May 9, 1933. E. L. CHAMPNESS 1,907,499

ABOVE-WATER TORPEDO ARMAMENT FOR SURFACE WARSHIPS

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FIG. 1.

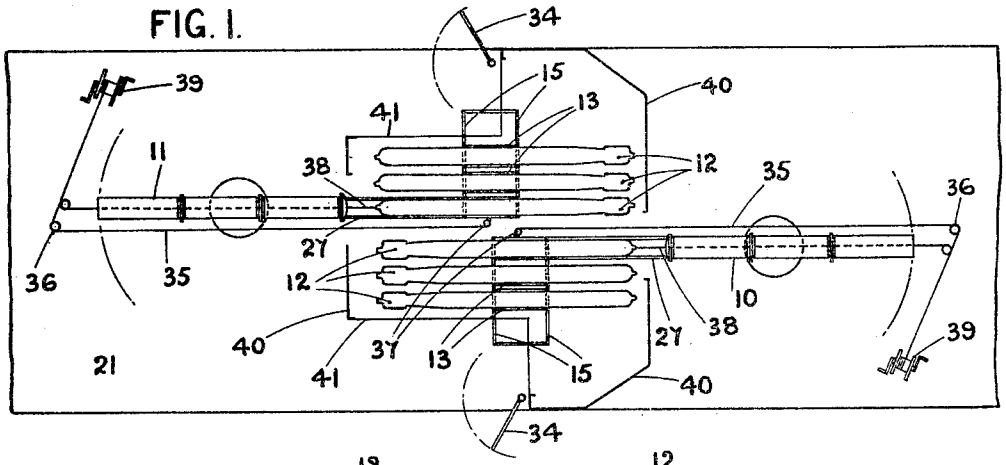

FIG. 2.

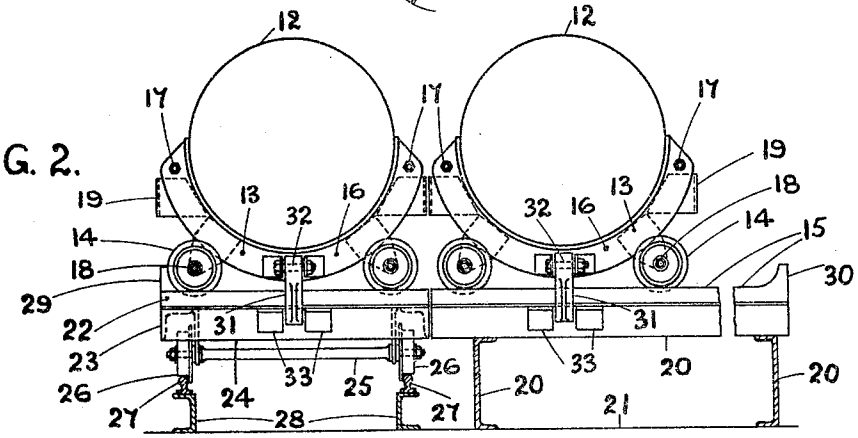

FIG. 3.

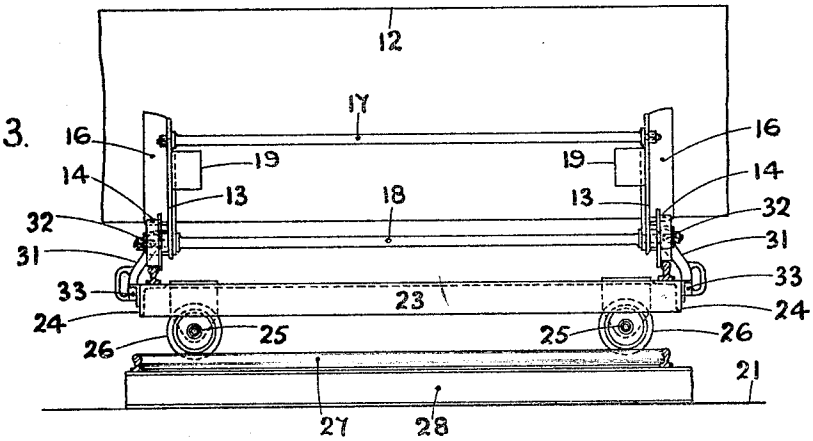

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FIG. 4.

