

(No Model.)

G. S. DODMAN.

APPARATUS FOR RAISING SUNKEN SHIPS, &c.

No. 357,657.

Patented Feb. 15, 1887.

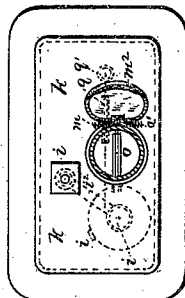
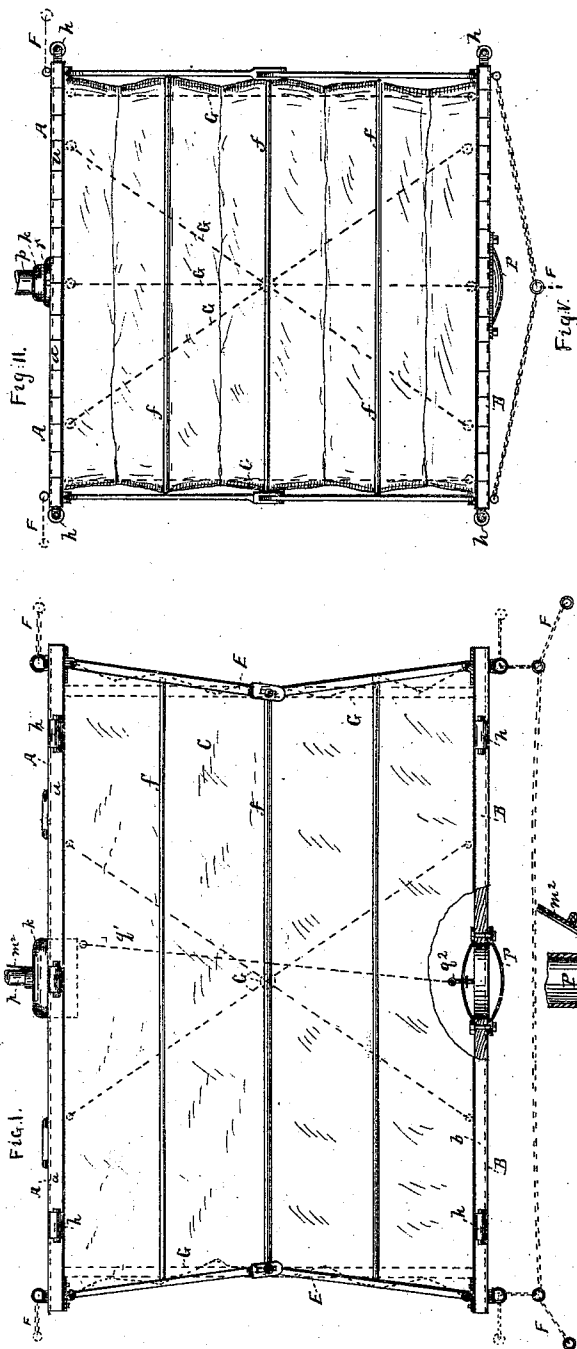


Fig. 12.

Fig. 13.

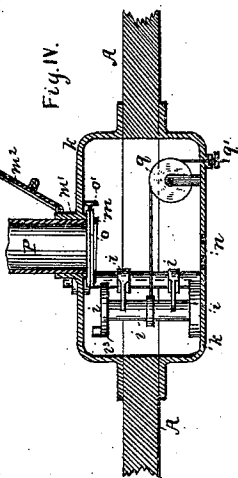
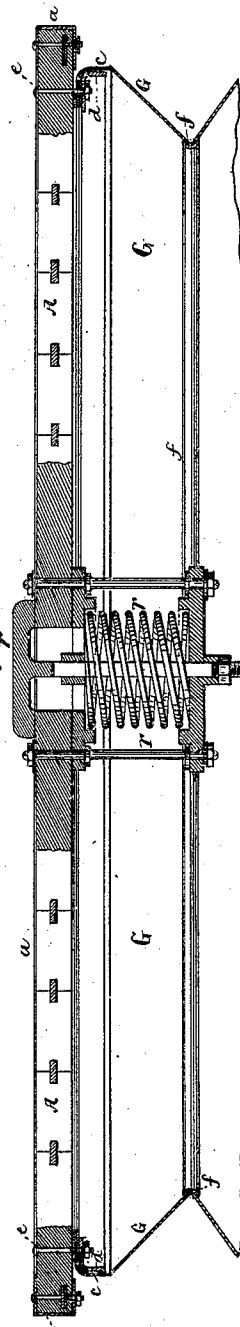


Fig. 14.



