

GREEK BIREME 6th century B.C.

SCALE: 1/72

length: 395mm

width: 150mm

height: 140mm

HISTORY:

The model represents the Greek bireme from the 6th Century before Christ. The garrison force was created by 50 oarsmen, who were sitting in two rows one above another (on each side 25) and by about another 10 soldiers. In the event of struggle the oarsmen left the oars and skulls and fought with the shields and swords. The protrusion on the forward of the ship served for sinking of the enemy ships, the boat strove to crash by that into the hull of the adversary boat. The ship was handled by two rudders on the stern. The main drive of the ship was oared, the sail served only for longer lasting voyages. During the battle the sail together with the mast were down swept on stern and the ship was driven entirely by oars.

Recommended tool list:

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

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.

Coloring:

The antique Greek ships have had the hull sealed by resin, whereby they have obtained the black color. The board sides might have been colored in red. Big eye was painted on every side of the forward. The deck was in natural color of wood. The paints for plastic models or a special paint for wood is possible to use for painting this model.

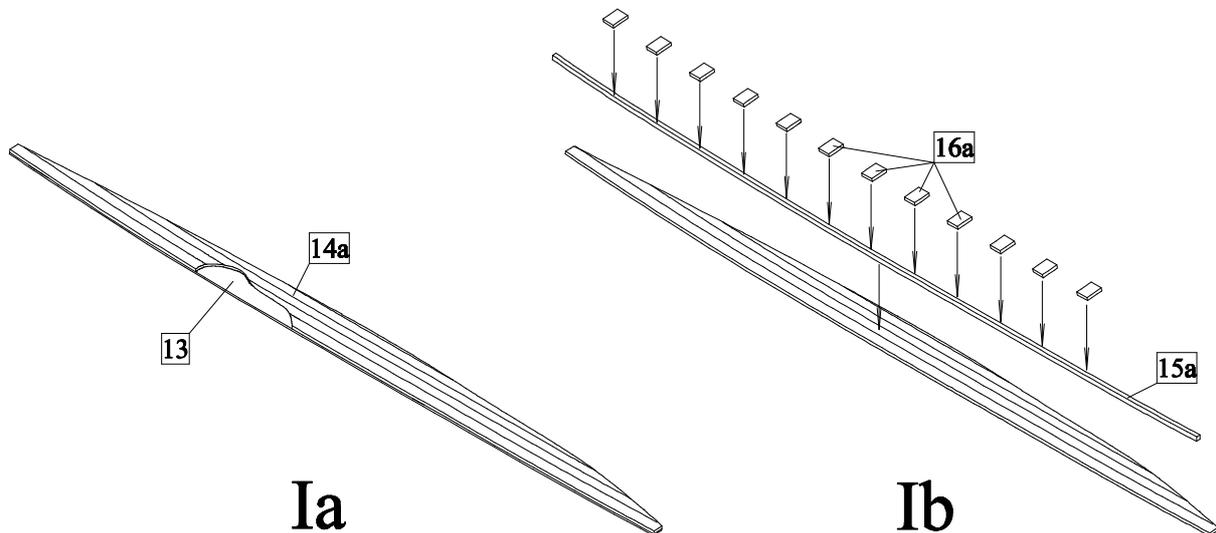
Bending of wooden strips:

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 steps.

Building of the model:

I) Lower deck:

- a) Glue strips 14a to decks 13 (both right and left side).
- b) Glue beams 15a to the both decks and then to the beams also seats of oarsmen 16a. Exact position of the beams 15a and seats of oarsmen are shown in the plan 2.

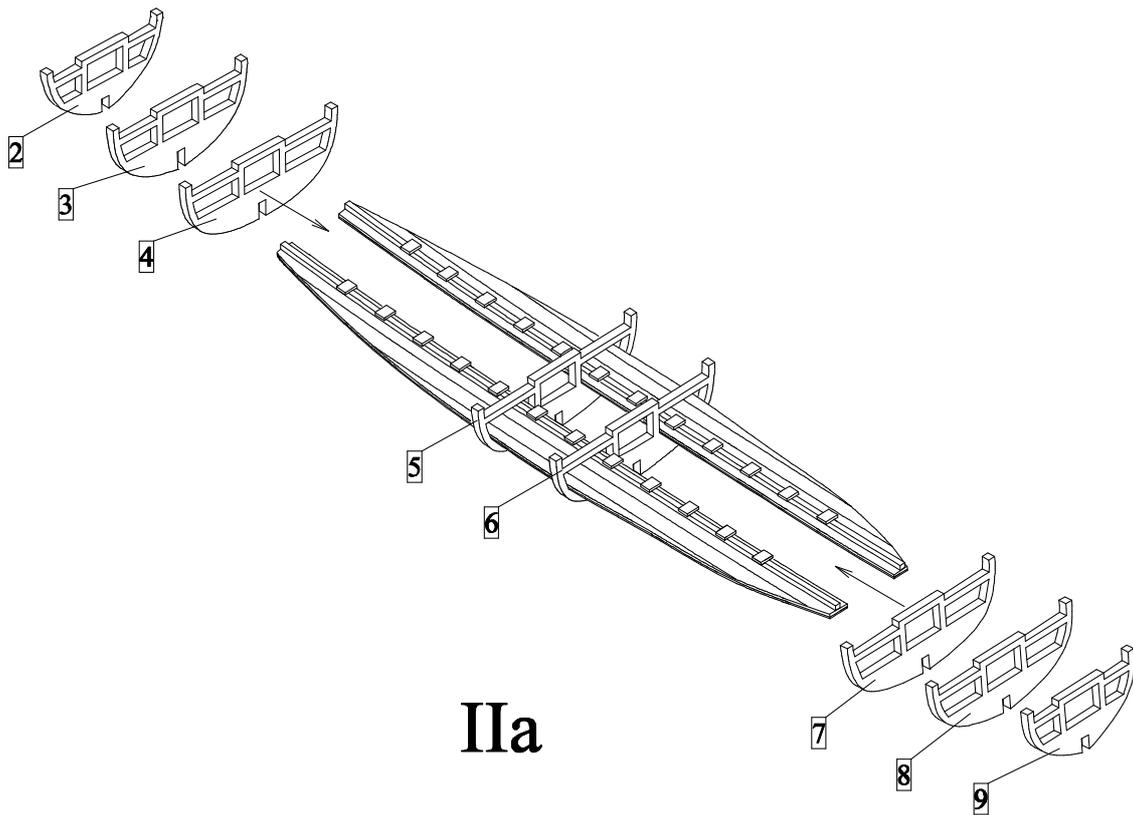


II) Framework of the hull:

