J. HAMPTON.

MEANS FOR HOLDING AND RELEASING DEPTH CHARGES, MINES, AND THE LIKE ON BOATS OR SHIPS.

APPLICATION FILED MAY 23, 1919.

1,353,652.

Patented Sept. 21, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

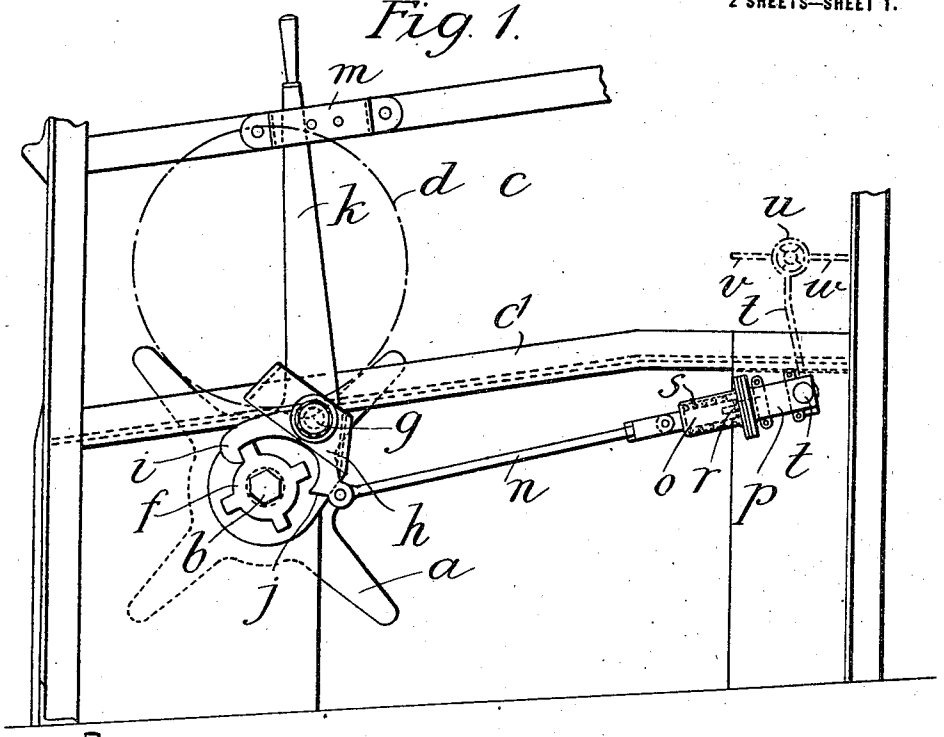
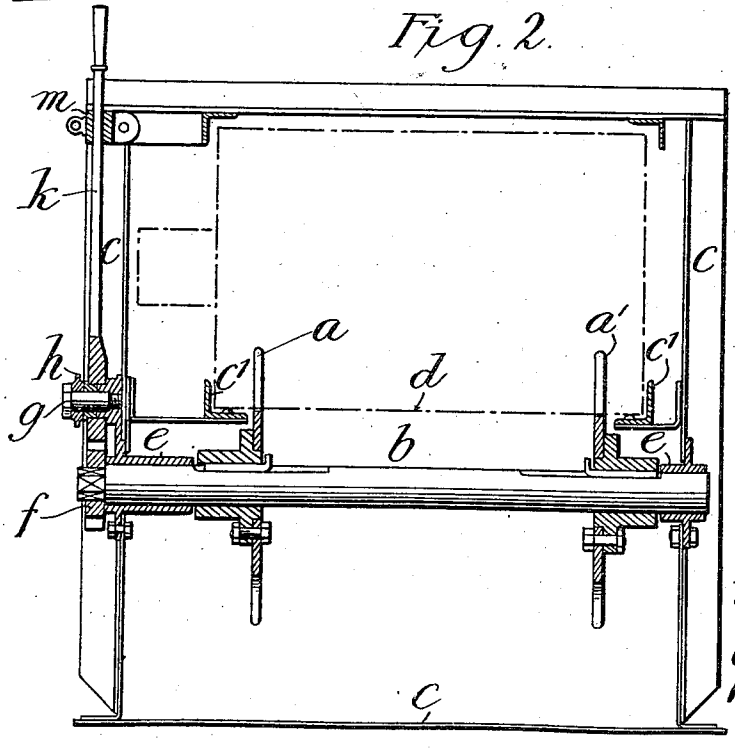


Fig. 2.



