

SAN MARTIN, 1588

**SCALE: 1/72,
Length: 840mm,
Width: 345mm,
Height: 700mm**

HISTORY:

The San Martin was flagship of famous *Armada Invencible* (Invincible Fleet) under the command of the Duke of Medina Sidonia in 1588. San Martin sustained heavy damage in the battle of Gravelines by a group of English ships. The San Martin was originally built as a Portuguese galleon *São Martinho* in 1580. There are no available original plans or construction drawings of the San Martin but it is supposed that the ship was about 180 feet long and had about 1000 tons displacement. She carried 48 guns of different calibres.

Recommended tool list:

- 1) Modeler's knife or scalpel
- 2) Mini drilling machine
- 3) Drill bits
- 4) Selection of abrasive paper
- 5) Scissors
- 6) Pliers
- 7) Clothes pegs or crocodile clips
- 8) Pencil
- 9) Rule
- 10) Set of needle files
- 11) Electric plank bender
- 12) Mini-lathe

Before you begin:

Before you begin to build the model it is necessary with a vengeance read building instructions and plans. Also chronology of assembly steps is necessary to keep. You check if the parts go together before you glue it respectively you make any corrections with sandpaper. During the gluing, painting, lacquering and at work with another chemical materials is necessary well ventilated in your working room. You cut the parts from sheet until actually required for fitting. You cut by knife only in direction off ward your body so that you head to injury risk. It is recommended to use water based white glue to gluing wooden parts and *cyanoacrylate glue* for gluing resin and brass parts.

Coloring:

Medieval ships were protected against influence of salt water and woodworms by a mixture of tar and thanks to it the hull of ships was a reddish-brown or brownish-black color. This effect is possible to get by staining of the wood by dark wood stain. It is recommended to use the wood stain before gluing of the parts. The hull under water was painted by protective white coating. Decks of the ships were probably in naturally color of wood. Anchors and other metal parts were a black color.

17th Century galleons were decorated by color geometric shapes painted on their boards. This decoration is possible to do by using of self adhesive tapes (which can be used as mask) and colors commonly used for painting of plastic kits.

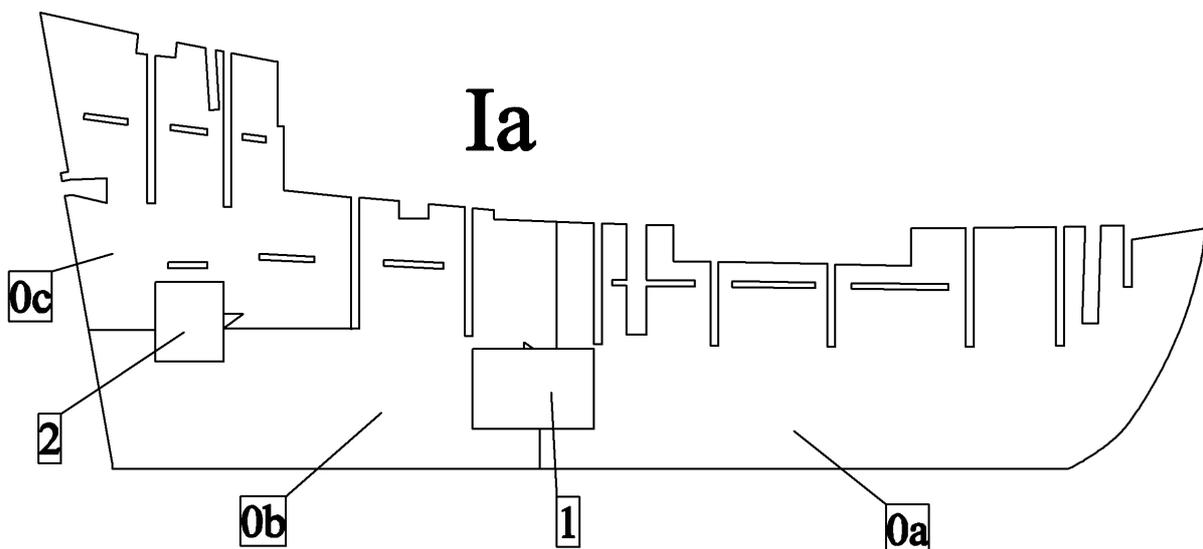
Bending of wooden strips:

The Wooden strips will be more flexible if you will boil it in hot water about 10-15 minutes. You can bend the strips along any cylindrical area but ideal is using of special plank bender (it would be best to use electric plank bender). If you need to do very small radius so you must bend it in more s

Model building process:

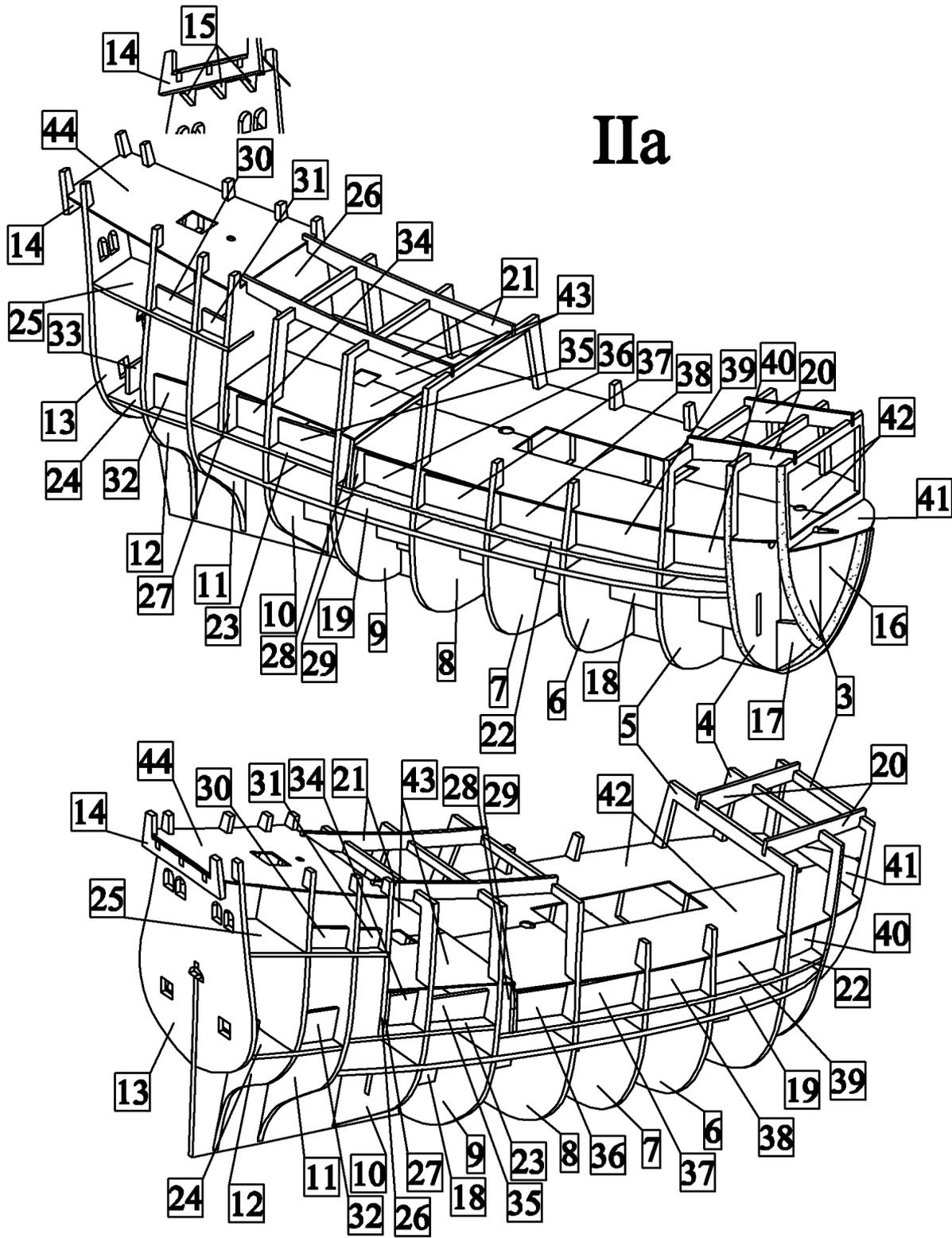
I) Keel:

a) Glue a keel from parts 0a-0c and 1-2.



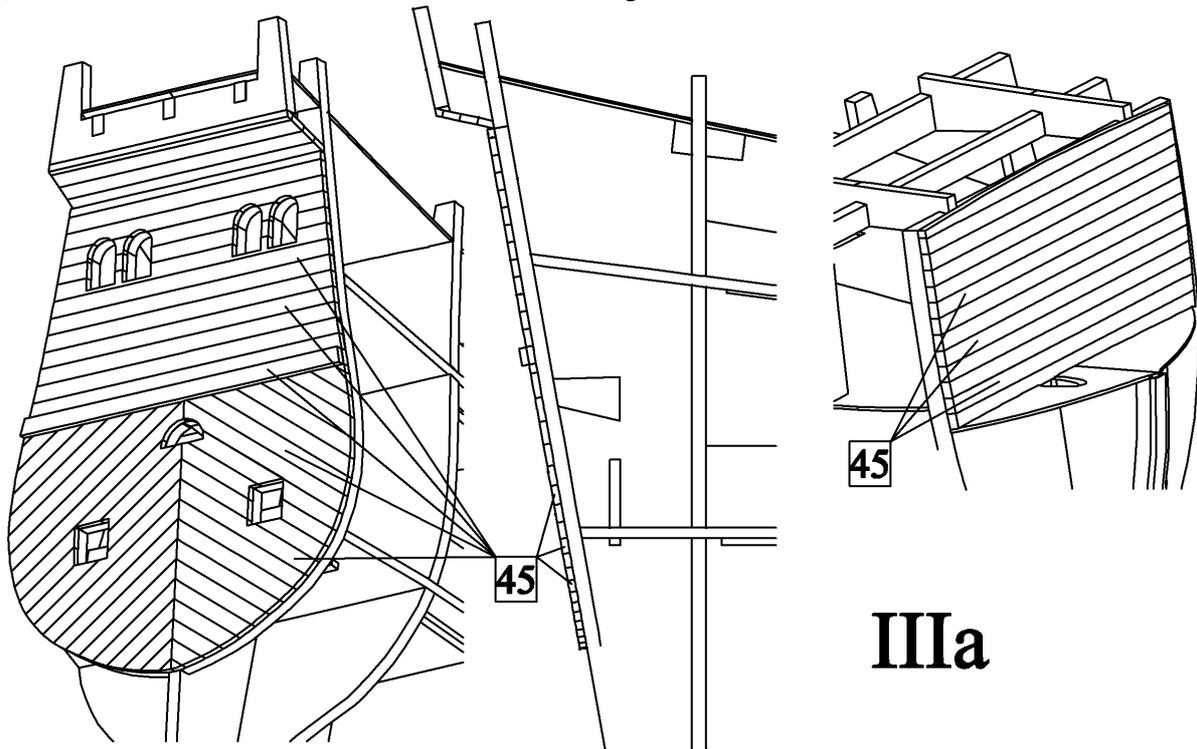
II) Framing of a hull:

a) First insert the frames 4-10 into the keel and then pass reinforcements 15 through the frames. Then insert also frames 3 and 11-13 into the keel and pass reinforcements 19-25 through the frames and glue all to the keel. Then glue parts 14-17 and 30-40 to the skeleton. Then glue decks 41-44 to the frames. Finally grind the frames and reinforcements so that it would be easy for gluing of strips.



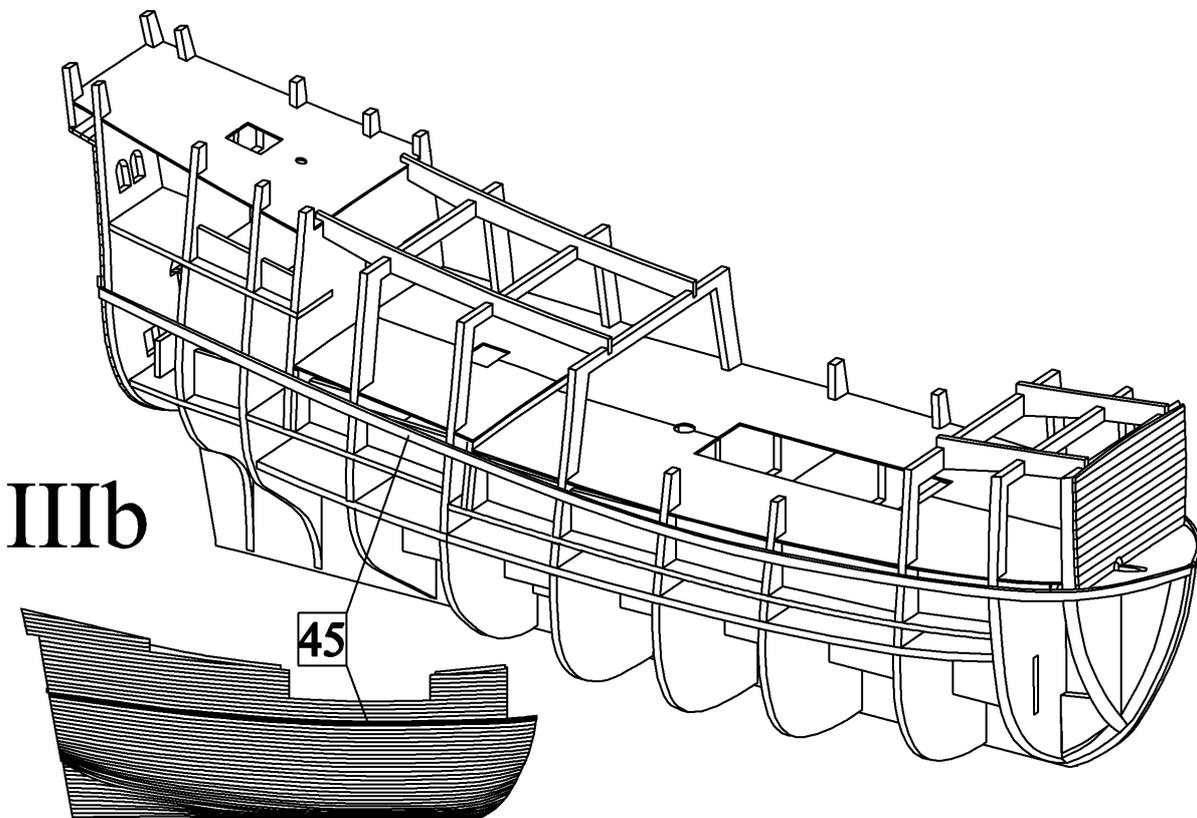
III) Planking of the hull:

a) Plank the bow and stern as it is shown in the figure.



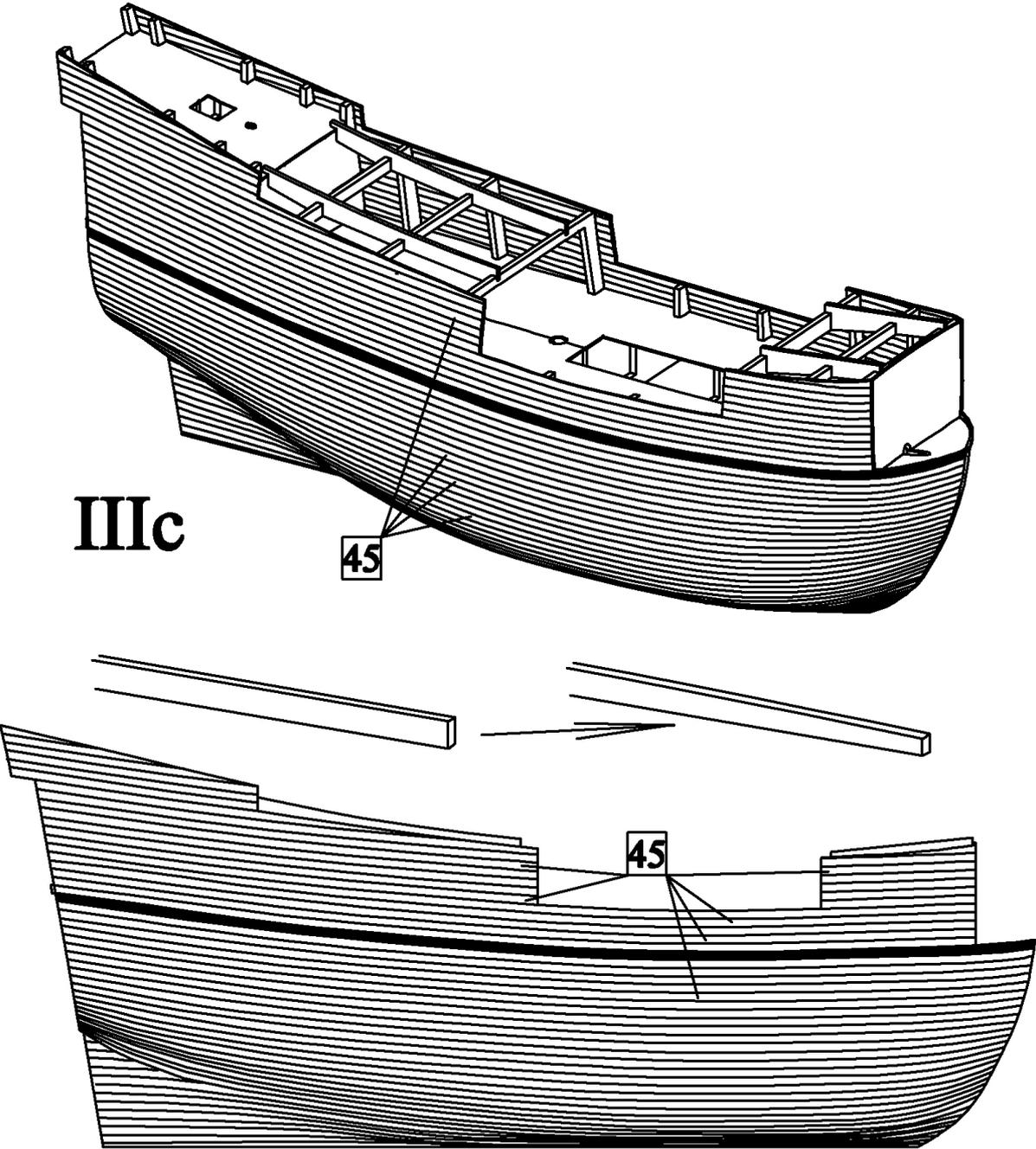
IIIa

b) Glue first reference strip to the skeleton. The position of the first plank is shown in the plan. Glue the strips in direction from bow to stern.

