(No Model.) 2 Sheets—Sheet 1.

L. MATIGNON.

MEANS FOR RAISING SUNKEN VESSELS.

No. 605,231. Patented June 7, 1898.

Fig. 1

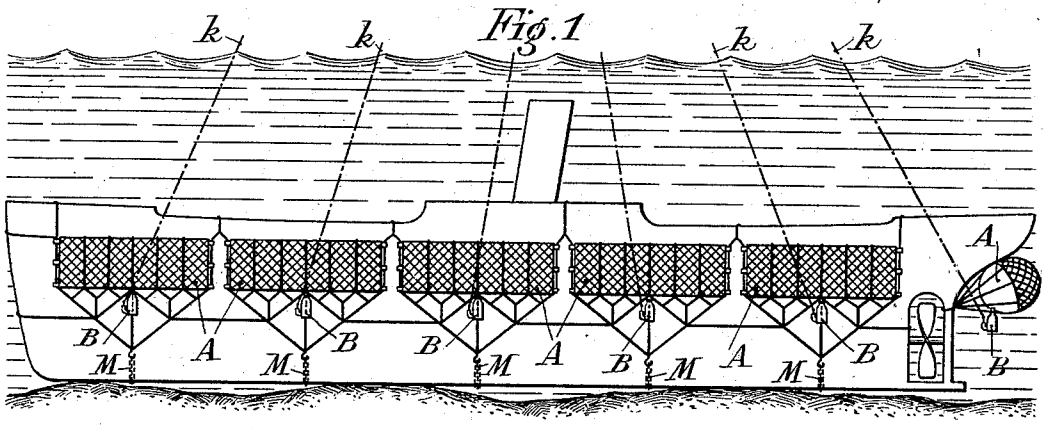


Fig. 2

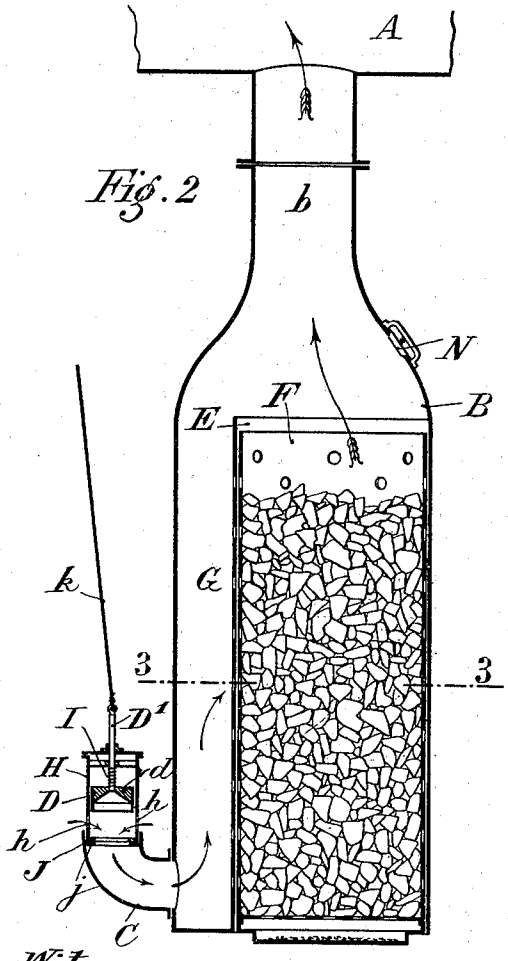


Fig. 3

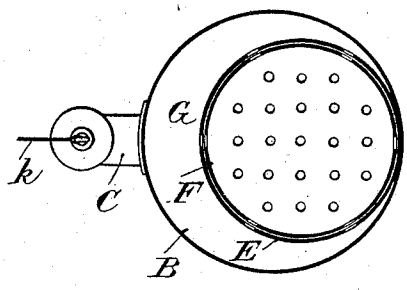
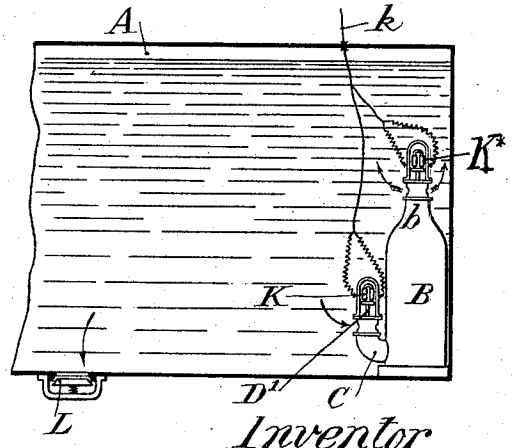


Fig. 4



Witnesses:-
Edward Vieser.
George Barry Jr.

