(No Model.)

2 Sheets—Sheet 1.

W. WINCHESTER.

LEAK STOPPER FOR VESSELS.

No. 417,894. Patented Dec. 24, 1889.

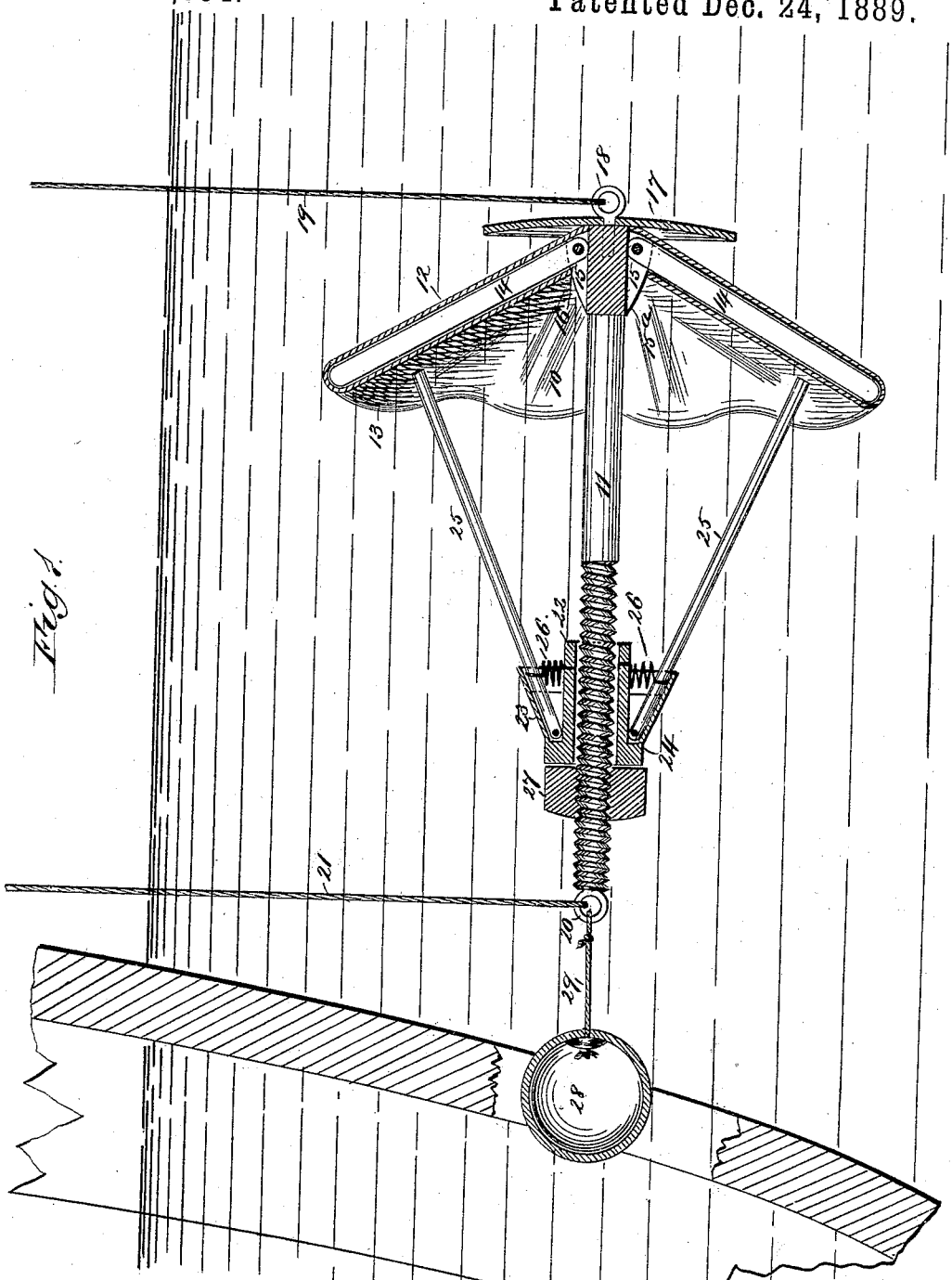

Fig. 1.

WITNESSES:

Francis McArdle.

C. Sedgwick

INVENTOR:

W. Winchester

BY Munn & Co

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

W. WINCHESTER.

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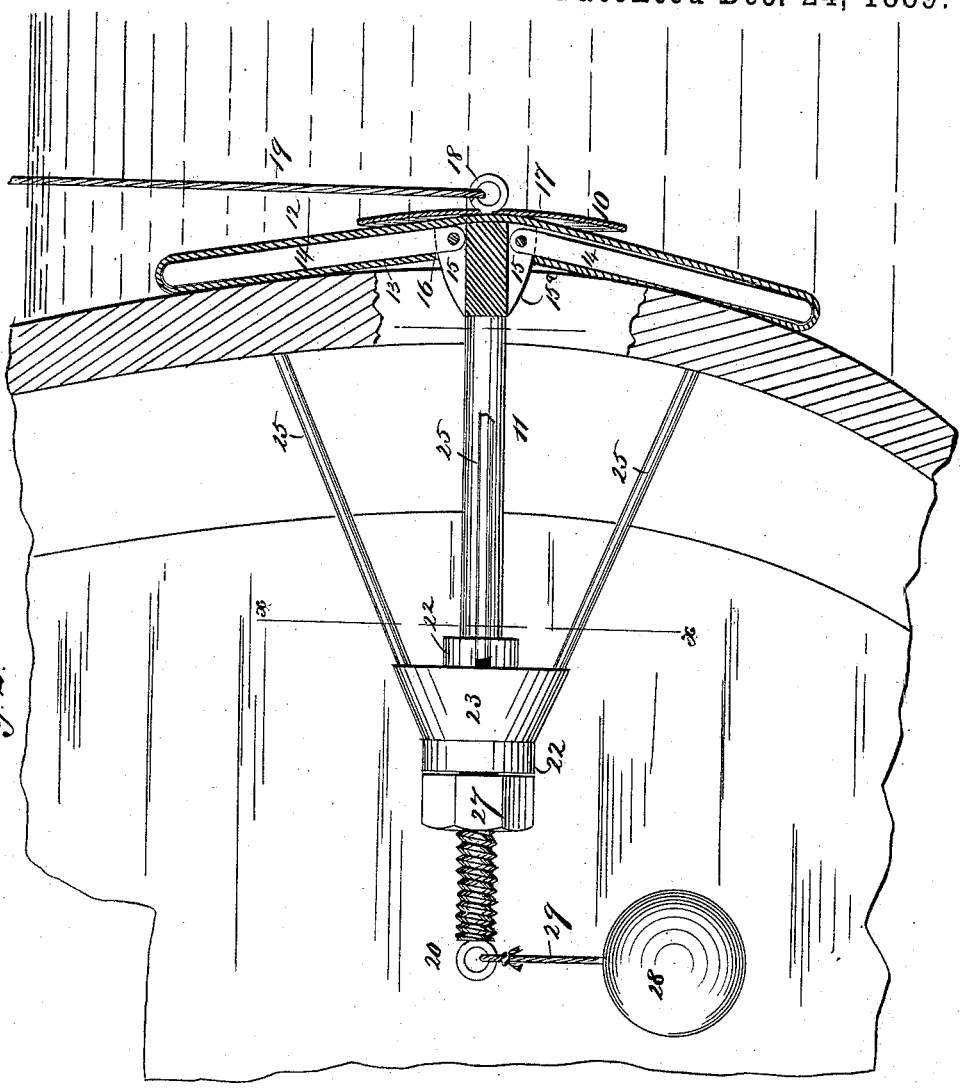

Fig. 2.

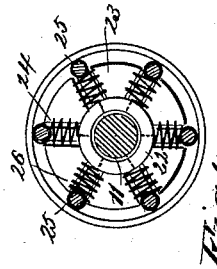

Fig. 5.

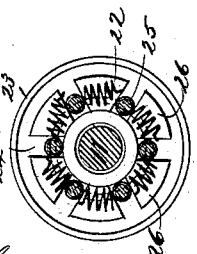

Fig. 4.

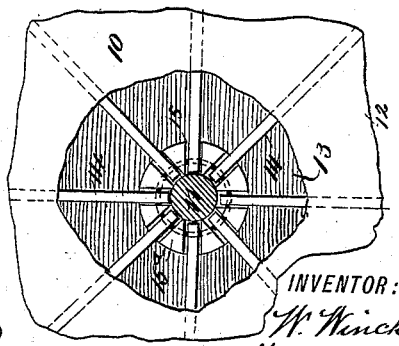

Fig. 3.

WITNESSES:

F. McArdle.

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UNITED STATES PATENT OFFICE.

WILLIAM WINCHESTER, OF MARE ISLAND, CALIFORNIA.

LEAK-STOPPER FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 417,894, dated December 24, 1889.

Application filed September 24, 1888. Renewed August 20, 1889. Serial No. 321,407. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WINCHESTER, of Mare Island, county of Solano, in the State of California, have invented new and useful Improvements in Hull-Plugs, of which the following is a full, clear, and exact description.

My invention relates to an improvement in plugs especially adapted for closing openings below the water-line in the hull of a vessel, and has for its object to provide a plug of simple and durable construction, which may be expeditiously and conveniently applied from the outer side of the hull, and the further object of the invention is to provide a plug which, when the opening is located, will be automatically drawn to place.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section through the device, and also through a section of the hull of a vessel, illustrating the entrance of the former through a break in the latter. Fig. 2 is a partial side elevation and section illustrating the plug secured in place. Fig. 3 is a partial bottom plan view of the head, partially in section; and Figs. 4 and 5 are transverse sections on line x x of Fig. 2, the stretcher-arms being contracted in Fig. 4 and expanded in Fig. 5.