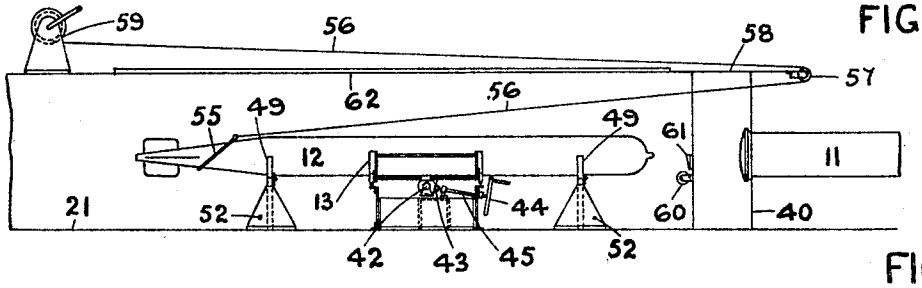


FIG. 5.

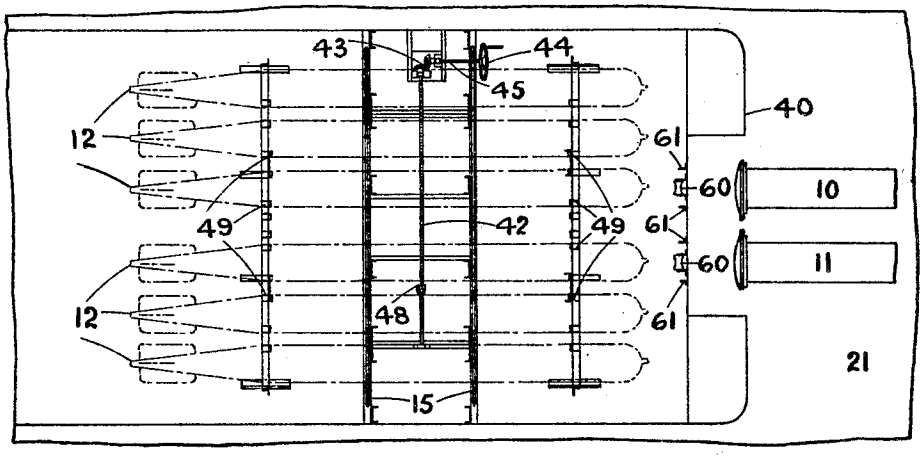


FIG. 6.

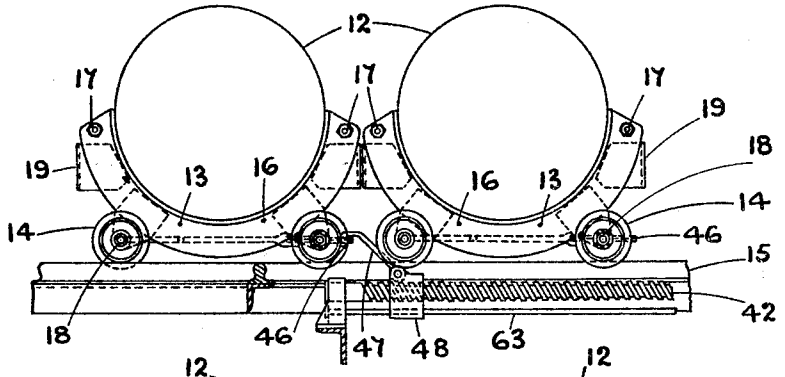


FIG. 7.

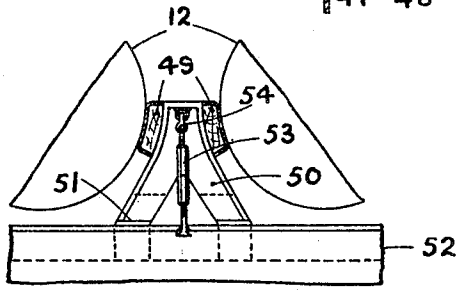
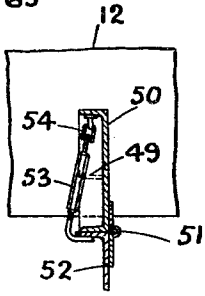


FIG. 8.