Inventor
Laurent Matignon
by attorneys
Brown & Seward

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

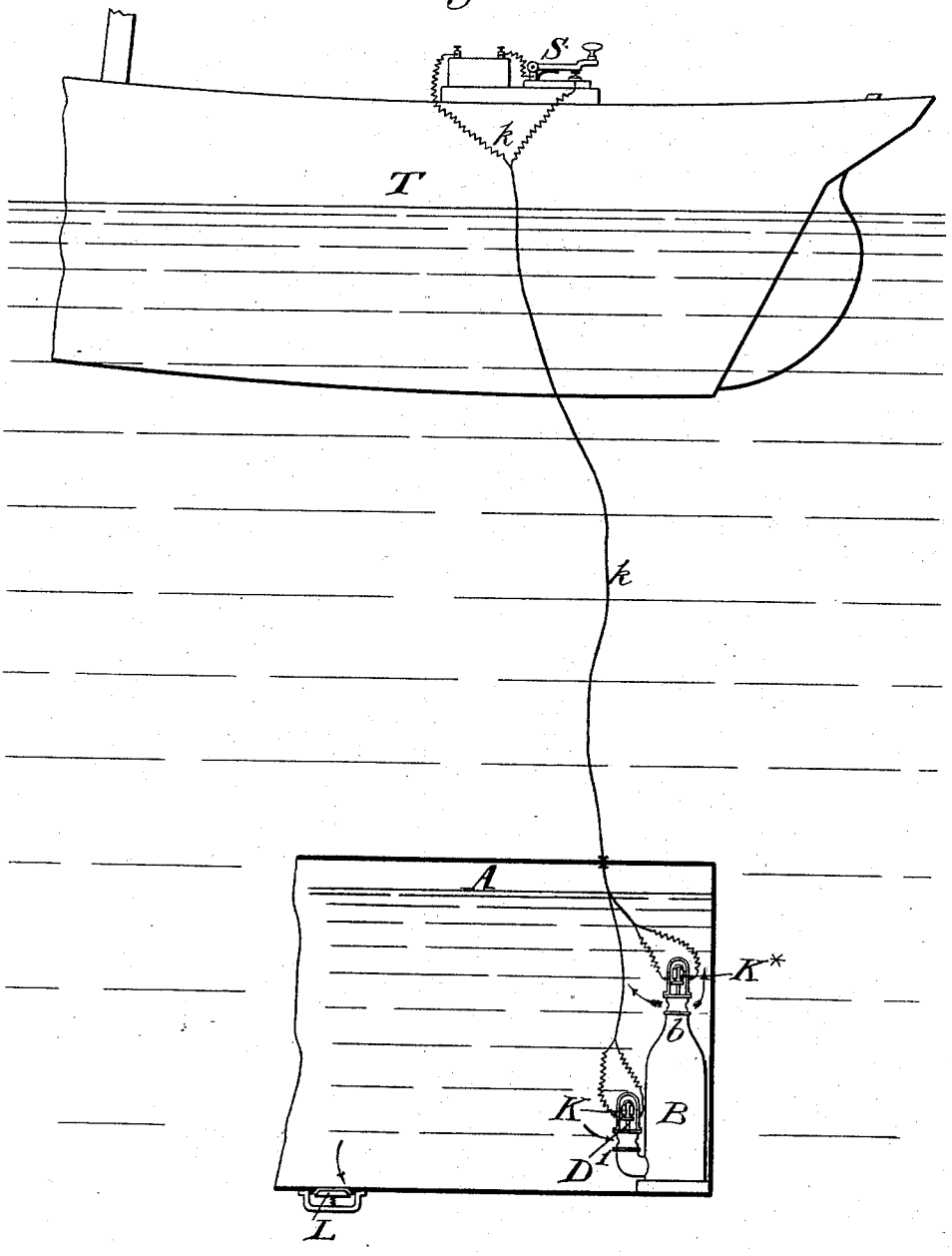
2 Sheets—Sheet 2.

