J. F. & J. B. NEWSOM.

PROTECTIVE CAISSON FOR SHIPS.

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1,270,544.

Patented June 25, 1918.

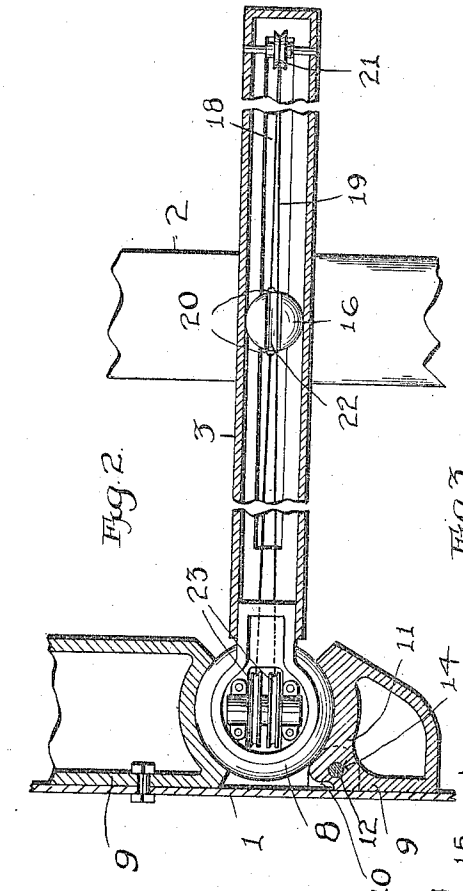


Fig 2.

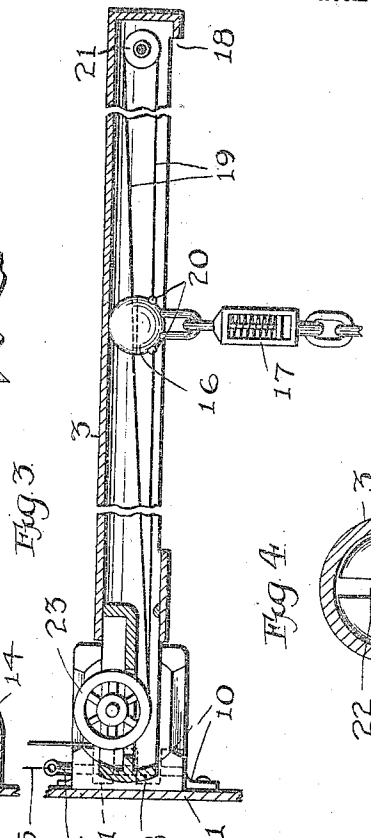


Fig 3.

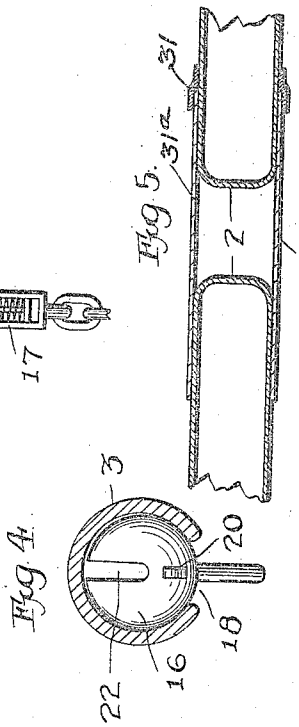


Fig 4.

Fig 5.

