N. LONGORIA.

TORPEDO CONTROLLING APPARATUS.

APPLICATION FILED MAY 20, 1918.

1,313,100.

Patented Aug. 12, 1919.

3 SHEETS—SHEET 1.

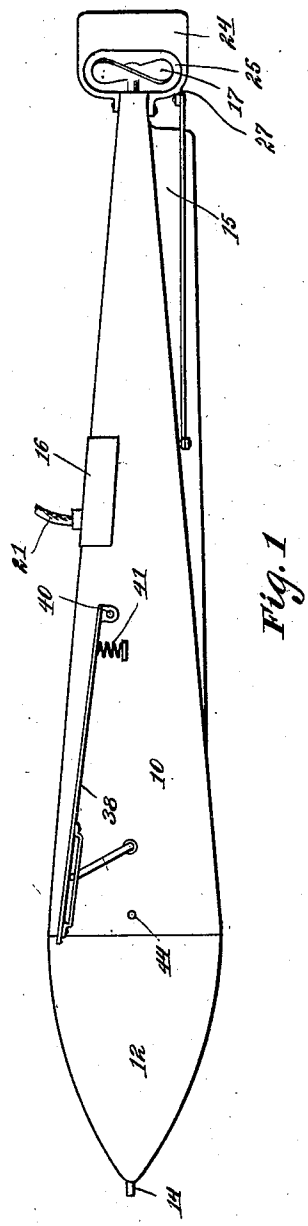


Fig. 1

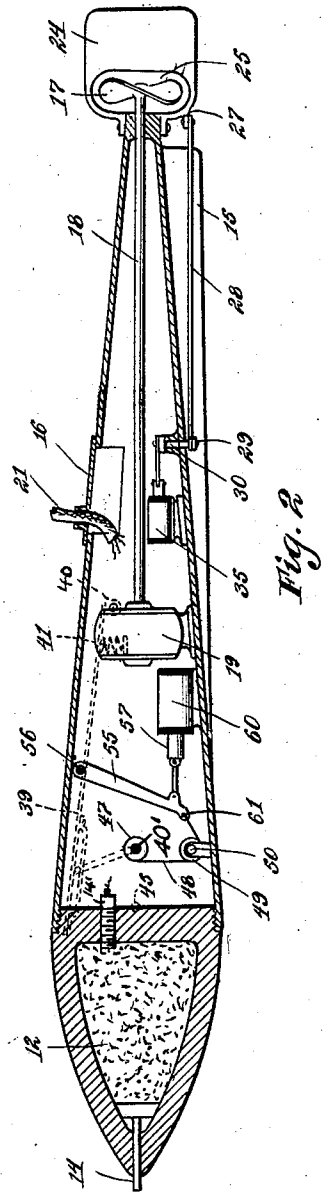


Fig. 2

Witnesses

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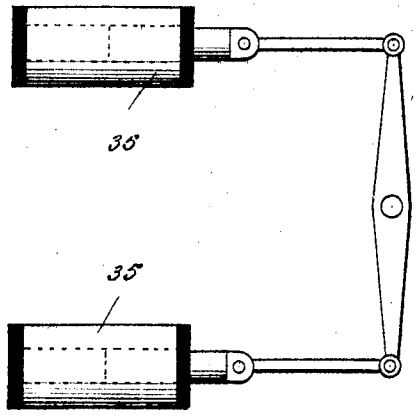


Fig. 3

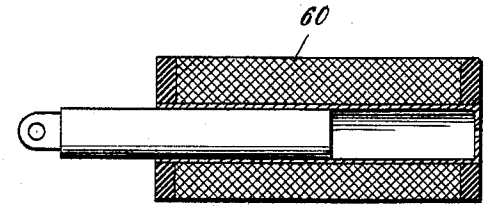


Fig. 4

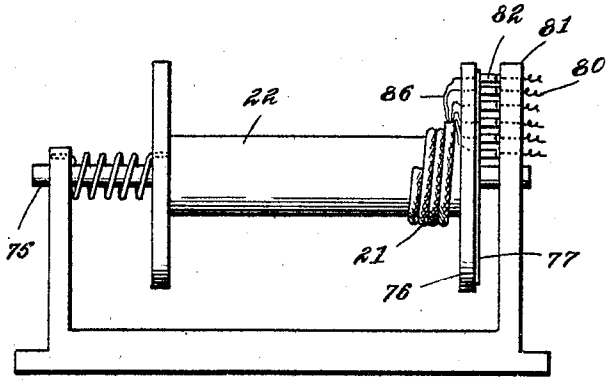


Fig. 6

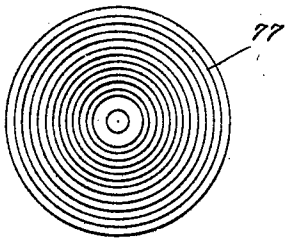


Fig. 5

Witnesses

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3 SHEETS—SHEET 3.

