(No Model.) 3 Sheets—Sheet 1.

M. BRABAW.

WRECKING APPARATUS.

No. 501,912. Patented July 25, 1893.

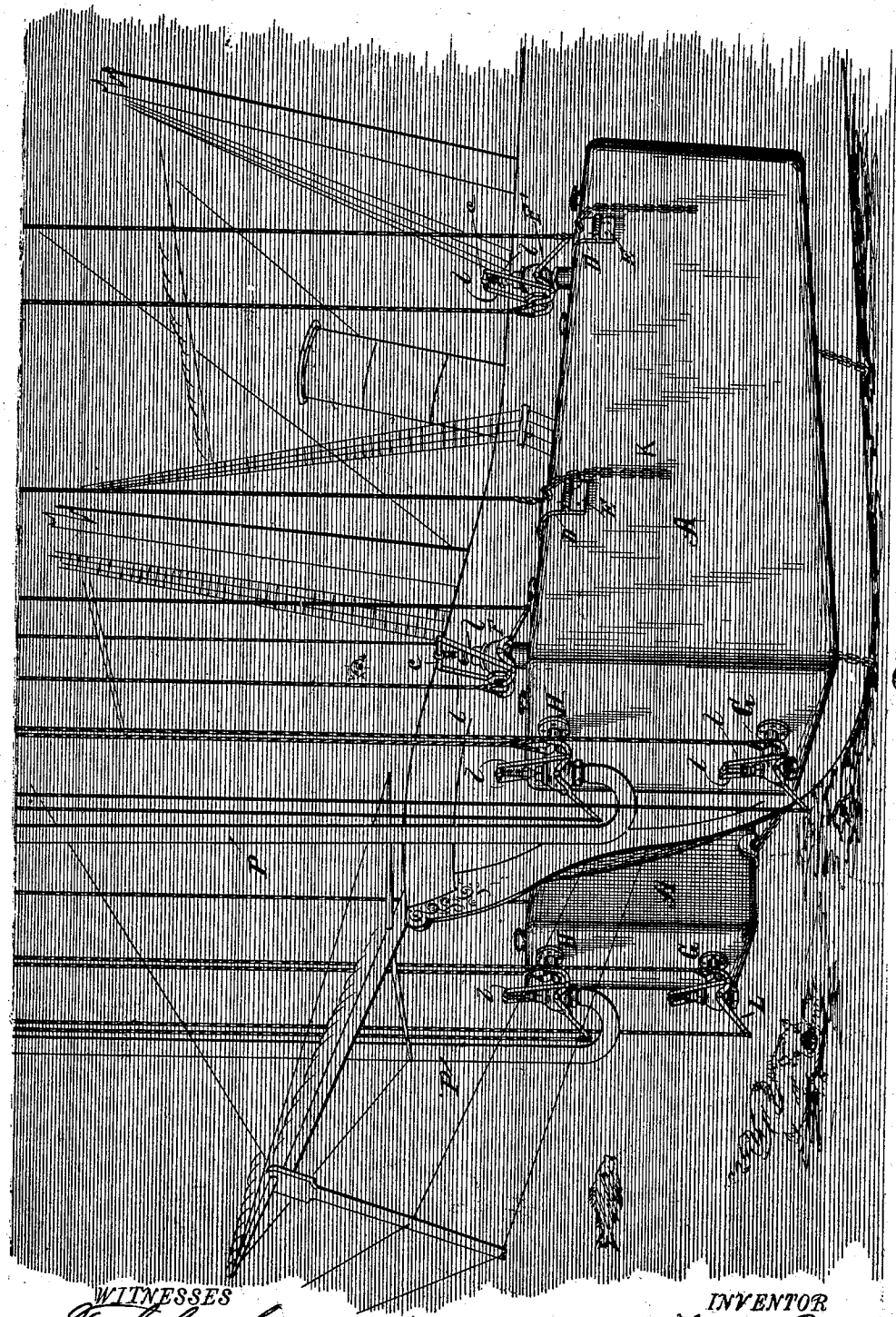

Fig. 1.

