No. 635,939. Patented Oct. 31, 1899.

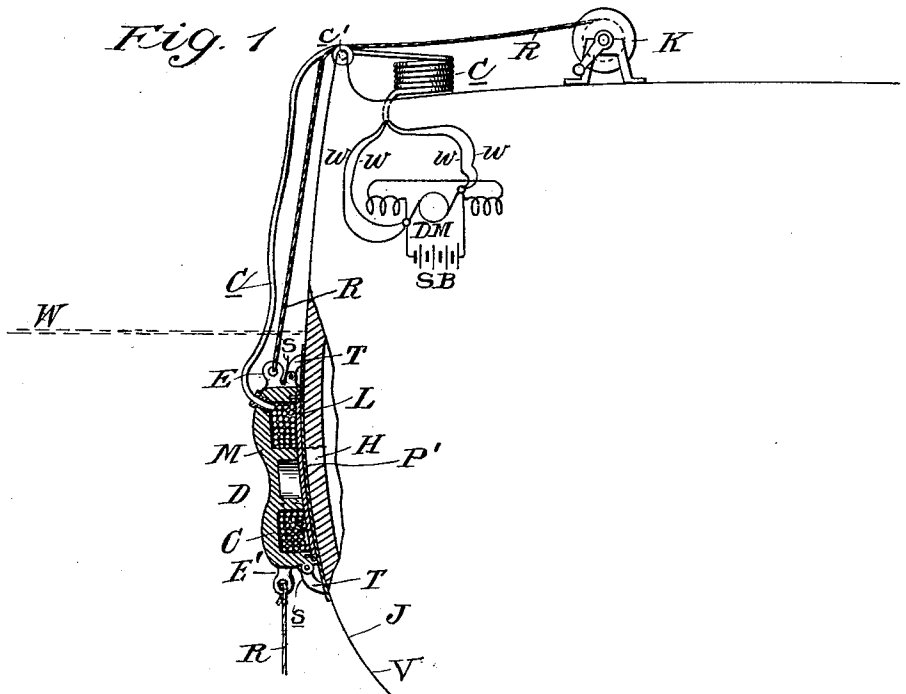
D. MASON.

MEANS FOR REPAIRING VESSELS WHILE AFLOAT.

(Application filed Nov. 11, 1898.)

(No Model.)

Fig. 1



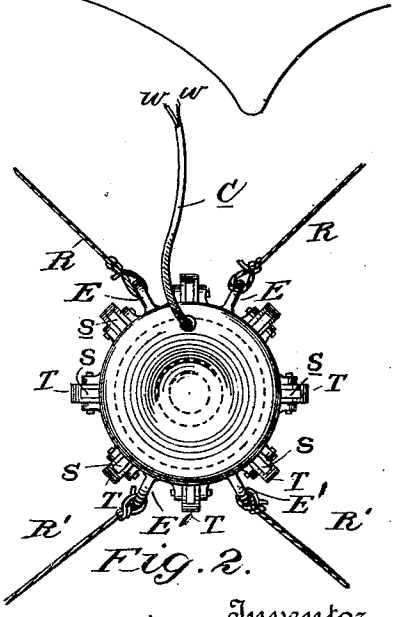


Fig. 2.

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UNITED STATES PATENT OFFICE.

DAVID MASON, OF NEW YORK, N. Y.

MEANS FOR REPAIRING VESSELS WHILE AFLOAT.

SPECIFICATION forming part of Letters Patent No. 635,939, dated October 31, 1899.

Application filed November 11, 1898. Serial No. 696,145. (No model.)

To all whom it may concern:

Be it known that I, DAVID MASON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have made a new and useful Invention in Means for Repairing Vessels While Afloat, of which the following is a specification.

My invention has for its objects, first, to devise means for enabling one to quickly repair any damage done to a vessel when by collision or otherwise a hole or opening is made in the hull thereof below the water-line, and, second, to provide means for enabling one to affix to the outer surface of the vessel and below the water-line, wherever such a hole or opening may have been made, a temporary patch which will enable the vessel to be brought into port and ultimately docked for effecting a permanent repair. These objects are fully accomplished by my invention as hereinafter described, for a full understanding of which reference is had to the following specification and accompanying drawings, in which—

Figure 1 represents the outline of the hull of a vessel afloat, showing also in sectional view my novel means of providing a temporary patch for a hole or opening below the water-line thereof, certain details of the invention being shown on the deck of the vessel in elevational view and others below the deck thereof in diagrammatic view. Fig. 2 is a side elevational view of my novel vessel-repairing device as seen looking at the same part of the device in Fig. 1 from the left-hand toward the right-hand side of the drawings.