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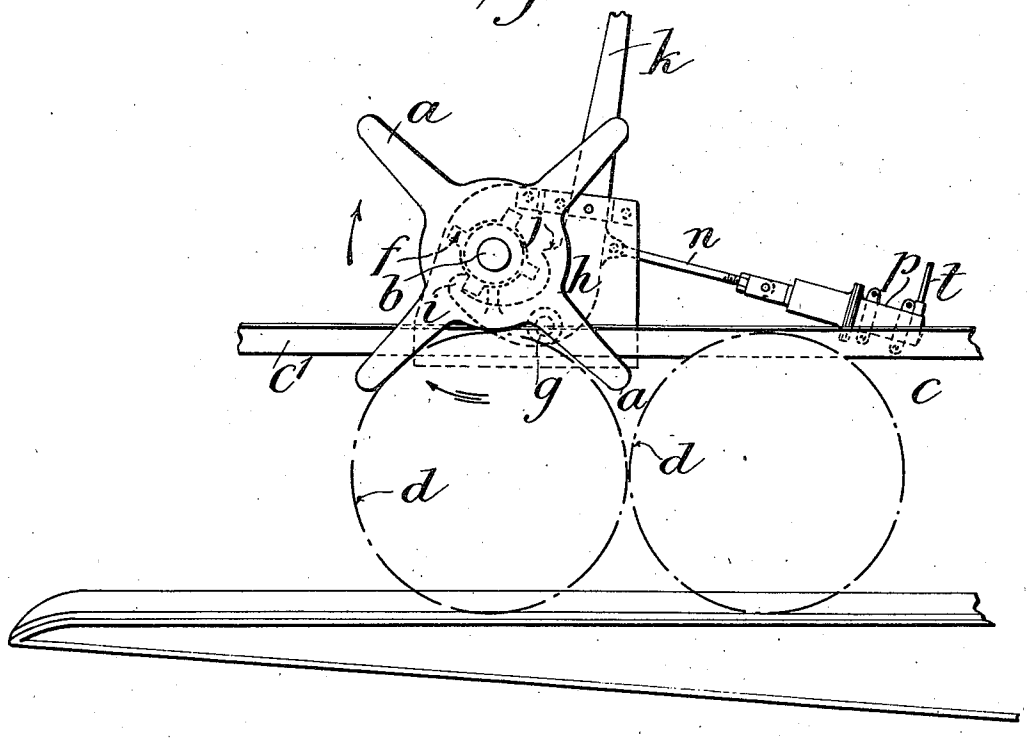
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR HOLDING AND RELEASING DEPTH CHARGES, MINES, AND THE LIKE ON BOATS OR SHIPS.

1,353,652. Specification of Letters Patent. Patented Sept. 21, 1920.

Application filed May 23, 1919. Serial No. 299,322.

To all whom it may concern:

Be it known that I, JAMES HAMPTON, a subject of the King of Great Britain and Ireland, residing at Southampton, in the county of Hants, England, have invented Improvements in or Relating to Means for Holding and Releasing Depth Charges, Mines, and the like on Boats or Ships, of which the following is a specification.

This invention has reference to improvements in means or apparatus for holding depth charges, mines and like devices (hereinafter referred to as depth charges) on boats or ships and for releasing them one at a time and allowing them to move under the action of gravity and fall into the sea, and it has for its object to provide means or apparatus for this purpose that shall be more reliable, work in a smoother and more advantageous manner and be more proof against improper handling than the apparatus heretofore employed for the purpose mentioned.

