

No. 630,104.

Patented Aug. 1, 1899.

E. G. PETTIT.
APPARATUS FOR RAISING SUNKEN VESSELS.

(Application filed Feb. 27, 1899.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1

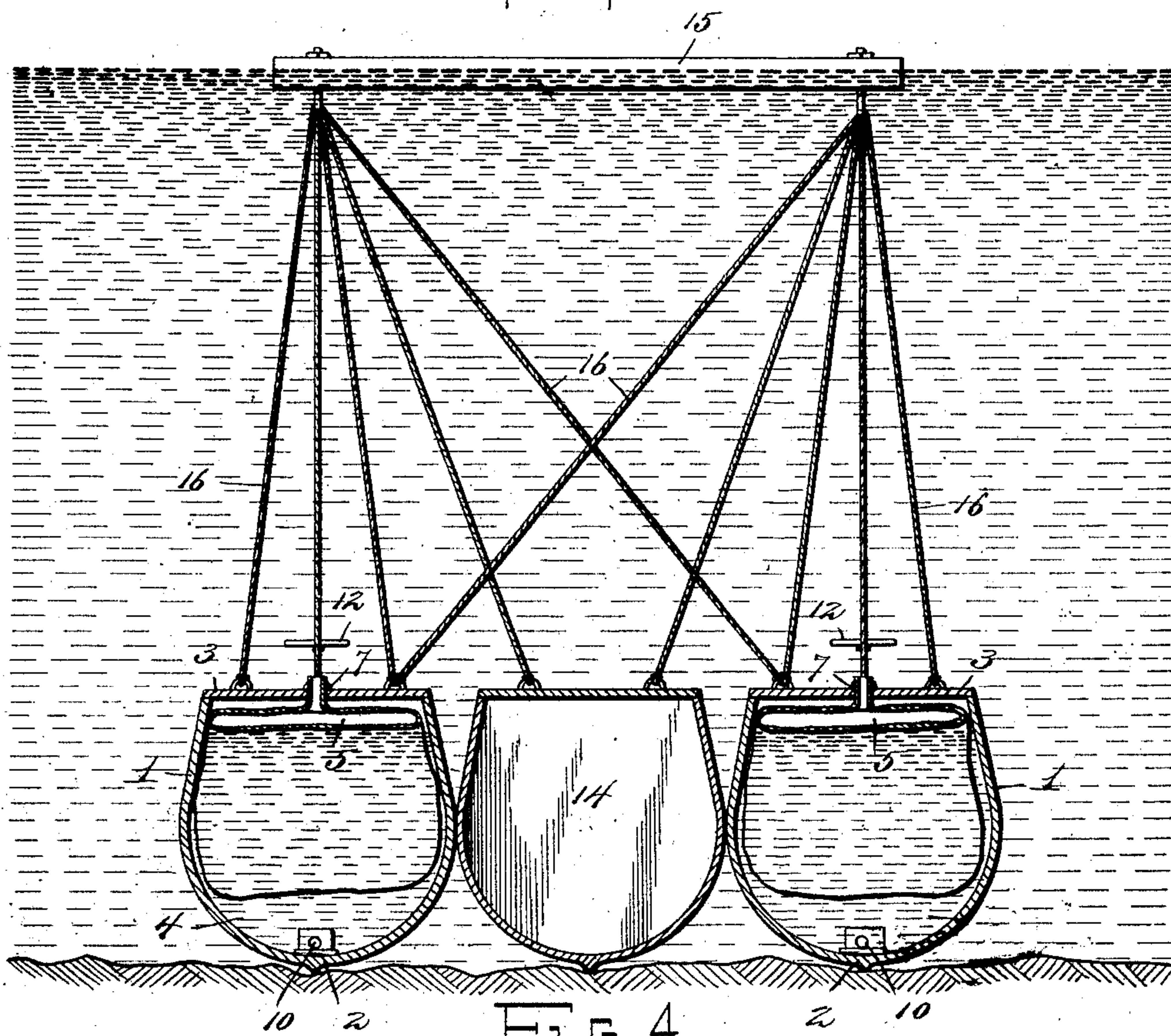
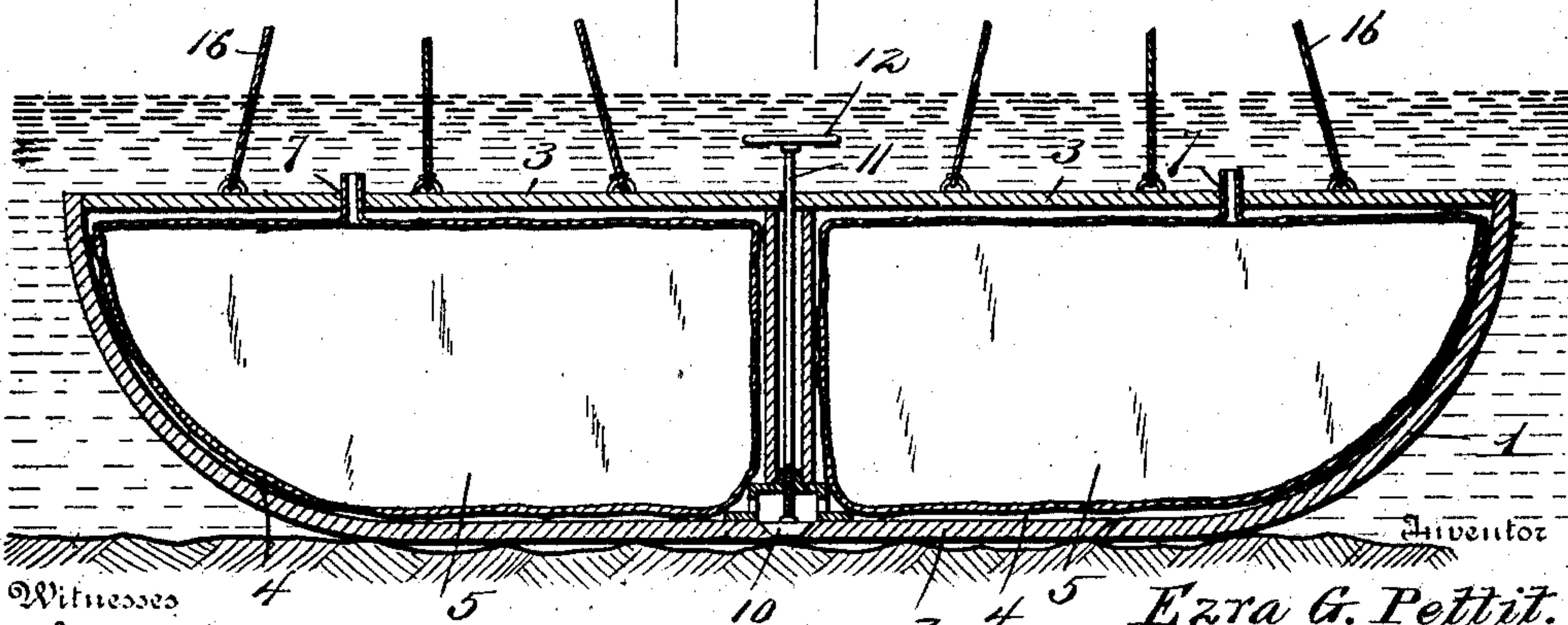


