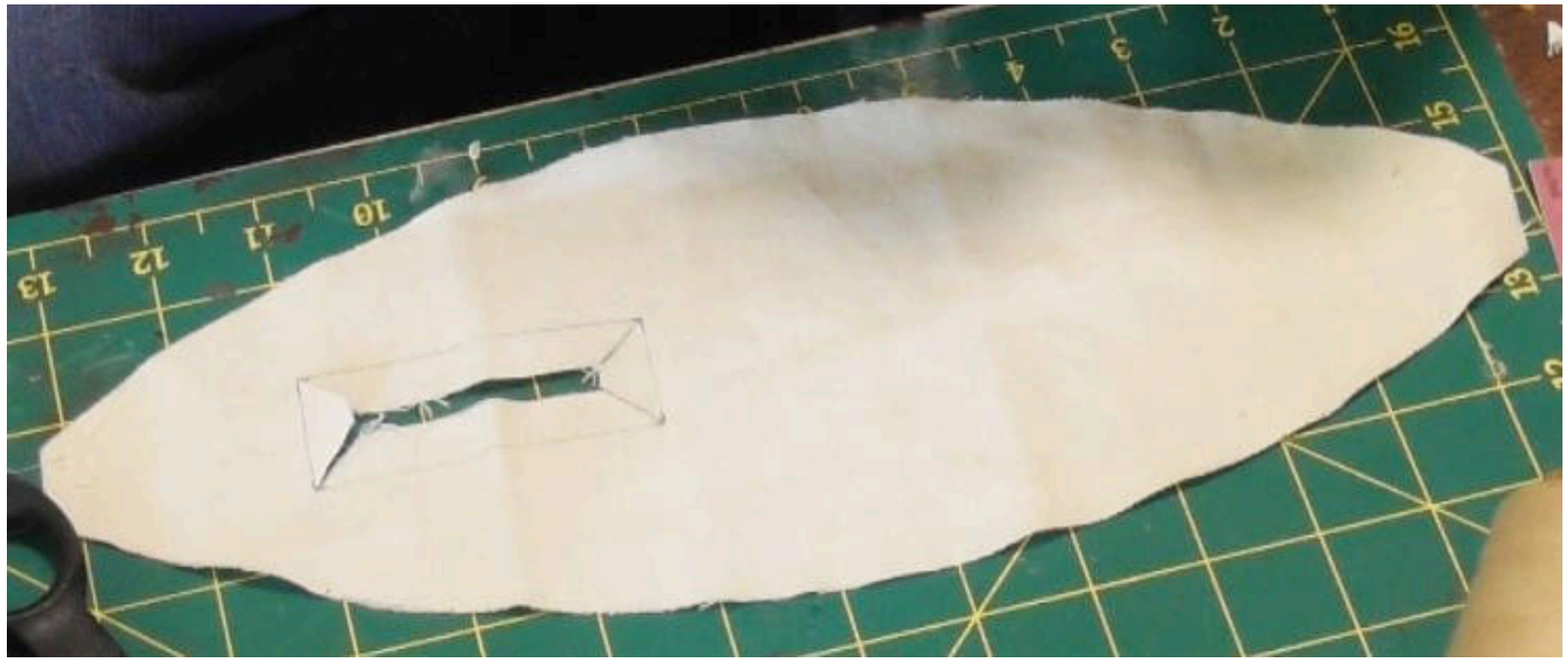












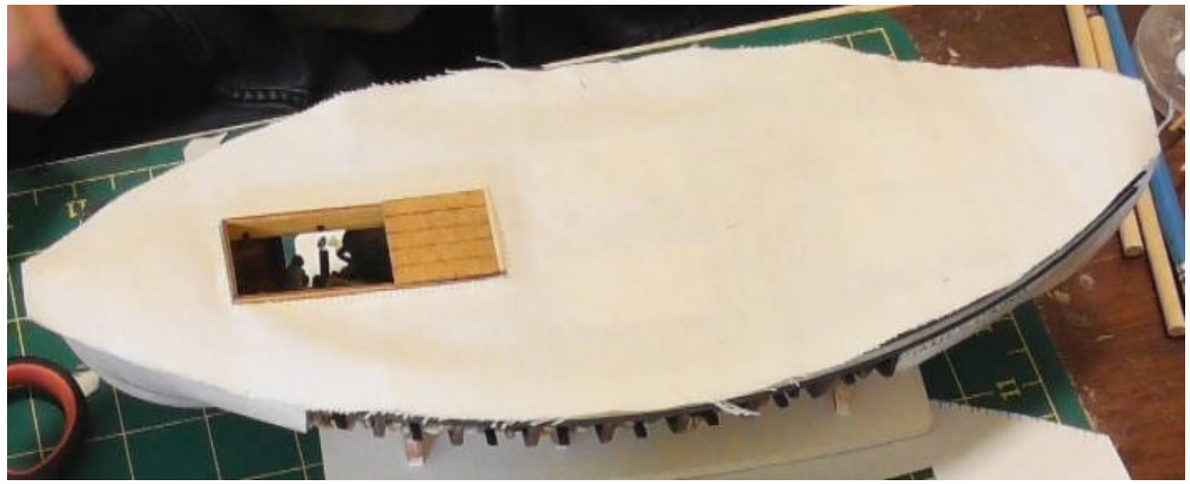
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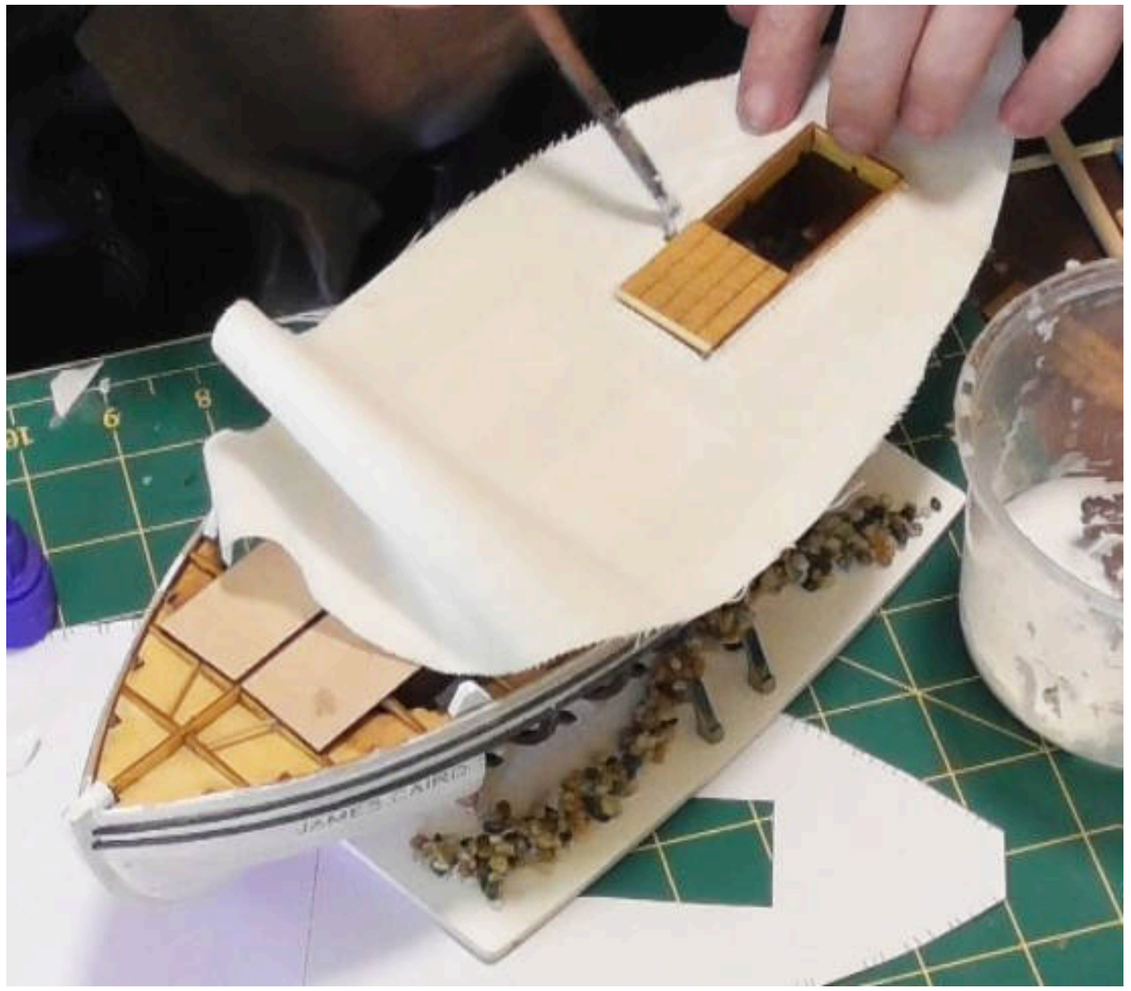
6.23 Deck Canvas Covering continued

Fold over the flaps of the cockpit as shown - use a needle and white cotton thread to sew a hem around the edge. Once complete use scissors to remove the excess flap. Turn the calico over and trial fit onto the deck as shown. Remove the deck covering and apply slightly water diluted white wood glue to the deck-calico contact points - apply to half the deck as shown. Fit the calico deck covering in place and apply more diluted glue to the calico as shown.





