2 Sheets. Sheet 1.

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Fig. 3. Transverse section.

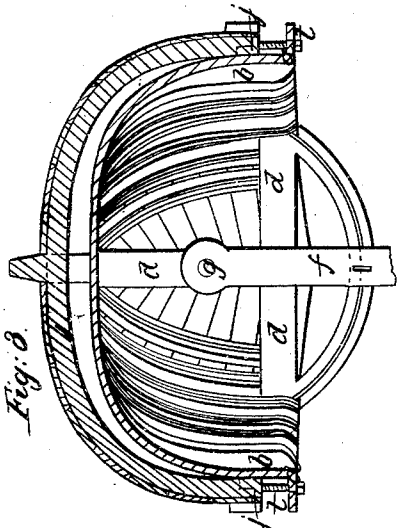


Fig. 4. Front Elevation

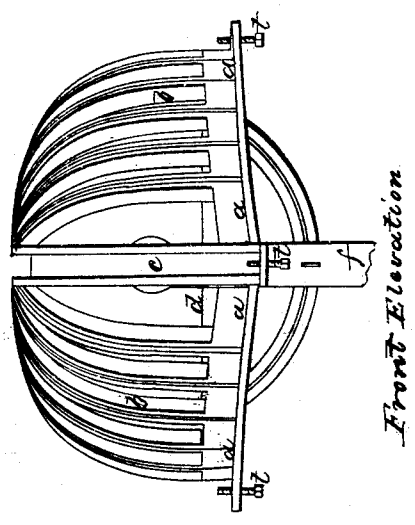


Fig. 1. Elevation.

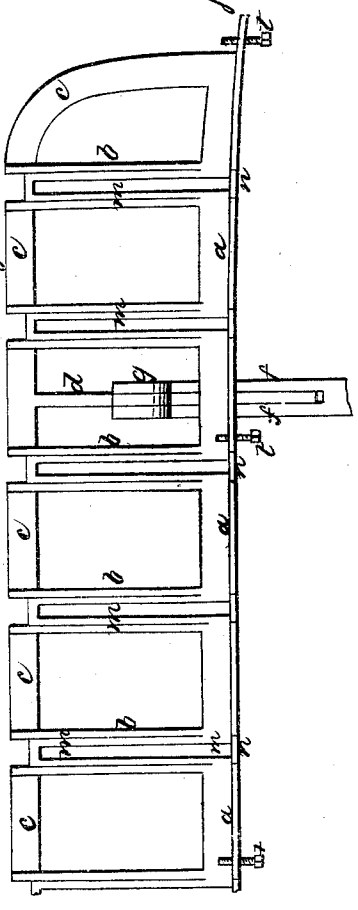
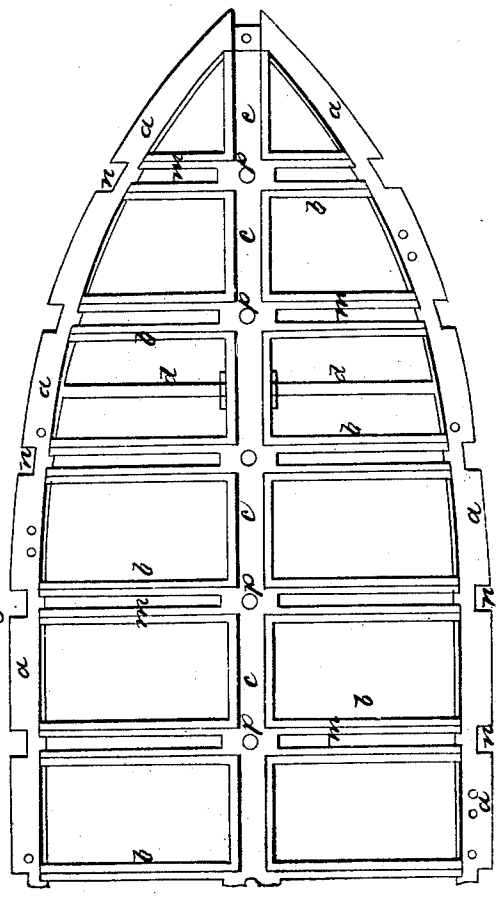


Fig. 2. Plan.



