(No Model.)

N. C. JESSUP.

BOAT.

No. 291,909. Patented Jan. 15, 1884.

Fig. 1.

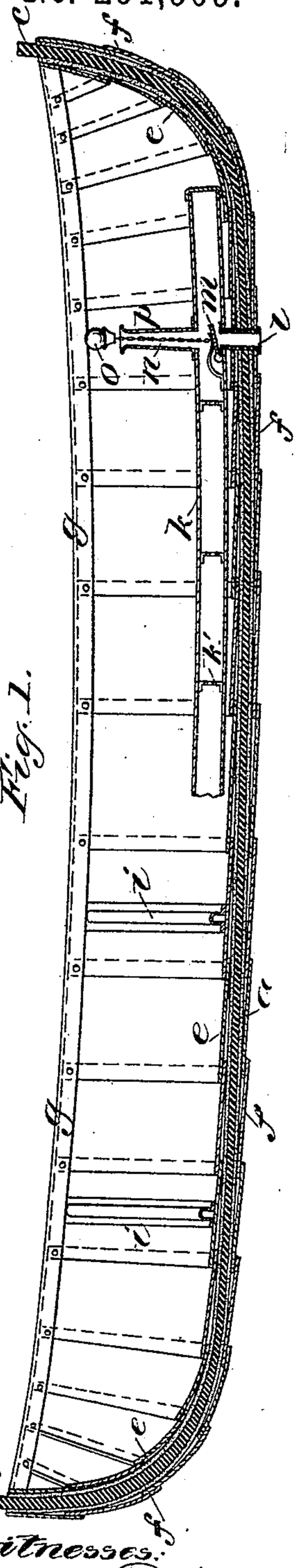


Fig. 2.

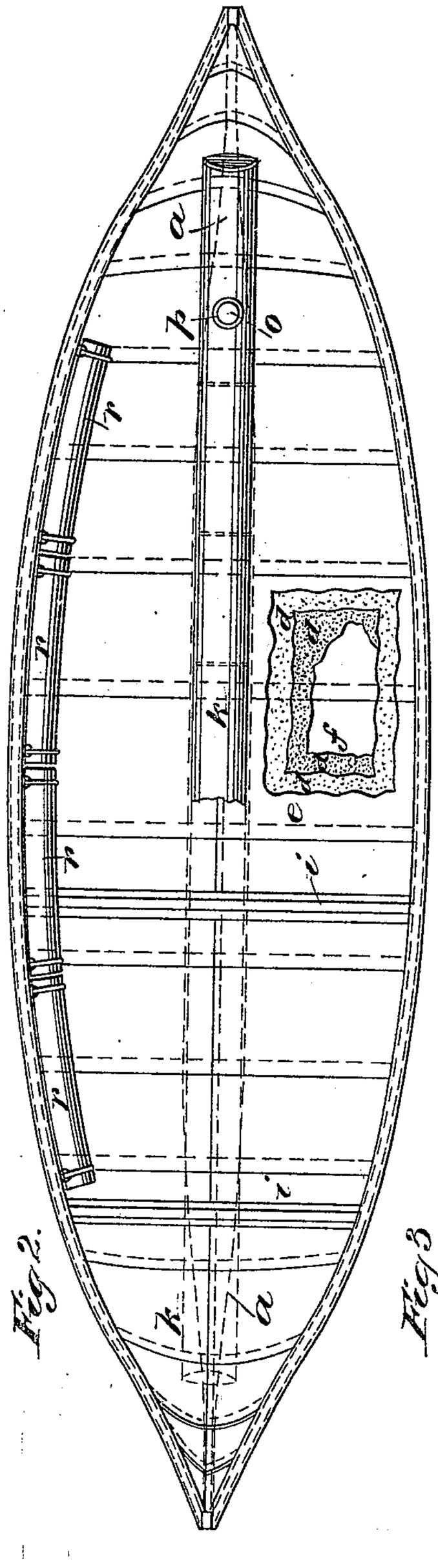


Fig. 3.

