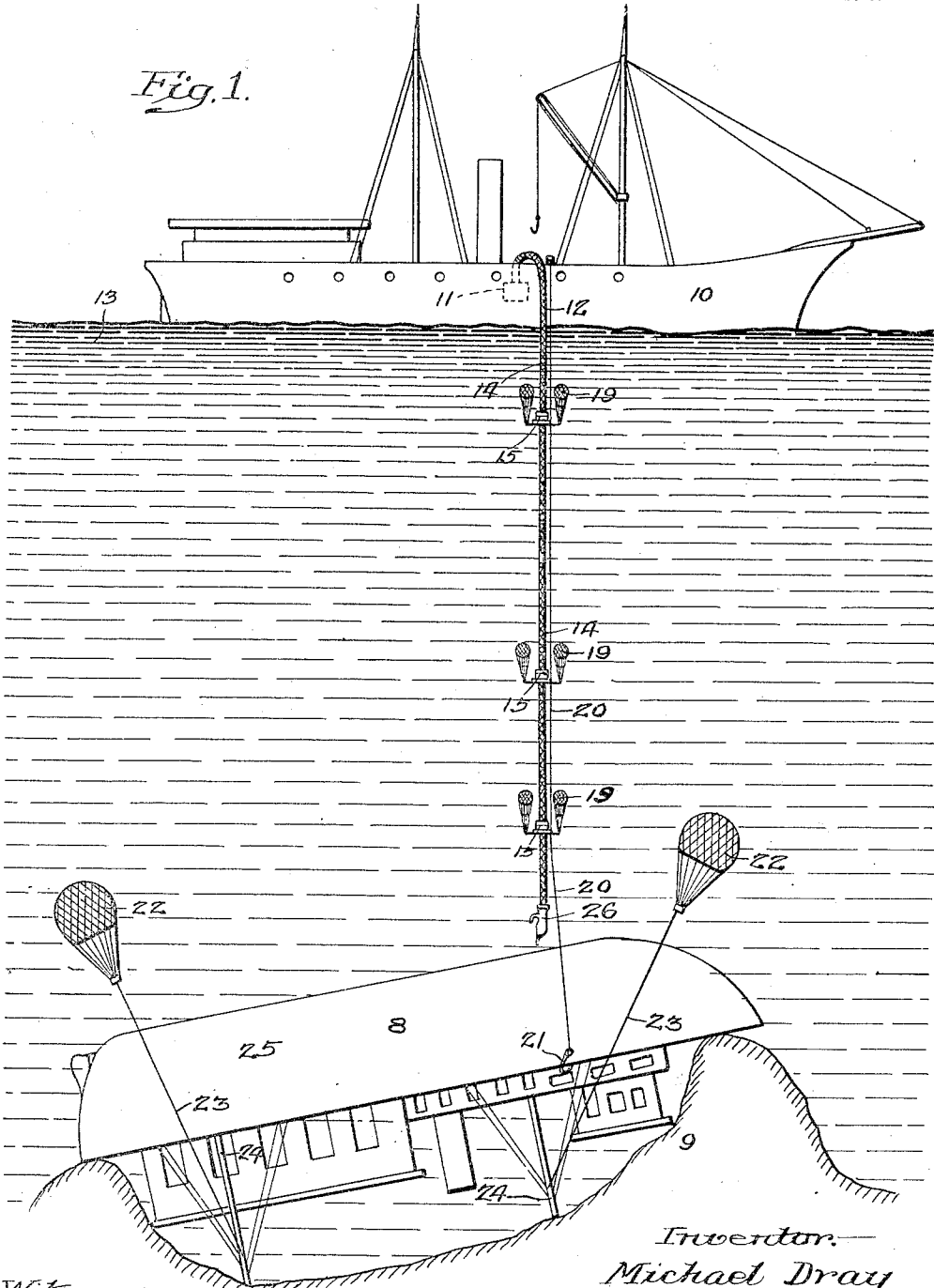


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1,332,384.

Patented Mar. 2, 1920.
3 SHEETS—SHEET 1.



