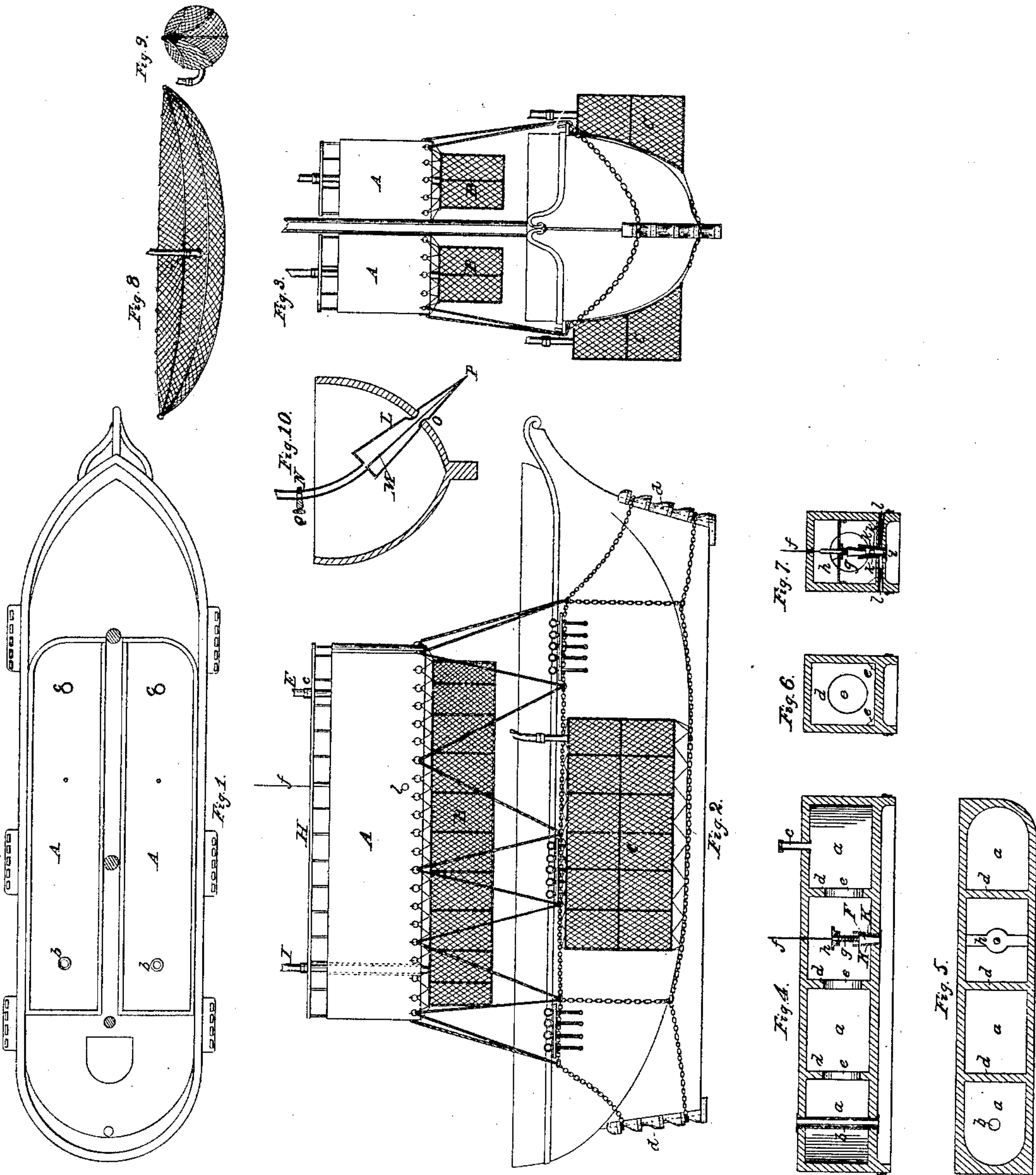


A. WINDHAM.
APPARATUS FOR RAISING SUNKEN VESSELS.

No. 21,532.

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Witnesses:
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UNITED STATES PATENT OFFICE.

