(No Model.)

J. T. KELLY & A. McINTYRE.

MEANS FOR RAISING SUNKEN VESSELS.

No. 491,725. Patented Feb. 14, 1893.

Fig. 1.

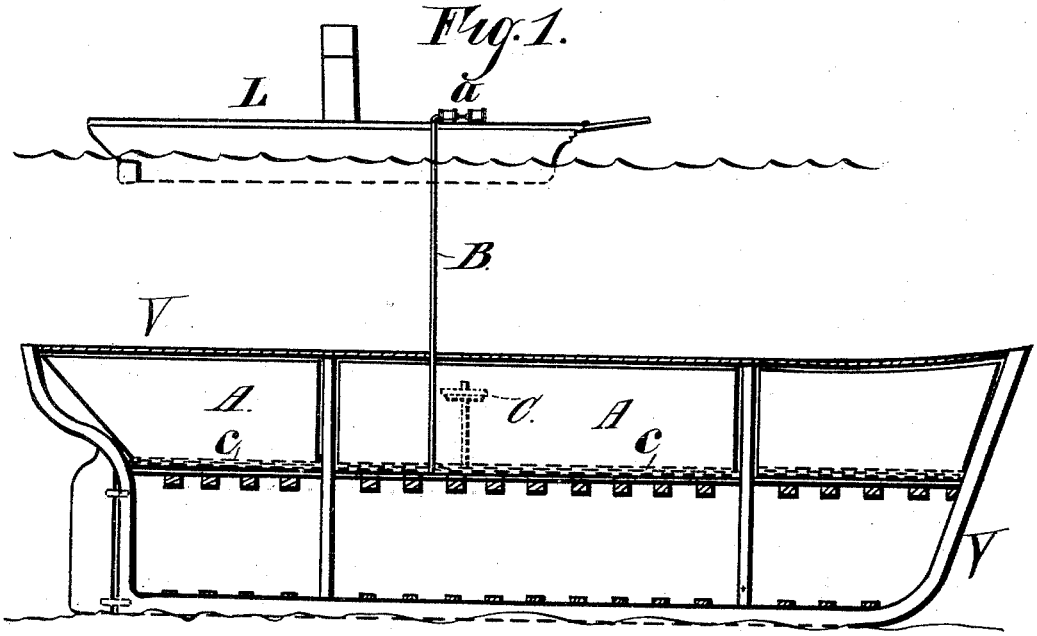


Fig. 2.

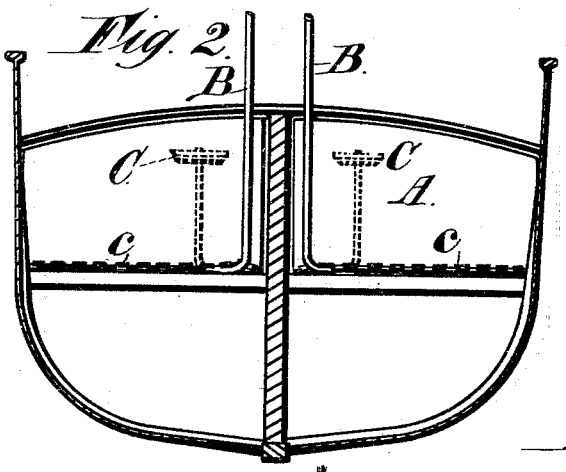


Fig. 4.

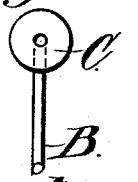
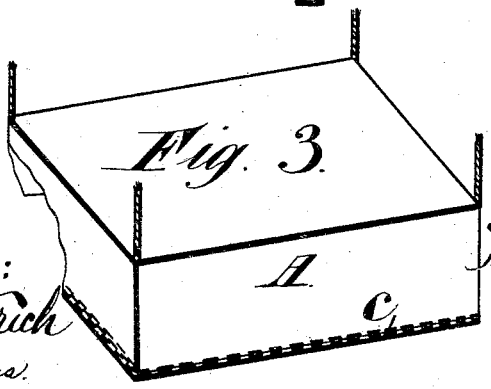


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN TONNER KELLY, OF NORTH FITZROY, AND ARCHIBALD McINTYRE, OF FITZROY, VICTORIA.

MEANS FOR RAISING SUNKEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 491,725, dated February 14, 1893.

Application filed August 27, 1891. Serial No. 403,879. (No model.) Patented in Victoria December 2, 1890, No. 8,298.

To all whom it may concern:

Be it known that we, JOHN TONNER KELLY, blacksmith, residing at No. 40 Queen's Parade, North Fitzroy, and ARCHIBALD McINTYRE, builder, residing at No. 52 Cecil Street, Fitzroy, in the British Colony of Victoria, subjects of the Queen of Great Britain, have invented an Improved Means for Raising Sunken Vessels, (for which we have obtained a patent in the British Colony of Victoria, No. 8,298, dated December 2, 1890,) of which the following is a specification.

