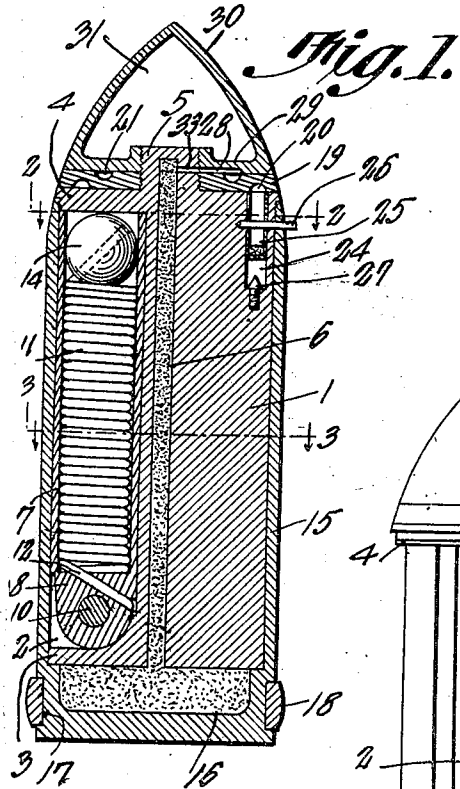
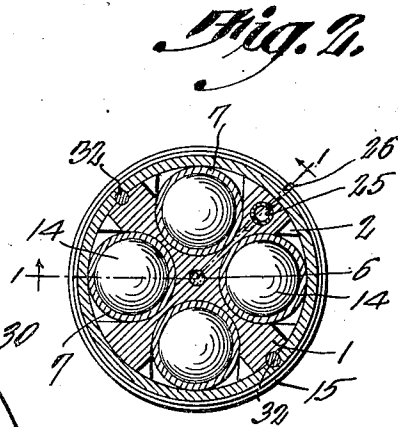
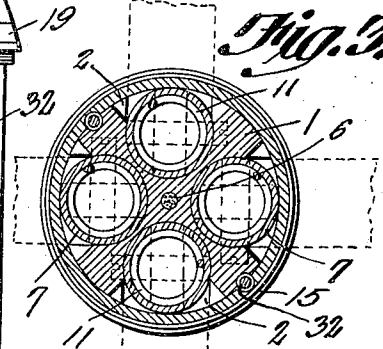
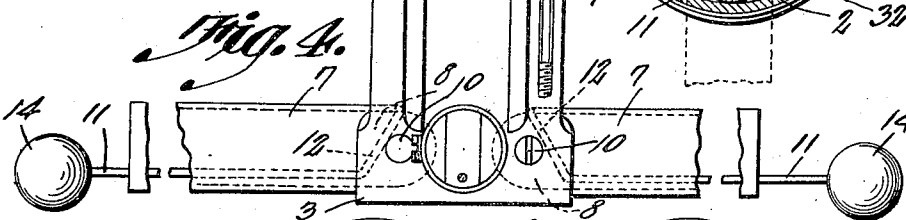
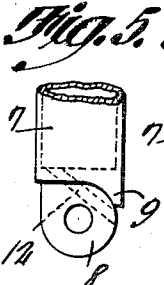
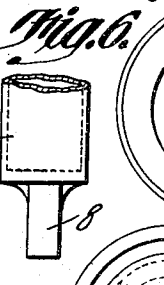
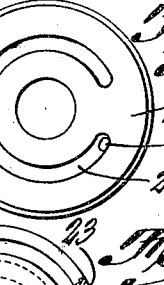
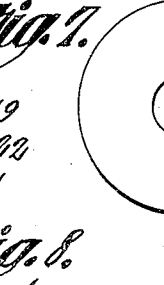
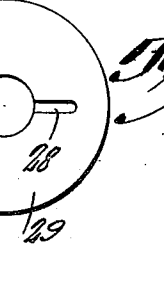
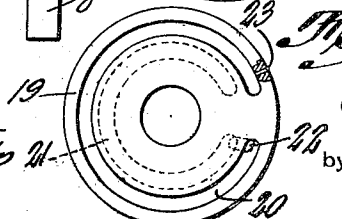


1,067,080.

Patented July 8, 1913.



Witnesses
J. P. Torrey
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UNITED STATES PATENT OFFICE.

GUSTAV TORDAY, OF SOUTH BETHLEHEM, PENNSYLVANIA.

PROJECTILE.

1,067,080.

Specification of Letters Patent.

Patented July 8, 1913.

Application filed March 11, 1913. Serial No. 753,579.

To all whom it may concern:

Be it known that I, GUSTAV TORDAY, a citizen of the United States, residing at South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented a new and useful Projectile, of which the following is a specification.

