

# Construction Manual

## DS STAVENES



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I recommend to read the whole manual before you start the building process.

The fiberglass hull has already been refinished and the porthole frames (brass tube sections) are inserted. Likewise, the wall rail and the various semicircular profiles are mounted. The hull was finally treated with a filler used in car industry (you can use acrylic, enamel or solvent-based paint).



You have to drill the holes for the stern tube (6mm) and the rudder trunk (4mm) first. All openings in the aft bulwark are done later after the deck will be glued to the hull. The stern tube (I recommend standard shaft system from Peba/Hobby-Lobby 13-8065N) has to be shortened to 150mm - then the shaft connection is exactly at the front end of the quarterdeck, which will be firmly glued to the hull. The

stern tube support may need to be adjusted to the hull. The correct position is reached when the stern tube is parallel to the lower edge of the fuselage.

To get access to the rudder, there is a service hatch and the pad is glued under the deck. For propeller I recommend a 4blade 40mm Raboesch brass propeller M4 (147-14).

The real ship had a reinforced (ice) bow. Glue 2x2mm profile to the hull. You have to cut a slot into the hull for the 2mm polystyrene stern steven / hoe. The rudder hoe is additionally stabilized at the bottom with a 3x3mm brass profile (U-shaped), the end of which protrudes approx. 10 mm into the laminated hull (for this purpose, the hull has to be provided with slots to accommodate the U-profile).



To align the rudder coker (4mm MS-pipe) and the tailstay, it is best to push the rudder axis (3mm MS-pipe) through to the stem. Use tape and some wood profile to fix the parts in line until the glue hardens.

Inside the hull the rudder trunk is secured with 2 trapezoidal supports that open in a V-shape towards the bow. This may take force on the rudder

/ rudder coker, which otherwise may result in small cracks around the coker and thus a leakage.

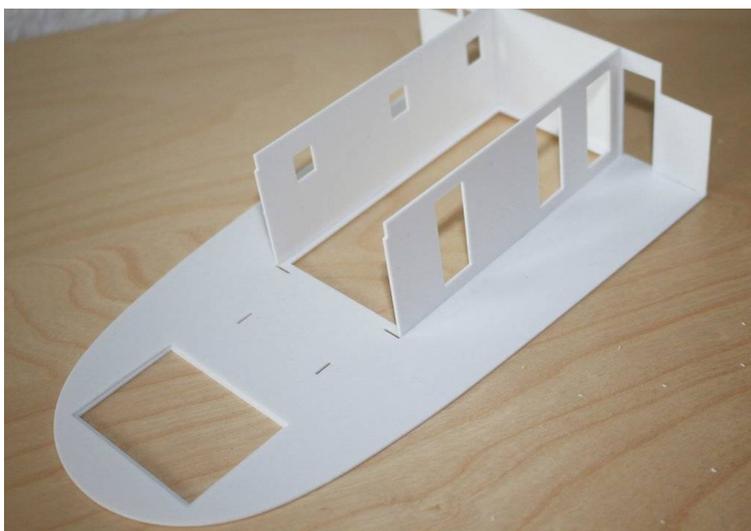
The rudder blade is directly glued to the rudder axis. This is not quite scale, but it is a simple solution and sufficient for the force acting on the rudder.

After all the hull completions it might be necessary to use filler / some sanding of the hull again before you start painting the hull.



For the aft deck, the support strips (2x2mm polystyrene) are glued. Mark the height of the upper edge of the deck with crepe and then leave 1mm for the polystyrene deck. The portholes of the lower deck are fairly close to the ceiling - so the support bar must be glued in sections, otherwise the portholes are partially covered (glue segments with superglue and then with Stabilit / Acrylit).

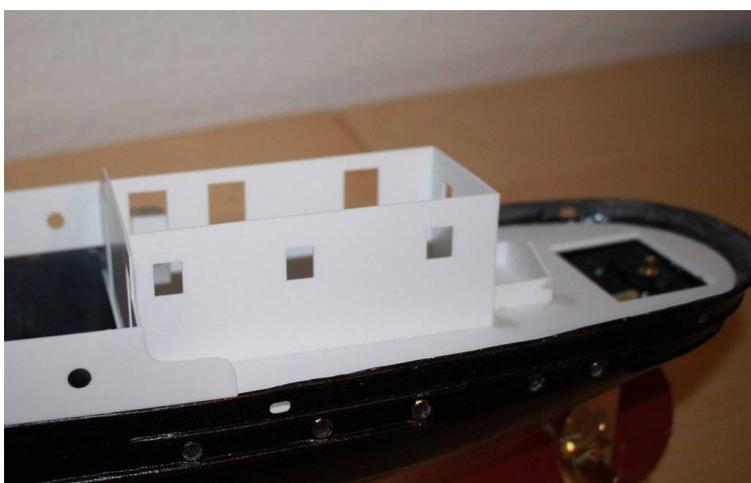
The porthole glasses are made of 1mm acrylic glass and have to be glued before mounting the deck. You better pint the hull now or you have to cover the glasses later.