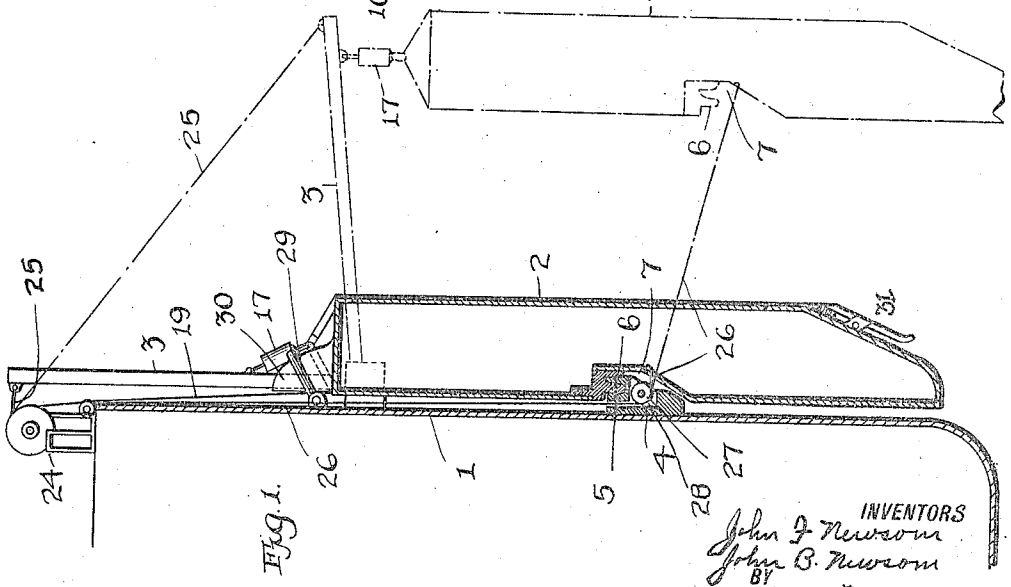


Fig 1.

INVENTORS

John F. Newsom

John B. Newsom

BY

Messmer & Austin

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN F. NEWSOM AND JOHN B. NEWSOM, OF PALO ALTO, CALIFORNIA.

PROTECTIVE CAISSON FOR SHIPS.

1,270,544. Specification of Letters Patent. Patented June 25, 1918.

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To all whom it may concern:

Be it known that we, JOHN F. NEWSOM, a citizen of the United States, and resident of Palo Alto, county of Santa Clara, State of California, and JOHN B. NEWSOM, a citizen of the United States, and resident of Palo Alto, county of Santa Clara, and State of California, have invented certain new and useful Improvements in Protective Caissons for Ships, of which the following is a specification.

Our invention relates broadly to improved means for manipulating caissons or other protective devices that may be suspended from the side of a ship as a protection against torpedo attacks.

One of the primary objects of the invention is to provide a supporting device that is capable of limited movement in more than one direction to accommodate movement of the caisson due to the action of the waves or the progress of the vessel and to minimize or eliminate the strains arising from wave shock.

A further object of the invention is to provide means whereby the caisson, together with the supporting device, may be readily unshipped and cast into the sea in case this should become necessary to prevent fouling of the vessel or in order to cast away a damaged caisson or for any other cause.

According to this invention, the protective caisson may be of any desired construction, but preferably we employ the caisson shown in and more fully described in copending application of John F. Newsom, Serial #178,638. The caissons are held at a distance from the ship while the vessel is in the danger zone and are nested and supported adjacent the hull while the vessel is outside of the danger zone. The positioning of the caisson or other protecting device is accomplished by means of a movable arm provided with a carrier that is attached to the caisson and is movable on or in the arm. The arm is secured to the ship by means comprising a universal joint that permits the arm to swing in all directions; this movement, however, being limited and controlled by suitable tackle that is operated from the deck of the vessel. The universal connection for the arm, such as a ball and socket joint, is so constructed and arranged that the arm itself with the attached caisson may be cast adrift, whenever it becomes necessary, by cutting the tackle which normally limits the movement of the arm and by actuating a suitable releasing device which is operated from the deck of the ship.

Various other objects and advantages of our invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying our invention, and our invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Figure 1 is a sectional view of a ship's hull and caisson in its nested position, the protective position of the caisson being indicated by dotted lines.

Fig. 2 is a plan view in section of the supporting arm.

Fig. 3 is a side elevation partly in section of the arm.

Fig. 4 is a detail view showing a cross section of the arm; and

Fig. 5 is a detailed view showing means for preventing eddy currents between adjacent caisson.