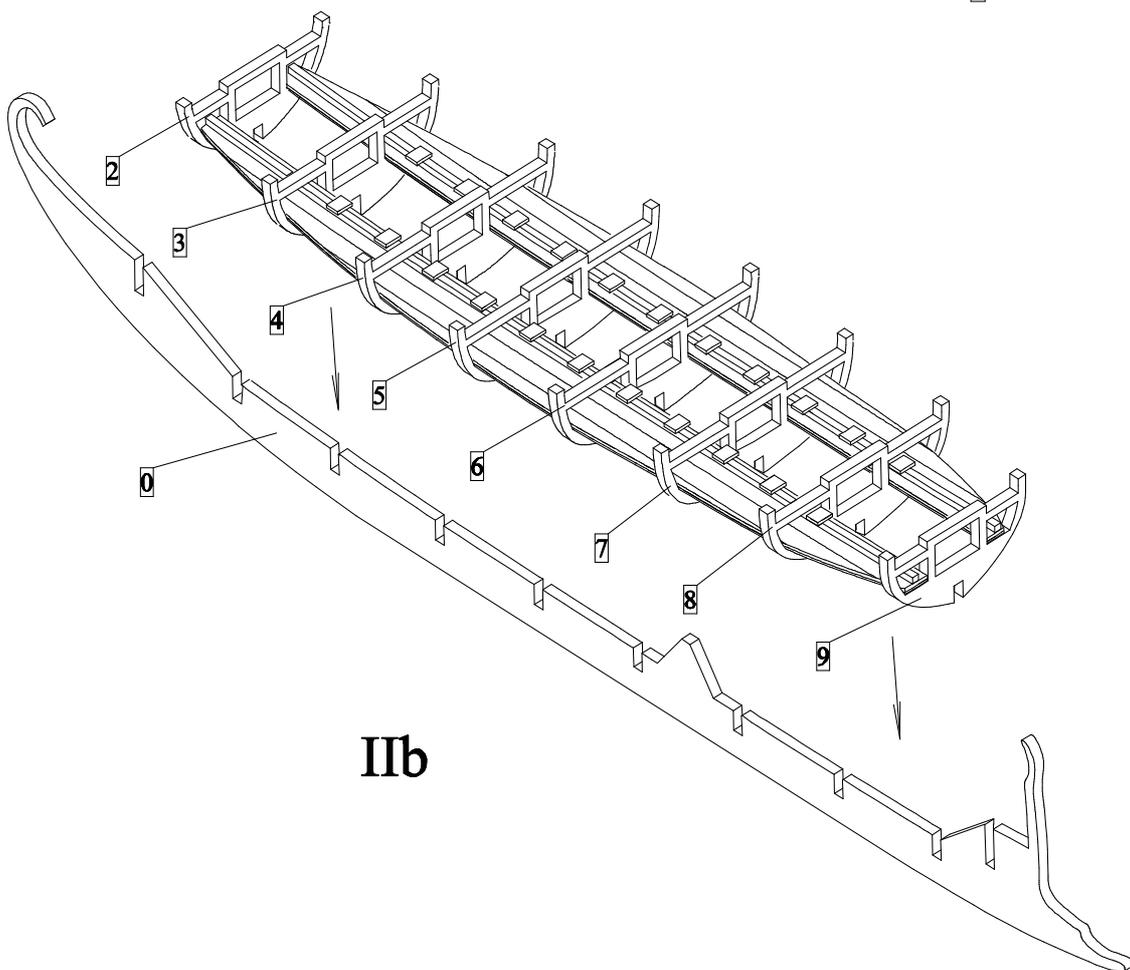
- a) Run the lower decks through windows in frames from 2 to 9. Attention: don't glue them in this step!
- b) Push the frames with the decks in a keel.
- c) You can make a simple tool for assuring of perpendicularity between the keel and frames. The tool is shown in the figure IIc. Now you can glue the frames first to the keel and then also to the decks.

III) Planking of the hull:

