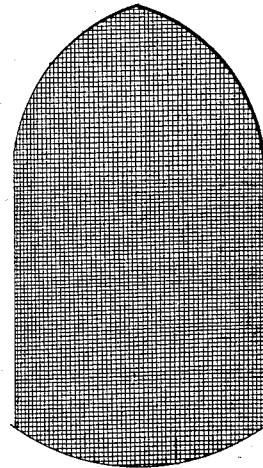
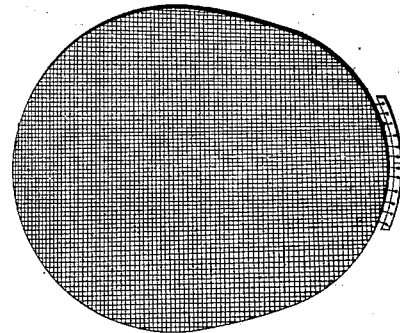
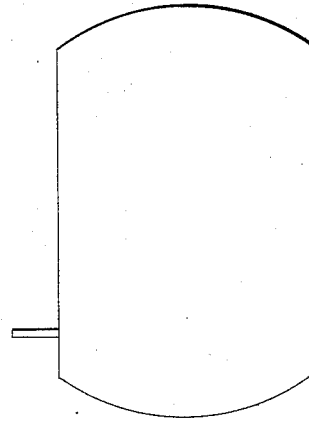
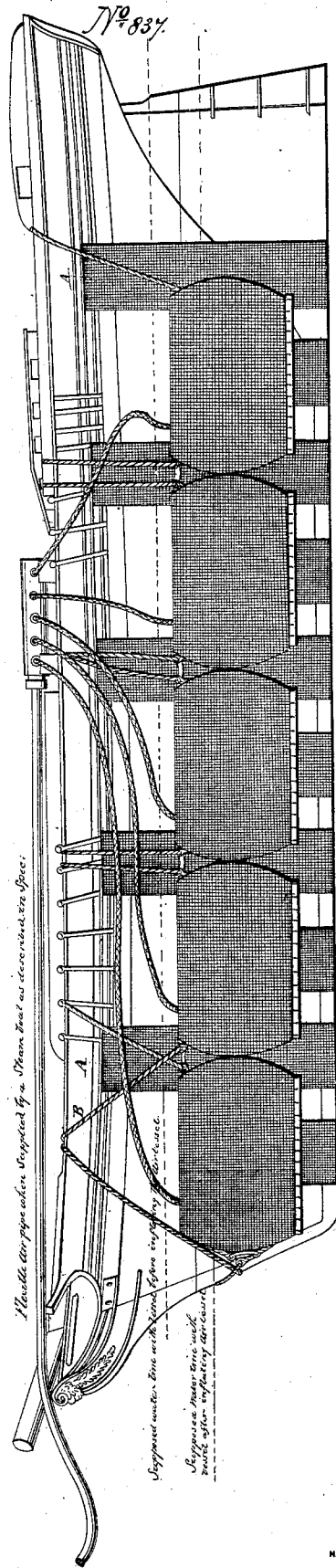


