PS13b

**1:250 Scale
Card Model**

PAPER · SHIPWRIGHT

SMS Rhein/Mosel

Germany, 1872
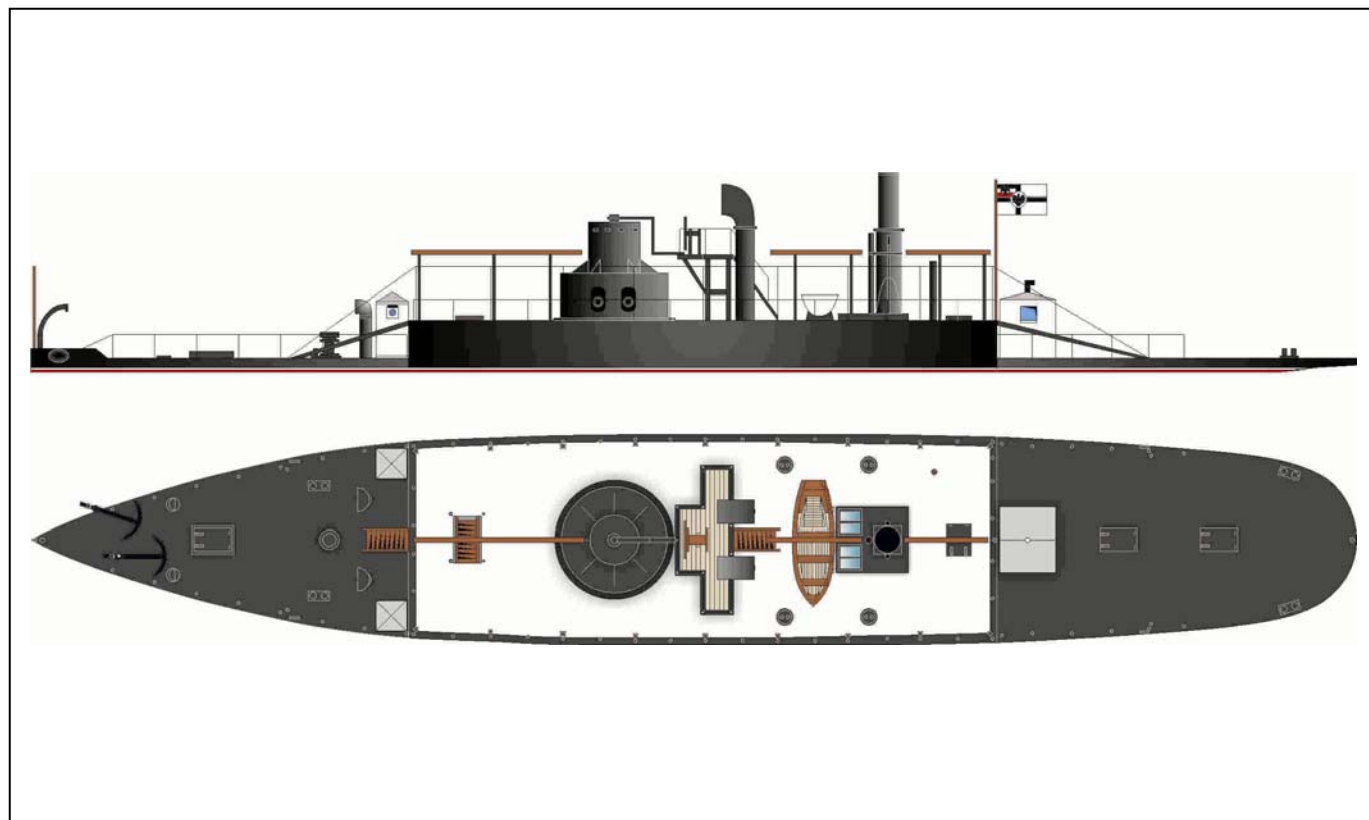
Model Designed by David Hathaway

Length: 22cm
Width: 3cm
Height: 4cm

2 Sheets DIN A4
224 pieces

Skill rating: Intermediate

Historical Information

The end of the war between France and the newly formed Germany triggered a review of the latter's defences. It was quickly realised that an armed naval force was required to protect the vital artery of the Rhine around the city of Koblenz.