To this end, holding or releasing means or apparatus of the kind referred to constructed according to the present invention, comprises a rotary holding and releasing device adapted, in one position, to hold a depth charge in place ready to be released and in another position to release the depth charge and allow it to move under the action of gravity and drop into the sea, and controlling apparatus adapted to be operated by hand, or by mechanical or equivalent power, or in either of these ways at will, the arrangement being such that when the control apparatus is moved into one position, the holding and releasing device will move into a position to release the outer or outermost of a number of depth charges arranged one behind the other on the boat or ship and allow it to drop into the sea and arrest the next and succeeding depth charges, and upon moving the control apparatus into another position, the holding and releasing device will move into a position to hold the next succeeding depth charge in position to be released when the control apparatus is again operated. In this way the holding and releasing device is adapted to move in an intermittent or step by step manner and is positively held in its depth charge releasing and holding positions.

The holding and releasing device may conveniently be a rotary one comprising a wheel, resembling a star wheel as seen in side view, having a number of pairs of parallel spokes the angular space between any two succeeding pairs of which is such that the said two pairs of spokes can partly embrace and hold in position a depth charge of cylindrical shape. The control apparatus may conveniently be an escapement device comprising an escapement wheel connected to the rotary holding and releasing device and an escapement lever adapted to be operated in either direction either by hand power, or by hydraulic or equivalent power at will.

Holding and releasing apparatus adapted to act in the manner set forth can be constructed in various ways.

In the accompanying illustrative drawings Figure 1 shows in side elevation and Fig. 2 in cross section, one construction of holding and releasing apparatus according to the invention. Fig. 3. is a similar view to Fig. 1 showing a modified arrangement of the apparatus.

According to the example shown, the holding and releasing device comprises a pair of similar star or sprocket shaped wheels a a^1 fixed on a horizontal shaft b that is arranged to extend in a transverse direction with reference to an inclined guideway c on the boat or ship. The said wheels are adapted to support and guide a number of depth charges d arranged one behind the other, the bearings e for the shaft being carried by the opposite side walls of the guideway. c^1 are supplementary guides to keep the depth charges in place laterally. Fixed on one end of the shaft b is an escapement wheel f the teeth of which may, as shown, conveniently be of rectangular shape as seen in side view. Mounted to turn upon a pin g extending laterally from the guideway c is an escapement lever h having at one end, namely its free end, a tooth i that may, as in the example shown, be of truncated V shape as seen in side view and at its other end a square shoulder or abutment, i. To the escapement lever is connected an upwardly extending hand lever k that may work in a bracket m fixed to the upper part of the corresponding side of the guideway c. To one end of the escapement lever h (Fig. 1) or, it may be to the hand lever k (Fig. 3) is jointed one end of an operating rod n. The other end of this rod is jointed to the piston rod o of a hydraulic cylinder p be-

tween the piston r of which and one end of the cylinder and surrounding the piston rod is a coiled spring s. The other end of the cylinder is connected to a pipe t adapted by means of a valve u to be placed in connection through a pipe v with a source of fluid under pressure, conveniently water or oil, and to an exhaust pipe w.

The arrangement is such that upon moving the escapement lever h by the hand lever k, or by the hydraulic piston r in a direction to disengage the tooth i at the free end of the escapement lever h from the escapement wheel f, the rotary holding and releasing device $a\,a^1$ will be caused by the pressure of the outer or outermost depth charge d against it, to turn into a position in which the forward pair of spokes or arms of the holding device will release the said depth charge and allow it to fall into the sea and bring the next succeeding pair of spokes or arms into a position to effectively prevent the next succeeding depth charge following the first one, the holding and releasing device being then held in this position by a tooth of the escapement wheel then bearing against the square shoulder j on the escapement lever h. The escapement lever can then be moved back into its original position by means of the hand lever k, or by placing the cylinder p through its pipe t, in connection with the exhaust pipe w, whereupon the spring s will act to move back the piston r and turn the escapement lever h into its original position and permit the depth charge d to move into a position ready to be released when the escapement lever is again moved into the releasing position.