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Patented May 9, 1933

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UNITED STATES PATENT OFFICE

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ABOVE-WATER TORPEDO ARMAMENT FOR SURFACE WARSHIPS

Application filed November 18, 1932, Serial No. 643,241, and in Great Britain July 21, 1931.

This invention relates to above-water torpedo armament for light cruisers, destroyers, torpedo boats and other surface warships.

The primary object of the present invention is to provide an improved arrangement of torpedo armament which, while being equally effective, will be simpler, lighter and less expensive than existing arrangements.

Another object of this invention is to provide improved means for housing torpedoes and for loading them into torpedo tubes.

With these and other objects in view, as will appear as the description proceeds, my invention consists in the novel arrangements and constructions hereinafter fully described and as set out in the appended claims.

In the accompanying drawings in which similar reference numerals denote like and corresponding parts throughout the several views,

Fig. 1 is a plan of a portion of the deck of a destroyer provided with one arrangement of torpedo armament in accordance therewith;

Figure 2 is a part enlarged 'thwartship elevation illustrating my improved means for housing spare torpedoes; and

Figure 3 is a fore-and-aft elevation thereof.

Figure 4 is a fore-and-aft elevation of a portion of the deck of a torpedo destroyer illustrating an alternative arrangement of torpedo armament in accordance with my invention;

Figure 5 is a plan thereof, the carrier bogies hereinafter described being omitted from this view for clearness;

Figure 6 is a part enlarged 'thwartship elevation thereof; and

Figures 7 and 8 are a 'thwartship elevation and a fore-and-aft elevation respectively of one of the collapsible chocks for supporting the spare torpedoes.

In Figs. 1, 4 and 5, the forward end of the vessel is towards the right.

Referring more particularly to the specific examples illustrated in the accompanying drawings, which are intended for application to a destroyer, the torpedo armament of which has hitherto comprised two sets of above-water type quadruple revolving tubes carrying eight torpedoes, I propose to reduce the number of tubes to two sets of single tubes or a single set of double tubes while providing the same number of torpedoes. The tubes are indicated at 10, 11 and are of existing pattern. They may be of single revolving deck type (Fig. 1) or of twin revolving deck type (Figs. 4 and 5). They are mounted so as to be capable of being trained on either beam in wellknown manner. Each tube houses one torpedo, and the three spare torpedoes (indicated at 12) for each tube are each supported by a carrier bogie 13. The carrier bogies are mounted on wheels 14 running on 'thwartship rails 15, and are of light construction and of suitable length. As shown in Figs. 2, 3 and 6, each carrier bogie comprises a pair of semi-circular angle bars 16 connected by fore-and-aft rods 17 and by stays 18 on the ends of which are mounted the wheels. 14. Buffers 19 are provided on the sides of the bogies.

In the arrangement illustrated in Figs. 1 to 3, the 'thwartship rails 15 are mounted on light framing 20 on the deck 21 and are continued by rails 22 mounted on the frames 23 of a pair of loading bogies 24 (Figs. 2 and 3), there being one loading bogie for each tube 10, 11. Each loading bogie is provided with axles 25 fitted with wheels 26 running on fore-and-aft rails 27 mounted on channel frames 28 on the deck. The inboard ends of the rails 22 on the loading bogies are turned up as shown at 29 (Fig. 2) to form stops, and the outboard ends of the rails 15 are similarly turned up as shown at 30. Semi-automatic stops 31 hinged at 32 to the angle bars 16 of the carrier bogies are provided to engage between pairs of projections 33 on the framing 20 on the deck and the frames 23 of the loading bogies and serve to temporarily anchor the carrier bogies against 'thwartship movement. The carrier bogies are interchangeable end for end and side for side, and the tops of their semi-circular angle bars 16 act as guides to

ensure that the torpedoes enter the tube in correct axial position.