As shown in the accompanying drawings, the hull 1 of the ship is protected by a plurality of caissons 2, which may be suspended from arms 3 at a suitable distance from the ship when it is in the danger zone and at other times are nested adjacent the hull. In its nested position the caisson rests upon a supporting member such as a beam or girder 4 that is rigidly secured to the hull of the vessel and is provided with a groove or trough 5. The caisson is formed with a lip or projection 6 adapted to seat in this groove and support the caisson. Preferably a groove is also formed on the caisson to receive the edge of the trough thus forming an interlock between the engaging parts. A suitable recess 7 is provided in the caisson to receive the supporting member and which permits it to seat closely to the hull. The caissons preferably are formed to receive and carry cargo but may be mere plates of metal or of wood built up into any desired form.

The arms 3 which support the caissons are preferably tubular or circular in section with a longitudinal slot at the bottom. The arms are secured to a hollow spherical head 8, forming one member of a universal joint of

the ball and socket type. The other member or the socket is formed by brackets 9 having curved bearing surfaces secured to the sides of the hull.

One of these brackets is made in two parts that are detachably secured together so that one part may drop away and release the arm 3 from the bearing. The part 10 is rigidly secured to the hull of the ship and the other part 11 is connected with it by a knuckle joint and is held in place by a bolt 12 that passes through an eye 14 provided in the interlocking sections of the joint. The pin may be removed by a rod or cable 15 operated from the deck of the vessel. The caisson is fastened to the arm by means that will permit it to be readily moved inward and outward with respect to the hull of the ship. In the present case the carriage is a spherical ball 16 sliding inside of and on the bottom of the arm, although it will be obvious other sliding devices may be used. The caisson is attached directly to the carriage by a spring shackle 17 through the slot 18 provided in the bottom of the arm. The carriage with its depending caisson is moved lengthwise of the arm by a rope or cable 19 attached to the ears or lugs 20 of the ball. One end of the cable 19 passes over a sheave 21 mounted near the outer end of the arm and through a groove or slot 22 formed in the ball 16. Both ends or sections of the cable pass over guide sheaves or ore pulleys 23 mounted in the hollow head and thence to a winch 24 (indicated diagrammatically) on the deck of the ship.

Each caisson in its defensive position is supported by two of the arms 3, which are attached to the caisson at or near its ends. The positions of the arms and caisson are controlled from the deck by suitable tackle. A cable 25 is attached to the outer end of the arm whereby it may be raised and lowered. A cable 26 is attached to the lower part of the caisson and is reeved over a sheave 27 mounted on the hull preferably in a recess 28 provided in the supporting beam 4 whereby the caisson may be drawn toward the ship. Both of these cables may be operated through the winch 24 or in any other suitable means.

In order to prevent eddy currents and diminish the resistance of the water to the passage of the caissons the rear end of each is preferably provided with a suitable clamp 31 to hold a sheet of flexible material 31ª of such length that it will overlap a short distance the front end of the next succeeding caisson. Rubber or a stout fabric is suitable but various other materials may be used.

In its nested position the caisson is supported on the rail or beam 4 and the arms 3 are in a vertical or practically vertical position adjacent the sides of the ship where they can be locked securely in place either through the cable 25 or other means. The caisson is held against outward or upward displacement by means such as a bail 29 that will engage over a projection or lug 30 provided on the top of the caisson. When it is desired to move the caisson from its nested into its operative or protective position, it is raised by the cable 19 to disengage it from the trough 5 on the supporting member and the arm 3 is lowered into its operative and approximately horizontal position. The carriage is then paid out on the arm carrying with it the caisson to which it is attached.

By the construction above described, we have provided means for supporting the caisson in a manner that will allow sufficient flexibility to absorb wave shock and permit automatic adjustment to wave movement without impairing the essential rigidity and strength of the supporting means. The ball and socket joint not only allows the supporting arm to swing freely in all directions but the ball and socket joint also provides a broad bearing surface to take up the end thrust of the arm and distribute the same over a relatively large surface area of the hull. The movable carriage to which the caisson is attached can be moved back and forth on the arm regardless of the position which the arm may occupy with reference to the ship's side. This construction also permits the entire supporting device with the attached caisson to be unshipped and dropped into the sea, in case of accident or wreckage. When in its nested position the caisson is so firmly secured to the hull that it becomes almost an integral part of the ship and interferes very little if at all with the speed or maneuvering of the ship or with docking it when in port.

