W. H. BAKER.

MINE OR TORPEDO GUARD FOR VESSELS.

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1,200,069.

Patented Oct. 3, 1916

FIG. 1.

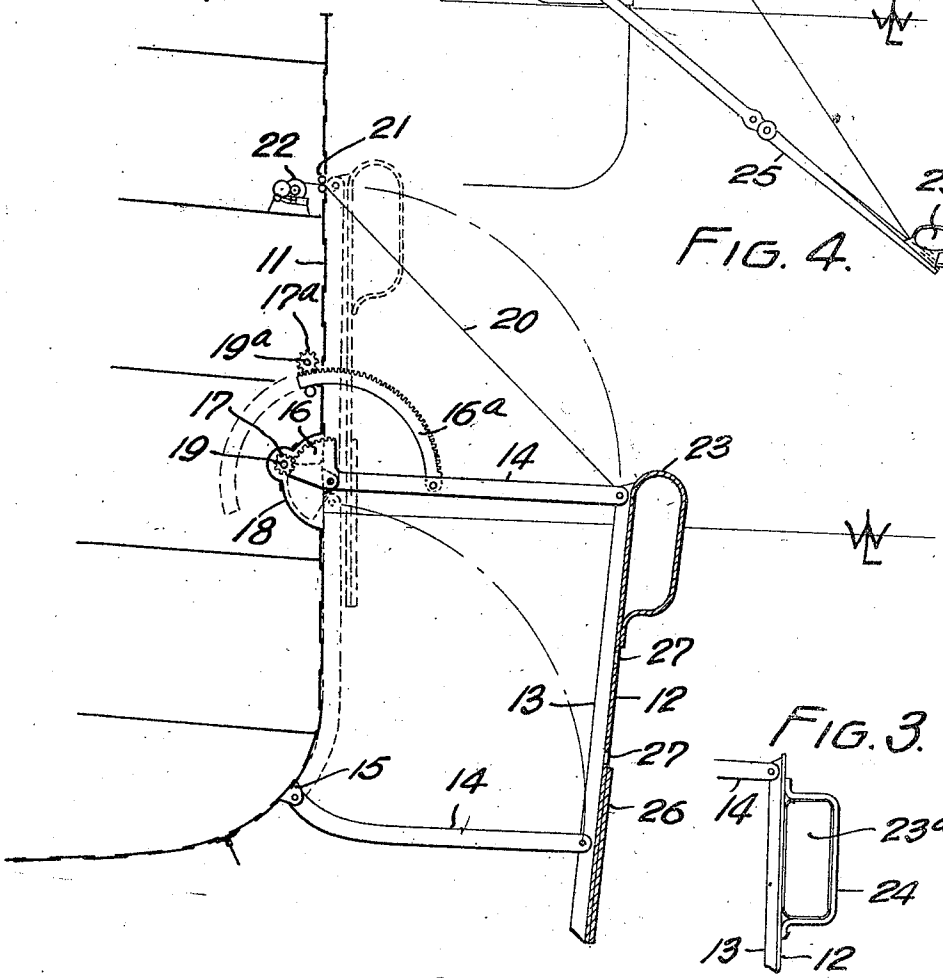


FIG. 4.

FIG. 3.

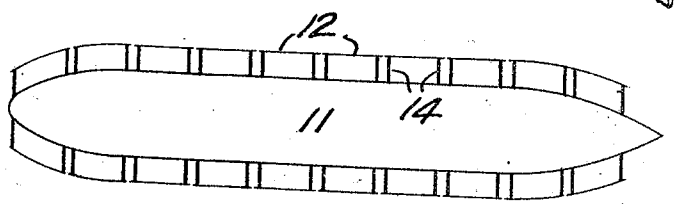


FIG. 2.

Witnesses

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MINE OR TORPEDO GUARD FOR VESSELS.

1,200,069. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed June 10, 1915. Serial No. 33,295.

To all whom it may concern:

Be it known that I, WILLIAM H. BAKER, a citizen of the United States of America, and resident of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Mine or Torpedo Guards for Vessels, of which the following is a full, clear, and exact description.

This invention relates to improvements in mine or torpedo guards for vessels, and the object of the invention is to provide a simple, inexpensive and practical device which may be mounted on a vessel, and which will form a barrier around the hull to guard the same from torpedoes or drifting mines.

A further object is to provide a device which may be raised to inoperative position out of the water and close against the vessel's sides when not in use.

The device consists essentially of a series of plates adjustably mounted on the vessel and adapted to be positioned in the water partially or entirely submerged, and forming a continuous barrier practically all around a vessel. Suitable means are provided for supporting and shifting the barrier plates and for relieving the vessel's hull of stresses incident to wave action on the plates. Various devices such as torpedo nets, sweeps and the like, have been devised for attachment to war and other vessels as a guard against torpedoes and mines. Of these devices, the most common and practically the only one in use, is the torpedo net. The disadvantage of the net is that it merely catches and entangles the torpedo so that the same is not exploded, but may subsequently be brought against the vessel's sides and exploded by wave action or other forces. It may also happen that a torpedo will pass entirely through the net.

In the present invention, plates of sufficient thickness to insure the explosion of a torpedo or mine are positioned a suitable distance from the vessel's side and supported by arms pivotally mounted on the vessel's hull. These plates when lowered are entirely or partially submerged, and unite to form a barrier practically all around the vessel, extending from the water line a suitable distance downward to guard the submerged portion of the hull. These plates are preferably provided with air chambers of sufficient displacement to float the plates, so that when the latter are submerged, the only stress on the arms and hull will be that necessary to maintain the plates in position. When not in use, the plates may be raised close against the vessel's hull, to serve as additional armor plate.