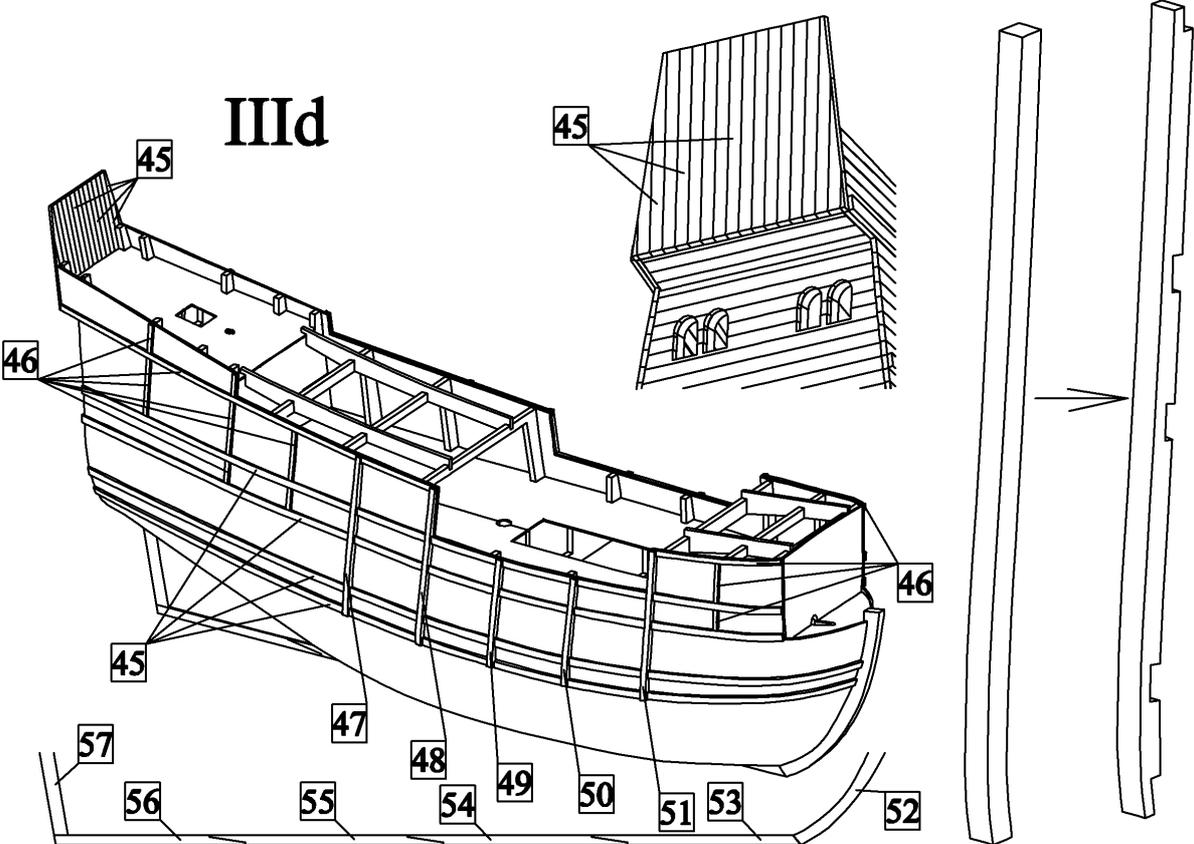


IIIb

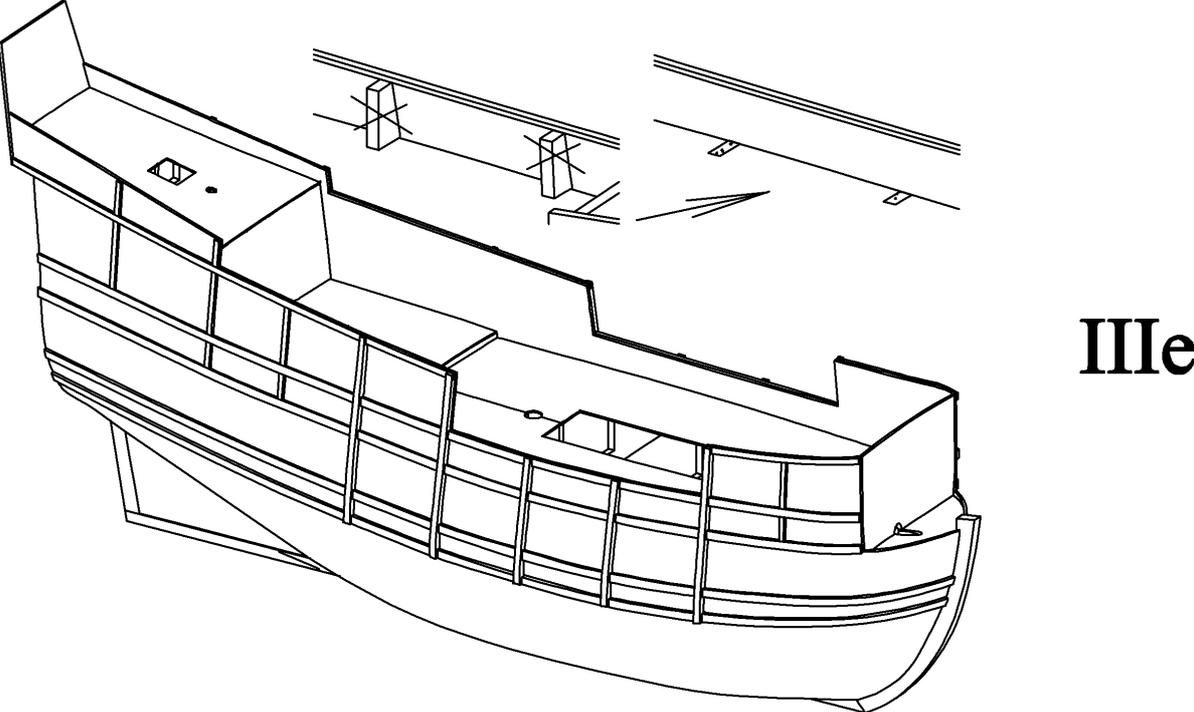
c) Planking the whole hull. Glue the strips again in direction from bow to stern. It needs to grind some strips (mainly in the lower section of the hull) into required shape so that would fit well.



d) First planking the stern. Then glue keel and stem and sternpost (parts 52-57) to the hull- start with part 52 and then stepwise other parts in direction from 53 to 57. Then glue wales 45 and 46 to the hull. Finally glue reinforcements 47-51 to the hull. It is need to grind by needle file slots as it is shown in the figure.

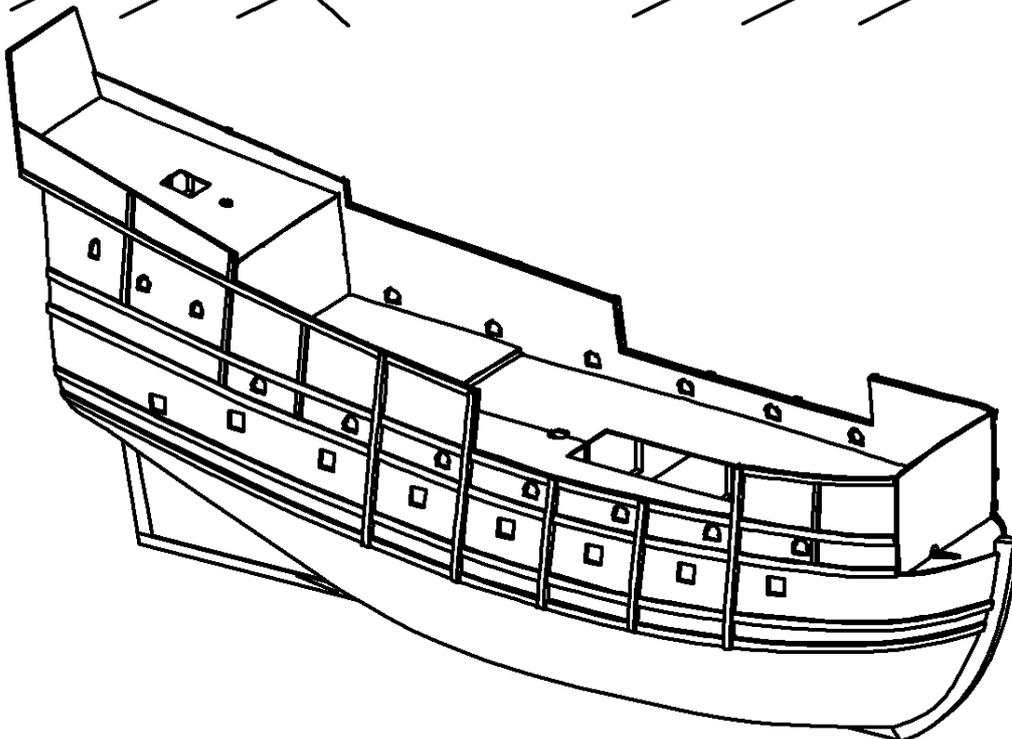
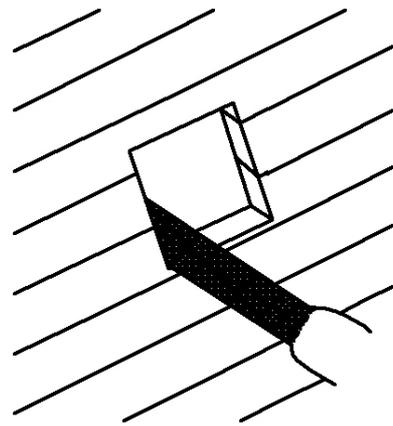
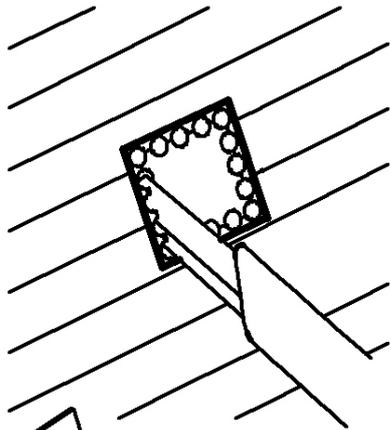
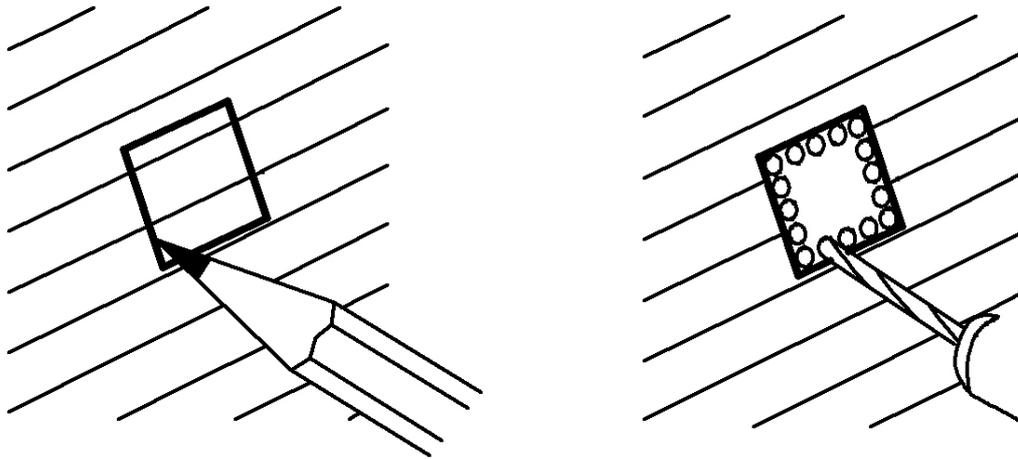


e) Carefully cut off parts of the frames which overhang the decks.



IV) Gun ports:

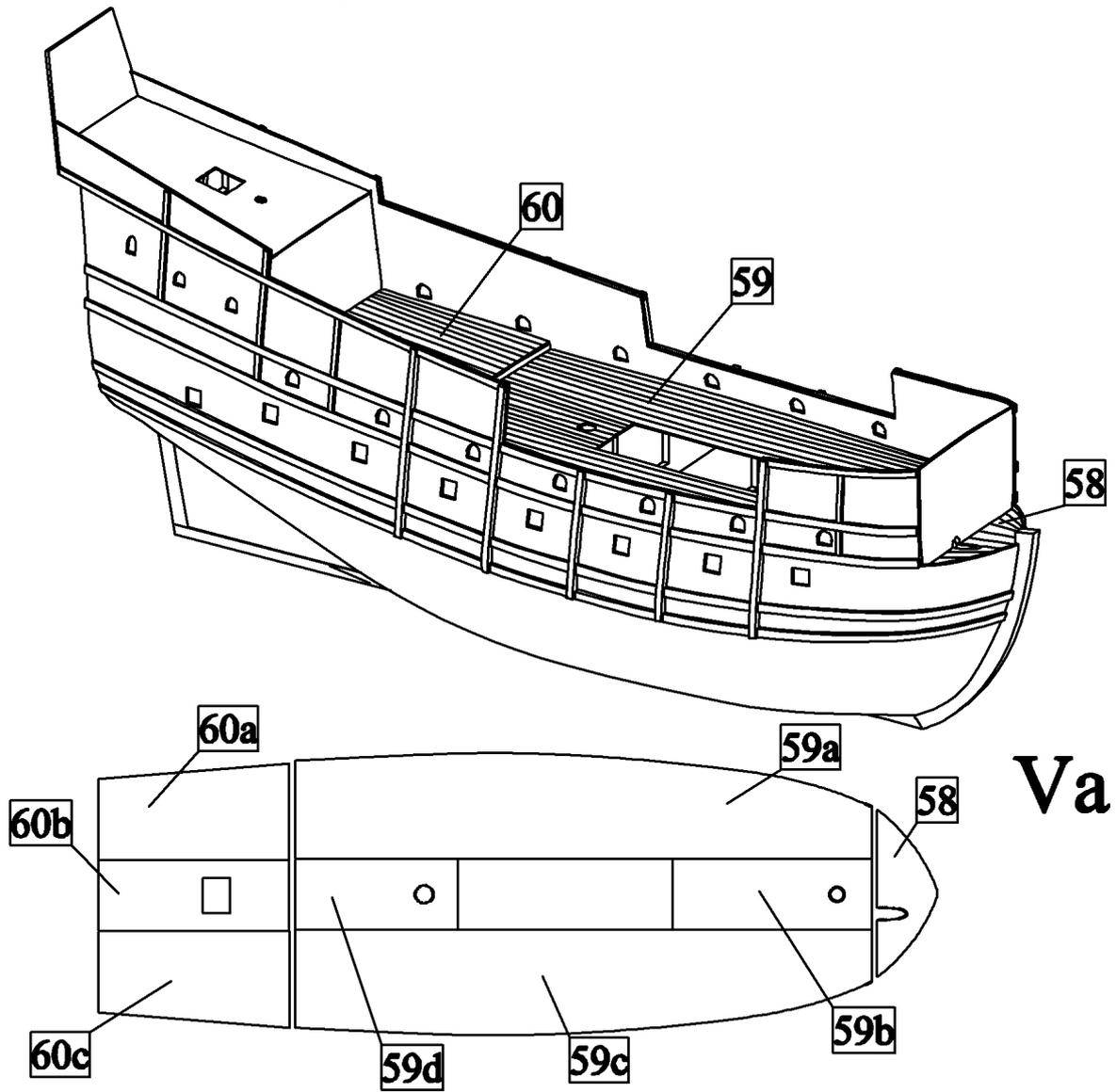
a) Make gun ports into the hull. First draw outlines of the gun ports by a pencil on the hull. Then drill holes near the outlines. Then cut out the gun ports by a sharp knife or scalpel. Finally sharpen the gun ports by needle files.



IVa

V) Deck I:

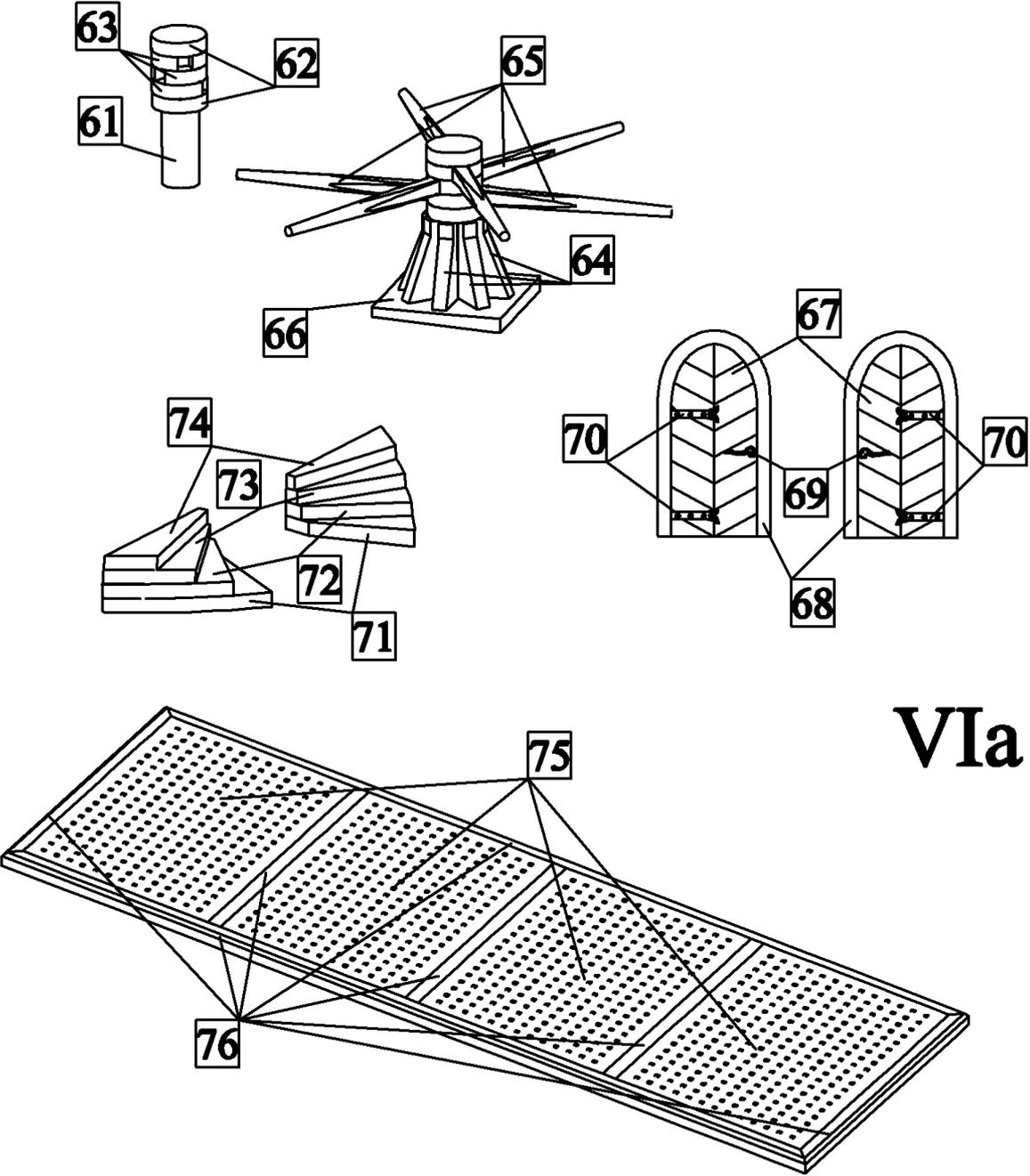
a) Glue decks 58-60 on their places.