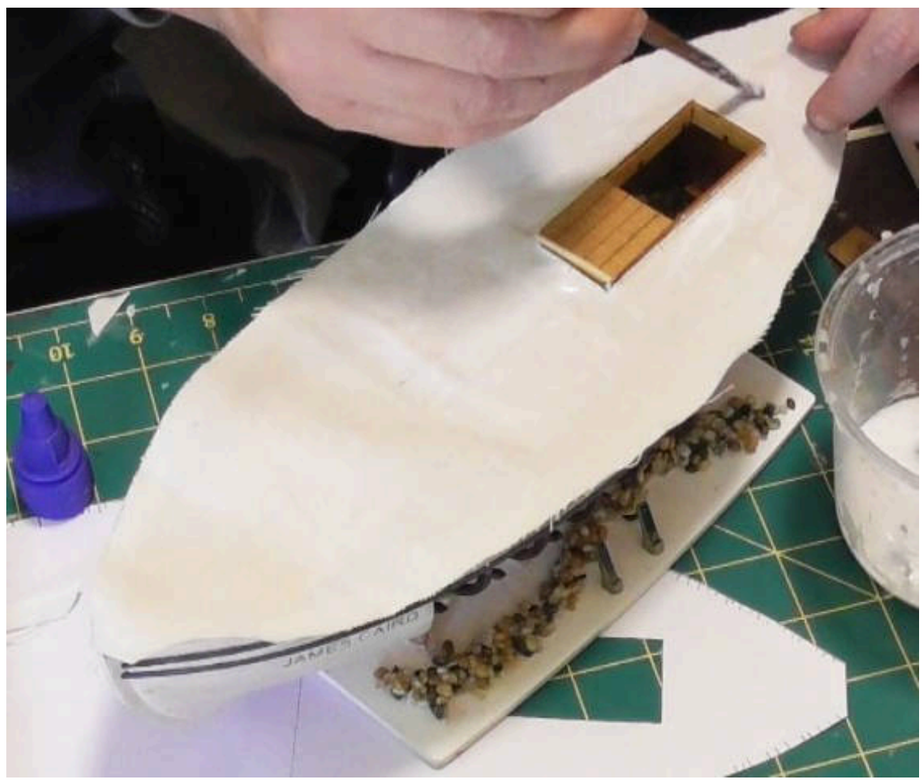


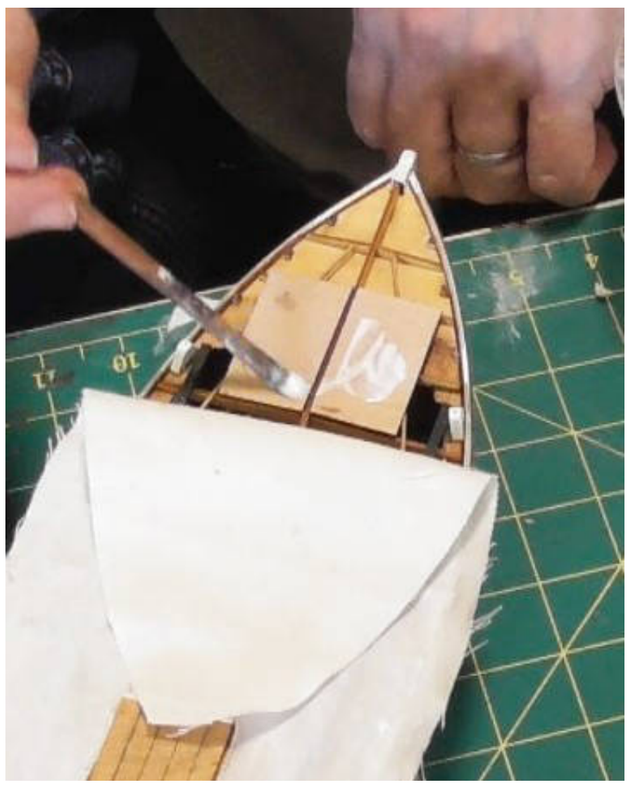


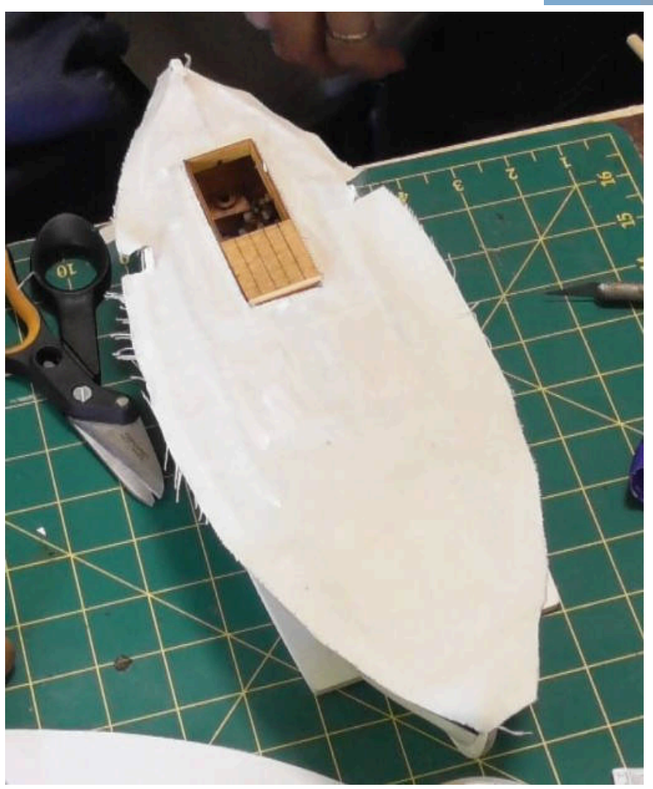
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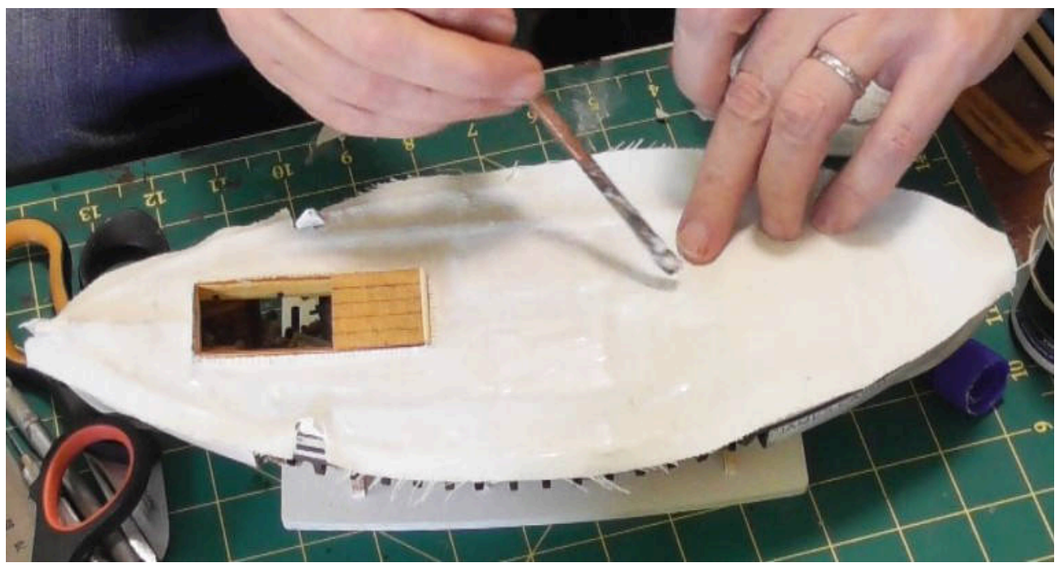
6.23 Deck Canvas Covering continued

Apply the diluted glue to the remaining deck contact points and fold the calico into place. Apply the glue evenly over the whole deck covering - allow time to dry. Use scissors to cut gaps in the calico for the rowlock bases and the stem and stern posts as shown.









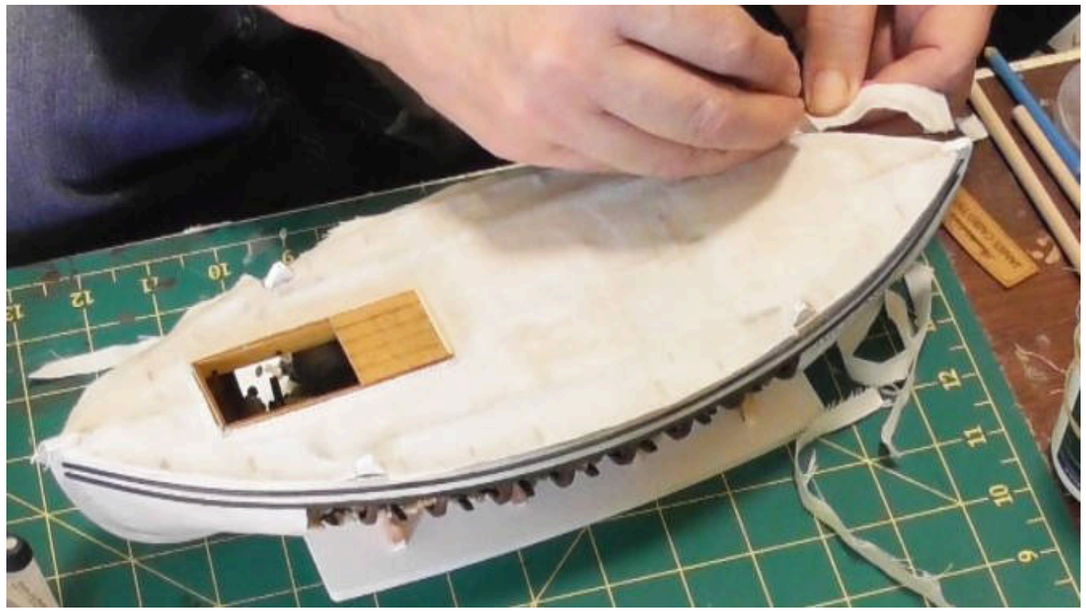


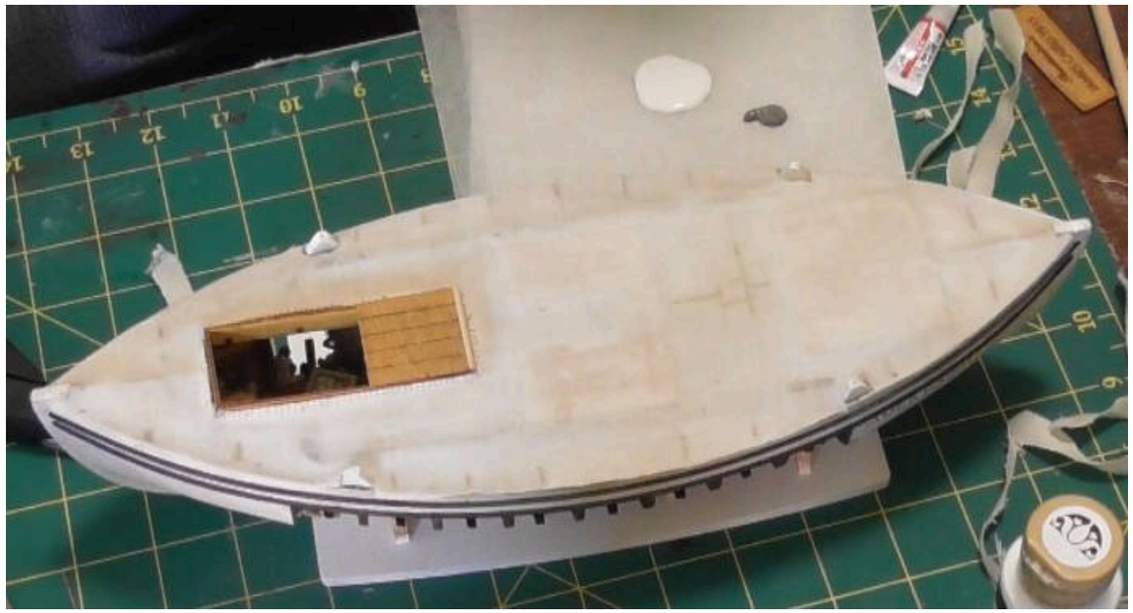
JAMES CAIRD
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SHEET 36

