Feb. 19, 1924. 1,484,304

A. T. HALL

TORPEDO

Filed Aug. 9, 1920

Fig. 1

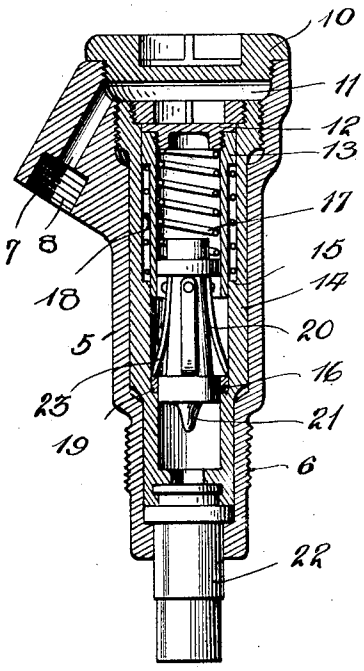
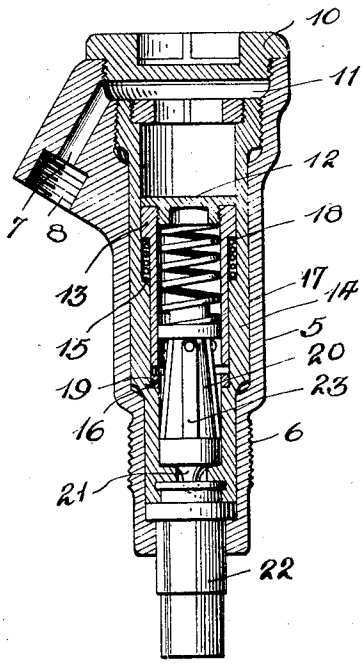


Fig. 2



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UNITED STATES PATENT OFFICE.

ANDREW T. HALL, OF NEWPORT, RHODE ISLAND, ASSIGNOR TO THE GOVERNMENT OF THE UNITED STATES.

TORPEDO.

Application filed August 9, 1920. Serial No. 402,433.

To all whom it may concern:

Be it known that I, ANDREW T. HALL, a citizen of the United States, residing at Newport, Rhode Island, have invented new and useful Improvements in Torpedoes, of which the following is a specification.

This invention relates to improvements in torpedoes and more particularly to the pistols adapted to ignite the fuel in the combustion flask. As is well known to those familiar with torpedo construction and operation the turbines are diven by a mixture of compressed air and steam, the steam being formed by the conversion of water sprayed into the combustion flask into steam by the utilization of the heat given off by an alcohol spray burner or the like. The alcohol burner is ignited by means of a pistol when the torpedo is fired. The invention will hereinafter be described with relation to such application although it is, of course, to be understood that it is not to be limited to this particular application or the materials above specifically mentioned.

One of the objects of the present invention is to provide a simple and practical self cocking pistol adapted to be operated by the fuel pressure thus insuring the admission of the fuel to the combustion flask simultaneous with the operation of the pistol.

A further object is to provide a pistol of the above character which may be inexpensively manufactured and assembled.

A further object is to provide a pistol which will be safe to handle at all times being in normal or inert position until the moment of firing at which time it may be depended upon to ignite the charge.

Other objects will be in part obvious and in part hereinafter pointed out in the accompanying drawings forming part of this disclosure and in the several figures of which similar reference characters denote corresponding parts.

Figure 1 is a longitudinal sectional view of the device in normal position.

Figure 2 is a similar view showing the device in firing position.