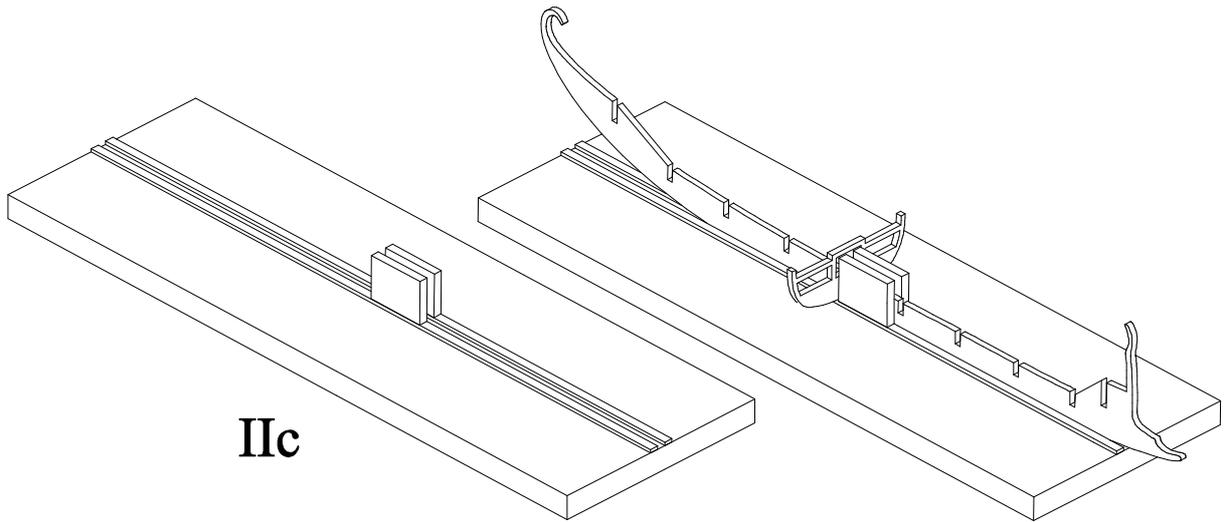
- a) Sharpen by sand paper the reinforcements 11 and 12.
- b) Glue to the keel the frames from 1 to 10 and reinforcements 11 and 12 and reinforcement of mast 17. Then glue to the frames beams 15b and to the beams glue the seats of oarsmen 16b. Exact position of the beams 15b and seats of oarsmen 16b is shown in the plan 1.