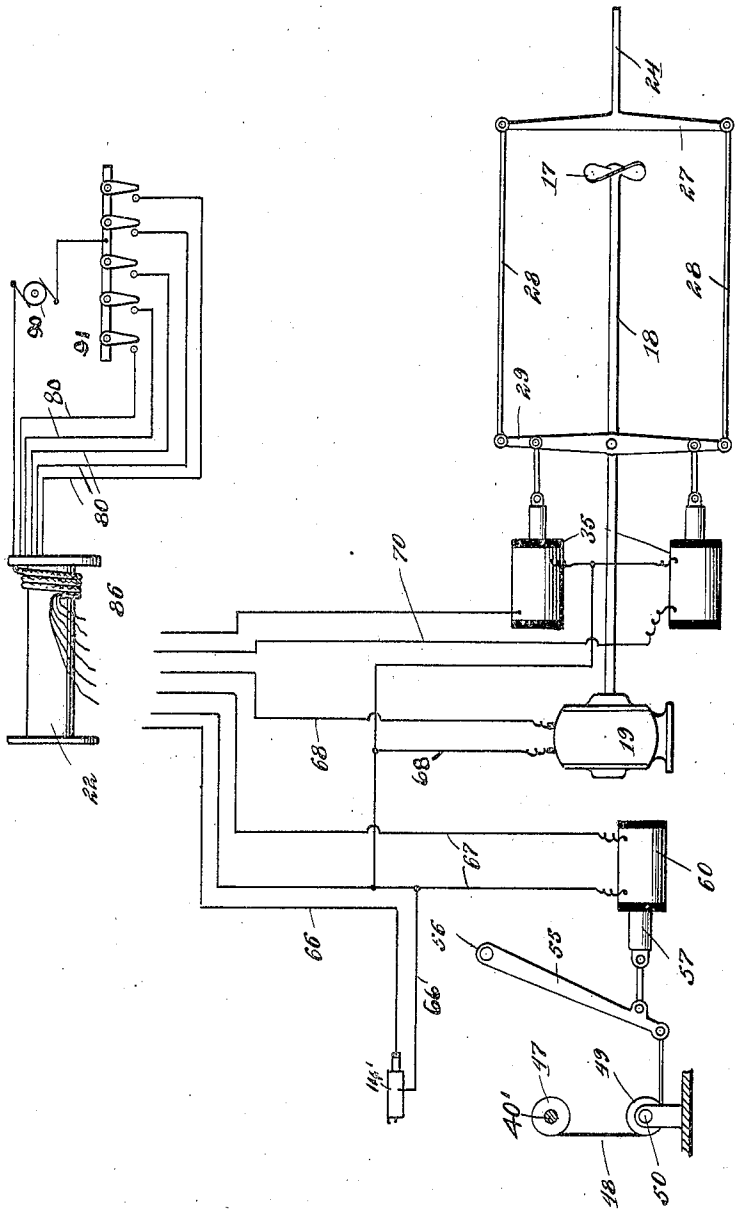


Fig. 7

Witnesses

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UNITED STATES PATENT OFFICE.

NICHOLAS LONGORIA, OF LAREDO, TEXAS.

TORPEDO-CONTROLLING APPARATUS.

1,313,100. Specification of Letters Patent. Patented Aug. 12, 1919.

Application filed May 20, 1918. Serial No. 235,474.

To all whom it may concern:

Be it known that I, NICHOLAS LONGORIA, a citizen of the United States, residing at Laredo, in the county of Webb and State of Texas, have invented new and useful Improvements in Torpedo-Controlling Apparatus, of which the following is a specification.

This invention relates to a torpedo controlling apparatus, and one object is to provide a torpedo which may be controlled from an airplane by means of wings or vanes mounted on said torpedo for effecting depth control by means of electrically operated devices carried by the airplane.

A further object is to provide certain novel means by which the position of the vanes or wings carried by the torpedo are inclined to such a degree as to effect the submerging operation.

In the drawings:

Figure 1 is a view in side elevation.