*S. Carson.*  
*Raising & Floating Vessels.*  
*Patented Jul. 12, 1838.*

*Fig. 1.*

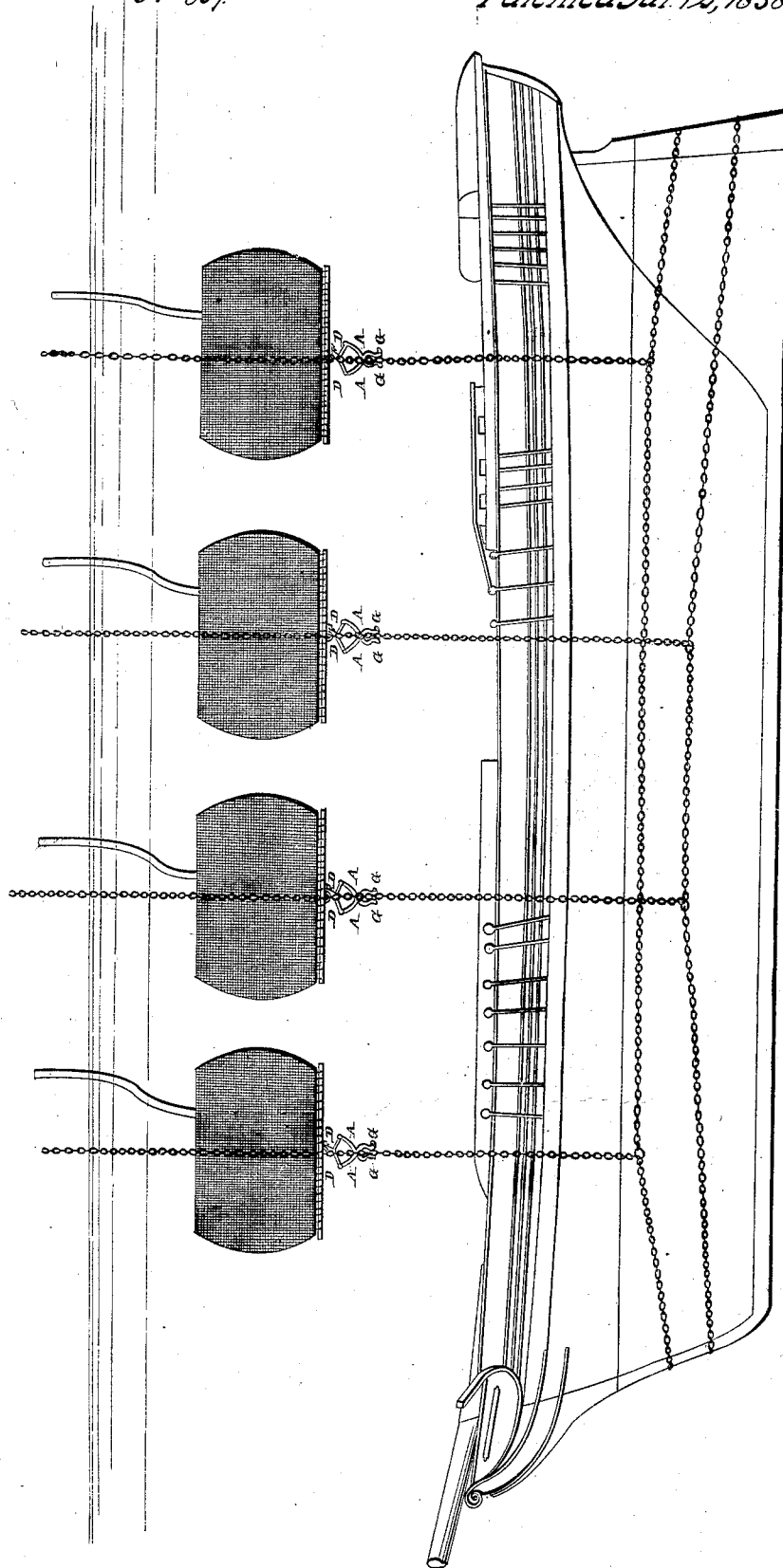


S. Carson.

Raising & Floating Vessels.

Patented Jul 12, 1838.

No 837.





# UNITED STATES PATENT OFFICE.

SAMUEL CARSON, OF WOODSIDE, ENGLAND.

## APPARATUS EMPLOYED FOR FLOATING AND RAISING VESSELS AND OTHER BODIES IN THE WATER.

Specification of Letters Patent No. 837, dated July 12, 1838.

*To all whom it may concern:*

Be it known that I, SAMUEL CARSON, of Woodside, in the county of Chester, England, merchant, a subject of the Queen of Great Britain, have invented or discovered new and useful Improvements in Apparatus Employed for Floating and Raising Vessels and other Bodies in the Water; and I, the said SAMUEL CARSON, do hereby declare the nature of my invention and the manner in which the same is to be performed and fully described and ascertained in and by the following statement thereof, reference being had to the drawing hereunto annexed and to the figures and letters marked thereon—that is to say—

My invention relates to improvements in the modes of using air tight flexible bags or vessels and to improvements in the apparatus in connection therewith in order to giving the necessary supply of air thereto and for sustaining and strengthening such flexible bags or vessels whereby their use is much simplified and they may according to my invention be applied with facility in floating laden and other ships and vessels over bars or shallow places over which the ship or vessel with her ordinary draft of water would not pass but by means of a judicious arrangement of air bags in combination with my improved apparatus the same will with facility be raised to such a degree that the depth of draft will be materially decreased and the ship or vessel floated over the bar or other shallow water and in like manner a ship or vessel may when at sea and in a sinking state be kept afloat and saved and further the apparatus as improved by me becomes more useful certain and safe in raising sunken ships and vessels and other bodies than any heretofore practised; and further the apparatus may also be used in calm weather even at sea to lay the vessel or ship on one side to examine her bottom in case of her having received damage or otherwise.

