

No. 713,985.

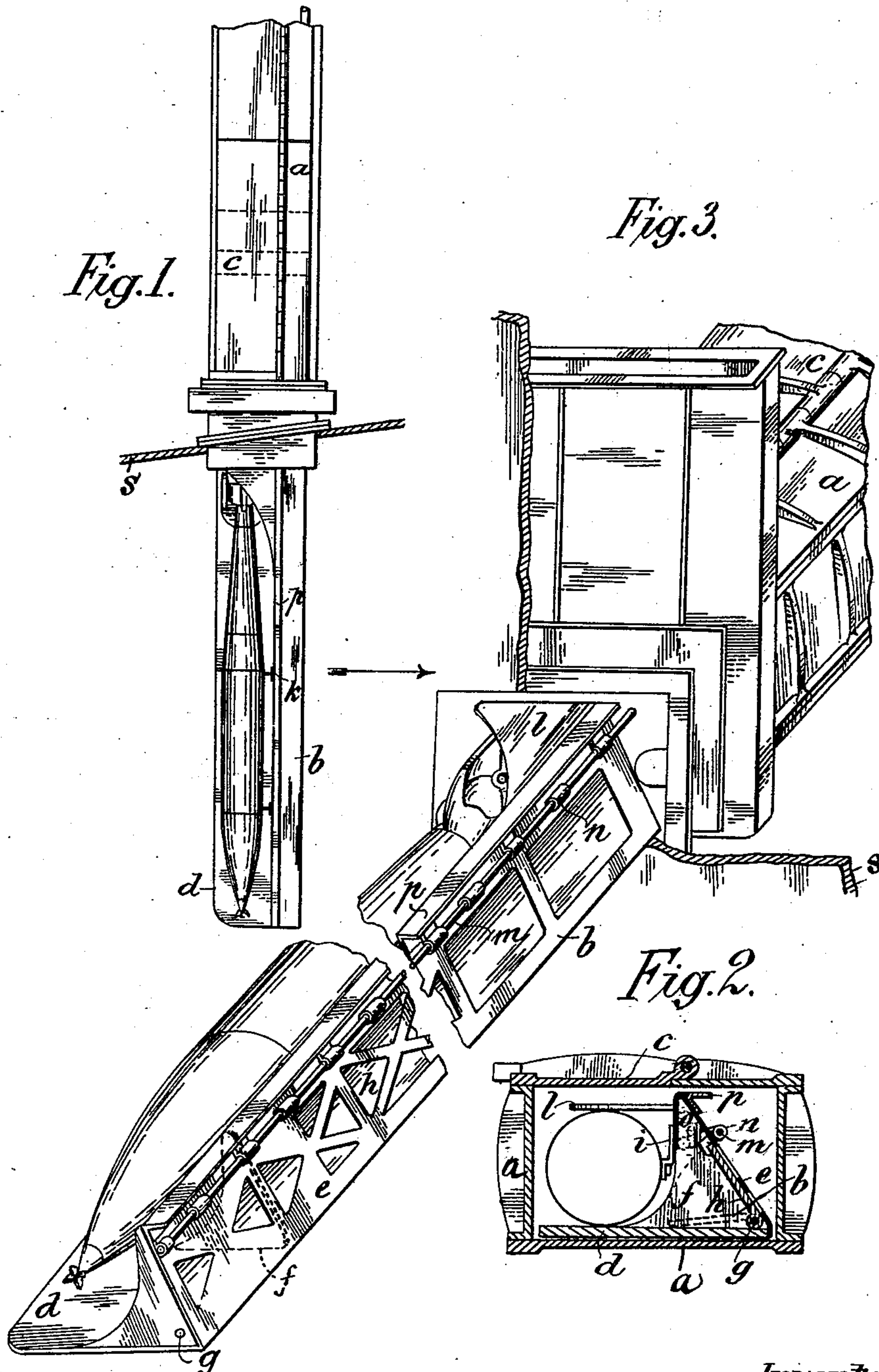
Patented Nov. 18, 1902.

G. HOYOS.

SUBMERGED BROADSIDE APPARATUS FOR DISCHARGING TORPEDOES.

(Application filed June 13, 1902.)

(No Model.)



Witnesses.

*Geo. W. Conley*  
*Geo. T. Byrne*

Inventor.

*George Hoyos.*

*by Millinson & Fisher*  
Attorneys.



# UNITED STATES PATENT OFFICE.

GEORGE HOYOS, OF FIUME, AUSTRIA-HUNGARY.

