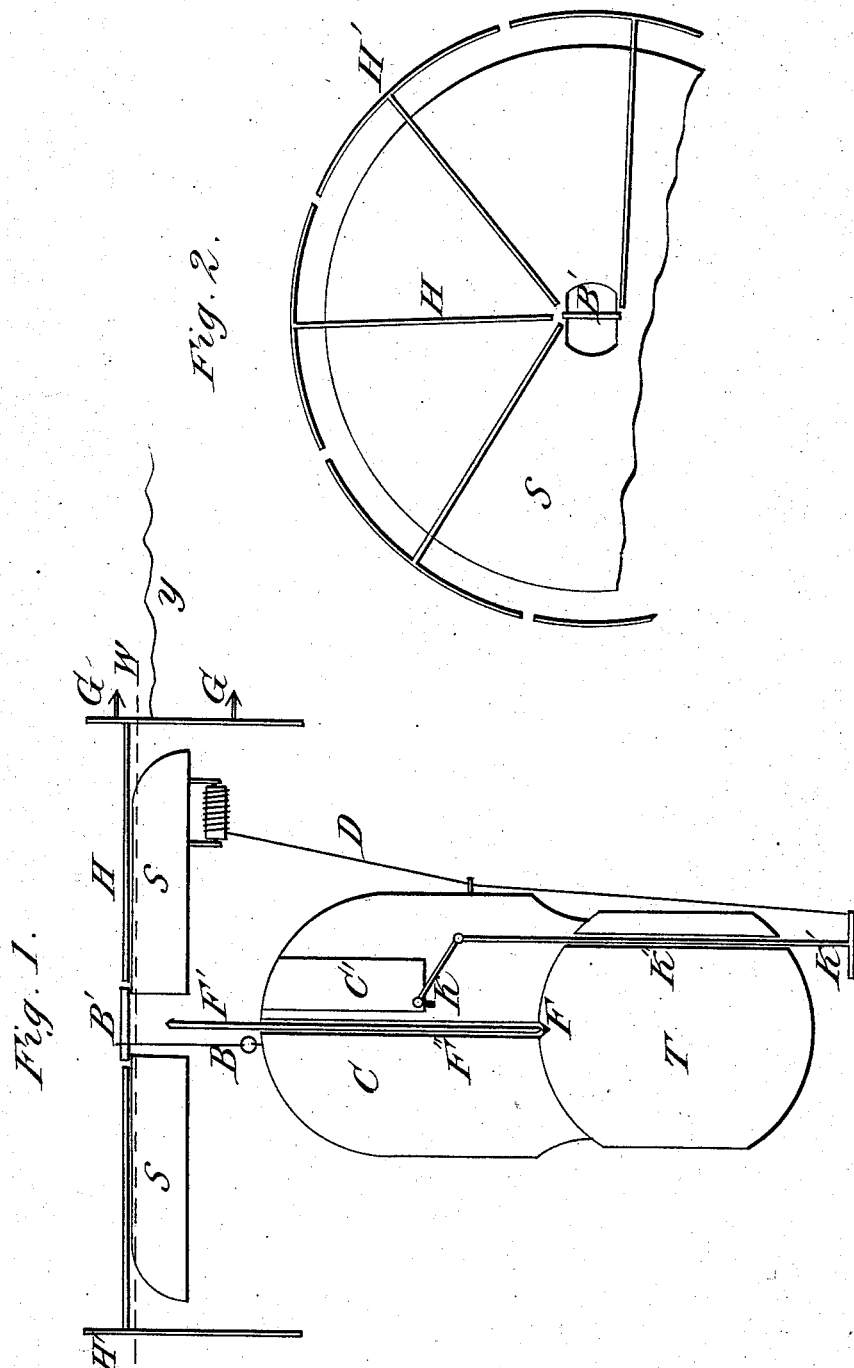


H. F. KNAPP.  
Marine-Torpedo.

No. 217,011.

Patented July 1, 1879.



Attest:  
S. Frank Crockett,  
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# UNITED STATES PATENT OFFICE

HENRY F. KNAPP, OF NEW YORK, N. Y.

## IMPROVEMENT IN MARINE TORPEDOES.

Specification forming part of Letters Patent No. **217,011**, dated July 1, 1879; application filed April 6, 1878.

