A. E. JONES.

SELF PROPELLED TORPEDO.

APPLICATION FILED NOV. 1, 1907.

917,449. Patented Apr. 6, 1909.

Fig. 1

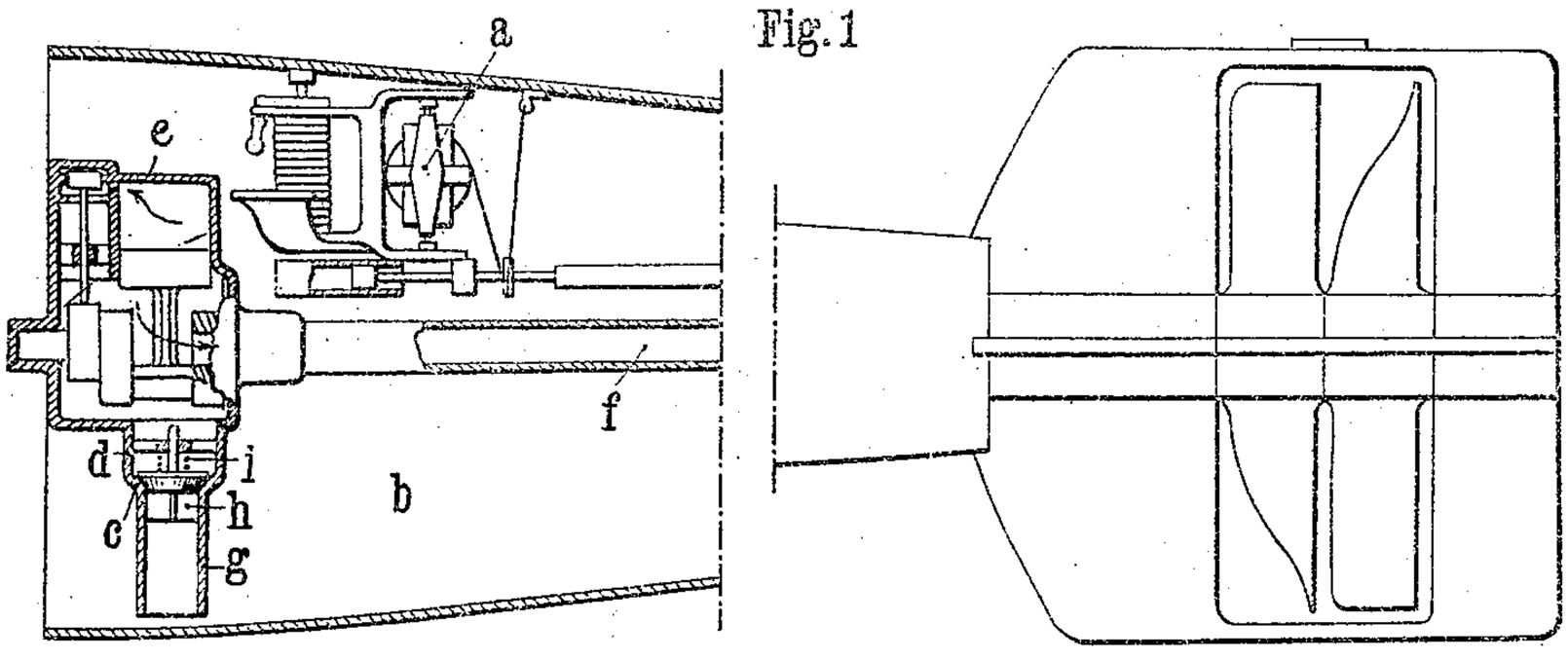
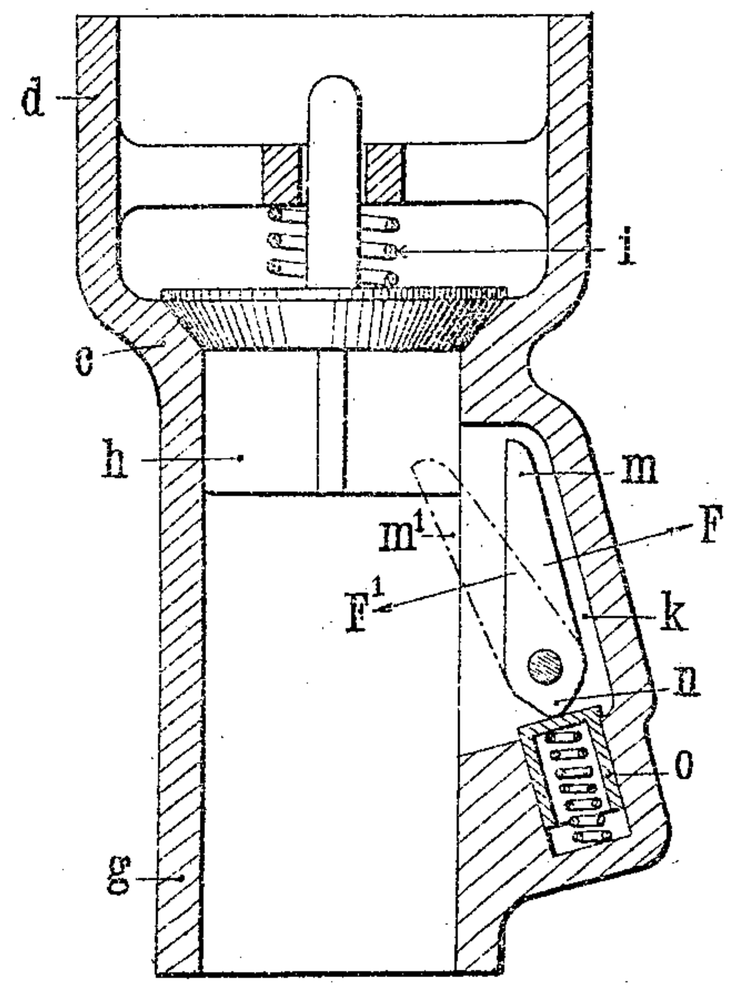