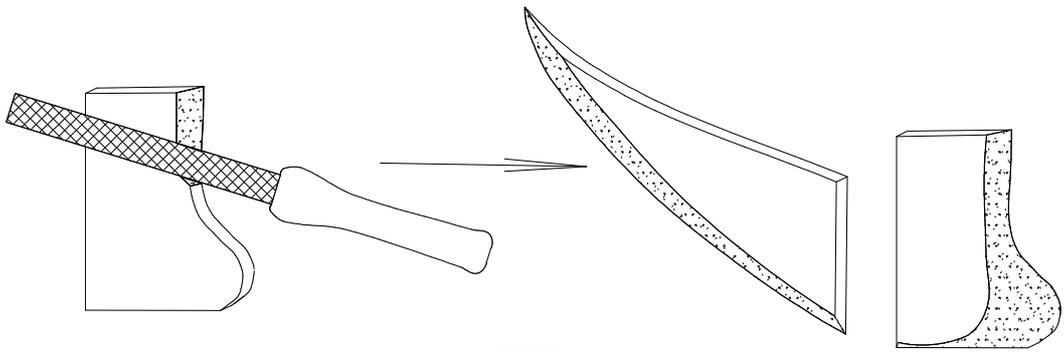
IIa



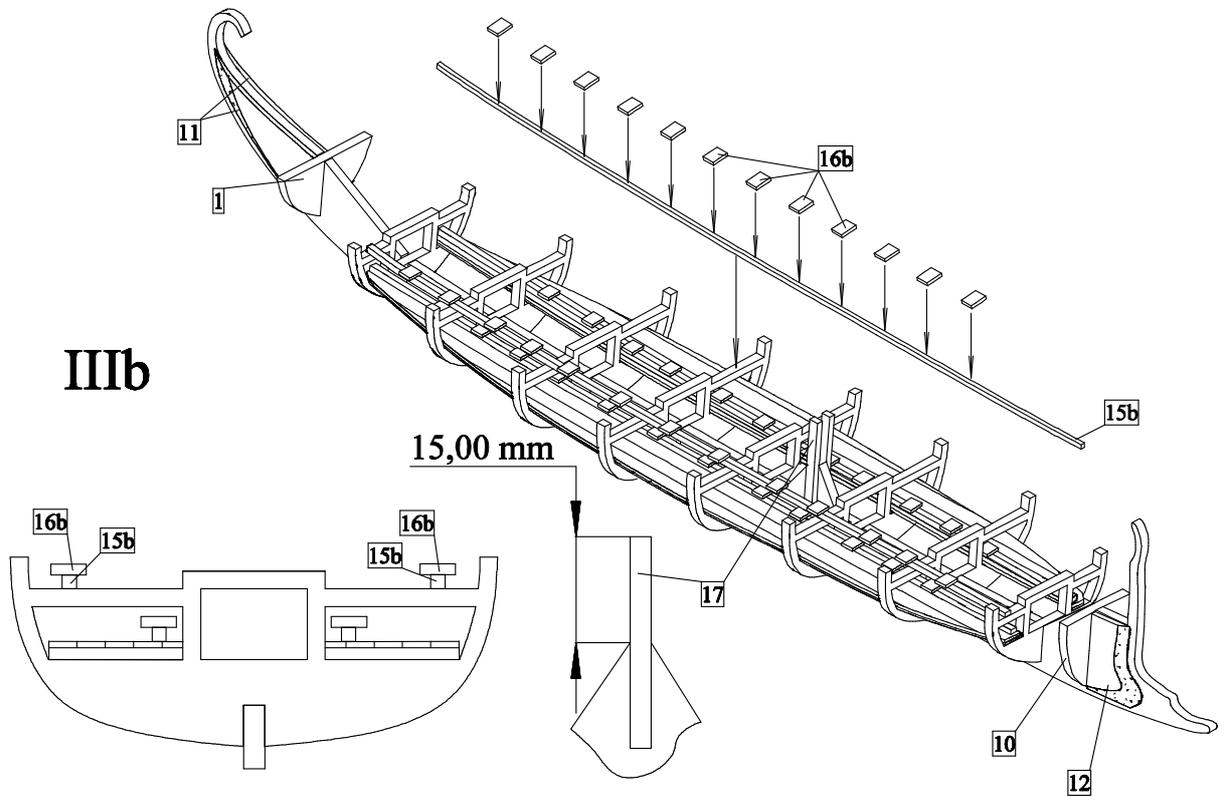
IIb



IIc



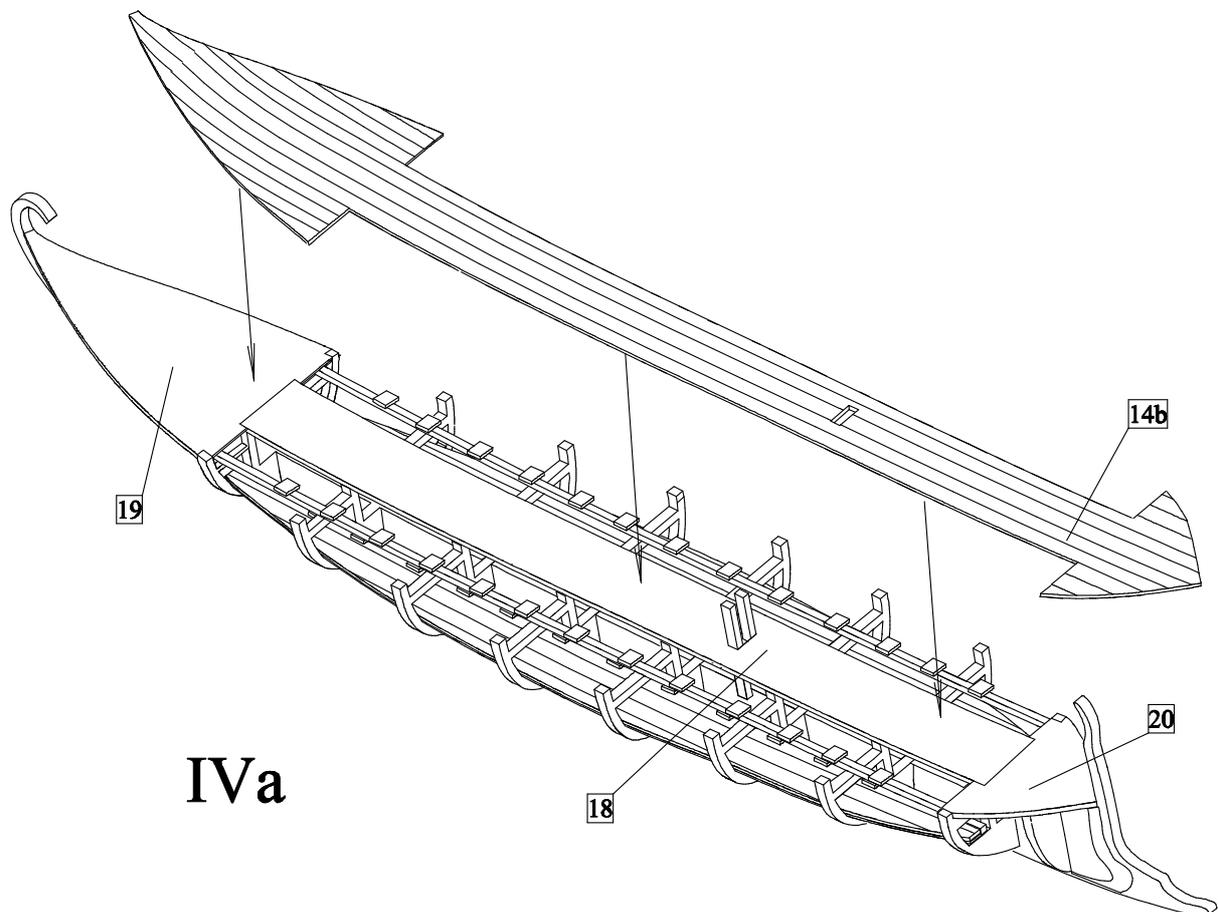
IIIa



IIIb

IV) Upper deck:

a) Deck 18, 19 and 20 from plywood 1mm glue to the frames and keel. Then to the decks 18, 19 and 20 glue strips 14b.