L. MATIGNON.

MEANS FOR RAISING SUNKEN VESSELS.

No. 605,231. Patented June 7, 1898.

Fig. 5.



Witnesses:
Edward Victor.
George Barry Jr.

Inventor:
Laurent Matignon
by attorneys
Brown & Seward

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LAURENT MATIGNON, OF LA GARENNE-COLOMBES, FRANCE.

MEANS FOR RAISING SUNKEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 605,231, dated June 7, 1898.

Application filed November 30, 1897. Serial No. 660,208. (No model.)

To all whom it may concern:

Be it known that I, LAURENT MATIGNON, a citizen of the Republic of France, residing at La Garenne-Colombes, France, have invented a new and useful Improvement in Means for Raising Sunken Vessels, of which the following is a specification.

It is well known that the raising of sunken vessels is an operation which with the means heretofore employed presents difficulties which are often insurmountable. It has been proposed to employ for this purpose floats constituted by vessels or receivers filled with air or gas and attached to the sunken vessel for the purpose of raising it to the surface of the water; but this conception can hardly be said to have passed into the domain of common practice because of the difficulty of combining all the elements of the apparatus employed in such manner as to produce at the desired moment the necessary lifting power.

The present invention, which is based upon the employment of acetylene, resolves this problem in a manner as simple as practicable. It is characterized by the placing around the vessel to be raised of a certain number of floats, each of which is furnished with a generator of acetylene organized in the manner hereinafter described, whereby at the precise moment when it may be desired to produce the lifting the simultaneous operation of all the generators may be produced under the control of means at a distance from the vessel, the generators being thus made to produce at once and rapidly a sufficient quantity of acetylene to inflate or fill their corresponding floats, and to thus create the ascensional force necessary for the lifting of the vessel.

Each of the acetylene-generators consists of a receiver which contains a sufficient quantity of carbid to produce at least the volume of acetylene necessary for the filling of the corresponding float. This generator is in communication by a wide opening with the float-space which it is required to fill with acetylene, and it is, moreover, provided with a wide water-inlet, which is normally closed by a valve. The valves of the generators are so applied and combined that they may be all opened simultaneously from a distant point—for example, from a vessel acting as a tender.

If the floats are constituted by supple or elastic receivers, they are sunk empty and attached to the sides of the vessel and the acetylene-generators are adapted to them externally. If, on the contrary, the floats are constituted by rigid receivers, they are filled with water to facilitate their descent, and the generators are preferably arranged in the interior of the receivers themselves. The opening for the delivery of the acetylene thereinto is then also closed by a valve, which opens at the same time as the valve which admits the water to the generator. The gas which is delivered by this orifice into the receiver drives out the water from the latter by an evacuation-valve.

The accompanying drawings illustrate an apparatus embodying my invention.

Figure 1 represents a side view of a sunken vessel equipped with means for floating it. Fig. 2 represents a vertical section of one of the generators and a portion of the float to which it is attached. Fig. 3 represents a horizontal section of the float in the line 3 3 of Fig. 2. Fig. 4 represents in section a portion of a float with rigid walls containing its generator. Fig. 5 represents a portion of a float and its contained acetylene-generator and a boat on which is a key for closing an electric circuit for opening the inlet-valve of the generator.

A A designate the floats, either inflatable or having rigid walls, which the divers have just attached to the sides of the vessel, spacing them in such manner that when they act as floats their action will be well distributed. These floats are provided each with a generator of acetylene—such as B, Figs. 2 and 3. This generator B consists of a cylindrical receiver having its upper part connected with a float A and communicating therewith through a wide opening *b*. This receiver is furnished in its lower part with a tubular water-inlet C, which is normally closed by a valve D. The receiver B, to which is adapted at a convenient point a safety-valve N, has within it a cylindrical compartment E, the walls of which are perforated, which is intended to receive a perforated basket F for containing carbid, the said basket being introduced through the bottom of the receiver and being secured in place in any suitable manner, by which a hermetical joint may be formed

at the bottom of the receiver. The cylindrical compartment E is arranged eccentrically within the recever B in such manner as to leave within the latter, on the side where the valve D is situated, a space G, which facilitates the rapid arrival of water upon the mass of carbid.

