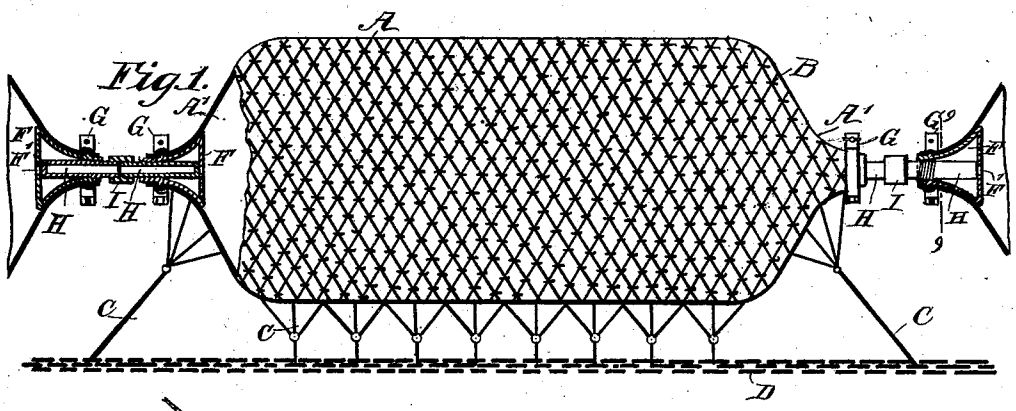
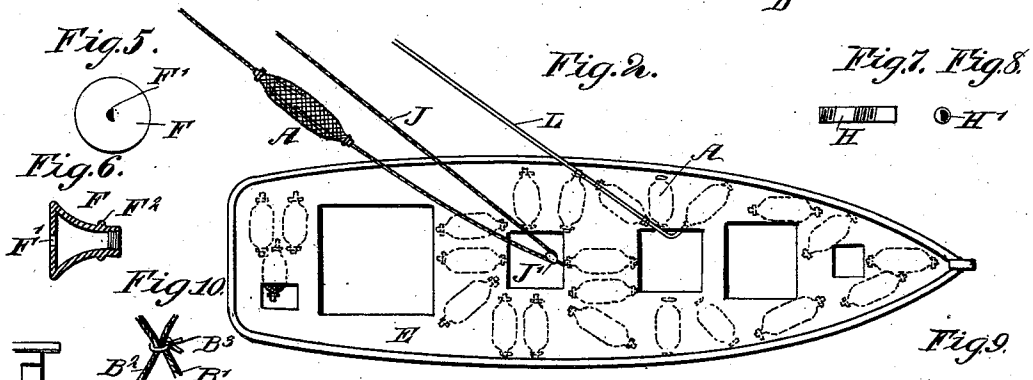
(No Model.) 2 Sheets—Sheet 1.

W. A. & F. E. TURNER.

MEANS FOR RAISING SUNKEN VESSELS.

No. 531,485. Patented Dec. 25, 1894.





WITNESSES:
F. M. Ardley.
C. Sedgwick.

INVENTORS
W. A. Turner
F. E. Turner
BY
Munn & Co
ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

W. A. & F. E. TURNER.

MEANS FOR RAISING SUNKEN VESSELS.

No. 531,485. Patented Dec. 25, 1894.