Fig. 2



WITNESSES

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SELF-PROPELLED TORPEDO.

No. 917,449. Specification of Letters Patent. Patented April 6, 1909.

Application filed November 1, 1907. Serial No. 400,198.

To all whom it may concern:

Be it known that I, ALBERT EDWARD JONES, a subject of the King of Great Britain, residing at Fiume, Austria-Hungary, engineer, have invented certain new and useful Improvements in and Relating to Self-Propelled Torpedoes, of which the following is a specification.

This invention has for its object improvements in self-propelled torpedoes, and relates more particularly to the automatic expulsion of the leakage water, by utilizing the sinking valve itself, and also the protection of the gyroscope and its accessory parts from the harmful action of the said leakage water.

In the accompanying drawing:—Figure 1 represents a longitudinal section through the rear portion of a torpedo. Fig. 2 is a detail view of the sinking valve.

The arrangement adopted in self-propelled torpedoes, and which consists in locating the gyroscope below the longitudinal axis of the torpedo and the sinking valve at the upper part, presents the defect of enabling the water to leak through the sinking valve, to fall upon the gyroscope, and by collecting in the buoyancy chamber to impede the operation of the gyroscope. The present invention obviates these defects, and consists, instead of placing the sinking valve in direct communication with the external water by the wall of the torpedo, in arranging it internally, and as close as possible to the bottom of the buoyancy chamber, upon the discharge path for the air exhausted from the servo-motor of the gyroscope and at the place at which leakage water might collect. Further, the gyroscope is located above the longitudinal axis of the torpedo, preferably at the upper part of the buoyancy chamber, in order to place it out of reach of leakage water.

The gyroscope which is designated as a whole by *a* is suspended from the roof of the buoyancy chamber *b*.

The box *c* of the sinking valve is connected by a tubular socket *d* with the exhaust chamber *e* of the engine, from which the hollow shaft *f* proceeds; the compressed air after performing its work escapes through this shaft to the exterior. The box *c* is continued downward by a short socket *g* to within close proximity with the bottom of the buoyancy chamber. The sinking valve *h* is held upon its seat by a spring *i*.

