No. 647,892. Patented Apr. 17, 1900.

F. STUTH.

MECHANISM FOR OPERATING BILGE PUMPS.

(Application filed Feb. 4, 1899.)

(No Model.)

Fig. 1.

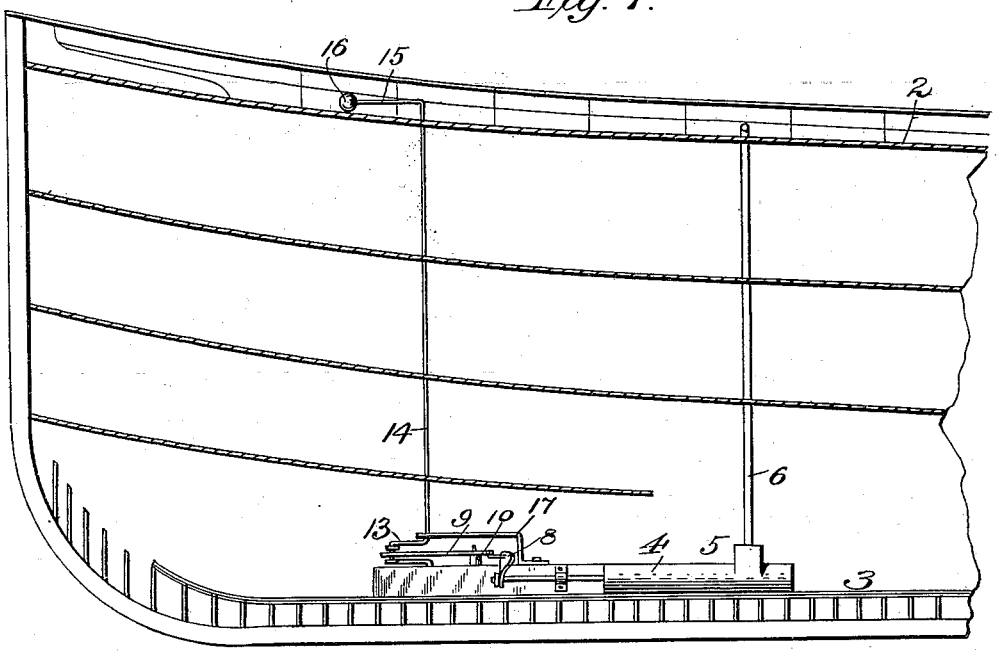

Fig. 2.

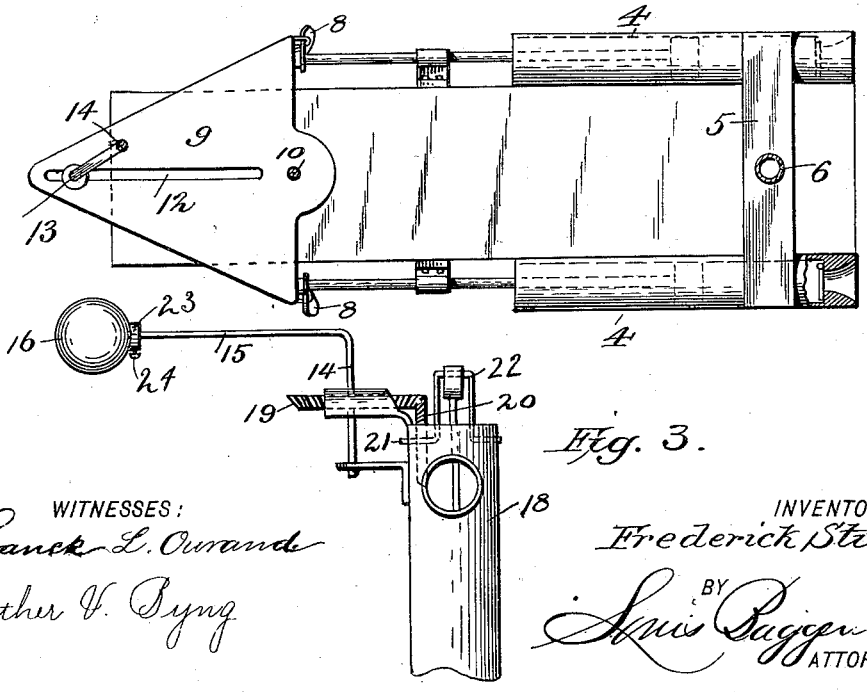

Fig. 3.

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MECHANISM FOR OPERATING BILGE-PUMPS.

SPECIFICATION forming part of Letters Patent No. 647,892, dated April 17, 1900.