The water-inlet valve D is preferably constituted by a piston fitted to slide in the cylinder H, which is affixed to the tubular water-inlet C and which has in its walls large ports *h* for the entry of water. The piston is formed of a piece of tubing reinforced in the part which comes opposite the ports *h* when the valve is closed by a closed head *d*. The said piston is pushed downward to a position to close the valve by a spring I in such manner that under normal conditions its lower edge makes a hermetical joint against the leather washer J, which is supported at the bottom of the cylinder H by an annular shoulder *j*. The said piston is furnished with a rod D′, by the aid of which it may be manipulated from a distance by any convenient means—for example, electrically. In the latter case the piston-rod D′ will carry the armature of an electromagnet K, Fig. 4, the circuit *k* of which may be closed from a distant point—as, for example, by a circuit-closer S on a boat T, as illustrated by Fig. 5. When this circuit is closed, the magnet attracts the armature and produces the opening of the valve.

As I have already stated, the floats are lowered empty to be attached to the walls of the vessel when they consist of supple, elastic, or inflatable vessels. The generator is then adapted thereto externally, as shown in Figs. 1 and 2, in order that the sea may flow into the generator when the opening of its valve D is produced.

When the floats are constituted by receivers having rigid walls, they are filled with water to facilitate their sinking. In this case the generator is arranged in the interior of the float, as in Fig. 4. When the water-inlet valve is opened, the water from the float flows into the generator and the gas, which is thus disengaged and which escapes into the receiver by the opening *b*, presses down the water in the receiver and drives it out through an evacuation-valve L.

As will be understood, when the generator is contained in the float A, which is filled with water, its opening *b*, through which the acetylene is delivered, should be normally closed by a valve which is opened at the same time as the water-inlet valve. This valve at the opening *b* may be similar to the valve D and may be opened by an electromagnet K*, placed in a branch of the circuit *k*, as shown in Figs. 4 and 5.

The floats A may be attached to the vessel in any appropriate manner. They may, for example, as shown in Fig. 1, be placed in nets connected with each other and furnished with goose-feet, to which to attach chains M to pass under the vessel to connect the floats on the two sides thereof. The floats might also be attached to two metallic belts surrounding the vessel at different heights. To permit the placing of these belts when the vessel lies on its side, it may first be righted by attaching to it two or three floats, such as A, which may be inflated or filled with acetylene in the manner previously described.

When the vessel has been equipped for raising, it is sufficient to draw simultaneously all the manipulating-cords of the valves or to close simultaneously by means of a suitable circuit-closer all the circuits *k* to produce the opening of all the valves, the disengagement of the acetylene, the filling of all the floats by the gas, and consequently the automatic lifting of the vessel.

What I claim as my invention is—

1. In an apparatus for raising sunken vessels, the combination of a float, an acetylene-generator connected and having communication with said float and comprising a cylindrical receiver containing an eccentric compartment with perforated walls and an opening in its bottom, a perforated basket for carbid adapted to be introduced into said compartment through the said opening, a hermetic seal between the said opening and the bottom of said basket, a valve for admitting water to said receiver, and means for operating said valve from a point above the level of the water distant from the vessel and float for the purpose of admitting water to said receiver, substantially as herein described.

2. In an apparatus for raising sunken vessels, the combination of a float, an acetylene-generator attached to and having communication with said float, a valve for admitting water to said generator, a normally open electric circuit in which is an electromagnet the armature of which is attached to said valve, a circuit-closer in said circuit and means for operating said circuit-closer at a point above the level of the water distant from the vessel and float, substantially as herein described.

3. In an apparatus for raising sunken vessels, the combination of a float having rigid walls, an acetylene-gas generator within said float, a water-escape valve in said float, a second valve between said float and generator for the admission to the latter of water from the former, a third valve between said float and generator to admit to the former acetylene gas from the latter, and means for operating the said second and third valves from a point above the level of the water distant from the vessel and float, substantially as herein described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LAURENT MATIGNON.

Witnesses:
HENRY THIESSE,
EDWARD P. MACLEAN.