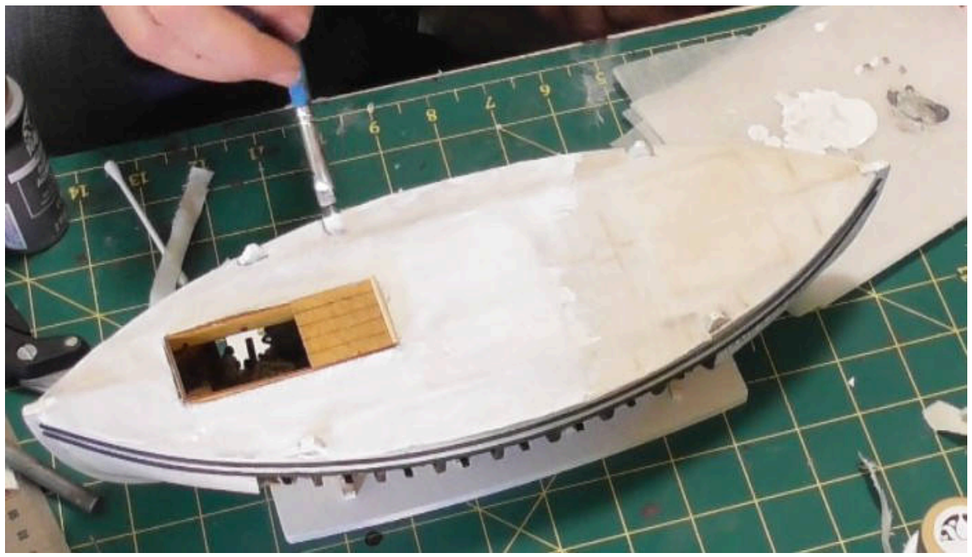
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6.23 Deck Canvas Covering continued

Use a pointed blade knife to carefully remove the excess calico around the outer edge of the boat as shown. Use the white paint and mix with a small amount of the brown paint to give a weathered effect to the deck covering as shown.









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6.24 Oars

Identify the oar shanks P46A and oar blades P46B. Shape the shanks so they are rounded as shown. Glue the blades in place as shown. Use the brown paint and a dampened cloth to rub the paint into the assembled oars as shown.



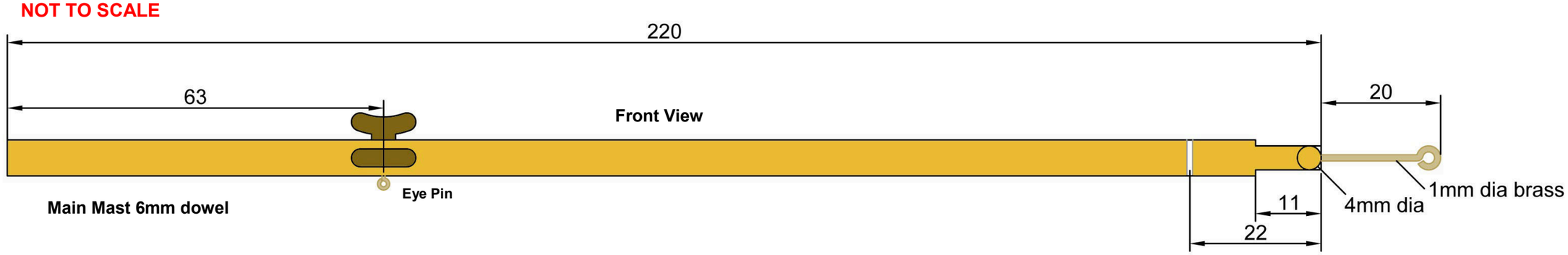


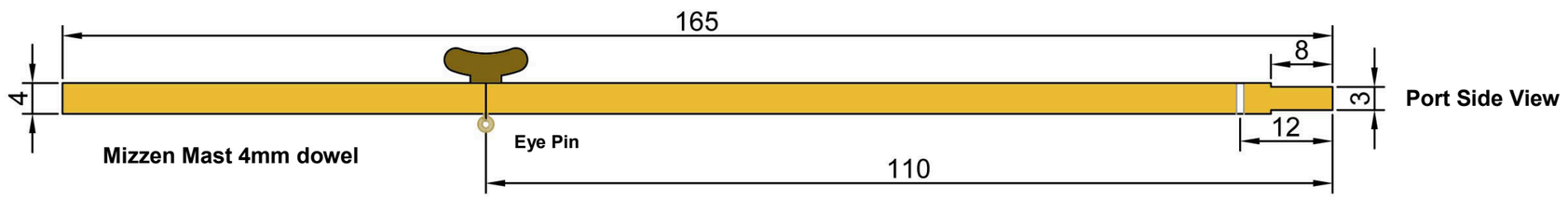
Port Side View

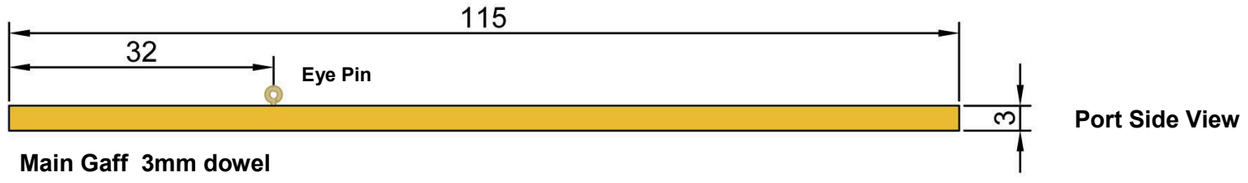
6.25 Masts, Gaffs & Boom

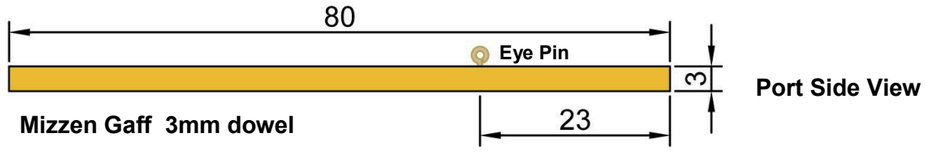
Identify the 6mm dowel P18, 4mm dowel P47 and 3mm dowel P48. Cut and shape each dowel as shown below. **Do not taper any of the dowels.** Apply a shellac finish to the shaped dowels. Drill a 1mm hole in the main and mizzen masts as shown. Identify the cleats P49 - round the edges on each - paint brown - fit a pin in the base of each and fix to the main and mizzen masts as shown. Fix eye pins P13 to the points as shown. Identify the brass wire P50 - shape as shown and fit to the top centre of the main mast as shown.

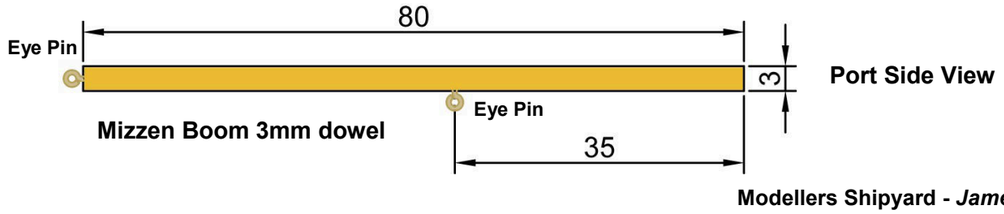
NOT TO SCALE









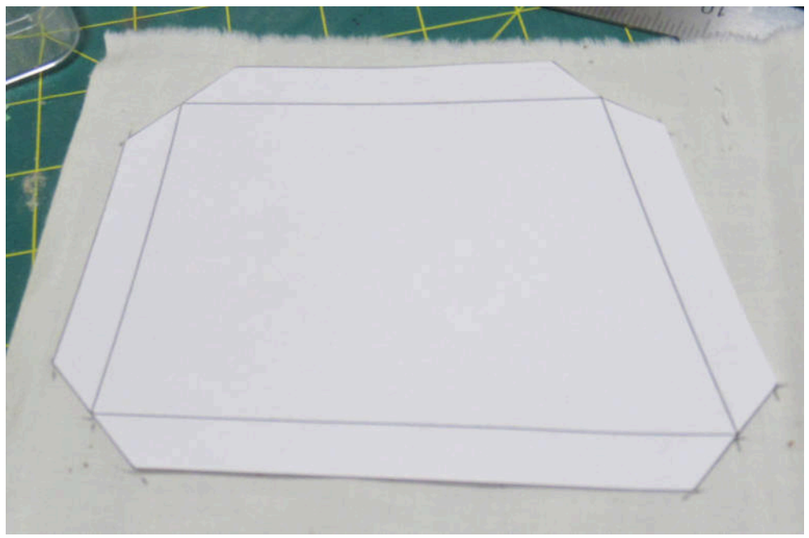


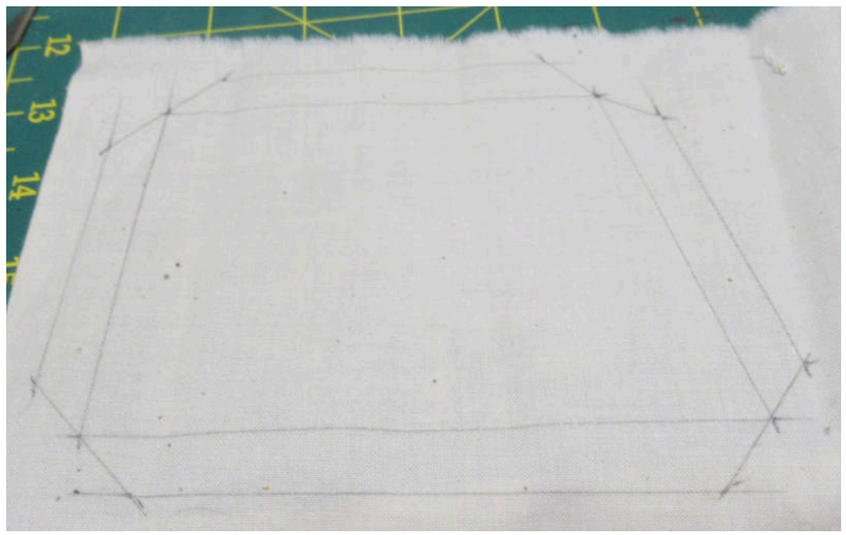
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6.26 Sails

