

Krogh & Hogness.
Raising Sunken Vessels.

N^o 36,718.

Patented Oct. 21, 1862.

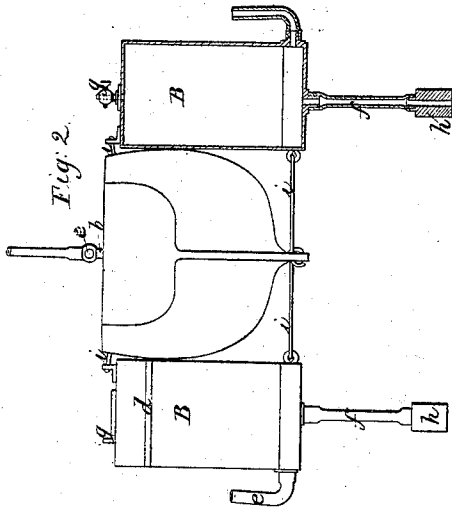


Fig. 2.

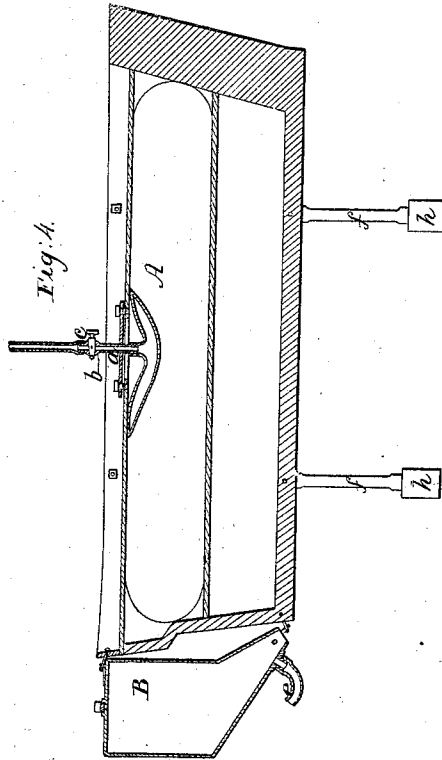


Fig. 4.

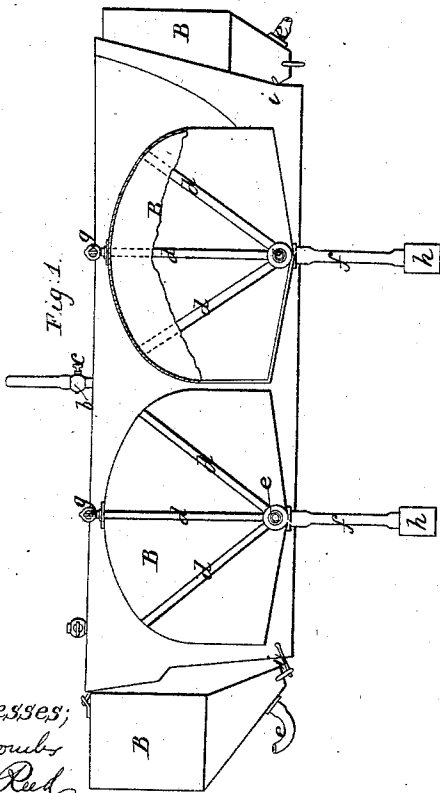
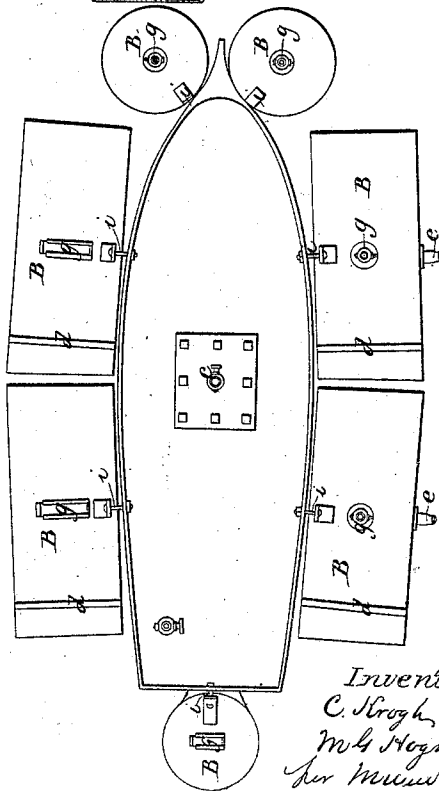


Fig. 1.

Fig. 3.



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UNITED STATES PATENT OFFICE.

C. KROGH AND M. G. HOGNESS, OF KROGHVILLE, WISCONSIN.

IMPROVEMENT IN MODE OF RAISING SUNKEN VESSELS.

Specification forming part of Letters Patent No. 36,718, dated October 21, 1862.

To all whom it may concern:

Be it known that we, C. KROGH and M. G. HOGNESS, of Kroghville, in the county of Jefferson and State of Wisconsin, have invented certain new and useful Improvements in Raising Sunken and Saving Damaged Vessels; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view, partly in section, illustrating the application of our invention to raising a sunken vessel. Fig. 2 is a view looking toward the stern of the vessel. Fig. 3 is a plan of the same. Fig. 5 exhibits a longitudinal vertical section of the vessel, showing the application of the invention to floating damaged vessels.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the raising of sunken ships and other vessels, and in the prevention of damaged vessels from sinking, by placing air-tight bags or chambers of flexible material within them, in combination with inflexible air-tight chambers or floats around them, and forcing air into the said bags, chambers, or floats.

