B. A. RICHARDSON.

TORPEDO-GUARDS FOR VESSELS.

No. 193,727. Patented July 31, 1877.

Fig 1

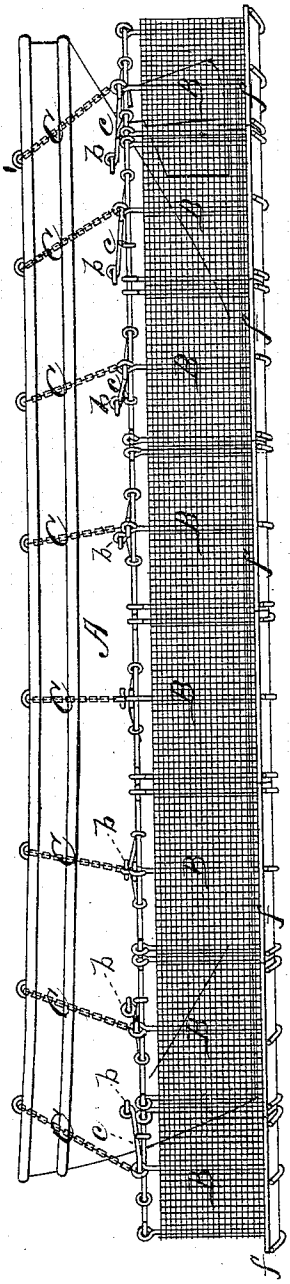


Fig 2

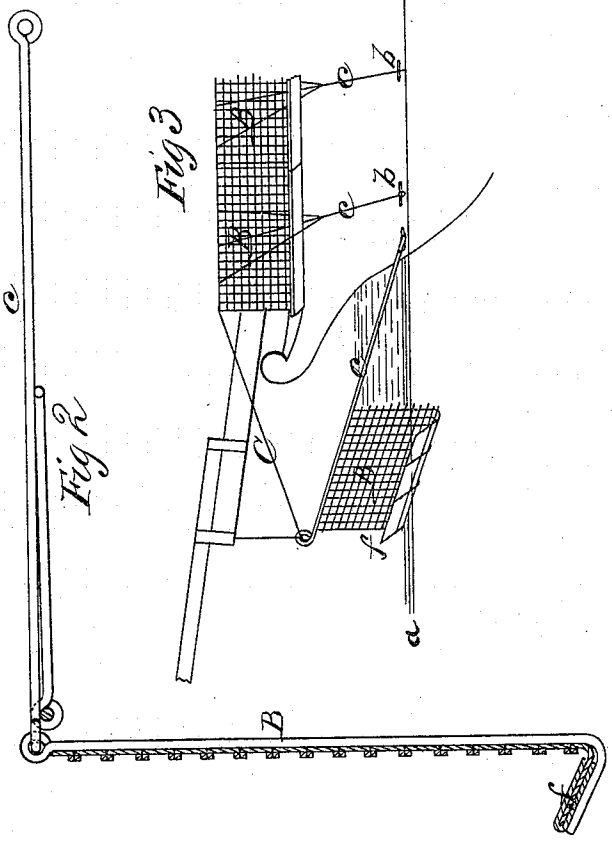
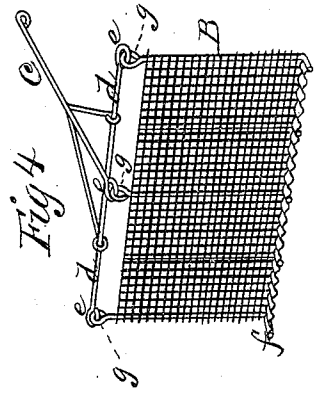


Fig 3

Fig 4



WITNESSES

Willetta Anderson.

F. J. Masi

INVENTOR

Benjamin A. Richardson.

by E. W. Anderson,

ATTORNEY

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

BENJAMIN A. RICHARDSON, OF NORFOLK, VIRGINIA.

IMPROVEMENT IN TORPEDO-GUARDS FOR VESSELS.