### *To all whom it may concern:*

Be it known that I, HENRY F. KNAPP, of the city, county, and State of New York, have invented a certain new and useful Improvement in Offensive Automatic Torpedoes, of which the following is a specification.

This torpedo is designed for passing under the guard-netting and booms encircling a warship, and exploding beneath her bottom, and thereby render futile any of the present modes or means for protecting a vessel from torpedoes. This object is accomplished by the explosive torpedo sinking beneath the water-surface as soon as the apparatus touches the netting, &c., and as soon as it has passed under the netting it immediately rises with great speed and strikes directly under the ship's bottom and explodes, the passage of the netting being effected as it sinks and rises.

For fuller description I will explain by detail, reference being had to the accompanying drawings.

Figure 1 represents a vertical section of apparatus; Fig. 2, a top plan of float.

This torpedo, as shown, is drifted with the tide, and is carried on float S through the medium of a trip or catch, B', to which it is suspended by a light wire, B. So arranged, it is allowed to float (in pairs, the two being connected by a light cord of some hundreds of feet in length, so as to embrace a great sweep) against the booms or netting of a ship, when sliding arms H, arranged with the arc of a circle, H', at their outer ends, and also having vertical arms, to insure striking the booms, &c., are made thereby to trip B', and the torpedo T sinks by its own weight toward the bottom.

T represents an explosive torpedo, to which is firmly attached an air-chamber, C, in which, again, is a compressed-air chamber, C', having a stop-cock, K, which stop-cock is opened by a lever-rod, K', striking on the bottom when the torpedo sinks; or, if the water is of great depth, it is opened by a line attachment raising the rod K', and thereby allows the compressed air to escape from chamber C' into, and expand in, chamber C, driving out the water therein through the tube-column K'' in torpedo T, through which column also passes the rod K'.

By the air displacing the water in chamber C the apparatus becomes specifically much lighter than water, and consequently immediately rises upward toward the surface with proportionate speed, and by the action of the current drifting it horizontally during its vertical movements it will pass under the netting around a ship, and rise up under the ship's bottom, when rod F', arranged in air-tight tube F'' of chamber C, collides with the ship's bottom, and is made thereby to pierce percussion F of the torpedo, which explodes at the most fatal part of the ship—viz., directly under her bottom.

It is always best to operate this apparatus in pairs, tied together by a string having a sweep of several hundreds of feet, so that as they move down with the current this string will be most certain to sweep against the anchor-cable of the ship, when the two torpedoes will gradually swing in toward the sides of the ship, when, as before described, catch B' is tripped, and the torpedo sinks until the slack is taken out of line D, attached by one end to the float, and by the other end to the rod K', which thereby opens compressed-air cock K, and causes the torpedo to immediately come toward the surface, &c. The drift of these floats may to some extent be controlled by a line in certain cases; also, it might be possible in some cases to discard the float and carry the remaining part of the apparatus on a boat-spar, self-propelling apparatus, &c.

W represents the water-line surface, and the connecting-line, when the apparatus is used in pairs, is represented by Y. G represents finger-catches in the sliding arms to lay hold of and hang onto the netting which the apparatus strikes.

The torpedo apparatus may be worked to advantage in some cases without the float, by being sunk or deposited on the bottom in a channel-way, and at the proper time the cock of the compressed-air chamber may be opened by pulling a line, by electricity, or similar means, and thereby cause the torpedo to rise to the surface, as before described.

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

1. A movable torpedo provided with air-compartments, and a chamber of compressed

air, which is opened by mechanism, substantially as described, to inflate the torpedo-buoy at the proper time.

2. In combination with a floating torpedo having a compressed-air chamber, a lever mechanism to release the air in the chamber and inflate the torpedo, substantially as described.

3. A torpedo provided with a spindle for exploding the percussion, in combination with the expanding air-chambers.

4. The float S, arranged with arms H and trip-catch B', for the purpose described.

5. A float carrying a reel of line, in combination with an automatic exploding apparatus, to which the other end of the line is attached, substantially as described.

6. The combination of float S, line D, lever K, and compressed-air chamber C' with the torpedo, substantially as described.

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Witnesses:

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