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Fig. 5. Transverse section shewing man nailing on sheathing.

Fig. 6. Transverse section shewing the men riveting.

Fig. 7. Perspective view.

Fig. 8.

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UNITED STATES PATENT OFFICE.

N. THOMPSON, JR., OF BROOKLYN, NEW YORK.

MOLDING-FRAME FOR THE CONSTRUCTION OF BOATS.

Specification of Letters Patent No. 20,308, dated May 18, 1858.

To all whom it may concern:

Be it known that I, NATHAN THOMPSON, Jr., of Brooklyn, eastern district, Kings county, New York, have invented certain new and useful Apparatus to be Used in the Construction of Boats, and that the following specification, taken in connection with the drawings, is a full, clear, and exact description thereof.

Figure 1 is a side elevation of one half of the apparatus. Fig. 2 is a top view of the same. Fig. 3 is a vertical cross section thereof with the finished boat represented in the act of being removed therefrom. Fig. 4 is a front elevation of the apparatus. Fig. 5 is a cross section of the apparatus and of a boat partly finished. Fig. 6 is also a cross section, showing how the apparatus is supported when it is desirable to work on the inside of the boat. Fig. 7 is a perspective view of a partly finished boat, in position upon the apparatus and Fig. 8 is an elevation of a thumb screw and washer.

The object of my invention is to cheapen the manufacture of boats by reducing the time now necessary for their construction and by being able to build an equally good boat with labor of a less expensive character, and the nature of the first part of my invention consists in a suitable frame constructed of any proper material in such manner as to be capable of supporting and retaining in proper relative position to each other, the same that they occupy in a finished boat, the gunwale ribs keel stem and stern posts, said frame being substantially such as is hereinafter described. And the nature of the second part of my invention consists in mounting substantially such a frame upon supports that admit of the frame being easily placed and retained in various positions proper for the operation of workmen while building a boat thereon substantially as hereafter set forth. And the nature of the last part of my invention consists in providing the frame with proper means substantially such as specified for the purpose of removing the boat, when finished from the frame upon which it was built.

The ordinary method of constructing small boats by means of setting up one or more ribs upon a keel, and then applying ribbons and drawing or bending them into shape and then fitting other ribs thereto, and finally planking up is a process so well known as to need no further detail of description, and a contrast therewith of the method of construction by the use of my invention, is unnecessary in this paper as the following description of my invention will enable any person skilled in the art clearly to distinguish between the two.

The model and size of a boat having been previously determined, a frame L shaped in its section is procured, so bent or otherwise formed that the L shaped surface shall correspond with the interior of the gunwale of the finished boat both as to sheer and horizontal curvature. This piece is represented in the drawings at *a a a*. To this piece are to be attached other frames with a V shaped section each frame being shaped like one of the ribs of the boat to be made, and such frames being attached to the gunwale frame so as to support the ribs in the proper relative position that they are to occupy in the finished boat. These rib frames are shown at *b b b* and they are to be united each to the other by another frame also V shaped in section such as *c c c* so shaped as to correspond with the keel, stem, and stern posts of the boat.

By reference to the drawings it will be perceived that the gunwale frame has certain notches cut therein, that the keel frame has slots or holes cut through the bottom of the V and that the rib frames have a slot throughout their length also in the bottom of the V. The bottom of the V in both keel and rib frames conforms in surface with the inner surfaces of the keel and ribs of the boat to be built and it is the best plan to make the edges of the V's of the rib frames correspond with the edges of that surface of the ribs upon which the planking is to be nailed as they will then serve as guides for dubbing off the ribs both to curve and bevel. These edges should however gradually die away into the bottom at the gunwale so as to admit of the removal of the finished boat.

The frame as a whole when solidly put together in any manner known to mechanics is supplied with two or more cross pieces such as *d d* securely attached to it, and these pieces are to enter between two posts or a slotted post such as *f f* securely attached to the ground or floor, a bolt as at *g g* is then to be passed through the posts and cross pieces, and the cross pieces are to have attached to them arcs such as represented in the drawings entering between the posts and

capable of being fixed at various points by a set screw *h*. The object of the whole arrangement is to support the frame, in connection with side benches and to admit of its being turned and fastened at different angles with the horizon.