A flotilla of ironclad ships was commissioned, based on ships similar to the successful United State's warships called monitors (named after the USS Monitor). As the primary purpose of the ships was to protect the important railway bridges, the railway companies were obliged to pay for the ships.

Two ironclad, steam-powered monitors were built at the AG Weser dockyard in Bremen. Named SMS Rhein and SMS Mosel, but more accurately described as Flußkanonenboote (river gunboats or river monitors) they were laid down in 1871 and launched in 1872. The short journey to the mouth of the Rhine was uneventful and they were stationed in Koblenz. They rarely left the city throughout their short lives.

Despite later being named the "Lorelei Flotilla" (and immortalised as such in a contemporary song) in recognition of their rather dubious practicality, the two monitors did prove some deterrent to the French.

Kaiser Wilhelm I undertook a short journey on board the monitor Rhein in 1875, while on a visit to Koblenz.

The monitors were grossly underpowered - their engines were unable to propel the ships upstream when the river was in flood, and the ships needing teams of horses to assist in up-stream travel at these times.

Armour protection was very limited. The ships were designed to be able to be submerged in the water by flooding special tanks fore and aft so that only the central casemate showed above the water. This casemate was protected by 5.5cm armour backed with 20cm of wood. The Ericsson-type turret was armoured with 5cm of iron, backed by 22cm of wood.

The armament was also inadequate, the twin 12cm bronze cannons (it is unclear whether they were muzzle or breech loaders) being unable to pierce even rudimentary armour plate. The magazines were situated within the casemate, either side of the turret.

A command turret above the main turret had room for the captain and a helmsman and it was intended for use when the ship was in action. For normal purposes, the navigation bridge behind the turret gave better visibility.

The crew of 22 men and 6 officers had no sleeping quarters on board, the expectation being that the monitors would anchor or moor for the night and the crew would sleep on the shore in tents. Toilets were provided on the fore deck and a galley was situated on the aft deck. Day cabins for the Captain and the officers were provided inside the casemate, forward of the turret.

A team of between 50 and 100 troops was allocated to the monitors, intended to act as a pioneer squad to assist with navigation and to provide temporary mooring facilities.

The monitors had a short and peaceful service career, finally being put up for sale at the end of 1884. Both were scrapped.

The model represents the monitors as they appeared in service and because of conflicting primary sources the modeller is able to depict either a pointed or rounded stern on the ship.

Technical Details

Length	49.6m
Beam	7.85m
Draught	1.6m
Displacement	283t
Propulsion	Two single-cylinder steam engines; coal-fired boilers
Maximum Speed	6.5 knots
Armament	Two 12cm muzzle-loading bronze cannons,
Crew	22men, 6 officers

The model is a reconstruction based on contemporary drawings, descriptions and a single surviving photograph. As a result, some aspects of the model are conjecture, and the model should not be interpreted as completely accurate. It is, however, representative of the appearance of the monitors. The designer would be grateful for any information, plans or photographs that would enable the model to be made more accurate.

Symbols

———o	Score on printed side and fold away from printed side (mountain fold).
———•	Score on reverse side and fold towards printed side (valley fold).
✕	Cut out marked white area.

27	Part number. Sub-parts are labelled in alphabetic order, eg a, b, c…
27*	Part is optional and may be omitted.
16	Glue numbered part here – numbers in brackets indicate the part should be glued behind the labelled area.
↻	Roll part into a cylinder by bending marked side.

Tools required:

- Sharp craft knife or scalpel.
- Steel ruler (preferably cork backed).
- Pointed instrument for scoring fold lines (eg a compass point).
- Art/Craft self-healing cutting mat, thick cardboard or newspaper to cut on.