The holding and releasing device $a\,a^1$ may, as shown in Fig. 1, be mounted in the lower part of the guideway c for the depth charges, so as to work below such depth charges, or it may, as shown in Fig. 2, be arranged at the upper part of such guideway, so as to work above the depth charges, as may be desired, the hand lever k and hydraulic cylinder p and connections being arranged, as shown, to suit the particular arrangement adopted. In the latter case the piston of the hydraulic cylinder p may be connected to the hand lever k and through it, to the escapement lever h.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. For controlling the discharge of cylindrical mines and the like, the combination with an inclined way embodying a pair of separated guides of a shaft arranged transversely thereto and intermediate of their length, a pair of star wheels carried by said shaft and arranged between the guides, said star wheels being so positioned that one pair of arms of each normally engages the foremost of a series of mines on the guideway and holds it at a position intermediate of the length of the guideway, an escapement wheel upon the shaft aforesaid and arranged to one side of the guideway, an escapement lever and operating means therefor adapted with movement in one direction to release the star wheels so that they can liberate the foremost mine and obstruct the travel of the mine next in order until with a movement of the escapement lever in the opposite direction, the wheels are released again, thereby permitting the wheels to move through a further angle and the arrested mine to follow the same until the normal holding position of the mine is reached.

2. For controlling the discharge of cylindrical mines and the like, the combination with an inclined way embodying a pair of separated guides of a shaft arranged transversely thereto and intermediate of their length, a pair of star wheels carried by said shaft and arranged between the guides, said star wheels being so positioned that one pair of arms of each normally engages the foremost of a series of mines on the guideway and holds it at a position intermediate of the length of the guideway, an escapement wheel upon the shaft aforesaid and arranged to one side of the guideway, an escapement lever having an arm, adapted to be operated by hand and means for hydraulically operating the escapement lever.

3. For controlling the discharge of cylindrical mines and the like, the combination with an inclined way embodying a pair of separated guides of a shaft arranged transversely thereto and intermediate of their length, a pair of star wheels carried by said shaft and arranged between the guides, said star wheels being so positioned that one pair of arms of each normally engages the foremost of a series of mines on the guideway and holds it at a position intermediate of the length of the guideway, an escapement wheel upon the shaft aforesaid and arranged to one side of the guideway, an escapement lever and means for intermittently operating said escapement lever, said means comprising a hydraulic cylinder having at one end an inlet for pressure fluid, a piston in said cylinder connected to said escapement lever, a spring arranged between said piston and the end of the cylinder opposite to that to which pressure fluid is admitted and a valve for controlling the admission of pressure fluid to and its exhaust from said cylinder.

4. For controlling the discharge of cylindrical mines and the like, the combination with an inclined way embodying a pair of separated guides adapted to support a series of mines, a pair of separated guides arranged above the lower guideway, a shaft arranged transversely to such way and dis-

posed above the uppermost pair of guides intermediate of their length, a pair of star wheels carried by said shaft and arranged between the guides, said star wheels being so positioned that one pair of arms of each normally engages the foremost of a series of mines on the guideway and holds it at a position intermediate of the length of the guideway, an escapement wheel upon the shaft aforesaid and arranged to one side of the guideway, an escapement lever and operating means therefor adapted with movement in one direction to release the star wheels so that they can liberate the foremost mine and obstruct the travel of the mine in order until with a movement of the escapement lever in the opposite direction, the wheels are released again, thereby preventing the wheels to move through a farther angle and the arrested mine to follow the same until the normal holding position of the mine is reached.

Signed at American consulate, Southampton, England, this twenty-fifth day of April, 1919.

JAMES HAMPTON.

Witnesses:
HARVEY J. BAVERSTOCK,
CHARLES PACK.