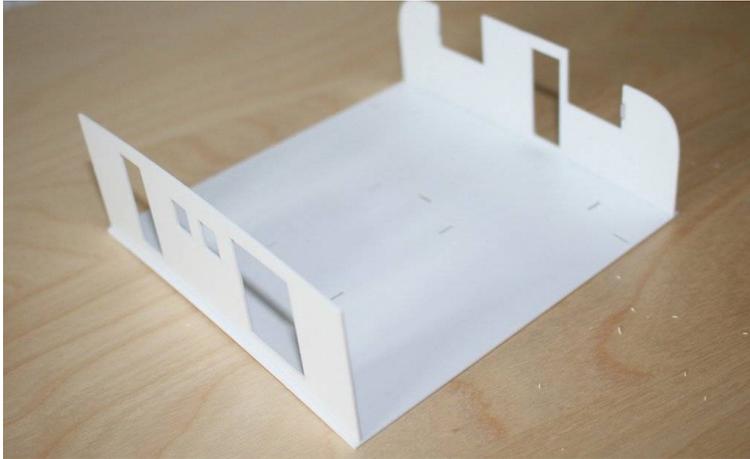
The aft deck is preassembled separately. In this model, the implementation of the deck jump and the beam bay is not quite so difficult because the deck level changes over the whole length several times - so the tension in the material is not so big that a slight vaulting crosswise would not be possible.

The photo does not show the opening in the deck for the skylight (pre series model). The large crosswise wall facing the bow has a wall section above the opening / companionway to the main deck, which has to be cut away later - but during construction it serves to stabilize the whole deck.

Glue the walls of the skylight to the deck and fix the two parts on top. Over the windows of the skylight 1x1 profile is glued as protective bars (you can use brass round profile instead).

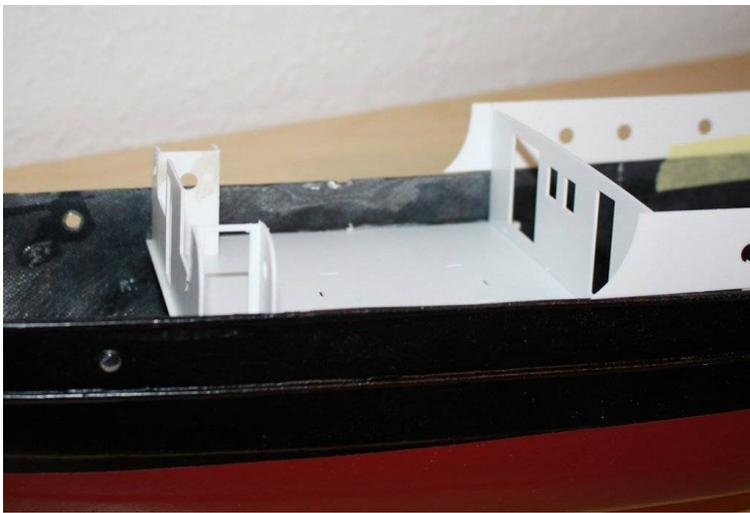


After the walls have been glued to the deck, the completed section is set in place and fixed with superglue - followed by a watertight all-around sealing and filling of the transition deck-bulwark.



For the right distance between the levels of main and aft deck, the curved side parts are taped to the hull. The parts of main deck are mounted separately. The main wall facing the stern will show you the level of the deck (the height of this main wall has to correspond with the height of the curved side parts). Make a marking inside the bulwark and fix the supports for the

main deck (2x2mm) to the hull. In the decks are glued there, the deck mounted separately and then glued in as a whole.



The small deck houses are a toilet and a storeroom for petrol / petrol lamps. The ship did not have electric light in the early days and the odorous petroleum was better off there. The toilet gets a wooden door (opening to the center of the ship) - the storage room a smooth door (polystyrene - opening to the aft). For the roofs there are also milled parts - however, they should be mounted not before the portholes and

doors are mounted and painted.



Fix the sides of the hatch to the deck and glue segments of the quarter round profile (2x2) to the corners. Fix a 1x1mm profile about 2mm below the upper edge as reinforcement.

Make some eyelets (0,5mm brass wire) and fix them into the side walls of the hatch (for lashing the hatch top).

Glue a 1x2mm profile around the edge of the hatch top (raised at the top and bottom

each 0.5mm) two profiles crosswise (0.5mm x 1mm) and at the corners 4 eyelets (where the hatchtop could be taken up by the boom).

The following steps are the construction of the foredeck, hawse pipe and the bulwark at the bow.

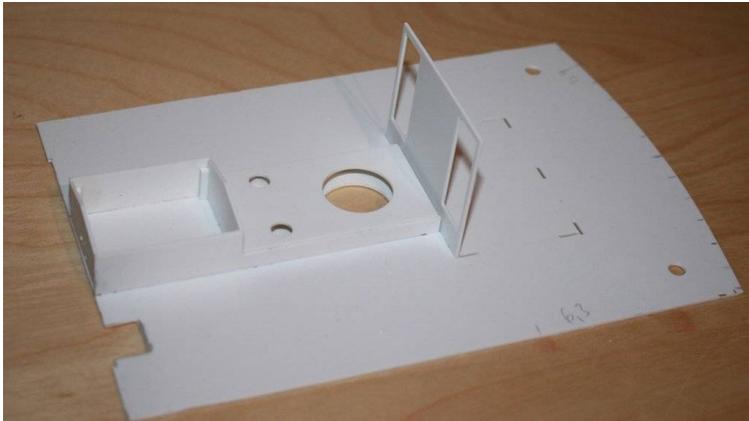


The foredeck consists out of two parts, each about the half length of the total deck. This is necessary to glue the hawse pipe watertight to deck and hull. Hawse pipe is made of 4mm polystyrene pipe. The holes for the pipes in the deck and hull have to be adjusted to an oval shape. Push the pipe through both holes, cut it with some extra length and glue it to deck and hull. After hardening of

the glue, cut off the part over deck level and sand it. Leave approximately 1 mm of the hawse pipe over the hulls outside and put some putty or superglue around.

