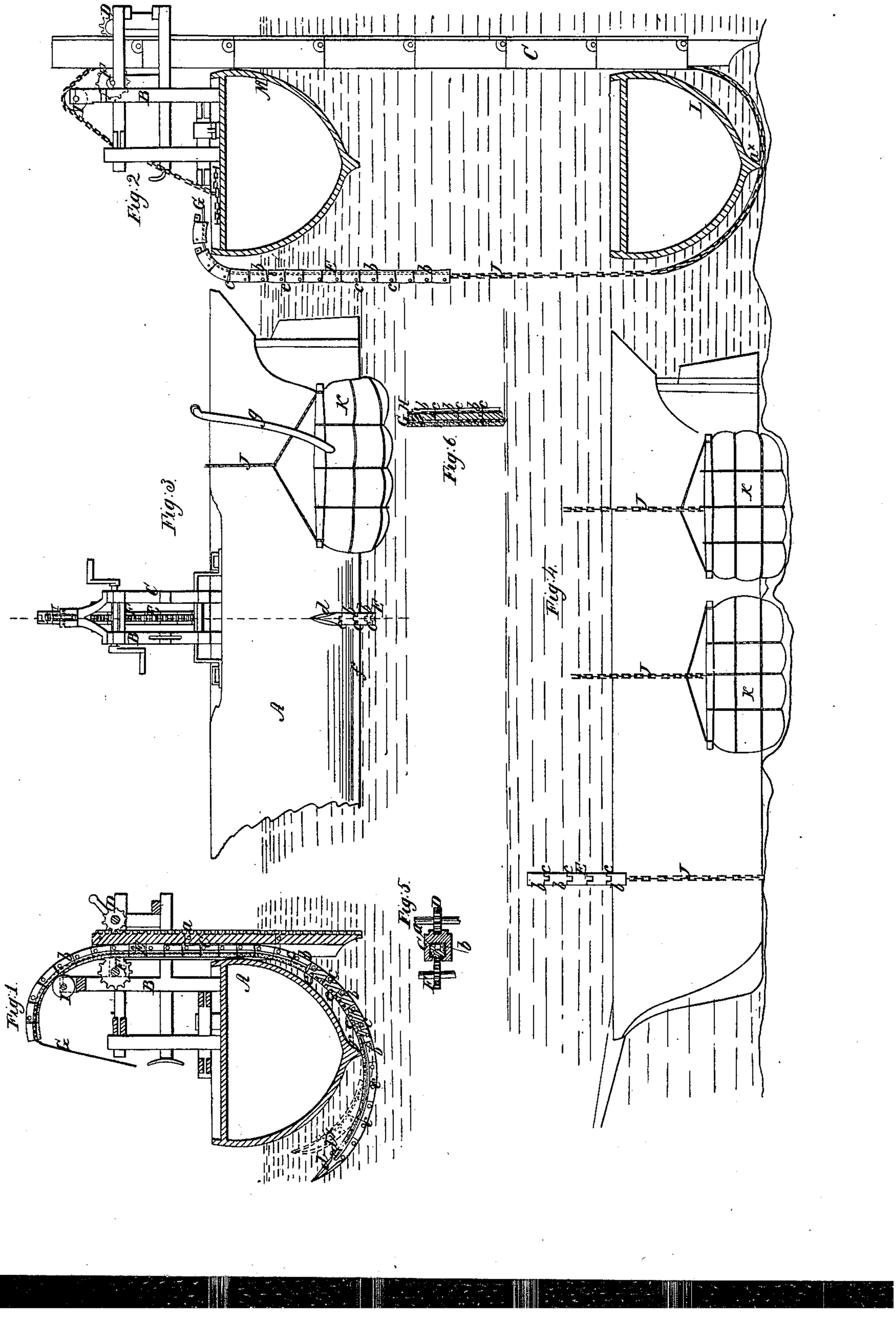
F. G. FORD & P. PLANT.

DEVICE FOR RAISING SUNKEN VESSELS AND ALSO FOR PREVENTING VESSELS FROM SINKING.

No. 19,500. Patented Mar. 2, 1858.



UNITED STATES PATENT OFFICE.

F. G. FORD, OF NEW YORK, N. Y., AND P. PLANT, OF WASHINGTON, DISTRICT OF COLUMBIA.

METHOD OF RAISING SUNKEN VESSELS.

Specification of Letters Patent No. 19,500, dated March 2, 1858.

To all whom it may concern:

Be it known that we, FREDERICK G. FORD, of the city, county, and State of New York, and PASCAL PLANT, of Washington, in the District of Columbia, have invented a new and useful Apparatus or Device to be Used in the Raising of Sunken Vessels and also in Preventing Leaking Vessels From Sinking; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a transverse section of a sinking vessel with our improvement applied to it. Fig. 2, is a transverse section of a sunken vessel and a "wrecker" above or over it, our improvement being applied to the "wrecker." Fig. 3, is a side view of the sinking vessel shown in Fig. 1. Fig. 4, is a side view of the sunken vessel shown in Fig. 2. Fig. 5, is a detached top view of the tube and chain. Fig. 6, is a section of the chain showing an additional central chain.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of a chain peculiarly constructed and used in connection with a tube as hereinafter shown, whereby chains may be passed underneath and around sunken vessels and also underneath and around vessels in a sinking state, and by means of inflated bags or other suitable air vessels which are attached to the chains that are passed underneath the vessels, the same, if sunken, may be raised by the buoyant power of the air bags, or, if in a leaking and sinking state made sufficiently buoyant to be kept afloat until succor arrives, and the leak stopped.