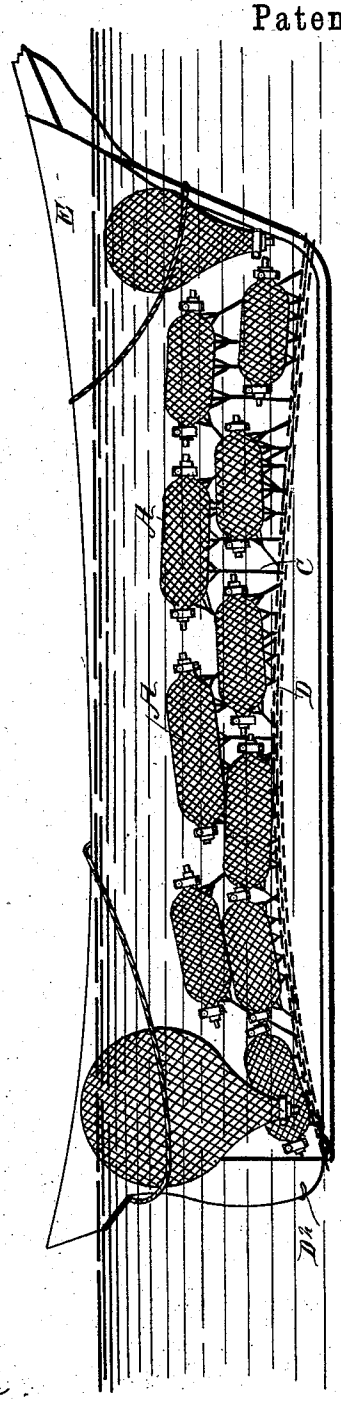


Fig. 4.

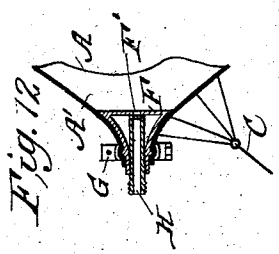


Fig. 12.

WITNESSES:
H. McArdle.
C. Sedgwick

INVENTORS
W. A. Turner
F. E. Turner
BY Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM A. TURNER AND FRED E. TURNER, OF MALDEN, MASSACHUSETTS.

MEANS FOR RAISING SUNKEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 531,485, dated December 25, 1894.

Application filed July 26, 1893. Serial No. 481,492. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. TURNER and FRED E. TURNER, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and Improved Means for Raising Sunken Vessels, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and improved means for raising sunken vessels, in a very short time and at a comparatively low cost.

The invention is embodied in the inflatable receptacle provided with a valve inlet of peculiar construction, as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a plan view of the improvement as applied on the deck of the sunken vessel. Fig. 3 is a side elevation of the improvement as arranged on the outside of a sunken vessel. Fig. 4 is a like view of the improvement, showing it applied to the outside of a large sunken vessel. Fig. 5 is an end view of one of the valve casings for the receptacle. Fig. 6 is a sectional side elevation of the same. Fig. 7 is a side elevation of the connecting pipe for the said valve. Fig. 8 is an end view of the same. Fig. 9 is a transverse section of the valve inlet on the line 9—9 of Fig. 1. Fig. 10 is a side elevation, showing the connection of the cords for forming a netting for the receptacle; and Fig. 11 is an enlarged side elevation of part of the chain. Fig. 12 (Sheet 2) is a detail section of one of the valve attachments of the inflatable receptacle.

The improved means for raising sunken vessels consists of a series of receptacles A, adapted to be fastened to the vessel, either on the deck, as shown in Fig. 2, or on the outside thereof, as illustrated in Figs. 3 and 4.

The receptacle A is preferably made of cotton, hemp or linen canvas and a compound of gum rubber, the compound being calendered or otherwise attached to the canvas in thin sheets, and then the fabric thus produced is formed into a receptacle of any desired shape, preferably however, cylindrical, as illustrated in the drawings, with the contracted ends A′ for the inlet and egress of the air. The receptacle A is inclosed by an exterior netting B, provided with extension ropes C adapted to be attached to a chain D or other means fastened to the vessel E to be raised, as illustrated in Figs. 1, 3 and 4.

The chain D is passed around the outside of the vessel, and has its ends connected with each other by a suitable devil's claw D′, near which is arranged a second hook D^2 adapted to be hooked on the rudder of the vessel, or on the bow of the same, to securely hold the chain in place. See Figs. 3 and 4.