While we have shown and described, and have pointed out in the annexed claims, certain novel features of our invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described our invention, we claim:

1. The combination of a protective device for a ship, an arm pivoted to the ship by a ball and socket joint, a movable member on the arm attached to the protective device, and means for controlling the position of the movable member on the arm, comprising a guide sheave mounted in the ball member of said socket joint.

2. The combination of a protective device

for a ship, a hollow arm pivoted to the ship, a movable member on the arm attached to the protective device, and means for controlling the position of said member on the arm comprising guide sheaves mounted within the hollow arm.

3. The combination of a protective device for a ship, an arm provided with a hollow spherical head, a socket for the head secured to the side of the ship, a movable member on the arm attached to the protective device, and means for controlling the position of the movable member on the arm comprising a guide sheave mounted in said head.

4. The combination of a protective device for a ship, a hollow arm mounted on the side of the ship by a universal connection, a movable member within said arm, means for moving said member lengthwise of the arm and resilient means for securing the protective device to said movable member.

5. The combination of a protective device for a ship, an arm mounted in a detachable bearing on the side of the ship to swing freely about the same, means securing the protective device to the arm and means for releasing the bearing to cast off the arm and caisson.

6. The combination of a protective device for a ship, an arm mounted on the side of the ship by a universal connection, said arm being tubular in section and provided with a slot on its bottom, a movable carriage in said arm, means for moving said carriage and means for supporting the protective device from said carriage.

7. The combination of a protective device for a ship, an arm mounted on the side of the ship by a ball and socket joint, a portion of said socket being detachably secured to the ship, a movable carriage on said arm, means for moving said carriage, a clevis secured to the carriage adapted to support the protective device and means for releasing the detachable portion of the socket.

8. The combination of a protective device for a ship, a movable arm having a hollow spherical head, a pulley mounted in said head, a carriage movable lengthwise of the arm, means for attaching the protective device to said carriage, and a cable secured to the carriage passing over said pulley to actuate the carriage.

9. The combination of a protective device for a ship, an arm mounted on the ship, means on said arm attached to the protective device for moving same toward or away from the hull of the ship, a supporting member secured to the hull and means on the protective device intermediate its ends adapted to engage said supporting member.

10. The combination of a protective device for a ship having a recess formed therein, an arm pivoted to a ship, means on said arm attached to the protective device for moving same toward or away from the hull of the ship, a supporting member secured to the hull of the ship below the arm and means mounted in the recess on the protective device to interlock with said supporting member.

11. The combination of a protective caisson for a ship, an arm pivoted to the ship, means on said arm for moving said caisson toward and away from the hull of the ship, a supporting member secured to the hull provided with a groove, and a tongue on the caisson adapted to seat in said groove and interlock therewith.

12. The combination of a protective caisson for a ship, an arm pivoted to said ship, means on said arm attached to the caisson for moving same toward and away from the ship and a flexible device secured to the caisson near the edge thereof and projecting beyond the same to prevent eddy currents substantially as described.

13. The combination of a protective caisson for a ship, means for moving said caisson toward and away from the ship, a supporting member for the caisson rigidly secured to the hull of the ship and adapted to support the caisson in one position thereof and means for holding the caisson against upward and outward displacement with respect to said supporting member.

14. The combination of a protective shield for a ship, a hollow arm mounted on said ship by a ball and socket joint, a movable carriage on said arm attached to the shield, pulleys mounted adjacent both ends of said arm and a cable passing over said pulleys and attached to said carriage to move the same in all positions of the arm.

This specification signed this 17th day of September, 1917.

JOHN F. NEWSOM.
JOHN B. NEWSOM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."