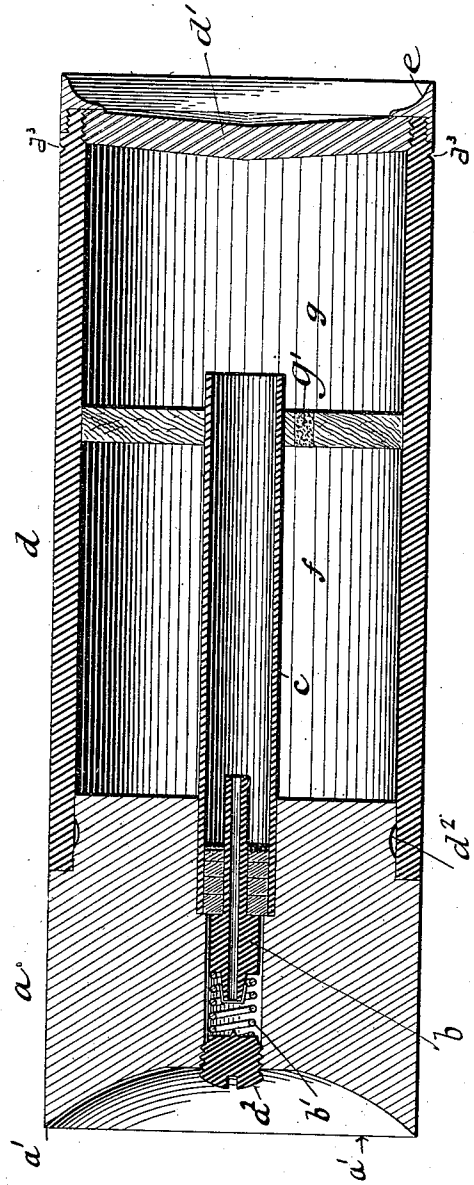
No. 669,534. Patented Mar. 12, 1901.

W. L. LOWREY.

PROJECTILE.

(Application filed Feb. 24, 1899.)

(No Model.)



WITNESSES

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PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 669,534, dated March 12, 1901.

Application filed February 24, 1899. Serial No. 706,675. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. LOWREY, a citizen of the United States, residing at Morgan Hill, in the county of Buncombe and State of North Carolina, have invented certain new and useful Improvements in Projectiles, of which the following is a full, clear, and exact description.

This invention relates to projectiles, and particularly to projectiles carrying explosive charges and known as "shells."

The principal object of the invention is to provide a shell which will insure the greatest possible amount of damage to the target, and for this purpose I provide a shell with two explosive charges, one of which is arranged behind the other, the rearward charge being fired by a percussion-firing device upon the impact of the projectile and the forward charge being fired by ignition from the explosion of the rearward charge. The rear portion of the shell is weakened, so that the explosion of the rearward charge will blow off the rear end of the projectile and give a penetrating impulse to the remainder of the shell. In this way a second explosion will take place after the shell has wholly or partially entered the target.

Another object of the invention is to provide means for preventing the projectile from glancing off from the surface which it strikes, such means consisting of an annular cutting edge formed around the forward portion of the projectile in such location that some portion of it must always present itself to the object against which the projectile is fired. If the projectile thus constructed strikes the object at an angle thereto, the point of the cutting edge which first strikes will act as a pivot upon which the projectile will swing into a position where its axis will be at right angles to the surface of the object struck, and thus be in a position to penetrate the object when the penetrating charge is fired.

My improved shell will be described in detail with reference to the accompanying drawing, in which the figure is a longitudinal central sectional view of a shell.

