A. E. JONES.

MEANS FOR LAUNCHING TORPEDOES FROM THE SIDES OF SHIPS.

APPLICATION FILED MAR. 12, 1912.

1,046,192.

Patented Dec. 3, 1912.

2 SHEETS—SHEET 1.

Fig. 1

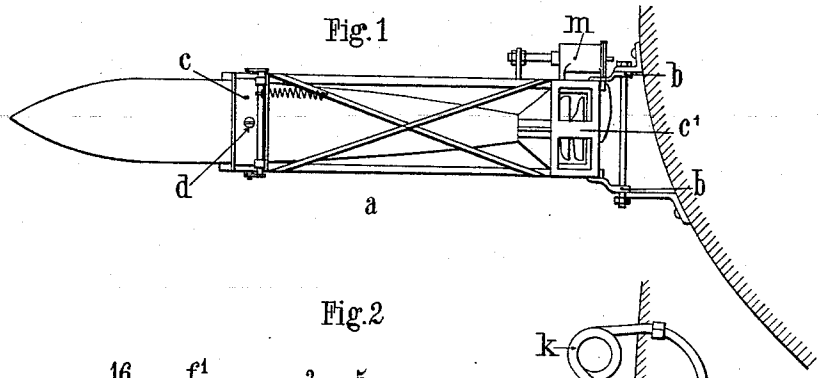


Fig. 2

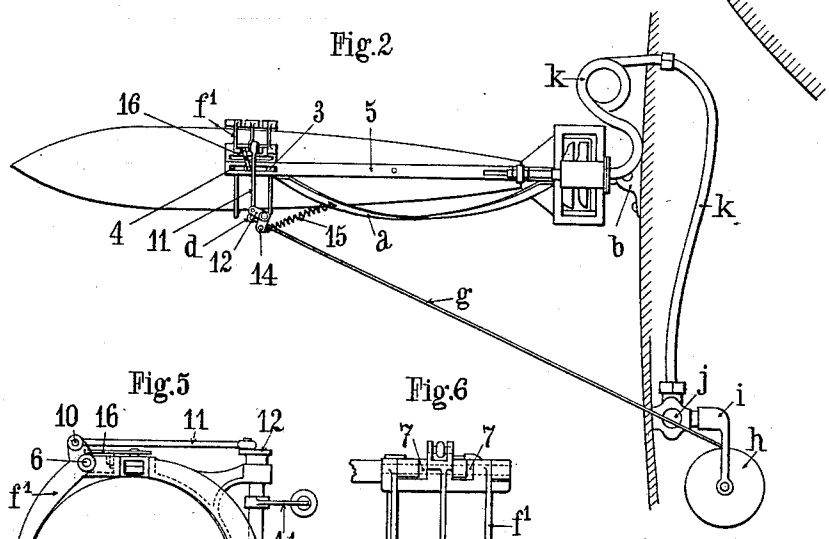


Fig. 5

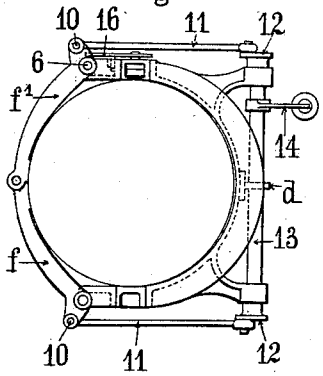


Fig. 6

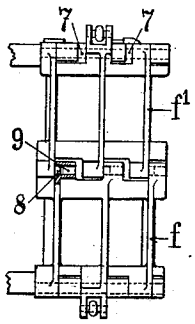


Fig. 4

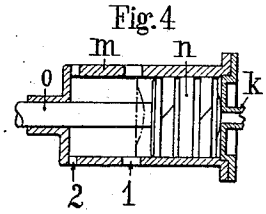
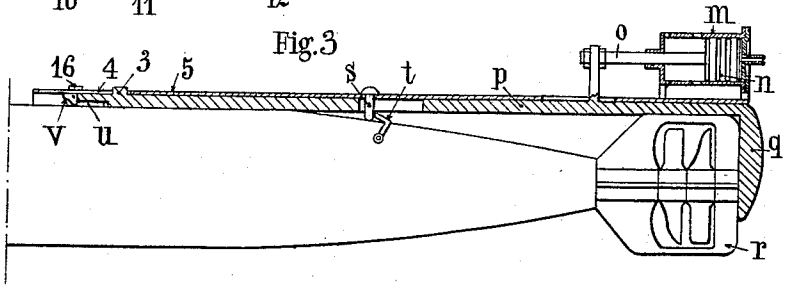


Fig. 3



WITNESSES

Sidney Brooks

A. L. Kitchin.

INVENTOR

Albert Edward Jones

By Munn & Co

ATTORNEYS

A. E. JONES.

MEANS FOR LAUNCHING TORPEDOES FROM THE SIDES OF SHIPS.