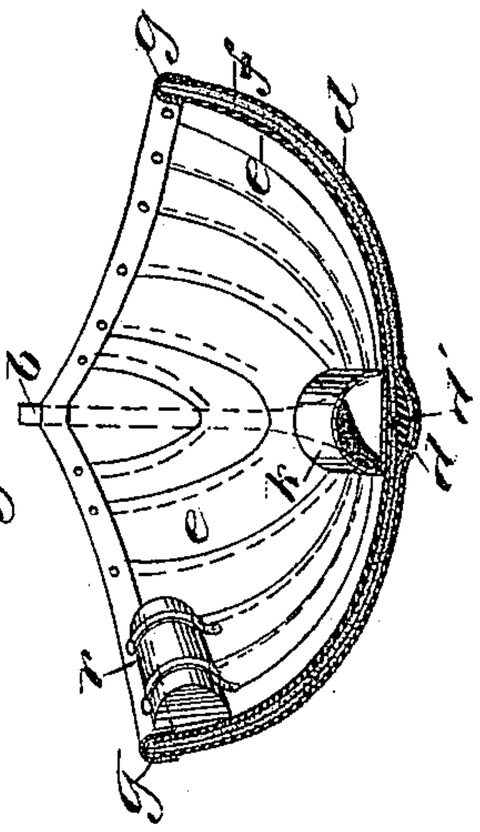


Fig. 4.

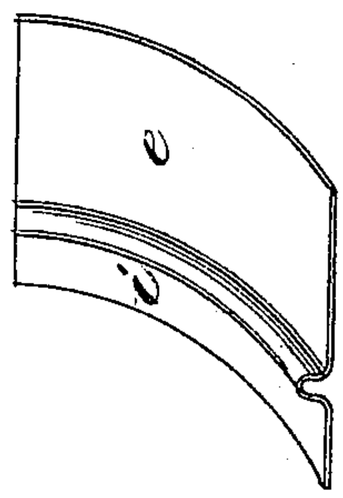
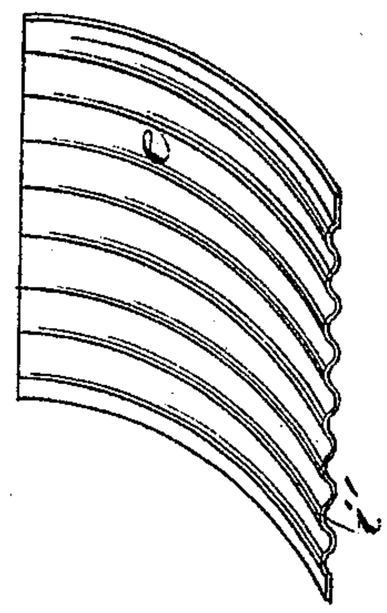


Fig. 5.



Witnesses:
Henry A. Parker.
Jno. E. Lovering

Inventor:
Nathan C. Jessup
by Chas. M. Higgins
Attorney.

UNITED STATES PATENT OFFICE.

NATHAN C. JESSUP, OF SOUTHAMPTON, NEW YORK.

BOAT.

SPECIFICATION forming part of Letters Patent No. 291,909, dated January 15, 1884.

Application filed February 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, NATHAN C. JESSUP, of Southampton, Suffolk county, New York, have invented certain new and useful Improvements in Boats, of which the following is a specification.

My invention applies more especially to small boats—such as life-boats, surf-boats, and similar small craft where great strength and lightness is desired, with power to resist the shock of waves or of collisions against a ship's side, and with a quality of self-righting when capsized.

To this end a main feature of my invention consists in constructing the hull with an inner continuous water-tight shell or hull of paper, wood, or similar material, and an outer continuous and water-tight shell or hull of thin sheet metal—preferably steel—closely overlying and completely inclosing upon each side the inner hull and secured to the same, forming one compound hull.