Identify the sail templates on Sheet 50. Start with the main sail - lay the main sail template onto the calico P33 - use a pencil to mark-out the key points as shown. Cut out the calico as shown. Fold the edges over and use a needle and cotton thread to sew a small tacking stitch around the sail edge as shown - at the corner of each sail make a small loop. Carefully cut the excess calico off and turn the sail over and press flat. Repeat the process for the mizzen sail and jib sail.







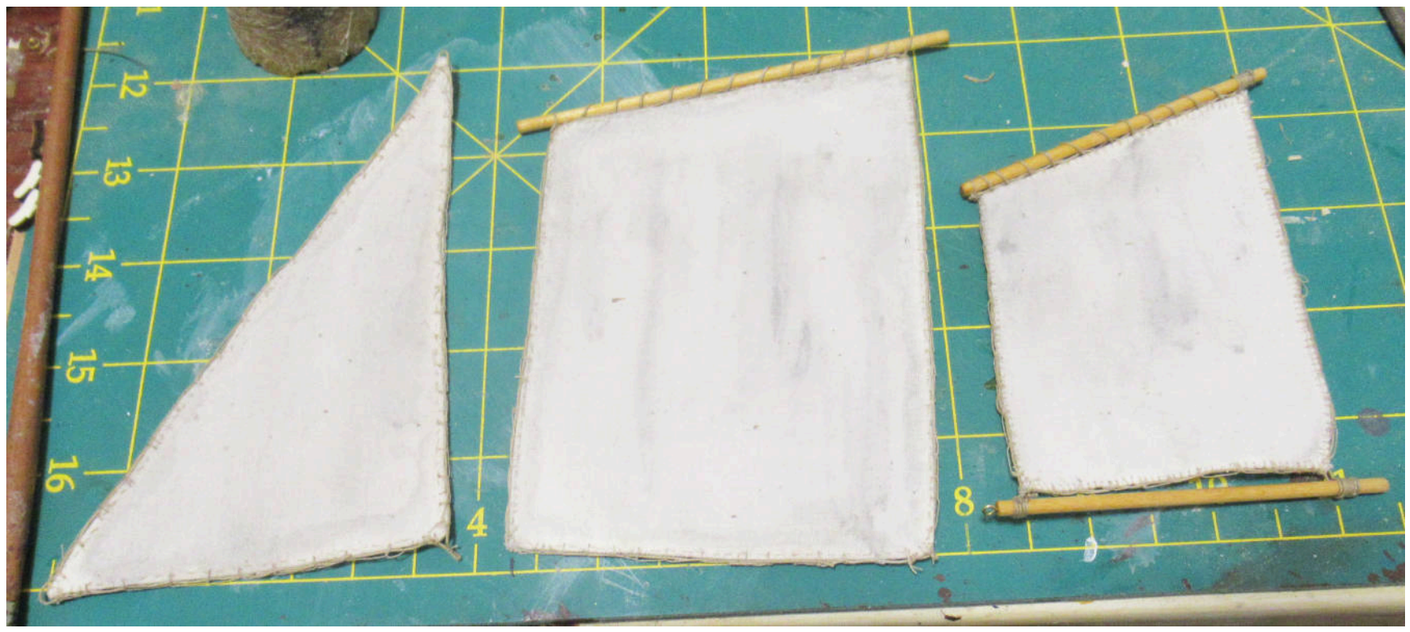


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SHEET 39

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6.26 Sails continued

Use 0.5mm fawn cord P51 to attach the main sail to the main gaff as shown. Use the same cord to attach the mizzen sail to the gaff and boom as shown. Apply white paint and mix with a small amount of the brown paint to give a weathered effect to the sails as shown. Apply diluted glue to the sails as shown to stiffen the sails.





Identify the 3mm brass rings P14 - open 5 rings out with pliers and fit equidistant along the longest edge of the jib sail as shown.



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6.27 Rigging

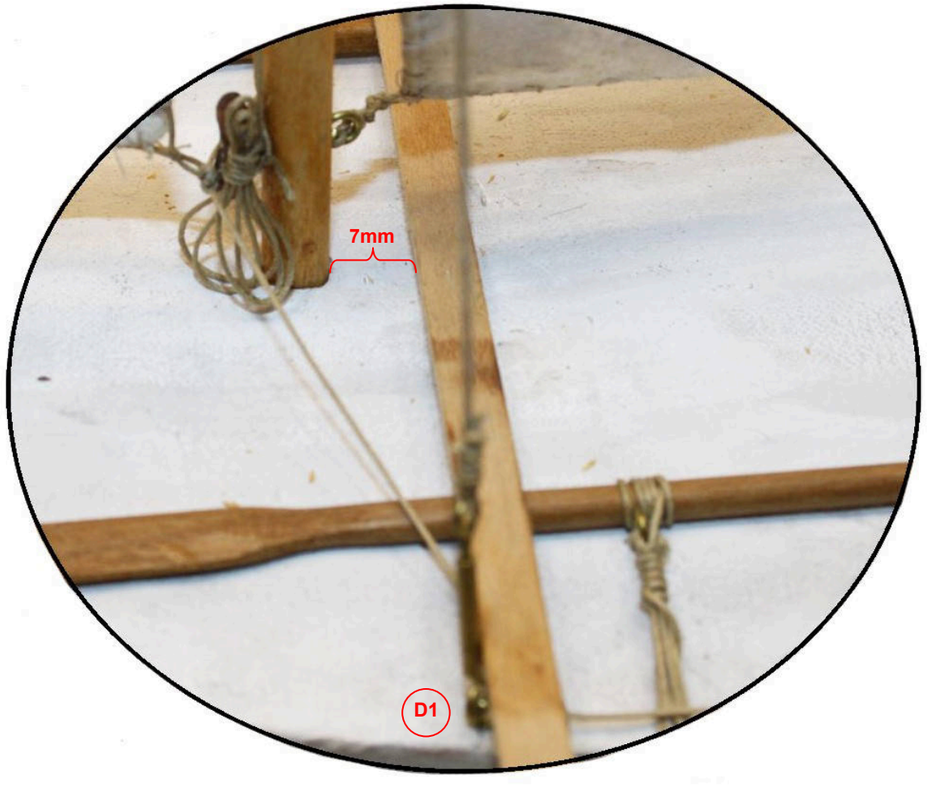
All rigging cord used is 0.5mm fawn/grey P51.

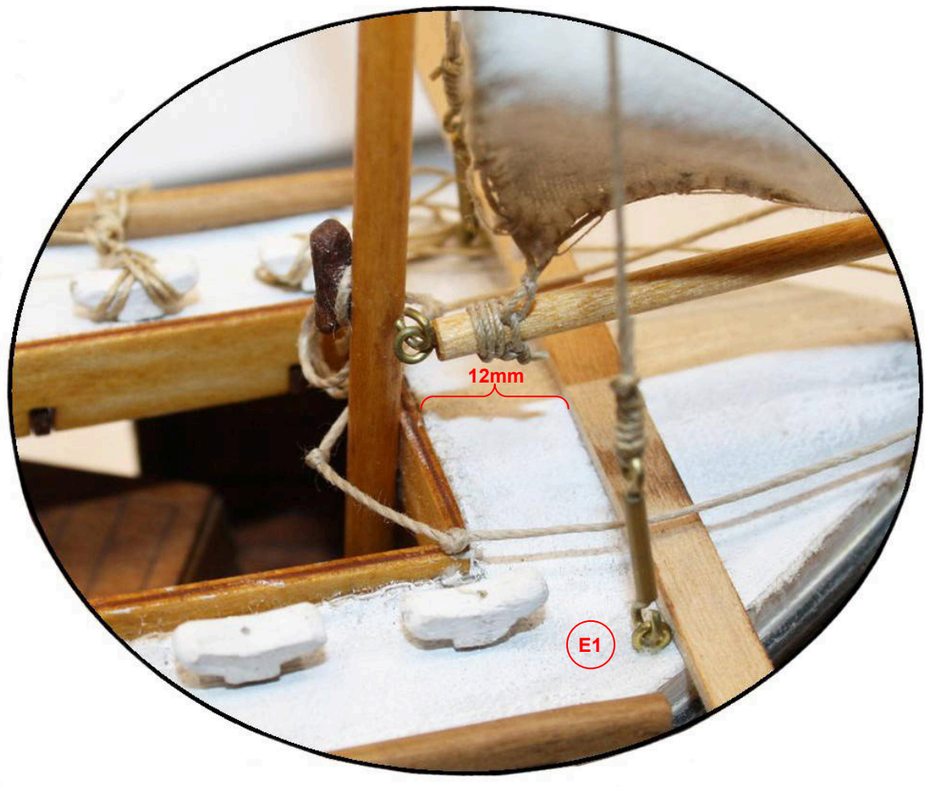
Identify the location to fit the main mast - carefully cut through the calico. Trial fit the main and mizzen masts - fractionally adjust as required. Once satisfied glue each mast in position

The main mast shroud assemblies are attached to eye pins P13 located at points D1 & D2 - to determine these points place a plank straight across the deck top 7mm from the rear of the main mast as shown - mark the points on the port and starboard deck edge - fix an eye pin P13 at these points D1 & D2. The mizzen mast shroud assemblies are attached to eye pins P13 at points E1 & E2 - to determine these points place a plank straight across the deck top 12mm from the rear of the cockpit as shown - mark the points on the port and starboard deck edge - fix an eye pin P13 at these points E1 & E2.