Va

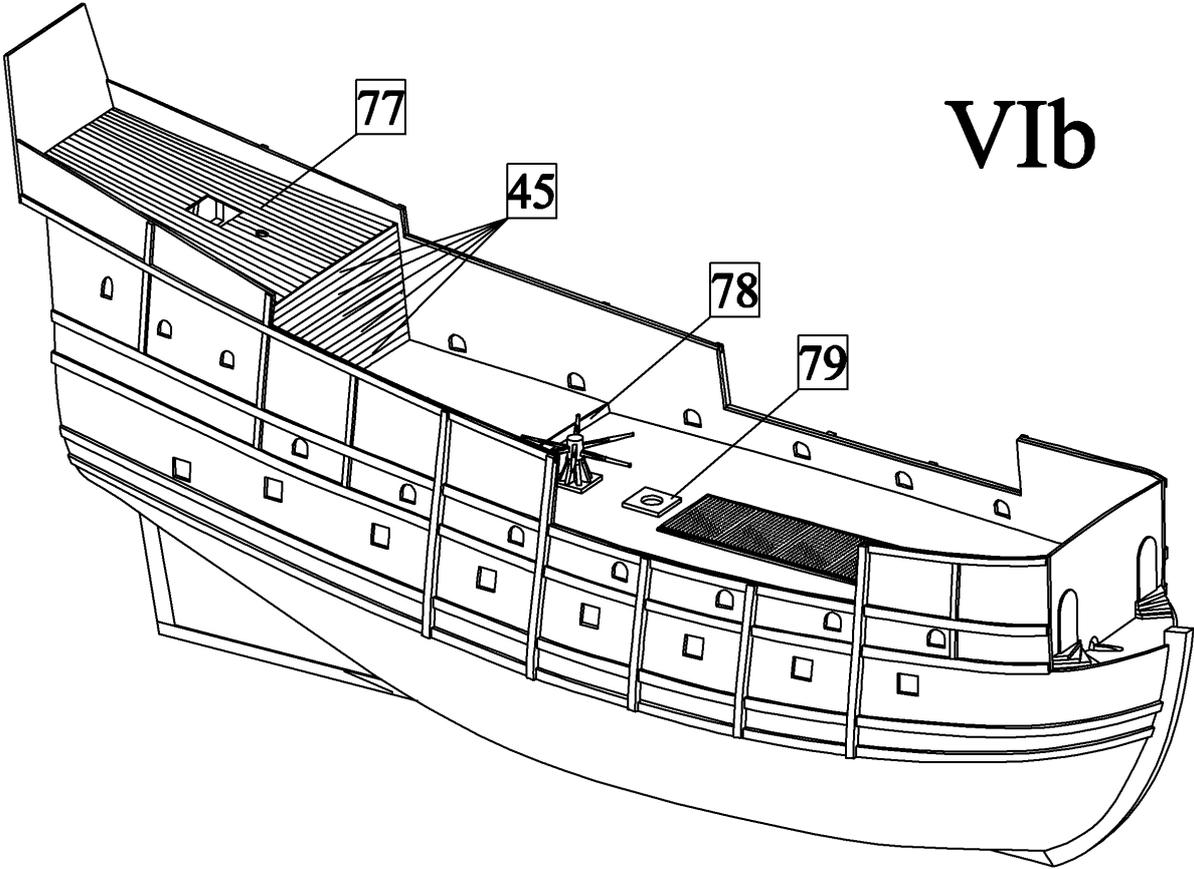
VI) Details I:

a) Make capstan, doors, stairs and gratings as it is shown in the figure. Capstan Bars 65 is needed to grind by sand paper into required shape first.



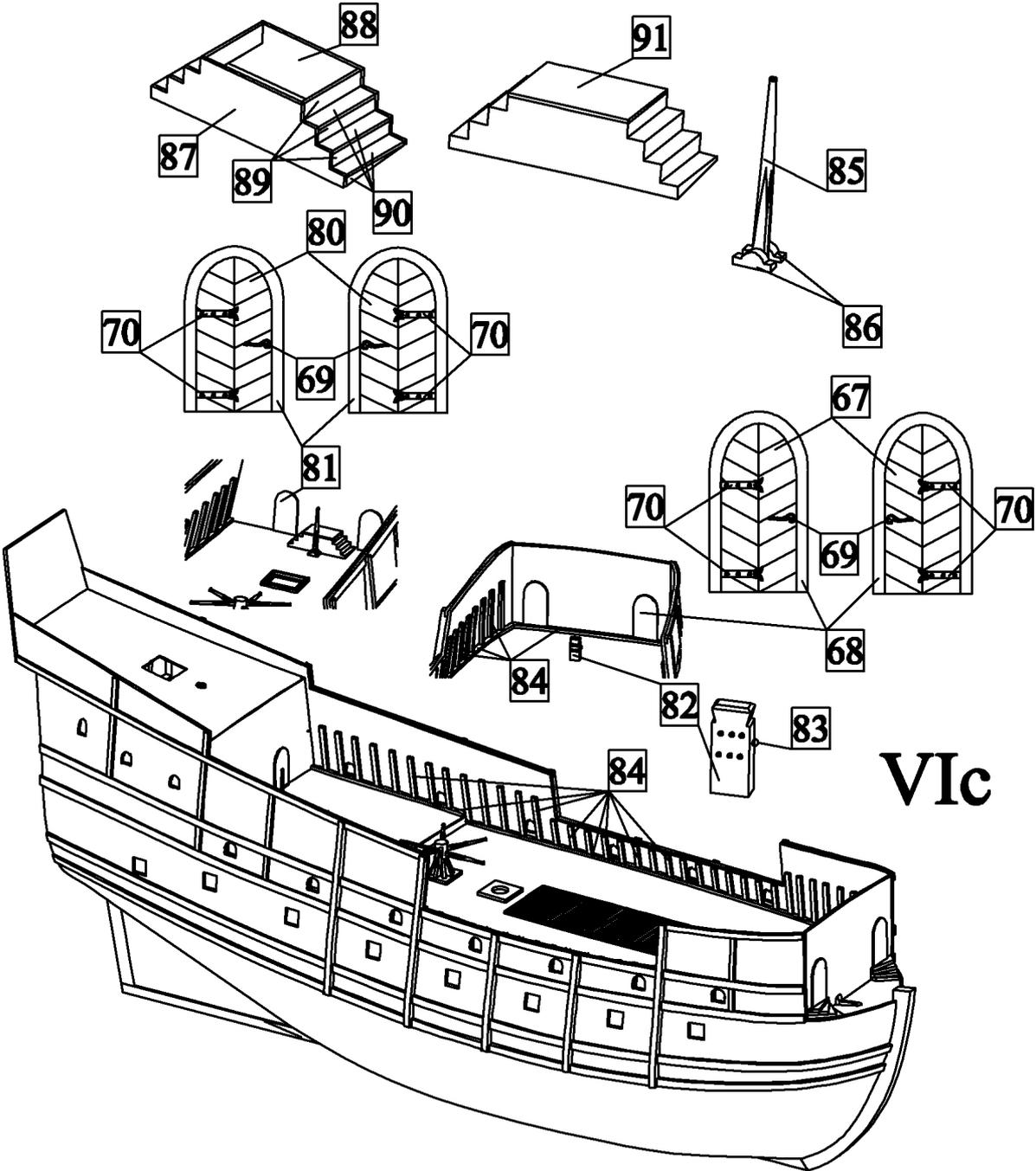
VIa

b) First planking the wall by strips 45 and then glue deck 77 as it is shown in the figure. Then glue parts 78, 79, capstan, doors, grating and stairs to their positions.



VIb

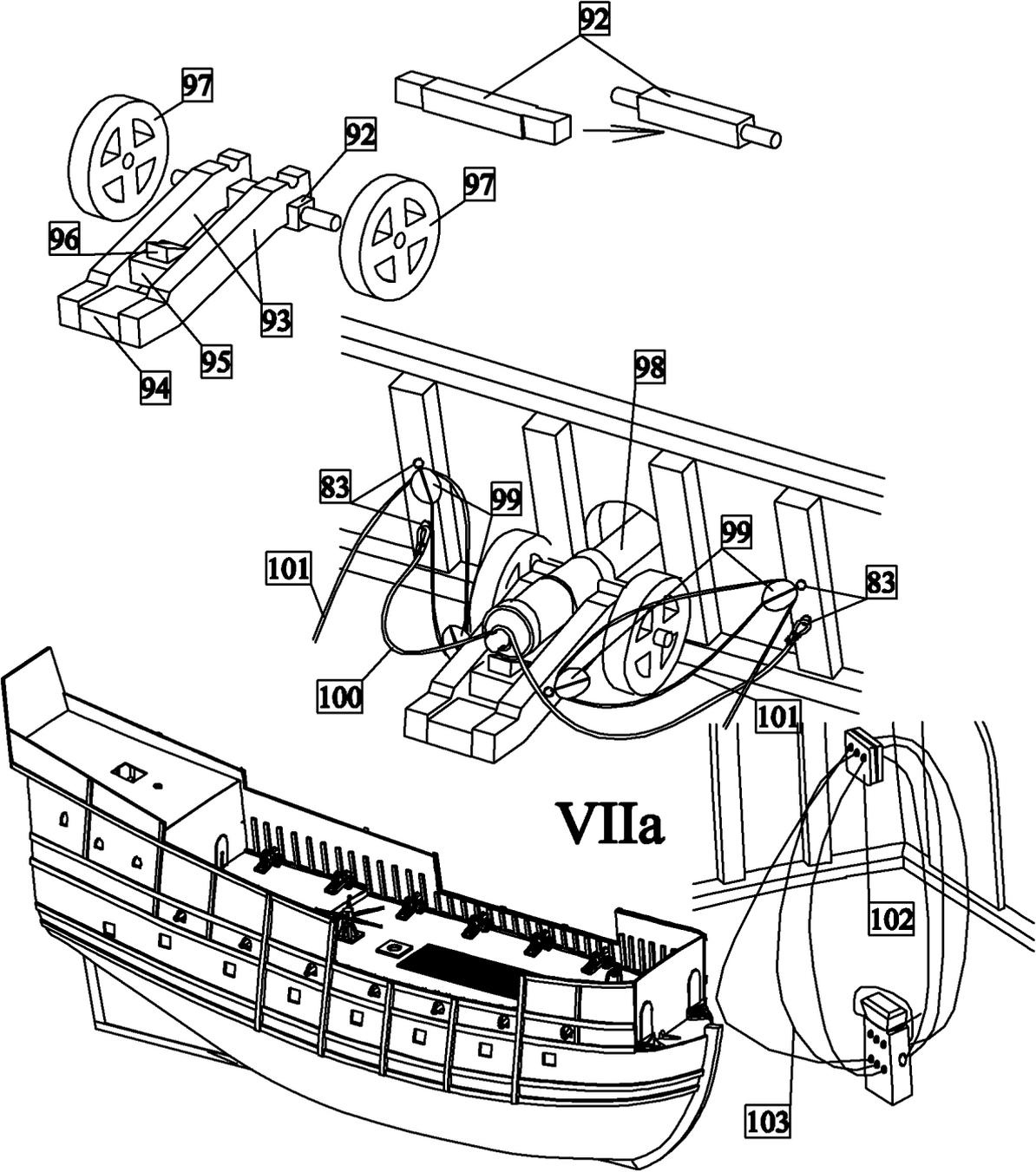
c) First glue strips 84 to sides of hull as it is shown in the figure. Then make helmsman's stand from parts 87-91 and whipstaff from parts 85 and 86 and then install them into their positions. Then make doors and glue them to stern and bow walls as it is shown in the figure. Finally glue knighthead 82 to the deck.



VIc

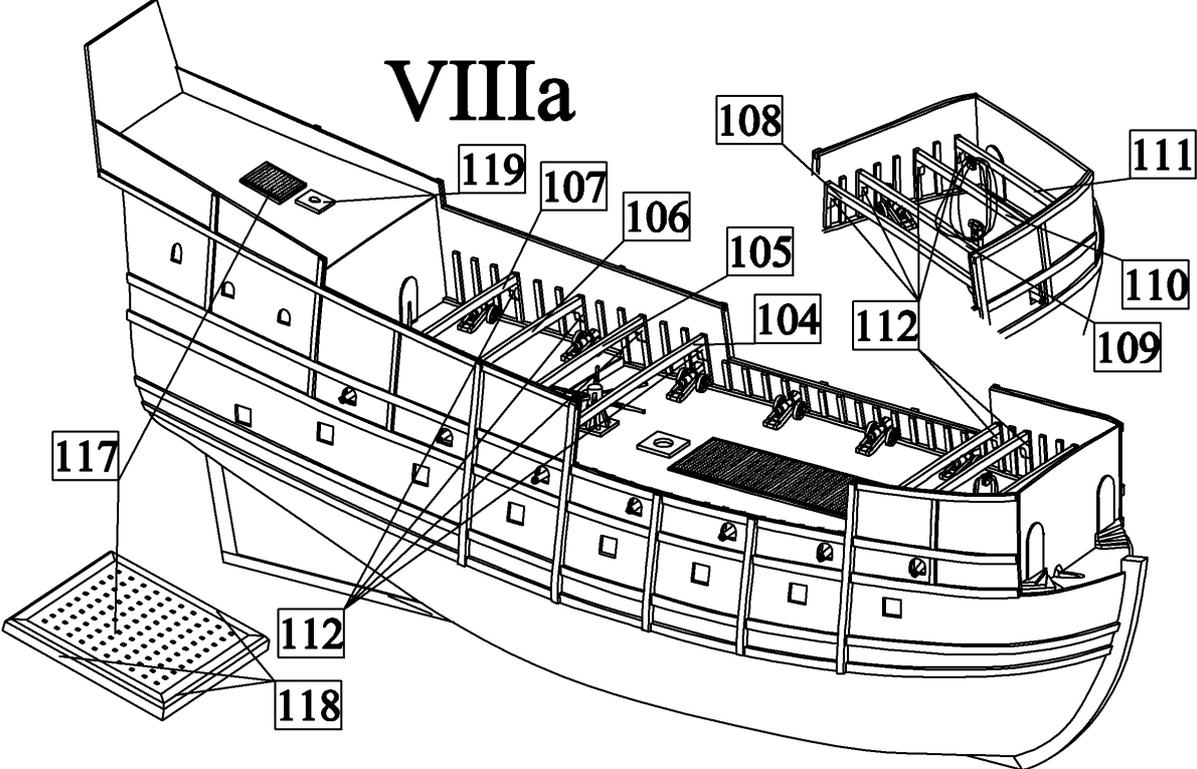
VII) Guns I:

c) First sharpen by needle file both ends of axles of gun carriages 92 into cylindrical shapes as it is shown in the figure. Then glue gun carriages from parts 92-97 and then glue gun barrels 98 to the carriages. Then install the guns on the deck as it is shown in the figure. Finally tie block 102 to the knighthead on the bow.