The first object of my invention is to improve the construction and mode of applying air tight flexible bags or vessels and this I accomplish by two modes. According to the various attempts that have been made to employ air tight flexible bags or vessels for such purposes the same have been simply attached to ropes or chains and in some in-

stances the bags or vessels have had flat ropes or fabrics attached at intervals around or over them where the attachment of the ropes or chains are to be made but in all such modes of using the bags there has been more or less of the surface unsupported, or strengthened and as these bags are usually constructed of light and thin fabrics joined by a layer or layers of india rubber they are not adapted under such circumstances to be employed with advantage.

In making air tight flexible bags or vessels to be employed for the purposes of my invention I take by preference water and air tight fabrics produced by stitching two thicknesses of fabric together as has heretofore been practised and to which I lay no claim nor do I confine myself thereto, as my invention does not relate to the mode of making such vessels but to the mode of treating and applying them to produce the beneficial effect of my invention which first relates to the employment of an external covering of strong woven fabric to which the attachments of the ropes chains and tackle are to be made, the air bags or vessels being within such strong woven fabric and are thereby supported and preserved from injury and it is desirable to make such outer covering somewhat less than the internal bag in order to prevent the inner bags being strained beyond their powers. Or in place of a woven fabric I employ a covering made up of a series of staves of wood or metal which however are not made into a vessel but the parts are capable of movement and hence of being readily applied and removed and the same may be folded up when out of use. It will be evident that on the size and weight of the ship or vessel to be raised will depend the number and size of the apparatus used but the same will readily be adapted for each particular case but in order to give the best information in my power I will suppose that it is intended that each bag or vessel should be capable of floating thirty tons in such case. I prefer the flexible vessels to be of the following dimensions ten feet by fifteen which will be ample, having by the usual means stuck the fabric together to produce the bag or vessel and connected a suitable air tight flexible pipe thereto. I prepare a strong woven fabric the warp and weft being made of hemp or

flax of about a quarter of an inch diameter but this may be varied both in material and dimensions care being observed in making the external covering so strong that it will more than support the weight it will be required to sustain this strong woven fabric is to be formed to a similar figure as that of the bag (but as before stated somewhat less) which is to inclose and in such manner that by lacing the air bag may be inclosed with facility and in order to keep these bags distended I apply a bar of the length of the bag and by preference to the lower part thereof care being observed so to lace the bar to the outer cover as to bring all the cords or strands of the web to bear their equal proportions or as nearly so as possible and to these bars I affix one or more strong flat ropes for going under the keel of the ship or vessel and long enough to be made fast either to the side of the ship or on the deck or otherwise and in such manner that a number of flexible bags may be thus attached and be made simultaneously to act in supporting and floating a vessel. This will become more clear on inspecting the drawing, Figure 1, where an arrangement of apparatus such as above mentioned and explained is applied to a ship in a proper manner for reducing the depth of her water line in order to float her over a bar or other shallow water, and I would here remark that I prefer that each vessel or ship should at all times carry a suitably arranged apparatus according to my invention by which means she would be provided at all times when she had to pass over bars or shallow waters, and further in case of danger of sinking she may have it applied in a very short time as will readily be evident and I prefer that each air supply pipe of the various bags should be connected to one common air vessel situated on the deck of the ship or vessel whereby the whole of the bags would be simultaneously filled and the ship or vessel progressively raised and the depth of her water line reduced and in case the ship or vessel is being towed by a steam vessel I recommend the air pump or pumps for supplying the air vessel should be worked by the engines on board and a flexible air pipe connection thereto and to the air vessel (see Fig. 1 of the drawing) or the same may be worked by the hands on board the vessel or ship which is being raised.

It may be now desirable shortly to explain the mode of applying the apparatus, Fig. 1, in order to lessen the draft of water that the vessel or ship may pass over a bar or other shallow waters: a rope is to be passed over the stem or stern (for it is not material at which end the operation is commenced) and to this rope one of the flat ropes *a* is to be made fast and drawn under the keel till the air bag or vessel is sufficiently below the

water then another and another bag or vessel is successively to be applied observing to draw the rope *b* of the eye of the next air bag as it is about to be lowered by this means all the bags or vessels will be connected together and when all are down and the ropes made fast the air pump or pumps are to be applied and the inflation will simultaneously go on in all the air bags or vessels and the ship or vessel will progressively rise toward the waters surface till she draws only so much water as will allow of her passing over the bar or other shallow water and in case of it being desired to lay the vessel over on one side to examine her bottom the inflation should only go on, on one side as will readily be understood.

