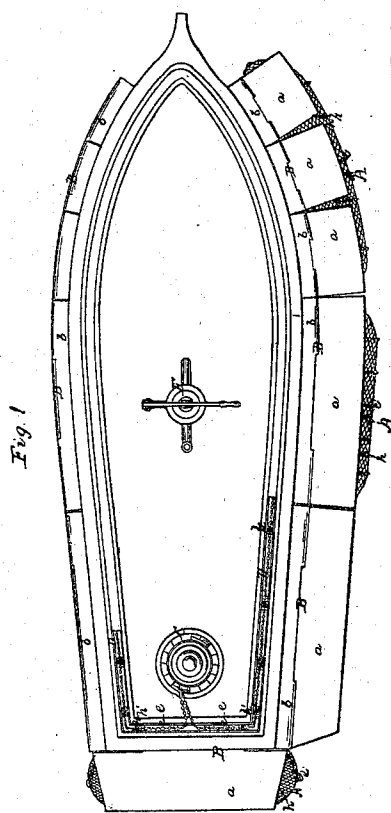
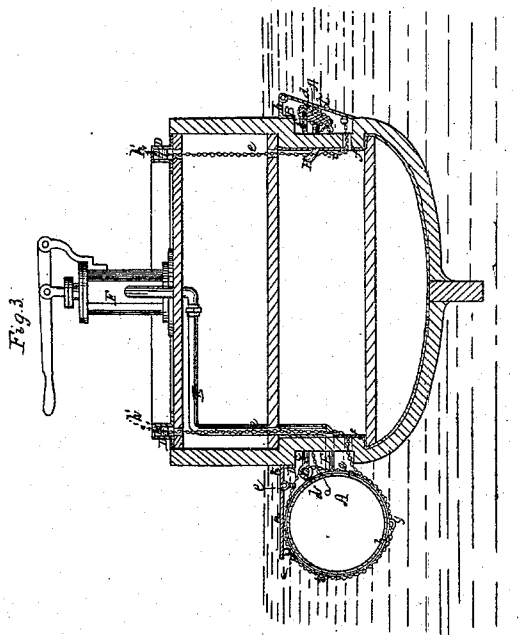
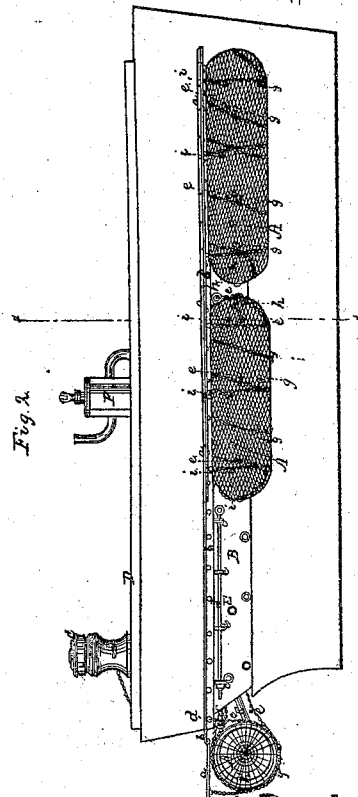


E. Goulard, Floating Dock.

N^o 881.
N^o 31,885.

Patented Apr. 2, 1861.



Witnesses
J. H. Buckley.

Inventor
E. Goulard

UNITED STATES PATENT OFFICE.

E. GOULARD, OF NEW YORK, N. Y.

APPARATUS FOR BUOYING VESSELS.

Specification of Letters Patent No. 31,885, dated April 2, 1861.

To all whom it may concern:

Be it known that I, E. GOULARD, of the city, county, and State of New York, have invented a new and Improved Apparatus for Buoying Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 represents a plan or top view of my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse vertical section of the same in a larger scale than the previous figures the line *x, x*, Fig. 2, indicating the plane of section.

Similar letters of reference in the three views indicate corresponding parts.