In the drawings which illustrate the invention:—Figure 1 is a partial diagrammatic cross section of a vessel showing the application of the device thereto. Fig. 2 is a diagrammatic plan, showing the arrangement of plates. Fig. 3 is a fragmentary detail showing a slightly alternative form of air chamber. Fig. 4 shows the application of the device to a mine sweep.

Referring more particularly to the drawings, 11 designates the hull of a vessel, and 12 a series of plates of suitable strength and dimension, which may if desired be provided with stiffening ribs 13. This plate is connected to the hull by links or arms 14 pivotally connected to the plate and to brackets 15 carried by the hull, the dimensions of the arms and the disposition of the pivotal points being such that the plate may be swung to the position shown in dotted lines, close against the hull and substantially out of water. The upper arm 14, which is preferably located above the water line, passes into the hull and is provided with a toothed quadrant 16 meshing with a pinion 17 to oscillate the arm in a vertical plane, and thus raise or lower the plate. To avoid the necessity of making a water tight joint where the arm passes into the hull, a pocket 18 may be provided in which the quadrant 16 can sling. This arrangement will provide for an absolutely water tight construction, as it will be very easy to maintain water tight packing around the shaft 19 carrying the pinion 17 where it passes through the walls of the pocket. A cable 20 may be attached to the free end of the upper arm 14 and passed through suitable pulleys 21 to a winding device 22 located in the hull. This device may be used of itself to raise and lower the plate 12, or may act in conjunction with the parts 16 and 17, or the parts 16 and 17 may be used alone to raise and lower the plates.

The upper edge of each plate is turned over outwardly upon itself to form an air chamber 23 having a sufficient displacement to support the plates 12 in the water and thus relieve the arms 14 and hull of the weight of the plate when the same is in its

lowered position, the arms serving merely to space the plate away from the hull. Instead of forming the air chamber integral with the plate, the chamber may be separately formed, as indicated at 23ª in Fig. 3, and secured to the plate by straps 24. The idea of the buoyancy chamber is not limited to the particular form of guard shown, but may be applied to any suitable sweeping device, such as that indicated at 25 in Fig. 4, and mounted at the bow of a vessel for the purpose of engaging mines or the like in the path of a vessel.

As shown in the drawings, the plate extends some distance below the point of attachment of the lower arm 14, so as to extend a considerable distance down into the water and guard the bottom of the vessel against a torpedo traveling upwardly in an inclined path. It may happen that this downward extension of the plate will not lift entirely clear of the water when the plate is raised to inoperative position, as shown in Fig. 1. This feature depends largely upon the size of the vessel. The lower edges of the plates may be reinforced as shown at 26. Such reinforcement would have the effect of forming an armor plate along the water line when the plates were raised to inoperative position.

It is obvious that the precise form and arrangement of the plates and the method of supporting the same may be considerably varied, as required, for different types of vessels, so that it must be understood that this invention contemplates all such changes and is not limited to the precise form shown in the drawings and described.

The device when submerged is substantially in equilibrium, so that it will rise and fall easily in the water with the roll of the vessel, without throwing any great stress on the hull. If, on the other hand, the device is slightly buoyant, and the arms are left free to oscillate, the plates will remain substantially fixed with respect to the water level, while the vessel will roll between them. If, however, the plates are fixed with respect to the vessel, they will have a considerable steadying effect. These plates when submerged will naturally reduce the speed of the moving vessel to some extent, but the amount of reduction in speed need not be excessive, as the plates will move edgewise in the water and offer comparatively little resistance. The air chambers 23 and arms 14 will naturally be formed to move with a minimum of resistance through the water.

Any suitable means may be provided for controlling the raising and lowering of the plates, so that they may be operated singly or in groups of any desired number, or all at once. When in their lowered position, the plates form an effective barrier around the vessel, and if struck by a torpedo form sufficient resistance to explode the torpedo. It is obvious that the plate struck and possibly adjoining plates will be destroyed, but the explosion will have been caused at sufficient distance to prevent a rupture of the hull. Plates thus destroyed may be readily replaced.

In Fig. 1, a toothed rack 16ª is shown pivoted to the upper arm 14, and passing into the vessel some distance above the water line, where it meshes with a pinion 17ª carried on a shaft 19ª. This rack may be used either alone to replace the quadrant 16 or as an auxiliary to the quadrant for the same purpose as the cable 20. Apertures 27 may be formed in the plate 13 in position to register with the port holes when the plate is raised against the vessel's side. These apertures will naturally be so small that they will not permit the passage of a torpedo or mine when the plate is in operative position.

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

1. In a device of the character described, a protective member adjustably secured to a vessel, and an armored float attached to said guard and maintaining the same approximately in equilibrium while in the water.

2. In a device of the character described, the combination with a vessel, of a series of apertured plates, links pivotally connected to the vessel and to the plates, rack and pinion mechanism connected to the links for raising and lowering the plates, means independent of said rack and pinion mechanism for supporting the plates in lowered position, the apertures of said plates being positioned to register with port holes of the vessel during raised position of the racks.

In witness whereof, I have hereunto set my hand, in the presence of two witnesses.

WILLIAM H. BAKER.

Witnesses:

S. R. W. ALLEN,

G. M. MORELAND.