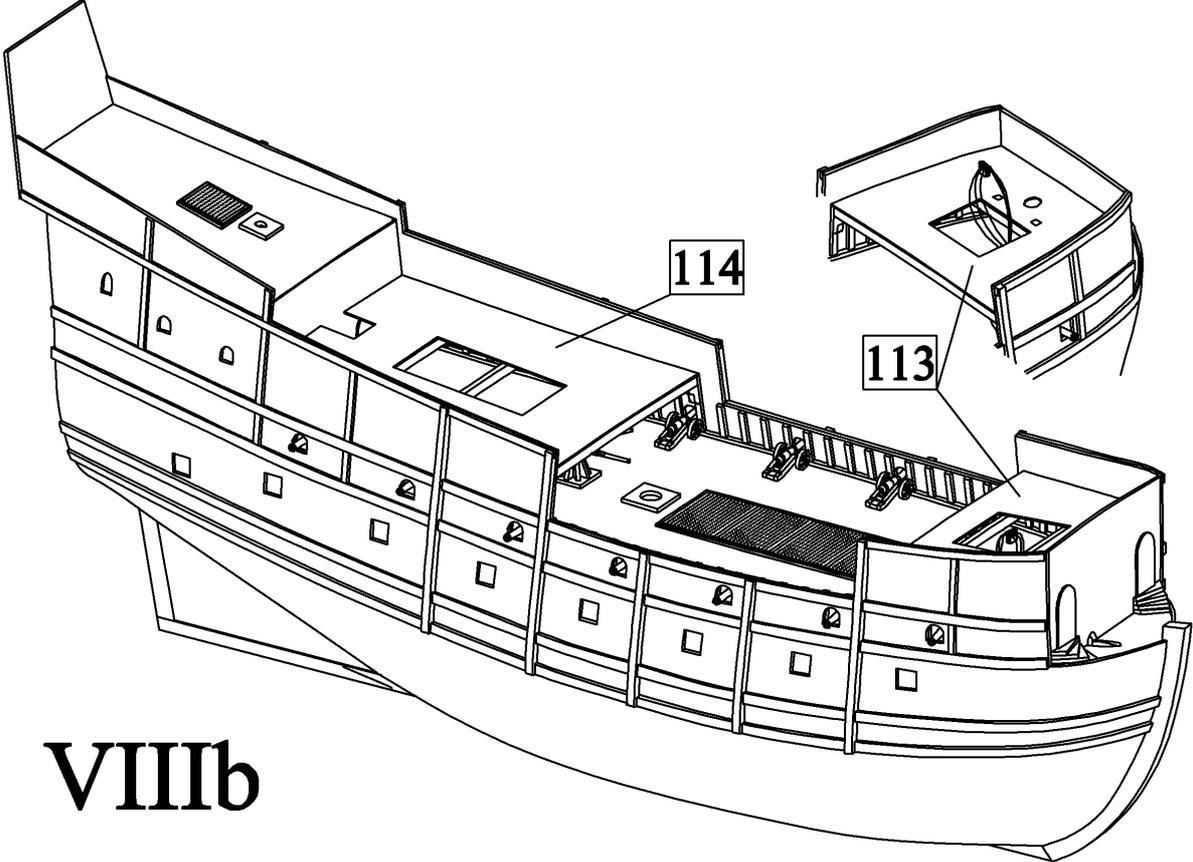


VIII) Deck II:

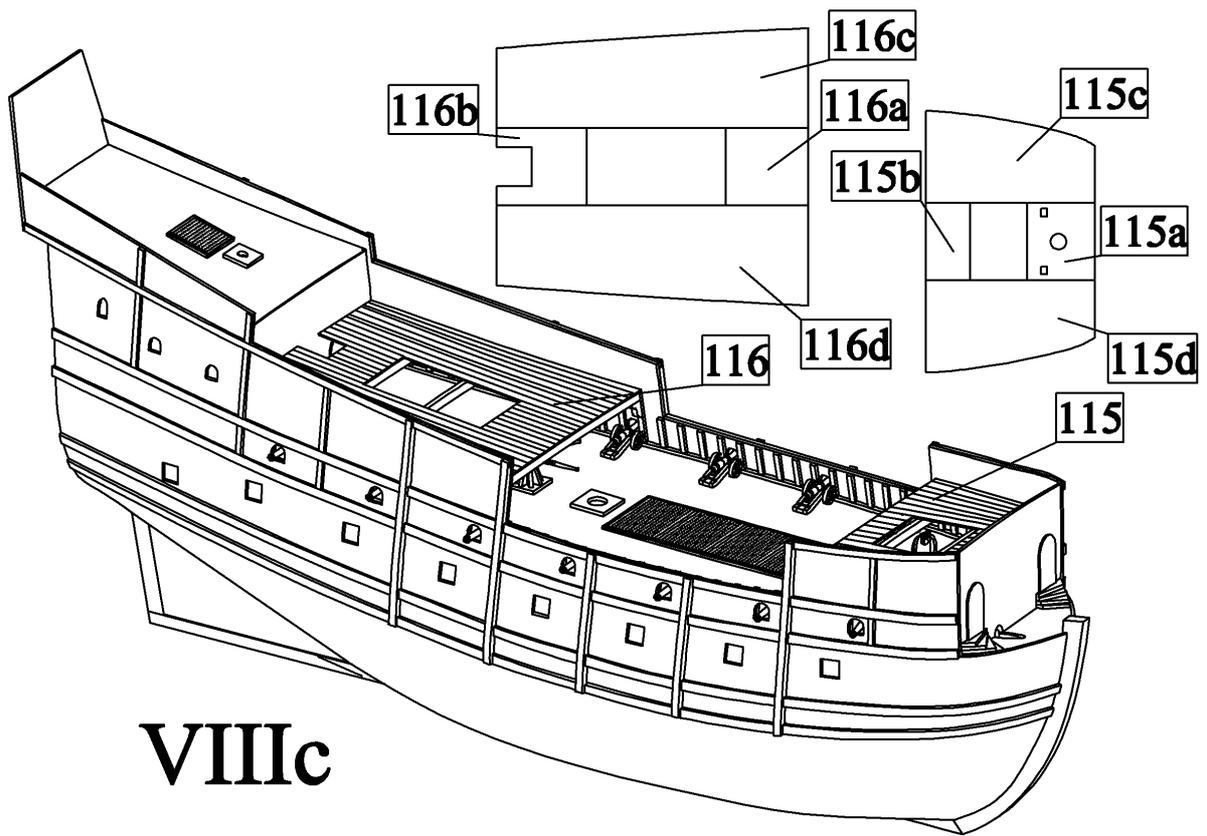
a) First glue beams 104-111 and reinforcements 112 to the frames as it is shown in the figure. Then glue mast foot and grating to the poop deck.



b) Glue decks 113 and 114 to the beams.



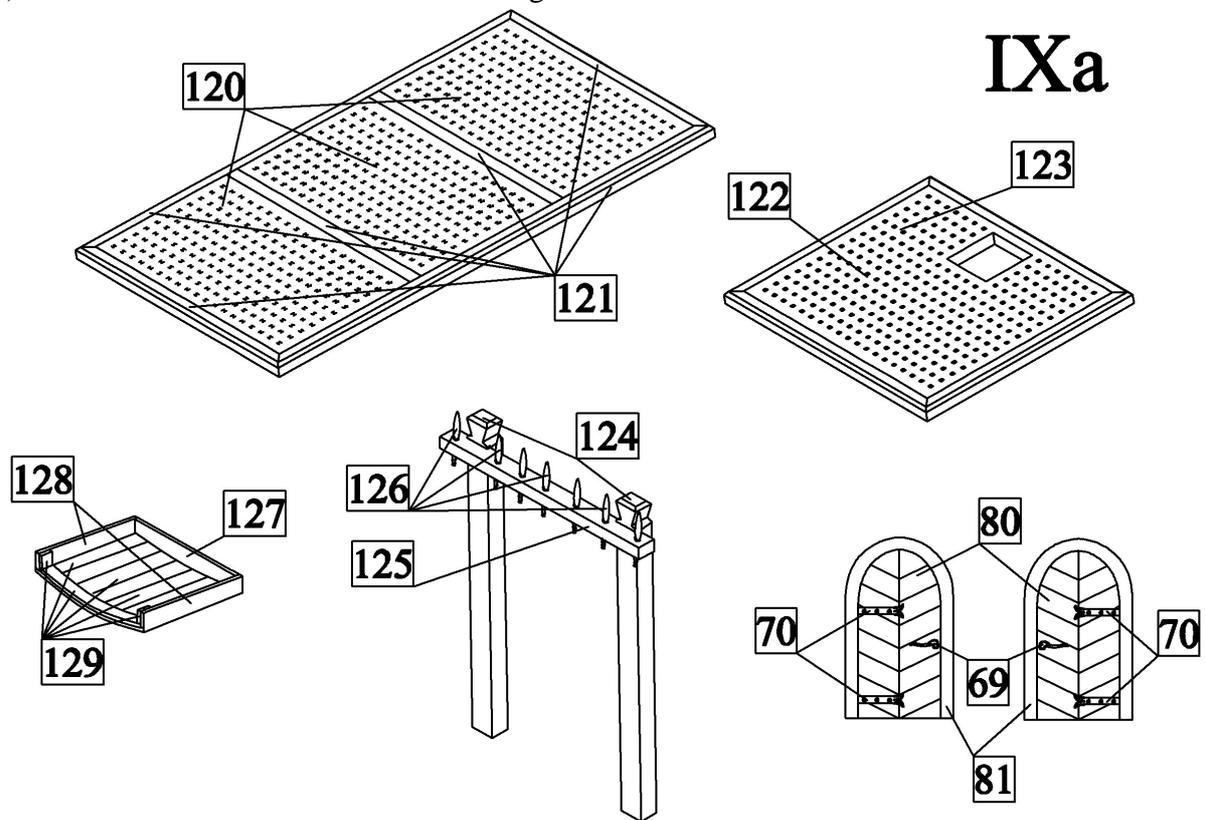
c) Glue decks 115 and 166 to the parts 113 and 114.



VIIIc

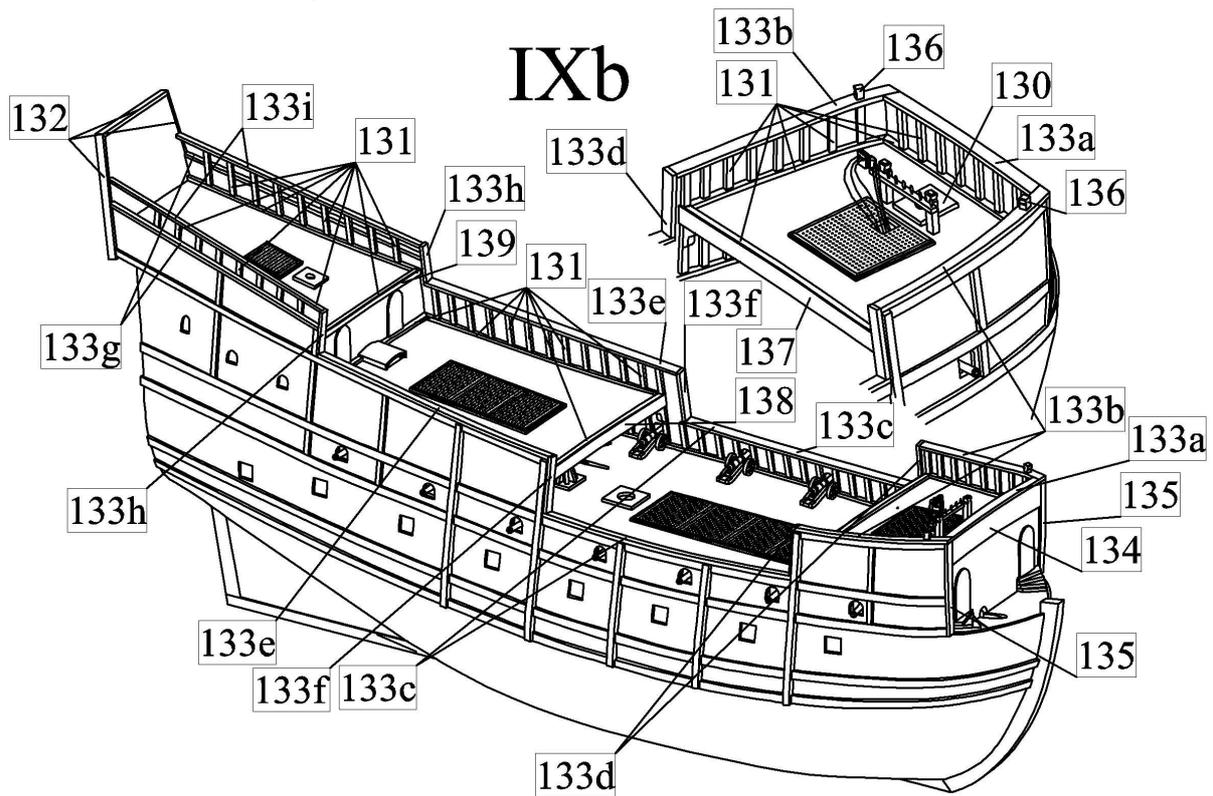
IX) Details II:

a) Make the details as it is shown in the figure.

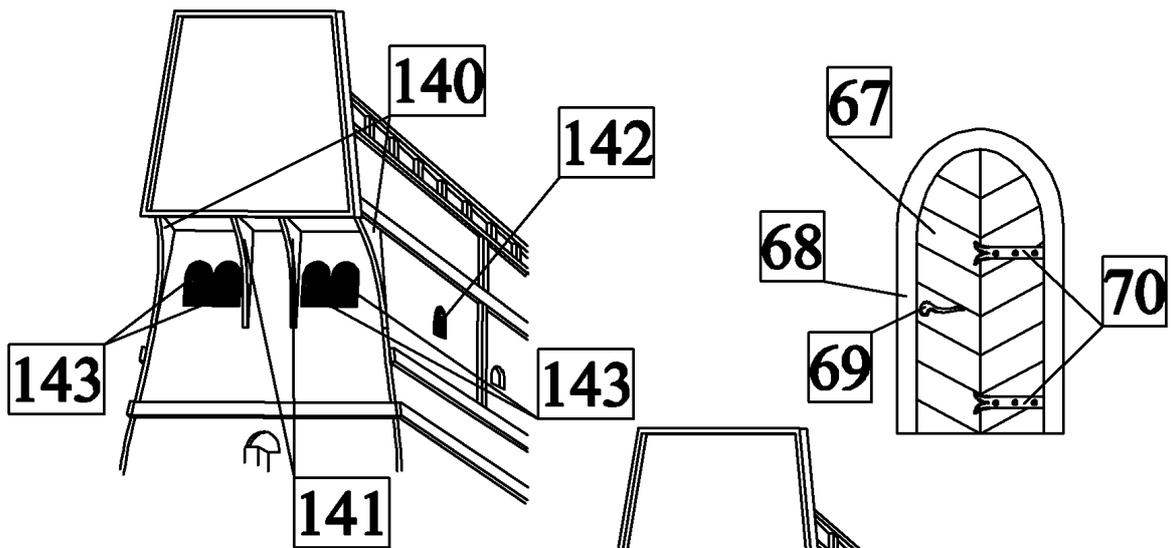


IXa

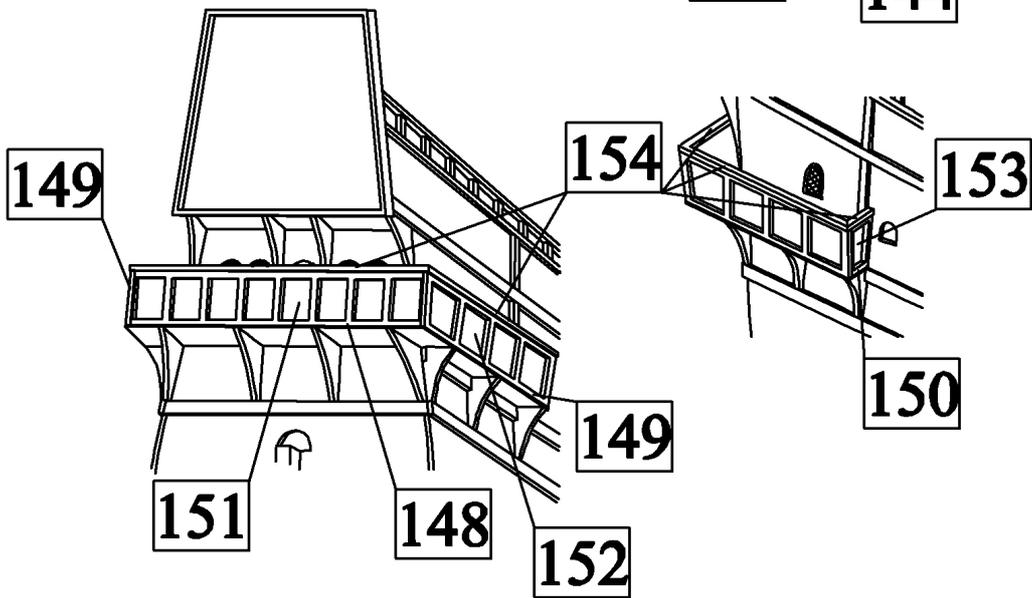
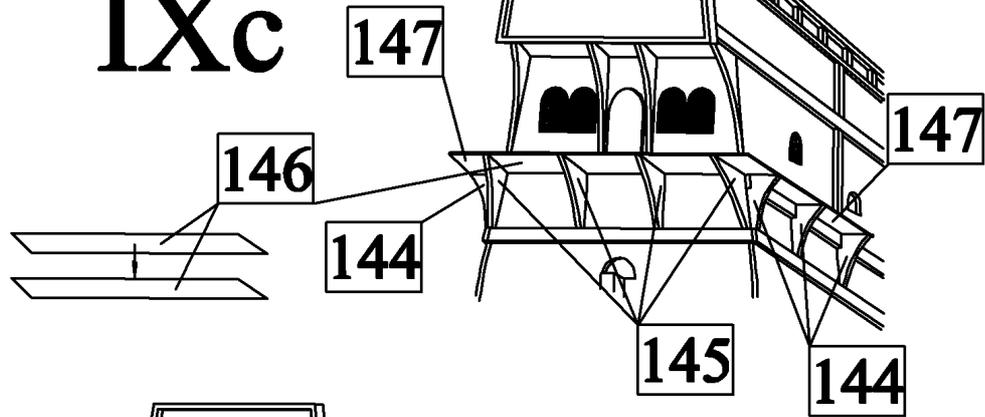
b) First glue frames 131 and then parts 133-139 to the sides. Finally install simple (gratings, doors, mast foot and etc.) details on the decks.



c) Make stern gallery. First glue reinforcements 140 and 141 and windows 142 and 143 on their places. Then make door from parts 67-70 and glue it to stern. Then glue supports 144 and 145 with decks 146 and 147 to the hull. The decks 146 and 147 are composed from two parts (upper and lower). Then glue railing 148-154 to the decks.