In carrying out the invention, the head 10, which is attached to a threaded shaft 11, consists of two circular pieces of flexible material—such as rubber or its equivalent—united to form a spaced upper and lower wall 12 and 13; or one piece of material may be employed, bent upon itself, as illustrated. Between the walls 12 and 13 a series of spaced ribs 14 are secured at their outer ends, the inner ends whereof are free, and the said free ends of the ribs are pivoted in recesses 15, formed longitudinally in an enlargement or hub 15^a, attached to or constituting an integral portion of the outer end of the shaft. The outer wall of the head is centrally secured in any approved manner to the outer extremity of the hub, and the inner wall of the head is provided with a central opening 16, through which the hub passes. Thus the head 10 partakes somewhat of the form of an umbrella, the ribs being concealed.

At the outer end of the shaft 11 a circular plate 17 is secured adapted to limit the outward spread of the head, and an eye 18 or equivalent device is attached centrally to the plate purposed to receive one end of a rope 19. A second eye 20 is secured to the inner end of a shaft, to which a second rope 21 is tied, the two ropes 19 and 21 being purposed to suspend the shaft 11 in a horizontal position when the plug is in use. A sleeve 22 is held to slide loosely upon the shaft 11, provided at its inner end with a flange, and an outwardly-flaring cap 23, integral with or fastened to said flange, as best shown in Fig. 1.

The flange of the sleeve 22 is provided with a series of longitudinal recesses 24, and in said recesses one end of a series of stretcher-arms 25 are pivoted, the free ends whereof are adapted to extend outward within a suitable distance of the head. The stretcher-arms are normally held in engagement with the inner walls of the cap by springs 26, bearing against the contiguous surfaces of the sleeves and the several arms, as best illustrated in Figs. 1 and 5.

The plug is completed by screwing a locknut 27 upon the shaft from the inner end and the attachment of a float 28 to the same end, as illustrated in Figs. 1 and 2. The float usually consists of a hollow ball filled with air, and the attachment to the shaft is effected through the medium of a rope 29, secured to the eye 20.

In operation the shaft 11 is lowered horizontally over the side of the vessel in any approved manner, the float bearing against the side. When the opening, which may have been produced below the water-line by a shot, or from other cause, is reached, the suction of the water passing through the opening into the hull will automatically draw the float into the hull, and the stretcher-arms being capable of moving toward the shaft the said shaft may pass through the opening until the head is brought in contact with the

surface of the hull, as illustrated in Fig. 2. As soon as the head touches the hull, or before, if desired, the stretcher-arms expand and engage with the inner surface of the hull. The inner suspension-rope being disengaged, the lock-nut is screwed forward from the inside of the vessel against the sleeve, whereupon the head is drawn tightly against the outside of the hull around the opening therein. The plate or shield 17, limiting the expansion of the head, is of a diameter greater than the widest portion of the opening to be closed.

The plug is specially adapted for closing openings below the water-line made by a shot, but may be employed to temporarily close openings otherwise produced.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a leak-stopper for vessels, the combination, with a shaft, of a flexible head and a float secured at the opposite end of the shaft, substantially as shown and described.

2. In a leak-stopper for vessels, the combination, with a shaft and a flexible head and float secured at opposite ends of said shaft, of a shield attached to the shaft outside the head, substantially as shown and described.

3. In a leak-stopper for vessels, the combination, with a threaded shaft and a flexible head and float secured at opposite ends of the same, of a sleeve, stretcher-arms pivoted in said sleeve, and a lock-nut traveling upon the shaft, substantially as shown and described.

4. In a leak-stopper for vessels, the combination, with a threaded shaft, a flexible head and a float secured at opposite ends of the shaft, and a rigid plate secured to the said shaft outside the said head, of a sleeve, spring-actuated stretcher-arms pivoted in said sleeve, and a lock-nut traveling upon said shaft, all combined to operate substantially as shown and described.

5. In a leak-stopper for vessels, the combination, with a threaded shaft and a head secured to the outer end of the same, consisting of spaced flexible walls and ribs secured therein and pivoted to the shaft, of a sleeve sliding upon the shaft and stretcher-arms pivoted in said sleeve, substantially as shown and described.

6. In a leak-stopper for vessels, the combination of a shaft, a head or stopper on one end of the shaft, an adjustable sleeve mounted on the said shaft, and pivoted and spring-pressed stretcher-arms carried by the said sleeve, substantially as described.

7. In a leak-stopper for vessels, the combination, with a threaded shaft and a head secured to the outer end thereof, consisting of spaced flexible walls and ribs secured between the walls and pivoted to the shaft, of a rigid disk attached to the outer face of the head, a float secured to the inner end of the shaft, a sleeve loosely mounted upon the said shaft, spring-actuated stretcher-arms pivoted to the sleeve, and a lock-nut engaging said sleeve, all arranged to operate substantially as shown and described.

WILLIAM WINCHESTER.

Witnesses:
AUGUST ERNST FISCHER,
JOHN REDDAN.