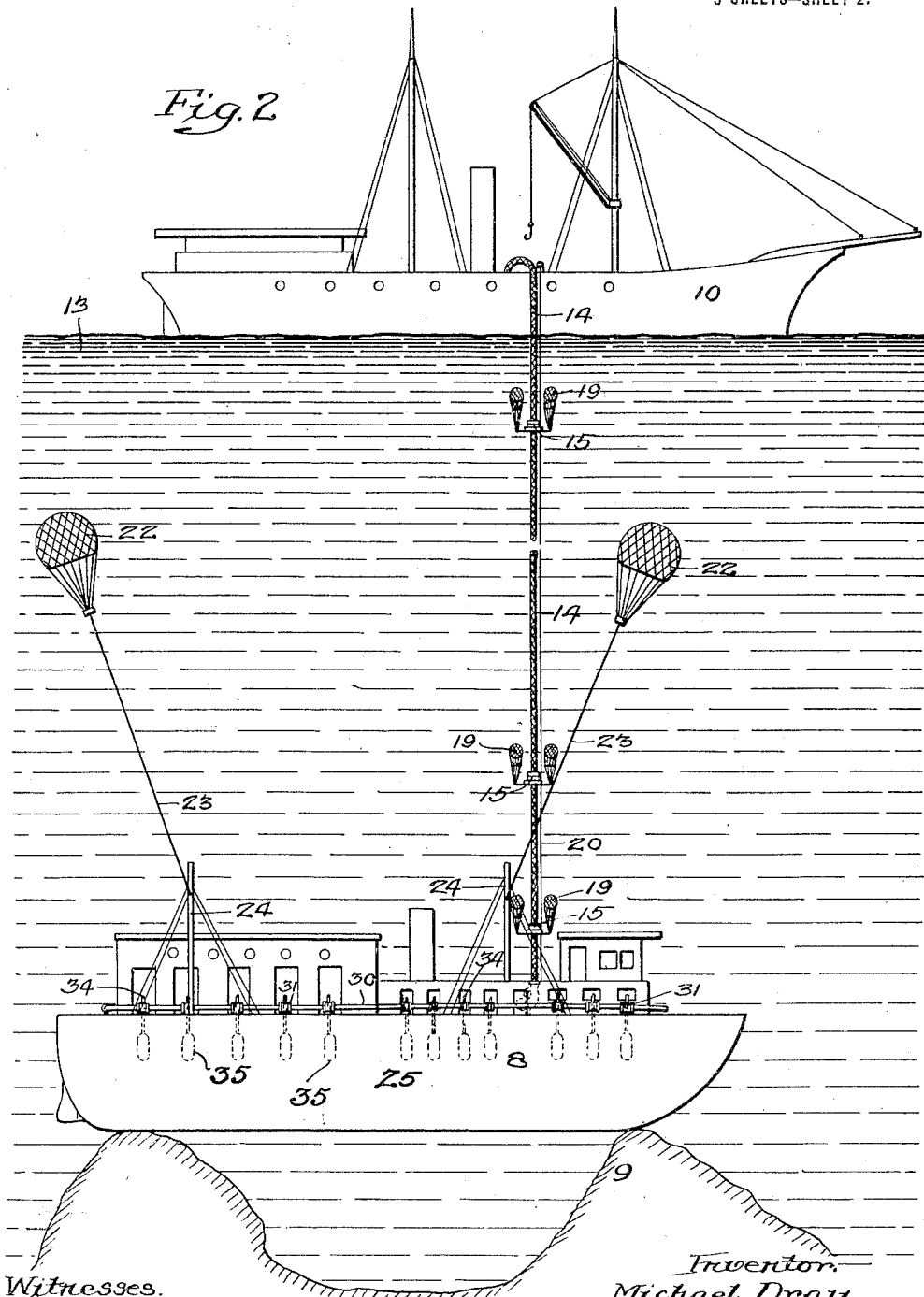
Witnesses.
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Augustus Klopper

Inventor.
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Witnesses.

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 3 SHEETS—SHEET 3.

