W. C. IRWIN.

PROJECTILE.

APPLICATION FILED JULY 26, 1917.

1,281,967. Patented Oct. 15, 1918.

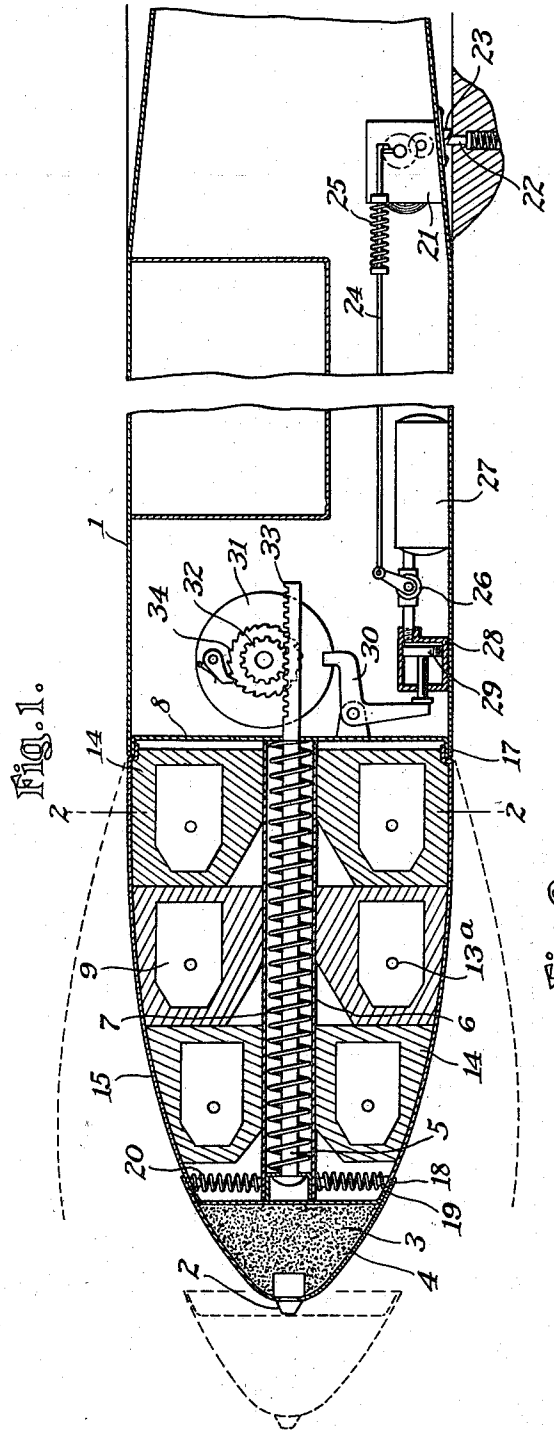


Fig. 1.

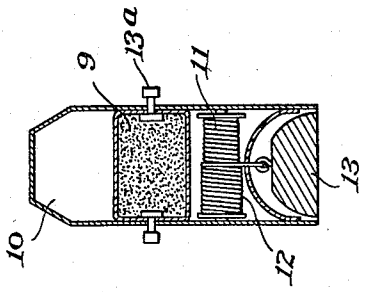


Fig. 3.

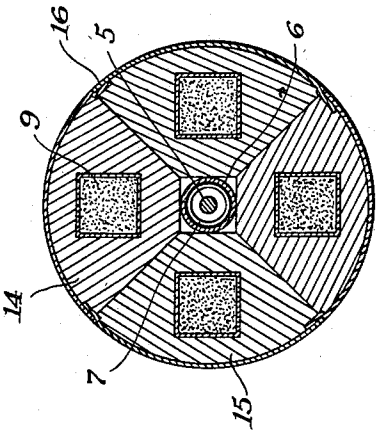


Fig. 2.

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UNITED STATES PATENT OFFICE.

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PROJECTILE.

1,281,967. Specification of Letters Patent. Patented Oct. 15, 1918.

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To all whom it may concern:

Be it known that I, WILLIAM C. IRWIN, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

The present invention relates to projectiles, being, in this instance, illustrated as embodied in a marine torpedo, but it will be understood that the invention is capable of being embodied in an aerial projectile. The object of the invention is to provide a projectile which will have a plurality of bursting charges, provision being made whereby these charges may be simultaneously exploded while they are attached to the projectile, or may be detached or disconnected from the projectile to be individually exploded. Another object of the invention is to provide said charges with floats whereby they may act as marine mines. Still another object of the invention is to provide anchors on the floats held against action for a length of time so that the mines will float apart after being discharged from the projectile.

To these and other ends the invention consists of certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:—

Figure 1 is a longitudinal section for a portion of a marine torpedo;

Fig. 2 is a transverse section on the line 2—2, Fig. 1; and

Fig. 3 is an enlarged sectional view through one of the bursting charges.