Fig. 2 is a longitudinal section.

Fig. 3 shows the solenoids in top plan view, for controlling the rudder.

Fig. 4 is a section of the one of the solenoids controlling the vanes.

Fig. 5 is an elevation of the contact rings on the end of the reel.

Fig. 6 is a front elevation of the reel.

Fig. 7 is a diagrammatic view of the circuits for the solenoids controlling the rudder and vanes, and a motor driving the propeller shaft, the circuits being supplied by feed wires formed into a cable wound on a reel, the individual contact rings of which have connection with individual switches in the circuit of a generator.

The body portion of the torpedo is designated 10 and includes a head 12 carrying explosive material and a firing device 14 mounted in the usual position. The torpedo is provided with a keel 15 and an opening in the upper side is closed by a door or the like designated 16.

The propeller 17 is mounted on shaft 18 and is driven by an electric motor 19 receiving power from a suitable source such as a generator carried by the airplane not shown. The cable carrying the various wires for the circuits described below is designated 21 and is wound on a drum 22 adapted to be carried by the airplane. A rudder is shown at 24 and is provided with a cutaway portion 25 for the accommodation of the propeller 17. This rudder is controlled by a transversely extending arm or the like designated 27 connected by means of short cables or the like 28 with a transverse arm 29 mounted on a staff 30 operated electrically by any suitable mechanism shown conventionally at 35. Solenoids may be employed for this purpose, suitable means being provided for securing the gradual movement of the staff or shaft 30, such as will be required for the purpose indicated.

The vanes or wings are designated 38 and 39 and are pivotally mounted on a shaft 40 by the operation of which the inclination of the wings is varied. Springs 41 are connected with the ends of the wings and suitable devices 44 and 45 limit the movement of the wings. Shaft 40′ constitutes a crank shaft and carries a pulley 47 with which a flexible device 48 is connected, this flexible device passing around a pulley 49 on a shaft 50, and having connection with any suitable means for producing tension on the flexible member or cable 48 for rotating the crank shaft and effecting the required movement of the vanes. As shown in Fig. 1 there is a type of pin and slot connection between the ends of the crank shaft and the vanes.

One form of device which may be employed for the purpose here specified consists of a downwardly depending arm 55 pivoted at 56 and carrying a laterally extending member 57 constituting the core of a solenoid 60. The arm 55 is connected with the cable or the like designated 48 at the point 61.

If necessary or desirable, in order to produce the more gradual movement of the vanes and rudder, I propose to employ any well known form of retarding device in connection with the solenoids, such as a piston having a port therein operating within an air cylinder.

I have shown diagrammatically the circuits for controlling the rudder, the wings or vanes and the propeller, or rather the motor operating the propeller, and a circuit connected with the device for firing the charge in the event that it is to be fired electrically.

The wires comprising the circuit leading to the device for exploding the charge are designated 66, the wires of the circuit effecting the control of the wings are designated

67, the wires leading to the motor are shown at 68, and the wires for controlling the rudder are designated 70.

The cable 21 leads to a winding drum or the like 22 carried by the airplane, the shaft 75 of this drum being encircled by a spring normally forcing the drum or roller in the opposite direction. The end portion 76 comprises a series of insulated rings 77 with which the separate wires of the cable are connected electrically and mechanically, as by soldering. A plurality of wires designated 80 extend through a standard or the like 81 and in electrical connection with each of these wires is a contact member 82 which may comprise a roller or brush for engaging the proper ring carried by the drum, thereby affording electrical connection between the corresponding wires of the series 80 and the individual wires of the series 86 forming the cable.

The winding drum may be operated manually or by an electric motor. The cable may be rewound after the firing of the torpedo.

The springs 41 are designed to cause the blades to move into position (when the solenoid 60 is deënergized) to cause the torpedo to rise.

The electrical firing device is shown at 14′ and the series of switches for the circuits connected with dynamo 90 is shown conventionally at 91 in Fig. 7.

What is claimed is:

A torpedo including a body portion, propelling means therefor, guiding means, means for firing an explosive charge, and depth controlling means comprising pivotally mounted vanes located on opposite sides of the torpedo, the vanes being formed with guides, springs normally retaining the vanes in a position to cause the torpedo to rise, a crank shaft passing transversely through the body portion, the ends of the crank shaft engaging the guides, and means for imparting rotary movement to the crank shaft effecting depth control by moving the vanes against the action of the springs.

In testimony whereof I affix my signature.

NICHOLAS LONGORIA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."