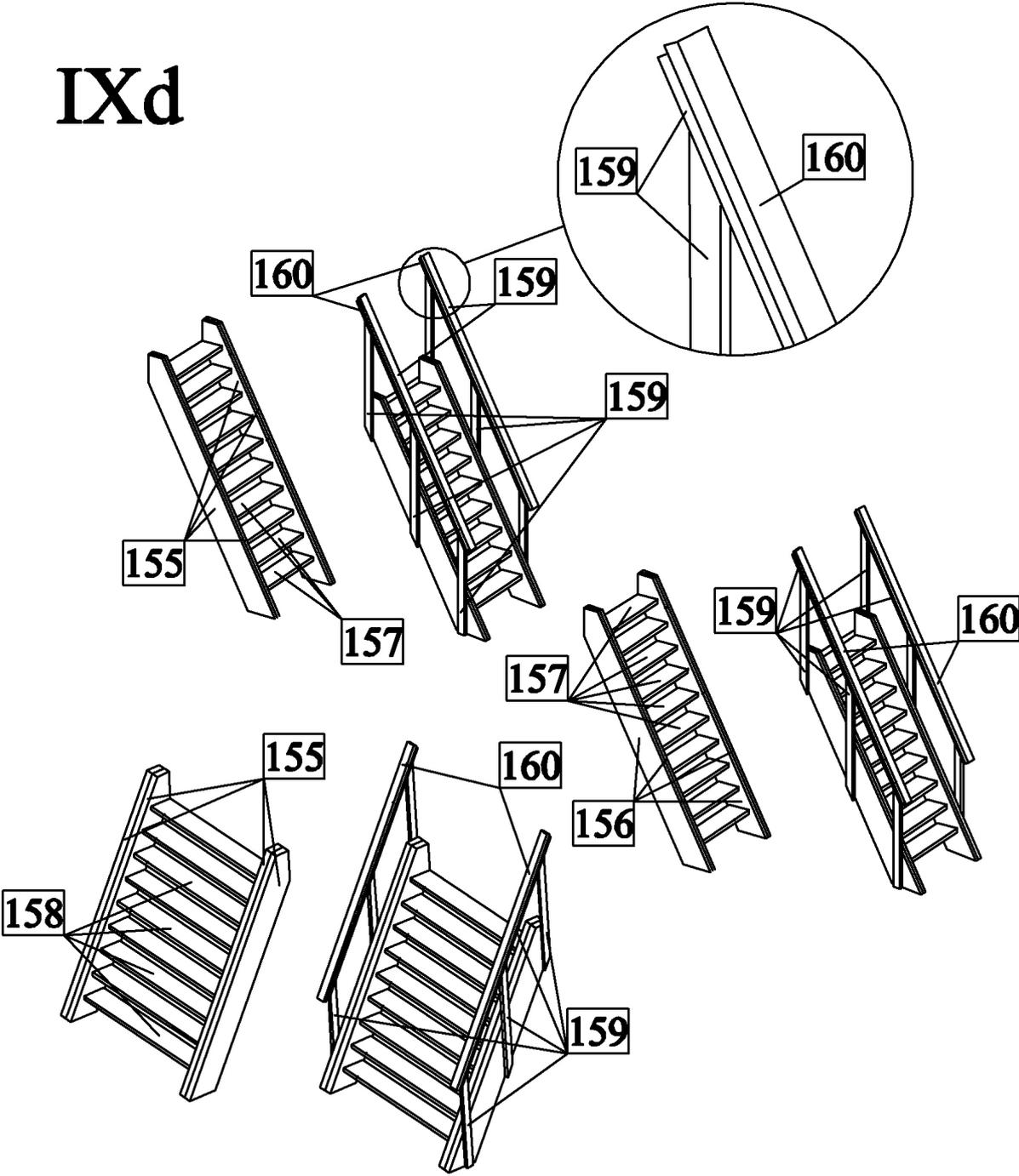


IXc



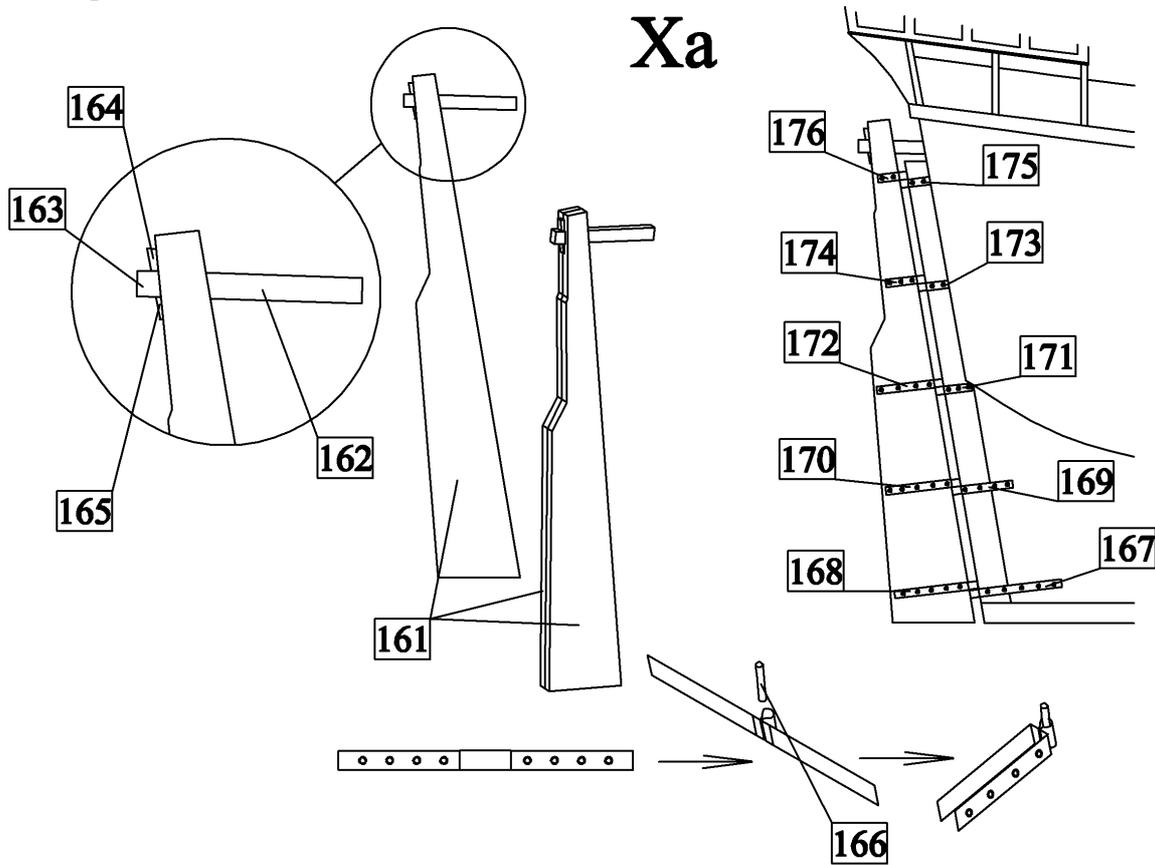
d) Make stairs from parts 155-159. First glue side parts 155 and 156-stairs to poop deck and to forecastle deck parts 155 and stairs to quarter deck parts 156. Then glue cross parts 157 and 158 to the side parts-stairs to poop deck and to quarter deck parts 157 and stairs to forecastle deck parts 158. Then make handrail from parts 159 and 160. Finally glue the stairs to their places on the decks.

IXd



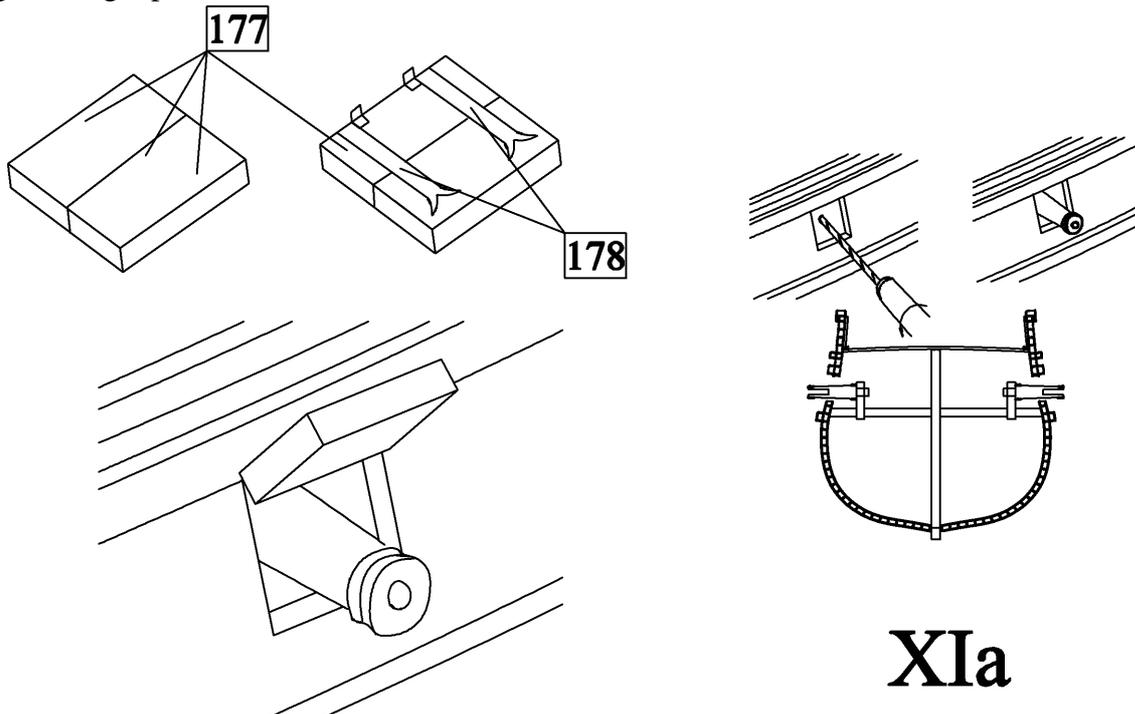
X) Rudder:

a) First make a rudder from parts 161-164. Then install the rudder through hinges 166-176 to the stern post.



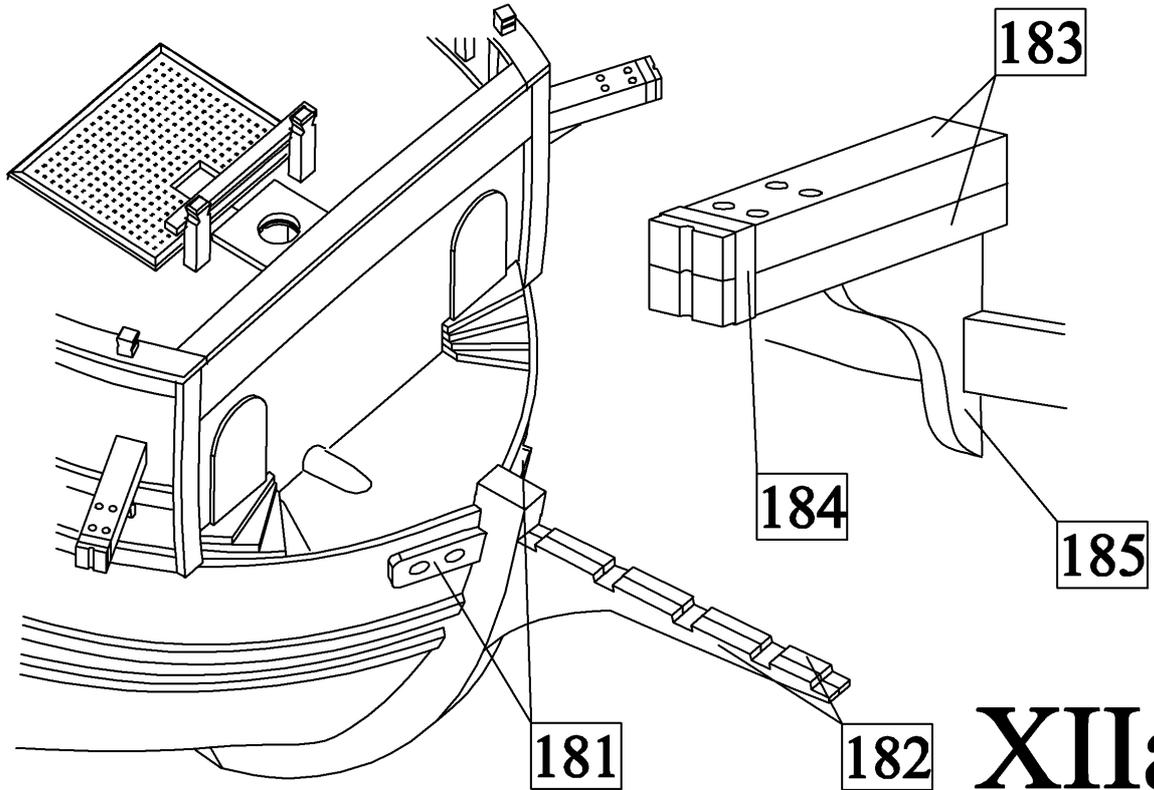
XI) Guns II:

a) Make gunport lids from parts 177 and 178. Then drill holes into the frames 30-40 and then glue gun barrels 179 (into parts 32-40) and 180 (into parts 30 and 31) into the holes. Finally glue the gunports to the hull.

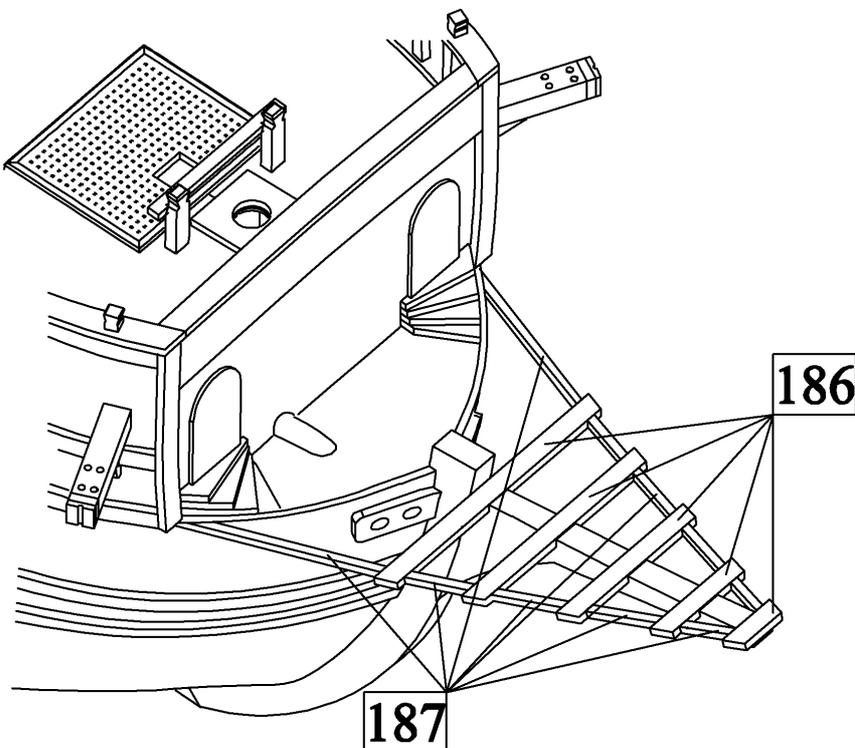


XII) Head:

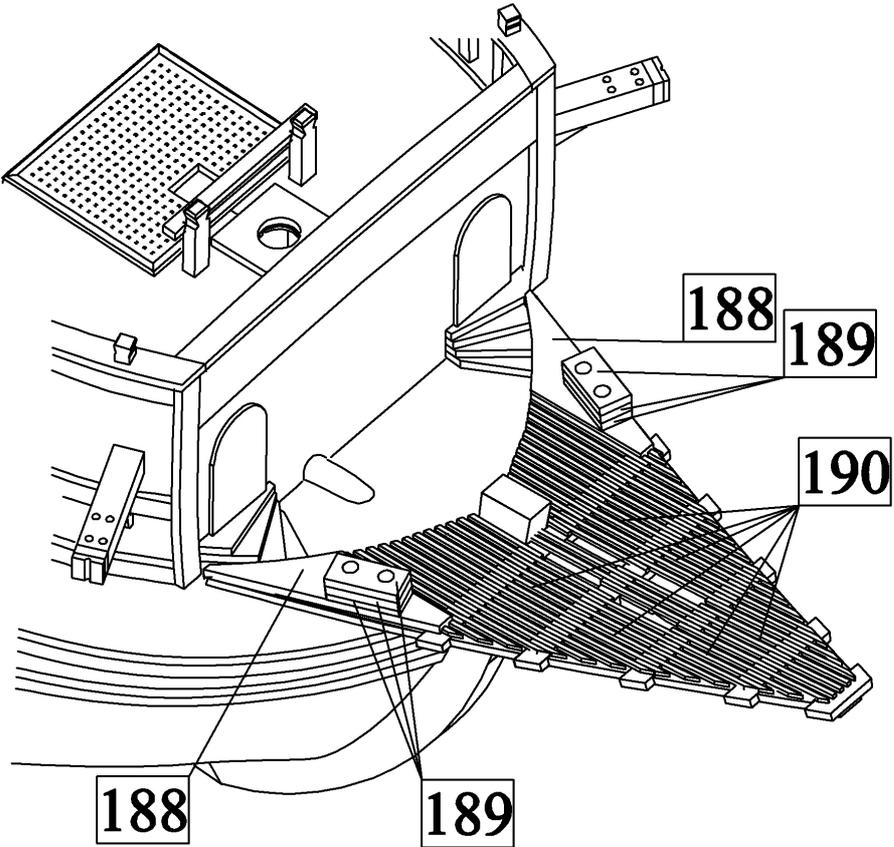
a) First drill hawse holes into the hull and glue parts 181 on their places. Then make catheads from parts 183-185 and glue them to the hull. Finally glue head 182 to stem.



b) Glue beams 186 and 187 to the head.

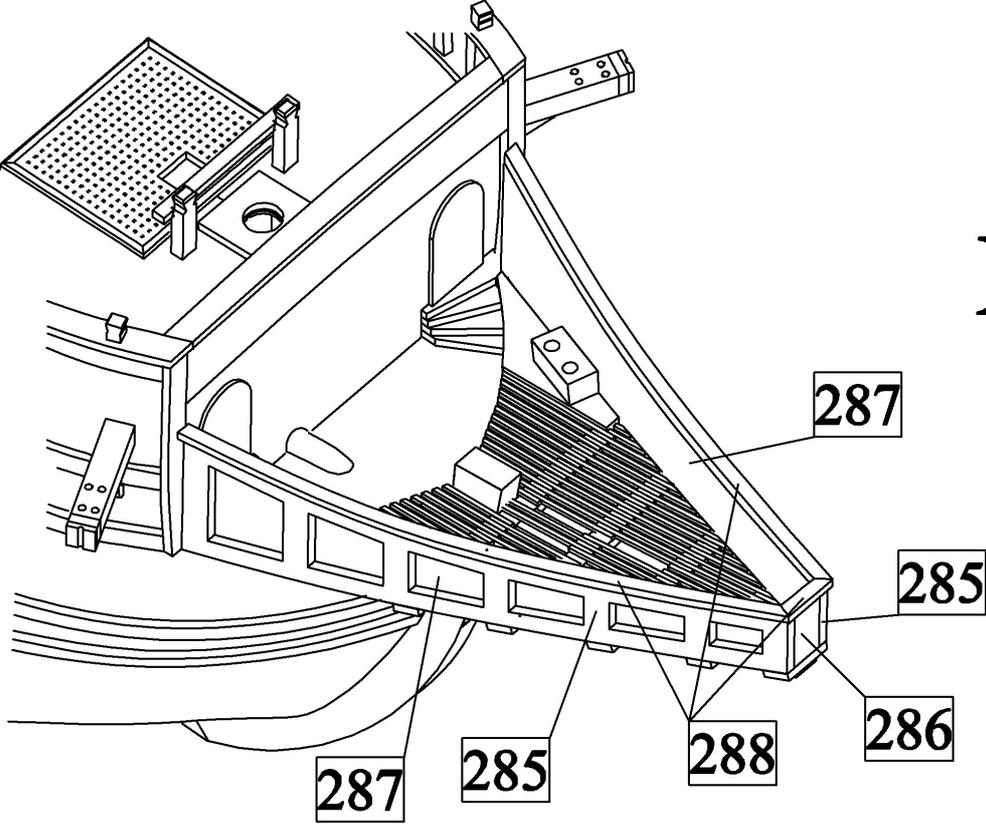


c) Make toilets from parts 188 and 189 and glue them to the head. Then make head deck from strips 190.



