3 Sheets--Sheet 1.

M. OSBORN.

Wrecking Apparatus.

No. 154,894. Patented Sept. 8, 1874.

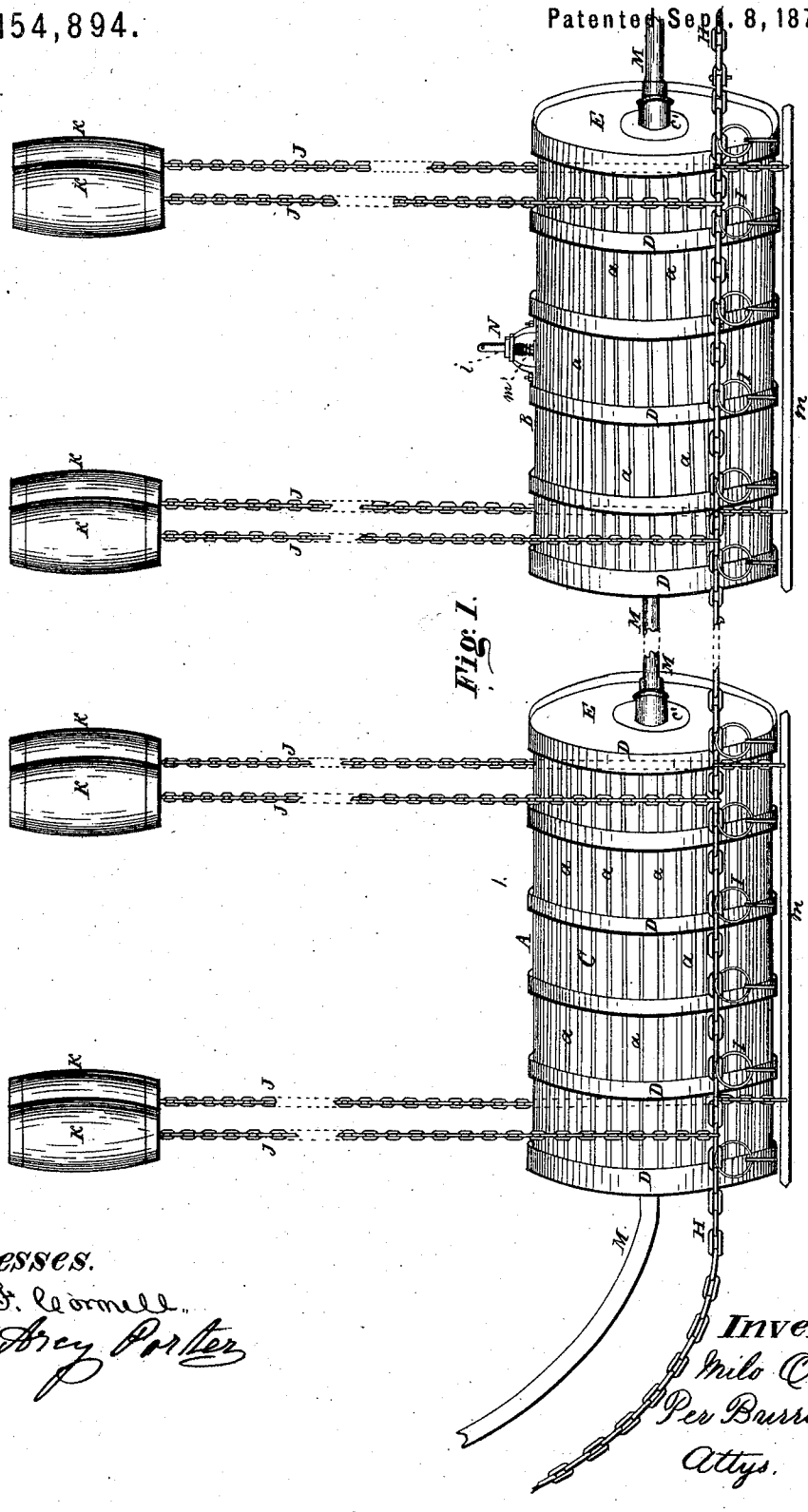

Fig. 1.

