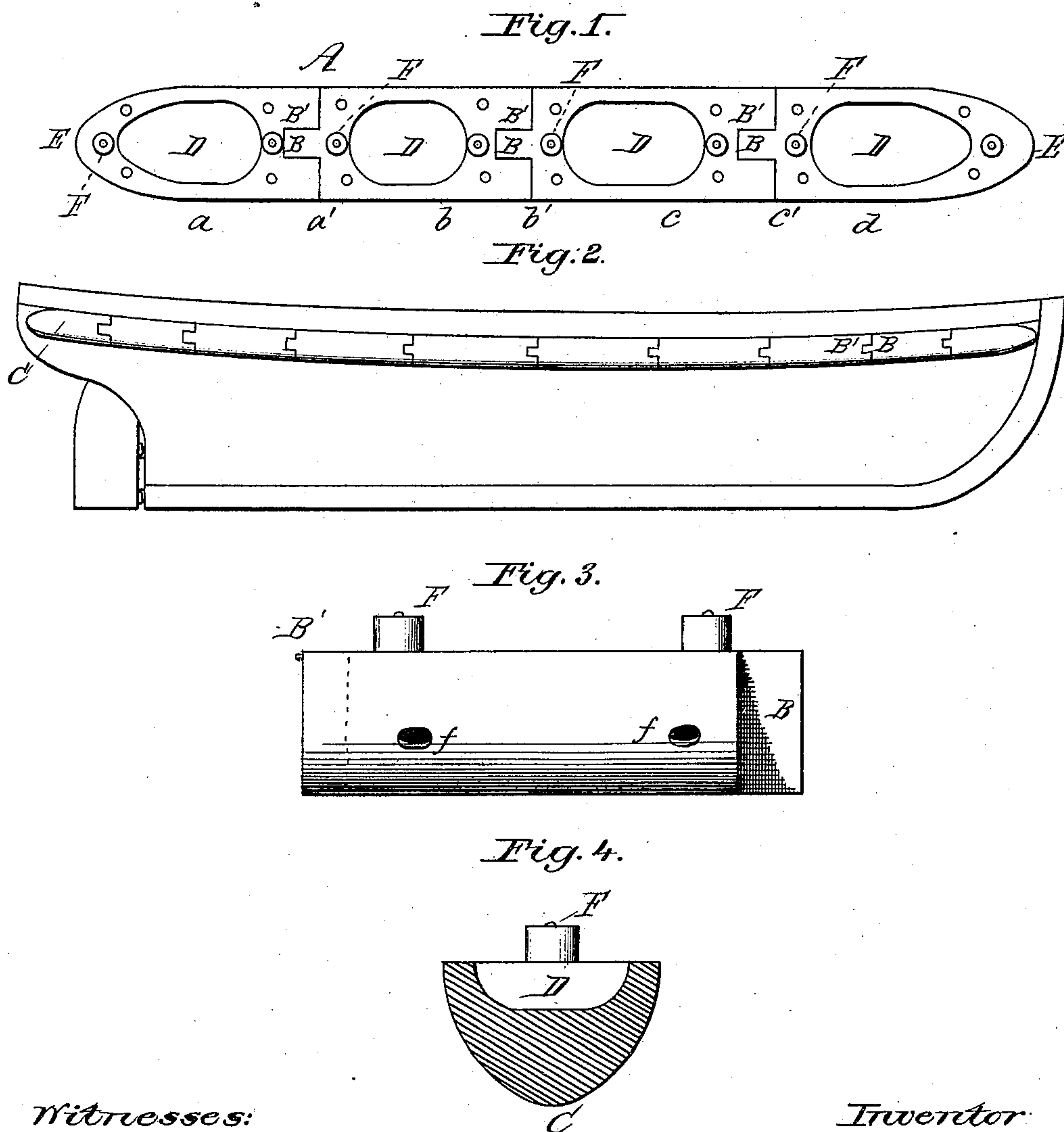


B. EDGAR.
Bilge-Protectors for Vessels.

No. 168,974.

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Witnesses:

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UNITED STATES PATENT OFFICE.

BUTLER EDGAR, OF ESPY, PENNSYLVANIA.

IMPROVEMENT IN BILGE-PROTECTORS FOR VESSELS.

Specification forming part of Letters Patent No. **168,974**, dated October 19, 1875; application filed September 27, 1875.

To all whom it may concern:

Be it known that I, BUTLER EDGAR, of Espy, Columbia county, State of Pennsylvania, have invented certain Improvements in Bilge-Protectors for Canal and other Boats, of which the following is a specification:

The object of my invention is to protect boats from damage, when in motion, by striking the banks of canals or other water-courses, or other obstacles under water.

My invention consists of a protector arranged in sections, manufactured of cast-iron or other cheap hard metal, firmly fastened to the bilge-plank or elsewhere, as necessity requires, which will more fully appear from the following specification and drawings.

Figure 1 is an inside length view of the protector as arranged for use, showing the sections and bosses. Fig. 2 is a side or elevation view of a boat with the protector secured to the bilge-plank. Fig. 3 is a side view of a single section, showing the tongue, bosses, &c. Fig. 4 is a transverse view of one of the sections, showing their form outside and inside.

A, Fig. 1, is a metallic bilge-protector, when represented as a unit and in condition for use. It is constructed in sections, *a b c d*, the division-lines being shown by *a' b' c'*, of cast-iron or other hard cheap metal. Each section is from one to two feet long, from five to six inches wide, and from two to three inches thick. The sections are joined together by means of tongue B and groove B', Figs. 1 and 3, alternating, snugly fitting to each other, having square shoulders. The outside, C, Fig. 4, of the sections is oval or half-round, or nearly so. The inside of each section is plain, and, when the sections are in position for use, form a straight line, Fig. 1. But to facilitate their fitting closely to the surface to which they are fastened they are hollowed or made

disk-shaped, D, Figs. 1 and 4, commencing about three inches inward from each end, and about one and one-half inch inward from each side, leaving a margin sufficiently firm to hold the spikes or bolts whereby they are held to their fastenings. To guard against dangerous concussion, the outer ends of the end sections are tapered to a point, E E, the taper running back from the point about one-half the length of the section. F F, Figs. 1, 3, and 4, are circular bosses raised on the center of both ends of the inner sections, and on the inner ends of the end sections, about one and one-fourth inch in diameter, and from one-half to three-fourths of an inch high. They are situated in a direct line with, and are designed to act in conjunction with, the tongue and groove above described in giving firmness and steadiness to the sections. The bosses are snugly let into the bilge-plank or other fastenings.

Thus constructed, this protector is firmly fastened to the bilge-plank, or wherever else required on the sides of the boat, at the front or rear corners or knuckles, by means of large spikes or bolts, *f f*, Figs. 1 and 2, properly headed. The bolts, passing through the boat, are held to their places by nuts.

It is constructed in sections, as less liable to break in the event of a heavy or sudden blow than if in one long piece, and more readily repaired. While the metal out of which it is made may be cheap, it should be hard, to avoid sticking in case the boat strikes rocks or similar obstacles.

I claim—

The metallic bilge-protector A, Fig. 1, substantially as constructed, as and for the purpose specified.

BUTLER EDGAR.

Attest:

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