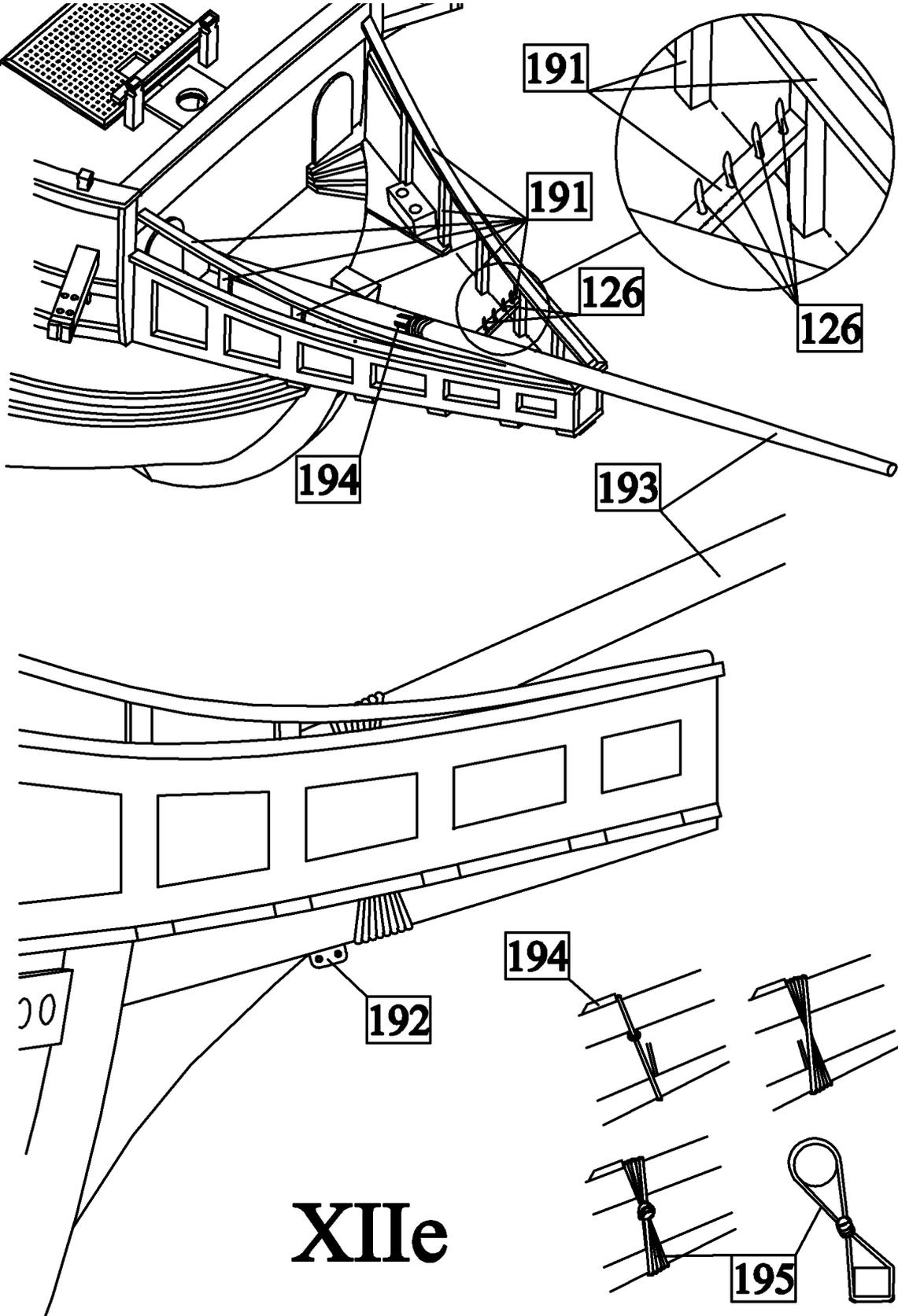
XIIc

d) Make railings on head from parts 285-288.



XIId

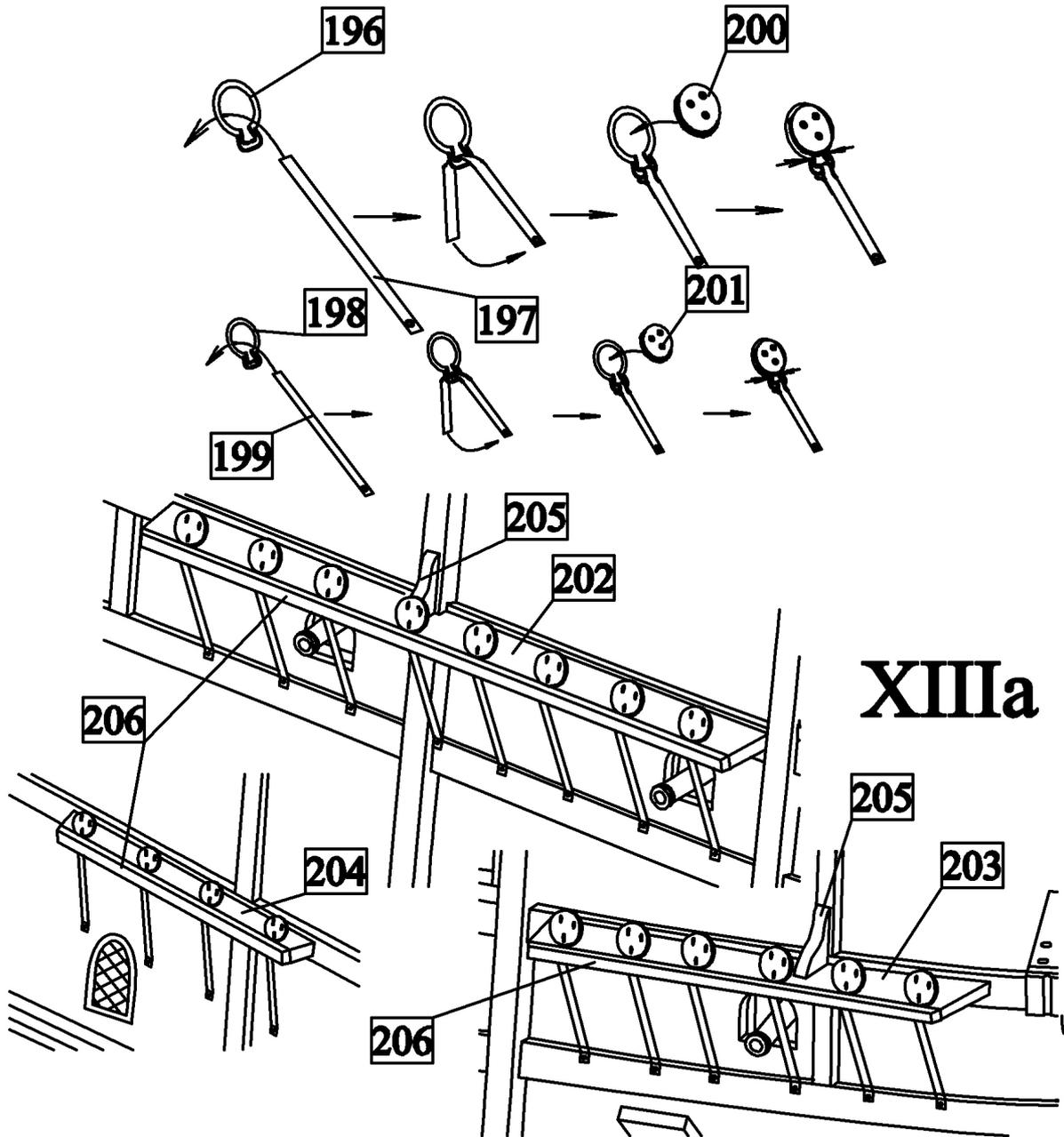
e) First glue beams 191 and cross beam with belaying pins 126 to the side of head railing. Then grind by sand paper bowsprit from dowel and tie it to the head by rope 195 as it is shown in the figure.



XIIe

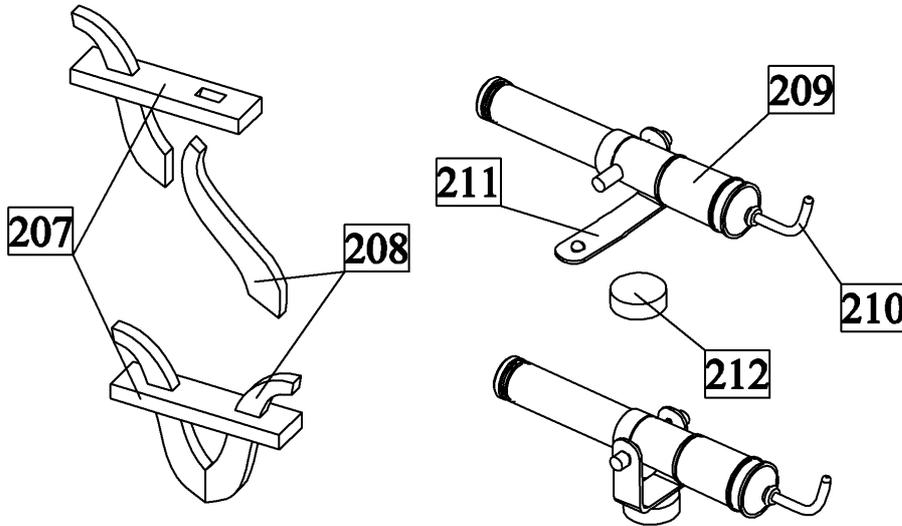
XIII) Deadeyes blocks:

a) First pass parts 197 and 199 through hoops 196 and 198. Then bend the parts 197 and 199 and glue them as it is shown in the figure. Then put deadeyes blocks 200 and 201 to the hoops. Finally press the hoops in their neck as it is shown in the picture. Then glue the deadeyes to the channels and then glue capping strips 206 to the channels too.



XIV) Details III:

a) Make staghorns from parts 207 and 208 and glue them to their places. Make swivel guns from parts 209-212 and glue them to their places too.



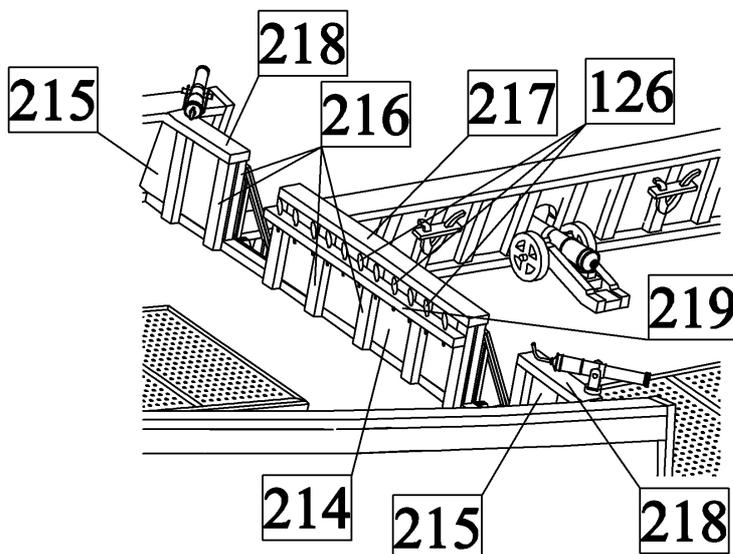
XIVa

b) Make railing on poop deck from strips 213.



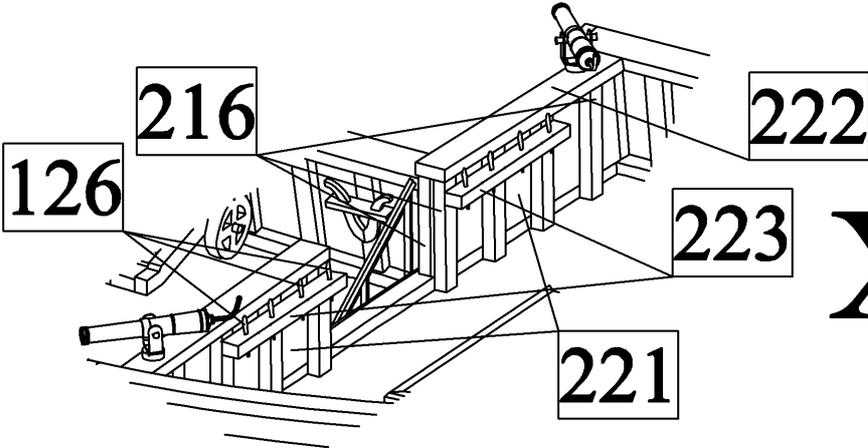
XIVb

c) Make railing on quarter deck from parts 215-215. Then glue cross beams 219 with belaying pins 126 to the railing.



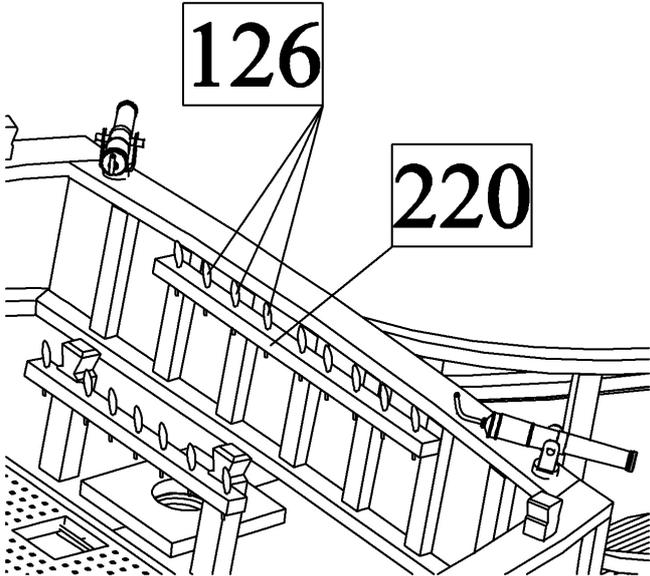
XIVc

d) Make railing on forecastle deck from parts 221, 222 and 216. Then glue cross beams 223 with belaying pins 126 to the railing.



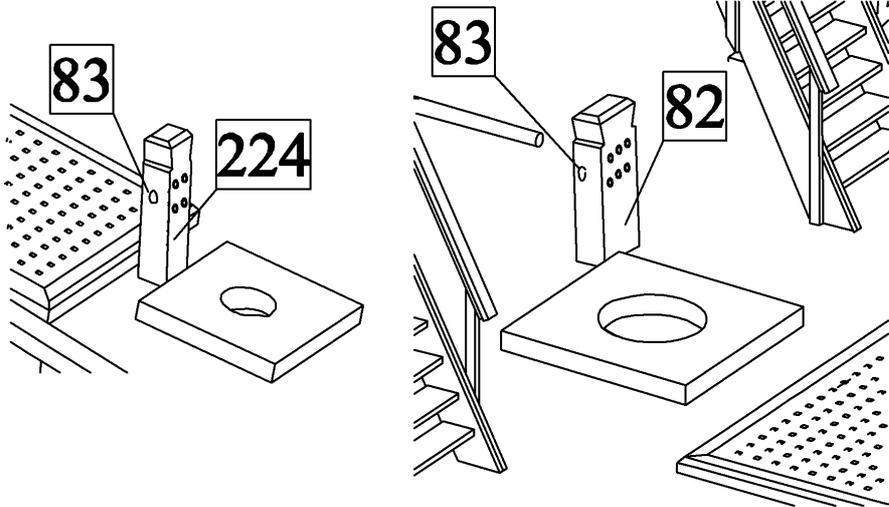
XIVd

e) Glue cross beam 220 with belying pins 126 to the railing on forecastle deck.



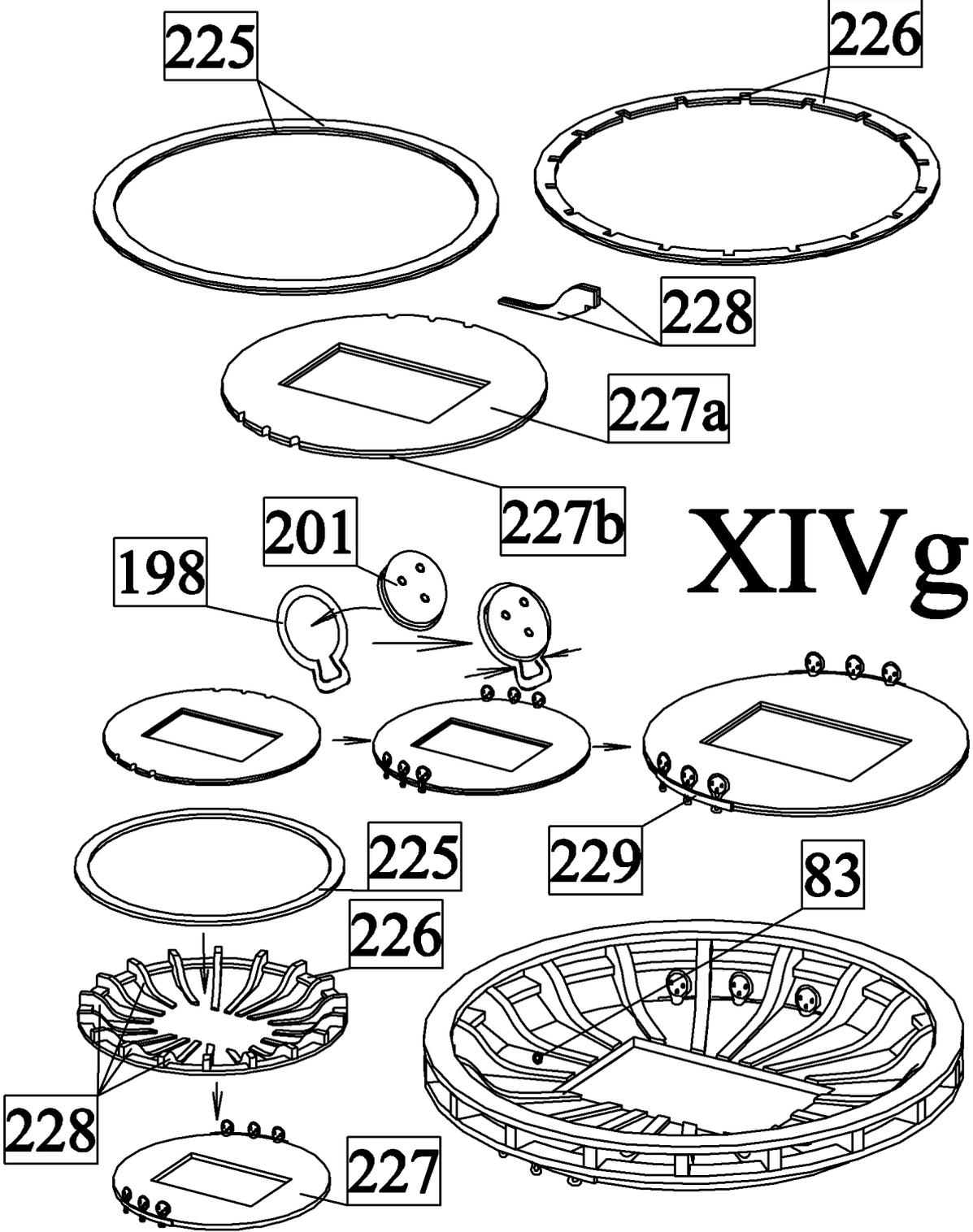
XIVe

f) Glue knighthead 82 and 224 to the main and mizzen masts.



