E. & G. A. Waters.

Impt. in Construction of Boats.

No. 79,421. Patented Jun. 30, 1868.

Fig. 1.

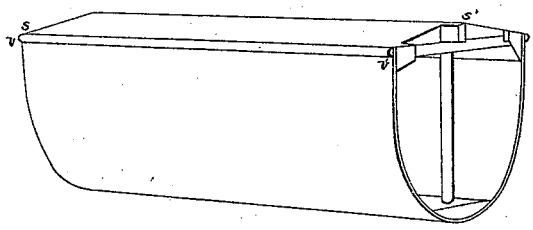


Fig. 2.

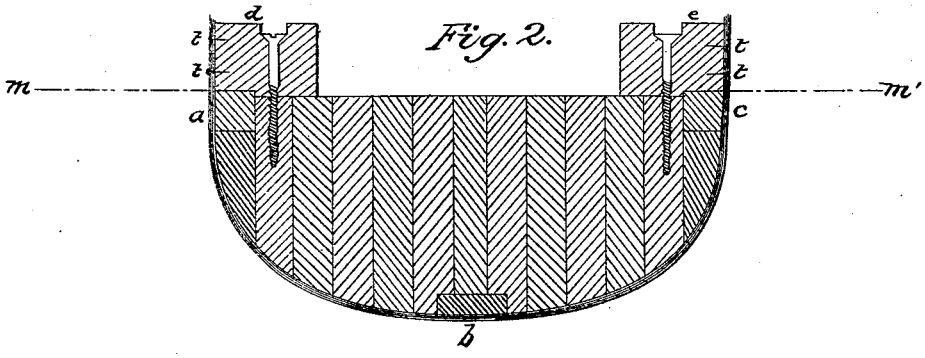


Fig. 3.

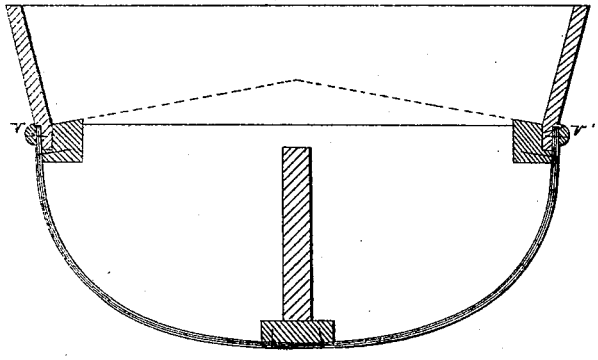
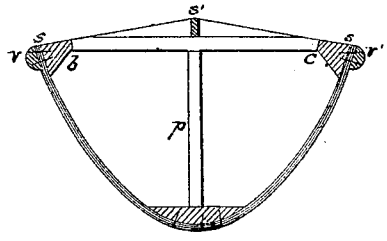


Fig. 4.



Witnesses.

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ELISHA WATERS AND GEORGE A. WATERS, OF TROY, NEW YORK.

Letters Patent No. 79,421, *dated June* 30, 1868.

IMPROVEMENT IN BOATS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ELISHA WATERS and GEORGE A. WATERS, of Troy, in the county of Rensselaer, and State of New York, have invented certain new and useful Improvements in the Building of Shell, Working, and other descriptions of Boats; and we do hereby declare the following to be a full, clear, and exact description of the method of applying the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a section of a shell-boat taken six feet from the stern-post.

Figure 2, a cross-section, taken at midships, of the model or form over or on which the skin of the boat is made.

Figure 3, view of a bulk-head at end of cockpit in a shell-boat, showing cross-section of combing, gunwales, keel, and kelson.

Figure 4, cross-section through a carline of a finished shell-boat, showing the method of framing with paper skin and deck.

Our invention relates—

First, to the manner of forming, with paper, the shell or skin and the decks of boats, so that these parts shall be perfectly water-tight, and the boats stiffer, stronger, and lighter than if made of wood in the usual way.

To enable one skilled in the art to apply and use this invention, we will proceed to describe the same with reference to the drawings.

The dimensions and lines of the boat to be built being given, a model in wood is constructed, conformable thereto, of the full size required, so that the water-lines on its exterior surface shall be exactly those desired in the boat to be built.