The three carrier bogies 13 of the forward tube 10 are disposed on the starboard side of the deck 21, and the three carrier bogies for the after tube are mounted on the port side as shown in Fig. 1. A torpedo-embarking davit of convenient known type is provided at each side as indicated at 34. The carrier bogies 13 may be hauled athwartship by a wire 35 led around pedestal fairleads 36, 37 on the deck, and the loading bogies 24 may be hauled by a wire 38, said wires 35 and 38 being led to a loading winch 39. The wire 38 is suitably secured to an eye in the torpedo head. The empty carrier bogies are comparatively light and can be readily removed from the 'thwartship rails by hand. The arrangement above described allows of the spare torpedoes 12 being rapidly fed to the tubes 10, 11 and of the rapid reloading of the tubes. The method of re-loading is positive, and is not hampered by the motion of the vessel in a seaway.

Light steel screens 40 are provided on the deck as indicated in Fig. 1 to protect the spare torpedoes 12 from the weather and provide a covered working space in which the usual overhead gear for hauling the warheads for the torpedoes may be housed. Removable canvas screens 41 may be provided to normally close spaces which are open during working. The space enclosed by the steel screens 40 may be roofed in, and the deckhouse so formed strengthened and utilized for the support of a search-light and light guns, for an emergency steering position, or otherwise suitably as may be desirable.

In the alternative arrangement illustrated in Figs. 4 to 8, instead of two sets of single tubes, I provide a single set of revolving twin tubes 10, 11 at the forward end of the screen 40, and I adapt the carrier bogies 13 to be travelled athwartship on the rails 15 by a threaded shaft 42 revolved by bevel gearing 43 actuated by a hand-wheel 44 on a shaft 45. The shafts 42 and 45 are supported in suitable bearings on the deck 21, and one stay 18 of each carrier bogie is provided as shown in Fig. 6 with a central eye 46 adapted to be engaged by a hook 47 hinged to a nut 48 on the threaded shaft 42, a guide rod 63 preventing rotation of the nut when it is engaged with the eye so that, when the shaft 42 is revolved by the handwheel 44, the nut and its hook are travelled athwartship and the carrier bogie to which the hook is temporarily attached is drawn along on the rails 15.

The heads and tails of the spare torpedoes 12 on the carrier bogies 13 are further supported against movement in a seaway by collapsible wooden chocks 49 on inverted Y-brackets 50 which are hinged at 51, as shown in Figs. 7 and 8, to upstanding rails 52 on the deck 21. Normally the brackets 50 are held upright by adjustable shackle hooks 53 pivotally attached at 54 thereto and adapted to engage the flanges of the rigid rails 52 which support the chocks. Chocks are provided both near the heads and the tails of the spare torpedoes, the tail chocks falling, when their hooks are released, immediately the torpedo is moved forwards.

In this arrangement, the loading bogies hereinbefore described are dispensed with, and, for loading the spare torpedoes 12 into the tubes 10, 11, I provide a strop 55 adapted to be attached around the tail of the torpedo in line with the tube 10 or 11 as shown in Fig. 4, said strop being attached to a wire 56 passed over a guiding pulley 57 on the forward edge of the platform 58 under which the spare torpedoes are housed and carried aft to a hand winch 59 on said platform. It will be seen that, by winding in said wire the torpedo to which the strop 55 is attached can be drawn forward and loaded into the tube 10 or 11. The weight of the torpedo during its forward movement is taken by its carrier bogie 13 and by one of a pair of rollers 60 in line with the tubes. Guides 61 on each side of said rollers ensure that a side-lug on the torpedo enters the tube in the correct axial position.

The torpedoes may be embarked onto the carrier bogies 13 by a single derrick through hatches 62 in the top 58 of the deckhouse.

It will now be seen that the arrangements herein described and illustrated provide torpedo armaments which are at least as effective as the armaments hitherto fitted and are considerably less expensive both in first cost and in upkeep. My improved arrangements are of simple and light construction, and the consequent saving in weight increases the speed of the vessel with the same power and moreover improves the vessel's stability due to reduction of top weight. Embarkation, loading, running-back and parting of the torpedoes are readily accomplished, and my improved arrangements occupy less space than the hitherto customary arrangements of similar armament.

