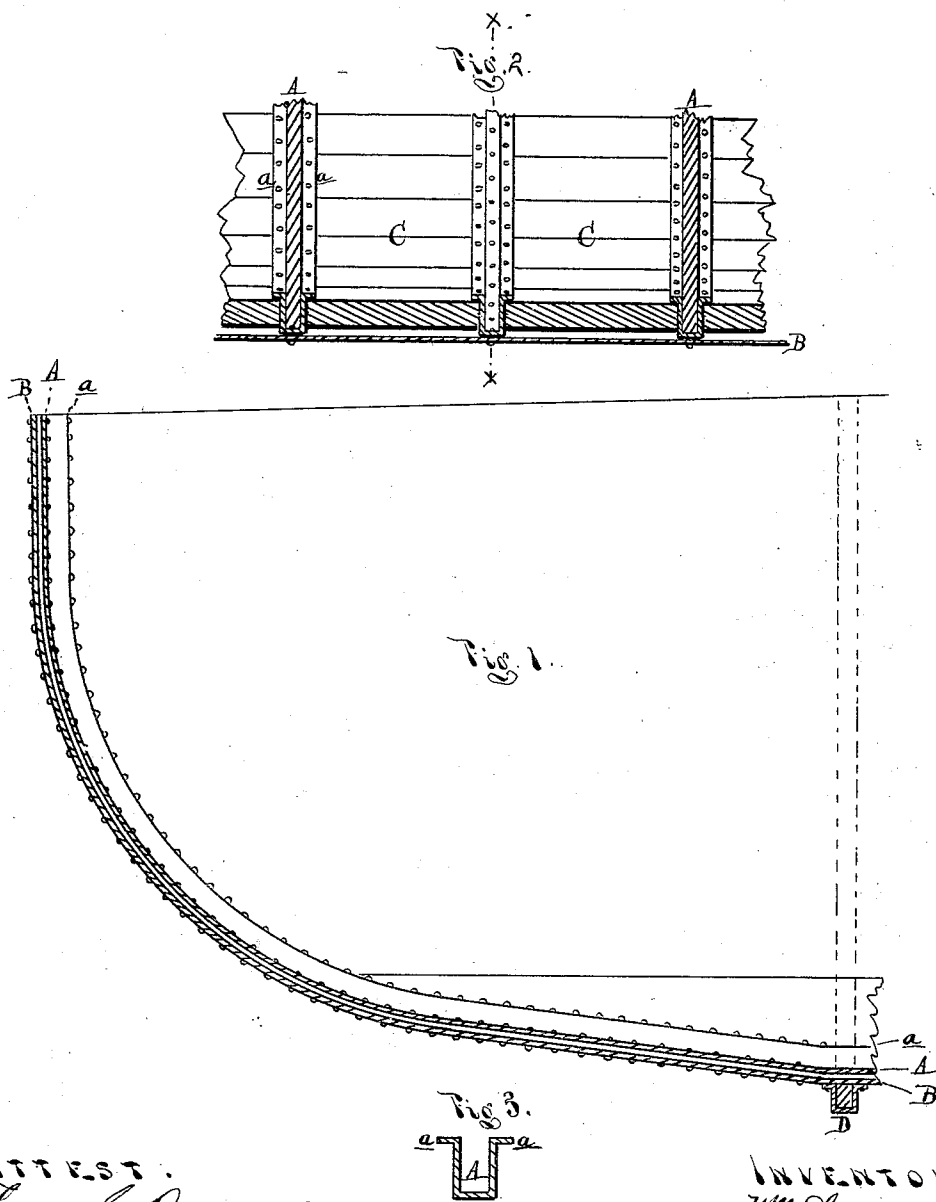


W. DONALDSON.
Construction of Iron Ships, &c.

No. 151,860.

Patented June 9, 1874.



ATTEST.
Theo. S. Day.
Wm. P. Spalding

INVENTOR.
Wm. Donaldson
 By Attorney
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UNITED STATES PATENT OFFICE.

WILLIAM DONALDSON, OF TORONTO, CANADA.

IMPROVEMENT IN THE CONSTRUCTION OF IRON SHIPS, &c.

Specification forming part of Letters Patent No. **151,860**, dated June 9, 1874; application filed February 2, 1874.

To all whom it may concern:

Be it known that I, WILLIAM DONALDSON, of Toronto, in the county of York and Province of Ontario, Canada, have invented an Improvement in the Construction of Iron Ships, of which the following is a specification:

The object of my invention is to strengthen and render more durable the hulls of iron-built ships, and to diminish the dangerous effects which would otherwise follow from a collision or other accident occurring to the plating of such ships. The invention consists in placing a wood backing between the ribs or frames, held in place either by means of T-iron riveted on the ribs, or by making the said ribs of flanged U-iron. Between the wooden backing and the plates a space should be left to be filled and calked with oakum or other material, to prevent the said plates from rusting.

Figure 1 is a half-midship cross-section. Fig. 2 is a horizontal section at water-line through three of the frames, showing the latter in cross-section. Fig. 3 is a detached cross-section of a frame.

In the drawing, A represents the frames or ribs, preferably U-shaped in cross-section, with flanges *a a*, as seen in Fig. 3. B is the iron plating, riveted to the outer faces of said frames. Behind the plating is a backing of

wooden struts, C, extending from frame to frame, being held in place by the flanges *a a*. Between the plating and backing a sufficient space should be left to be filled or calked with oakum or other material, to prevent the oxidation of the inner surfaces of the plates. The keel D is made of U-iron, with a wooden filling.

The ordinary angle-iron may be used for the frames, with a T-iron riveted to the inner web to hold the backing; but the U-iron I deem better and cheaper for the purpose.

It is evident that should such a hull strike the bottom, or come into collision, between the frames, a hole cannot be punched through the plating without smashing the backing, which, without being too thick or heavy, can be much stronger as well as more elastic or resilient than the plating alone.

What I claim as my invention, and desire to secure by Letters Patent, is—

In iron hulls, the wooden backing composed of the struts C, extending from frame to frame, and secured by the flanges *a a* of said frames, substantially as shown and set forth.

WILLIAM DONALDSON.

Witnesses:

I. N. WINSTANLEY,
WM. SMITH.