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Fig. 2.

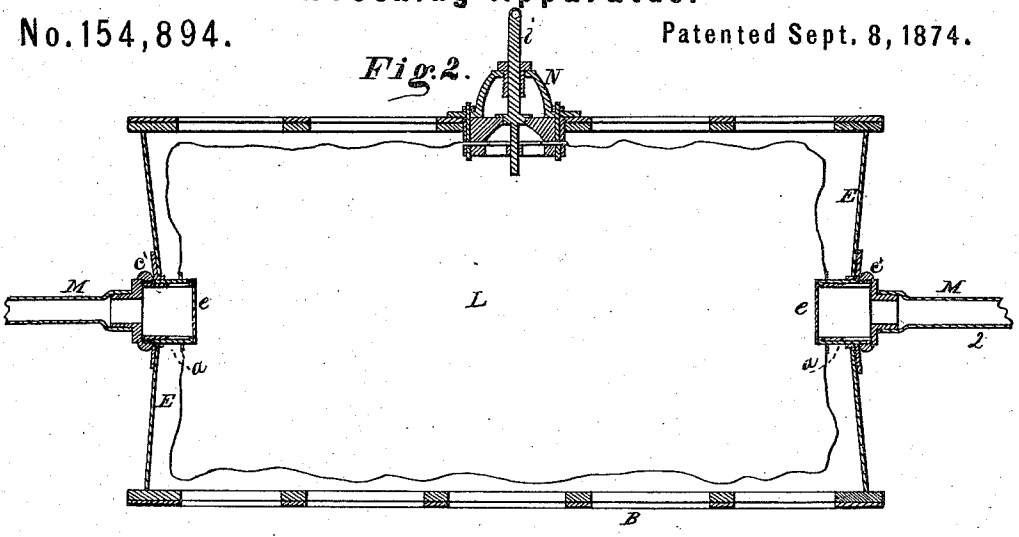


Fig. 3.

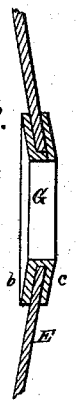


Fig. 4.

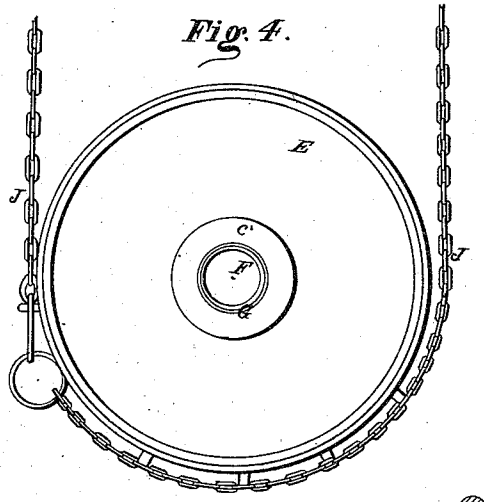


Fig. 5.

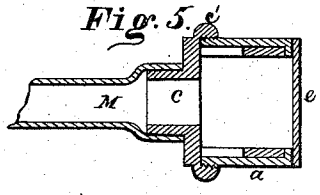


Fig. 6.

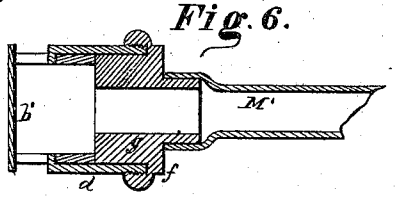
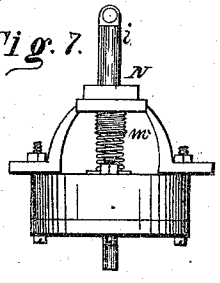


Fig. 7.



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Wrecking Apparatus.