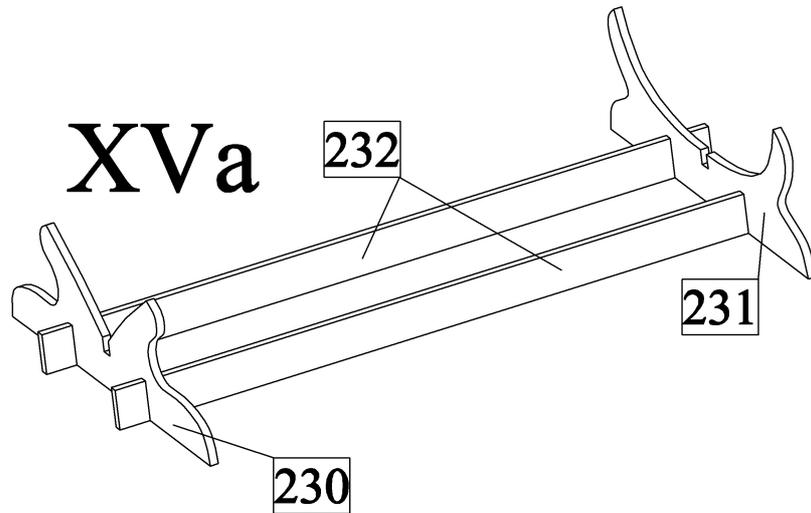
XIVf

g) Make tops. Parts 225, 226 and 228 are glued from two parts. Lower parts glue from parts 227a and 227b. First insert deadeyes blocks 201 into the hoops 198 and glue them to the lower parts 227. Then glue parts 229 and eyebolts 83 to the lower parts. Then glue parts 225, 226 and 228 to the lower parts too.



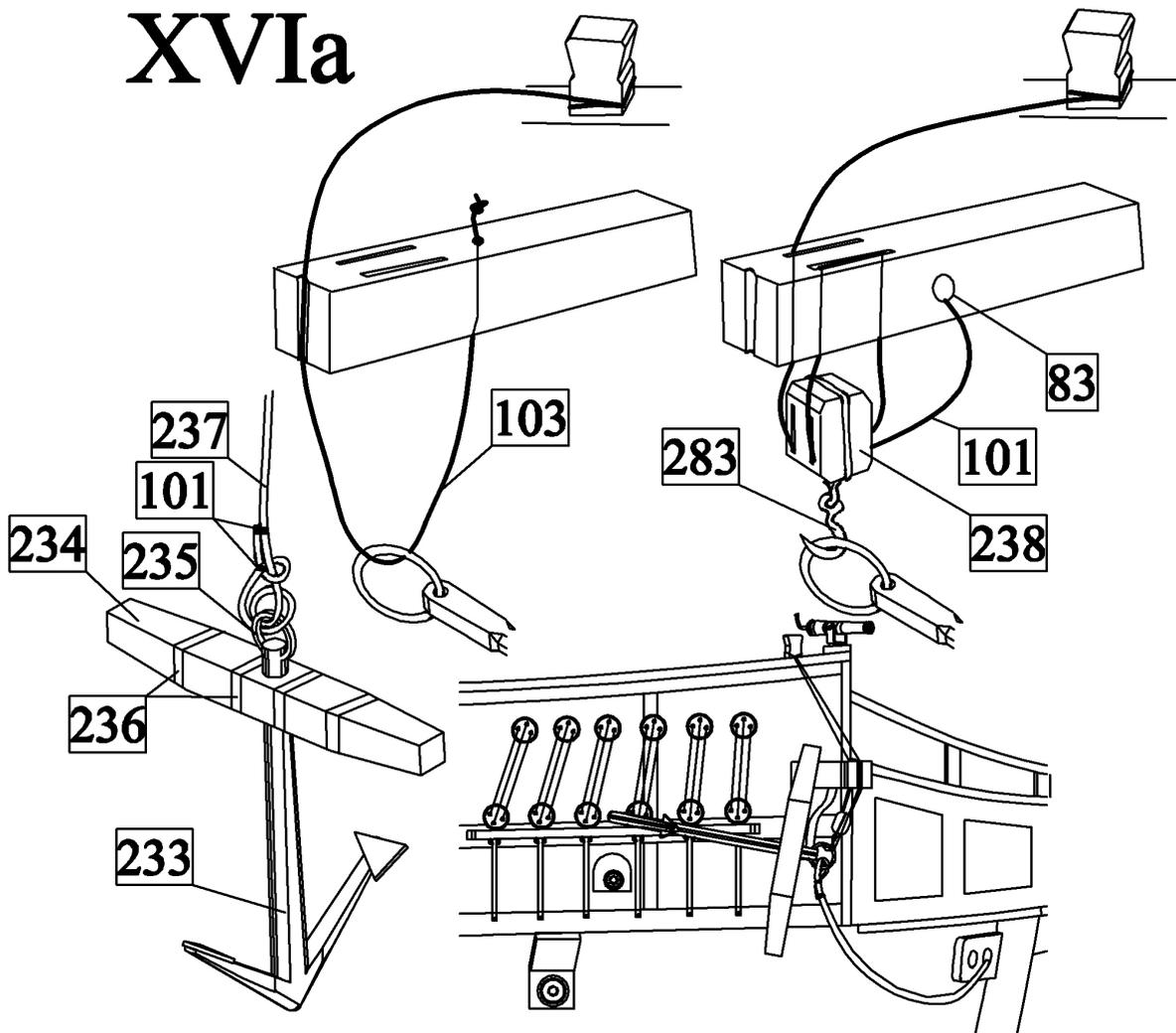
XV) Stand:

a) Make a stand form parts 230-232.



XVI) Anchors:

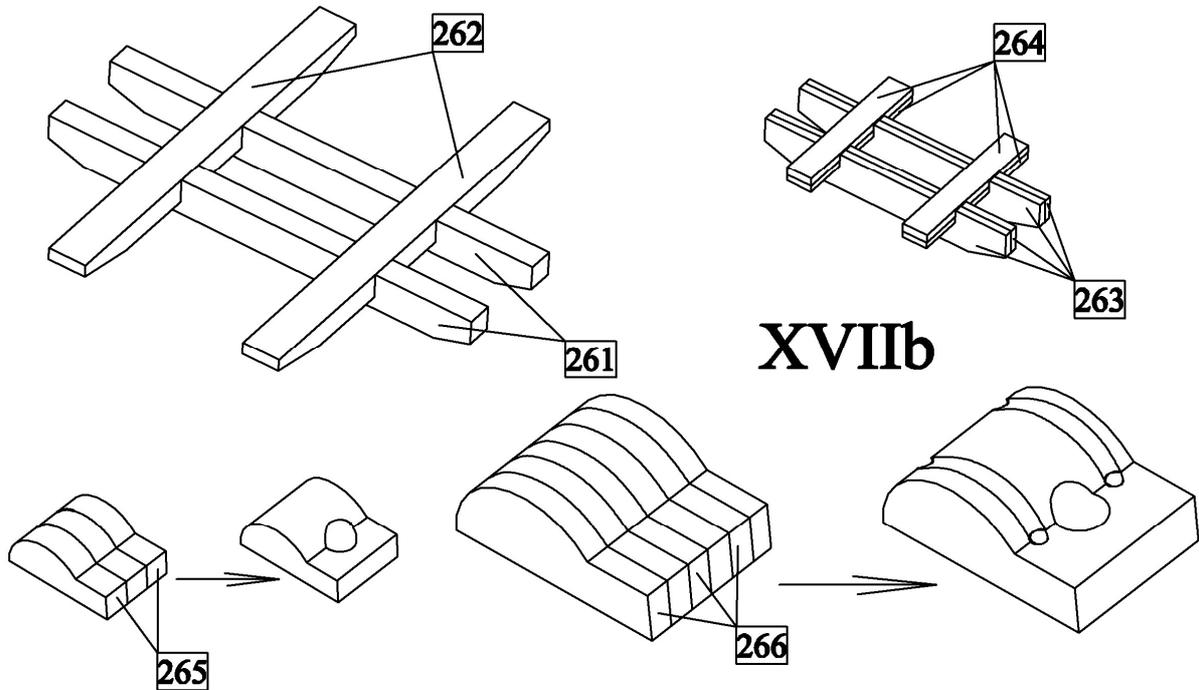
a) Make anchors from parts 233-236 and then install them to the catheads as it is shown in the figure.



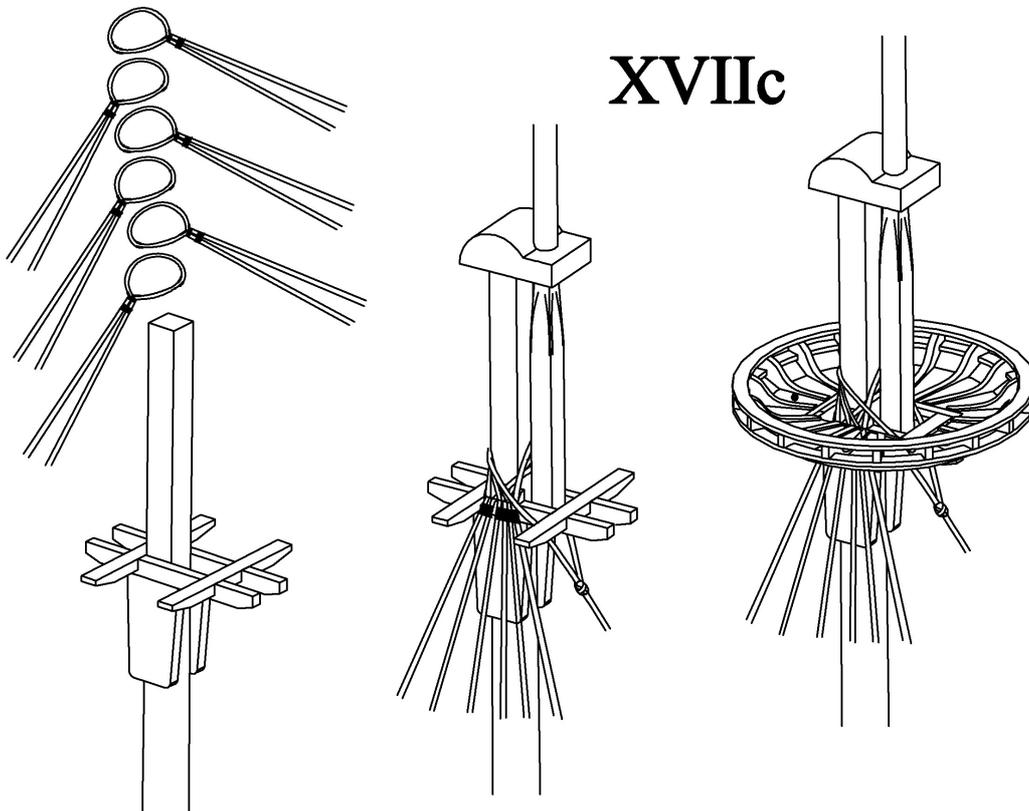
XVII) Masts and standing rigging:

a) First grind the masts, topmasts and flagpoles into needed shapes. This work will be easier if you will use modeller lathe.

b) Make trestle trees and cross trees- for main mast and fore mast from parts 261 and 262 and for mizzen mast and main and fore topmasts from parts 263 and 264. Then make caps as it is shown in the figure-for main mast and fore mast from parts 266 and for mizzen mast and main and fore topmasts from parts 265.

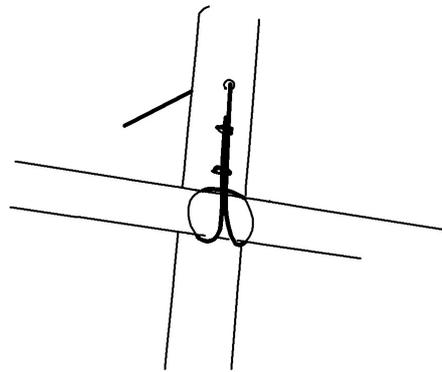
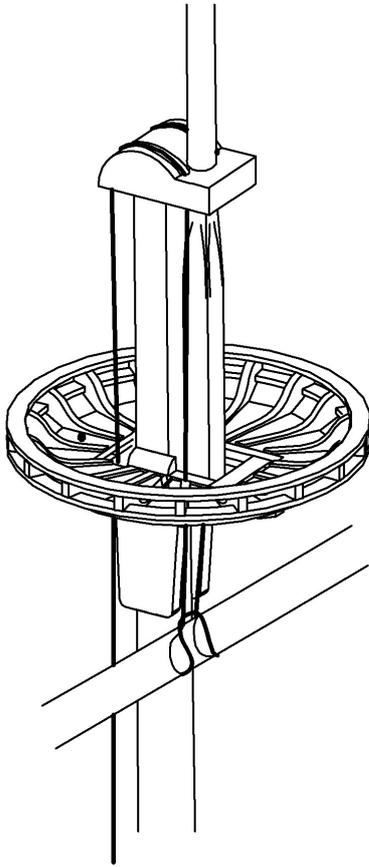


c) Install the masts to the hull and then tie standing rigging to them.



XVIII) Yards and running rigging:

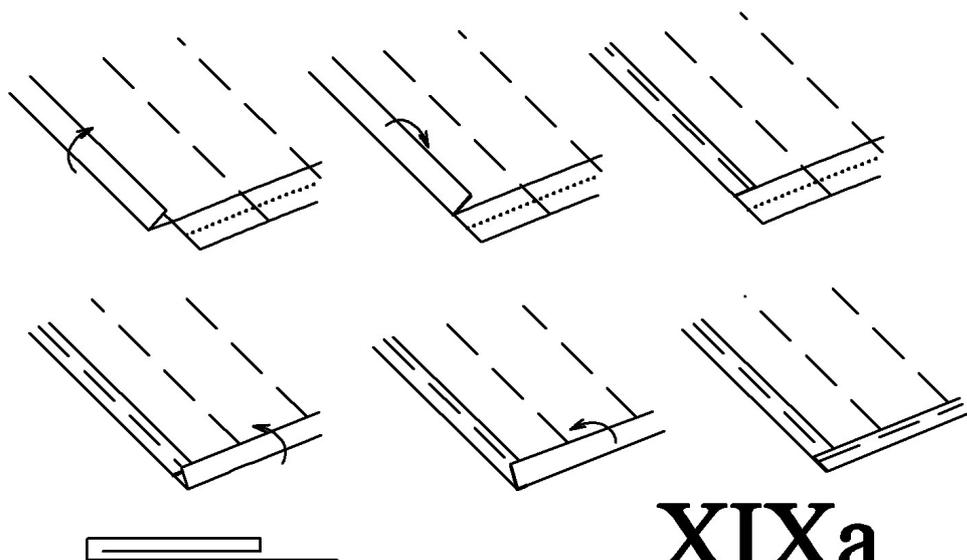
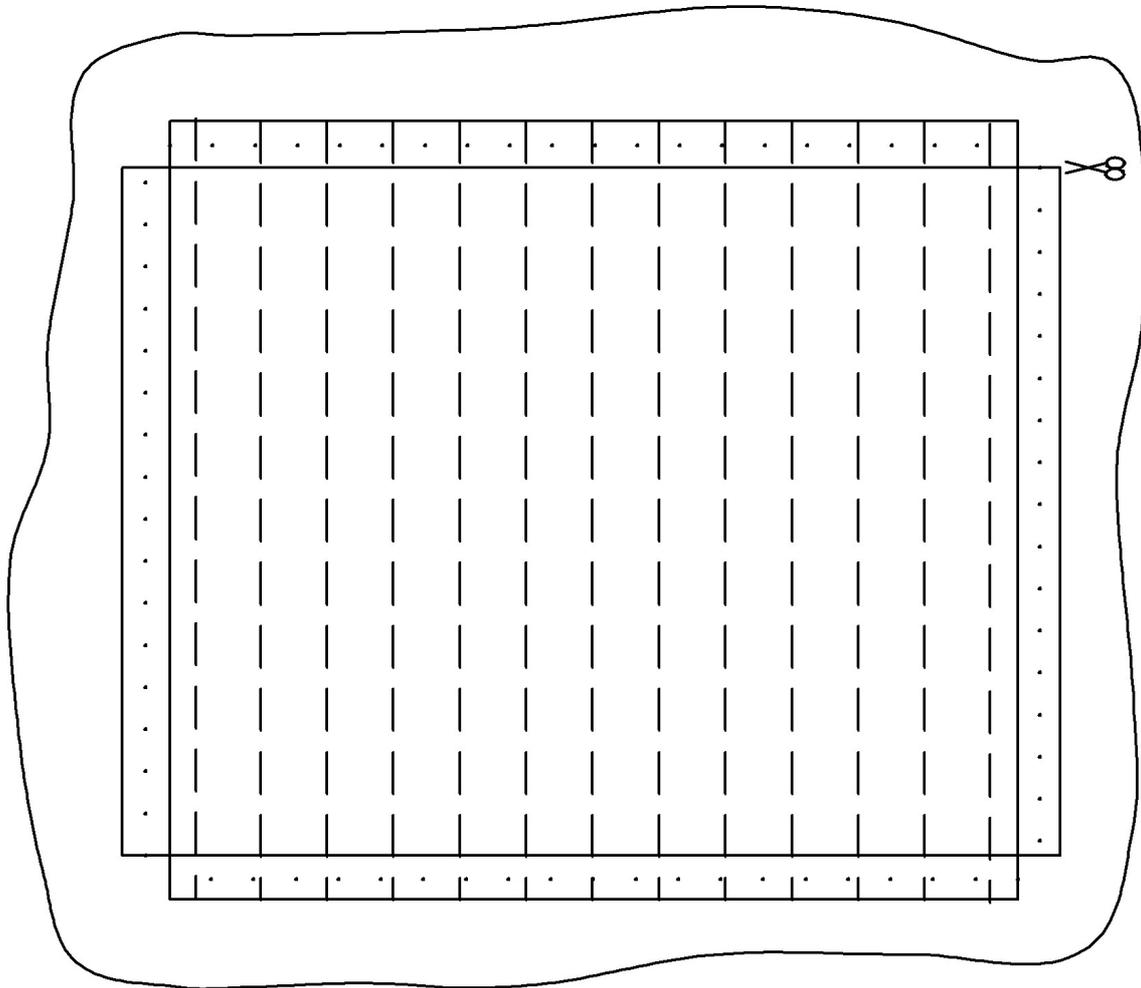
- a) First grind the yards into needed shapes. This work will be again easier if you will use modeller lathe.
- b) Install the yards and running rigging to the ship.



