C. Harrison.

App's for Raising Sunken Vessels.

No. 45,602. Patented Dec. 27, 1864

Fig. 1.

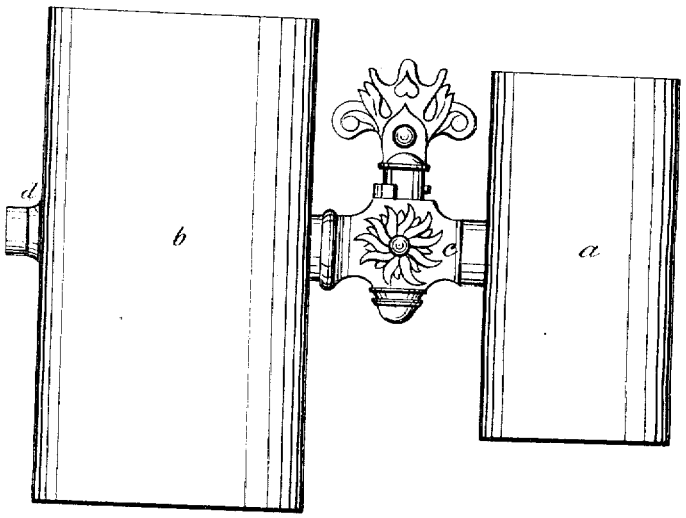


Fig. 2.

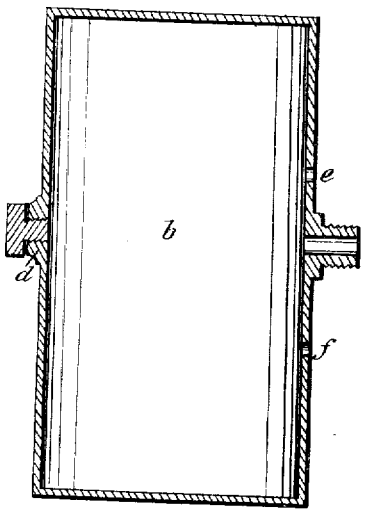
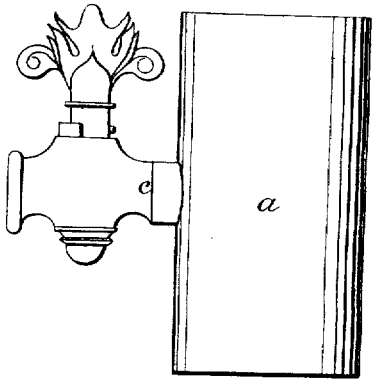


Fig. 3.



Witnesses.
Geo C Lambright
Law. Jones

Inventor.
Caleb Harrison
by Atty T. T. Everett

UNITED STATES PATENT OFFICE.

CALEB HARRISON, OF MILWAUKEE, WISCONSIN.

IMPROVED MODE OF RAISING SUNKEN VESSELS.

Specification forming part of Letters Patent No. **45,602**, dated December 27, 1864.

To all whom it may concern:

Be it known that I, CALEB HARRISON, of Milwaukee, in the State of Wisconsin, have invented a certain new and useful improvement on means for raising sunken vessels and other bodies in or under the water; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the marks and letters thereon.

My invention relates to that class of means for raising sunken vessels and other submerged bodies where atmospheric or other air or gas is used, and has special regard to the use of compressed air and the manner of rendering its buoyancy available and efficient.

The drawings forming part of this specification represent one set of means that may be used in carrying out my invention, Figure 1 of these drawings being a face view of a pair of cylinders connected by tubes and faucet, Fig. 2 being a view by longitudinal section of the larger of the two cylinders, and Fig. 3 being a face view of the smaller cylinder with the tube and faucet attached thereto.

In each of these figures, where like parts are shown, like marks and letters are used to indicate the parts.

As is evident, chambers or reservoirs of any other shape or form may be used instead of the cylinders, and the kind and character of the connections and faucets or valves and their position and relation to the chambers and to each other can be such as will best adapt them to the particular object to be raised or to the location, occasion, or other present circumstances.

The drawings represent the cylinder *a* to be of the least capacity of the two. In this cylinder atmospheric or other air will be forced to such degree of compression as will be deemed requisite, the pressure for producing such compression being derived from any of the usual sources of power for such purpose. This cylinder, being filled with compressed air and the faucet or valve closed, can be attached to the cylinder *b*, by the tube *c*, or by any other suitable means. Cylinder *b* will have such capacity as will allow the compressed air of cylinder *a* to be expanded therein.

When ready to be passed down to the sunken vessel or other body, cylinder *b* will be filled with water, for the exit of which holes or outlets *d e f* properly controlled by plugs or cocks, are provided. The larger one of these holes or outlets is represented as having such controlling plug or valve, and the same kind of plug or valve may be used in connection with tubular projections from the cylinder, or any other suitable plug may be used to control the smaller openings. The large outlet is the main one that will be used the smaller ones being only supplemental.

When the cylinder *b* is filled with water and attached to cylinder *a*, filled with compressed air, the weight of the whole will be such as to sink in the water, and when so prepared they can be lowered down and guided to the vessel or other object by any of the means generally or commonly employed for lowering and guiding bodies in water. Having reached such vessel or object, and cylinder *b* having been properly secured to it, the cock or valve between the two cylinders being opened and the cocks or valves of cylinder *b* being also opened for the escape of the water therein, the compressed air of cylinder *a* will rush into the cylinder *b*, forcing out the water and expanding in that cylinder, and when the escape of the air through the outlets of cylinder *b* indicates that the water is out of it, the outlets can be closed and the air then be confined in that cylinder. Cylinder *a* can then be separated from *b* and drawn up to the surface for further use. In this way such number of cylinders or other chambers may be passed down to the vessel or body to be raised until the bouyancy required to elevate such vessel or body is thus given to it.

As will readily be perceived, this manner of using compressed air may be extended to submarine armors and such other pieces of apparatus and structures of a like character of, as will allow of the use of air or gas under such circumstances.

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

The raising of sunken vessels and other bodies in the manner and by the means substantially herein recited.

This specifiation signed this 6th day of August, 1864.

CALEB HARRISON.

Witnesses:

G. W. MYGAT,

CHAS. C. RATTINGER.