It also consists in the arrangement of the openings for the introduction of the air into such chambers or floats at or near the bottom thereof, that the said openings may be sealed by the water itself and the air effectually prevented from escaping from the vessel; and it further consists in the attachment to the above-mentioned openings of weighted flexible pipes, by which their outer orifices are kept below the body of the float or chamber, in case of the latter getting displaced in their operation.

To enable others skilled in the art to make and use our invention, we will proceed to describe it with reference to the drawings.

To prevent the sinking of damaged vessels, we propose to employ bags or chambers of air-tight flexible material—such as india-rubber cloth or oiled cloth—within the vessel, using as many as may be convenient, each fitted with a faucet to provide for filling it, to shut the air within it when full, and to permit the air to be discharged from it when necessary. These bags or chambers should be made of a form to nearly fit the parts, compartments,

cabins, or apartments of the vessel they are intended to occupy. In the drawings, Fig. 4, only one bag is shown, as that is sufficient to illustrate our invention. Each bag A has a tube, *a*, fastened permanently in it, and to this tube is screwed another tube, *b*, fitted with a stop-cock, *c*, or its equivalent, and coming through a suitable opening in the deck or other part of the vessel, to connect with a blowing apparatus arranged above the deck, for the purpose of inflating the several bags employed. The connections of the bags with the blowing apparatus should be by metallic or flexible pipes arranged on deck in such manner as to be out of the way and well protected from accidental injury. In vessels with two or more decks the bags may be arranged in the lower as well as in the upper apartments. The bags can be kept rolled up or spread out flat, as may be most convenient for storage, until required to be used. The several bags should have a capacity in the aggregate equal to about one-fourth more than that of the portion of the hull below the level of the water outside which is unoccupied by cargo. In a vessel without side rooms there should be provided partitions between the bags lengthwise of the vessel, to keep the bags in their places and prevent them from being tipped over.

Whenever the hull of the vessel becomes damaged from any cause whatever, the connections are made between the blowing apparatus and as many of the bags as is convenient or desirable, and after as many as can be filled at once have been filled the stop-cock *c* may be shut to confine it within them and the blowing apparatus disconnected and connected with others of the bags, which are then filled in the same manner until as many have been filled as are necessary to give the vessel a requisite degree of buoyancy.

In some cases it may be desirable to use, in connection with the bags or flexible chambers A, to save damaged vessels, small outside lifters of similar character to those we propose to use for raising sunken vessels, as will be now described.

B B are the outside lifters, consisting of vessels which may be of any convenient shape, or of various shapes, to fit against different parts of the exterior of the hull of a vessel. These lifters may be made of sheet-iron of suit-

able thickness, and strengthened with bands *d* *d* in such directions as may be desirable, and each one has one or more openings in or near the bottom for the admission of air by pipes *e* *e*, one or more openings in the bottom for the expulsion of water through pipes *f* *f*, and one or more openings at the top for the expulsion of air, each of the latter openings fitted with a stop-cock or valves *g*, of any suitable kind, to close it when the lifters are desired to rise. The pipes *f* *f* should be of india-rubber or other flexible material, and they have hollow weights *h* *h* at their lower ends, to keep their mouths below the bottom of the lifter, such weights serving also to keep the lifter right side up. The lifters may be furnished with suitable rings or hooks to attach them to a sunken vessel by chains passing under the bottom thereof, or with hooked rods *i* *i*, to attach them to the keel and sides of the vessel, as shown in the drawings.

To employ the lifters *B B* in raising a sunken vessel, they must be carried on board of a suitable vessel or vessels or floated and towed to the place where the vessel has been sunk, and are there sunk by opening the cocks or valves *g* *g*, and thus by allowing the air to escape at the top allowing the water to enter by the pipes *f* *f* and fill them. The lifters having been lowered to the proper positions and made fast to the vessel by means of the chains or hooks provided for the purpose, are connected by the pipes *e* *e* with a blowing apparatus on a floating vessel conveniently anchored, and on the cocks or valves *g* *g* having been closed the blowing apparatus is set in operation and the lifters are gradually filled with air, which, rising into their upper parts, forces the water out at their bottoms, through the pipes *f* *f*, until the lifters have buoyancy enough to raise the vessel. It may be well, however, before commencing, to fill the lifters with air. Each one, after having been secured, may have a little air forced in to bring it upright or in its proper position. In case of one end of the vessel rising before the other, and the lifters being consequently tilted from their intended position, the weights *h* *h* keep the lower orifices of the pipes *f* *f* below the lowest part of the lifter,

and so prevent the escape of any air through the said pipes. To insure this without making the pipes *f* *f* very long when the lifters are of great length, it will be well to have two pipes, *f* *f*, to each lifter, near the ends thereof.

In raising a vessel from very deep water lifters of the same kind may be fastened to the rigging and deck, which will keep it in an upright position, and when the vessel has been raised to the surface more lifters can be placed lower down to bring the deck above water, for the purpose of enabling the vessel to be floated into harbor or dock.

When bags or flexible chambers—such as have been herein described for saving damaged vessels—can be placed in the sunken hull and cabins, they can be used with advantage in assisting the operation of the lifters. When these bags or chambers are used, an opening must be made in the bottom or lower part of the vessel for the expulsion of the water by the inflation of the said bags or chambers. When the bags or flexible chambers and outside lifters are applied in sizes and number according to the size and weight, the largest ship, with its cargo, can be raised without any application of power but that necessary to force air into the bags or chambers and lifters.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The employment, in combination with the flexible bags or flexible chambers for raising sunken vessels, of inflexible lifters applied outside the vessel and operated substantially as herein set forth.
2. The arrangement of the connections of the air-pipes for the admission of air to expel the water from the lifters at or near the bottom of the lifters, substantially as and for the purpose herein specified.
3. The weighted flexible pipes *f* *f*, applied to the lifters, and operating substantially as and for the purpose herein specified.

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