It is quite difficult to reach the area under the foredeck later. So if you intend to have lights installed, you should fix it now. One bulb for the cabins and the cable for the lantern on the mast is enough.

In order to have a good support for the second part of the deck, you can glue some rest material (1mm polystyrene) under the first part of the foredeck. Then you can glue the second part of the deck to the model. The deck is approx 1mm higher in the middle axis of the ship compared to the height at the side. For that reason the deck is a little bit broader than the opening and you have to bend the deck a little bit.

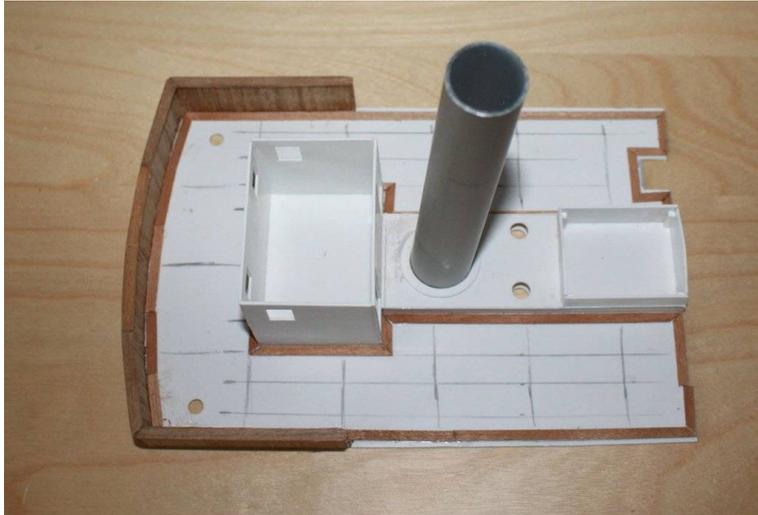


The next segment is the bridge deck. This will not be glued to the model as you need to remove it to get access to motor etc. The side walls with the five bull eyes form together with the transverse walls on the bow side to the main deck and to the stern towards the aft deck a good frame, which is reinforced with 2x2mm strips of polystyrene.



A good idea to fixing the deck are neodymium magnets. Clearly recognizable in the picture is the engine room skylight, the base for the fan and chimney as well as the rear wall of the superstructure. They are followed by the other walls and the wooden bulwark

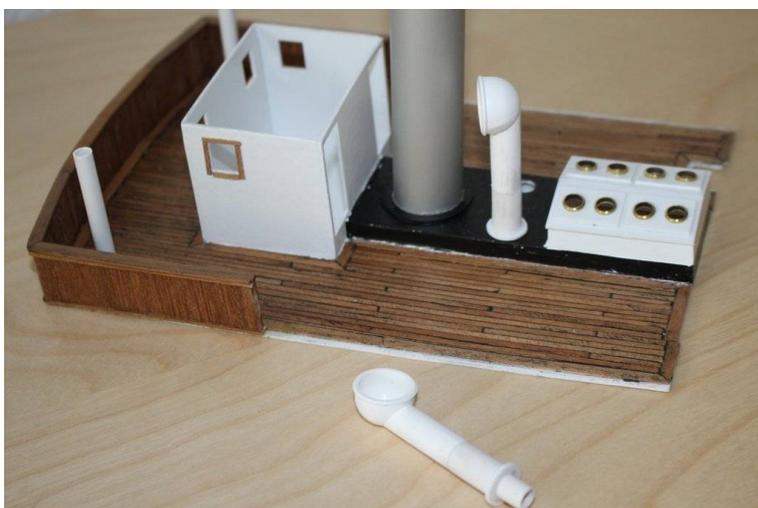
in the front area of the bridge deck. The polystyrene parts for the bulwark are glued to the deck. For this, the deck should be fixed with tape on the model in order to get the deck vault transverse into the deck. The bulwark is covered with 2mm teak strips. At the top and bottom are horizontal bars that are slightly raised and above, of course, the handrail.



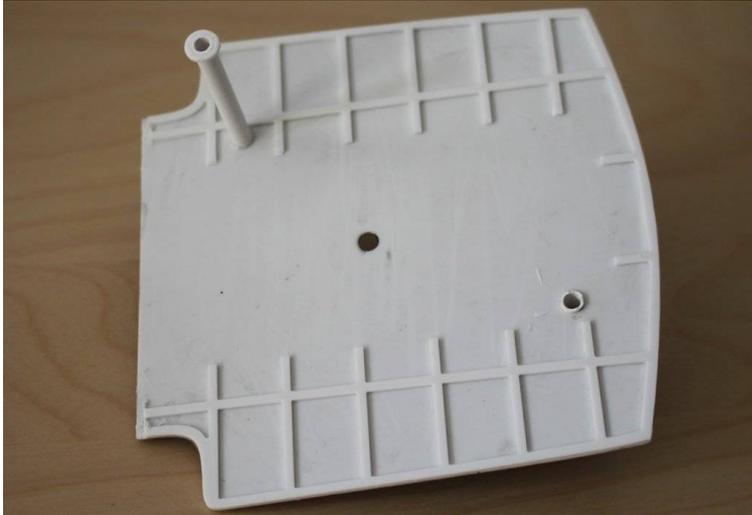
Then follows the laying of the wooden deck (4mm wide cherry veneer strips around all deck openings), marking the center line, auxiliary lines for the straight laying of the planks and the lines across the ship, which mark the plank joints. (it is a bit easier if you do this before the walls are glued to the deck) For the planking of decks use cherry wood veneer strips with 2mm width, maximum length 12 cm (corresponds to 10cm width and 6m length in the original), every 3 cm a plank joint. The planks are glued with polystyrene adhesive directly to the deck - lateral distance by eye. Lay the strips directly to the edge of the wooden bulwark. You should leave 3mm free where the rescue boats belong - this is for spill water to run off and has to be done on all other decks in the same way.