Referring now to the drawings in detail and first to Fig. 1, V represents a vessel afloat, and H an opening or hole in the side thereof at some point below the water-line W.

M represents my repairing device, consisting of a well-known tubular form of electromagnet having internally-projecting pole-pieces and a coil of insulating-wire C wound in the grooves between said poles. The conductors *w w* of said coil (see Fig. 2) as they emerge from the core of the magnet M are inclosed in an insulating-cable *c*, which is carried upward and is shown in the form of a coil upon the deck of the vessel, the conductors *w w* being preferably connected in multiple-arc relation to the poles of a dynamo-electric machine D M and storage battery S B, the connections being preferably as shown for the purpose of rendering any possibility of the failure of the device to act in the event of one of the sources of electrical energy being temporarily disabled.

T T T represent radially-disposed pole-pieces of magnetic material pivotally secured by lugs or ears integral with the core of the magnet M, *s s* being springs for normally holding such pivotal pole-pieces outward for a purpose to be hereinafter described.

L is a curvilinear protecting-plate of diamagnetic material, which covers the face of the magnet and protects the coil from the action of the water.

E E′ are lugs or ears secured to opposite sides of the magnet for the purpose of attaching manipulating ropes or cords R R′, (see Fig. 2,) one pair of which ropes is carried over pulleys *c′* on the side of vessel the and attached to a winch K.

P′ is a patch of strong canvas with which it is designed to mend the opening or hole H, the operation of this part of my invention being as follows:

Suppose that an opening or hole H has been made in the side of the vessel. It is first closed as well as can be temporarily from the inside thereof to prevent the inflow of water and to better effect a perfect mending from the outside. The patch P′ is secured to the inner grooved face of the protecting-plate L by common paste or such material as will readily convey it below the water when located in position, the inner face of said patch being coated with marine glue or any such adhesive agent as will cause it to stick to the outer surface of the vessel V. The device is then lowered, with the attached patch, into the position shown by turning the winch from right to left until the proper position is reached. The circuit is then closed through the several conductors *w w* by a properly-devised switch, so that the electromagnet M, which is of a powerful nature, will be drawn forward with great force, thus causing the patch to adhere to the outer surface of the vessel, it being of course understood that the hull of said vessel is of steel, iron, or other magnetic material.

In the event of there being irregularities in the surface of the vessel the pivotal pole-

pieces T T will yield in accordance with such irregularities and will be magnetized and securely hold the magnet and patch in position.

After the patch is set, the circuit through the magnet M may be broken and the device drawn on board, or, if preferred, the vessel may proceed into port with the device in the position shown, it being essential that the electrical generators shall be maintained in operation during the entire time.

It is also apparent that when it is desired to use the patching device illustrated in the drawings at points beneath the bottom of the vessel it will be necessary to use the lower pair of ropes R′ R′ by conveying them entirely beneath the bottom and securing them to another winch on the other side of the vessel, so that by the use of two winches and two sets of ropes R and R′ it may be moved to any desired position where repairs are to be made, after which it is magnetized and used in the manner hereinbefore described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A patching device for repairing damages to floating vessels at points below the waterline, consisting of electromagnetic means for closing the opening or hole where the damage is done, in combination with electrical connections for causing said electromagnetic means to adhere to the side or bottom of the vessel, substantially as described.

2. A patching device for repairing damages to floating vessels at points below the waterline, consisting of electromagnetic means provided with a patch temporarily secured thereto, in combination with conductors running to an electrical generator on board of the vessel, substantially as described.

3. A patching device for repairing damages to floating vessels at points below the waterline, consisting of means for checking the inflow of water from the outside of the vessel, in combination with additional means for moving the first-named means to the point where the damage is done, together with electromagnetic means carried by the vessel for causing said patching device to adhere to the side or bottom of the vessel, substantially as described.

4. A patching device for repairing damages to floating vessels at points below the waterline, consisting of electromagnetic means operatively connected with means on the vessel for lowering it into position, said electromagnetic means being provided with additional means for temporarily holding or securing the patch to it in combination with an electrical generator adapted to supply an electrical current thereto, substantially as described.

5. A patching device for repairing damages to floating vessels at points below the waterline, consisting of an electromagnet provided with radially-disposed pivoted pole-pieces adapted to conform to the surface of the vessel, in combination with conductors running to a source of electrical energy on board of the vessel, substantially as described.

6. A patching device for repairing damages to floating vessels at points below the waterline, consisting of a tubular-shaped electromagnet provided with a concave face covered with diamagnetic material, in combination with radially-disposed pivoted pole-pieces adapted to conform to the surface of the vessel, substantially as described.

In testimony whereof I have hereunto subscribed my name this 5th day of November, 1898.

DAVID MASON.

Witnesses:
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M. F. KEATING.