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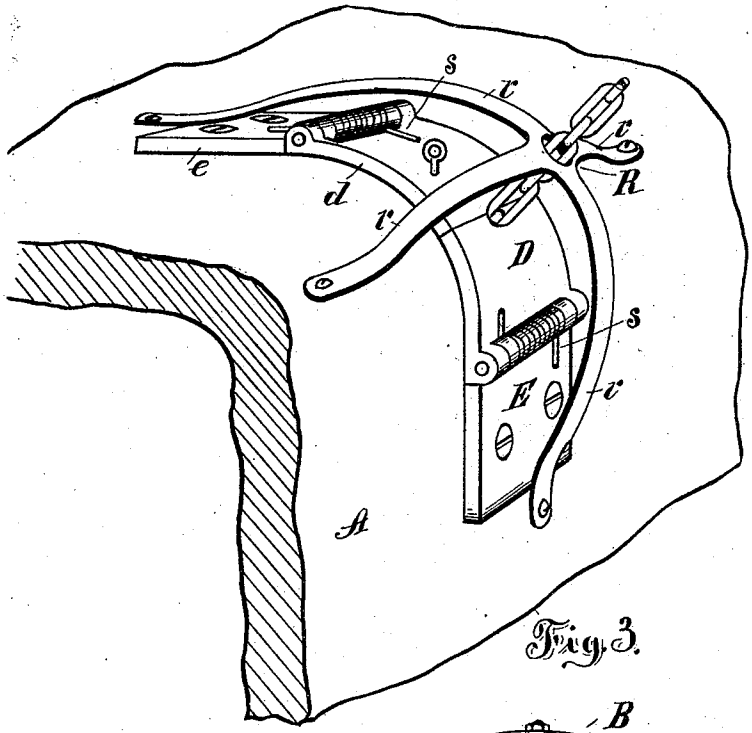

Fig. 3.

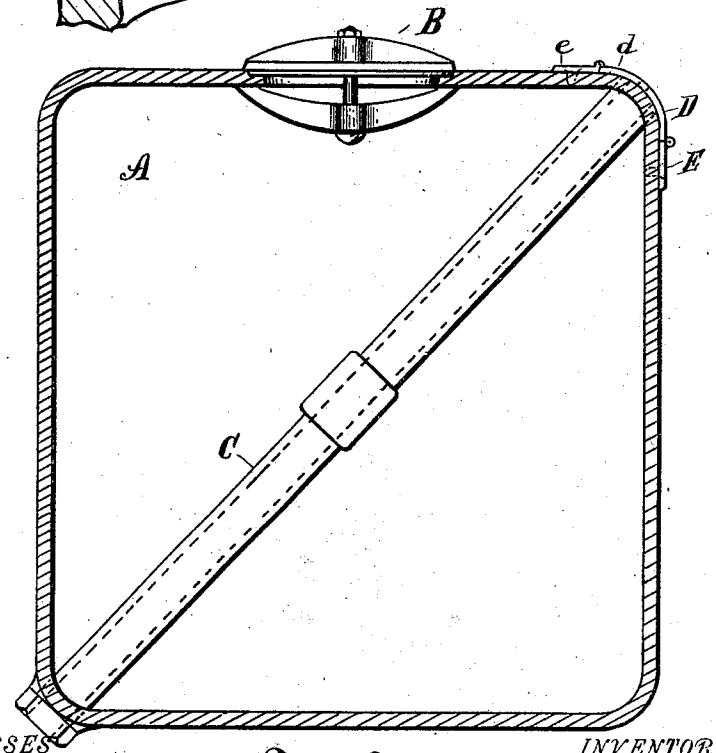

Fig. 2.

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Fig. IV.