The invention may also be applied to the raising of obstructions from the beds of rivers and harbors such obstructions as are not permanently attached to the beds as snags, boulders and the like.

To enable those skilled in the art to make and use our invention we will proceed to describe its construction and the way in which it is used.

A, Fig. 1, is a vessel on the deck of which at any proper place a small framing B, is placed a portion of which projects over or beyond one side of the vessel.

C, is a vertical tube which is fitted in the framing B, and allowed to move freely up and down therein, the outer side of the tube having a sunken rack (a) formed in it, in which rack a pinion D, in the framing B gears. The tube may be constructed of cast iron of quadrilateral form and in pieces connected together in any proper way.

E, is a chain the links (b) of which, may be constructed of cast iron and of quadrilateral form. The links (b) are connected together by joints (c) and the ends of each are not parallel but are formed obliquely with each other, slightly converging from the outer to the inner sides of the links so that each link forms the segment of a circle and allows the chain E, to bend in circular form in one direction as shown in Fig. 1. The chain E, may be of greater or less length as may be desired and the longer terminal link (d) is pointed or made in the form of a drill, see Fig. 1. The inner sides of the links (b) have recesses (e) made in them and these recesses form a sunken rack, in which a pinion F, gears, said pinion being in the framing B, and working through a vertical slot in the back of the case. Through the links (b) a small or comparatively small chain G, passes. The lower end of this chain G, is attached to the inner side of the terminal link (d) as shown at ($d^{\times}$), and the chain passes through the links near their inner edges as shown clearly in Figs. 1 and 2.

In the section of the chain E, Fig. 6, an additional chain H, is shown. This chain H, is precisely the same as the chain G, but passes through the links (b) of the chains E, near their outer sides. On the framing B, a pulley I, is placed, as shown clearly in Figs. 1 and 2.

The operation is as follows. Suppose the vessel A, Fig. 1, to be in a sinking state and supplied with our apparatus or device. The chain E, may be kept in a locker or recess at the side of the vessel opposite to that where the framing B is placed. The chain E, is placed over the pulley I, and the link (d) placed in the upper end of the tube C, the pinion F, gearing into the rack (e) at the inner sides of the links (b). The tube C, is forced down a sufficient distance by turning the pinion D, and when in proper position the chain E, is forced down by turning the pinion F. This chain when its terminal link (d) passes a short distance below the keel (f) of the vessel A, is bent upward by drawing upward the chain G,

and as this chain G, passes through the links near their inner sides and the ends of the links are beveled or made oblique the chain will be curved so that its link (*d*) will project upward and as the upper end of the chain E, is forced down, the end (*d*) will be forced upward at the opposite side of the vessel, and when it reaches the deck it is grasped by an operator one or more and secured to any proper windlass or device, the links (*b*) of the chain as a matter of convenience being detached and removed from the inner chain G, as said chain E, is elevated. The chain E, has a chain J, attached to its end opposite to that where the link (*d*) is attached and when the chain F, is drawn fully up at the side of the vessel opposite to that where it was forced down, the chain J, of course will be around the vessel and underneath the keel. Any proper number of chains J, may be thus passed around the vessel, the frame B, being adjusted on the vessel at different parts, and to the chains J, bags K, are attached which, when the chains J, are properly secured in position, are inflated from the deck of the vessel through tubes (*g*) which communicate with the bags K, the tubes being permanently attached to the bags and sufficiently long to reach from their proper position on the chain J, to the deck of the vessel, see Fig. 3. The inflated bags or vessels K, of course buoy up the vessel and if a sufficient number of them be employed the vessel will be kept afloat. Any merchantman or trading vessel may be supplied with this apparatus or device at a reasonable cost and perhaps it would be preferable to have the links (*b*) stowed away detached, and have them placed on the chain G, and connected together as the chain E, is forced down the tube C, the links being detached and removed from the chain G, as it is drawn up at the opposite side of the vessel.

From the above description it will be readily seen that the device may be applied to the raising of sunken vessels, boulders, and detached obstructions of any kind.

Figs. 2 and 4 show the manner of raising a sunken vessel L. M, is a "wrecker" or a wrecking vessel supplied with an apparatus the same as shown and described in Fig. 1. The vessel M, is brought directly over the sunken vessel L, and the tube C, which may be made of the desired length by connecting together any proper number of joints or pieces is forced down until its lower end is a trifle below the keel ($a^{\times}$) of the sunker vessel. The chain E, is then forced down the tube C, and the chain E, will pass underneath the keel ($a^{\times}$) of the vessel L, the chain being bent by the resistance of the sand or bottom on which the vessel rests, and in case the vessel L, rests on hard sand, clay, or any substance too hard for the chain E, to pass readily through, the chain E, may be worked up and down so that the terminal link or drill (*d*) will cut an opening or passage for the chain E. And in case too much resistance should be offered to the chain, by the hard clay, gravel or other material on which the vessel rests, so that the chain E, would be bent too quickly to pass under the keel ($a^{\times}$) the chain H, is drawn taut in order to counteract such effect. This will be understood by referring to Fig. 6. Any number of chains J, with bags K, attached may be passed under the vessel L, a sufficient number of bags being used to float the vessel.

We do not claim the employment or use of inflated bags for raising sunken vessels, for such means have been previously used; but,

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

1. The chain E, constructed substantially as shown and provided with one or more internal chains G, H, and used in connection with the tube C or any equivalent device for the purpose set forth.

2. We also claim the arrangement for operating the tube C, and chain E, to wit, the framing B, provided with the pulley I, and pinions F, D, which gear into the racks (*a*), (*e*), made respectively in the tube C, and chain E, substantially as and for the purpose set forth.

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Witnesses:
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