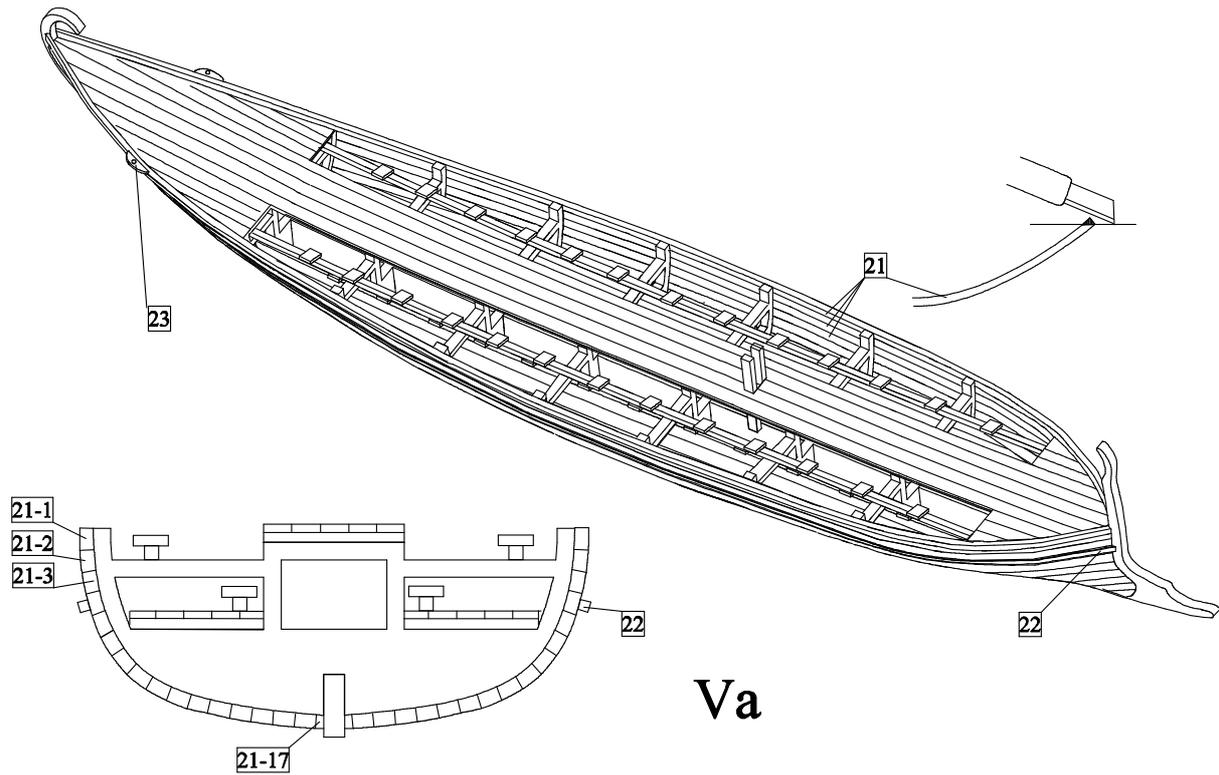
IVa

V) Hull planking:

a) First bend the strips into required shapes. Process of bending of the strips is described at the beginning of this instruction. Start with strip 21-1. First glue it to the stem and continue to the stern. Then glue similarly also other strips from 21-2 to 21-17. After that glue wales 22 to the strips 21-4 and parts 23 to the strips 21-1.

Drill holes of diameter 2,5mm into the strips 21-3. Exact position of the holes in the hull is shown in the plan 1. Then sharpen by needle file also half round groove into strips 21-1. Exact position of the half round groove is also shown in the plan 1.

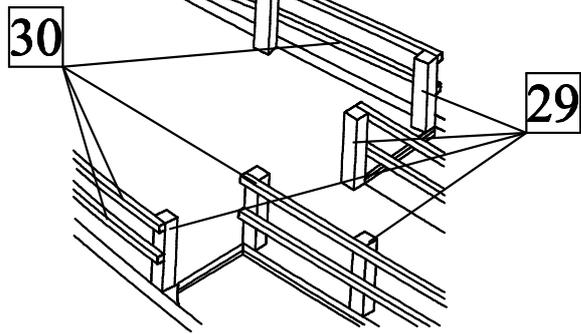
Drill holes of diameter 1mm below the half round groove.



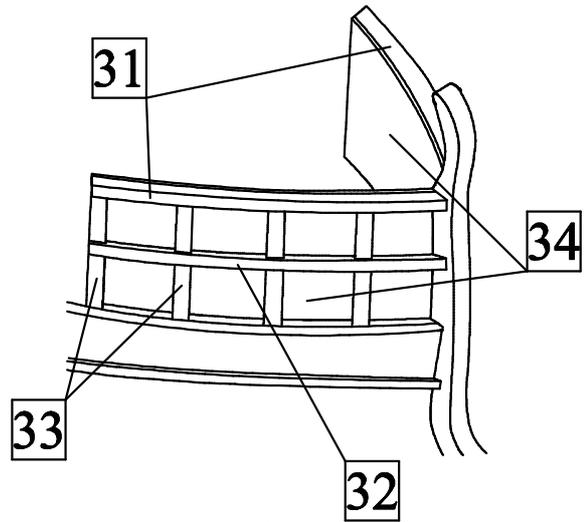
Va

VI) Details:

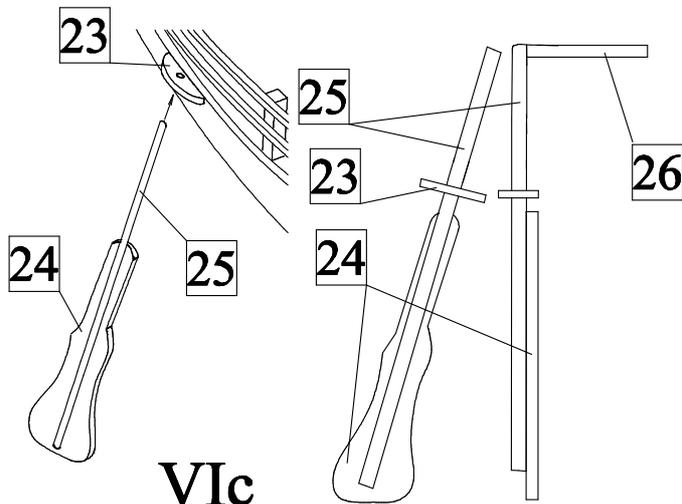
- a) Glue columns of railing 29 to the deck. A position of simple columns is shown in the plan 1. Glue to the columns diagonal beams 30.
- b) Make from parts 31-34 a barrier in a bow of the ship. First glue columns 33 to part 32 and then glue to the columns 33 also upper part 33. Glue veneer plate to inner side of barrier.
- c) Make steering oars from parts 24 and 25. Then run the steering oars through holes in parts 23 and then glue to steering oars also handles.
- d) Tie the steering oars by rigging rope 38 to the parts 23 and 30.
- e) Make bitts 27 and 28 from strip 2x2mm. The bitts are shown in the plan 2. Then glue the bitts to the deck. Position of the bitts on the deck is shown in the plan 2.