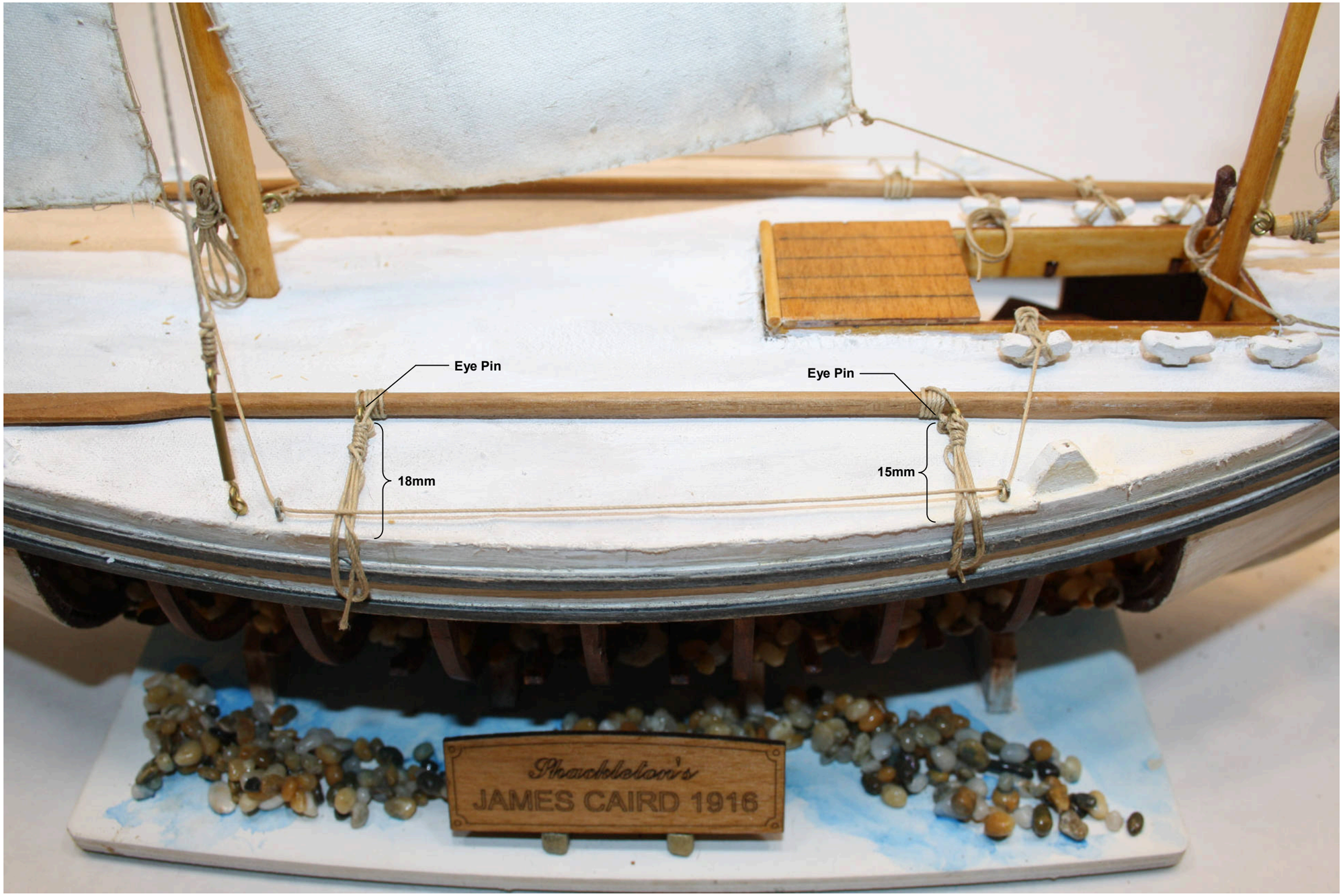


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6.27 Rigging continued

Identify the 6 x cleats P49 - round the edges on each - paint white - fit a pin in the base of each and fix in place 3mm from the edge on each side of the cockpit as shown. Identify the eye pins P13 - fix in place on the deck at the position as shown - repeat for the starboard side. Lash the oars to the eye pins as shown.

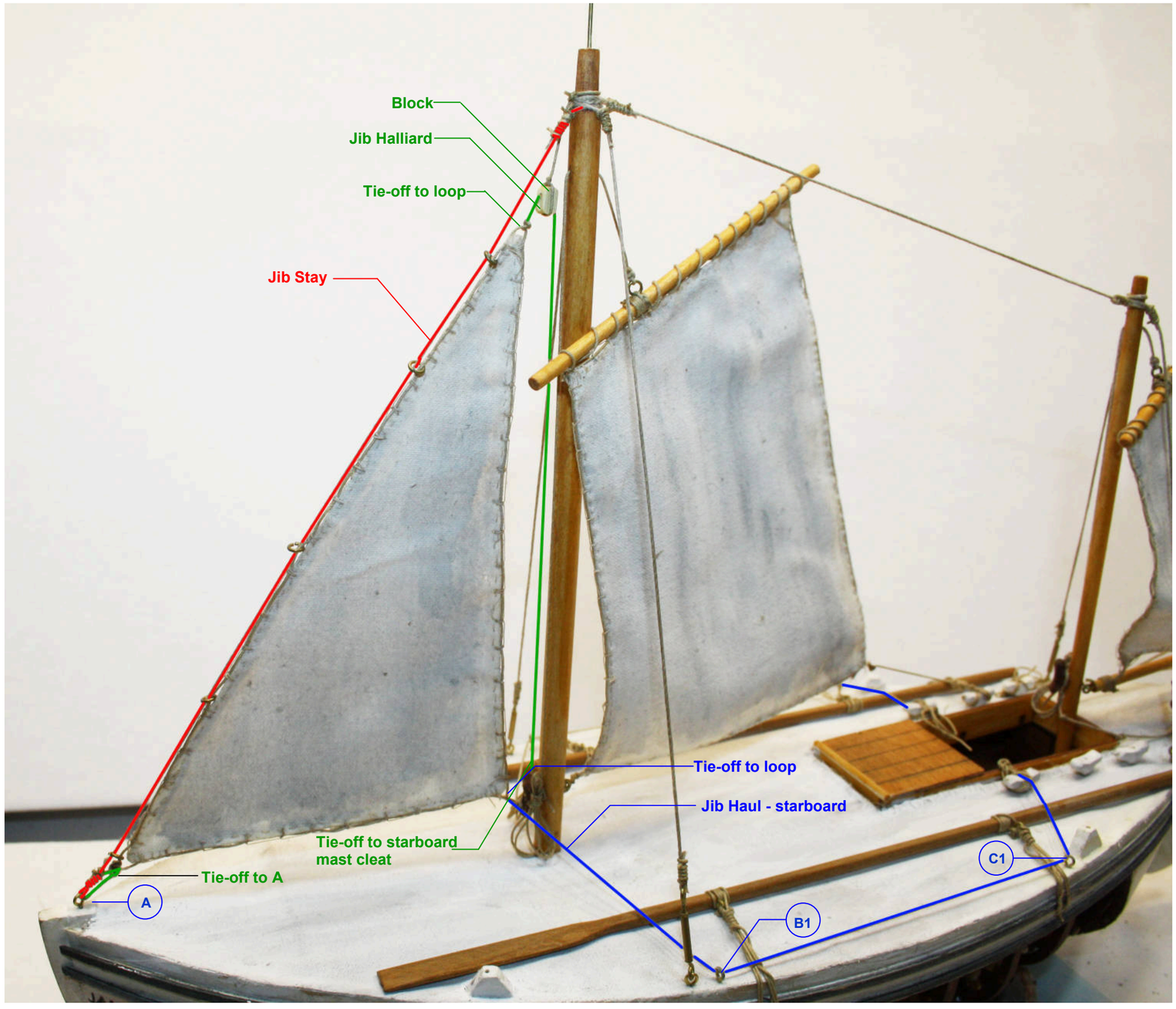


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6.27 Rigging continued

Fix eye pins P13 to points A, B1 & C1 as shown - fix B2 & C2 on the starboard side as a mirror image. **Jib Stay** - take a length of cord and feed through the rings on the jib sail as shown. Attach to eye pin A and the mast top as shown. Attach a short length of cord to the loop at the base edge of the sail and attach to A as shown. **Jib Halliard** - identify a 1 hole 5mm block P52 - attach to a length of cord and tie-off end to the mast top as shown. Tie a length of cord to the loop at the top corner of the sail as shown - run through the block and tie-off at the starboard mast cleat.
Jib Haul - tie a length of cord to the loop at the inside base of the sail as shown - run cord through eye pins B and C and tie-off at deck cleat as shown. Repeat for the starboard side.