Another feature of my invention consists in ribs formed by a corrugated strip of sheet metal, and my invention also embodies a central longitudinal tube or chamber in the bottom of the boat, with means for admitting and discharging water to form a water-ballast along the keel, and in floats fixed on one side of the boat at the gunwale, whereby the boat is rendered self-righting when upset.

My invention also embodies some details connected with these main features, as hereinafter set forth.

I am aware that the hulls of boats, particularly small boats, have been made of paper alone, and also that hulls of small and large vessels have been made of sheet metal alone, and that it has been common to plate the hulls of wooden ships with thin sheet metal on the exterior, to prevent marine incrustations, also with thick armor-plates to resist shot. I am not aware, however, that hulls have ever been made of two complete water-tight shells of metal and an intervening one of paper or its equivalent, the three secured together as in my invention, which embodies a construction and fulfills a purpose to which neither of the former instances can respond. I would also remark that in a former patent issued to me October 25, 1881, No. 248,755, I show a life-boat having an inner shell of wood or paper and an outer water-tight shell of thin steel, rising only to the deck-line on the inner hull, and not to the gunwale, so as to completely inclose the inner hull, so that my present invention is an improvement on my former patent, as will hereinafter more fully appear.

In the annexed drawings, Figure 1 presents a longitudinal section of my improved boat; Fig. 2, a plan view thereof, and Fig. 3 a cross-section. Figs. 4 and 5 illustrate details of ribbing.

In Figs. 1, 2, and 3, *a* indicates the keel, and *b c* the stem and stern posts, which are constructed in the ordinary manner, preferably of wood.

d d indicate a complete shell or hull of paper, thin wood, or similar light stiff non-metallic material, paper being much preferred. *e* indicates a complete shell or hull of thin sheet metal, preferably galvanized sheet-steel, which overlies the paper shell *d d* on the interior of the boat; and *f* indicates a similar sheet-steel shell, which overlies the paper shell on the exterior of the boat. Each of the steel shells extends completely over the paper shell up to the gunwale, as shown, so that the paper shell is thus inclosed or embraced between them, the three shells being secured tightly to each other in closely-overlying layers, as shown, by being riveted or otherwise fastened together at numerous points. The edges of the three shells at the gunwale are covered and protected by a gunwale-strip, *g*, of sheet metal, rolled or bent in the shape of an inverted U, which, being riveted over the edges of the three shells, forms a strong finished gunwale on the boat, and securely fastens the three shells together at their margins, as will be readily appreciated. Each of the three shells is complete throughout the hull, and is made water-tight, thus rendering the construction very strong and tight. The inner paper shell, *d*, is preferably made in two layers, as shown best in Fig. 3, one layer or sheet extending over the keel and the other under the keel, as illustrated, the two being cemented closely together with water-proof cement, and also nailed or riveted at numerous points. The sheets forming the paper shell do not lap at the edges, but are laid with their edges closely