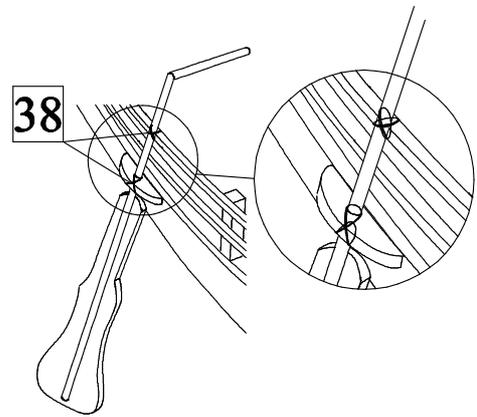
VIa



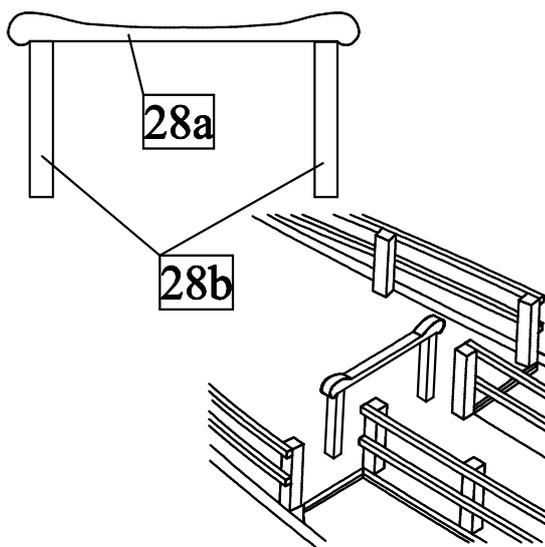
VIb



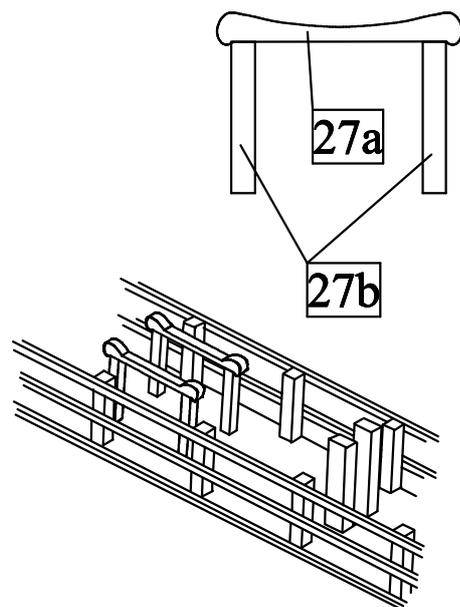
VIc



VIId

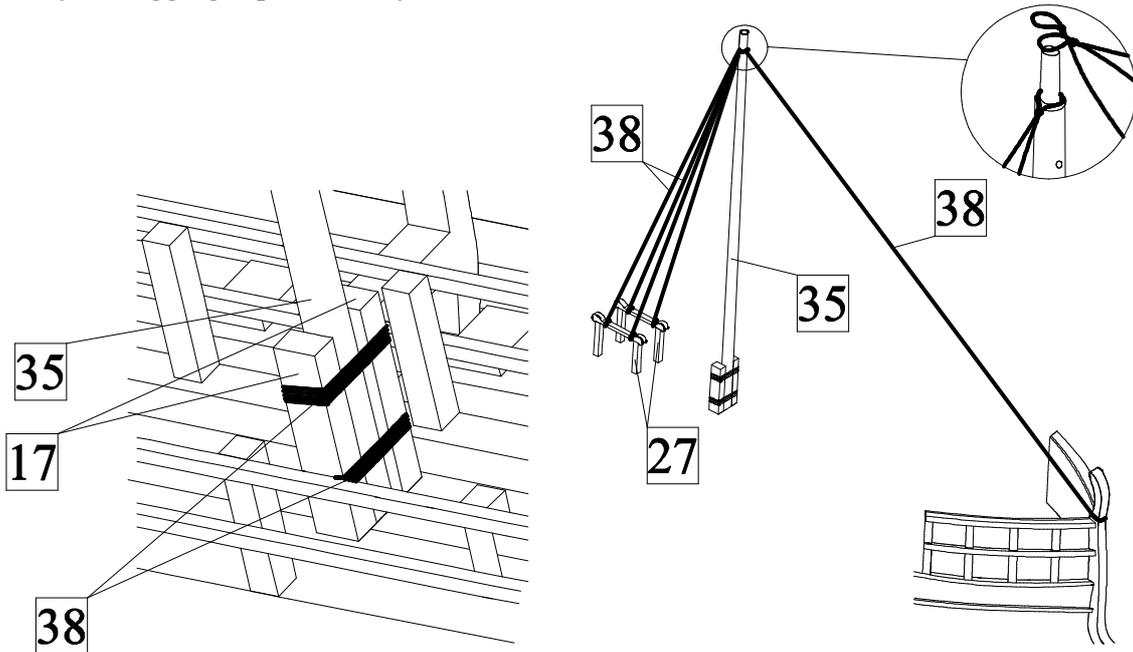


VIe



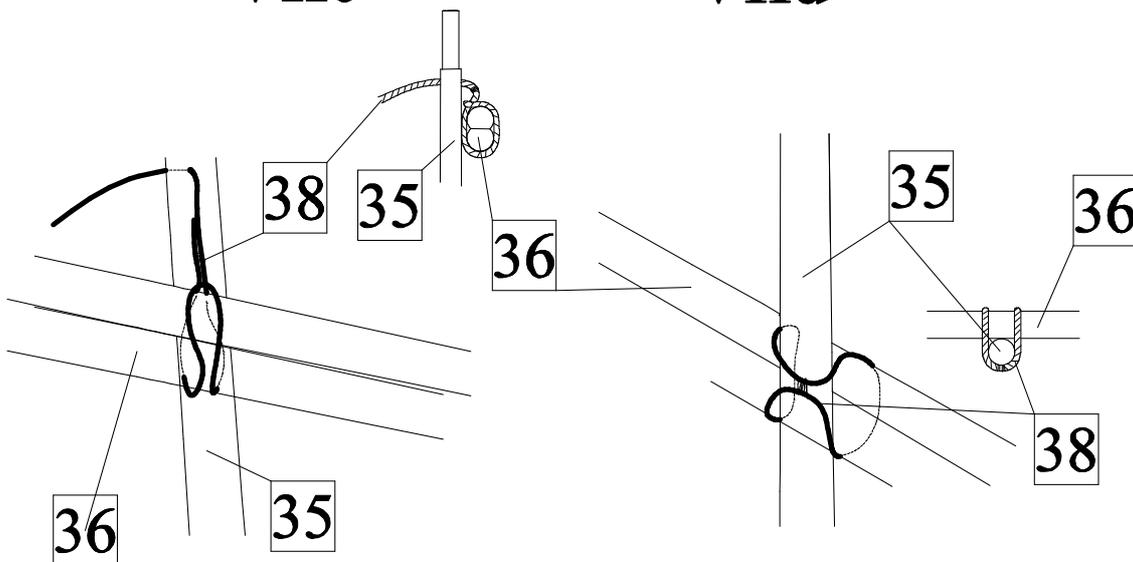
VII) Mast and Yard:

- a) Sharpen the mast 35 by a sand paper from dowel 3mm. Make an offset for belaying of rigging ropes on a top of the mast. Drill a hole 1,5mm for rope which serve to elevation of the yard on a top of the mast. The mast is shown in plan 2.
- b) Make the yard 36 from a dowel 2mm. The yard is compound from two parts which are together joined by rope 38.
- c) Tie the mast by rigging ropes 38 to reinforcements 17.
- d) Fix the mast by rigging ropes 38 to stem and to bitts 27.