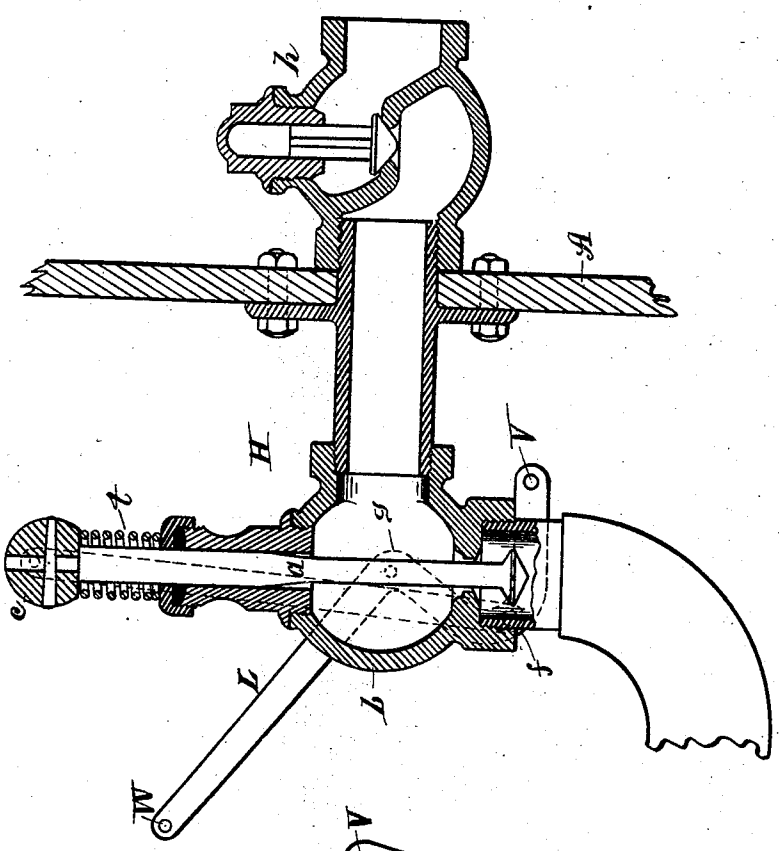
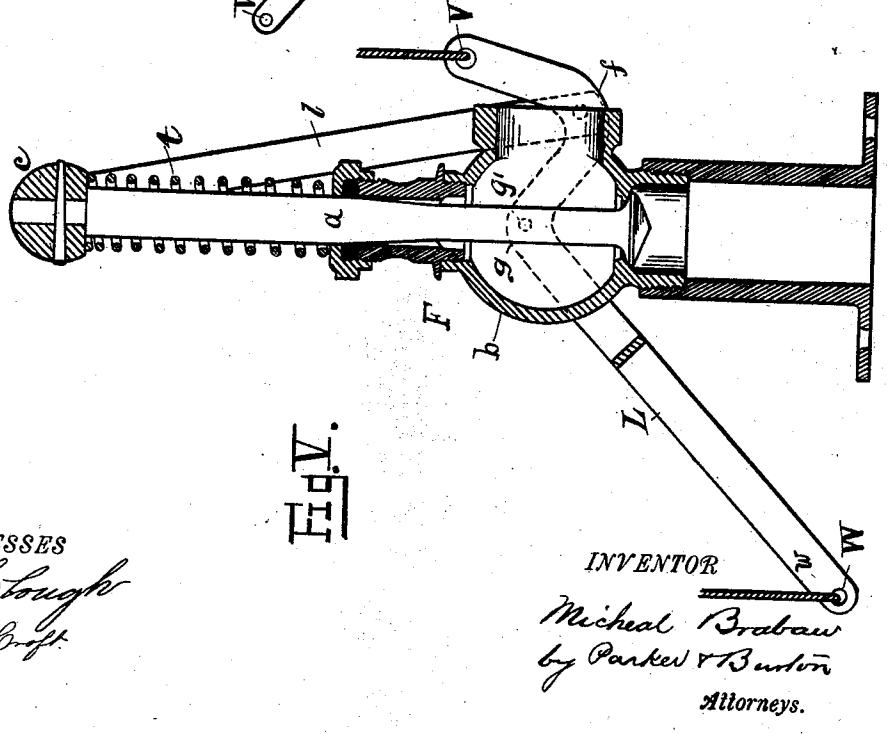


Fig. V.



WITNESSES

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UNITED STATES PATENT OFFICE.

MICHEAL BRABAW, OF DETROIT, MICHIGAN.

WRECKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 501,912, dated July 25, 1893.

Application filed December 12, 1892. Serial No. 454,883. (No model.)

To all whom it may concern:

Be it known that I, MICHEAL BRABAW, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Wrecking Apparatus; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to wrecking apparatus, and has for its object improvements in that class of wrecking apparatus, in which the buoyant power of air is used for the purpose of lifting sunken vessels, or lightering vessels of heavy draft over shoal places, or for lifting and releasing vessels from shoals and bars on which they may have grounded.

The improvements relate to means for connecting the air tanks or pontons to the vessel, and means for filling the pontons with air, and driving out and displacing water with which the pontons have been previously filled to aid in sinking them.