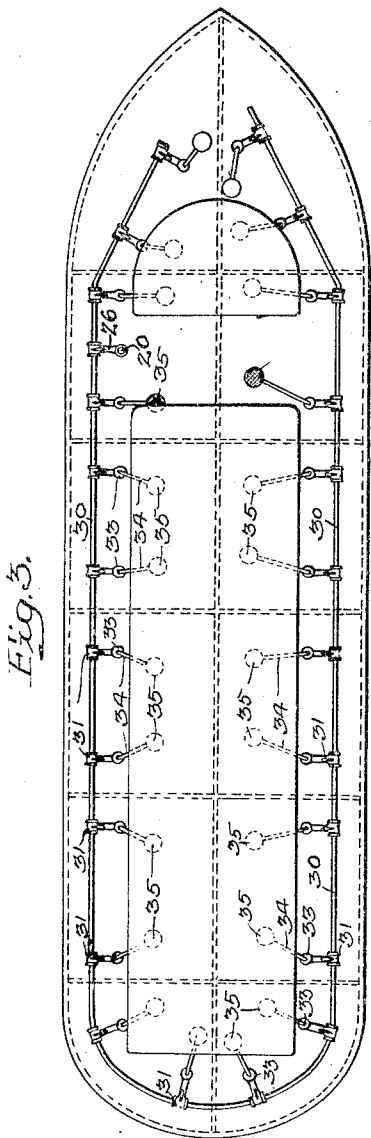


Fig. 3.

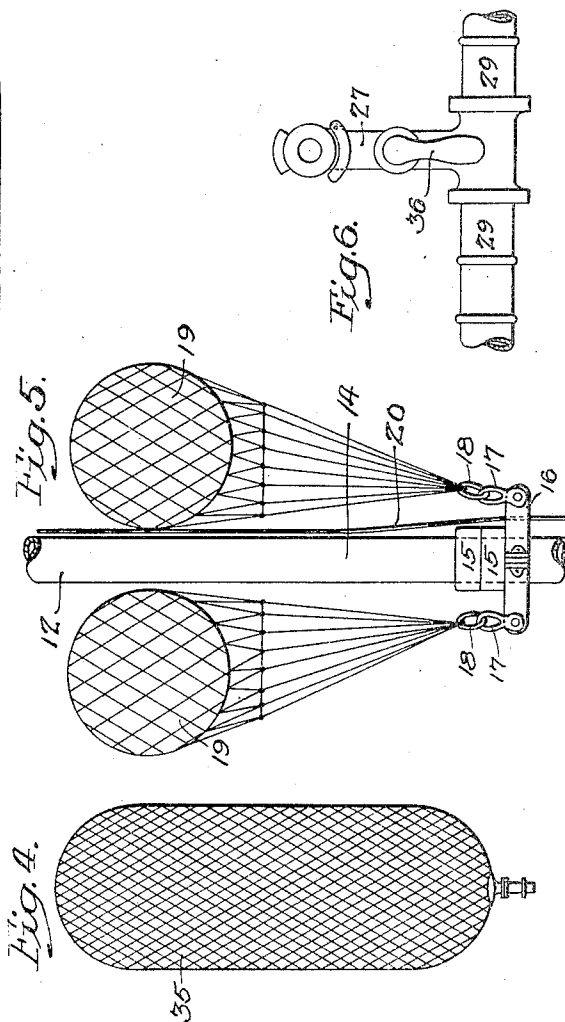


Fig. 4.

Fig. 5.

Fig. 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

MICHAEL DRAY, OF COATESVILLE, PENNSYLVANIA.

SHIP-RAISING APPARATUS.

1,332,384.

Specification of Letters Patent.

Patented Mar. 2, 1920.

Application filed August 1, 1919. Serial No. 314,649.

To all whom it may concern:

Be it known that I, MICHAEL DRAY, a citizen of Russian Poland, residing at Coatesville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Ship-Raising Apparatus, of which the following is a specification.

One object of my invention is to provide improved apparatus which can be effectively used for raising sunken ships and is so constructed that it can be quickly and easily manipulated.

Another object is to so construct my improved apparatus that it will be of a durable construction so that the parts thereof will not break during the use thereof.