It will be clear that changes may be made in the construction and arrangement of the various details of my invention without departing from the essential features and purposes thereof, and it is my intention to cover by the appended claims any modified arrangements and mechanical equivalents which may be said to fall fairly within their scope.

What I claim and desire to secure by Letters Patent is:—

1. In above-water torpedo armament for surface warships, the combination of a pair of torpedo tubes axially offset from each

other, a number of carriers each adapted to carry a spare torpedo, means for successively travelling said carriers into axial alignment with said one or the other of said tubes, and means for moving each of said torpedoes toward a tube, said means including stationary means located in axial alignment with each tube and between the pair of tubes.

2. In above-water torpedo armament for surface warships, combination of a pair of torpedo tubes axially offset from each other, a number of wheeled carrier bogies each adapted to carry a spare torpedo, rails running athwart the deck of the ship, means for successively travelling said carrier bogies on said rails into axial alignment with one or the other of said torpedo tubes, means for moving each of said torpedoes toward a tube, said means including stationary means located in axial alignment with each tube and between the pair of tubes.

3. In above-water torpedo armament for surface warships, the combination of a torpedo tube, a number of wheeled carrier bogies each adapted to carry a spare torpedo, rails running athwart the deck of the ship, means for successively travelling said carrier bogies on said rails into axial alignment with said torpedo tubes comprising a threaded shaft arranged athwartship, bearings for said shaft on the deck, a nut on said shaft, detachable means for temporarily connecting said carrier bogies to said nut, means for revolving said threaded shaft, and means for transferring the spare torpedoes from said carrier bogies into said tube.

4. In above-water torpedo armament for surface warships, the combination of a torpedo tube, a number of wheeled carrier bogies each adapted to carry a spare torpedo, rails running athwart the deck of the ship, means for successively travelling said carrier bogies on said rails into axial alignment with said torpedo tube comprising a threaded shaft arranged athwartship, bearings for said shaft on the deck, a nut on said shaft, detachable means for temporarily connecting said carrier bogies to said nut, means for revolving said threaded shaft, collapsible chocks for supporting the heads and tails of the spare torpedoes carried by the carrier bogies, brackets for supporting said chocks from the deck, and means for transferring the spare torpedoes from said carrier bogies into said tube.

5. In above-water torpedo armament for surface warships, the combination of a torpedo tube, a number of wheeled carrier bogies each adapted to carry a spare torpedo, rails running athwart the deck of the ship, means for successively travelling said carrier bogies on said rails into axial alignment with said torpedo tube comprising a threaded shaft arranged athwartship, bearings for said shaft on the deck, a nut on said shaft, detachable means for temporarily connecting said carrier bogies to said nut, means for revolving said threaded shaft, collapsible chocks for supporting the heads and tails of the spare torpedoes carried by the carrier bogies, brackets for supporting said chocks from the deck, and means for transferring the spare torpedoes from said carrier bogies into said tube comprising a strop adapted to be attached around the tail of the spare torpedo on the carrier bogie in alignment with the tube, a flexible connection attached to said strop, guides for said connection, guides for the torpedo, and a winch for winding-in said flexible connection.

6. In above-water torpedo armament for surface warships, the combination of a pair of torpedo tubes axially offset from each other, a number of wheeled carrier bogies each adapted to carry a spare torpedo, rails running athwart the deck of the ship, rails running fore-and-aft in line with each torpedo tube, a wheeled loading bogie on said fore-and-aft rails, rails on said loading bogie adapted to align with the 'thwartship rails on which the carrier bogies run, means for successively travelling said carrier bogies onto said loading bogie, means for temporarily locking said carrier bogies thereon, and means for travelling said loading bogie on its rails towards the torpedo tube to transfer the spare torpedoes from said carrier bogies to said tube.

In testimony whereof, I affix my signature.

EDWARD LESLIE CHAMPNESS.