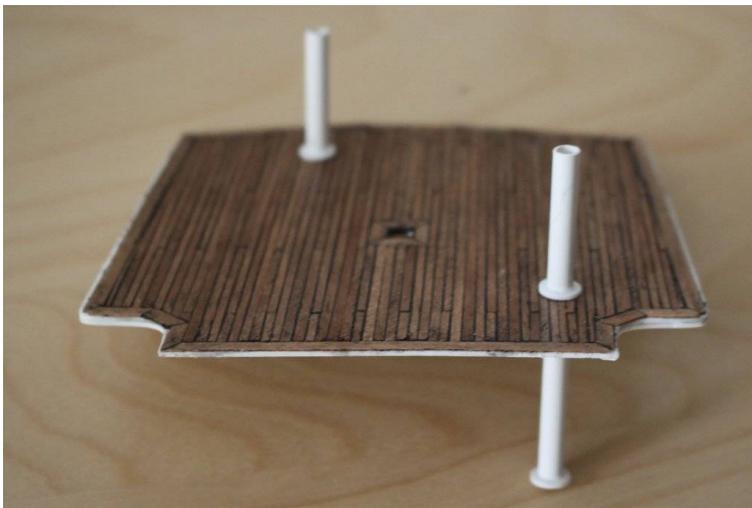
After gluing all planks to the deck give it some sanding and then use clear paint to close all wood pores. Use black water soluble wood filler and press it into the cracks between the strips. After the wood filler is dry use a sharp blade to remove the surplus of the black filler and again use clear paint to make wood water resistant. Main and foredeck are also covered with planks. Attention! At the foredeck, a skylight has to be mounted for the rooms located in the lower deck. The corresponding area has to be left free.



The covers for the engine compartment skylight are glued on top and brass rings (5mm diameter) are used for the glass. In addition the vents for the engine room and the suction fans (40mm length) get their base edge (in the photo of the prototype, they have no head yet).



Glue the subframe under the aft upper deck and mount the suction vents (the shortest and the longest).

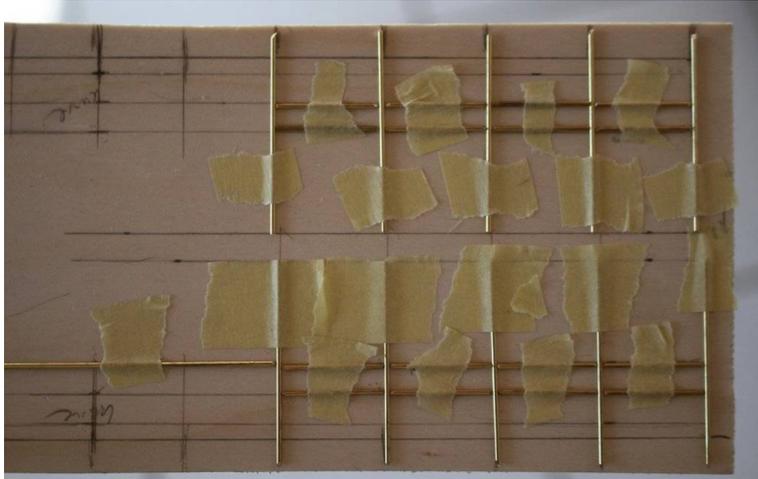


The funnel is made mainly using the 20mm wide alu pipe. It has to be mounted slightly inclined aft (you have to widen the round openings in the deck and the funnel mount).

Use 1x2 mm polystyrene profiles for the rings around the funnel. If you have them all glued to the funnel in a way that the cut is at the same place, you can easily

have this directly behind the exhaust pipe and the steam whistle. Use 2mm brass wire and 3mm brass tube for these parts and mount them to the funnel as shown in the pictures / drawings.

Make some small eyelets of 0,5mm brass wire, drill holes to the second ring with 0,5mm diameter for the bracing.



Now it's time for soldering the railings. I suggest to copy the area from the drawing or to mark the distances between the stanchions and the horizontal parts on a board. Take care to the curved line of the deck and start with the more or less unbent parts of the railing.

Railings are made of 1mm brass.

All bent sections are easier to be soldered on the model.



The holes in the deck are drilled after the railings are finished (except at the places where the railing makes bends).

The railing on the foredeck has some recess for the ropes at the bollards. Bollards are

The aft bulwark gets 1x2mm profile supports and the milled U-shaped profile is glued on top.

At the aft deck, the railing is shorter (because of the existing bulwark).

The upper deck aft again has a similar structure as the railing on the foredeck.



With these two decks it is important to ensure that the supports of the upper deck correspond to the subframe. The upper deck serves as access to the rudder servo and shaft system - therefore

do not glue together but alternatively provide a frame that fits into the structure or use small neodymium magnets to hold the upper deck in place.

