(No Model.) 2 Sheets—Sheet 1.

M. GARLAND.

APPARATUS FOR RAISING SUNKEN SHIPS OR VESSELS.

No. 426,259. Patented Apr. 22, 1890.

Fig. 1.

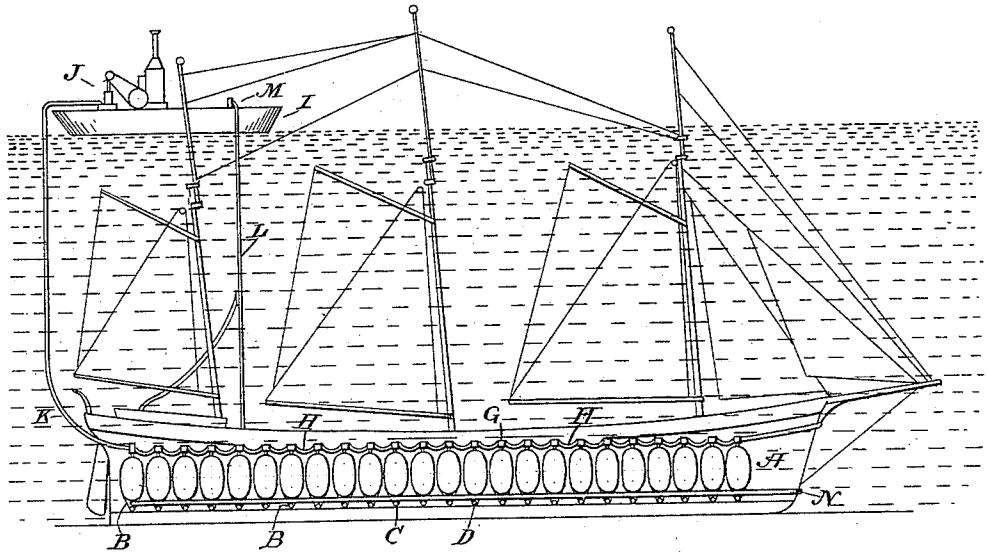
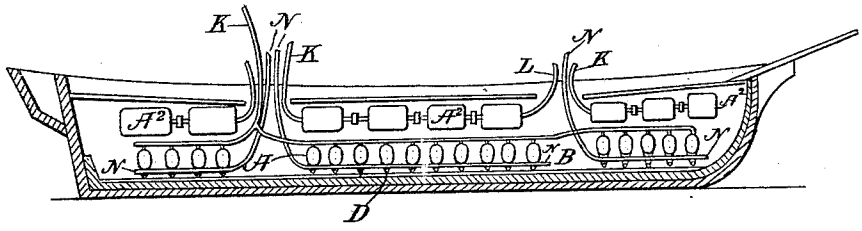


Fig. 2.



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Fig. 3.

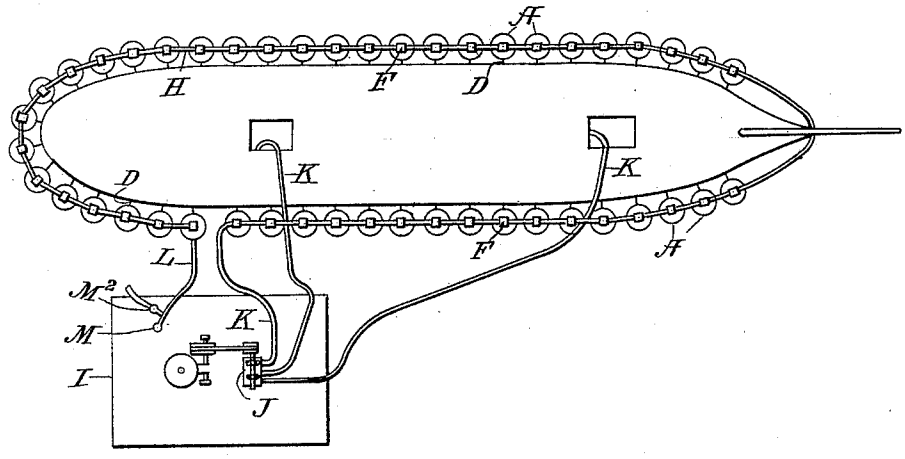


Fig. 4.

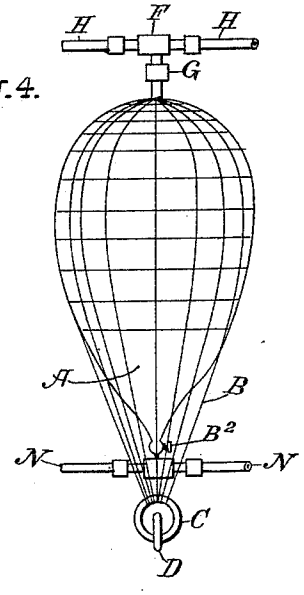
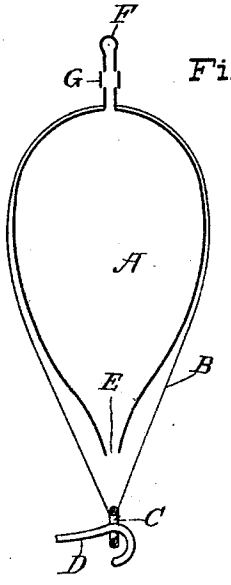


Fig. 5.



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UNITED STATES PATENT OFFICE.

MICHAEL GARLAND, OF BAY CITY, MICHIGAN.