FIG. 4



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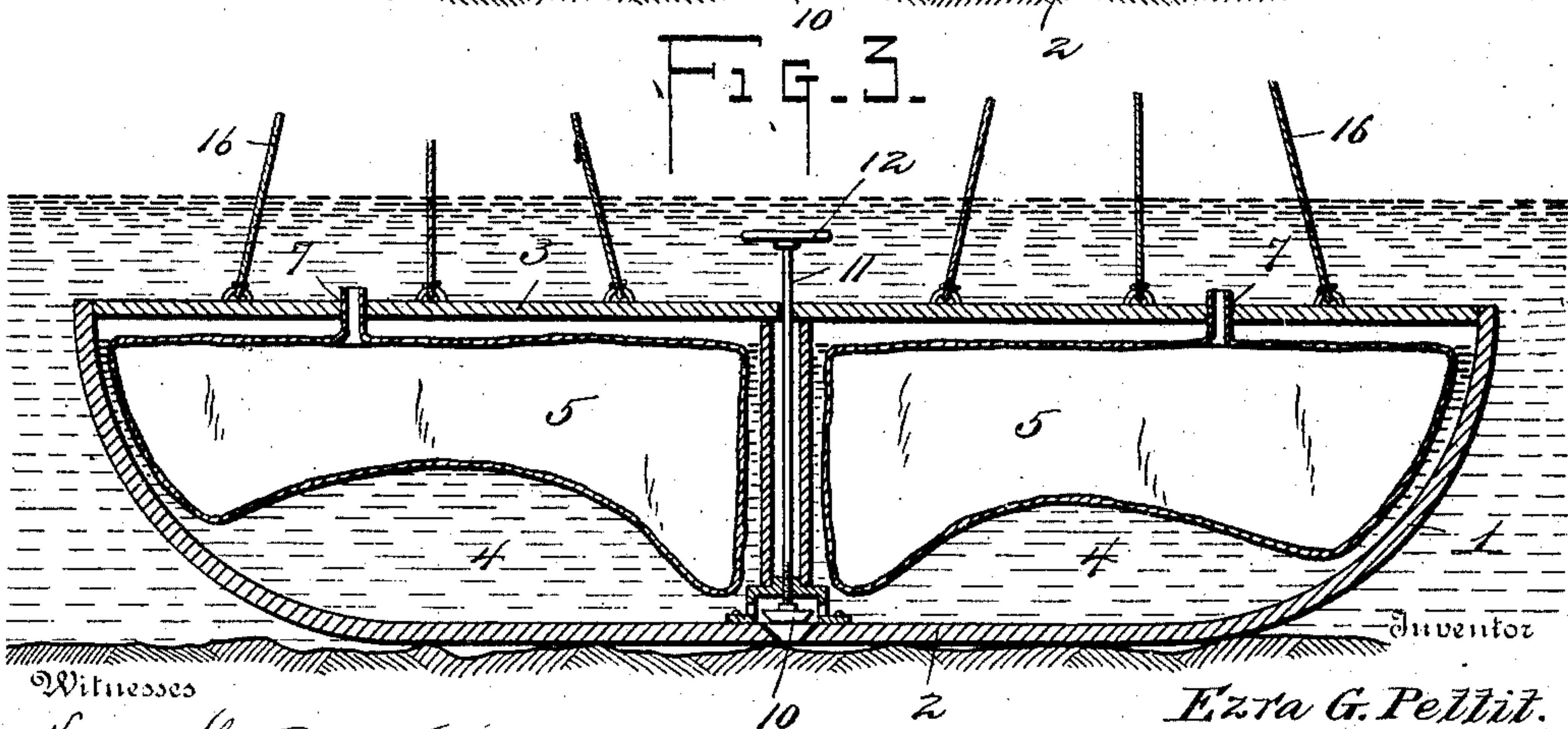
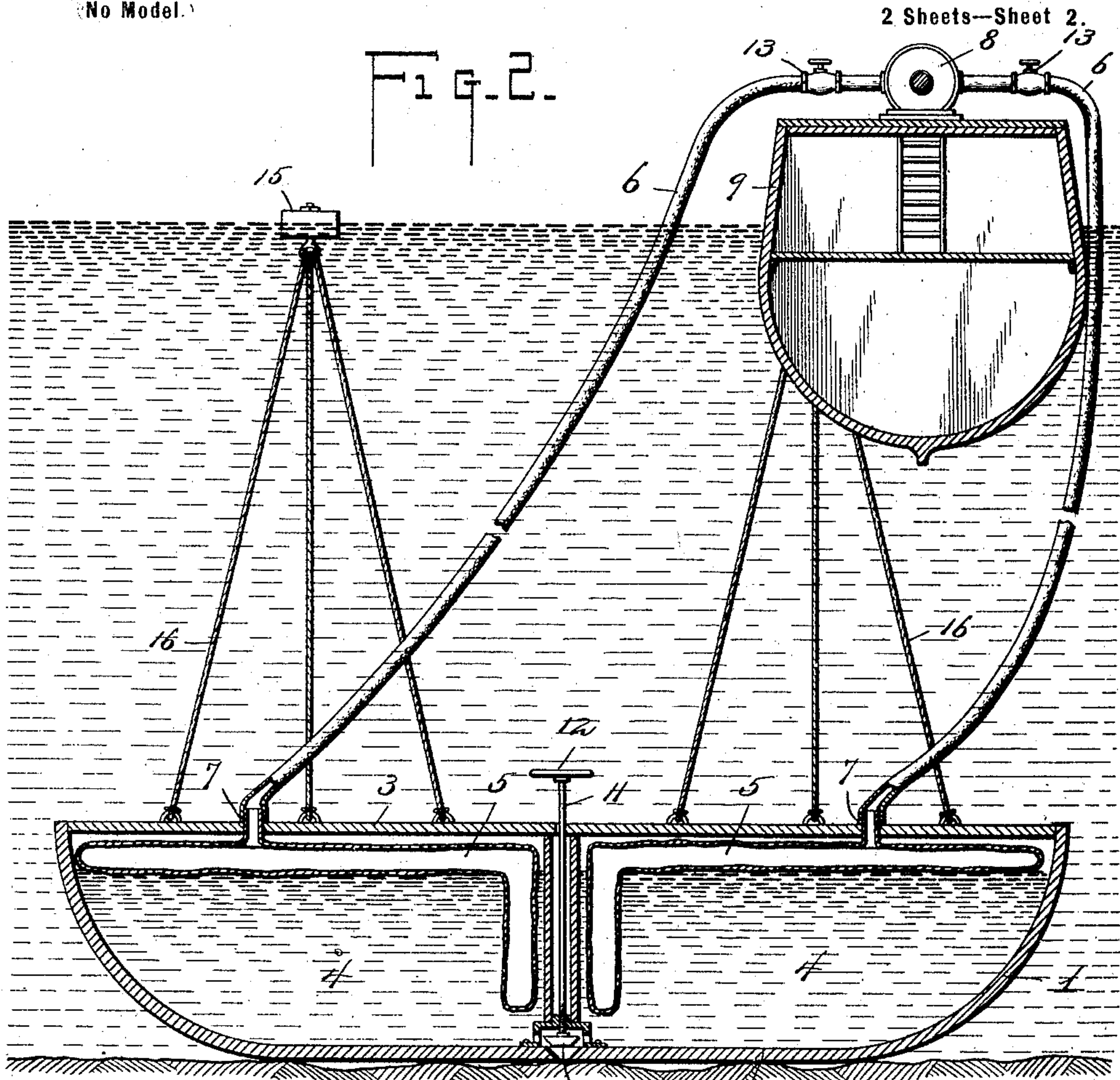
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR RAISING SUNKEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 630,104, dated August 1, 1899.