A still further object is to so make the apparatus of my invention that it will be applicable for raising sunken ships which are so positioned that prior to my invention it was practically impossible to dislodge them sufficiently for the purpose of raising them.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is an elevation, partly in section, showing a sunken ship in an inverted position and also showing a certain portion of the apparatus of my invention in position showing the first stage in dislodging the sunken ship,

Fig. 2 is a view of similar nature to Fig. 1 showing the sunken ship having been turned over in an upright position and having other portions of my apparatus attached thereto in the position to raise the sunken ship,

Fig. 3 is a top plan view of the sunken ship showing a portion of my apparatus thereon including inflated flexible pontoons,

Fig. 4 is an enlarged elevation of one of the flexible pontoons showing the same inflated,

Fig. 5 is a fragmentary elevation drawn on an enlarged scale of certain of the supporting means for an inflating tube or hose which forms a part of my invention, and

Fig. 6 is a face view of a main tube coupling which I preferably employ.

Referring to Fig. 1, 8 represents a sunken ship in an inverted position resting on the bottom 9 of a river, ocean or other water

way, and 10 represents an operating ship having an air pump 11 thereon which is connected to a hose or tube 12 which is preferably made of a strong flexible material which is lowered into the water 13 and is made up of a plurality of sections 14 which are provided with flanges 15 secured together in any suitable manner. Clamping bands 16 are positioned around the tube 12 directly below each pair of flanges 15, said clamping bands having shackles 17 thereon to which are attached rings 18 connected to balloons or floats 19. Thus the balloons 19 assist in taking up the weight of the tube 12 at a number of points throughout the length thereof and prevent the tube from breaking where it is necessary to use an extremely long tube. A cable 20 is attached to the operating ship 10 and at its lower end is provided with a hook 21 or other suitable gripping means. The cable 20 is preferably threaded through the clamping bands 16 and a diver can secure the hook 21 to the sunken ship, such as illustrated, and thereby hold the tube 12 in a substantially vertical position prior to being attached to coupling means hereinafter described.

Balloons 22 have cables 23 which are preferably attached to the masts 24 or other suitable projections and the cables 23 extend to the side of the hull 25 of the sunken ship so that the pull of the balloons 22 will tend to turn the sunken ship 8 into an upright position, such for example as shown in Fig. 2.

After the sunken ship has been turned in an upright position, a main coupling 26 on the end of the tube 12 can be attached to tubes 30. The tubes 30 can be positioned around the decks of the sunken ship, such for example as shown in Fig. 3, and other couplings 31 can be interposed between the tubes 30 to provide branches or take-offs for attachment to other couplings 33. The couplings 33 have tubes 34 which connect with flexible pontoons 35. The various couplings are provided with valves 36 so that when the pump 11 in the operating ship 10 is operated, the air will pass downwardly through the tube 12, tubes 30 and tubes 34 to inflate the pontoons 35. After the pontoons have been inflated, the valves can be cut off and the pontoons will operate to raise the sunken vessel. It will be noted that the tubes 34 can be extended into any compartments through doorways, windows

or other openings in the sunken ship and when the pontoons are inflated, the displacement will be such as to cause the sunken ship to be raised as above noted.

5 While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not
10 limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

15 Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Apparatus, for raising sunken ships, including an inflating tube adapted to be
20 suspended in the water; and a plurality of supporting means adapted to support said tube at various positions throughout its length; substantially as described.

2. Apparatus, for raising sunken ships,
25 including an inflating tube adapted to be suspended in the water; and a plurality of

floats attached to said tube at different positions throughout its length; substantially as described.

3. Apparatus, for raising sunken ships, including an inflating tube made in sections having flanges secured together; clamping bands surrounding said tube at different
35 portions throughout its length and adapted to bear on said flanges; and floats connected to said bands; substantially as described.

4. Apparatus, for raising sunken ships, including an inflating tube made in sections having flanges secured together; clamping bands surrounding said tube at different
40 portions throughout its length and adapted to bear on said flanges; a cable threaded through said bands; and means on said cable for attachment to a sunken ship; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL DRAY.

Witnesses:

JOHN MICKIM,
JOHN DUBISH.