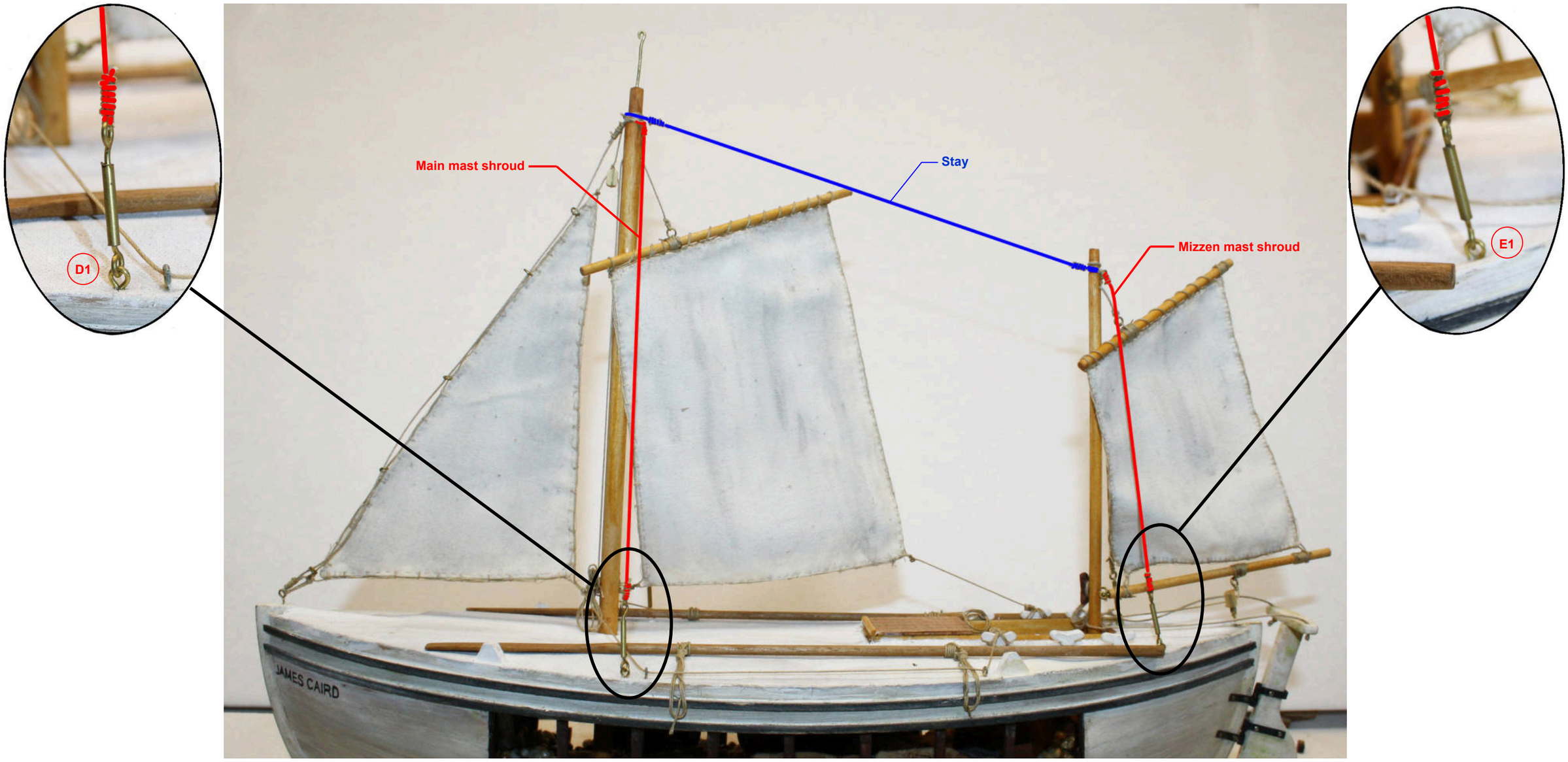
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6.27 Rigging continued

Shrouds and Stay

Identify the copper tube P53 - cut 4 x 10mm lengths. Use a two part epoxy glue to fix an eye pin P13 into both ends of the tubes as shown. For the main mast shrouds attach each base eye pin to the eye pin D1 & D2(starboard side). Lash a length of cord to the top eye pin and lash around the mast top and pull taut as shown. Repeat for the mizzen mast shrouds attaching to E1 & E2 (starboard side). For the stay lash a length of cord around the main mast top - run the cord to the mizzen mast top - pull taut and lash off as shown.

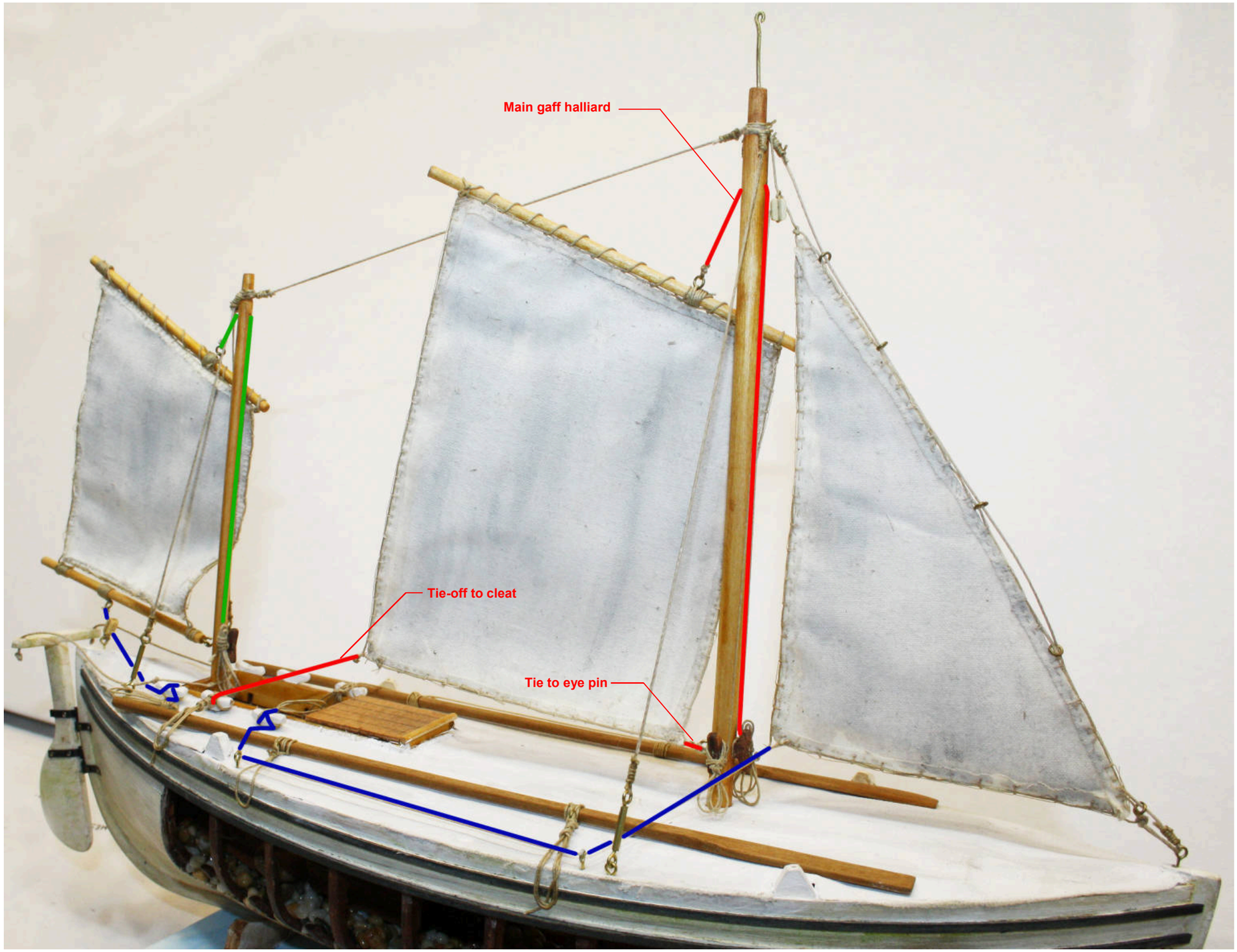


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6.27 Rigging continued

For the main gaff halliard lash a length of cord to the eye pin as shown - run cord through the pre-drilled hole in the mast and run cord down to be tied-off at the front cleat as shown. Attach cord to the lower points of the main sail and tie-off as shown.

