(No Model.) 2 Sheets—Sheet 1.

C. CUMMINGS.

APPARATUS FOR RAISING SUNKEN VESSELS.

No. 563,750. Patented July 14, 1896.

FIG. 1.

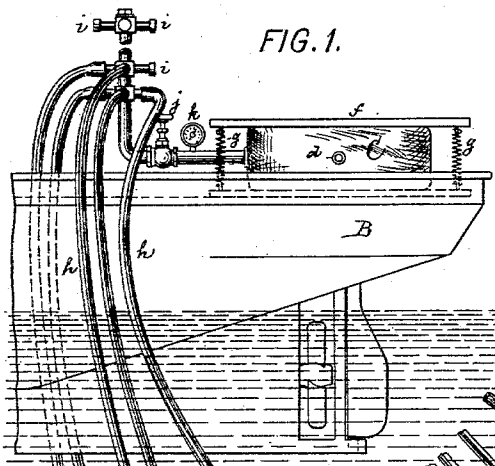
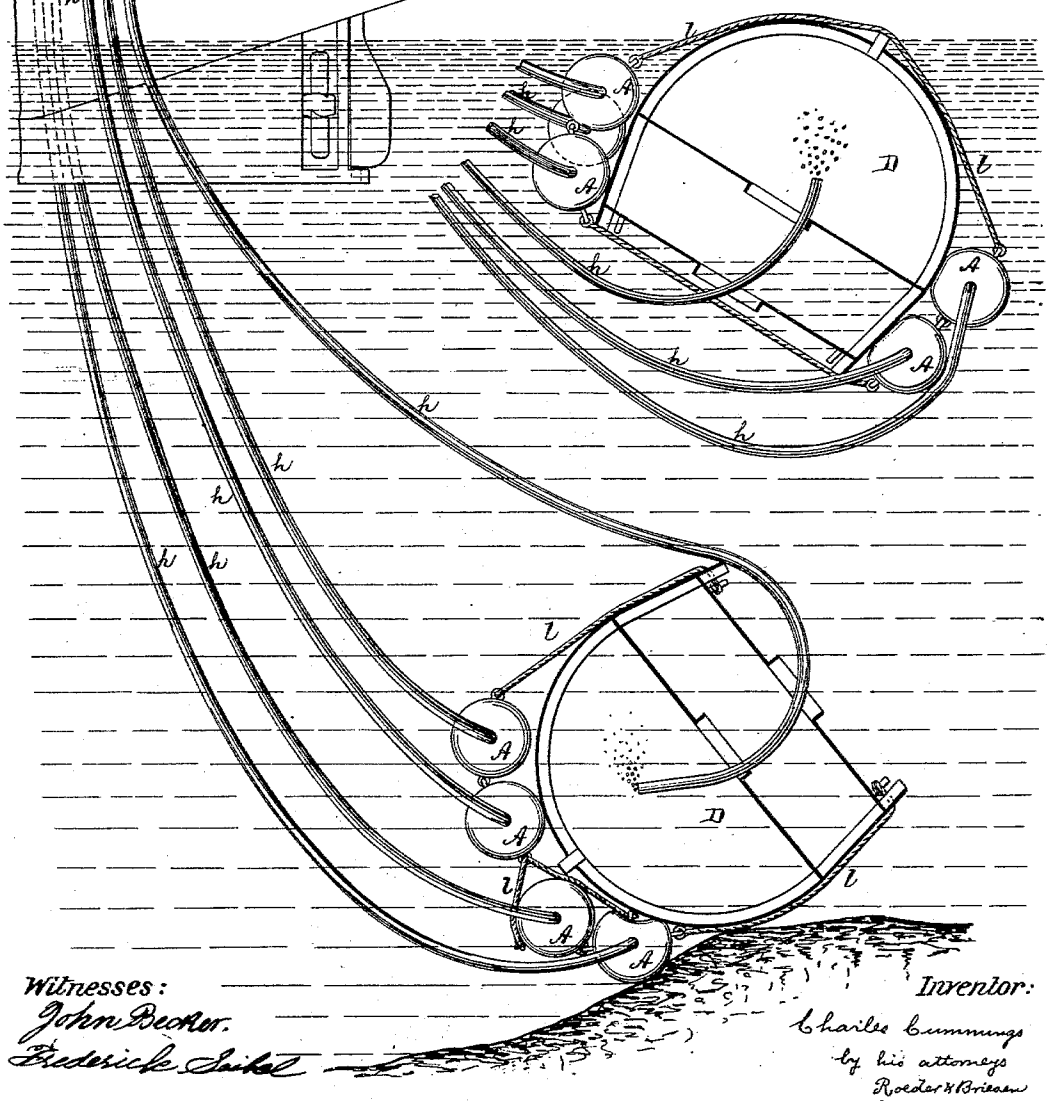