- Glue
- Tweezers for handling small parts.
- Fine thread or monofilament for rigging (optional).
- Coloured pencils or watercolour paints to touch up cut edges (optional).

PS13b

General Instructions and Tips

Read through the instructions and identify all parts before starting.

Work in an area with plenty of light and space. Take your time and do not rush.

It is recommended to use a flat, stiff piece of wood, plastic or cardboard as a building base during assembly. Glue the hull base to it using a series of small spots of glue around the perimeter. The completed model can be separated from the base by slipping a razor blade between the base and the model.

Assemble parts in number order unless stated otherwise. Where parts have sub-parts, assemble in alphabetic order. Most parts are shown in Figures A - E.

Score any fold lines before cutting out a part. Use a blunt pointed instrument (compass point or empty fine-pointed ball-point pen) and a ruler to score fold lines. Note some parts must be scored on the reverse - check the symbols used to indicate the score lines. Practice scoring and folding some scrap card before starting on your model.

Do not cut out any parts until they are required. Cut out any openings in a part before cutting out the part. Test fit all parts before gluing. Use a steel ruler and scalpel or craft knife for straight cuts.

Parts marked with an asterisk (*) are optional and may be omitted if desired.

A water-based PVA adhesive (often sold as wood glue, craft glue or white glue) or clear multi-purpose glue are recommended. Avoid applying too much glue.

Where parts are contained within a larger, printed rectangle - score, cut out, fold double and glue the whole rectangle. Allow the glue to dry before cutting out the individual parts.

Parts to be rolled are easily formed by placing the part face down on a soft surface and drawing a thin, rounded, cylindrical object gently back and forth across it. Practice the technique with scrap card first.

The edges of cut out parts may be coloured with coloured pencils or watercolour paints to match the part – this will prevent white edges spoiling the look of the model.

Hatches, doors and other parts are provided both printed in place and as extra parts. The extra parts may be cut out and glued over the printed equivalents to provide a more realistic effect.

Keep your model in a dust-free environment when it is finished.

Assembly Instructions

Print the model PDF sheets 1 and 2 onto 160-170gsm card. It is suggested to print sheet 2 again onto 80-100gsm paper – It will be easier to roll and form the small parts if they are cut from thinner paper. If the sheets are printed using an ink-jet printer, allow them to dry thoroughly before starting assembly.

The model may be assembled with either a pointed stern or a rounded stern. Cut out parts using the red outline and discard parts xx,xx and yy for the pointed stern version or cut out parts using the green outlines and assemble using parts xx,yy and zz for the rounded stern version.

Fold the tabs up on the hull base (1) and glue to an appropriate baseboard. Glue the casemate spine (2) to the hull base, aligning it carefully down the centre of the hull base. Cut out the casemate formers (3-10), attaching them in turn to hull base and spine. Glue double and cut out the fore hull spine and formers (11-15), gluing them in place on the base. Repeat the process for the aft hull spine and formers (16-20). See Figure A for details.

Glue the casemate deck (21) in position on top of the hull spine and formers. Ensure it is exactly centred. Glue the forecastle deck (22) and the aft deck (23) into position.

If assembling with the rounded stern carefully remove the model from the baseboard. Glue part 23a underneath the aft deck. Glue the stern parts (24,25) and stern formers (26-28) to the underside of the aft deck as shown in Figure A. Glue the model to the baseboard again.

Cut out the hull sides (29,30) and glue in place (colour the back of the support struts and the aft end of the sides black before gluing the sides in place). Make sure they are symmetrically placed or the hull will warp. Glue the bow bulwark pieces inside the bow.

Glue double and cut out the fore and aft armour plate pieces (31,32) and glue in place against the casemate. Glue double and cut out the casemate side armour pieces (33,34) and glue to the casemate sides.