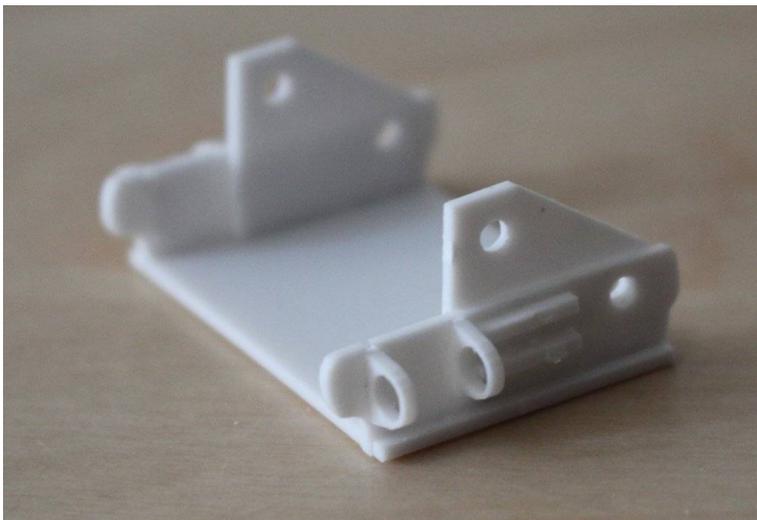
The rudder quadrant is built up out of 3 parts - the smaller one belongs between the other two of the same size. Glued together you will have a U-shaped profile for the guidance of the chain. From the rudder quadrant (not yet assembled for the photo session), the chains / ropes go over the pulleys along the water passage and shortly before reaching the crosswise standing wall up to the bridgedeck. There it is continued at the foot of the railings. There is a box around the ropes on the aft deck (this is the 2x2mm square tube made of brass).



The masts made of 5mm beech wood are already conical. You may have to control the diameter and fix it so that the rings for the wires to keep the mast in place fit well. Fix the turnbuckles with a small brass ring (0,5mm) to the deck first before connecting them to the ring on the mast.

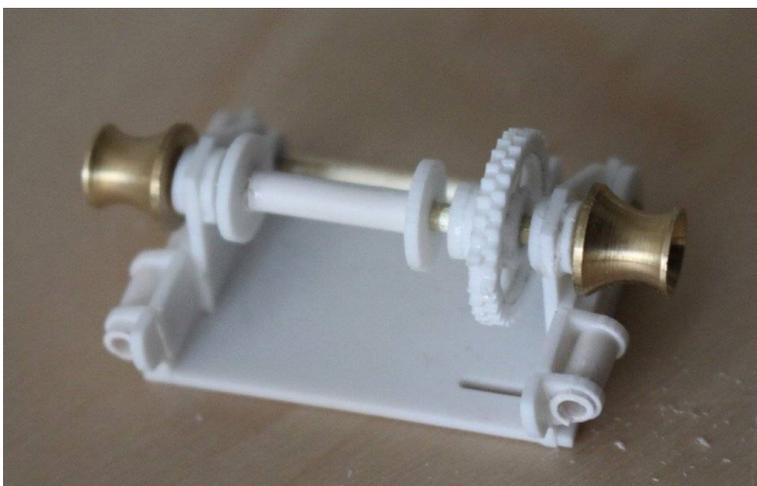


At the front mast needs two suspensions for the petroleum-powered lantern. Drill a hole for a 1mm brass wire crosswise under the upper ring and 15 over deck level. Enamel covered wire is pulled over these crossbars - on the one hand as an indication of the lines on which the lantern has been pulled up, on the other hand as a power supply line.

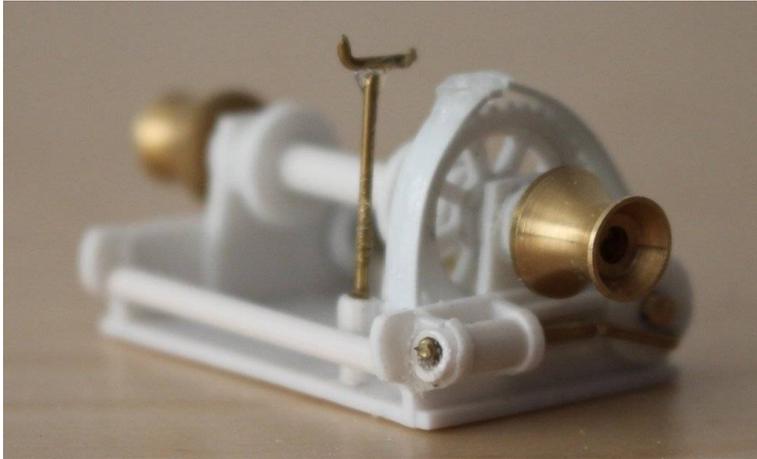


Next parts are the winches.

Begin with the two side parts of the loading winch. Glue the guides for the crossheads (the flat U-formed pieces) and the holders for the cylinders to the sides (take care to make two mirror-image parts!). Then these side parts are glued together with the trapezoidal panels into the slots on the bottom plate. Be sure, that the holes for the two shafts are in line.



The inner side part gets a bearing reinforcement on the upper bore on both sides. Then the large gear is provided with the sprocket, the brake disc is doubled and the rope drum is made (two discs and a 3mm polystyrene tube), from which the cylinders are made.



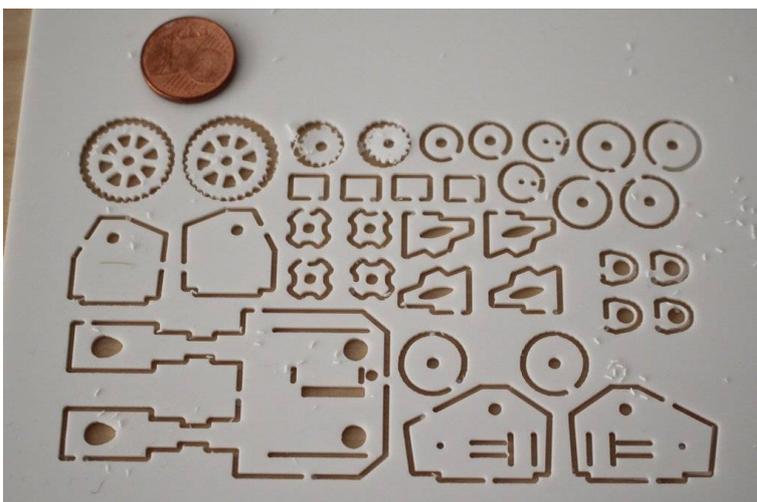
Mounted on the frame and provided with spill heads it looks like this.