In the illustrated embodiment of the invention, 1 indicates a marine torpedo which may be provided with the usual propelling and controlling means, not shown. At the front end of this torpedo is arranged a fuse 2, either of the percussion or time type, or both, adapted to produce the explosion of a detonating charge 3 in the chamber 4 in the rear of the fuse. This chamber, together with the fuse, may be supported for longitudinal movement by a stem 5 which is guided in a tube 6, extending longitudinally of the torpedo and inclosing a helical spring 7. The latter abuts the rear wall of the chamber 4 at one end and the partition 8 at the other end, the tube 6 projecting from said partition 8.

Between the chamber 4 and the partition 8 is formed a chamber which incloses a plurality of bursting charges 9. In this instance, these charges are in the form of floating mines, each being provided with an air chamber or other float 10 and an anchor 13. In this instance, the anchor is in the form of a weight secured by a cable 12 wound on a drum 11. The weight is adapted to sustain the mine in the proper position in order that the percussion caps 13ª may be engaged by a boat.

To cushion the mines from each other, and at the same time to permit the mines to be strewn over a large area by the tide or waves, each mine is inclosed within a jacket 14 of soluble matter, such, for instance, as a chalk and sugar compound. By this arrangement the anchor of each mine will be held against operation and each mine will float on the surface of the water until such a time that the soluble matter has dissolved when the weight 13 will be freed, permitting the weight to lower with reference to the floating portion of the mine, and thus tending to anchor the mine in a certain position.

To the end that the bursting charges may be discharged while in their common chamber, the latter has its exterior wall divided into a plurality of longitudinally-extending sections 15, having their abutting edges overlapping at 16, and their inner edges interlocking at 17 with that portion of the torpedo adjacent the wall 8, their outer edges being interlocked at 18 with a projecting flange 19 on the chamber 4. Springs 20 are interposed between the tube 6 and the outer ends of the wall sections 15 so that when the spring 7 acts on the chamber 4, to move the latter to the position shown in dotted lines, Fig. 1, the springs 20 will act on the outer ends of the wall sections 15, thus separating such sections and permitting the discharge of the bursting charges from their chamber.

The time of the opening of the chamber containing the bursting charges is determined preferably by a timing mechanism 21 of any suitable construction. This timing mechanism is set or adjusted before the projectile is introduced into the gun which is to throw the projectile. As the projectile passes from the bore of such gun,

the yielding projection 22 within the gun coöperates with the portion 23 of the timing mechanism, starting the latter into operation. After a time the timing mechanism releases the rod 24 to the action of its spring 25, this rod being connected to a valve 26 which admits air from an air tank 27 to a piston chamber 28, causing the air to act on the piston 29 within the chamber and operate a bell crank latch 30 which engages within a notch of a disk 31. The disk 31 is connected by a gear wheel 32 to a rack bar 33 formed on the rod or plunger 5. It will thus be seen that the discharge of the plurality of bursting charges from their chamber is controlled by a timing mechanism adjusted when the projectile is inserted in the gun. It may be desirable to provide a pawl and ratchet connection 34 between the rod 33 and the disk 31, in order that the rod 33 may be moved inwardly after the latch 30 has been engaged with the wheel 31, so that the mines may be introduced into their common chamber after the completion of the other parts of the projectile.

From the foregoing it will be noted that there has been provided a projectile which has a plurality of bursting charges adapted to be simultaneously exploded by a detonating charge on the projectile, or to be separated from the projectile to be independently exploded. In this instance, the projectile is in the form of a marine torpedo and the explosive charges are provided with floats which will permit the charges to act as mines when separated from the projectile. These mines are provided with anchors which are held against operation for a length of time after the mines are discharged in order that the mines may float apart. This means for holding the anchors against operation also tends to separate the charges within the chamber of the projectile. It is believed that the construction herein shown will be effective for mining against submarines or under sea boats. The detonating charge may be of sufficient strength to produce an explosion which will crush the wall of a submarine. The cables connecting a mine with its weight may be of any length, the length preferably being such that the mines will be situated below the surface of the water. Any suitable means may be employed on the mines for causing them to explode on coming into contact with the water or after the mines have reached a certain depth to destroy enemies' mines or netting.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A projectile having a plurality of bursting charges separable from the projectile and from each other and adapted to be exploded simultaneously while connected to the projectile or individually while separated from the projectile.

2. A projectile according to claim 1 in which a detonating charge is provided on the projectile to effect the simultaneous explosion of the bursting charges.

3. A projectile according to claim 1 in which each bursting charge has an individual percussion device.

4. A projectile according to claim 1 in which a timing mechanism effects the separation of the bursting charges from the projectile.

5. A projectile according to claim 1 in which a detonating device is employed for exploding all of the charges simultaneously and a timing device is employed for separating the bursting charges from the projectile.

6. A projectile according to claim 1 in which the bursting charges are arranged in a common chamber, the walls of which are formed by separable sections movable to permit the discharge of the bursting charges.

7. A projectile according to claim 1 in which the bursting charges are provided with means for sustaining them in a floating condition in water so as to act as mines.

8. A projectile according to claim 7 in which each bursting charge has means to serve as an anchor.

9. A projectile according to claim 8 in which a soluble substance sustains the anchor of each bursting charge against action for a length of time so that the charges may float apart after being separated from the projectile.

WM. C. IRWIN.