Assemble the turret, guns and command turret unit (35) as shown in Figure C and glue in place on the casemate deck. The turret pivot point is marked if the modeller wishes to insert a short length of rod to enable the turret to turn.

Glue double and cut out the parts for the navigation bridge (36). Glue the four large supports (b) to the bottom of the bridge platform (a) and glue the braces (c) between the supports. Glue the assembled bridge to the casemate deck.

Roll the boiler vent body parts (37a) and glue to form cylinders. Glue in place on the casemate deck. Score, fold and glue the vent heads (b) – colour the inside red before gluing. Glue in place on the vent bodies.

Cut out and fold the turret brace (38) as indicated. Glue the spacer (b) to the top of the command turret. Glue the round end of the brace on top of the spacer and glue the other end on top of the navigation bridge. Glue the second spacer (c) on top of the round end of the brace.

Fold and glue the funnel base (39) to make a four-thickness piece. Cut out the part and glue in place on the casemate deck. Wrap part 30a round the edge of the funnel base and glue.

Glue double and cut out the funnel former (40a) and glue in position on the funnel base. Score the funnel body (b) as indicated and roll into a cylinder, then glue in position over the funnel base former (colour the inside grey or black before rolling). Glue the steam-pipe (d), whistles (e) and funnel top (c) in place as shown in Figure C. Glue the boat chocks (41) in place on the funnel base.

Score, fold and glue the galley (42) into shape and glue in position on the aft deck. Score, fold and glue the heads (43) into shape and glue in position on the fore deck. The doors should face the centre of the ship.

Roll the fore deck vent body parts (44a) and glue to form cylinders. Glue in place on the fore deck. Fold and glue the vent heads (b) into shape – colour the inside red before gluing. Glue in place on the vent bodies.

Assemble the capstan (45) as shown in Figure C and glue in place on the fore deck.

Glue the hatch-coaming (46) round the hatch on the fore deck. Assemble the hawse-pipes (47) as shown in Figure C and glue in place on the fore deck.

Assemble the companionways (48-50) by gluing each set of companionway steps (a) between two side pieces (b) to complete each unit. Add the companionways and ladder (51) to the superstructure as shown in figure B.

Cut out and glue the casemate chimney (52) in place on the casemate deck, beside the funnel. Glue the galley chimney (53) in place on top of the galley.

Glue double and cut out the parts for the ships wheel (54). Assemble as shown in Figure C and glue in place on the navigation deck with the wheel facing forward. Steering ropes made from

thread may be added – they should pass round the shaft of the wheel, through the navigation bridge and into the casemate deck.

Glue the anchor stocks (55a) and heads (b) together. Use the supplied paper anchor chains (56) or substitute fine jewellery chain or modellers chain. Glue the anchors in place on the fore deck as shown in Figure B.

Glue the bollard bases (57) in place on the printed rectangles on the fore and aft decks. Roll and glue the bollard parts (b) to form cylinders and glue in place on the bases. Glue the covering disks (c) in place on the bollards.

Glue the anchor derrick (58) in place on the fore deck.

Cut out the Dinghy hull (59a), curve the sides and glue to shape. Trim the ends when dry. Glue in place the floorboards (b) and thwarts (c). Glue the rudder (c) in place at the stern and the oars (e) on top of the thwarts. Glue the lifeboat in place on the chocks on the deck.

Carefully score, fold and glue the navigation lights (60,61) into shape and glue to either side of the navigation bridge.

Glue double and cut out the awning frames (62-64) and glue in place as shown in Figure D. Glue double and cut out the awning stanchions (65) and glue along the edge of the casemate deck.

Recommended rigging for the awning stanchions is shown in Figure D. Suitable material for rigging is fine nylon monofilament (coloured black) or thin black cotton thread.

Glue the flagpoles (66,67) in place at the bows and stern of the ship.