The forward end or head *a* of the shell is a solid cylindrical block of high-grade steel, the front end of which is concaved to provide at the outer diameter an annular cutting edge *a'*. The head is provided with an axial passage to receive the tubular weighted firing-pin *b*, said passage being enlarged at the rear to receive the end of the fuse-tube *c*. The forward end of this passage is closed by a plug a^2, between which and the end of the firing-pin is a coiled spring *b'*, normally holding the pin away from the plug, but adapted to yield when the projectile strikes and allow the pin, which carries the cap on its forward end, to move forward and fire the cap by contact with the plug. The body of the shell is a cylinder *d*, of low-grade steel or wrought-iron, closed at the rear by a concaved plate *d'* of similar material and shrunk onto the rear diameter of the head *a*, the latter being made smaller to make the surface of the cylinder flush with the head. For better security the head may have an annular groove d^2, into which the metal of the cylinder will enter in the shrinking process. The extreme rear end will be fitted with an annular flange *e*, of soft metal, adapted to be forced radially outward by the explosion of the propelling charge to enter the rifling of the gun and aid in directing the flight of the projectile. The chamber holding the explosive charge of the shell is preferably divided into two parts *f* and *g*, one being forward of the other, the latter containing a material which is first fired by the fuse in the tube *c* and acting immediately after the impact of the shell to force it into the object. The explosion of this penetrating charge will set off the charge in the forward compartment by communicating its flame thereto through the small fuse-tube *g'* in the partition. The second explosion will therefore necessarily take place an appreciable time after the first and will therefore do its damage after the shell has penetrated to some extent into the object struck. The fuse in the tube *c* may be made as rapid as desired, and to separate the chamber containing the firing-pin from the fuse disks of wire-netting and wadding are inserted at *h*. The rear end of the shell *d* is provided with an annular weakening-groove d^3, which insures

the rupture of the shell at that point and the removal of the closing-disk d' by the force of the explosion in the chamber g.

The annular cutting edge at the forward end of the projectile is preferably located at the extreme diameter of the shell, although a slight variation of this may be in some instances serviceable.

The ability possessed by the shell to right itself at the moment of impact of course takes place whether the shell itself becomes inclined during flight or the surface struck is inclined to the line of flight. In either case the cutting edge at the head of the projectile strikes at one point and its momentum causes it to swing upward, downward, or laterally to immediately bring its axis at right angles to the surface struck. This occurs at about the moment the penetrating charge is fired, which therefore acts most advantageously.

Having described my invention, I claim—

1. A projectile provided with two explosive charges one arranged forward of the other, a percussion firing device adapted to explode the rearward charge upon the impact of the projectile, and means for igniting the forward charge after and by the explosion of the rearward charge, the rearward portion of the projectile being relatively weakened so that the base will be blown off when the rearward charge is exploded and the projectile thereby given a forward impetus at the moment of striking, substantially as described.

2. A projectile provided with two explosive charges one arranged forward of the other, a percussion firing device adapted to explode the rearward charge upon the impact of the projectile, and means whereby the explosion of the rearward charge will cause the explosion of the forward charge, the rearward portion of the projectile being relatively weakened so that the base will be blown off when the rearward charge is exploded and the projectile thereby given a forward impetus at the moment of striking, substantially as described.

3. A projectile provided at its forward end with an annular cutting edge and having two explosive charges one arranged forward of the other, a percussion firing device adapted to explode the rearward charge upon the impact of the projectile, and means whereby the first explosion will cause the explosion of the second charge, the rearward portion of the projectile being relatively weakened so that the base will be blown off when the rearward charge is exploded and the projectile thereby given a forward impetus at the moment of striking, substantially as described.

4. A projectile provided with two explosive charges, one arranged forward of the other, a firing device adapted to explode the rearward charge upon the impact of the projectile, means for firing the forward charge after the explosion of the rearward charge, the structure of the projectile being weakened annularly at its rear end so that the explosion of the rearward charge will blow off the rear end of the projectile and thereby exert its force against the atmosphere behind the projectile, substantially as described.

In witness whereof I subscribe my signature in presence of two witnesses.

WILLIAM L. LOWREY.

Witnesses:

J. R. BRYANT,

J. Y. KEITH.