The operation is as follows:—During the travel of the torpedo, the air of the servo-motor of the gyroscope is discharged into the buoyancy chamber *b*. When the pressure in this chamber becomes greater than that of the air contained in the chamber *e*, the valve *h* rises, the air within the buoyancy chamber being discharged through the chamber *e* and the hollow shaft *f*. This discharge of air prevents the outer water from entering through the hollow shaft *f* and if the leakage water collects in the buoyancy chamber, it is carried by the current of exhaust air through the short socket *g* entering the water and the open sinking valve *h*. When the engines stop, the pressures of air in the buoyancy chamber and in the exhaust chamber *e* fall, so that the sinking valve *h* is able to close. For torpedo practice, the valve is allowed to close; the water only fills the hollow shaft *f* and the chamber *e*, and the torpedo rises to the surface. For actual launching, when the torpedo is to sink at the end of its travel if it has missed its mark the arrangement represented in Fig. 2 may be adopted for preventing the sinking valve from returning to its seat and enabling the external water to fill the buoyancy chamber. To this end, the socket *g* presents a chamber or recess *k* containing a pawl *m* ending in a heel *n* on which a spring sleeve *o* acts in such a manner that the pawl may be held in the position shown in full lines (for practice launching), or in the positions shown in dotted lines (for actual launching). In the latter case the pawl is held in an intermediate position with its end resting against the valve, until the valve rises from its seat, when it moves to the extreme inward position beneath the valve to hold the said valve raised. It will be understood that when the pawl is cocked in the direction indicated by the arrow F′, as soon as the sinking valve *h* has risen, the pawl becomes depressed into the position *m′* shown in broken lines, and prevents the valve from falling back on to its seat.

The advantages are as follows:—The arrangement of the gyroscope above the longitudinal axis of the torpedo places it out of reach of leakage water. The sinking valve not being in direct communication with the

outer water, the likelihood of the leakage of water is lessened, and any water which may leak in is automatically expelled by the means described.

It is obvious that a sinking valve of any construction adapted to requirements may be employed, and that the means used for keeping this valve away from its seat might be replaced by any other equivalent locking device.

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

1. In a self-propelled torpedo, the combination of a gyroscope placed above the longitudinal axis of the torpedo, a buoyancy chamber into which the servo-motor of the gyroscope discharges, a sinking valve placed in the buoyancy chamber, said valve having a box connected with the exhaust chamber of the engine and a socket opening in close proximity to the bottom of the buoyancy chamber.

2. In a self-propelled torpedo, the combination of a gyroscope placed above the longitudinal axis of the torpedo and having a servo-motor which discharges into the buoyancy chamber, an exhaust chamber for the engine continued rearward by a hollow shaft, a sinking valve placed in the buoyancy chamber and provided with a box connected with the exhaust chamber, a spring for holding said valve on its seat, and a tubular socket connected to the valve box and opening in close proximity to the bottom of the buoyancy chamber.

3. In a self-propelled torpedo, the combination of a gyroscope placed above the longitudinal axis, a sinking valve having a casing opening close to the bottom of the buoyancy chamber, and means for preventing the valve from falling back on to its seat for exercise shots.

4. In a self-propelled torpedo, the combination of a gyroscope placed above the longitudinal axis out of reach of the leakage water, a sinking valve having a casing opening close to the bottom of the buoyancy chamber in the path for the discharge of the air from the servo-motor of the gyroscope, a pawl arranged in a recess of said casing, and a spring adapted to hold the pawl under the valve, when the valve is raised sufficiently, thus preventing the sinking valve from returning to its seat.

In testimony whereof I have hereunto placed my hand and seal at Birmingham England this ninth day of October 1907.

ALBERT EDWARD JONES. [L. S.]

In the presence of two witnesses:
ARTHUR WRIGHT, Junior,
HOWARD JONES ASHLY.