Application filed February 27, 1899. Serial No. 707,025. (No model.)

To all whom it may concern:

Be it known that I, EZRA G. PETTIT, a citizen of the United States, residing at Zanesville, in the county of Muskingum and State of Ohio, have invented certain new and useful Improvements in Boats; and I do hereby 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 appertains to make and use the same.

This invention relates to boats, and more particularly to that class of boats employed in raising sunken vessels or other objects below the surface of the water.

The object of the present invention is to provide what may be termed a "sinkable boat," so constructed that it is provided with a series of compartments in which are arranged inflatable sacks or bags from which pipes or tubes lead to an air-pump mounted upon and carried by another boat, float, or vessel upon the surface of the water, thereby enabling the first-named boat to be sunk to any required depth and to be brought to the surface whenever desirable. The sinkable boat is constructed with special reference to the raising of sunken vessels and after being submerged is designed to be lashed to the sunken vessel and to bring the sunken vessel to the surface with it when the bags or sacks are inflated in a manner hereinafter particularly described.

The detailed objects and advantages of the invention will appear in the course of the ensuing description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a sectional view showing a sunken vessel with two of the improved sinkable boats applied thereto, one on each side, the boats being shown submerged and in readiness to elevate the sunken vessel to the surface of the water. Fig. 2 is a similar view showing the improved boat and the manner of arranging the air-bags in the compartments and placing the same in communication with a pump on

a vessel floating on the surface of the water.

Fig. 3 is a reduced sectional view through the sinkable boat, showing the compartments partly filled with water and the air-bags partially compressed and emptied. Fig. 4 is a similar view showing the air-bags fully inflated and the boat riding on the surface of the water.

Similar numerals of reference designate corresponding parts in all the views.

The improved boat contemplated in this invention may be given any desired form and may be of any suitable size, according to the work to be accomplished thereby. The hull (indicated at 1) is shown of the ordinary form, and the bottom thereof is preferably made flat for a considerable distance, as indicated at 2, so as to allow the boat to rest evenly upon the bottom of a stream or body of water. The boat is also covered in by a deck 3 and is divided into any desired number of compartments 4, in each of which is placed an air-tight bag 5, having connected thereto an inflating-pipe 6, which passes through a suitable opening 7 in the deck or side of the vessel and leads from thence upward to an air-pump 8, of any suitable type, mounted upon a wrecking vessel 9, which remains on the surface of the water while the boat 1 is being raised and lowered. The boat 1 is also equipped with one or more valves 10 in the bottom or below the water-line, so as to admit water to the hull and into the compartments occupied by the bags 5. Each valve is controlled by a stem 11, having a suitable operating-handle 12. In sinking the boat the valve 10 is opened and allowed to remain open, thus allowing the water to flow in through the valve-opening and pass into the compartment or compartments controlled by said valve. If desired, a separate valve may be employed for each compartment, although it is sufficient to provide one valve for two, three, or even a larger number of compartments.