It will be observed that the cross pieces and bolts are so arranged that the line on which the frame as a whole turns is one joining the center of gravities of the several sections of the frame, and this arrangement is essential as without it there would be considerable difficulty in handling such a heavy body as the frame is when made as I prefer of cast iron.

Upon substantially such an apparatus there are several ways of constructing a boat. The way I prefer is as follows: I procure pieces of wood of proper length and size for a sort of inside gunwale such as *j*, and the frame being set in position as in Fig. 5, have the wood properly steamed and then bend it so as to lie in the angle of the L and hold it in place as it is bent either by clamps or screws such as *k* the washer of which rests against the inside of the frame while the gimlet pointed screws project through the long slits *m m* near the bottom thereof, and then enter the gunwale. When the gunwale is thus secured it is to be notched on the outside for the reception of ribs. Pieces of proper size and length for ribs are then to be taken and tenoned at one end to enter the notches in the gunwale. The tenon may then be tacked fast or secured in some other way in position upon the gunwale and the rib is to be bent over in contact with the bottom of the rib frame being secured at intervals by screws passing from the inside through the slits or in some convenient way, until it reaches the gunwale on the opposite side when it is to be joined thereto by a tenon and notch. The ribs are in succession to be thus bent and secured in shape and proper relative position and a piece or pieces of wood of suitable size and shape for the keel stem and stern posts are then to be bent over the keel frame along its V from the gunwale at the bow to the gunwale at the stern. I usually intend to cut notches both in the keel and ribs at their points of junction, and the keel is to be held in place by bolts or spikes driven from the outside through the ribs and passing down through holes such as *p p*, the stem and stern post are to be secured to the keel and to the gunwale.

The frame of the boat, all parts secured in proper relative position is now ready for planking, and the planks may be secured to the ribs, and stem, as also to each other and to the keel in any usual way. If rivets are the fastening employed they are to be driven from the outside, when driven the boat may be turned after the benches such as *s s* that hold up the sides of the frame are removed, until the boat and frame are in position as in Fig. 6; free access may then be had to the interior and the rivets can be headed up over clench rings as usual. The boat may now be calked and is to be lifted off of the frame by screws such as *t t* working in nuts tapped in or secured to the gunwale frame. This latter contrivance is a necessary adjunct, as the boat as a whole even after the confining screws or clamps are removed adheres tightly to the frame on which it was built, and it is difficult to attach lifting apparatus to it without marring the boat.

I intend usually to apply an outside gunwale such as *x x* over the gunwale streak of planking. When the boat is removed from the frame it may be turned upside down or in the position it would occupy in the water and be fitted with thwarts, thwart knees, ceiling or bottom boards etc.

I intend sometimes to use ribs, keel etc. bent into shape before they are confined upon the frame and my frame for assembling the various parts of a boat frame will be useful even when such parts are made of metal. This plan of boat building is applicable economically only when many boats of the same or nearly the same pattern are to be constructed, and it will in a greater degree save expense if all the parts are got out by proper machinery according to pattern.

It is not essential that the section of the rib and keel frames should be V shaped as a bottom and one side are all that are necessary, the requisite being something that will hold the ribs and keel in proper relative position, both sidewise and fore and aft and such conditions may be fulfilled in different ways within the scope of my invention.

I claim as of my own invention—

1. A frame substantially such as is hereinbefore described capabe of supporting and confining in proper relative position the various parts that make up the frame of a boat substantially in the manner specified.

2. And in combination with such a frame I claim means substantially such as specified for holding the frame in proper necessary positions, and admitting of an easy change from one position to another.

3. And also in combination with such a frame lifting screws passing through the gunwale frame substantially in the manner and for the purpose described.

In testimony whereof I have hereunto subscribed my name in the city of Brooklyn E. D. on this 26th day of April A. D. 1858.

NATHAN THOMPSON, Jr.

In presence of—
R. H. Hinman,
John M. Stearns.