This invention has been devised for the purpose of providing effective means for raising sunken vessels, and in doing so, the well known principle of displacing water by the pressure of air has been adopted. Hitherto all attempts to utilize this method have been failures and our invention consists in certain means whereby this method may be made successful. These means consist in providing one or more compartments of the vessel desired to be raised with one or more empty flexible bags (say of canvas) capable of accommodating itself or themselves to the exact shape of the interior of the compartment in which it or they are placed, so that when the air is forced into it or them they will be supported on the outside by the rigid top and sides of such compartment the lower end of such bags being by preference left open and weighted. When more than one bag is used in a compartment they will form a mutual support for each other except on the outside where they are supported by the compartment itself. Each bag must be connected to some suitable source of supply from whence air can be pumped into it at any pressure and to any desired extent. Where only one bag is used it must be of a greater holding capacity than the compartment in which it is placed and where more than one such bag is used the collective holding capacity must be greater than that of the compartment in which they are placed. These bags are filled with air by means of a pump or other suitable apparatus the pressure being sufficient to inflate them and to expel the water from the compartment in which they are placed. As the supply continues the buoyancy of the vessel will increase and in due time will cause it to rise to the surface when the object and purpose of our invention will have been completed.

The machinery for supplying the necessary air forms no part of our invention and may be of any ordinary construction.

The air supply pipes and the empty flexible bags into which they lead may be made of any material commonly used for this purpose, but it is essential that the bags be made of flexible material capable of accommodating themselves to the shape of the compartment in which they are placed and able also to prevent the escape of the air forced into them in the manner and for the purpose described, it being distinctly understood that it is preferable to leave the lower end of the bag open to admit of the escape of the air when its pressure becomes too great and also to admit of the entrance of a diver to examine their condition and the operation of the air with which they are filled or being filled.

In the accompanying drawings—Figure 1 is a view representing a sunken vessel filled with bags constructed according to this invention and into which air is being forced by machinery in a launch or steamer above. Fig. 2 is a transverse section of the sunken vessel showing the bags in position. Fig. 3 is a perspective view of one of said bags, a portion thereof being broken away, and Fig. 4 is a plan view of the end of the air pipe provided with a float to support the same.

In the drawings L, indicates the wrecking launch or steamer containing the necessary appliances for raising the sunken vessel indicated by the letter, V, and A A indicate the air bags which as stated above are open at the bottom and are introduced one in each of the compartments of the sunken vessel as shown, though if necessary more than one bag may be introduced into said compartment.

B, B, indicate the air pipes that lead from the air forcing apparatus, *a*, in the launch, L, into the bags, said pipes being constructed of a flexible material and are provided at their ends with a float, C, of any suitable material and of a discoidal form, each bag containing one air forcing pipe, B, of such length

as to extend vertically into the bag nearly to the top thereof, said pipes entering through the open bottom of the bag.

When air is forced into the bags, the water is displaced, the bags gradually expanding and as they are constructed of a flexible material they will assume the form of the compartment into which they are placed so that when sufficient air has been forced into the bags and a corresponding volume of water displaced, the vessel, V, will rise to the surface.

In order to prevent too great expansion of the bags at the open bottom, and also to provide means whereby such bags may assume and retain a given form when expanded and for the purpose of weighting the mouth of the bag we provide stay chains, *c*, secured to and encompassing the lower edge of the bags as shown.

It will be readily understood that as the bag is entirely open at the bottom there is nothing to prevent the water from passing out as its place is taken up by the air nor to prevent the air from escaping from the bag when the pressure within the latter is greater than that of the water surrounding the same or luting the mouth thereof. This feature of open bag is one of the material features of our invention as it effectually prevents the bursting of the bags which takes place invariably if air is forced into the same after the water has been displaced from a compartment or the bags are otherwise relieved of external pressure.

We would have it understood that we do not claim broadly the method of raising sunken vessels by the injection of air and the ejection of water therefrom inasmuch as we are aware that this method possesses no novelty.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:

1. The improved means for raising and floating sunken vessels which consists of a bag constructed of a flexible material and adapted to accommodate itself to the shape of the top and side or sides of a vessel's compartment said bag being open at bottom and having its lower edges weighted in combination with a flexible air forcing pipe entering the bag through the open bottom, substantially as and for the purpose set forth.

2. The improved means for raising and floating sunken vessels which consists of a bag constructed of a flexible material and adapted to accommodate itself to the shape of the top and side or sides of a vessel's compartment, said bag being open at bottom, in combination with a flexible air forcing pipe entering the open bottom of the bag, said pipe being provided with a float, substantially as and for the purpose set forth.

3. The improved means for raising and floating sunken vessels which consists of a bag constructed of flexible material and adapted to accommodate itself to the shape of the top and side or sides of a vessel's compartment, said bag being open at bottom and weighted at its lower edge, in combination with a flexible air forcing pipe entering the open bottom of the bag, said pipe provided at its outlet with a float, substantially as and for the purpose set forth.

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