Specification forming part of Letters Patent No. **193,727**, dated July 31, 1877; application filed June 23, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN A. RICHARDSON, of Norfolk, in the county of Norfolk and State of Virginia, have invented a new and valuable Improvement in Torpedo-Guards; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my invention applied to a ship; and Figs. 2, 3, and 4 are detail views.

This invention has relation to improvements in means for protecting vessels of war from the insidious and deadly encounter with submarine or floating torpedoes.

The nature of my invention consists in combining with a vessel a sectional reticulated metallic shield or guard, suspended at a suitable distance from the hull of the ship, and partly or wholly surrounding the same, which shields extend downward a sufficient distance below the water-line to arrest a floating torpedo or explode one attached to an attacking vessel, as the "Wood and Lay" torpedo or the "Whitehead-Fish" torpedo.

It also consists in securing the sections each to a swinging boom or outrigger, so that while the vessel is under way they may be swung upward out of the water, so as not to be an impediment to its progress, as will be hereinafter more fully set forth.

In the annexed drawing, the letter A designates a vessel, in connection with which I propose to illustrate my invention. At the water-line (indicated in the drawings by the letter *a*) are arranged a number of spaced metallic eyes, *b*, to which are hooked the booms or outriggers *c*. The spaced eyes *b* extend completely around the vessel, and the booms or outriggers *c* vibrate freely and vertically on said eyes. The outriggers are provided upon their free ends with cross-heads *d*, having a number of spaced eyes, *e*, for a purpose hereinafter explained. When the outriggers are lowered until the cross-heads are on the surface of the water the ends of the latter will be in contact, or nearly so, with each other, and completely encircle the ship.

B represents the sections of my improved guard, composed of strips of metal of suitable strength, crossing each other at right angles, thus forming a reticulated plate, which offers but little resistance to the water. The lower ends of the vertical rods that compose these sections are turned up in hook form, as shown at *f*, Fig. 2, and, being braced by the lower transverse strips or rods, are very effective as drags for gathering up topedoes that may be anchored to the bottom of the channel sought to be entered. The upper edge of the reticulated guard above described is provided with spaced hooks or other equivalent attachments, *g*, that engage the eyes *e* of the cross-heads *d* in such a manner that, whatever be the position of the booms or outriggers aforesaid, they will always hang vertically therefrom, so that, whether the said booms be in a horizontal or vertical position, they will hang down from the cross-heads. In the former position they serve as a combined torpedo guard and drag, and in the latter as a protection against musketry fire. The guards may be readily raised by means of chains or ropes C, secured to the cross-heads, and extending into the vessel over the gunwale or through suitable apertures in its sides.

In practice the sections of the guard may sometimes be linked or otherwise secured together, so that they may one and all afford a yielding but adequate resistance to the impact of a torpedo, and prevent it from reaching the side of the ship. They, however, infallibly cause the explosion of the topedoes of the percussion order, and are themselves, being reticulated, but little injured.

The front sections of the guard may be suspended by their chains from the martingale or bowsprit of the ship, and, when the latter is going "bows on" up a channel or other water-course guarded by torpedoes, will either gather up submarine torpedoes or cause them to explode before striking the ship.

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

1. The combination, with a vessel, of the spaced encircling reticulated torpedo-guard, substantially as specified.

2. The combination, with a vessel and the vertically-vibrating outriggers *c*, of the sec-

tional encircling guard, substantially as specified.

3. The reticulated section B of a torpedo-guard, in combination with a vessel, an outrigger, and a cross-head on said outrigger, substantially as specified.

4. A torpedo-guard composed of reticulated sections suspended from a vessel, and provided upon their lower upturned edges with gathering-hooks, substantially as specified.

5. The combination, with a vessel, of the vertically-vibrating outriggers *c*, having cross-heads *d*, with eyes *e*, and the reticulated guard-sections B, having hooks *g*, adapted to engage said eyes, substantially as specified.

6. The combination, with a vessel and the T-shaped outriggers *c*, of the sectional guard B, hinged to said outriggers, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

BENJAMIN A. RICHARDSON.

Witnesses:

E. W. MOORE,

BENJ. D. BLICK.