WITNESSES:

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APPARATUS FOR RAISING SUNKEN SHIPS, &c.

SPECIFICATION forming part of Letters Patent No. 357,657, dated February 15, 1887.

Application filed March 31, 1886. Serial No. 197,360. (No model.) Patented in England January 30, 1883, No. 500, and October 10, 1884, No. 13,405.

To all whom it may concern:

Be it known that I, GEORGE SUTHERLAND DODMAN, a subject of the Queen of Great Britain, residing in the city of Liverpool, county of Lancaster, England, have invented a new and useful Improved Apparatus for Raising Sunken Ships, (for which I have obtained patents in England, No. 500, January 30, 1883, and No. 13,405, October 10, 1884,) of which the following is the specification.

My invention has for its object the construction of a convenient form of apparatus to be applied as a means for raising sunken ships and other submerged objects; and it consists of a certain construction of inflatable vessel or buoy and its accessory appliances and connections which are used in requisite numbers for raising the sunken structure or body, the vessels or buoys being constructed and applied in the manner hereinafter set forth.

The following is a description of my invention in such full, clear, and distinct language as to enable any one skilled in the art to which it belongs to put the same into practice, reference being had to the annexed sheet of drawings, making a part of this specification, and to the letters and figures of reference marked thereon, which letters and figures of reference correspond with those used in the following description, like letters and figures being used to denote the same parts throughout the various views.

Figure I is an elevation, partly in section, of an apparatus, being a vessel or buoy according to my invention. Fig. II is an end view of Fig. I. Fig. III is an enlarged view of the top of the apparatus, shown in section through one of the relief-valves. Fig. IV is a sectional elevation of the air-admission valve. Fig. V is a plan of Fig. IV.

A vessel or buoy according to my invention is of a collapsible form, and has a top end, A, and a bottom end, B, parallel with each other. The ends A and B of the vessel are of well-seasoned timber, and each end is provided with an angle-iron frame, *a b*. The four sides of the vessel are composed of a continuous collapsible fabric, C, such as water-proof canvas. The end edges of the canvas come between the ends A and B and an angle-frame, *d*, which is

provided on the inside of each of the ends A and B for that purpose, the iron angle *d* being made with a well-rounded bull-nose, and the joint between the angle-iron *d*, the canvas C, and the end A or B being made with an india-rubber or other suitable packing-strip, *c*, on each side of the canvas, so as to make a perfect joint between the wooden ends A and B, being fastened to their respective angle-iron frames *d* by through-bolts *e*, which secure the joint and the canvas. Both top and bottom ends of the vessel are of the same construction, and they are held apart by four distant bars or stays, E, placed at each corner of the vessel, to collapse when the ends A and B are brought together, the canvas or water-proof fabric folding up like an accordion when the vessel is in a collapsed state, the bending edges of the canvas being provided with india-rubber strengthening-pieces *f*.

The top A and the bottom B of the vessel are provided with chains F, extending from each corner. The bottom chains F are used to attach the vessel to the submerged object to be raised, and are provided with hooks for that purpose. The top chains F are used to connect the vessels together when more than one is used, and also for lowering and working the apparatus. Chains G are also provided inside the apparatus for connecting the top and bottom together and taking the strain off the canvas. The top and bottom of the apparatus are provided with rollers *h* to keep the apparatus from chafing against any object.