The device forming the subject matter of this application is a projectile, adapted primarily, although not exclusively, to be employed for the destruction of flying machines.

One object of the invention is to provide a novel structure which will expand beyond the body of the projectile so as to tear a large hole in the obstacle encountered.

Another object of the invention is to provide novel means for timing the explosion of the projectile.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing: Figure 1 shows the invention in longitudinal section; Fig. 2 is a transverse section on the line 2—2 of Fig. 1, the line 1—1 on Fig. 2 indicating the cutting plane of Fig. 1; Fig. 3 is a transverse section on the line 3—3 of Fig. 1; Fig. 4 is a sectional side elevation showing the projectile in opened position; Fig. 5 is a fragmental side elevation of one of the arms; Fig. 6 is a fragmental side elevation of one of the arms, the view point in Fig. 6 being 90° remote from the view point in Fig. 5; Fig. 7 is a top plan of the rotatable timing member; Fig. 8 is a bottom plan of the rotatable timing member; and Fig. 9 is a bottom plan of the nose of the projectile.

In carrying out the invention there is provided a body 1 equipped with longitudinally extended recesses 2 extended between a rear disk 3 and a forward disk 4 which constitute parts of the body 1. The forward disk 4 is equipped with a threaded boss 5. The body 1 is provided with a central passage 6 which at its forward end extends into

the boss 5, the passage 6 at its rear end projecting through the rear disk 3.

The body 1 of the projectile is provided with extensions which are adapted to swing laterally. The extensions include tubular arms 7 located in the recesses 2, the bores of the tubular arms 7 constituting longitudinal channels. The rear ends of the tubular arms 7 are provided with bearings 8 and each bearing 8 is equipped in its edge with a shoulder 9. Pins 10 extend through the bearings 8 and engage the body 1 to form a pivotal mounting for the rear ends of the tubular arms 7. Flexible elements, preferably steel wires 11 are coiled in the arms 7. The rear ends of the wires 11 extend through the bases of the arms 7 and are engaged as indicated at 12 with the shoulders 9. To the forward ends of the steel wires 11 balls 14 are connected, the balls 14 being located within the tubular arms 7 and constituting auxiliary projectiles.

The projectile comprises, as cooperating parts, the body 1 hereinbefore referred to, and a tubular case 15 in which the rear end of the body 1 is inclosed. In the base of the case 15 there is a chamber 16 which is adapted to contain an explosive. The chamber 16 communicates with the central passage 6 in the body 1. The case 15 is equipped adjacent its base with a circumscribing groove 17 in which is located a soft ring 18, adapted to engage the rifling. The ring 18 may be made of copper or other material which will conform to the necessary extent to the rifling. The case 15 is held upon the body 1 by means of screw bolts 32 which engage the forward disk 4 of the body 1 and the base of the case 15. The bolts 32 are of sufficient strength to hold the body 1 and the case 15 together while the ring 18 is engaged with the rifling so that the body and the case may rotate together. The bolts 32 however, are relatively weak, so that, after the projectile has left the gun and after the charge in the chamber 16 has been fired, the bolts will separate and permit the case 15 to leave the body 1, whereupon, the tubular arms 17 will swing outwardly, into the positions shown in Fig. 4. The arms 7 constitute means for directing the lateral movement of the balls or projectile 14, and constitute also, means for directing the lateral

flight of the steel wires 11. In operation, therefore, and after the projectile has been fired, the arms 7, the wires 11 and the balls 14 will be disposed in outstanding relation, as clearly shown in Fig. 4, and will serve to

5 tear a large opening in any obstacle which may be encountered by the projectile. A means is provided for timing the explosion of the contents of the chamber 16. This means includes a movable member or disk 19 which is mounted upon the boss 5. The disk 19, in its rear face, is provided with an outer groove 20 and in its forward face is provided with an inner groove 21 which is of less diameter than the outer groove 20. A passage 22 connects the grooves 20 and 21 at one end, and the outer groove 20 may be equipped with a vent 23, positioned as may be desired.

10 The body 1 is equipped in its forward end with a longitudinally extended priming bore 24, adapted to receive a cartridge or capsule 25. The cartridge 25 is held in place, prior to the insertion of the projectile into the gun, by means of a pin 26 inserted into the body 1, as clearly shown in Figs. 1 and 2. Located at the base of the priming bore 24 is a firing pin 27. The outer groove 20 communicates with the priming bore 24 and the inner groove 21 communicates with a groove 28 formed in the base 29 of the nose 30 of the projectile, the nose 30 being mounted upon the boss 5. The groove 28 communicates with a passage 33, located in the boss 5, the passage 33 communicating with the central passage 6 in the body 1 of the projectile. If desired, the nose 30 may be equipped with a chamber 31 which may contain an explosive.