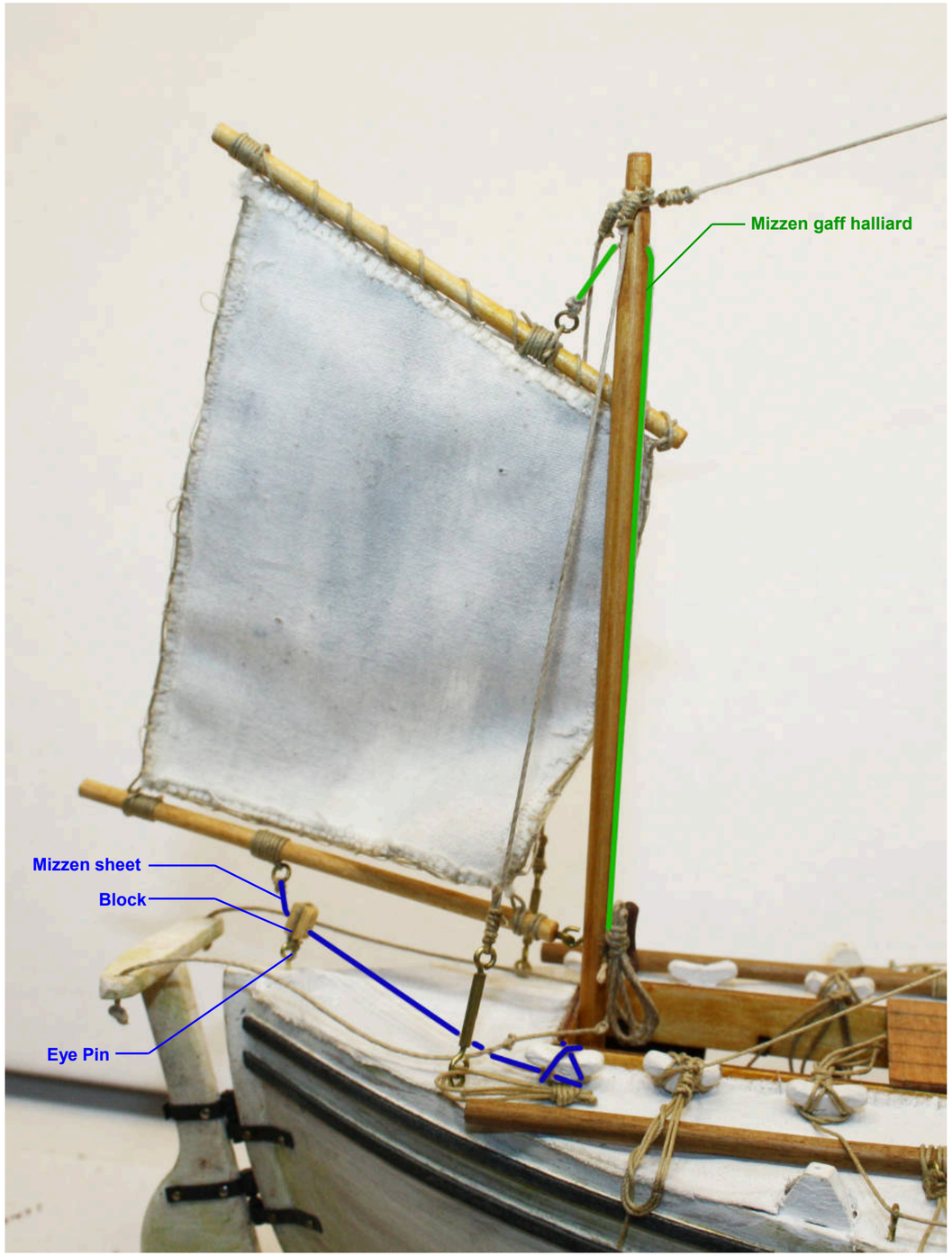


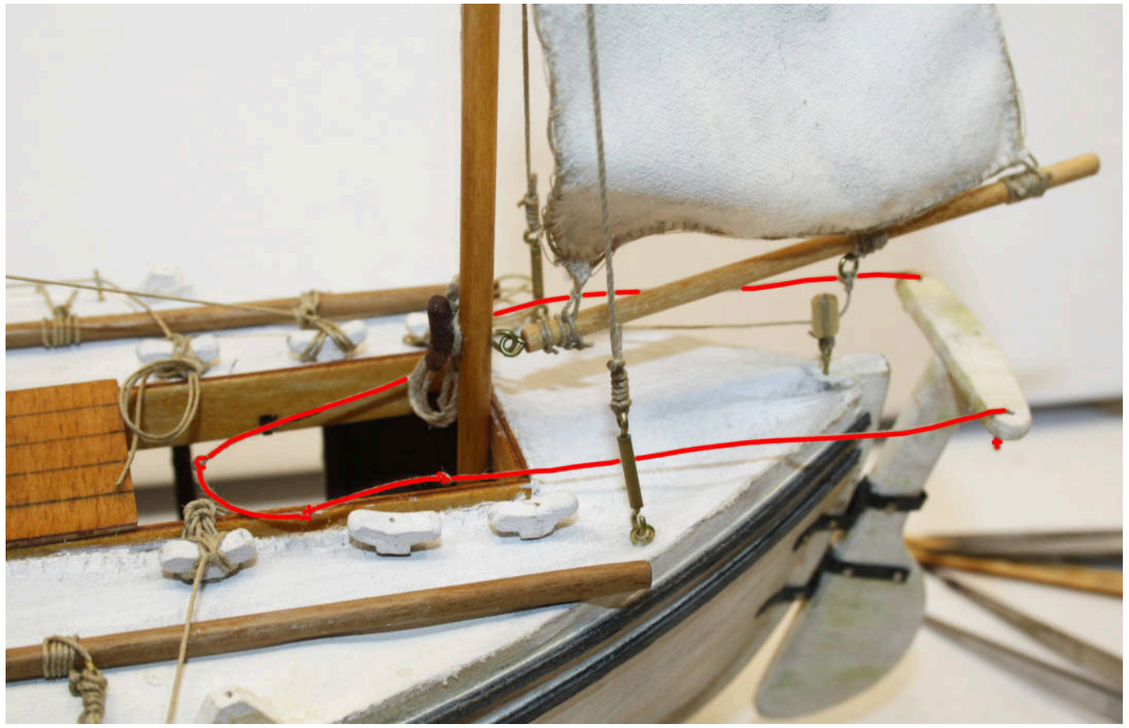
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6.27 Rigging continued

For the mizzen sail attach the boom to the boom eye pin to the mast eye pin as shown. For the mizzen gaff halliard lash a length of cord to the eye pin as shown - run cord through the pre-drilled hole in the mast and run cord down to be tied-off at the cleat as shown. Fix an eye pin P13 to the stern post as shown - identify a 1 hole 5mm block P52 and tie-off to the eye pin. For the mizzen sheet tie a length of cord to the eye pin as shown - pass through the block and tie-off at the cleat as shown. Retrieve the rudder and attach to the hull as shown. To steer the boat cut a length of cord - tie a few knots in the cord. Make a knot in one end of the cord and pass through one pre-drilled holes in the yoke, around the mast and back to the other hole in the yoke as shown - tie a knot to terminate the cord as shown.





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6.27 Rigging continued
Use cord to make rope coils - attach to mast and deck cleats as shown



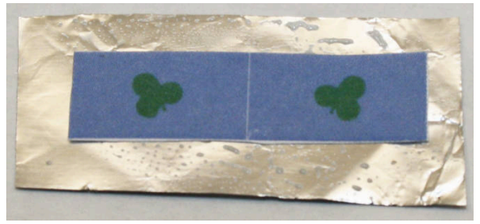




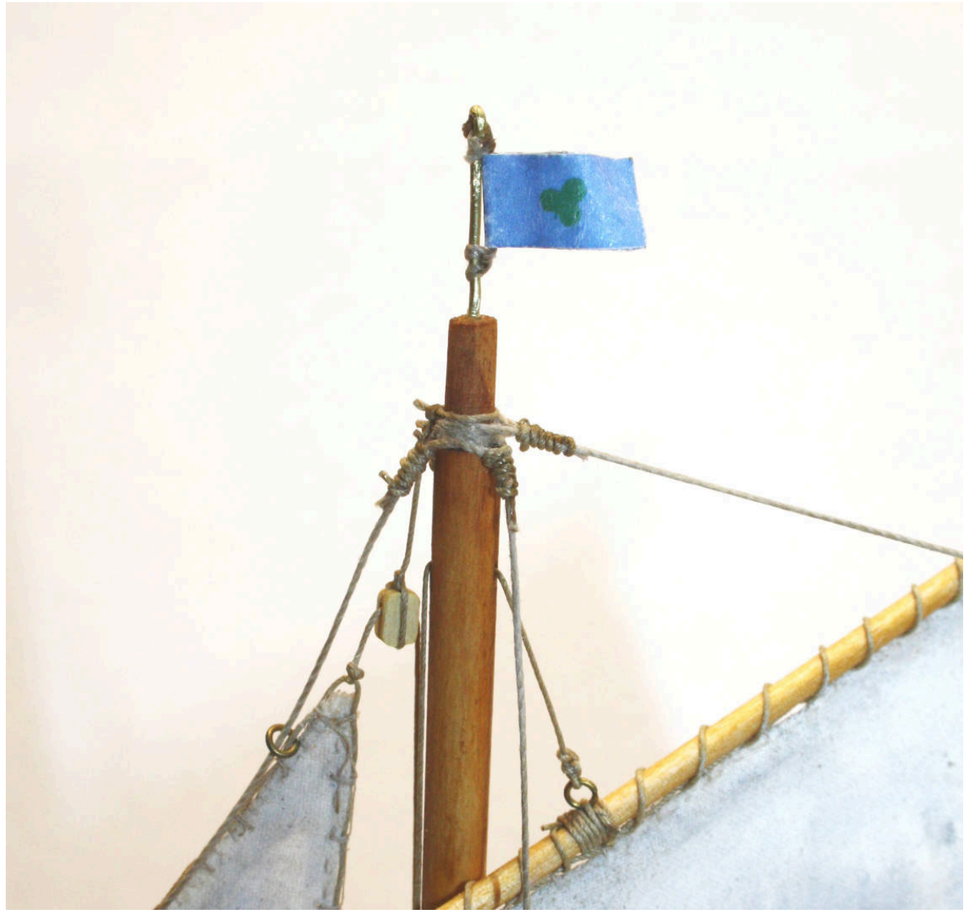


6.28 Pennant (the pennant's purpose was to indicate wind direction)
Identify the pennant P54 on Sheet 50. Cut a piece of aluminum foil - apply a paper glue on its surface and place the pennant onto the foil as shown. Trim-off excess foil - turn the pennant over and again apply paper glue to the foil - fold the pennant around a length of cord as shown and press firmly together. Tie the pennant to the brass rod as shown. Shape the flag as desired.

Source for Pennant: James Caird Society, Dulwich College, London.





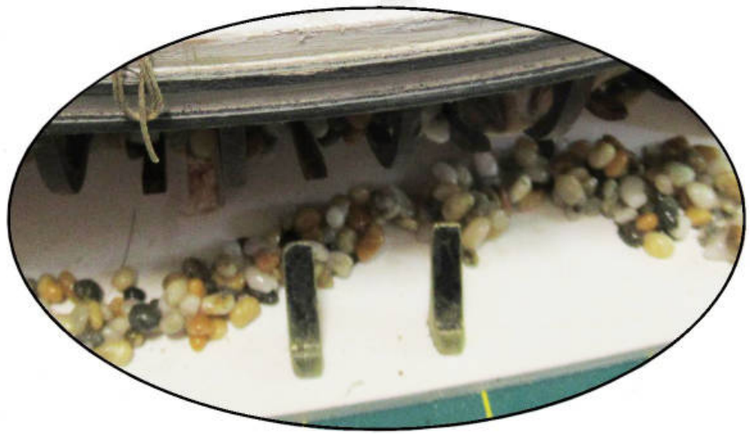


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6.29 Name Plate

Identify the name plate supports P21 - paint colour as desired. Glue each in place on the display board. Identify the name plate P55 - use a dampened cloth to rub diluted brown paint into the surface. Glue name plate to the supports as shown. If you wish fix felt to the underside of display board base as shown.







6.30 Completed Model

Look carefully over the model and building instructions and check to ensure you have not overlooked anything.