ALDRIDGE WINHAM, OF NEW YORK, N. Y.

APPARATUS FOR RAISING SUNKEN VESSELS.

Specification of Letters Patent No. 21,532, dated September 14, 1858.

To all whom it may concern:

Be it known that I, ALDRIDGE WINHAM, of the city, county, and State of New York, have invented a new and useful method of
5 Raising Sunken Vessels; and I hereby declare that the following specification, in connection with the accompanying drawings and references thereon, constitute a lucid, clear, and exact description of the manner
10 of constructing and of carrying out the same.

In referring to said drawings, Figure 1, denotes a plan of a vessel with my raisers over it. Fig. 2, a side elevation of the same.
15 Fig. 3, an end elevation of the same. Fig. 4, a longitudinal section of the rigid portion of my raiser. Fig. 5, a plan of the same with the top removed. Figs. 6 and 7, transverse sections of the same. Figs. 8 and 9,
20 a side and end view of an inflatable air vessel, or buoy which may be attached to a ship after it is raised to keep it afloat. Fig. 10, denotes a section of a vessel, and of my elastic inflatable stopper applied thereto ready
25 for raising.

Invention.—The nature of my invention consists in the hereinafter described construction, arrangement and combination of the rigid metallic and elastic inflatable
30 air vessels together constituting the raiser when so united, and so small as to be conveniently carried by any vessel which they can raise, as hereinafter described. Also, in providing the vessels with portable lifting
35 shoes, so constructed as to be applicable to different sized ships; and to receive the lifting cable, and protect the vessel from its otherwise injurious abrasive force and at the same time be constructed of such propor-
40 tions of wood and iron, or otherwise, as to be sufficiently buoyant as to be easily manageable under water, by one person as hereinafter described. Also, in the construction and application of an inflatable elastic stop-
45 per, so constructed that it may be thrust through an opening or leak and then be inflated with air, by which it is enlarged both without and within, the vessel or leak; while that portion of it passing through the open-
50 ing in the vessel exactly conjoins by its inflation, thereto, regular or irregular, and constituting a self adjustable elastic rivet, instantly formed within the leak by inflation, as hereinafter seen.

55 *Construction.*—To enable persons skilled in the art to which my invention appertains,

to construct and carry out the same, I will describe it as follows. I construct the rigid portion of my raiser seen at A, of metal, water tight, and of great strength braced
60 with open partitions seen at *d*, Figs. 4, 5, 6 and 7, and openings at *e*, same figures, in order to allow all the apartments *a*, Figs. 4 and 5, to be made use of. The top has an opening or tube *c*, to which a flexible tube E,
65 may be secured, and a guard rail H, Figs. 2 and 3, quite around it.

In the bottom of A, I fit a self acting valve F, the inlets being seen at *k*, Figs. 4, and 7, and the inlets from outside of A, to
70 valve F, are seen at J, Figs. 2 and 7, a rod *f*, Figs. 1, 2, 4 and 7, connects to the valve F, and passes air tight through the top of A, up to the surface of the water, and to the operator, by which the valve can be allowed
75 to close, when the raiser is filled with water and sunk. The plate *h*, and socket *i*, guides the valve, and the spring *g*, closes it when allowed to by the operator.

I construct the elastic air vessel inflatable,
80 seen at B, Figs. 2 and 3, of any suitable substance highly flexible and impervious to water or air, and surround it with a netting of tarred rope, seen in drawing (by checked
85 lines), of great strength and of the extreme expansive size of B. This air vessel so constructed, is to be secured or joined to A, by any efficient means such as ring bolts or
90 ropes or perforations may be made in bottom edge of A, through which the tarred rope network may be put, to lash B to A, firmly. B, when the air is exhausted from
it, folds readily into the recess G in A. The tube *b*, is formed through A to conduct an
95 air inflation tube I, to the air vessel B, which tube reaches above water to the air pump.