ing, so as to avoid all protuberances, as
ated in Fig. 3. The sheets are prefer-
of such a length in the cross-section of
oat as to extend continuous from the gun-
to the center of the keel, where their
s meet in a "butt-joint," as indicated at
Fig. 3. The sheets of steel forming the
and outer steel shells, *e f*, are shown of
ly-exaggerated thickness in the draw-
and these are so laid as to overlap at
oints, as shown, each joint being both sol-
l and riveted, so as to be perfectly strong
water-tight. The boat may be strength-
or stiffened on the interior by ribs *i i*, which
preferably formed by rolling a strip of
nized sheet-steel with an inverted-U-
ed section, and then soldering and rivet-
his strip on the inner steel shell, as shown
gs. 1 and 2, thus forming very light and
ribs, which impart great strength and
ess to the boat without adding much
ht thereto. These ribs will of course be
ed at numerous points along the boat at
intervals as may be considered best, in-
l of being limited to the two points rep-
ted in the drawings.
stead of forming the rib in a strip of steel
rate from the sheets of the inner hull,
sheets may be so rolled or corrugated, as
n in Figs. 4 and 5, so as to provide the
within themselves, as will be understood;
I prefer the former construction.
r an ordinary ship's life-boat, or for surf-
s, the thickness of the inner paper shell
not be greater than the quarter of an
, while the two overlying steel shells need
be thicker than ordinary bristol-board,
rendering the boat very light and still ex-
ingly strong and stiff. By having the
sheets thoroughly galvanized they will be
iently protected from rusting, and may be
ered readily at the joints, thus rendering
shell a complete hull in itself and per-
y water-tight. The paper shell, being
ly embraced between the two water-tight
shells, will be thus efficiently protected
contact with water, and, if desired, the
er may be so prepared as to be impervi-
to water; but this in most cases will not
ecessary, for even if one of the steel shells
ld become punctured, so as to allow wa-
o come in contact with the inner paper
l, this would have very little effect in soft-
g or injuring the paper shell, for the rea-
that as the paper is closely embraced be-
en the two steel shells, and as these shells
secured tightly together, the effect of the
ing of the paper would be to swell the
e in the immediate vicinity of the leak,
thus cause the paper shell to expand forci-
between the two shells at the location of
leak, and thereby close up the crevice
stop any further leakage in a most effective
ner. Hence, by means of the shell of pa-
or other fibrous swellable or somewhat ab-
ent material between the two metal shells,
a most effective means is provided for auto-
matically stopping any slight leaks or punc-
tures in the inner or outer skin of the hull, which
in other constructions would allow a constant
leakage into the boat. It will therefore be seen
that a boat constructed as described will be
very strong and light and comparatively cheap
and very durable, and its sides will at the
same time possess such an elastic or springy
quality, combined with strength and tough-
ness, as to enable it to yield slightly to shocks
or collisions, and thus resist the same more
effectually. The sides of the boat will also be
much more difficult to puncture than would
be a boat made of sheet metal alone, or of pa-
per or wood alone, and for the reasons before
indicated a puncture, when it does occur, will
not be followed with as bad consequences as
would be the case with the others, because it
would immediately afterward close up partly
or entirely by the swelling of the inner shell
between the two outer ones. The advantage
of this construction, therefore, particularly for
all small craft—such as life-boats and surf-
boats—is obvious.

In the drawings I have shown no rowlocks, seats, deck, or other ordinary adjuncts to the hull, as my invention does not relate to such parts. The rowlocks and seats may be applied and fixed in any suitable way, as will be understood. In cases of life and surf boats, a deck may be extended across about the middle of the hull, so as to completely inclose the under space between the deck and the keel, forming a water-tight air-chamber, as is usual in such boats, to give permanent buoyancy and render the boat unsinkable. This deck may be made in the same manner as the hull—viz., of an inner shell of paper embraced between two steel shells—and it may be otherwise constructed as shown and claimed in my former patent above referred to, and provided with the peculiar form of scuppers there shown.

In surf or life boats I prefer to affix a large ballast tube or chamber, *k*, centrally along the bottom of the boat directly over the keel, which is preferably made of galvanized sheet metal, with water-tight joints, and is closed at each end. An open pipe, *l*, extends through the bottom of the boat and opens into the bottom of the ballast-tube *k*, and its opening therein being controlled by a valve, *m*, which constantly tends to shut down upon and close said opening by the action of a spring, as shown, so that by raising said valve for a certain interval water may be admitted from the sea to charge said tube to any desired extent, and thus form a good ballast along the keel, to render the boat firm and steady when afloat, and reduce any tendency to capsizing which might otherwise exist. This ballast-pipe *k* will also serve to stiffen the boat in the manner of a keelson, as it acts, in fact, as an auxiliary keelson. If desired, the keel itself may be made hollow, in the form of a sheet-metal tube

