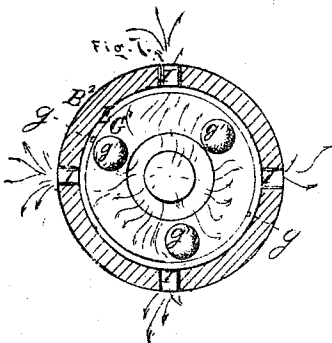
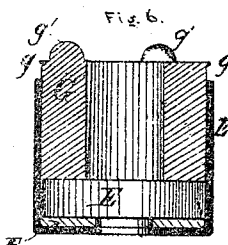
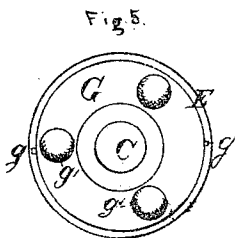
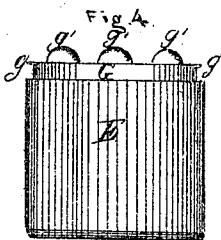
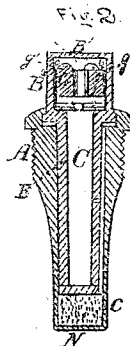
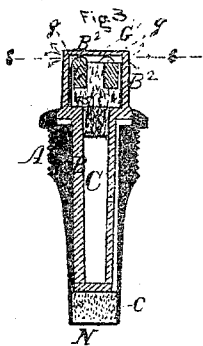
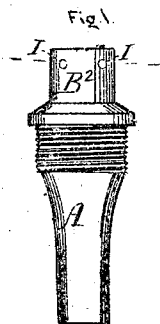


*B. B. Hotchkiss,
Shell Fuse.*

No. 42660.

Patented May 10 1864



*A. D. Smith
Wm. L. Thompson*

Signature
*B. B. Hotchkiss
per Thos. S. Eaton Attor.*

UNITED STATES PATENT OFFICE.

B. B. HOTCHKISS, OF SHARON, CONNECTICUT.

IMPROVEMENT IN TIME-FUSES FOR SHELLS.

Specification forming part of Letters Patent No. 42,660, dated May 10, 1864.

To all whom it may concern:

Be it known that I, B. B. HOTCHKISS, of Sharon, in the county of Litchfield and State of Connecticut, have invented a certain new and useful Improvement in Time-Fuses for Explosive Projectiles; and I do hereby declare that the following is a full and exact description thereof.

The accompanying drawings form a part of this specification. Figure 1 is a side view of the fuse complete. Fig. 2 is a vertical section of the same before firing. Fig. 3 is a corresponding section after firing. It shows the positions of the parts after the striker has fallen on the discharge of the cannon and has exploded the fulminate, and has then been thrown forward to the fullest possible extent by the resulting gases. Fig. 4 is a side elevation of the capped striker detached from the other parts. Fig. 5 is a corresponding plan view. Fig. 6 is a central vertical section through said part. Fig. 7 is a cross-section through the entire fuse on the line S S in Fig. 3.

Similar letters of reference indicate like parts in all the figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, by the aid of the drawings, and of the letters of reference marked thereon.

A is the exterior fuse-plug; B, an interior part fitting tightly in A, and adapted to be turned therein to regulate the time of the explosion in a manner not necessary to be described; and C is the slow-burning composition which fills the interior of B. The fire from the combustion of C, communicates at a proper time to the quick-powder D, and the explosion which then occurs ruptures the thin plate N and ignites the main contents of the shell. (Not represented.)

It is necessary to ignite the forward end of the slow composition C at the moment the shell is projected forward. To effect this, I inclose within the capacious head B² of the turning part B, a quantity of fulminate and a striker, which latter strikes on the former by its inertia when the shell is thrown forward. The hot gases or flame from the fulminate ignite the forward end of the composition C, and the combustion of this composition pro-

duces a powerful and continuous current of flame, which should be allowed to escape freely under all circumstances, in order to insure a certain and uniform combustion of the slow composition. I attach great importance to the means by which I provide for such escape of the gases.

E is a thin shell or cap, of copper or other suitable metal, and G is a striker of metal applied therein in the manner represented. When the cap E and striker G are fitted together and introduced in the head B², in the manner represented, the firing of the gun will cause the striker G to move backward relatively to E, and shear off the slight projections *g g*, which overhand the edge of the cap E. This allows it to strike on and explode the fulminate F, which is between the interior of the cap E and the base of the striker G. I close the front of the hollow head B² entirely by a stout disk, B³, which is secured by bending down a part of the rim of B², so that it shall cover the edge of B³ after the latter is in place, and I provide holes I in the periphery or sides of B², very near the front thereof, as represented. In case the striker G is thrown forward after it has struck and exploded the fulminate F, it will be observed that its projections *g'* will strike the front plate, B³, as shown in Fig. 3, and hold the main body G of the striker at such a distance from B³ that the gases may find a free passage through the intervening space, which I designate G', between the main body of the striker G and the front plate, B³, so as to escape without possible obstruction, under any circumstances, through the final discharge-holes I. The motion of the gases in such cases is denoted by arrows in Figs. 3 and 7.

The fact that the openings I are in the side and not in the front of the head is of advantage. If these holes are in the front, B³, the escape of the gases is liable to be entirely stopped and the fuse extinguished in a single ricochet over water or soft earth. This is a matter the importance of which has long been known; but I am not aware that any one has, previous to my invention, provided for the leading of the gases freely to side holes, I, through spaces G' between the striker and the front of the inclosing cavity, which spaces are kept open under all conditions, as I have done.

I do not claim the lateral openings I, except in combination with the other elements of my invention; but,

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

In connection with the fuses of time-shells, the time composition C, fulminate F, striker

G, interior communicating passages, G', and exterior lateral discharge-passages, I, combined and arranged substantially as and for the purpose herein set forth.

B. B. HOTCHKISS.

Witnesses:

THOMAS D. STETSON,
D. W. STETSON.