XVIIIb

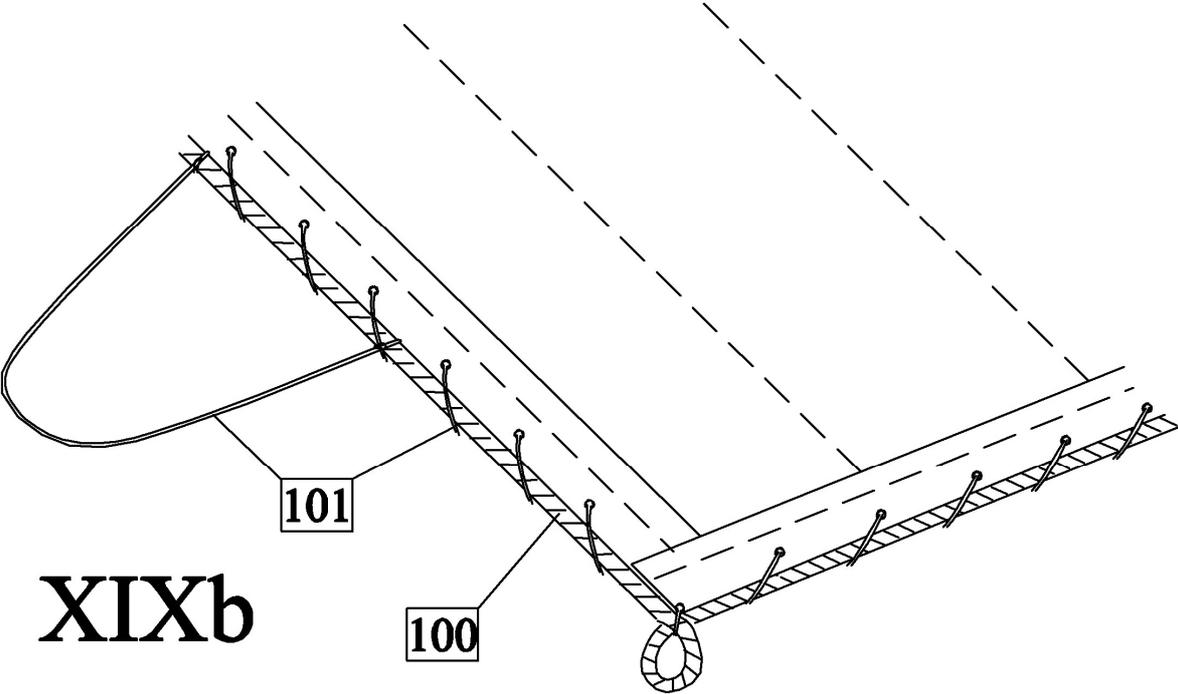
XIX) Sails and flags:

a) First draw by pencil contours of the sail on the cloth. To the border of the sails add about 10mm for fell. By the pencil draw on the cloth also seams which divided the sail into simple segments. Then By a sewing machine sew outlines of the sails segments. Then scissor the sail with fells and sewn it like it is shown below.

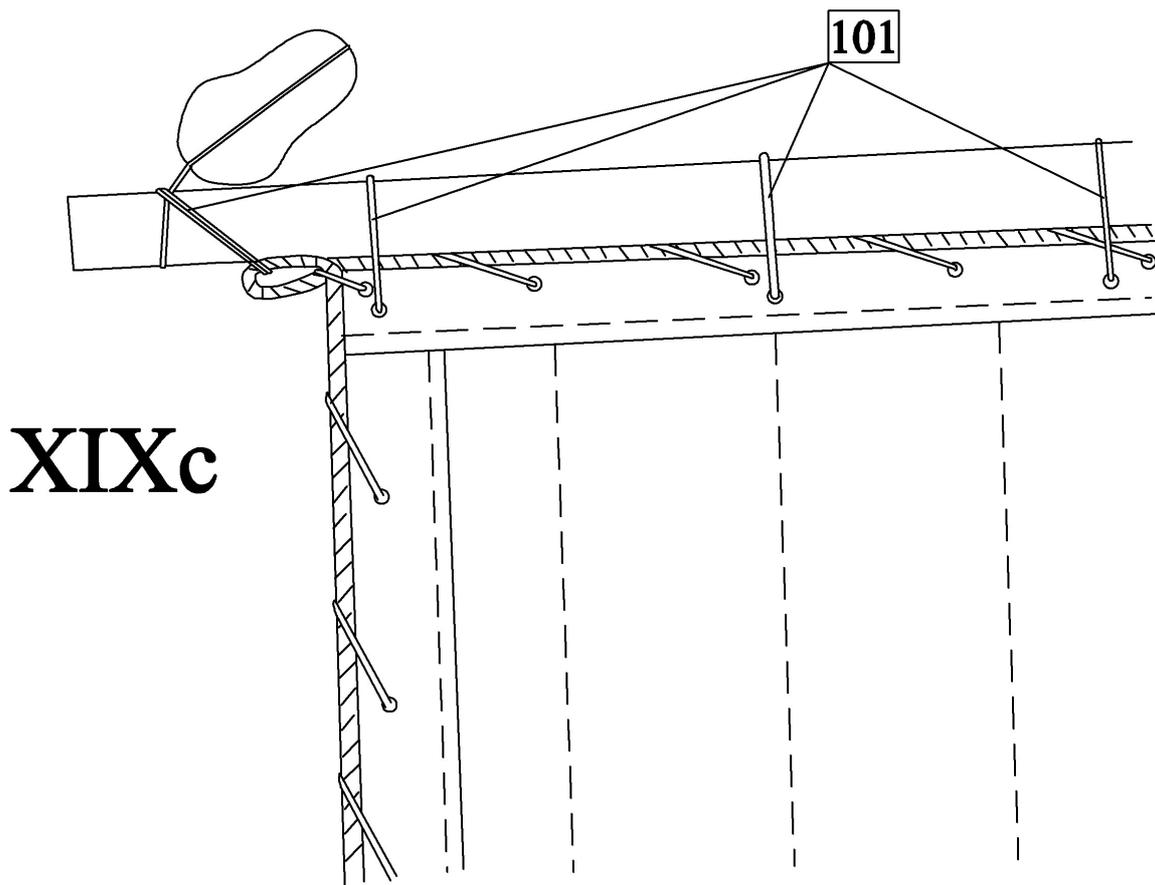


XIXa

b) To the circumference of the sails sew on ropes 100 so that in the corner of the sail will eyes with diameters about 3mm. Then tie ropes 101 to the sides of the sails.



c) Tie the sails to the yards by rope 101. Finally tie flags to the flagpoles.



XIXc

Part list:

0a-0c	Keel	plywood 4mm	1pc
1, 2	Keel	plywood 4mm	2pcs
3-14	Frames	plywood 4mm	1pc
15	Frames	plywood 4mm	3pcs
16-21	Reinforcements	plywood 4mm	2pcs
22-25	Reinforcements	plywood 3mm	2pcs
26	Reinforcements	plywood 3mm	1pc
27-40	Reinforcements	plywood 3mm	2pcs
41	Deck	plywood 0.8mm	1pc
42, 43	Deck	plywood 0.8mm	2pcs
44	Deck	plywood 0.8mm	1pc
45	Planking	strip 2x5mm	175pcs
46	Planking	strip 2x3mm	12pcs
47-51	Reinforcements	wood 3mm	2pcs
52-57	Keel	wood 3mm	2pcs
58	Deck	veneer 0.6mm	1pc
59a-d	Deck	veneer 0.6mm	1pc
60a-c	Deck	veneer 0.6mm	1pc
61	Capstan	dowel 5mm	3pcs
62	Capstan	wood 2mm	2pcs
63	Capstan	wood 2mm	3pcs
64	Capstan	wood 2mm	8pcs
65	Capstan	strip 2x2mm	5pcs
66	Capstan	wood 2mm	1pc

67	Doors	veneer 0.6mm	5pcs
68	Doors	veneer 0.6mm	5pcs
69	Doors	photoetched parts	9pcs
70	Doors	photoetched parts	18pcs
71-74	Stairs	wood 2mm	2pcs
75	Gratings	wood 2mm	4pcs
76	Gratings	strip 2x2mm	5pcs
77	Deck	veneer 0.6mm	1pc
78	Deck	veneer 0.6mm	1pc
79	Mast foot	wood 2mm	1pc
80	Doors	veneer 0.6mm	4pcs
81	Doors	veneer 0.6mm	4pcs
82	Knighthead	wood 3mm	2pcs
83	Eyebolts	eyebolt	100pc
84	Frames	strip 2x3mm	12pcs
85	Whipstaff	strip 2x2mm	5pcs
86	Whipstaff	wood 2mm	2pcs
87, 88	Helmsman's stand	veneer 0.6mm	1pc
89	Helmsman's stand	veneer 0.6mm	6pcs
90	Helmsman's stand	veneer 0.6mm	8pcs
91	Helmsman's stand	veneer 0.6mm	1pc
92	Guns	wood 2mm	14pcs
93	Guns	wood 2mm	28pcs
94-96	Guns	wood 2mm	14pcs
97	Guns	wood 2mm	28pcs
98	Gun barrels	gun barrel 28mm	14pcs
99	Block 2mm	block 2mm-1 hole	70pcs
100	Rope 0.75mm	rigging 0.75 hell	10m
101	Rope 0.25mm	rigging 0.25 hell	40m
102	Block 7mm	block 7mm-3 holes	2pcs
103	Rope 0.5mm	rigging 0.5 hell	20m
104-111	Beams	wood 3mm	1pc
112	Reinforcements	wood 3m	16pcs
113, 114	Deck	plywood 0.8mm	1pc
115a-d	Deck	veneer 0.6mm	1pc
116a-d	Deck	veneer 0.6mm	1pc
117	Gratings	wood 2mm	1pc
118	Gratings	strip 2x2mm	5pcs
119	Mast foot	wood 2mm	1pc
120	Gratings	wood 2mm	3pcs
121	Gratings	strip 2x2mm	5pcs
122	Gratings	wood 2mm	1pc
123	Gratings	strip 2x2mm	5pcs
124	Knightheads	wood 3mm	2pcs
125	Knightheads	strip 2x3mm	12pcs
126	Belaying pins	belaying pin	50pcs
127	Helmsman's shelter	veneer 0.6mm	1pc
128	Helmsman's shelter	veneer 0.6mm	2pcs
129	Helmsman's shelter	veneer 0.6mm	14pcs
130	Mast foot	wood 2mm	1pc

131	Frames	strip 2x3mm	12pcs
132	Plank sheer	strip 2x5mm	175pcs
133a	Plank sheer	wood 2mm	1pc
133b-i	Plank sheer	wood 2mm	2pcs
134	Plank sheer	wood 2mm	1pc
135	Plank sheer	wood 2mm	2pcs
136	Bits	wood 3mm	2pcs
137-139	Plank sheer	veneer 0.6mm	1pc
140, 141	Reinforcements	wood 2mm	2pcs
142	Windows	photoetched parts	2pcs
143	Windows	photoetched parts	4pcs
144	Supports	wood 2mm	6pcs
145	Supports	wood 2mm	4pcs
146	Deck	veneer 0.6mm	2pcs
147	Deck	veneer 0.6mm	4pcs
148	Railing	wood 2mm	1pc
149, 150	Railing	wood 2mm	2pcs
151	Railing	veneer 0.6mm	1pc
152, 153	Railing	veneer 0.6mm	2pcs
154	Railing	strip 2x3mm	12pcs
155	Stairs	veneer 0.6mm	12pcs
156	Stairs	veneer 0.6mm	8pcs
157	Stairs	veneer 0.6mm	40pcs
158	Stairs	veneer 0.6mm	10pcs
159	Stairs	veneer 0.6mm	12pcs
160	Stairs	veneer 0.6mm	6pcs
161	Rudder	wood 3mm	2pcs
162, 163	Rudder	wood 3mm	1pc
164, 165	Rudder	wood 2mm	1pc
166	Rudder	wire 1mm	0,1m
167-176	Rudder	photoetched parts	1pc
177	Gunport lids	strip 2x5mm	175pcs
178	Gunport lids	photoetched parts	36pcs
179	Gun barrels	gun barrel 21mm	18pcs
180	Gun barrels	gun barrel 15mm	4pcs
181	Hawse holes	wood 2mm	2pcs
182	Head	wood 3mm	2pcs
183	Cathead	wood 3mm	2pcs
184	Cathead	photoetched parts	2pcs
185	Cathead	wood 2mm	2pcs
186	Timbers	strip 2x5mm	175pcs
187	Timbers	strip 2x2mm	5pcs
188	Toilets	wood 2mm	2pcs
189	Toilets	wood 2mm	6pcs
190	Deck	strip 1x1mm	5pcs
191	Timbers	strip 2x3mm	12pcs
192	Die plate	wood 2mm	1pc
193	Bowsprit	dowel 8mm	2pcs
194	Bowsprit	strip 1x1mm	5pcs
195	Rope 0.75mm	rigging 0.75 dark	10m

196, 197	Chain plates	photoetched parts	28pcs
198	Chain plates	photoetched parts	20pcs
199	Chain plates	photoetched parts	8pcs
200	Deadeye blocks	deadeye block 5mm	56pcs
201	Deadeye blocks	deadeye block 3.5mm	40pcs
202-204	Channels	wood 2mm	2pcs
205	Channels	wood 2mm	2pcs
206	Capping strips	strip 2x2mm	5pcs
207	Staghorns	plywood 0.8mm	8pcs
208	Staghorns	plywood 0.8mm	16pcs
209	Guns	gun barrel 20mm	12pcs
210	Guns	wire 0.5mm	0,2m
211	Guns	photoetched parts	12pcs
212	Guns	dowel 3mm	1pc
213	Railing	strip 2x3mm	12pcs
214	Railing	veneer 0.6mm	1pc
215	Railing	veneer 0.6mm	2pcs
216	Railing	strip 2x3mm	12pcs
217	Railing	wood 2mm	1pc
218	Railing	wood 2mm	2pcs
219, 220	Belaying pins rails	strip 2x3mm	12pcs
221	Railing	veneer 0.6mm	2pcs
222	Railing	wood 2mm	2pcs
223	Belaying pins rails	strip 2x3mm	12pcs
224	Knighthead	wood 3mm	1pc
225	Tops	veneer 0.6mm	4pcs
226	Tops	veneer 0.6mm	4pcs
227a, b	Tops	veneer 0.6mm	2pcs
228	Tops	veneer 0.6mm	72pcs
229	Tops	veneer 0.6mm	2pcs
230, 231	Stand	plywood 4mm	1pc
232	Stand	plywood 4mm	2pcs
233	Anchors	anchor	2pcs
234	Anchors	wooden part	2pcs
235	Anchors	ring 5mm	2pcs
236	Anchors	brass parts	4pcs
237	Rope 1.75mm	rigging 1.75 hell	0,3m
238	Blocks 5mm	block 5mm-2 holes	3pcs
239	Mizzen mast	dowel 5mm	3pcs
240	Main topmast	dowel 6mm	1pc
241	Fore topmast	dowel 5mm	3pcs
242	Fid	wire 0.5mm	0,2m
243-245	Flagpoles	dowel 2mm	1pc
246	Trucks	dowel 3mm	1pc
247	Main yard	dowel 6mm	1pc
248	Fore yard	dowel 5mm	3pcs
249	Main topsail yard	dowel 3mm	1pc
250	Fore topsail yard	dowel 3mm	1pc
251	Mizzen yard	dowel 4mm	1pc
252	Spritsail yard	dowel 3mm	1pc

253	Parral	roller 2mm	150pcs
254	Parral	veneer 0.6mm	27pcs
255	Parral	veneer 0.6mm	32pcs
256	Cleats	plywood 0.8mm	6pcs
257	Fid	strip 1x1mm	5pcs
258	Main mast	dowel 10mm	1pc
259	Fore mast	dowel 8mm	2pcs
260	Cheeks	wood 2mm	4pcs
261	Trestle trees	wood 2mm	4pcs
262	Cross trees	strip 2x3mm	12pcs
263	Trestle trees	veneer 0.6mm	12pcs
264	Cross trees	veneer 0.6mm	12pcs
265	Caps	wood 2mm	9pcs
266	Caps	wood 2mm	12pcs
267-272	Sails	cloth	1pc
273-275	Flags	flag	1pc
276	Rope 0.5mm	rigging 0.5 dark	10m
277, 278	Blocks	wood 2mm	2pcs
279	Rope 0.25mm	rigging 0.25 dark	40m
280	Blocks 3mm	block 3mm-1 hole	90pcs
281	Blocks 5mm	block 5mm-1 hole	6pcs
282	Blocks 7mm	block 7mm-violin	4pcs
283	Hooks	photoetched parts	2pcs
284	Blocks 3mm	block 3mm-2 holes	10pcs
285	Head wall	wood 2mm	2pcs
286	Head wall	wood 2mm	1pc
287	Head wall	veneer 0.6mm	2pcs
288	Head wall	strip 2x3mm	12pcs