APPLICATION FILED MAR. 12, 1912.

1,046,192.

Patented Dec. 3, 1912.

2 SHEETS—SHEET 2.

Fig. 7.

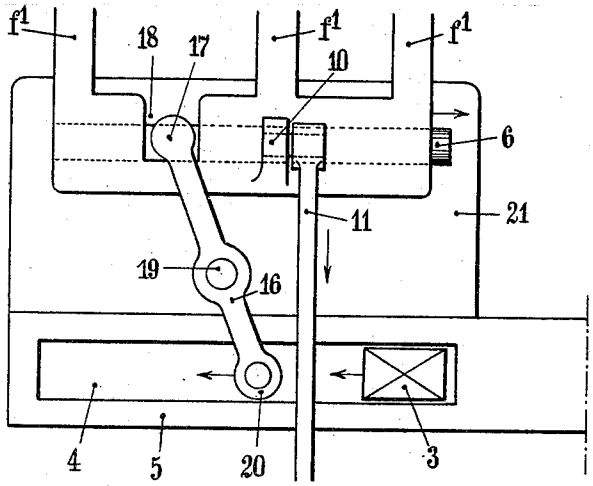


Fig. 8.

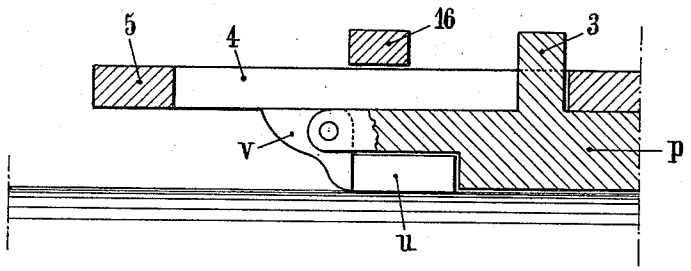
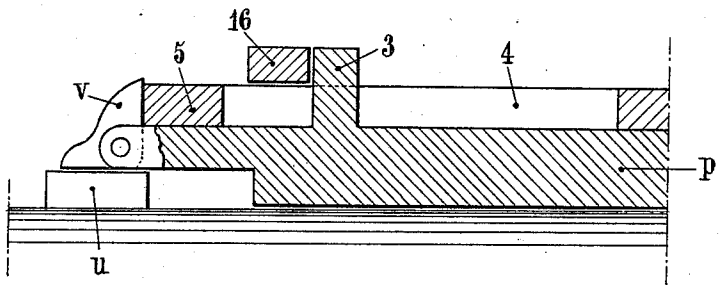


Fig. 9.



WITNESSES

Sidney Brooks.

A. L. Kitchin.

INVENTOR

Albert Edward Jones

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT EDWARD JONES, OF FIUME, AUSTRIA-HUNGARY, ASSIGNOR TO WHITEHEAD & CO., OF FIUME, AUSTRIA-HUNGARY.

MEANS FOR LAUNCHING TORPEDOES FROM THE SIDES OF SHIPS.

1,046,192. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed March 12, 1912. Serial No. 683,187.

To all whom it may concern:

Be it known that I, ALBERT EDWARD JONES, a subject of the King of Great Britain, and resident of Via Volosca No. 2, Fiume, Austria-Hungary, have invented new and useful Improvements in and Relating to Means for Launching Torpedoes from the Sides of Ships, of which the following is a full and complete description.

This invention has for its object means for launching torpedoes from the sides of a submarine vessel, a torpedo boat or other light vessel at any angle and by means of a torpedo launching frame jointed to the sides of the ship.

The invention has for its object to insure that the torpedo shall exactly follow the direction imparted by the torpedo launching frame at the moment at which the latter is locked and to prevent any deviation due to the gyroscope becoming operative prematurely.

Means are known for launching torpedoes from the sides of a vessel at any angle and by means of torpedo-carrying frames jointed to the sides of the ship but in these devices the starting mechanism and the release of the torpedo are generally controlled by the turning movement of the frame itself so that the starting of the wheel of the gyroscope and the release of the gyroscope are effected during this turning movement, that is to say, before the framework has been locked. As the torpedo obeys the gyroscope it will be understood that in these conditions it will not follow the trajectory indicated by the locked position of the frame but will always be brought back by the gyroscope into a direction which corresponds with that occupied by the frame at the moment at which (during the turning of the latter) the gyroscope was released.