The ensign (68) should be folded and glued double. When dry the flag should be glued to the stern (see Figure D). Note the part is available as a separate PDF file at the Paper Shipwright Web site (www.papershipwright.co.uk). This file can be printed onto very thin paper for a more realistic flag.

Railings (69-73) are supplied and can be fitted if desired. Fold each piece and glue in place as indicated in Figure D. The paper railings supplied can be replaced with railings made of thread or wire. A template and instructions for making thread railings is supplied (Figure E). Photo-etched metal parts (available in good hobby shops) may also be used.

If railings are fitted glue the lifebelts (74) to the railings on the casemate and aft decks, otherwise glue them to the casemate sides.

Assemble the name badge (75) - The model is now complete.

List of Parts

No.	Description	Sheet	Diagram		No.	Description	Sheet	Diagram	
1	Hull Base	1	A		49	Bridge companionway	2	B	*
2-10	Casemate spine & formers	1	A		50	Superstructure companionway	2	B	*
11-15	Fore deck spine and formers	1	A		51	Ladder	2	B	*
16-20	Aft deck spine and formers	1	A		52	Chimney	2	B	*
21	Casemate deck	1	B		53	Galley chimney	2	B	*
22	Forecastle deck	1	B		54	Ships wheel	2	B,C	
23	Aft deck	1	B		55	Anchors	2	B	*
24-25	Stern parts	1	B !		56	Anchor chains	2	B	*
26-28	Stern formers	1	B !		57	Bollard	2	B,C	*
29,30	Hull sides	1	B		58	Anchor derrick	2	B	*
31-34	Casemate armour plating	1	B		59	Lifeboat	2	B	
35	Turret and command turret	2	B,C		60,61	Navigation lights	2	B	*
36	Navigation bridge	2	B		62.63,64	Awning supports	2	D	*
37	Boiler room vents	2	B		65	Awning stanchions	2	D	*
38	Turret brace	2	B		66,67	Jack-staff & flagstaff	2	D	*
39	Funnel base	2	B		68a	Flag – jack	2	D	*
40	Funnel	2	B,C		68b	Flag - ensign	2	D	*
41	Boat chocks	2	B		69	Casemate deck railings	E	D	*
42	Galley/kitchen	2	B		70	Fore deck railings	E	D	*
43	Heads/crew toilets)	2	B		71	Aft deck railings	E	D	*
44	Fore deck vents	2	B		72	Navigation bridge railings	E	D	*
45	Capstan	2	B,C		73	Companionway railings	E	D	*
46	Hatch coaming	2	B	*	74	Lifebelt	2	-	*
47	Hawse-pipes	2	B,C	*	75	Name plate	1	-	*
48	Forecastle deck companionway	2	B	*					

* = Optional part, can be omitted   ! = parts only used for rounded stern version

List of Figures

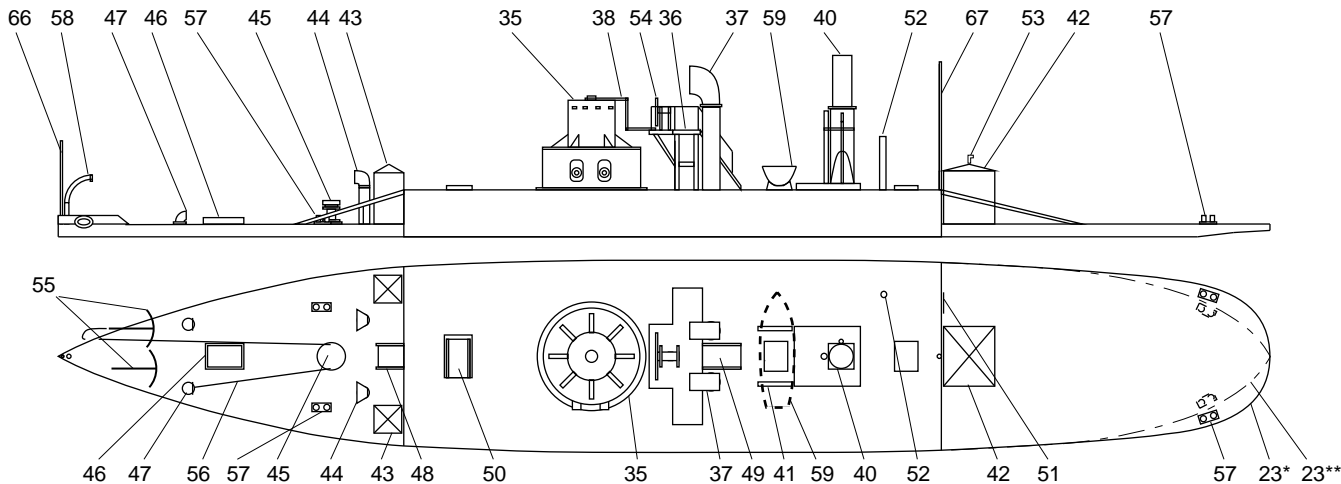| A	Hull base & hull formers (plan)		D	Rigging, railings and flags
B	Main assembly diagram (plan & elevation)		E	Thread railing template and instructions.
C	Part assembly details			