The smaller gear is also doubled and then mounted on the shaft running in the lower bearing. Likewise, now the eccentric discs are mounted.

Finally model piston and push rod using 1mm brass wire (correctly, both would have to be connected with a crosshead).

To cover the toothed wheels mount a guard (1x2mm polystyrene) over them, next to the brake.

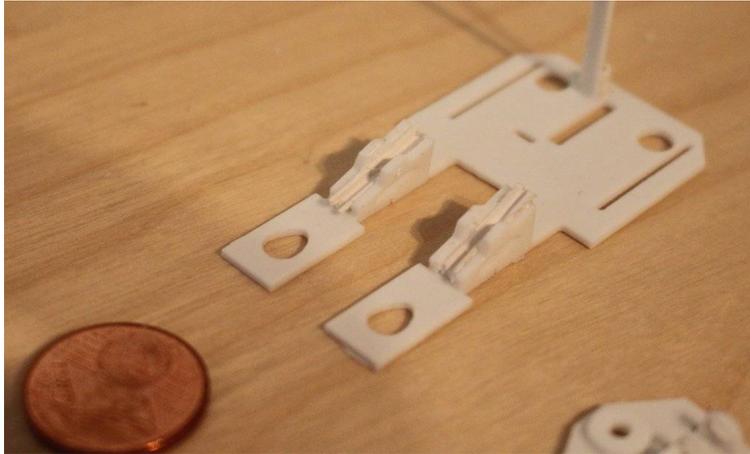
The winch is now mounted on the roof of the front companionway.



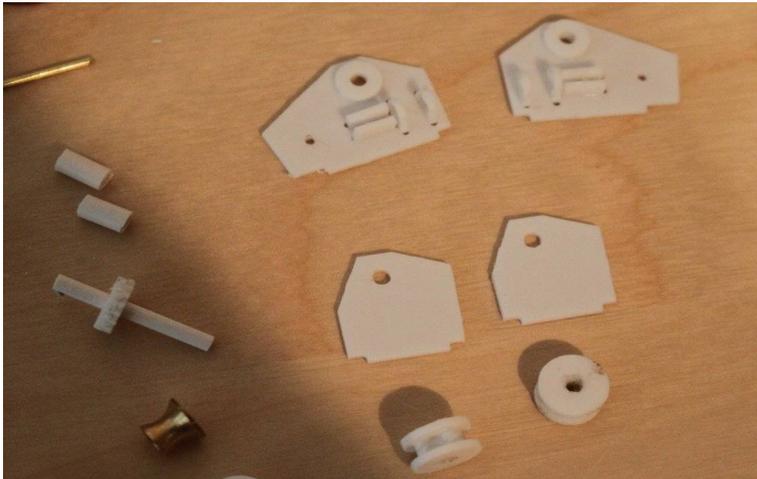
The windlass has even more parts, but this is also related to the fact that there is a base plate on which even the chain stoppers are mounted.

The milled parts: large and small gear for doubling, 2 bearing reinforcements, 2

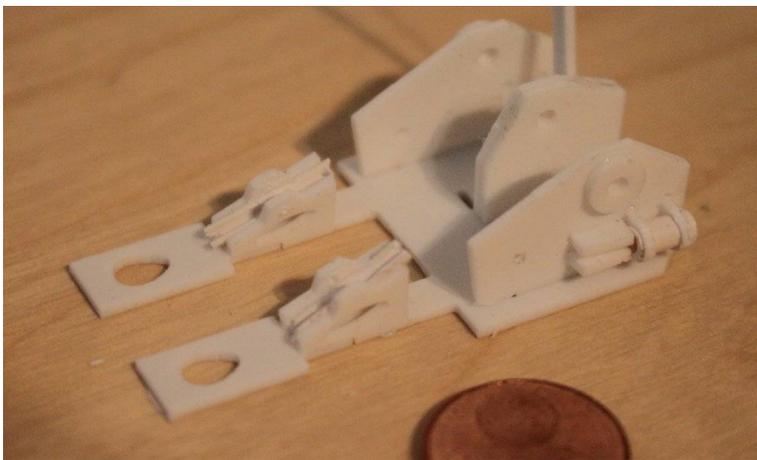
eccentric discs, 4 discs for the chain nuts (top right), 4 plates for the crosshead guides, 2 parts for the middle bearing of the main shaft (for doubling), 4 star shaped parts for the Chain nuts = 2 doubled "sprocket kernels", 4 carriers for the chain guide / chain stopper, 4 holders for the cylinders, the base plate, 2 brake discs and the outer cheeks. There was also some 1x2mm polystyrene profile, a little 2mm polystyrene tube and some brass (1 and 2mm round profile, 2mm tube).