- e) Tie the rigging rope which serve to elevation to the yard and then run it through the hole 1,5mm in the mast.
- f) Tie by the rigging ropes 38 the yard to the mast.



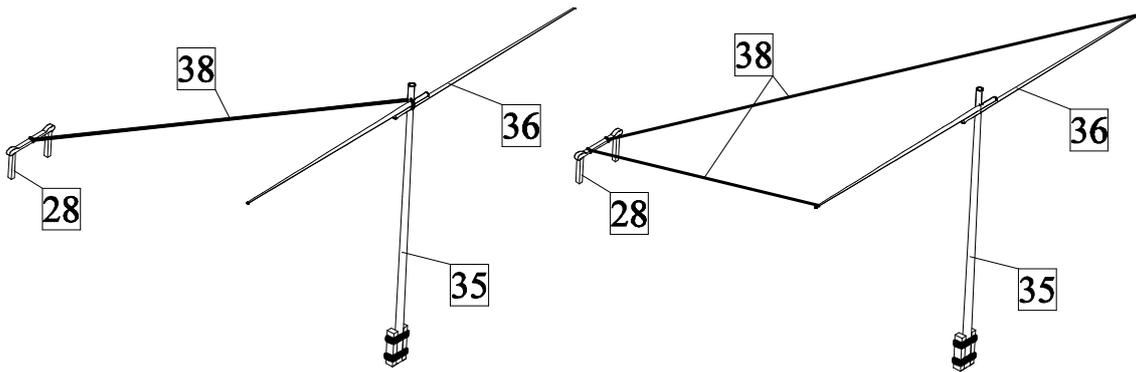
VIIc

VII d



VIIe

VII f



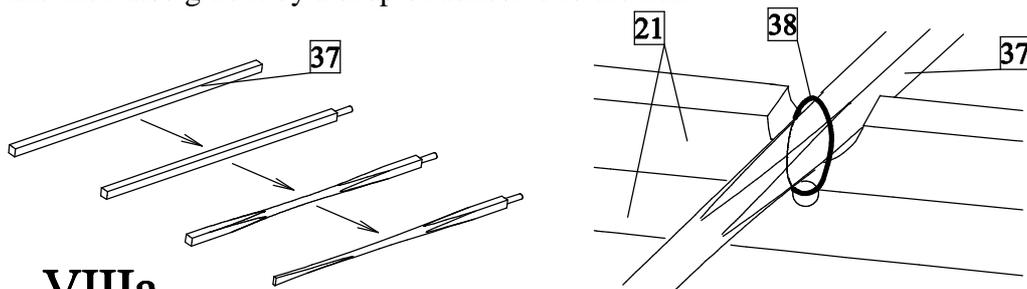
VIIg

VIIh

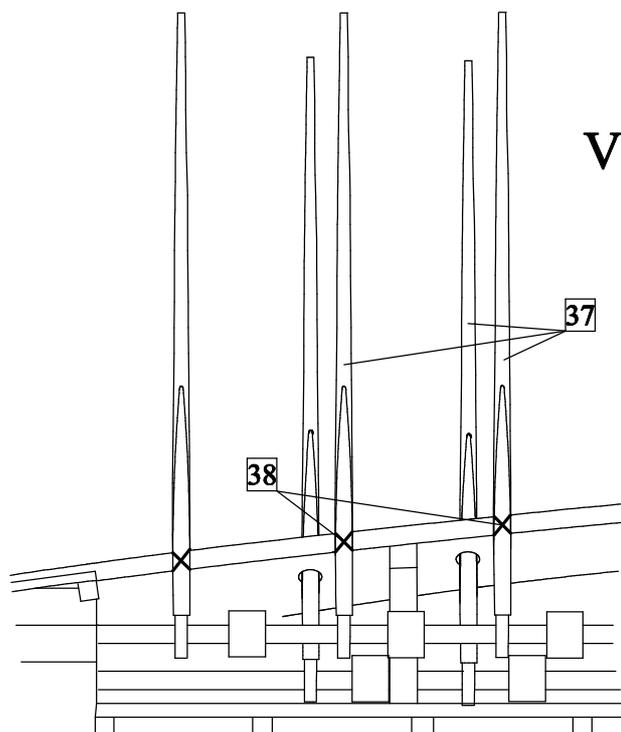
VIII) Oars:

a) Make the oars from strips 2x2mm. First sharpen through a needle file a handle of the oar. Then sharpen through a sand paper a middle part of the oar into round shape. Finally sharpen a blade of the oar. The oar is shown in plan 1.

b) Install the oars on the ship. Lace a lower row of oars thru the holes 2,5mm and then glue it by drop of adhesive to the hull. Tie the upper row of oars by rigging rope 28 to half round groove and then also glue it by a drop of adhesive to the hull.