In order that the gyroscope may fulfil the functions that have been assigned to it with precision it is necessary on the one hand that it should not be released before the frame has been locked but that on the other hand this release should take place before the torpedo has been released from the frame which serves as its guide.

The invention furnishes a solution of this problem and consists in mechanically connecting the rocking torpedo frame with the mechanism for starting and launching the torpedo, in such a manner that this mechanism cannot be rendered operative until after the frame has been locked in the firing position, while at the same time the mechanism comprises a retarding device which allows the gyroscope time to become released before the torpedo is left to itself, so that the torpedo is always brought back into the proper direction. The mechanical devices by means of which this problem is solved are illustrated in the accompanying drawing, in which:—

Figure 1 is a side elevation of the device. Fig. 2 is a plan thereof. Fig. 3 is a partial side elevation of the mechanism for releasing the torpedo. Fig. 4 is a detail to a larger scale of a portion of Fig. 3. Figs. 5 and 6 are respectively an end elevation and a side elevation of the shutters for retaining the torpedo. Fig. 7 is a detail plan view of the means for operating the shields. Figs. 8 and 9 are detail sectional views of the torpedo releasing means.

The frame *a* is hinged at *b* to the side of the vessel along which it can be turned back and it presents the guide shields *c c'* and the flaps or doors *f f'* which release the torpedo at the proper moment. The shield *c* at the front extremity of the frame is connected at *d* by a cable *g* with a winch drum *h* arranged upon the boat and provided with an arm *i* upon the trajectory of which a compressed air valve *j* is arranged. This valve is connected by a pipe *k* with a cylinder *m* inclosing a piston *n*, the rod *o* of which is rigidly connected with the bar *p* movable inside the frame *a* and ending in the operating hook *q* which acts upon the tail *r* of the torpedo; *s* is the fixed bolt serving to act upon the air supply lever *t; u* is the usual guide snug of the torpedo and *v* is a stop pivoted at the front of the bar *p* for releasing the torpedo at the proper moment. In proximity to its middle the cylinder *m* is perforated with water discharge openings 1 of considerable diameter and in proximity of its extremity with other apertures 2 of smaller diameter. The movable bar *p* carries a snug 3 (Fig. 3) movable in a slot 4 formed in the part 5 of the frame *a* and serving to guide the bar *p* (Figs. 2 and 3). The upper retaining flap *f'* (Fig. 5) is pivoted at 6 and is capable of effecting a certain longitudinal movement owing to the provision of the spaces 7 shown in Fig. 6. The upper door *f'* engages with the lower door

f by means of nipples 8 engaged in holes 9 in the lower door in such a manner that when the two doors are thus locked (see Figs. 5 and 6) they form a rigid shield which supports the torpedo against the lateral pressure of the water.

Each of the shields f and f' is provided with a small arm 10 (Fig. 5) connected with a rod 11 which is pivoted to a lever 12 mounted on a vertical pivot 13 (Fig. 5) carrying an arm 14 to which one end of a spring 15 is attached while its other end is attached to the frame a. The shield f' is movable longitudinally on its fixed shaft. The lever 16 is engaged by one extremity 17 in a recess of the shield f' (see Fig. 7). The lever 16 is fulcrumed on its center 19 and its other end placed over the groove 4 in the bar 5. The pivot 19 of the lever 16 is placed over a lateral extension 21 of the bar 5. When the bar p is pushed forward, the projection 3 of this bar, which is displaced in the groove 4, strikes one end 20 of the lever 16 and swings it around its pivot 19, thus producing a longitudinal displacement of the shield f', which is released from the lower shield f. When the shields f and f' are disengaged from each other, these shields are opened to allow the torpedo to escape laterally, by means of the spring 15 acting through the lever 14, the vertical pivot 13 and the two levers 12, on the two bars 11, which are connected to the arms 10 and 10 integral with the shields f and f' respectively.

The operation is as follows:—The position of the arm i upon the drum h is regulated in such a manner that at the moment at which the frame reaches its firing position (which is not necessarily perpendicular to the ship's side as shown in the drawing) the cable g applies the arm i against the air supply valve j in order to admit compressed air into the cylinder m through the pipe k. The piston n is then pressed forward with a velocity which depends simultaneously on the air pressure and upon the size of the apertures 1 for discharging the water. By the intermediary of the bar p and of the hook q it causes the torpedo to advance sufficiently to produce the rocking of the air supply lever t in contact with the bolt s. The motor of the torpedo is started and the wheel of the gyroscope is started but without the gyroscope yet being released. In proportion as the piston n covers the orifices 1 its speed is reduced because the escape of the water is throttled at 1; the piston continues its stroke with the reduced speed which is caused by the discharge of the water through the smaller aperture 2. This causes a retardation in the advance of the torpedo and consequently retardation in its departure and this retardation (which forms the special feature of this invention) affords time for the wheel of the gyroscope to become completely operative and the time necessary for the gyroscope as a whole to become released by the turning of the frame before the torpedo is released from the frame.