APPARATUS FOR RAISING SUNKEN SHIPS OR VESSELS.

SPECIFICATION forming part of Letters Patent No. 426,259, dated April 22, 1890.

Application filed November 18, 1889. Serial No. 330,656. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL GARLAND, of Bay City, in the county of Bay and State of Michigan, have invented a new and useful Improved Apparatus for Raising Sunken Ships or 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 drawings, forming part of this application.

My invention relates to a new and useful improvement in contrivances for effecting the raising of sunken ships or vessels by the use of inflatable buoys.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will proceed to more fully describe my improvement, referring by letters to the accompanying drawings, which make part of this specification, and in which—

Figure 1 is a side view or elevation showing a sunken vessel and the appliances by means of which, according to my invention, the ship may be raised. Fig. 2 is a longitudinal section of the hull portion of the vessel seen in elevation at Fig 1, and showing an internal or interior arrangement of the lifting floats or devices employed to effect the raising of the sunken ship. Fig. 3 is a plan view of the vessel and lifting appliances seen in elevation in Fig. 1. Figs. 4 and 5 are detail views, respectively, in elevation and vertical section, showing one of the collapsible and inflatable bags and its direct attachments detached from the other parts of the apparatus and drawn on a greatly-enlarged scale.

In the several figures the same parts, wherever they appear, will be found designated by the same letters of reference.

A represents a series of inflatable bags, made, as usual, of canvas, rubber, or other suitable strong and water-proof material, and designed to withstand a large amount of pressure and remain water and air tight. These bags, when applied exteriorly to the vessel, as shown, for instance, at Figs. 1 and 3, are enveloped by the rope netting or holding devices B, which are made to approximately correspond in shape to the form which the bag A will assume when inflated, which enveloping-nettings are secured or anchored at their lowermost portions, as shown, by means of the eyes or hooks C, to engaging hooks or devices D, which are for the purpose secured to the hull of the vessel or ship.

E are vents formed in the lower ends of the bags A, which vents may or may not be provided with stop-cocks, as shown at B^2, Fig. 4.

The upper ends or portions of the bags A are provided, as shown, with metallic connections G, by means of which said bags are coupled, through the media of branch connections F, (see Fig. 4,) with the sections of the main air-pipe H, all substantially as shown in the drawings.

I represents the wrecking-tug, which, as usual, carries a suitable air compressor or pump J, from which run one or more air-pipes—such as shown at K—for the conveyance of the air down to the interior of the inflatable bags or floats A, while L represents a return-pipe for the passage upward and final escape (in a manner to be presently explained) of the air contained in the bags A, as it may be necessary to allow the pressure in the bags to be decreased and the latter to be finally collapsed.

M is a valve on the end of the return-pipe, which may be arranged to operate either automatically or otherwise, and which operates both to control the pressure of the air in the air-pipe and in the inflated bags, and to permit the escape wholly of all compressed liquid, as will be presently explained.

N is a pipe, with which, preferably, the entire series of inflatable bags is connected, and by means of which the air and water therein are permitted to escape to the main discharge-pipe L, through which latter they will flow freely until all water shall have been forced from the bags and pipes, after which the pressure in the bags may be regulated either by a stop-cock or a safety-valve M, connected with said pipe L. The said escape-pipe is shown as controlled by the stop-cock or globe-valve M^2.

At Fig. 2, where I have shown the arrangement of two series of inflatable bags with their respective supply-pipe and escape-pipe connections arranged within the hold of the ship, there are, it will be seen, two different forms of inflatable bags employed, one set A being similar to the series of bags shown

in Figs. 1 and 3, placed exteriorly of the vessel, and the other (marked A^2) being of a somewhat different form and better adapted to be placed and retained between the decks of the ship.

In practice the contrivance shown in the drawings, and herein so far described, operates about as follows: The inflatable bags A or A^2, or both, having been brought into position both exteriorly and interiorly of the hull of the vessel, and the bags A having been secured in place by the means shown and herein already described, and the main pipe connected to the couplings and with the air-compressor on board the wrecking-tug, and the escape-pipes having been properly connected and adjusted, the air-compressing engine is set in motion and air is forced through the main pipe or pipes K into the inflatable bags until they shall have been sufficiently distended, any excess of air-pressure escaping through the vents at the lower end of the bag or being allowed to escape through the valve at the end of the return-pipe, where, preferably, there is the safety-valve operating automatically, as hereinbefore alluded to.

It will be seen that by having the air-vessels provided with a vent at the lowermost part thereof any excessive pressure within the vessel will be automatically relieved and thus undue strain on the vessel avoided; and it will be understood that by furthermore providing a safety-valve at the upper discharge end of the pipe to which the vents may all be connected (as hereinbefore explained,) the apparatus may be adjusted so that only a given maximum pressure can ever be created within the said air-vessels.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the series of inflatable lifting-bags adapted to be arranged within or exteriorly applied to the hull of the vessel, and a pipe for supplying compressed air to the series of bags, a pipe N, connected with a series of bags and extending upwardly to the main escape-pipe L, all in substantially the same manner and for the purposes hereinbefore set forth.

2. In combination with the series of inflatable bags, and suitable means, as specified, for supplying them with compressed air, and the escape-pipe L, for the discharge of the latter, a safety-valve for regulating the pressure within the bags, all in substantially the manner hereinbefore described.

In witness whereof I have hereunto set my hand this 11th day of November, 1889.

MICHAEL GARLAND.

In presence of—
H. M. GILLETT,
M. L. COURTRIGHT.