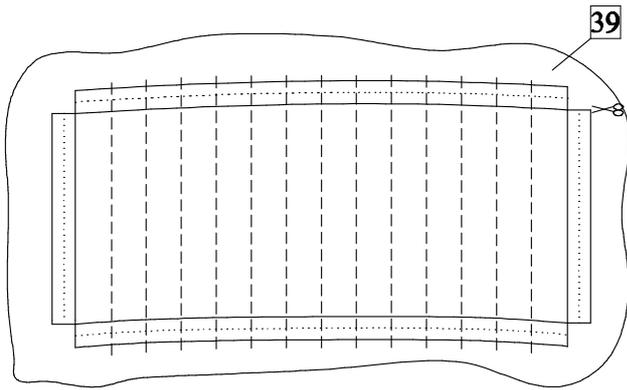
VIIIa



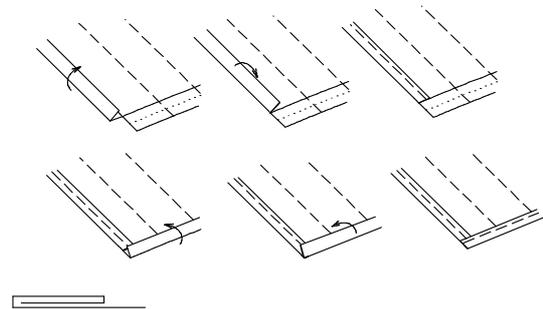
VIIIb

IX) Sail:

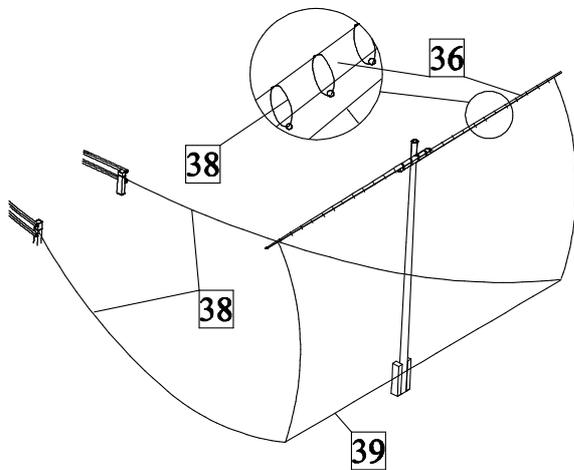
- a) Draw by a pencil outlines of the sail on the cloth. Add about 10mm to corners for making a fell. Draw by a pencil also outlines which divide the sail into simple segments.
- b) First sew on by a sewing machine seams which divide the sail into simple segments. Then cut out the sail with add edge and then stepwise sew on the fells.
- c) Install the sail on the ship. First fasten by rigging rope 38 the sail to yard. Then fasten by rigging rope 38 lower corners of the sail to column of railing.
- d) Fasten ropes which serve to reef of sail to lower edge of the sail. Then run the ropes about the yard and then fasten them to bitts 28.



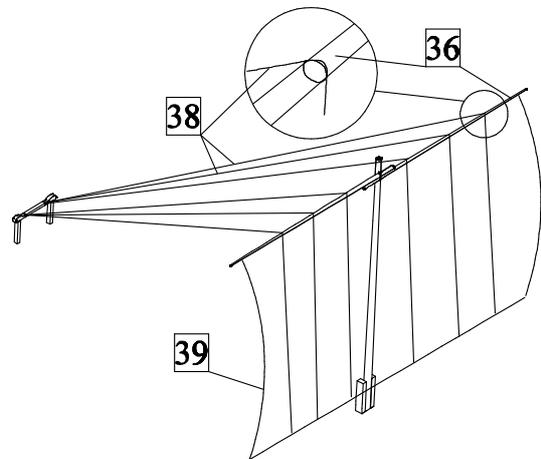
IXa



IXb



IXc



IXd

Part list:

0	Keel	plywood 3mm	1pc
1-10	Frames	plywood 3mm	1pc
11,12	Reinforcements	plywood 3mm	2pcs
13	Deck	plywood 1mm	2pcs
14	Deck	strips 0,5x4mm	15pcs
15	Beam	strips 2x2mm	15pcs
16	Seats	strips 1x4mm	1pc
17	Mast reinforcement	strips 2x3mm	40pcs
18-20	Deck	plywood 1mm	1pc
21	Planking	strips 2x3mm	40pcs
22	Wales	strips 1x1mm	10pcs
23	Rudder	plywood 1,5mm	2pcs
24	Rudder	plywood 1,5mm	2pcs
25-26	Rudder	dowel 2mm	1pc
27a,b	Bits	strips 2x2mm	15pcs
28a,b	Bits	strips 2x2mm	15pcs
29	Railing	strips 2x2mm	15pcs
30	Railing	strips 1x1mm	10pcs
31-32	Railing	plywood 1,5mm	1pc
33	Railing	strips 2x2mm	15pcs
34	Railing	veneer 0.6mm	1pc
35	Mast	dowel 3mm	1pc
36	Yard	dowel 2mm	1pc
37	Oars	strips 2x2mm	15pcs
38	Rigging	rope 0,5mm	5m
39	Sail	cloth	1pc