SUBMERGED BROADSIDE APPARATUS FOR DISCHARGING TORPEDOES.

SPECIFICATION forming part of Letters Patent No. 713,985, dated November 18, 1902.

Application filed June 13, 1902. Serial No. 111,553. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE HOYOS, a subject of the Emperor of Austria-Hungary, residing at Fiume, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Submerged Broadside Apparatus for Discharging Torpedoes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The apparatus forming the subject of this patent is based on the following principle: When a plane is moved through the water in a direction normal to its surface, a body of dead-water the magnitude of which varies with the size of the plane and with the speed of the motion will be found to cling to the following side and to partake of the plane's motion of translation. Should a torpedo be placed on the following side of a plane of such dimensions that no part of the torpedo projects beyond the body of dead-water, it will also cling to the plane and partake in its motion of translation, even though not mechanically held or connected to the following side of the plane. It is evident, therefore, that if the shield of a submerged broadside apparatus for discharging torpedoes be constructed with a plane on the advancing side and the plane be provided with apertures adapted to be opened when shield and torpedo are clear of the ship's side one has an apparatus in which the torpedo is completely protected from injurious lateral strains, so that the torpedo requires no strengthening pieces, guides, or adjuncts detrimental to its speed. There is the further advantage that the torpedo can be released by admitting the dynamic pressure of the water through the apertures mentioned above without subjecting it to any strain liable to cause injury to the torpedo or deflection from its course.

It will be found on comparison with submerged broadside apparatus in use or patented up to date that these two important qualities are now combined for the first time in the apparatus to be described.

Since it is evident that the plane alone would be wanting in lateral strength and would also afford no protection to the torpedo when the vessel rolls, I combine it with a

horizontal bottom plate, so that the cross-section of the shield is represented by the letter L. For constructional reasons, however, I prefer to incline the vertical member backward—that is, forming a more or less acute angle with the bottom member, this angle permitting the two members to be gusseted together and allowing room for the free motion of the swing-doors covering the apertures in the advancing side of the shield.

In order to be not compelled to make the advancing side or wall of the shield appreciably higher than the diameter of the torpedo would necessitate, I fit a coping or angle-bead on its top advancing edge, which has the result of increasing the height and width of the body of dead-water in the wake of the shield. The length of this body of water is increased by the bottom plate previously referred to as necessary to the stiffness of the shield and to the protection of the torpedo when the vessel rolls.

Since the shield is open on its top side, there is the great advantage that the torpedo can be lowered directly into place through a suitable corresponding port in the casing in which the shield runs, effecting thereby also a notable saving in the amount of space required for the loading of the apparatus.

In the accompanying drawings, Figure 1 is a plan view. Fig. 2 is an end view. Fig. 3 is a perspective view of the apparatus according to this invention.

The apparatus consists of a long box *a*, with sluice-valve firmly built into the body of the vessel, and of a shield *b* inside the box, which shield can be propelled in and out by means of air-pressure or a screw. The box, with sluice-valve and also the back part of the shield, which never passes out of it, can be either rectangular or cylindrical. The box *a* is provided with a door *c*, as long as the torpedo, which enables the torpedo to be inserted from above.

The shield *b*, open at the top and behind, consists, essentially, of a horizontal plate *d*, on which is erected a perforated wall *e*, which slopes backward and is supported by the vertical angle-plates *f*. In the niches formed by these angle-plates and by the wall are the doors *h*, pivoted on the longitudinal axle *g*, which are for the purpose of closing the aper-



tures in the slanting wall *e* and of protecting the torpedo from the dynamic pressure of the water until the moment when it is completely out of the ship.

5 The torpedo is firmly held in the shield by two T-shaped bosses *k*, fastened to it and which engage with two claws *i*. A horizontal angle-plate *l* prevents the steering-tail of the torpedo from being prematurely raised. It is  
10 adapted to be raised for putting a torpedo in place. The angle-piece *p* is for the purpose of diverting the water coming from the front still farther upward, so that the torpedo is not injured in any way by contact with the water,  
15 which flows over it and closes in behind it. This may also be attained by keeping the sloping wall correspondingly higher. After the shield has been completely pushed beyond the ship's side *s* the torpedo is released by  
20 turning the shaft *m*, which bears the catches *n* and lever *o*. By means of this movement of rotation, which can take place automatically, the torpedo is released, on the one hand, by unbolting the bolts *i*, and the doors *h* un-  
25 fastened, on the other hand, so that the pressure of the water folds them up, and, acting on the torpedo, frees it from the shield. The torpedo thereupon takes its course, driven by its own machinery, which is set working at  
30 the same moment. The apertures made in the slanting wall *e* must be kept as large as possible; but the form of the torpedo requires that those toward the outer end of the shield should be the smaller and toward the inner end  
35 the larger in order that the water flowing in with force may strike the torpedo with the same force behind and in front of its center of gravity.