In the drawings, Figure 1, shows a part of a vessel with pontons in place to lift the vessel. Fig. 2, shows a tube traversing the ponton for the passage of a chain by means of which the ponton is held in place beside the vessel. Fig. 3, shows a stop and chain guide. Fig. 4, shows an inlet valve through which air is forced into the ponton. Fig. 5, shows an air outlet valve placed on the upper surface of the ponton to permit the escape of air.

A, indicates the ponton which I prefer to make square or rectangular in vertical cross section, and rectangular in longitudinal cross section, of material sufficiently strong to withstand the pressure, and both water and air-tight. It is provided on its upper side with a man-hole cover B, the cover being secured air-tight to the body of the ponton. Across the ponton diagonally are placed a number of tubes C, the number depending on the length of the ponton, and the distance between them being from fifteen to twenty feet or even more; where the tube passes through the shell of the ponton an air-tight joint is made, and the opening through the tube is open at both ends. Above the upper and outer end of the tube is a hinged stop and a guard shown in Fig. 3. The stop consists of two plates D, *d*. One of these plates D, is hinged to a second plate E, which is bolted to the case of the ponton. The plate *d*, is also hinged to a plate *e*, that is bolted to the case of the ponton.

The two plates D, *d*, meet at the corner of the ponton, their meeting line being on a diameter across the tube C. Both the hinged plates D and *d*, are provided with springs, *s*, that hold them shut; between the meeting edges of the plates D and *d*, is an opening wide enough to permit the passage of a link of the chain K, when presented with its shortest diameter across the opening from D to *d*, but so narrow as to prevent the return movement of the same link, when the link is held with its transverse diameter across the opening. It is evident that the chain can be drawn upward through the tube and the stop but that it cannot slip downward through the stop, inasmuch as the adjacent leaves D and *d*, of the stop open outward to permit the upward passage of the chain but close downward and prevent the downward passage. Above the catch or stop is a guide ring R, supported on spider-legs *r*; the use of the guide ring is to prevent the chain K, from fouling the stop. To the upper leaf *d*, of the stop is secured a rope or line by means of which it may be lifted when the ponton is submerged.

To the ponton at proper places are secured a number of valve cases in which are placed valves, each one of which is provided with means for holding it in either an open or a closed position, and each one of which is provided with means for opening or closing it from the surface of the water when the ponton is submerged.

On an ordinary ponton I prefer to place one outlet valve at each end through which air can escape. The outlet valves are placed on the upper surface and near the end, so as to permit the free escape of air from the uppermost of the two ends, if for any reason the ponton should not be horizontal. On each end and near the bottom, I place water outlet valves. I prefer to place two such valves at each end of a ponton of ordinary size; in Fig. 1, however, only a single outlet valve is shown, inasmuch as a single valve will show

the principle of the construction of my invention, and the illustration is rendered clearer by omitting the second one; the valves thus located at the end and near the bottom of the ponton are employed to permit the escape of water from within the ponton. At the end and near the top of each ponton is still another valve, and to the casing of this valve is connected an air pipe P.

The valves F and F′, for the escape of air permit the free outlet of air, when the ponton is above water, and it is desired to sink the ponton; when above water they are readily opened and closed by hand, and when below water are opened and closed by means of lines as will be hereinafter described.

The valve G, permits water either to flow into the ponton in the process of submerging it, or permits the water to escape from the ponton when air is being forced into it, through the pipe P and the valve H. A section of the valve H, is shown at Fig. 4, and it will be seen that on the interior of the ponton there is employed in connection with the valve H, a check valve *h*.