This model may be made in any way known in carpentry, care being taken to have it sufficiently strong and stiff to bear a heavy pressure on its exterior surface, in putting on the paper coating forming the skin of the boat, and that it may be turned over as required.

Fig. 2 shows a cross-section of a model for a single-shell boat, in which the breadth at midships is thirteen inches. Channels are cut in the model, or left in the proper places during its construction, to receive the keel, gunwales, and, where they are required, the ribs. Pieces of wood of suitable size being fitted to these grooves, they are then worked so that their exterior surfaces shall form part of and conform to the surface of the model along the channels, as shown at *a b c*, fig. 2.

Longitudinal strips, two inches thick, marked in cross-section at *d e*, fig. 2, are then attached by screws to the upper or plane surface of the model, the outer faces of these strips being a continuation of its exterior warped surface; the object of the strips being to afford a means of holding in position the paper composing the skin, by means of tacks *t t* driven through the paper into them, and thus enabling the perfect paper skin to be cut and separated from the model along the gunwales, at the line *m m'*.

The model is now ready to be covered with paper, which may be either in the form of pulp or of sheets, as the nature of the surface to be covered may require. The latter are considered preferable, where the surface of the model will admit of their being put on smoothly. It is desirable that the width of the sheets should be sufficient to entirely surround the model, and extend over the strips *d* and *e*, as shown in fig. 2.

When it is necessary to enable it to take the form of the model perfectly, the paper selected for the first or inner layer may be dampened. It is then placed on the model, pressed into shape throughout its whole surface, so that it presents neither wrinkle nor unevenness, and tacked to the strips *d* and *e*, fig. 2.

Other layers of paper, composed of one or more sheets, as may be found necessary, previously saturated and made perfectly impervious to water throughout the entire fibre, or otherwise treated, according to circumstances, are now superposed on the first, each layer firmly attached to the one below it by means of shellac or other suitable adhesive substance, and all these layers pressed together, so as to form a solid mass, of any desirable thickness, depending on the size of boat, and the amount of strength and resistance wanted.

Before the last layer is put on, the keel is attached to the skin by nails and screws, the skin removed from the model, the interior framing fitted in place, and the skin firmly attached thereto, (see figs. 3 and 4.)

Previous to fitting the interior framing in place, the posts *p*, the carlines *b c*, fig. 4, and the ribs, where it is considered desirable, are, after being reduced to their minimum size, covered with one or more thicknesses of suitable paper, cemented in place by glue, shellac, or other suitable adhesive substance.

A deck, of paper, *s s'*, figs. 1 and 4, is now stretched over such parts of the hull as may require it, composed of one or more thicknesses or layers, and resting on a sub-deck of wood, or having no such support, as may be required.

This deck is formed in the same manner as has been described for the skin of the boat, the under layer of paper being firmly attached, by means of suitable water-proof composition, to the wooden deck, or, in the absence of the latter, to such parts of the framing as will properly secure it. The edges of the paper are brought over the edges of the skin at the gunwales, similarly attached to the skin by shellac, or other water-resisting substance or composition, and a protecting finish given by means of the mouldings *v v'*.

Water and air-tight compartments may be made at each end of the hull by placing bulk-heads of wood where needed, and covering them with a skin of paper, of any required thickness or strength, in the manner described.

The surface of the hull may be finished, to resist the action of the water, and of friction against other substances, in any manner suited to the use to which the boat is to be put, as experience may dictate.

Having thus fully described the nature and object of our invention, we do not claim the use or application of paper, in any of its forms as herein set forth, to the construction or manufacture of models of ships, boats, or other vessels, or to the construction or manufacture of forms of boats, to be used as ornaments, toys, or for boxes used as receptacles for various articles, in which the decks serve as covers or lids, as is set forth in the English provisional specification of Henry Bacheler, No. 3,081, of December 14, 1860; but

What we claim therein as new, and desire to secure by Letters Patent, is—

The building of the entire shell or skin, and the decks, (where used,) of paper, as hereinbefore set forth, and thus forming a new article of manufacture.

Troy, New York, October 30, 1867.

ELISHA WATERS,
GEO. A. WATERS.

Witnesses:
J. HATFIELD,
O. K. HILL.