I claim—

40 1. In an apparatus for discharging torpedoes below the water-line of a vessel, the combination with a V-shaped shield provided with a plurality of openings and doors for controlling said openings, of means for projecting  
45 said shield longitudinally through the ship's side, and means operated from the interior of the ship for opening and closing said doors and for releasing the torpedo when desired, substantially as described.

50 2. In an apparatus for discharging torpedoes below the water-line of a vessel, the combination with a V-shaped shield provided with a plurality of openings and doors for controlling said openings, of means for projecting  
55 said shield longitudinally through the ship's side, and means operated from the interior of the ship for simultaneously opening said doors and releasing the torpedo from the shield, substantially as described.

60 3. In an apparatus of the character described, the combination of a shield consisting of a flat horizontal plate and an upwardly-inclined plate perforated for the passage of water therethrough, of doors normally closing  
65 all of said perforations, means for projecting said shield from the side of the ship, and means operated from the interior of the ship

for releasing all of said doors when said shield is projected to the required distance, thus allowing the pressure of the water to open  
70 said doors, substantially as described.

4. In an apparatus for discharging torpedoes below the water-line, of a vessel, the combination with a V-shaped shield provided with a plurality of openings and doors normally  
75 closing said openings, with means for detachably securing the torpedo on said shield, of means for projecting said shield longitudinally through the ship's side, and means operated from the interior of the ship for simul-  
80 taneously opening said doors and releasing the torpedo, substantially as described.

5. In an apparatus for discharging torpedoes below the water-line of a vessel, the combination with a V-shaped shield provided with  
85 a plurality of openings and doors normally closing said openings, of means for projecting said shield longitudinally through the ship's side, and means operated from the interior of the ship for simultaneously opening all of  
90 said doors, substantially as described.

6. In an apparatus of the character described, the combination of a shield consisting of a flat horizontal plate and an upwardly-inclined plate perforated for the passage of  
95 water therethrough, and terminating in an angle-bead, of doors normally closing all of said perforations, means for projecting said shield from the side of the ship, and means operated from the interior of the ship for re-  
100 leasing all of said doors when said shield is projected to the required distance, thus allowing the pressure of the water to open said doors, substantially as described.

7. In an apparatus of the character de-  
105 scribed, the combination of a shield consisting of a flat horizontal plate and an upwardly-inclined plate perforated for the passage of water therethrough, with means for detachably connecting the torpedo to said shield, of  
110 doors normally closing all of said perforations, means for projecting said shield longitudinally through the side of the ship, means operated from the interior of the ship for releasing all of said doors when said shield is  
115 projected to the required distance, thus allowing the pressure of the water to open said doors, and means for releasing the torpedo from said shield, substantially as described.

8. In an apparatus of the character de-  
120 scribed, the combination of a shield consisting of a flat horizontal plate and an upwardly-inclined plate perforated for the passage of water therethrough, of hinged doors normally closing all of said perforations, means for pro-  
125 jecting said shield from the side of the ship, and a rod operated from the interior of the ship for releasing all of said doors, thus allowing the pressure of the water to open said doors, substantially as described.  
130

9. In an apparatus for discharging torpedoes below the water-line of a vessel, the combination with a longitudinally-movable shield provided with a plurality of openings



and doors for controlling said openings, with means for detachably connecting the torpedo to said shield, of means for projecting said shield longitudinally through the ship's side, 5 and means operated from the interior of the ship for opening and closing said doors and for releasing the torpedo when desired, substantially as described.

10. In an apparatus for discharging torpedo 10 does below the water-line of a vessel, the combination with a shield provided with a plurality of openings on its forward face and doors normally closing said openings, of

means for projecting said shield longitudinally through the ship's side, and means operated from the interior of the ship for releasing said doors allowing the pressure of water to open same, and also for simultaneously releasing the torpedo from the shield, substantially as described. 15 20

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE HOYOS.

Witnesses:

S. DANKL,

PAUL JOSEPH TOMANOCZY, Jr.