FIG. 2.



Witnesses:
John Becker.
Frederick Seibel

Inventor:
Charles Cummings
by his attorneys
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

C. CUMMINGS.

APPARATUS FOR RAISING SUNKEN VESSELS.

No. 563,750. Patented July 14, 1896.

FIG. 3.

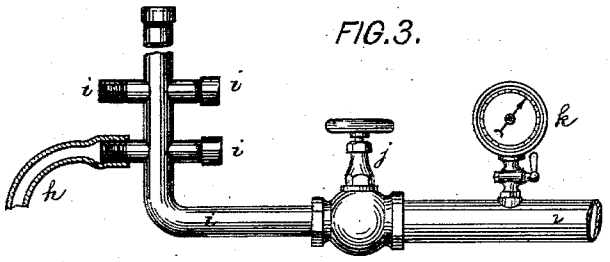


FIG. 4.

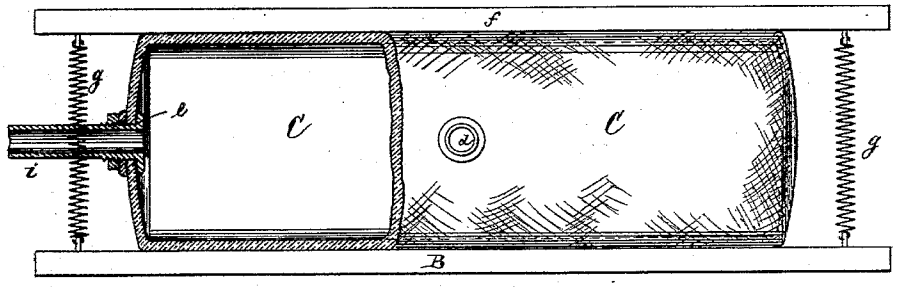


FIG. 6.

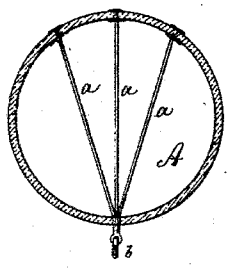
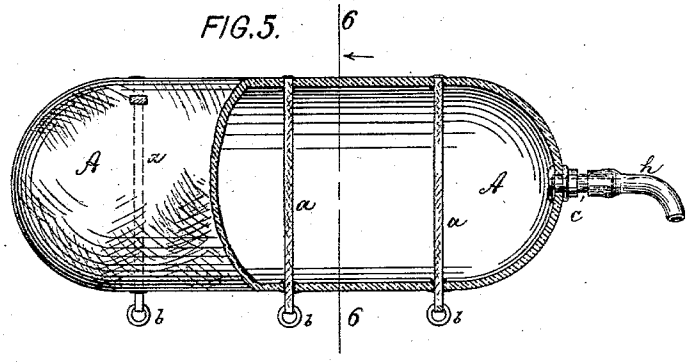


FIG. 5.



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UNITED STATES PATENT OFFICE.

CHARLES CUMMINGS, OF CHICAGO, ILLINOIS.

APPARATUS FOR RAISING SUNKEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 563,750, dated July 14, 1896.

Application filed April 19, 1895. Serial No. 546,436. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CUMMINGS, of Chicago, in the county of Cook and the State of Illinois, have invented a new and Improved Apparatus for Raising Sunken Vessels, of which the following is a specification.