In each contracted end A′ of each receptacle A is fitted an air inlet provided with a bell-shaped casing F formed in its base with a semi-circular opening F′ adapted to register with a corresponding opening H′ formed in a pipe H fitted into the neck of the bell-shaped casing F. On the outside of the casing F is formed an annular flange F^2, see Fig. 6, over which passes part of the contracted end A′ of the receptacle, and on this part passes a clamp G preferably made of two hinged members connected with each other at their free ends by a screw, as is illustrated in Fig. 9, so as to securely clamp the casings F in place in the ends A′ of the receptacle A.

The pipe, H, is removably and adjustably fitted in the bell-shaped casing, F, and, its outer end being screw-threaded, a suitable screw coupling (not shown) may be attached to it for the purpose of temporarily connecting a rope with it, for moving the receptacle from the tug-boat down to the sunken vessel, or an air pipe may be screwed on the pipe, H, to inflate the receptacle; or as shown in Fig. 1, the pipe, H, may be connected by a coupling I with the similar projecting end of the pipe belonging to another receptacle A, so as to connect two such receptacles with each other. Now, it will be seen that when the pipe H is turned half way round in one direction, its semi-circular opening, H′, will register with the corresponding opening, F′, in the casing, F, and, when turned in the opposite direction, the said openings H′ and F′ will be out of register; and thus the passage to the receptacle, A, is opened or closed for admission or escape of air, as the case may

be. As shown in Fig. 12, the pipe, H, is turned so as to close the aforesaid openings H′ and F′.

When the receptacle is to be applied on a sunken vessel, as illustrated in Fig. 3, then the outer ends of the pipes H, at the ends A′ of the receptacle A, are connected with a rope J, leading from the tug K to and around a sheave J′ attached to the chain D, or to any part of the sunken vessel E, so that when the rope is pulled the receptacle is moved downward through the water from the tug K to the sunken vessel. The diver located at the sunken vessel then fastens the ropes C to the chain D, or to any other suitable part of the sunken vessel. When this has been done, the receptacle is to be inflated, and for this purpose the end of an air pipe L is connected with the outer end of one of the end pipes H, as illustrated in Fig. 3, after which air is pumped through the said pipe L from the tug K into the receptable A, to inflate the same. This operation is repeated for each receptacle to be attached to the vessel, until finally sufficient air pressure is obtained by numerous receptacles to raise the vessel, it being understood that the said inflated receptacles have a tendency to rise to the surface of the water.

As illustrated in Fig. 10, the single strands B′ and B^2 of the netting B are connected with each other crosswise, and are fastened in place at the crossing by separate short strings B^3, as is plainly shown in the said Fig. 10.

Instead of forming the receptacles A with two valve ends A′, as shown in Fig. 1, and described above, we may provide the said receptacles with only one valve end, but in this case we prefer to shape the receptacle like a balloon, as indicated at the ends of Fig. 4.

It is understood that when the rope J is connected with the valve inlets A′ at the pipes H, as above described, then the said pipes H are in such a position as to have their apertures H′ out of register with the air pump L, after which the pipe is sufficiently turned to register the aperture H′ with the aperture F′, to permit air to pass into the interior of the receptacle A. In a like manner, after the receptacle has been filled, the pipe H is turned to move its aperture H′ out of register with the opening F′ to close the end of the vessel, and then the air pipe L is disconnected.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. As a means for raising sunken vessels, an inflatable receptacle having a valve inlet comprising a casing provided with an eccentrically located opening in its inner end, and a pipe fitted and adapted to turn in said casing, and open at its outer end, and having an eccentric opening in its inner end, as shown and described, whereby the circumferential adjustment of the pipe opens or closes the air passage to said receptacle, as specified.

2. A means for raising sunken vessels, consisting of an inflatable receptacle having a valve inlet comprising a bell-shaped casing formed in its base with an opening, a clamp for fastening the said casing to the end of the said receptacle, and a pipe mounted to turn in the said casing and formed at its inner end with an opening adapted to register with the opening in the base of the said casing, substantially as shown and described.

WILLIAM A. TURNER.
FRED E. TURNER.

Witnesses:
W. H. MASON,
CHAS. ANDERSON.