A

Note - Sketch shows round stern version - dashed lines show pointed stern version parts.

← Front

11 15 14 13 12 10 9 8 7 6 5 1 2 4 3 17 16 18 19 20 24 26 27 28
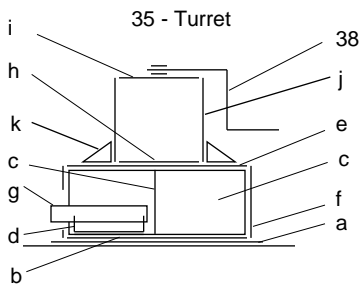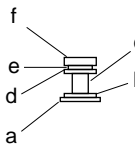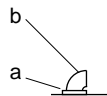
23*

20** 25
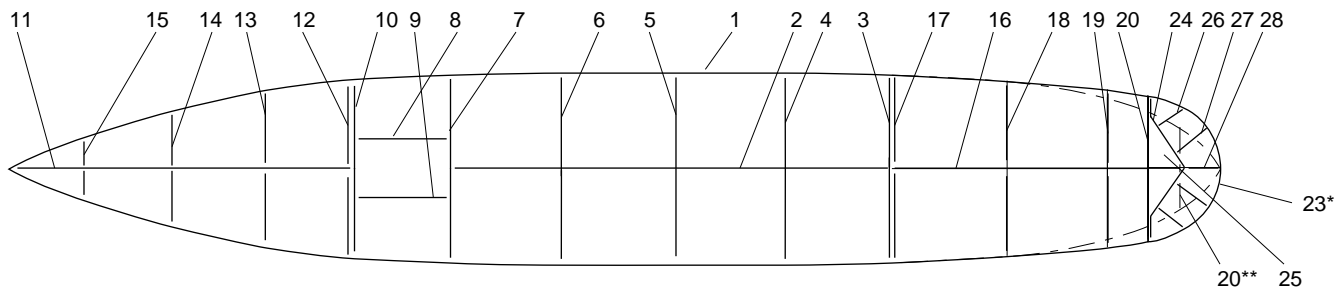
B

Note - Sketch shows round stern version - dashed line shows outline of pointed stern version.

← Front
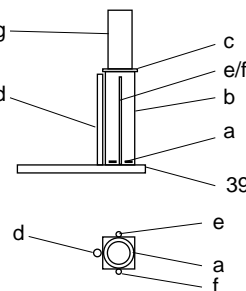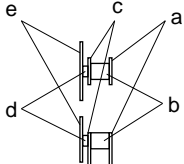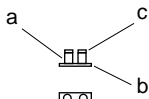
66 58 47 46 57 45 44 43 35 38 54 36 37 59 40 52 67 53 42 57

55

46 47 56 57 45 44 43 48 50 35 37 49 41 59 40 52 42 51 57 23* 23**

C

47 - Hawse-holes

b
a

45 - Capstan

f
e
d
c
b
a

35 - Turret

i
h
k
c
g
d
b
38
j
e
c
f
a

40 - Funnel

g
d
c
e/f
b
a
39
d
e
a
f

57 - Bollards

a
c
b

54 - Wheel

e
c
a
d
b

D

Note - Sketch shows round stern version - dashed line shows outline of pointed stern version.

