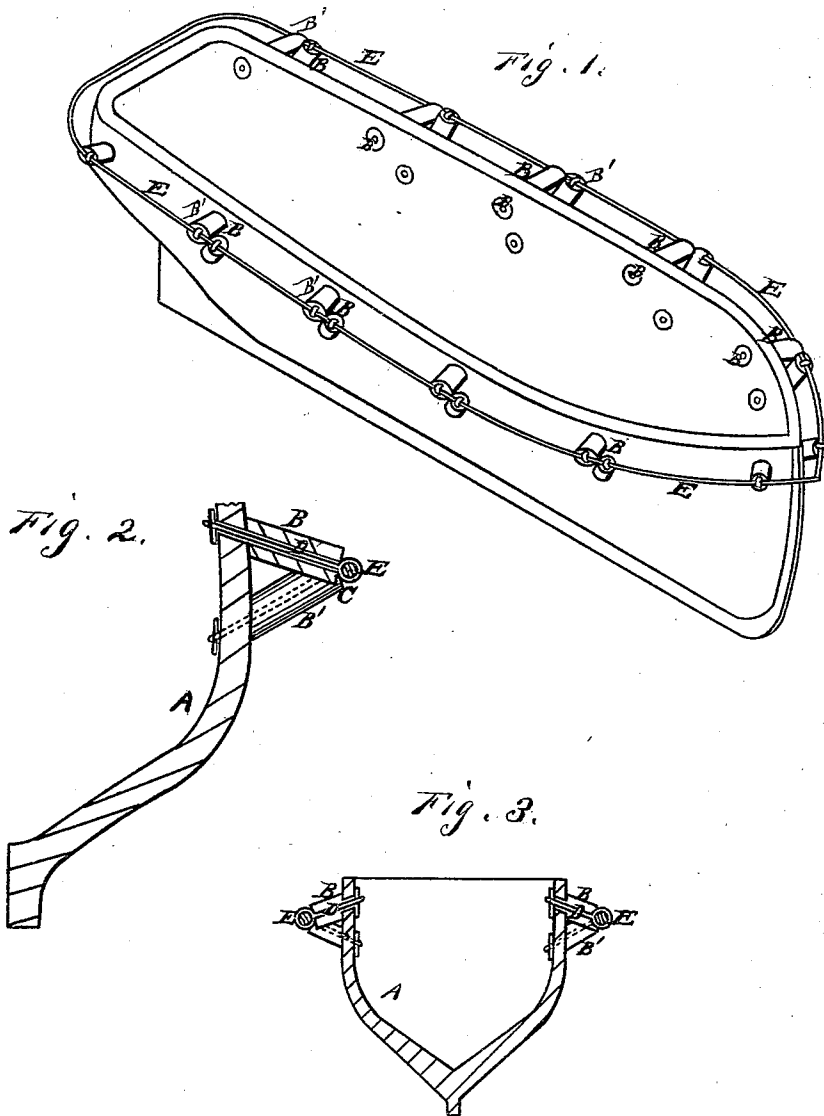


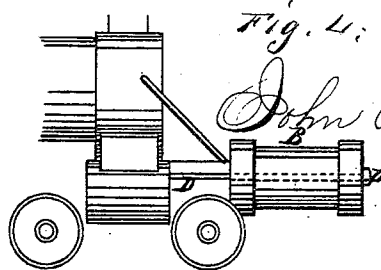
J. B. TREADWELL.
Fenders for Vessels.

No. 148,904

Patented March 24, 1874.



Witnesses
John L. Boone
C. Milton Richardson



Inventor
John B. Treadwell
by Sewey & Atty

UNITED STATES PATENT OFFICE.

JOHN B. TREADWELL, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN FENDERS FOR VESSELS.

Specification forming part of Letters Patent No. 148,904, dated March 24, 1874; application filed January 17, 1874.

To all whom it may concern:

Be it known that I, JOHN B. TREADWELL, of San Francisco city and county, State of California, have invented an Elastic Protector in case of Collision of Vessels or Railway-Trains; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to a novel device for the protection of the sides of vessels, railway-trains, or other moving bodies, against the effects of collision which may occur on the sea or other places; and it consists in the arrangement, along the ship's side, of a series of pairs of diagonal rubber buffers, connected with an iron or other rod running the ship's length, the buffers being held in place by sliding guide-rods, held to the inside of the ship's wall by washers.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of a vessel provided with my protector. Figs. 2 and 3 are transverse sections, showing the position of the parts. Fig. 4 shows the manner of attaching the buffers to a locomotive.

A is a section of the hull of any vessel which I may desire to protect by my device. I place my buffers B B' in pairs, as shown, one inclining upward and the other downward from the point where they rest against the vessel, until they meet at a suitable distance, C, from the side, thus serving to support and steady a connecting-rail when it is used. These buffers may be made cylindrical and of suitable size—as two feet in diameter and about ten feet long. A strong bolt or spindle, D, passes through the center, longitudinally, of the buffers, and this spindle enters the side of the vessel, and is secured by a head with a washer inside of a metallic tube extending through the side of the hull, so that it can slide in and out as the buffer may be compressed. Suitable packing or bushing around the spindle where it enters the vessel prevents leakage. At their outer ends, where they meet, the spindles D of each pair of buffers are strongly se-

cured to a stout iron rail, E, which may be supported by them about ten or twelve feet away from the vessel's side. The rail serves to unite and strengthen the spindles, and also to transmit any shock to a number of buffers, so that their united strength will offer a sufficient resistance to any blow that may be received.

In some cases it may be more effective to make the rail irregular—that is, with alternate angles out and in, at and between the buffers, so that if a colliding vessel should strike squarely or at right angles with the protected vessel, these angles will serve to make it glance, and also receive its force in such a manner as to divide it between two or more of the buffers.

One or more sets of buffers, with rails, may be employed, one set above the other; but I believe that a single set will be sufficient.

When the buffers are to be employed upon railway-trains, I would construct them similarly in every respect to those employed upon vessels. One or more buffers, B, are made to project from the front of the locomotive-frame, and a spindle, D, passes through each, in the same manner as described for vessels. Buffers may also be arranged between the cars composing the train, and in this manner the disastrous effect of collision may be greatly mitigated.

I am aware that buffers have been used in connection with iron frame-work; but by my diagonal arrangement of the buffer, it is enabled to sustain the shock or pressure coming from any direction.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The diagonally-arranged buffers B B', in combination with the rod E, rod D, and ship's wall A, all constructed and arranged as set forth.

In witness whereof I hereunto set my hand and seal.

JOHN BARTLETT TREADWELL. [L. S.]

Witnesses:

JOHN L. BOONE,

C. MILTON RICHARDSON.