Attached to the top end of the apparatus there is a special arrangement of valve (see Figs. IV and V) through which the air for inflating the apparatus is forced. *i* is the valve. It is of duplex construction and is fixed to swing radially in the valve-box K, being carried from the spindle *j* by the arms *k*. The seat of the valve is formed by the projecting ring *m* on the under side of the top of the box K, and the valve *i* is kept up to its seat by the pressure of air from the inside of the buoy through the hole *n*. The air-valve seat *m* is provided with a recessed locking-bar, *o*, which, when the air-pipe-nozzle mouth *p* is in position, is forced into a recess in each side of such air-pipe-nozzle mouth *p* by the action of a

spring, o' . In the valve-case K there is a lever or wheel, q , over which passes a wire or cord, q' , one end of which is attached to the valve i and the other end of which passes through the buoy and is attached by an adjustable stud, q^2 , to a man-hole, P, at the bottom of the buoy. The function of this wire or cord q' is that when the vessel is inflated to its fullest limit the wire or cord q' is so tightened that it causes the valve i to close over its seat m . As the valve i closes over its seat m the projection i^3 on the top of the valve i comes against the end of the locking bar o and forces back the locking-bar, and thus disconnects the air-supply-pipe nozzle p from the vessel. Over the mouth m' of the inlet for the air-supply pipe there is a cap, m^2 , which closes over the mouth m' by means of a spring, m^3 , when the nozzle p is withdrawn. It will thus be seen that an automatic means is provided for closing the air-inlet valve and disconnecting the supply-pipe. The vessel is also provided with suitable relief or escape valves, r , which it is not necessary to describe in detail, as such valves are in common use in connection with helmets and dresses for divers, and are also being used with inflatable bags for submarine purposes, their action being to regulate the pressure of air inside the vessel in accordance with the depth and head of water in which the vessel is working.

In the application of my invention to, say, the raising of a sunken ship, a number of vessels constructed as herein described are used. These vessels, from their collapsible nature, are easily transported to the scene of action. A flexible air-pipe is attached, as herein described, to the vessel. The vessel is then lowered by means of its chains and attached by a diver to any convenient part of the sunken ship—namely, by inserting the hooks through the side lights or attaching them to any convenient part of the ship's side, deck, or hold. The other end of the air-pipe is connected to any suitable air-compressing machinery on the salvage-vessel, and by these means the submerged vessel is inflated, and when inflated the air-pipe is automatically released and drawn up to the salvage-vessel and attached to another collapsible vessel, which in its turn is in like manner attached to the sunken ship. When a sufficient number of these vessels have been attached to the sunken ship, she will come up. The relief-valves in the vessels prevent such vessels from bursting as the head of water is lessened.

The collapsible vessels, according to my invention, may be of any convenient portable size. For example, each vessel may have, when inflated, a displacement of from six to twenty tons.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for raising sunken ships or vessels, the duplex valve i , connected to the spindle i' by arm i^2 , placed within the valve-box K, secured on top of the collapsible buoy or vessel A, substantially as and for the purpose set forth.

2. In an apparatus for raising sunken ships or vessels, the duplex valve i , connected to the spindle i' by arm i^2 , operated by cord q' , passing through buoy A, and fastened to stud q^2 of the man-hole P, in combination with the valve-box K, secured to the top of the buoy, substantially as and for the purpose set forth.

3. In an apparatus for raising sunken ships or vessels, the duplex valve i , having projection i^3 , and attached to spindle i' , placed within the valve-box K, attached to top of buoy A, and operated by cord q' , attached to man-hole P, in combination with rocking bar O, pivoted to the valve-seat m , placed in upper part of the valve box K, substantially as and for the purpose set forth.

4. In an apparatus for raising sunken ships or vessels, the rocking bar O, pivoted to valve-seat m , all attached to the upper part of the box K, in combination with the valve i , with projection i^3 , connected and operating as hereinbefore described and set forth.

5. In an apparatus for raising sunken ships or vessels, the buoy A, constructed as described and illustrated, the valve-box K, placed on top of buoy A, and containing the valve i , and operated by cord q' , secured to man-hole P, the rocking bar O, pivoted to valve-seat m , and the spring-cover m^2 , attached to buoy A, and the pipe p , inserted in mouth m' of buoy A, all combined and arranged substantially as described and illustrated, and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of September, 1885.

GEORGE SUTHERLAND DODMAN.

Witnesses:

T. H. SIPPET,
ARTHUR H. BELK.