In connection with the inflating-pipes 6, which are preferably flexible and of rubber suitably protected, I employ cut-off cocks or valves 13, so that the air compressed in the bags may be prevented from escaping after

the pumping operation ceases. It is also desirable in some cases to equip the pump or the inflating-pipes with compressed-air gages, so as to ascertain the amount of compressed air in the several compartments. The air-bags fit snugly within their respective compartments and when inflated occupy the entire compartment, bearing against the walls thereof, and thus relieving the bags from undue strain.

After arriving at the place where the sunken vessel is to be raised, one, two, or more of the sinkable boats are arranged in proper relation to the sunken vessel and the valves 10 opened, thereby allowing the boats to sink, the water entering through the valve-openings and forcing the air out of the bags 5, the stop-cocks 13 being opened to admit of the escape of the air. In Fig. 4 the bags are fully inflated, so that the boat will float upon the surface of the water. In Fig. 3 the bags are partially deflated and the compartments partially filled with water and the boat partially submerged. In Figs. 1 and 2 the boat is shown as resting upon the bottom of a stream. After the boats are lowered, as shown in Fig. 1, they are brought to opposite sides of the vessel to be raised and indicated at 14 and are lashed or otherwise conveniently secured to said vessel. In order to hold the several boats in proper relation to each other, I employ a float or beam 15, from which suitable stay ropes or cables 16 lead to the several boats. This beam or float also provides convenient means for supporting the inflating-pipes 6, leading upward from the air-bags. After the boats have been properly lashed together the air-pump 8 is brought into action and air is gradually forced into the bags 5. As these bags fill with air they displace the water within the several compartments in the boats and force said water out through the valve-openings below the water-lines of the hulls of said boats. When the bags 5 are nearly or entirely inflated, the boats 1 rise to the surface and carry the sunken vessel up with them.

Where the sunken vessel is very large and heavy, a number of sinkable boats may be sent down or slid downward on suitable chains or cables and fastened to the sunken vessel in the most convenient manner. The bags carried by said boats may then be inflated and the sunken vessel partially raised or lightened, so that it can be towed by a tug or other vessel into water which is more shallow. This operation may be repeated until the sunken vessel is brought into water sufficiently shallow to enable it to be repaired, the leaks stopped, and the vessel pumped out in the ordinary manner.

I do not desire to limit myself to the exact details of construction and arrangement of parts hereinabove set forth, but reserve to myself the right to modify the construction of the boat within the scope of this invention.

It will be apparent that any desired number of compartments and air-bags may be employed and that the boat may be made of any desired size or general shape and construction without departing from the principle or sacrificing any of the advantages of the invention.

The valves are of course so placed in the bottom of the hull and are also of such shape that they will not come in contact with the air-bags or interfere with the inflation and deflation thereof. It frequently happens that a vessel needs to be repaired near the water-line, in which event two of the improved boats carrying inflatable bags may be arranged one on each side of the vessel to be repaired, thereby enabling the vessel to be elevated sufficiently to enable access to be had to the places in need of repair. This can of course be done without placing the vessel in dry-dock. It also admits of a vessel being scraped and painted without removing it from the water.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A boat provided with a fixed compartment closed on all sides, a valve located below the water-line for admitting water to said compartment, and an air-tight bag arranged in said compartment and having provision for its inflation and deflation, substantially as described.

2. A boat provided with a plurality of fixed compartments closed on all sides, one or more valves controlling the admission of water to said compartments adapted when inflated to fill its own compartment, an independent air-tight bag for each compartment, and an air-pipe in communication with said bags, substantially as and for the purpose specified.

3. A boat having one or more fixed compartments closed on all sides, and provided with a valve controlling the admission of water thereto, in combination with an air-tight bag arranged in each compartment and adapted when inflated to fill the same and expel the water therefrom and designed to be deflated by the action of the admitted water and to be inflated by the provision of an inflating-pipe and a suitable pump, substantially as described.

4. A boat provided with a series of fixed compartments closed on all sides, and one or more valves for admitting water to said compartments, in combination with a series of air-tight bags arranged one in each of said compartments and adapted when inflated to fill their respective compartments and expel the water therefrom, and a corresponding series of air-pipes leading to said bags, an independent pipe being employed for each bag, substantially as described.

5. A boat provided with a fixed compartment closed on all sides and having a valve

controlling the admission of water thereto, in
combination with an inflatable bag located
within said compartment and adapted when
inflated to fill the same and expel the water
5 therefrom, the arrangement being such that
when the bag is inflated, water is forced from
said compartment and when the air is allowed
to escape from the bag, the water enters the

compartment and assists in expelling the air
from the bag.

In testimony whereof I affix my signature
in presence of two witnesses.

EZRA G. PETTIT.

Witnesses:

B. B. MASSEY,

A. J. ANDREWS, Jr.