Application filed February 4, 1899. Serial No. 704,504. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK STUTH, a citizen of the United States, residing at Somers Point, in the county of Atlantic and State of New Jersey, have invented new and useful Improvements in Mechanism for Operating Bilge-Pumps, of which the following is a specification.

My invention relates to mechanism for pumping bilge-water from the bilges of vessels or boats by the pitching or rolling of the vessel caused by the wave movement; and its object is to provide an improved construction of the same which shall possess superior advantages with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section showing a portion of a vessel or boat provided with my improvements. Fig. 2 is a detail horizontal view on the line *x x*, Fig. 1. Fig. 3 is a detail elevation of a modified construction of mechanism for operating the pump.

In the said drawings the reference-numeral 1 designates a boat or vessel of any ordinary or suitable construction, 2 the deck, and 3 the keelson. Located in the bilge of the vessel are one or more force-pumps 4, two being preferably employed, one at each side of the keelson. These pumps in the present instance are shown as being alternately-operating single-acting pumps, although double-acting pumps may be employed, if desired.

The numeral 5 designates lateral eduction-pipes communicating with said pumps, and also with the lower end of a vertical pipe 6, extending up above the deck. To the front ends of the piston-rods of these pumps are journaled arms 8, which are pivotally connected to a triangular plate 9, pivoted to a vertical shaft 10, secured to the keelson, preferably near the bow of the vessel. The front end of this plate is formed with a slot 12, with which engages a crank 13 of a vertical shaft 14, the lower end of which is stepped in the keelson, while the upper end extends above the deck and is provided with a horizontal arm 15, having a weight 16 at the free end.

The numeral 17 designates a brace-plate for supporting the upper end of the stud-shaft and through the front end of which the vertical shaft 14 passes.

The operation is as follows: The parts being located and arranged as described, as the vessel pitches or rolls, caused by the wave movement, the horizontal weighted arm of the vertical shaft will oscillate or rotate, according to circumstances, a slight pitch or roll oscillating the said arm and shaft and a greater movement of the vessel completely rotating the same. This oscillation or rotation of the shaft through the engagement of the crank near the lower end of the shaft with the slot of the triangular plate will oscillate the latter, which in turn will alternately reciprocate the piston-rods and pistons of the pumps, whereby the water in the bilge will be pumped up above deck.

The modification shown in Fig. 3 is preferably employed for use in small boats or vessels. In this figure the reference-numeral 18 designates a vertical pump extending from above the deck down into the bilge. The vertical shaft 14, provided with the weighted arm, in this instance is journaled in brackets at the upper end of the pump and is provided with a horizontal bevel gear-wheel 19, which meshes with a corresponding vertical bevel gear-wheel 20, secured to a horizontal shaft 21, provided near one end with a crank 22, which is connected with the upper end of the piston-rod of the pump. The operation will be readily understood. As the shaft 14 is oscillated or rotated by the movement of the vessel, as before described, the shaft 21 will be oscillated or rotated, as the case may be, reciprocating the piston-rod and piston of the pump.

From the above it will be seen that the pistons of the pump or pumps are reciprocated whether the vertical shaft 14 makes a complete reciprocation or simply oscillates.

I do not wish to confine myself to the details of construction shown and described, as many modifications may be made therein without departing from the character of the invention, the essential feature of which consists in the vertical shaft having a weighted horizontal arm and connections with a pump,

whereby said shaft is oscillated or rotated by the pitch or roll of the vessel to operate the pump.

When there is but very little or no water in the bilge, it is desirable that the mechanism be stopped to avoid wearing out of the pump. To accomplish this, I make the weight slidable and provide it with a boss 23, having a screw-threaded hole therein to receive a set-screw 24. When it is not desired to have the pump work, the set-screw is loosened and the weight is slid or moved inward to the vertical arm and the screw tightened. The leverage will now be so small that it will not be sufficient to operate the mechanism for working the pump.

In perfectly calm weather the pump can be operated by oscillating the weighted arm by hand.

Having thus fully described my invention, what I claim is—

The combination with a boat or vessel, of the rotatable shaft provided with a horizontal arm at the upper end, the adjustable weight carried by said arm formed with a boss and provided with a set-screw, the crank near the lower end of said shaft, the triangular plate pivoted to the keelson of the boat or vessel formed with an oblong slot with which said crank engages, the bent arms pivotally connected with said plate at opposite corners thereof, the pumps, the piston-rods to which said arms are pivotally connected and the single exit-pipe connected with the pumps and leading up to the deck of the boat or vessel, substantially as described.

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

FREDERICK STUTH.

Witnesses:
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