of proper sectional form, and be adapted to act directly as the water-ballast tube, as will be understood. A hollow pillar or tube, *p*, rises from the top of the ballast-tube *k* directly over the valve of the flooding-inlet *l*, and extends above the water and deck line of the boat, and a chain, *n*, extends from the valve up through this pillar and connects to a handle, *o*, by manipulating which the valve may be pulled open as long as desired, and then allowed to close, as will be understood. The handle *o* also serves as a plug to stop the top of the pillar *p* when released, and the chain *n* should be sufficiently slack to allow the plug *o* to be removed and hung over the edge of the pillar without opening the valve *m*, so that a small pump may be inserted through the pillar and passed down into the ballast-tube, whereby the contents thereof may be bailed or pumped out when so desired. I prefer to provide the ballast-tube *k* with perforated transverse partitions *k'* at intervals along its length, which will allow the water to flow to a uniform level along the tube, but prevent its rapid surging back or forth by any pitching motion of the boat in a rough sea.

Another feature of my invention particularly desirable for life-boats consists in providing the boat with floats or air-chambers *r r*, located at or near the top edge or gunwale, and on one side of the boat only, as shown in Figs. 2 and 3. These floats are preferably made of galvanized sheet-metal tubes of half-round or triangular section filled with air and tightly sealed, and they are preferably fastened in sections along the gunwale, as shown, in a detachable manner, so that they may be removed or attached in any desired numbers and at any time, according to circumstances. I prefer to fasten the floats in position by ordinary straps and buckles, as shown, which is a simple detachable form of fastening, as will be appreciated. When the floats are thus affixed on one side of the boat, a slight weight should be added to the other side of the boat, so as to balance the same and make the boat float even on her keel; and it will now be readily understood that in case the boat should be capsized, the side with the floats will be much the more buoyant, and will resist being submerged, and will at once float up high and submerge the opposite side, thus causing the center of gravity to be thrown over very much to one side, which, with the weighted or ballasted keel-tube *k*, will immediately act to right the boat and throw her over on an even keel, thus giving the boat an automatic self-righting tendency, which is very important. I am aware, of course, that floats have been used on each side of a boat; but these are used for simple buoyancy, and will not give a self-righting tendency, which a buoyancy on one side only will give, as described.

Some of the advantages of my invention will accrue if the inner metal sheet, *e*, be omitted.

I reserve the right to cover in a separate application any novel feature herein shown or described but not claimed.

What I claim is—

1. A boat having its hull constructed with an inner and an outer shell of sheet metal and an intermediate shell of non-metallic fibrous and swellable material, the said metallic sheets being made with water-tight joints closely embracing the intermediate shell and extending over the same up to the gunwale, and secured together at numerous points, substantially as herein shown and described.

2. A boat having its hull constructed with an inner and an outer shell of sheet metal and an intermediate shell of paper, said shells closely overlying each other, and secured together at numerous points, substantially as set forth.

3. In a boat's hull, the combination of the outer metallic shell and an intermediate shell of paper with an inverted-U-shaped gunwale-strip, *g*, of sheet metal, secured to and covering the edges of the metallic shells, substantially as and for the purposes set forth.

4. In a boat substantially as described, and in combination with the central ballast-tube, *k*, having perforated partitions *k'*, the well or tube *p*, and the spring-valve *m*, the cap *o*, fitting the said well as a plug, and the chain *n*, securing the caps and valve together, as and for the purposes set forth.

5. In combination with a boat's hull, the inner ribs, *i*, formed of sheet metal, with a flanged U-section, and secured in inverted position on the inside of the hull, substantially as herein shown and described.

6. The combination, in a boat with a weighted keel, of air chambers or floats *r r*, affixed on but one side of the interior of the boat, at or near the gunwale, substantially as and for the purpose set forth.

NATHAN C. JESSUP.

Witnesses:
ISAAC C. HALSEY,
ELIZABETH A. HALSEY.