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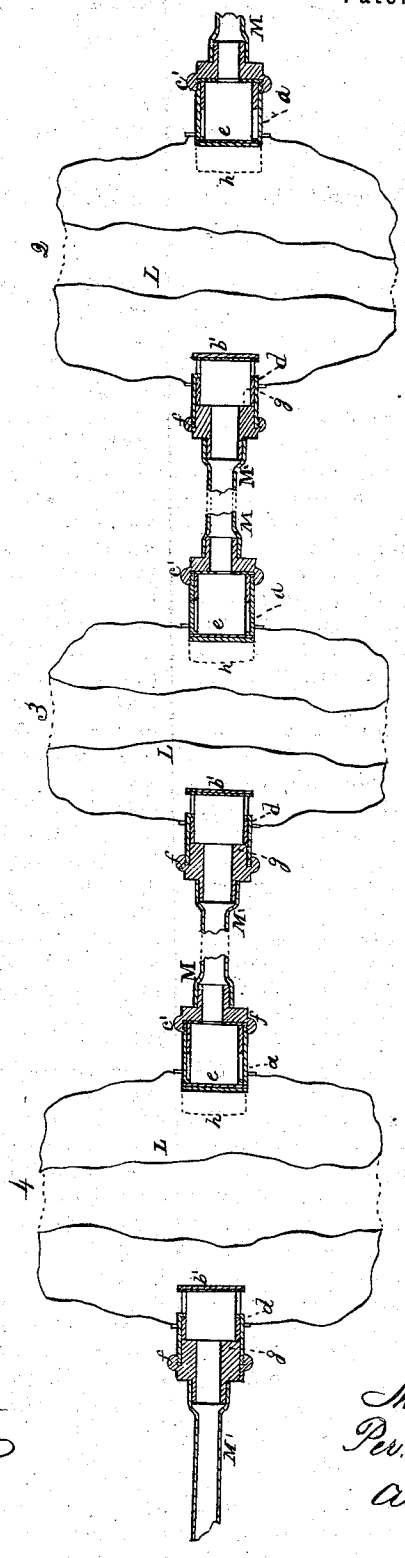

Fig. 8.

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UNITED STATES PATENT OFFICE.

MILO OSBORN, OF CLEVELAND, OHIO.

IMPROVEMENT IN WRECKING APPARATUS.

Specification forming part of Letters Patent No. **154,894**, dated September 8, 1874; application filed May 4, 1874.

To all whom it may concern:

Be it known that I, MILO OSBORN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Wrecking Apparatus, of which the following is a complete description, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a side view of the apparatus. Fig. 2 is a transverse longitudinal section. Fig. 3 is a detached section. Fig. 4 is an end view. Figs. 5, 6, 7, and 8 are detached sections.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a wrecking apparatus, and the special object thereof is to raise sunken wrecks by the application thereto of an arrangement of floats, usually combining four sections, consisting each section of a series of open cylinders or casings, each cylinder inclosing an air-tight sack, which sacks, in a collapsed condition, may be sunk with the cylinders or casings inclosing them, to which a cable is attached, and be made fast around a wreck. The sacks are then inflated with air, the buoyancy of which raises the wreck.

The several sections being made and fashioned alike, only one section is here represented by drawings, consisting of two floats, whereas any number of floats may be included to form a series constituting one section, the end ones being of the same pattern in each section, which sections need not be connected together only by the cable attached thereto. Although the drawings indicate a thimble and valve in the outer end of the exhaust-valve float, yet none need exist there, and that end of the float may be permanently closed.

Of the construction and operation of the above-deserибed apparatus the following is a more particular description:

A B, Fig. 1, represent two of the cylinders above referred to, each of which consists of a series of staves, C, jointed together only at intervals along the same by shoulders or projections where covered by hoops, and are bound about by the hoops D, allowing slots *a* between the staves C and hoops D for the free passage of water into the cylinder. The heads E of the cylinder are concave, as shown in Fig. 2, in each of which is an opening, F, Fig. 4. Said opening is lined with a bush, G, resembling a cringle, provided with two flanges or collars, *b c*, between which the central parts of the heads are held, as shown in Fig. 3, which shows a section of a bush, collars, and heads, the outward parts of the heads being fitted into crozings of staves. The hoops D are fashioned and placed around the cylinders much like hoops around ordinary casks, although much heavier and stronger. The hoops are not driven on with much force, there being no bilge in the cylinders, but, when in position, are held so by wedges or equivalents. To each hoop D is permanently fastened a link connected with a ring, I, attached to the cable H, as shown in Fig. 1. The cable H is also provided with chains J, shackled thereon at such intervals as shown in Fig. 1, two on each side of a cylinder, those on one side being longer than those on the opposite side, and are braced, so that they will not foul around the heads of the cylinders. These chains J are held in position after the cylinders are sunk, preparatory to being fastened around the wreck, by means of buoys K, with which each is provided, floating upon the surface of the water. The cylinders are supposed to sink by their own gravity; but chains J on one side thereof, being longer than those on the other side, will, when held in position by the buoys K, allow the cylinders to fall outward toward the long chains sufficiently to bring the cable H in contact with the wreck, and prevent the cylinders from coming in contact with or dragging upon the bottom. Inclosed by each of the cylinders is an air-tight bag or sack, of a size, when expanded, to fill the capacity of each cylinder. Three of such sacks are shown at L, Fig. 8. Said figure represents the sacks as being broken in two in order to save room in the drawing. The air-tight sacks are connected to each other by an elastic tube, M. The immediate connection of the tube M with the end of each sack is made by a thimble, *a*, Figs. 5 and 8, to the outside of which the material of the sack is secured in any appropriate air-tight man-

ner. In said thimble is fitted a valve, *e*, opening inwardly. On the outer end of the thimble is screwed a cap, *c'*.

Over a tubular projection of the cap is drawn the end of the air-tube M, as shown in Fig. 5, thereby completing the connection of the tube with that end of the sack. A tube is connected to the opposite end of the sack in a similar way. The thimble *d*, Figs. 6 and 8, is attached to the sack in an air-tight manner, as thimble *a* is. In the thimble *d* is fitted a valve, *b'*, also opening inwardly, as the valve *e*. To the outer end of thimble *d* is also fitted a cap, *f*, through which passes a tubular core, *g*. The inner end of the core fits closely but not tightly in the thimble *d*. To the outer end of the core is secured the tube M', as shown in said Fig. 6.

It will be obvious that by this arrangement of parts, on screwing the cap onto the thimble *d*, the inner end of the core *g* will be forced upon the valve *b'*, thereby pushing it in, as shown in Fig. 6, and thus causing a communication between the tube and sack, as shown in the aforesaid Fig. 6, and which remains open or pushed in until the tube is disconnected. It will also be obvious that by the same arrangement, whenever the cap is unscrewed from the thimble, or the tube disconnected from this end of the sack, the valve *b'* will close, and not until then, by a pressure of air inside the sack.

The valve *e* in the opposite end of the sack will, in contradistinction, close when the air-pressure is greater inside than outside of the sack, and no sooner, by uncoupling. Said sacks being each provided with thimbles *a* and valves *e* at one end, and thimbles *d* and valves *b* at the other end, all inclosed in the cylinders, as described, with the thimbles occupying central openings in the cylinder-heads, and with tubes M connecting one float with another, a series of floats, comprising one section, may be arranged as follows: Float No. 1, having attached thereto (instead of the tube M at thimble *a* and valve *e*) one end of a hose leading from an air-inflating pump, will be connected at the other end thereof to float No. 2 by means of the tube M; No. 2 will be connected to float No. 3 in like manner by another tube, M; No. 3 to No. 4 in the same way, and so on through the series, until the last float in the series is reached, which last float in each section will be provided with an exhaust-valve, N, Fig. 1, that opens into the air-sack, through which the air therein contained is permitted to escape. Said valve opens outwardly by means of a rope attached to the stem *i*; also, by a too great pressure of air, forcing the valve upward against the adjustable spiral spring *m'*, with which said stem is provided, such spring being adjusted according to the depth of water, so that the valve will open when the sack is fully expanded, and until then, by the spring, will be held to its seat, unless opened by said rope.

By this arrangement it will be obvious that an open communication is established throughout one entire section, comprising more or less floats, from the first float, connected directly with the air-pump, to the exhaust-float just described, and all can be simultaneously inflated through one hose connected to the pump.