The balloons A, are made of the best water proof material such as india-rubber or gutta-percha perfectly air tight and corresponding in size and strength to the capacity of the vessel to which they are to be attached. Each balloon may be made of any convenient size, but their combined capacity ought to be such that they contain a sufficient quantity of air to float the vessel with full cargo and water logged, or about twice the weight of the tonnage measurement of the vessel. These balloons are fixed around the vessel on the outside, and they are protected by an iron box B, which is permanently attached to the vessel. The cover *a*, of this box is hinged to standards *b*, which are firmly secured to the wood work of the vessel as clearly shown in Fig. 3 of the drawing. Inside the box and firmly secured to the sides of the vessel are strong iron eye bolts *c*, which form the supports for bars *d*, and from these bars the balloons are suspended by means of chains or ropes *e*. The inside of the vessel may be strengthened by strong iron ribs *f*, that are connected to the wood work by the same bolts and nuts which retain the standards *b*, and the eye bolts. Thus these ribs form a cradle, which is firmly secured to or connected with the balloons, and if the woodwork of the vessel becomes damaged or if it breaks away entirely, said cradle will support the cargo, and it can be kept afloat by means of the balloons and brought safely into port.

The chains *e*, which support the balloons are wrapped around them several times being kept in place by loops *g*, that are firmly secured to the outside surface of the balloon

or to a netting *h*, which may be made to inclose and protect said balloons, and the ends of these chains pass up over rollers *h'*, to a windlass or capstan C, in such a manner that by imparting to said capstan a rotary motion in the proper direction, all the balloons are compressed simultaneously. At the same time by means of chains *i*, branching off from the chains *e*, the covers of the boxes B, are closed and the balloons are firmly secured around the bars *d*, and protected against injury by the covers. Furthermore the boxes B, are so shaped that the same, when the covers are closed, do not alter the external appearance of the vessel and the apparatus therefore cannot interfere in any way with the sailing qualities of the vessel to which it is connected. It must be remarked however that if the apparatus is to be used with old vessels or with vessels not expressly built for this purpose, the boxes have to be attached to the outside, and in this case they have to be formed in such a manner that they offer the least possible resistance to the progress of the vessel. And since the balloons, when collapsed, take up but a very small space, the boxes can easily be brought to any desired form, so that the same, even when attached to the outside of a vessel already built, do not materially interfere with her appearance or with her sailing qualities.

The rollers *h'*, which form the guides for the chains *e*, are arranged in a conduit D, which passes all around the vessel either on the upper or on any of the lower decks. In case this apparatus is to be used with large vessels, it may be desirable, to use two or more capstans for the purpose of collapsing the balloons, and in this case said capstans have to be conveniently placed at suitable distances, one from the other on the upper or on any of the lower decks of the vessel, but above the water line. It is obvious that in order to prevent the water finding its way into the vessel through the holes, through which the chains pass out, said chains have to be inclosed in suitable tubes rising above the water line.

For the purpose of inflating the balloons A, tubes or pipes E, are distributed through the vessel. One end of each of these tubes connects with one of the balloons and the other end with an air pump F, which may be arranged on the upper deck or in any convenient place of the vessel. In large

vesels, where the capacity of the balloons is necessarily very great, the number of the air pumps may be increased, but in all cases great care must be taken, to have the air pump or air pumps and the connecting pipes always in the proper working order, so that they can be brought into action at any moment.

In steamers the air pump as well as the capstan can be so arranged, that they can be operated by steam instead of by hand, and in this case the engineer ought to have perfect control over the entire apparatus so that he can bring it in action by inflating the balloons or take it off by collapsing them as directed by the pilot.

This apparatus can be attached to large or small vessels with equal facility and it serves for diminishing the draft of the vessel when it is desired to pass a bar or other spot where the depth of the water would not allow the vessel to pass under ordinary circumstances or it may be used for

floating a vessel off a sunken rock or other spot where she has struck by accident or by carelessness and in case of a collision or other sudden disaster, which under ordinary circumstances would destroy the vessel, she can be kept afloat by the aid of this apparatus with the greatest facility.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The construction of the vessel with recesses or boxes B at the sides as and for the purposes herein shown and described.

2. The arrangement with the said boxes of the compressible balloons A, air pump F, air tubes E, windlass C, chains e and conduits D in the manner and for the purposes herein shown and described.

E. GOULARD.

Witnesses:

LEWIS A. TUCKER,
JAMES LAIRD.