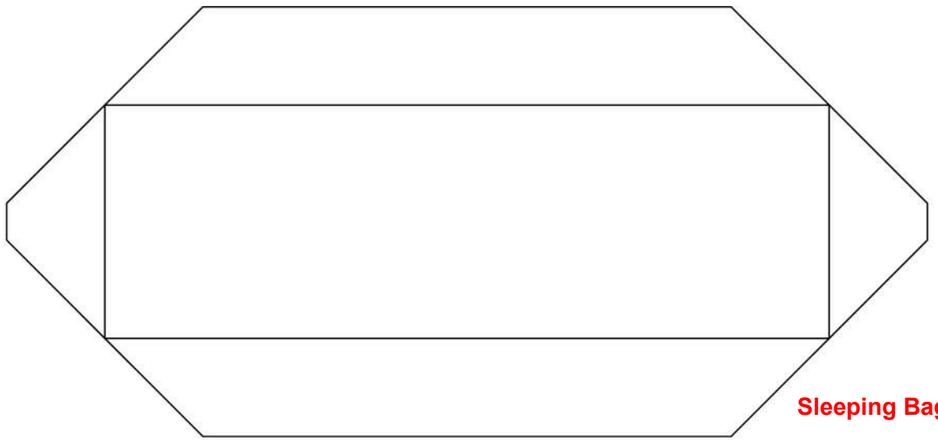
Proudly display your model as it plays an important part in preserving maritime history.



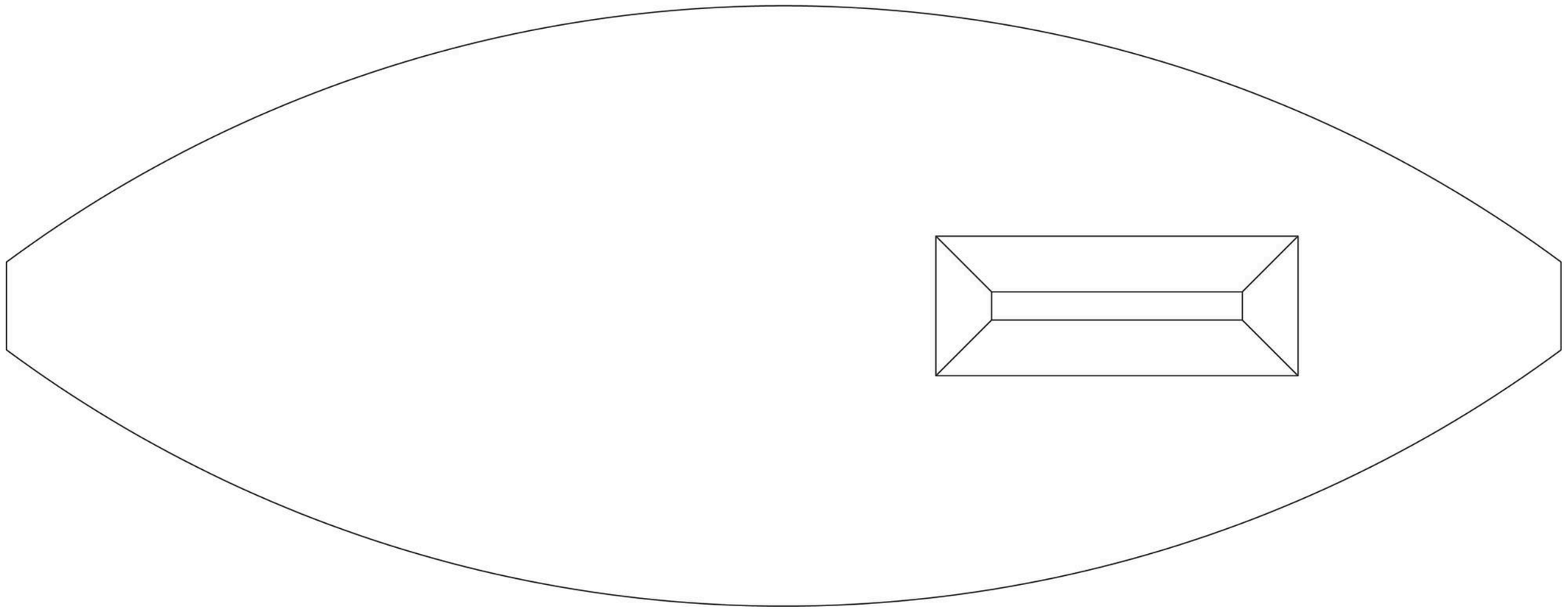
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Sleeping Bag Template

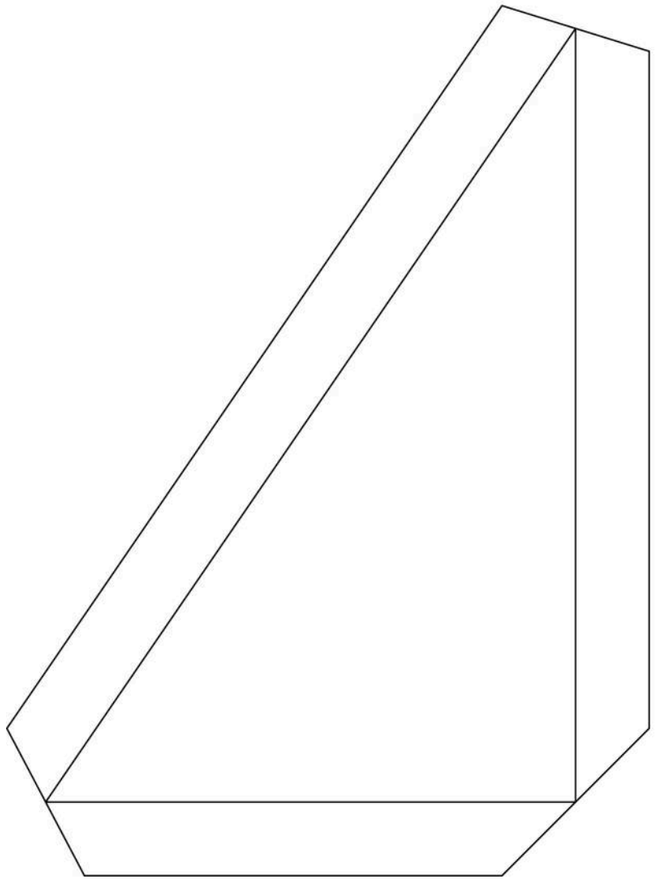


Deck Canvas Template

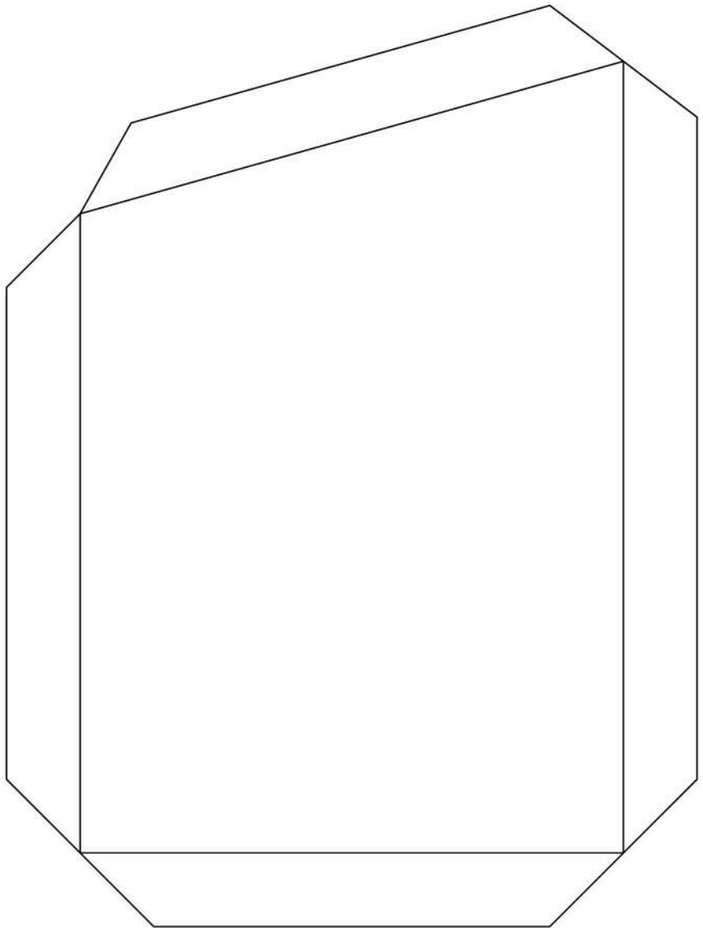
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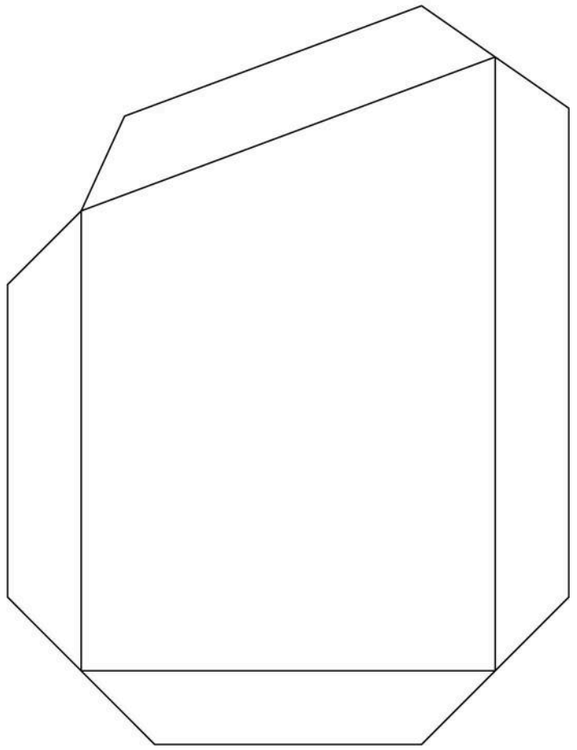
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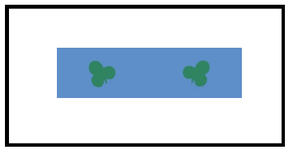
Jib Sail Template



Main Sail Template



Mizzen Sail Template



Pennant P54

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