Fig. 2 shows the arrangement of a series of staves or narrow boards or of iron or other metal combined together which may be used in place of the woven fabrics before explained.

Another part of my invention relates to the mode of constructing air pumps used for inflation air tight bags of whatever construction for the purpose of floating ships vessels and other bodies in water and the improvement consists in the mode of applying packing whereby the packing becomes more and more effectual as the pressure increases: In Fig. 3 a section of a pump is shown; *a* is the pump cylinder and *b* the piston which is completely covered with leather there being an opening where the piston rod passes through and that is covered by a plate *c* in order to make an air tight joint the lower part of the leather cover being sewed to the upper cup or cover of leather. *d* is a hole made through the lower plate of the piston and through the lower ring of leather as is shown in the drawing, hence it is evident that on the downstroke of the piston the air will pass up through the hole *d* and press out the leather covering which will insure a close packing and the more so as the pressure of the air is greater. And further in order to provide against more air being forced into the bags than is required to completely fill them I apply a valve *e* which may be loaded according to the depth the bags may be below the water and the hydrostatic pressure consequent thereon.

Another part of my invention relates to an apparatus for lowering down flexible air tight bags or vessels in order to raise sunken ships or vessels or bodies without the necessity of sending down divers to make such flexible air tight vessels or bags fast to the same. This apparatus consists of a pair of forceps which are so arranged that they may be made to take hold at any part of a cable and raised or lowered at pleasure from above. This apparatus is shown at Figs. 5 6 and 7 in various views of the parts com-

posing the same. A A are the two chaps moving on a pin or joint as an axis at B each of these have an opening or bow C and the axis B is embraced thereby and in the  
 5 axis there is an opening sufficiently large to allow of the passage of the chain or rope on which the forceps are to move and to hold. D D are two links or connecting rods by which and by pin joints at E E E the  
 10 chaps A are connected together and F is a ring or shackle by which the flexible bags or the external covering thereof are made fast to the forceps. G is a guard affixed to one of the chaps and within which the other  
 15 chap moves. H is a weight which is applied to one of the chaps A in order to sink the air tight bags and which may be removed when the apparatus is sufficiently lowered as is clearly shown by the drawing  
 20 the weight only hanging by a hook. I is a weight hung to one of the chaps A in order to keep it open till the apparatus is sufficiently lowered and it will readily be understood that so soon as the flexible bags  
 25 begin to fill and have a tendency to rise they will draw upon the chaps and close them and the more power the bags exert the more closely will the apparatus hold to the chains or ropes to which the forceps are applied.  
 30 And it will only be desirable in respect to this part of my invention further to remark that in order to use the same the ship or vessel below the surface of the water is to be swept for as is well understood in order  
 35 to get one or more cables around her and from these any number of chains or cables may be used and affixed for receiving air

bags and the same be made fast by the apparatus above described.

What I claim as my invention and desire 40 to secure by Letter Patent, is—

1. The forming and applying an envelop for the air tight bags made of woven fabric of sufficient strength to sustain the same, in the manner described; and, as a substi- 45 tute for such woven material, in the employment, as set forth, of a series of staves or narrow boards, or of iron or other metal, to surround said bags.

2. I claim the mode described by me of 50 applying a cover of leather to the air pumps to be employed in inflating the bags, constituting an improved packing for the purposes herein fully shown.

3. I claim the apparatus consisting of the 55 forceps, and its appendages, as described for lowering down flexible air tight bags or vessels, which apparatus is so arranged that the forceps may be made to take hold of any part of a cable, and be raised and low- 60 ered at pleasure from above and I wish it to be explicitly understood that the preceding specification must be taken in all things subject to this explanation.

Witness my hand at Liverpool in the 65 county of Lancaster and Kingdom of Great Britain the thirtieth day of January in the year of our Lord one thousand eight hundred and thirty eight.

SAML. CARSON.

Witnesses:

THO. P. COLLIER,  
 WM. UNDERWOOD.