This invention relates to an improvement in means for raising sunken vessels; and it has for its object to accomplish the raising of such vessels by means of bags or equivalent receptacles inflated with compressed air, and to provide means whereby the air supply will be under complete control above the surface of the water.

Another object of the invention is to provide means for turning the vessel's keel uppermost by the aid of the inflated bags in combination with the inflated hull of the vessel, and for raising the vessel with its keel uppermost to the surface of the water, and there to be maintained by a combination of inflated bags with the inflated hull, until the operator is ready to turn the vessel back onto an even keel, which is also done by means of the inflated bags.

In the accompanying drawings, Figure 1 is a diagram showing my invention as applied to a sunken vessel. Fig. 2 is a view representing a vessel reversed and raised to the surface of the water. Fig. 3 is a side view of the pipe communicating with the various inflated receptacles employed for elevating the vessel. Fig. 4 is a side elevation, partly in section, of the air-forcing apparatus; Fig. 5, a side elevation partly in section of one of the truss-bags; and Fig. 6, a cross-section on line 6 6, Fig. 5.

In carrying out my invention, I employ any desired number of truss-bags A, or other equivalent receptacles, capable of occupying but little space when folded up or collapsed, and of being inflated with compressed air or gases to a predetermined pressure. These bags or lifting-receptacles are made of rubber, canvas, or other material capable of withstanding pressure both from within and without. The bags are so constructed that the strain is taken up from the inside by a number of straps *a* attached to the inner face of the bags and passing outwardly through small openings in the bottom of the bags. The free ends of the straps are connected in groups by rings *b*, or otherwise. In this way the bags are allowed to receive the air more freely and without strain, while the weight is suspended almost direct from the top, instead of from the sides of the bag. Each bag A is provided with a nozzle *c*, located at any desired point of the bag.

Upon the vessel B, which is upon the surface of the water, a reservoir C is located, adapted to contain compressed air, Fig. 1. This reservoir is preferably made in the form of a collapsible bag, and may be constructed of the same material as the bags A. The reservoir C is fitted with an inlet *d*, through which the air is supplied, and with an outlet *e*, through which the air is discharged. A constant downward pressure is exerted upon this reservoir, preferably by placing a platform *f* upon the reservoir, and connecting it at its ends, which extend beyond the ends of the reservoir, with the deck of the vessel, or with any other convenient support, by means of a suitable number of springs *g*. The hose *h* is connected with the outlet of the reservoir by a pipe *i*, containing a valve *j* and a gage *k*, the latter showing the pressure of the air in the reservoir.

The bags A may be tied to the vessel D by means of the ropes *l*, or they may be otherwise secured thereto, either singly or connectedly. Of course these bags are placed wherever it may be found necessary or desirable, as there will seldom be found two vessels in the same position.

While the vessel may be raised keel down, it is preferred that the masts and other deck obstructions are removed and the vessel turned bottom upward. To accomplish this result, it is necessary to fasten a sufficient number of bags A about the keel of the vessel and inflate them with compressed air sufficient to assist in turning the vessel with its keel upward. In this position the vessel is raised to the surface of the water, Fig. 2, by the aid of the bags A, which are attached to both sides of the vessel, and at other places about the keel to hold it in position. Each compartment of the vessel is, moreover, inflated with compressed air at the same time that the bags A are inflated, to assist in raising the vessel and to keep it in position until the vessel reaches the surface of the water.

By the aid of the bags A, around the outside of the vessel, the latter will be held in position on the surface of the water, until all the water in the hull has been forced out by the compressed air. Then all the openings are closed and the leaks are repaired. A greater number of bags A are now fastened to one side of the vessel than to the other and the additional bags are inflated. The vessel's keel will thus list to the opposite side and as the masts and deck-rigging have been removed the vessel will now right back onto her even keel.

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

1. A truss-bag for raising sunken vessels composed of an inflatable body, a series of straps that are attached within and project out of said body, and means for connecting the exposed ends of the straps, substantially as specified.

2. The combination of a truss-bag with an air-forcing apparatus composed of a flexible body, a superposed platform and springs connected to the platform and adapted to collapse the flexible body, substantially as specified.

CHARLES CUMMINGS.

Witnesses:
MOSES FEIST,
EMIL SANDERS.