When the piston n has nearly reached the end of its stroke the small lever v which forms a stop for the snug u and an obstacle to the advance of the torpedo is lifted. The lever v, which has substantially the shape of a bell crank lever is pivoted at the front end of the movable bar p. See Figs. 8 and 9. The width of the lever v is slightly greater than the width of the groove 4 of the stationary bar 5. When the lever v is in the position shown in Fig. 8 it is supposed that the propellers of the torpedo are in motion. The projection u of the torpedo is pressed against the lever v. But this lever cannot be lifted. Consequently it holds back the torpedo, which cannot advance quicker than the bar p advances. As shown in Fig. 9, the lever v has reached the end of the bar 5, and it is free to be lifted by the pressure of the projection u of the torpedo, and as soon as it is lifted, the torpedo is free to start with the speed given by these propellers. Simultaneously the snug 3 on the bar p rocks the lever 16 which serves to displace the upper shield f' longitudinally and thereby to disengage the two shields which are then able to separate so as to release the torpedo because the traction spring 15 acts by the intermediary of the arm 14 of the pivot 13 the levers 12 and of the connecting rods 11 upon the small arms 10 of the shields. The torpedo is then able to start freely.

The main advantages of the device are as follows: (1) In view of the fact that the starting mechanism for the torpedo, the launching and the release of the gyroscope do not take place until after the locking of the frame a it becomes certain that the gyroscope will have no tendency to cause the torpedo to follow a different trajectory from that imparted by the direction of the frame after it has been locked. (2) In view of the fact that the retarding device affords time for the gyroscope to become released before the torpedo is left to itself that is to say while it is still guided in the firing direction by the frame a, the certainty is obtained that the gyroscope will always return the torpedo to this desired direction even if this torpedo should be overturned or deviated during its fall into the water.

Having now particularly described and ascertained the nature of my invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a device of the character described, a frame for supporting a torpedo, said torpedo being formed with a projecting guiding extension, an ejecting member for eject-

ing said torpedo from said frame, means extending from said ejecting member into engagement with said frame for guiding the torpedo and the ejecting member until the torpedo is free of the frame, and means for positively holding said torpedo in slidable engagement with the frame until said ejecting member has moved to substantially its outermost position.

2. In a device of the character described, a framework for supporting a torpedo, a pin projecting from said framework into the path of movement of the torpedo for setting in motion the means for rotating the propellers of the torpedo, means for positively holding the torpedo in said framework for a predetermined time after the power has been turned on to the propellers of the torpedo, an ejecting member for moving said torpedo longitudinally of said framework, and means for releasing said torpedo from said framework after said ejecting member has reached its extreme outer position.

3. In a device of the character described, a frame for supporting a torpedo, an ejecting member for ejecting said torpedo from said frame, a piston rod connected with said ejecting member, a piston connected with said piston rod, a cylinder surrounding said piston formed with comparatively large apertures midway the length thereof and comparatively small apertures at one end, and means acting on the rear of said piston for moving the same, the size of said apertures permitting the water in said cylinder to escape rapidly from the first movement of the piston and more slowly upon a continued movement of the piston whereby the movement of the ejecting member is retarded.

4. In a device of the character described, a torpedo supporting frame having movable and spring actuated shields, a cylinder, a fluid operated piston in the cylinder, and means operated from the piston for releasing the shields to permit them to open just before the piston has reached the end of its stroke.

5. In a device of the character described, a torpedo supporting frame having pivoted and spring actuated shields, the shields having interlocking engagement with each other and one of them slidable on its pivot, a pivoted lever having an end engaging the slidably mounted shield, a reciprocating bar having a lug for engaging the other end of the said lever, and means for operating said bar.

6. In a device of the character described, a supporting frame having movable shields, a torpedo in the frame and having a projection, a reciprocating bar, means for releasing the shields by said bar, and a locking lever on the end of the reciprocating bar and adapted to be operated by the projection of the torpedo.

7. In a device of the character described, a frame having movable shields, a torpedo in the frame and having a projection, a cylinder, a fluid operated piston in the cylinder, a sliding bar rigidly secured to the piston, means for releasing the shields from said bar, and a locking lever on the end of the sliding bar and adapted to be operated by the projection on the torpedo.

ALBERT EDWARD JONES.

In the presence of two witnesses:

R. LAIRDE,

MITTNER POL.