My raiser constructed as described has the inherent advantage of cheapness in construction, compact in size, by the folding of
100 the air vessel within it and consequently, conveniently portable, so that every vessel can carry its own means of a resurrection, if sunk by the shot of an enemy or otherwise, also it can be operated as easily in
105 heavy seas, as in placid water, from the fact that all the apparatus is first sunk, except the pumps and pipes leading thereto, and is worked when sunk. The whole being operated by one or two men, so that if a vessel
110 be sunk and this apparatus, a boat and two men be saved they can raise the vessel easily

without other aid, and in needing nothing more than a long boat above water, rough or smooth; to work the pumps for exhausting the rigid portion of the raiser, and filling it, and its air vessel with air, which will raise the sunken vessel. These important advantages result from the peculiar construction of the raiser, and their combination with each other in the manner described.

I construct a portable shoe d^2 , of wood and iron in such proportions as to nearly float so that one person can easily adjust and secure it to the vessel under water, the shoe should be made to fit the cutwater, and stern, or any desired part of the ship. Those in the drawing are placed against the bow and stern, and fixed there under water by thumb screw S, Fig. 3, the projections being formed of iron, as seen at J' , and a stay plate at J^2 , which projects under the vessel to prevent the shoe from sliding up when the cable is put around it, under projections J, Figs. 2, and 3, for raising the vessel. The object of the shoe is to get a strong hold of the ship, to raise it without jamming or injuring it.

When vessels have been for a long time sunk from shot holes or other leakage, and embedded in mud, it is necessary to exert all the force which human skill can devise to raise it, and to help effect this I construct an inflatable stopper of conical shape or otherwise, shown at L, Fig. 10, inflated and in actual use, or of any other desired shape, made of any proper flexible material impervious to air or water, and of sufficient strength. A spring rod M is fixed in the central part, and to the point of it, to give the desired rigidity to the stopper, so that it may in the hands of the operator, be thrust through the leak or openings in the vessel, and then expanded by inflation tube N, as seen at Fig. 10, which fills the leakage, and enlarges both without and within the side of the ship, as seen at O, Fig. 10, when inflated; then the stop cock Q, is turned after which the hatch may be closed, and the water pumped from the vessel, by tube connecting with water pump in long boat above water. This stopper can be applied to the leakage holes of sunken vessels, see Fig. 10, by persons provided with submarine armor, and be inflated from above water. Then the raisers are sunk (by opening valve F, by rod f), on each side of the sunken ship, so that their tops will be just below the

halyard plates R, Figs. 1, 2, and 3, so as to press on the under side of them to raise the vessel, then the lower ends of the raisers are secured by cable around the shoe d , which is previously adjusted and secured to the ship as seen in the drawing by thumb screw S, Fig. 3 by a person under water, protected by submarine armor. Then the valve F, is closed by letting down this valve, by spring g , Figs. 4 and 7, by the wire rope f , from above water, then the water pumps are applied from the boat above which discharges all the water through tubes E, &c., when the stop cock is closed in tube E, above water, (not shown) the lower end of which is connected to tube c . Then the tube I, leading to the air vessel B, is applied to the air pump in boat above water (not shown), and inflated sufficiently to raise the ship to which my raiser is attached.

The raisers may be sunk over the vessel to raise it, as seen in Fig. 2, if any circumstances render it preferable to the method just described, inflatable buoys seen at C, Figs. 2 and 3, and at Figs. 8 and 9, may be connected to the vessel when raised if desired.

Having thus described my invention I will state my claims as follows.

1. I claim the construction, arrangement, and combination of the rigid, and elastic inflatable air vessels A, and B, together constituting the raiser when so united, and so small as to be conveniently carried by any vessel which they can raise, essentially in the manner and for the purposes fully set forth.

2. I also claim the portable shoe d , so constructed of wood and iron, or other material as to be manageable under water, so as to be easily applicable to the sunken vessel to receive the cable for raising and protect the vessel from abrasion or jamming by the cable, essentially in the manner and for the purposes fully set forth.

3. I also claim the inflatable elastic stopper L, so constructed as to be easily thrust through a leak or opening in the vessel, and afterward inflated with air which stops the opening, so that the sunken vessel may be exhausted of water to assist its raising, essentially in the manner and for the purposes fully set forth.

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