The object of inclosing the air-sacks in open cylinders, as described, is to secure them from injury, and prevent them from bursting by inflation.

The different parts of one cylinder are made exactly like the same parts in all others, so constructed that all cylinders can readily be taken apart, the different parts economically packed for transportation, and as readily put together again for use without inconvenience in assorting.

The object of the flexible or elastic tube M is not only for communication between the floats, but to allow the floats to be brought into any angular position up to and around the wreck.

The object of inflating floats by sections around a wreck is to adapt more power to the heaviest part thereof, be it at either quarter, bow or stern, so that, in the process of raising, the wreck will not careen or capsize, the tendency to do so being indicated by the buoys K.

The general arrangement of the apparatus and its application to a wreck are as follows: On shore or on a dock four sections of floats are formed by a series, say, of ten floats in each. The floats in each section are coupled together by tubes M, as described. At one end of each section is attached an inflating-hose from an air-pump, and at the other end of each section is a float with an exhaust-valve. The floats of the several sections are then fully inflated, after which each float is uncoupled from the others at the thimble *d*, by which act both valves of each float will be closed and the inflation in the floats retained. The floats thus inflated and separated are easily handled and are one by one all rolled into the water, remaining upon the surface by reason of such inflation, when the floats of each section are coupled together again as before. The cable H is then applied in sections corresponding in length to nearly the length of one float and one tube, M, combined to which sections of cable, respectively, links I of each float are shackled, after which the cable now attached separately to each float is shackled together to the extent of each section of floats. These four sections are then stretched out in one continuous line, and the cables thereof are shackled together in the following order: Each two sections are coupled together by shackling the cable together at the outer ends of both of the safety-valve floats. Each of the two now combined sections are then coupled by shackling to one end of each of the combined sections a cable, say, twenty feet in length, thus completing the coupling of the whole cable after shackling to each end thereof a sufficiency for the clutch-fastener to

work on. To that central part of the cable destitute of floats are attached lateral chains with buoys, both of the same kind, used together in the same manner as lateral chains and buoys described in my Letters Patent dated September 5, 1871. To the foregoing-described cable are now attached chains J to the extent of two long chains on one side of each end. Every float as now arranged, and two short chains on the opposite side of said floats, with buoys attached to such chains, chains J, and the other lateral chains are now coiled around or upon their respective buoys, and so lashed for the purpose of towing. This continuous line of floats, and attachments lashed thereto, is towed out to the wreck supposed to be sunk in deep water, where, stretched out in the same line, the lashings are removed, and the ropes attached to the four safety-valve stems are pulled upward, allowing the air in all the floats to escape, when the floats and cables will gradually sink to a point, say, two feet above the bottom, where they are held by buoys K in the position represented at Fig. 1.

By means of large ropes previously fastened to the two ends of the cable H the whole is pulled taut around the wreck, bringing the floats up to each side thereof, with the central part of the cable at her bow or stern. At this point said cable is pulled taut and fastened by the same means and in the same manner as the large cable is fastened described in my Letters Patent dated October 28, 1873. Then the four parts of inflating-hose will each extend to the pump from the four floats now located at either side of the bow or stern of the wreck, when the process of inflating all the floats, as before described, will commence and continue until the wreck is raised to the surface.

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

1. Wrecking buoys or cylinders A B, adapted to be connected to each other by a flexible connection, M, and each provided with a valve opening inwardly, through which the sacks L are inflated, as and for the purpose specified.

2. The valves b' and e, in combination with the sacks L L and connecting-tubes M, substantially in the manner as described, and for the purpose specified.

3. The cylinders A B and cable H, in combination with buoys K and chains J, the chains J upon opposite sides of the cylinder being of unequal lengths, as and for the purpose herein described.

4. The cylinders A B, constructed with openings between the staves, as described, and with concavo-convex heads E and bush or cringle G, substantially as and for the purpose set forth.

5. The series of buoys A B, having valve e, opening inwardly, and the last of the series having valve N, opening outwardly, as and for the purpose set forth.

MILO OSBORN.

Witnesses:
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