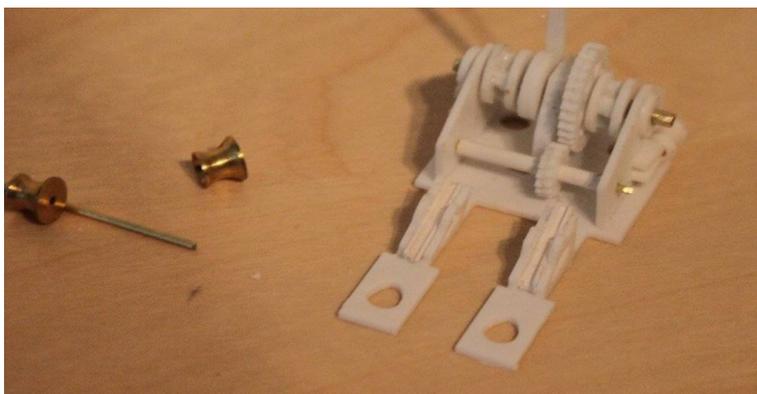
First, the chain stoppers are mounted on the base plate and the profile (1x2mm) is mounted for the brake. Cut two half round parts from 2mm polystyrene and glue them between the chain stopper sides.



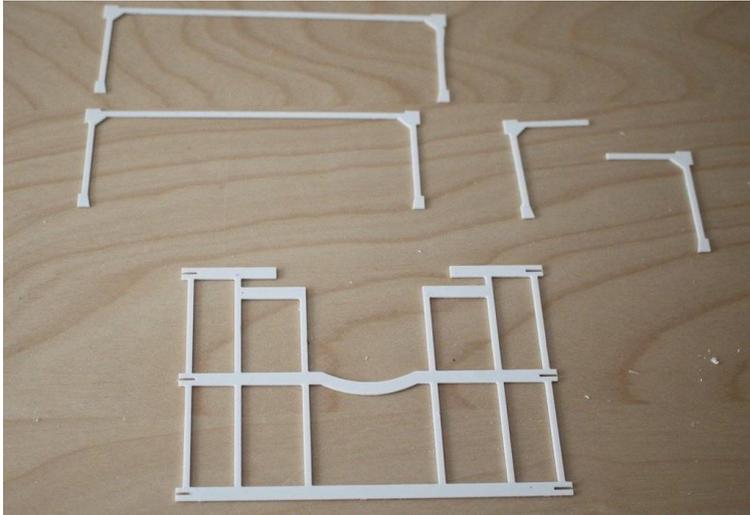
Then the pieces are glued together, which have to be doubled (middle support wall, gear, brake) Fix the holders for the cylinders, the bearing reinforcement (only on the outside) and the guide for the push rod to the side walls (two mirrorlike parts!) as you have done before with the loading winch.



The side and the middle wall are fixed in the slots of the ground plate. Glue after you have controlled, that the bores are in line (insert ahft for control).

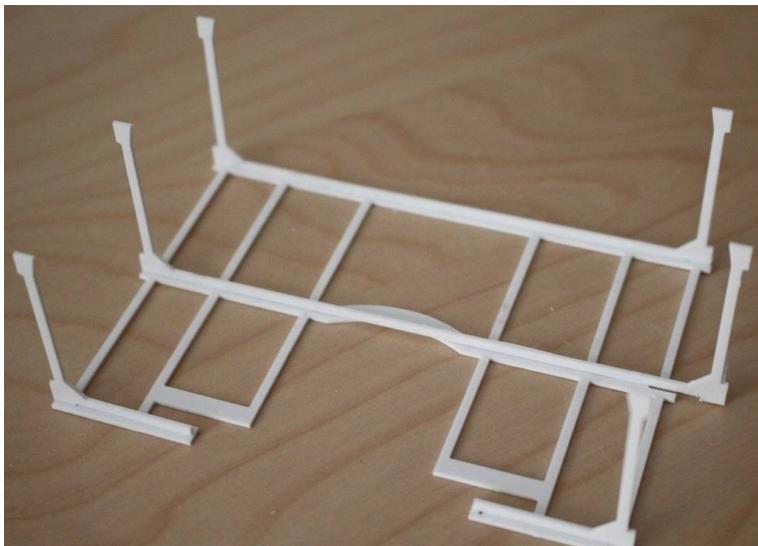


Then the shafts are inserted and the corresponding parts are inserted: (from the point of view as in the picture: chain sprocket, brake wheel, middle support, gear wheel, chain sprocket)

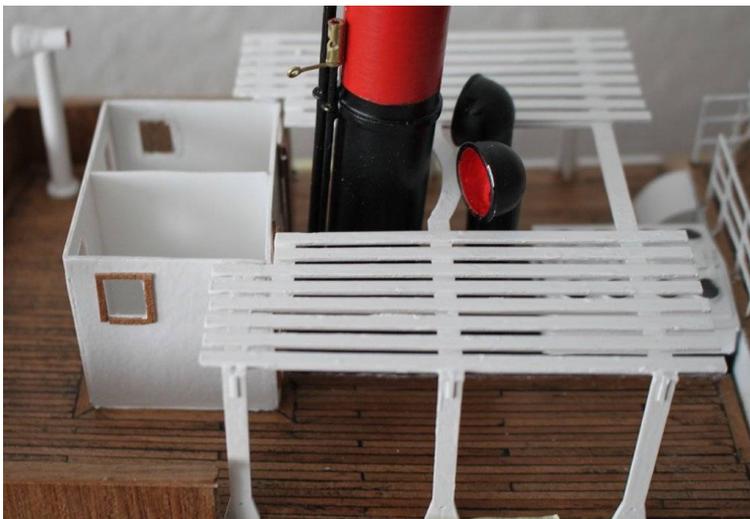


Continue amidships with the rack for the lifeboats. The frame parts are milled in 1mm polystyrene.

The aft beams are across the whole width of the ship, the two upper short ends connect to the walls of the deck house. The whole construction will end up in a T-shaped support.