70 69 62 72 63 64 68 71

70 73 62 65 72 63 69(a) 69(b) 64 71
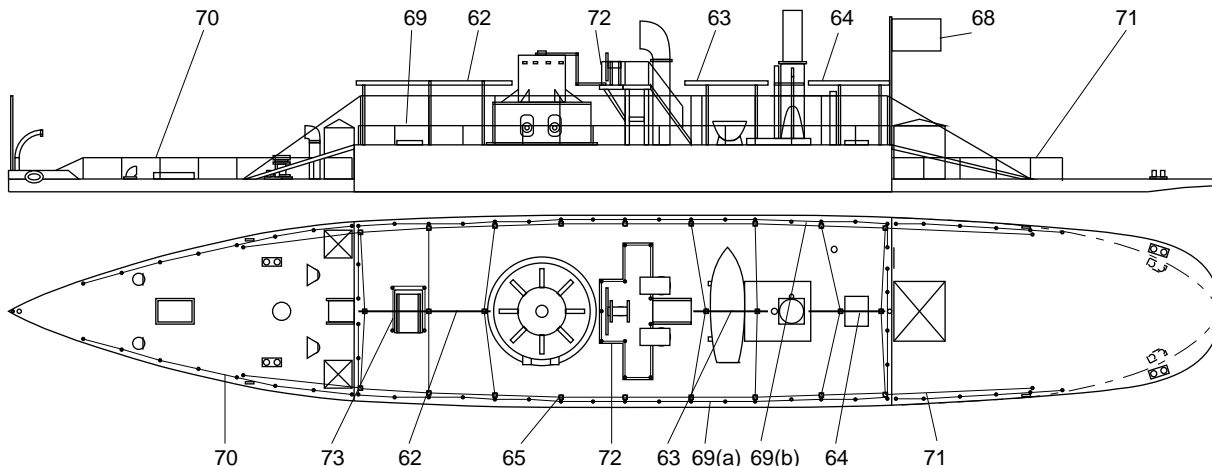
Instructions for making thread railings

Realistic scale railings can significantly improve the appearance of the model and can easily be made using the supplied template. The basic method is to wrap thread around an across the template to from a grid of threads with the correct spacing, then coat with glue.

1. Cut out the template and glue to thick cardboard - remember to cut out the centre opening.

2. Grey or black cotton may be used. Tie the end of the thread to the template and then carefully wrap it around the template, long side first following the guide marks on the template. Keep the thread tight but not too tight or the template will bend. Tie off the thread.

3. Repeat, wrapping the thread around the template's short side and following the guide marks. Tie off the thread when complete.

4. Check that all the threads are aligned with the template.

5. Using slightly diluted PVA adhesive (white craft glue) or instant glue (cyano acrylate glue) coat the threads in the opening of the template, paying particular attention to where they cross. Johnsons Kleer (Also called Future) floor polish can also be used. More than one coat of glue may be needed to give a sufficiently rigid set of railings. Set aside to dry overnight.

6. Carefully cut out the sections of railing using the template as a guide.

7. Fix to the model using white glue or instant glue.

61 Fore deck

62 Aft deck

60b Casemate deck (Starboard)

60a Casemate deck (Port)

63 Navigation bridge

64 Casemate companionway

62 Aft deck

61 Fore deck

60b Casemate deck (Starboard)

60a Casemate deck (Port)

63 Navigation bridge

64 Casemate companionway

F