30 In practical operation, the timing member or disk 19 may be rotated on the stud 5 so as to vary the position of the priming bore 24 with respect to the outer groove 20, the position of the inner groove 21 being adjusted in this manner, with respect to the groove 28 and the passage 33 which constitutes an outlet for the passage 6. Before the projectile is placed in the gun, the pin 26 is removed, and when the projectile is fired out of the gun, the cartridge 25 will move rearwardly and strike the firing pin 27, and thus the cartridge will be exploded, the fire from the cartridge traversing the groove 20, the connecting passage 22, the groove 21, the groove 28, the passage 33, the passage 6, and thereby exploding the contents of the chamber 16. The grooves 20 and 21, together with the port 22, constituting a sinuous passage in the disk 19, the effective length of which passage may be regulated, by rotating the disk 19 in the manner hereinbefore set forth. In this manner, the time which will elapse between the passage of the projectile from the mouth of the gun and the firing of the contents of the chamber 16 may be regulated.

When the contents of the chamber 16 has been exploded, in the manner hereinbefore described, the case 15 will be forced rearwardly and the body 1 of the projectile will be forced forwardly, thus effecting a breaking of the bolts 32, whereupon the body portion of the projectile will pass out of the case 15. The arms 7 will then swing laterally and the balls 14 together with the wires 11 will shoot laterally along the arms 7 into the protruding positions shown in Fig. 4.

Having thus described the invention, what is claimed is:—

1. A device of the class described comprising as cooperating parts; a body and a case inclosing the body, one of which cooperating parts is provided in its base with an explosive chamber for which the other cooperating part constitutes a closure, whereby the case and the body may be separated when the explosive in the chamber is discharged; and an extension connected with the body and housed within the case, the extension being adapted to protrude beyond the body after the body and the case are separated.

2. A device of the class described comprising as cooperating parts, a body and a case inclosing the body, one of which cooperating parts is provided in its base with an explosive chamber for which the other cooperating part constitutes a closure, whereby the case and the body may be separated when the explosive in the chamber is discharged; frangible means for connecting the body to the case; and an extension connected with the body and housed within the case, the extension being adapted to protrude beyond the body after the body and the case have been separated.

3. A device of the class described comprising a body; an auxiliary projectile movably mounted upon the body; an arm pivoted to the body and constituting means for directing the movement of the auxiliary projectile away from the body; and a flexible element connected with the auxiliary projectile and with the body.

4. A device of the class described comprising a body; an arm pivoted to the body and having a longitudinal channel; and a flexible element connected with the body and adapted to move outward in the channel and along the arm.

5. A device of the class described, comprising a body; an auxiliary projectile in the body; an arm pivoted to the body and constituting means for directing the outward movement of the auxiliary projectile away from the body; a flexible element connected with the auxiliary projectile and with the body; and a removable cap in which the body and the arm is inclosed.

6. A device of the class described comprising a body; an arm pivoted to the body

and having a longitudinal channel; a flexible element connected to the body and adapted to move outwardly in the channel and along the arm; and a removable cap in which the body and the arm are inclosed.

7. A device of the class described comprising a body; an auxiliary projectile in the body; an arm pivoted to the body and constituting means for directing the outward movement of the auxiliary projectile away from the body; a flexible element connecting the auxiliary projectile with the body; and a cap in which the body and the arm are inclosed, the space between the end of the body and the end of the cap constituting an explosive chamber.

8. A device of the class described comprising a body; an auxiliary projectile in the body; an arm pivoted to the body and constituting means for directing the outward movement of the auxiliary projectile; a flexible element connecting the auxiliary projectile with the body; a case in which the body and the arm are inclosed, the device being provided with an explosive chamber, located between the end of the body and the end of the case; the body being provided with a priming bore; and a movable timing member upon the body, the timing member being provided with a sinuous passage, forming a communication between the explosive chamber and the bore, the effective

length of said passage being adjusted when the timing member is moved.

9. A projectile of the class described comprising a body; a case surrounding the body; a movable extension pivoted to the body and held within the case, the projectile being provided with an explosive chamber located between the end of the body and the end of the case; the body being provided with a priming bore; a timing member movable upon the body and having a passage forming a communication between the explosive chamber and the bore; a cartridge slidable in the bore; and a manually operatable means for holding the cartridge against sliding movement.

10. A device of the class described comprising a body; a tubular arm pivoted to the body and housed within the body, the arm being adapted to swing outwardly, away from the body; an auxiliary projectile located within the arm; and a flexible element located within the arm, the flexible element constituting means for securing the auxiliary projectile to the body.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GUSTAV TORDAY.

Witnesses:

FRANK ZIRO,
CHARLES A. GORZTOWJE.