The center beam is slightly longer because it has to follow the rounding that results from the position between the chimney and engine room fan. Glue this first only on one side and then bend the middle part into shape.



Flat strips of polystyrene are glued onto it (ship's crew could stand on them to clear the life boats).

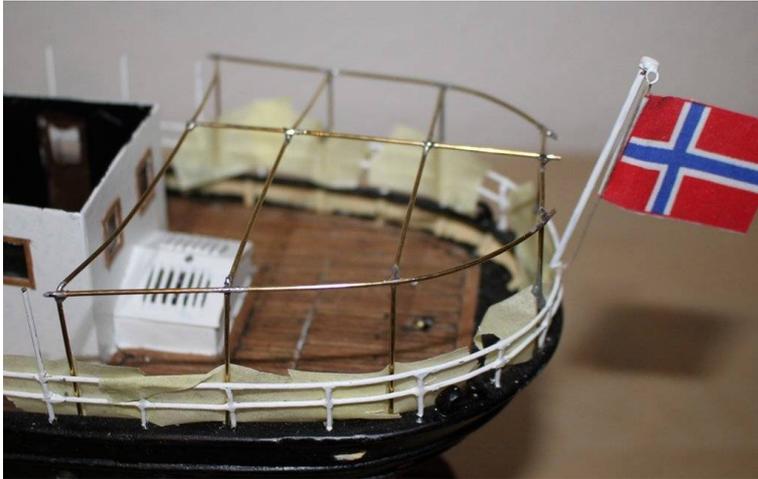


There are milled parts made of 0,4mm plywood for the wooden doors. They are covered with 2mm teak strips. After gluing the strips to the plywood, grind everything, paint and then mount the window glass. For door handles and door hinges short pieces of solder are recommended.



The steering wheel is missing on the bridge deck. There is a small kit for it within the fittings. For the stand use some tube and plate material.





The aft deck gets a sun protecting roof. The frame is made of 1mm brass. Bend 1mm brass wire in U-shape (a bit oversized in width) for the crosswise beams. This is necessary to have a little kink in the middle (approx 5-7°) - so the cover is not smooth like a flat roof and rain drains to both sides.

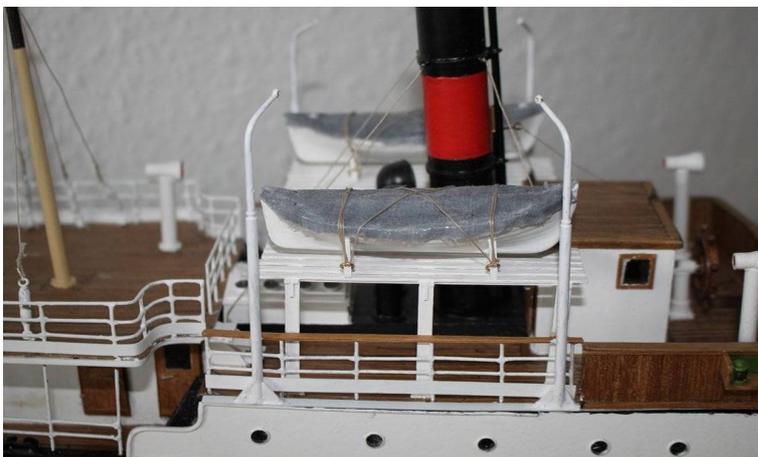


I attached the brass beams with tape to the inside of the railing and then soldered the middle bar and finally the outer frames. After soldering slightly bent, so that the frame sticks inside the railing (you need access to the hatch over the rudder!).

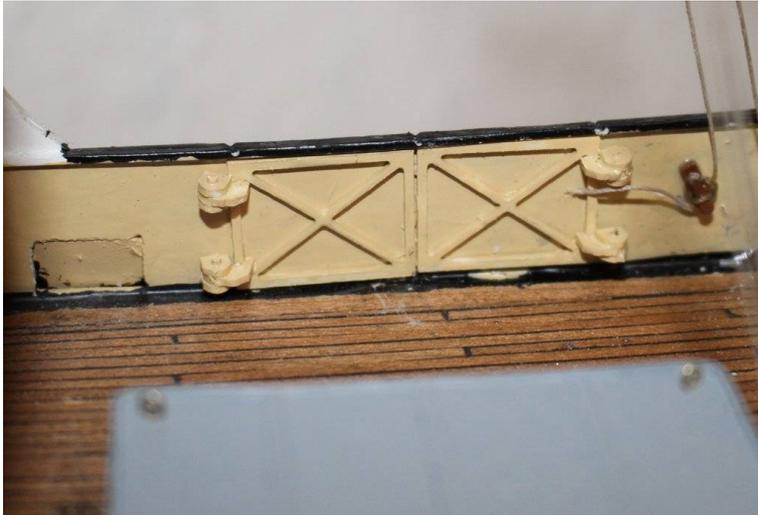
For the covering use some linen or cotton sheet.



The lifeboats are enclosed as shells (polystyrene). They still need some grinding at the top. The seat boards are milled as well as the suspension points for the hooks and a longitudinal strut, which ensures that the cover falls off to the sides. Because of the high position of the boats, I also recommend them to be closed and to waterproof the cover fabric. For the cover, old shirt fabric is used, which can be fixed and impregnated with superglue.



The davits (kit) are extended with 3mm pipe and then mounted on the waterway of the bridge deck.



There are some smaller parts to be fixed inside the bulwark of main deck left and right of the hatch as there are side door.

There are milled inner frames that are glued from the inside to the GRP hull. Likewise, the hinge kidneys are included - I recommend mounting the hinge kidney to the inner frame before they are glued to the bulwark.