Each one of the valves employed is furnished with means for operating it from the surface, the means being substantially similar in all of them and as follows: The valve-stem *a*, passes through the casing and supports a cross-bar *c*, to which is hinged a pair of links *l*. To the casing *b*, is hinged a forked lever, the casing being located within the divergence of the forks, and a prong of the fork extending on each side of the globe part of the casing. Each fork of the lever L, is in the form of a double bell-crank; one elbow *g*, is pinned to the casing by a pin *g′*, which forms the main fulcrum. The second elbow *f*, of the double bell-crank lever is pinned to the swinging end of the link *l*. At one end of the lever L, is an eye W, to which is attached a cord that extends upward to the place occupied by the operator. At the other end of the lever L, is an eye V, to which is attached another cord. On the stem of the valve and between the casing and the cross-bar *c*, is a coiled spring *t*. When the parts are in the position shown in Fig. 5, the strain of the spring *t* tends strongly to hold the valve closed, and the strain of the spring pushing against the cross-bar *c*, pulls the link *l*, upward and tends to raise the pin *f*, and to throw downward the end *w*, of the lever L; if however the end W, is lifted forcibly upward the lower end of the link, *l*, and the pin *f*, will swing across the fulcrum *g′*, and the pin *f*, will take a position on the opposite side of the pin *g′*, from that shown in Fig. 5, and the parts will all assume the position shown in Fig. 4. The strain of the spring *t*, holds the parts in the second position with the same security that it held them in the first position. This construction of levers is adapted to move the valve to either a closed or an open position, and the holding spring *t*, securely holds the valve in either of these positions.

In operating my wrecking apparatus for raising sunken vessels the chains are drawn under the vessels before the pontons are sunk; the pontons are then sunk, and the chains are drawn through the chain tubes in the pontons and the bottom of the pontons drawn in closely against the vessel or as closely against the vessel as the surfaces of the vessel and the ponton will permit; the pontons are employed in pairs, one on each side of the vessel and as many of them as are necessary to raise the vessel are placed along the sides from the bow to the stern; after the pontons are placed and drawn as closely against the vessel as possible, the air valves on the top of the pontons are closed, the water outlet valves at the ends of the pontons are opened, the air inlet valve at the end of the ponton is opened, and air is forced into the ponton from above. Under the pressure of the entering air, water is forced out of the ponton, and air takes its place until all the water has been forced out, or until enough has been forced out to cause the pontons relieved from part of their load to rise to the surface, bringing with them the vessel that rests upon the chains.

In using the apparatus for lightering purposes, to aid a vessel that is not yet aground, the vessel may be moved to a position between the pontons that are partially submerged, and the pontons can then be rapidly lifted by forcing water out from them. If the vessel is already aground, the operation would be quite similar to that employed to raise a sunken vessel.

A great advantage attending the use of this device arises from the character of the submergible pontons, which can be dropped in the water to the bottom and left there in case of a sudden storm, which would destroy or greatly endanger a fleet of pontons that can only be used at the surface. And a submerged ponton can be readily lifted by any cable that is strong enough to lift it when in the air; the contained water does not add to its weight in the water, and of course the weight of the metal casing is less in the water than in the air. Another advantage arises from the fact that after the pontons have once been placed around a submerged vessel, and filled with air sufficiently, so that it begins to rise, it comes to the surface immediately and is held in a practically upright position while rising, and is in condition to be immediately moved away to a safe harbor, whereas with pontons operated at the surface only, or simply sunk a few feet into the water and then floated by pumping the water out of them, the sinking and floating operation must be repeated a number of times, and if the sunken vessel operated upon is in deep water many times before the vessel is finally raised.

What I claim is—

1. In a wrecking appliance, the combination of air-tight pontons, chain tubes traversing said pontons, means for holding chains passed through said tubes, an air pipe for conducting

air into said pontons, water outlet pipes and valves in said water and air pipes, means for holding said valves in either an open or a closed position, and means for operating the valves from the surface of the water, substantially as and for the purpose described.

2. In a wrecking apparatus, the combination of a ponton rectangular in vertical cross-section, diagonal tubes crossing said ponton lifting chains passing through said tubes, and joining the pontons in couples, air inlet tubes leading to the surface of the water, water and air outlet tubes disposed along the top and ends of said ponton, valves controlling said outlet and means for operating said valves from a distance, and holding them in either an open or a closed position substantially as and for the purpose described.

3. In combination with a wrecking device, a spring closed valve, having a valve stem extending beyond the casing a double bell crank lever, fulcrumed at one elbow to the casing and linked at the other elbow to the valve-stem, the elbow to which the end of the link is attached being adapted to be forced to either side of the main fulcrum, and to strain the spring in either position whereby the valve is held in either its open or its closed position by the strain of the spring, substantially as and for the purpose specified.

In testimony whereof I sign this specification in the presence of two witnesses.

MICHEAL BRABAW.

Witnesses:
EFFIE I. CROFT,
MARION A. REEVE.