It is to be understood that the mechanism shown in Figures 1 and 2 is adapted to be connected with the combustion pot of the torpedo in a manner familiar to those skilled in the art. The fuse is provided with a main body member 5 with threads 6 whereby the same may be screwed into the wall of the pot. At one side is a diagonal passage 7 provided with a threaded recess 8 to which a pipe is adapted to be connected at one end, the opposite end of which pipe may be connected with the rotary valve for controlling the admission of the fuel, water and air to the pot. The upper part of the body member 5 is provided with a removable cap 10 having threaded or other suitable engagement mainly for the purpose of convenience of assembly. Beneath the cap is a chamber 11 and what may be considered a piston head 12 threaded into the top of a tubular member 13. These members are adapted to reciprocate within a sleeve 14 provided with an offset shoulder 15 near the central part and a second offset shoulder 16 near the lower part. Interposed between the shoulder 15 and a shoulder near the top of the member 13 is a spring 18 and within the member 13 is a second spring 17 acting between the head 12 and a firing pin member 20. This firing pin member is provided with a pin proper 21 adapted to engage the cap in the end of fuse cartridge 22. At the sides of the firing pin carrying member 21 are a plurality of flat flaring springs 23 adapted to engage a ring 19 resting on the shoulder 16. It is believed to be unnecessary to go into the details of construction and assembly more than above outlined for the reason that the device will be perfectly clear in its structure and operation to those skilled in the art. It may be stated, however, that the operation is substantially as follows:—

The air pressure or fuel pressure, according to the application or use is admitted through passage 7 and acts upon the upper part of the head 12 forcing the same downwardly compressing both springs 17 and 18. As the member 13 moves downwardly, however, its lower edge will engage the flaring springs 23 and force them inwardly until they reach the diameter of the lower part of the member 14 whereupon the firing pin is urged downwardly by reason of the compressed spring 18 as shown more clearly in Figure 2. The pin 21 strikes the cap in the end of the fuse 22 and the operation is completed except for the restoring of the parts to normal position by the action of the spring 17 which takes place as soon as the

pressures are equalized. When the pressure is relieved from behind head 12, spring 17, which has been compressed by the pressure acting on head 12, tends to return to its initial position, carrying with it head 12, member 13, firing pin member 20, firing spring 18, firing pin 21 and flaring springs 23 mounted upon a firing pin member 20. The ends of flaring springs 23 are within the lower part of member 14 and bear against the walls of the small diameter until they are raised by the upward action of spring 17 to a position opposite the shoulder 16, whereupon they are spread out by the wedging effect of firing pin member 20 and their natural resiliency, and land on the shoulder 16, thus returning the mechanism to its normal position. The wedging effect of firing pin member 20 is produced by the small amount of tension still available in firing spring 18. This type of fuse firing mechanism is preferably fired by fuel pressure which is an advantage in that the pistol does not fire until the fuel arrives in the combustion pot thus obviating non-ignition by the fuse through premature firing. The mechanism, as previously stated, is adaptable to the rotary valve for fuel, water and air distribution to the pot. The mechanism is simple and positive in its action, requires no lap joints, is self-cocking and non-cushioning and, in short, is believed to accomplish, among others, all of the objects and advantages herein set forth.

What I claim is:

1. A firing mechanism for the combustion flasks of torpedoes comprising a member adapted to carry a cartridge, a firing pin normally held in locked position out of engagement and away from the primer, a firing pin member carrying the firing pin, spring arms carried by said member, a spring engaging said firing pin member and adapted to be compressed on admission of fluid pressure, a second spring adapted to be compressed on admission of fluid pressure, a sleeve interposed between said springs and adapted to co-act with the spring arms carried by the firing pin member to release the same after said springs have been compressed whereby said first spring moves the firing pin into engagement with the primer.

2. A firing mechanism for the combustion flasks of torpedoes comprising a cylindrical member carrying a primer, a firing pin, a firing pin member and a spring for moving the firing pin into engagement with the primer, a plurality of springs associated with the firing pin member normally locking said firing pin against movement, a plurality of coiled springs, one of which acts upon said firing pin member and the other of which coacts with the casing and a movable sleeve separating said parts adapted to compress said first springs when fluid pressure is admitted and release the locking springs whereby one of said coiled springs carries the firing pin into engagement with the primer.

Signed at Newport, Rhode Island, this 13th day of March, 1920.

ANDREW T. HALL.