J. S. ADAMS.

Shell-Fuse.

No. 45,806. Patented Jan. 10, 1865.

Fig. 1.

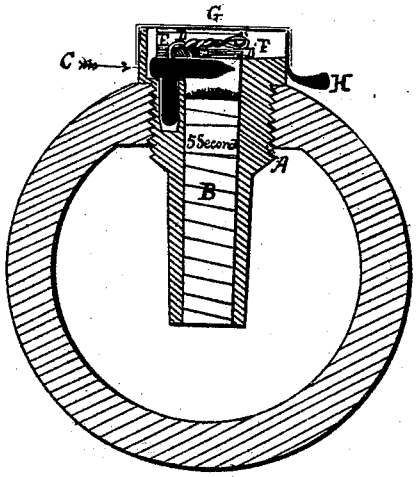


Fig. 2.

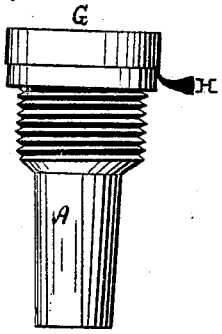
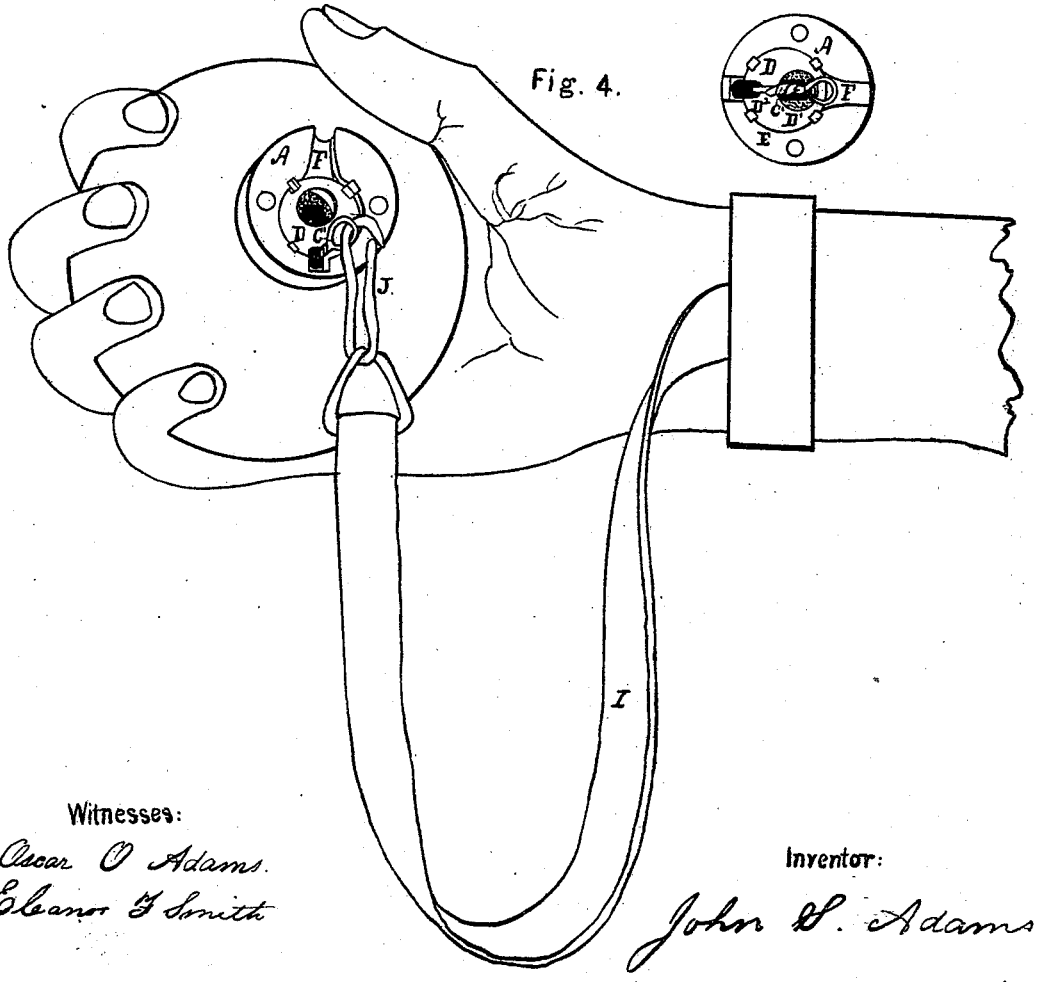


Fig. 3.

Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN S. ADAMS, OF STAUNTON, MASSACHUSETTS.

IMPROVEMENT IN IGNITING HAND-GRENADES.

Specification forming part of Letters Patent No. **45,806**, dated January 10, 1865.

To all whom it may concern:

Be it known that I, JOHN S. ADAMS, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in the Construction and Ignition of the Fuses of Hand-Grenades or other Projectiles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central longitudinal section of the fuse and grenade. Fig. 2 is a side elevation of the fuse. Fig. 3 is a plan of the same with the water-proof cap removed. Fig. 4 is a perspective view of the grenade and fuse, with the igniting-strap attached to the friction-wire and the wrist of the operator, showing the manner in which the grenade is to be held and the strap attached when the grenade is to be exploded when thrown.

Similar letters of reference indicate corresponding parts in the several figures.

This improvement consists in a certain arrangement and combination of the component parts of the fuse, to secure protection against accidental ignition or injury from the weather, and at the same time secure ease of access to the friction-wire when the grenade is to be used.

The objects and advantages of this improvement are as follows: First, its adaptation to use under a variety of circumstances and by a variety of means, as hereinafter shown; second, certainty of ignition when thrown in the manner described; third, rapidity of operation; fourth, safety to the operator; fifth, protection from danger of accidental ignition in transportation and handling and from injury from dampness.

To enable those skilled in the art to make and use my improvement, I will proceed to describe its construction and operation.

A is a metallic fuse-plug of common form, having a circular conical hole through it longitudinally, for the reception of the time-fuse B, which is inserted from the top of the plug. There is also a recess formed in the metal of the plug, at the side of the fuse-chamber, for the reception of the friction-primer C, which is inserted in the position shown by the drawings. A friction-primer of different form may by substituted for the present arrangement, provided the friction-wire is secured in the same relative position in the plug. The primer is firmly secured by means of the metallic disk D, which, fitting into the recess E, is secured by setting or riveting the metal of the fuse-plug down upon it in the manner shown. The primer may also be fastened by riveting the metal of the plug directly upon it, if desired. The vent-hole D' is made in the disk, to permit the escape of the gases from the burning fuse. The notch D^2 is formed in the edge of the disk, through which the friction-wire C' passes to the top of the disk. This disk forms a firm support for the water-proof cap, and at the same time serves to retain and concentrate upon the head of the time-fuse the flame of the exploding-primer, thus rendering the ignition of the time-fuse almost an absolute certainty. After the fuse-primer and disk are secured, as described, the friction-wire is bent down upon the top of the disk, the loop of the wire extending into the hook-slot F, so that it may be easily reached, and bent up by the spring-hook J when the grenade is to be used. The opening-tape H is then laid over the friction-wire, extending through the hook-slot and down the side of the plug. The water-proof cap G, composed of paper dipped in shellac or some other suitable preparation, is then applied, which completes the construction of the fuse. The metal surrounding the recess E secures the friction-wire from being disturbed by rough usage of the grenades in transportation or handling. The screw-thread should be coated with some suitable material before the fuse is screwed into the loaded grenade, so as to make the joint between the fuse and grenade water-proof. These grenades thus prepared may be ignited (after the water-proof cap is removed by means of the opening-tape) by quickly withdrawing the friction-wire from the primer by means of an igniting-strap, I, and hook J, spring, or other device for the purpose, either before the grenade is thrown or by the act of throwing it. They may be thrown from a fire-arm or mortar, centrifugal gun, sling, or any other device for throwing projectiles, and ignited as thrown by attaching to the friction-wire and some stationary part an igniting strap or device, to withdraw the friction-wire by the momentum of the grenade.

They may be thrown by hand and ignited by means of the igniting-strap I, attached to the friction-wire and the wrist of the operator in the manner shown in the drawings. This strap is made of leather or other suitable material, is about eighteen inches in length, and is provided with a spring-hook, J, by which it is attached to the friction-wire, and with a wrist-strap and buckle, by which to attach it to the wrist of the operator. The grenade thus attached may be thrown in the same manner as it would be were it independent of the igniting-strap, with sufficient additional force to compensate for the loss of velocity occasioned by the withdrawal of the wire. As the grenade is thrown, the sudden tension upon the strap withdraws the friction-wire, ignites the primer and fuse, and in the given burning-time of the fuse communicates fire to the powder in the grenade. These grenades may thus be exploded with great rapidity. By varying the burning-time of the fuses they may be thrown by the means described to a greater or less distance, as required. They are not liable to explode by being dropped upon the ground, unless attached to the strap, ready for use. In case they fail to ignite by the withdrawal of the wire when thrown, they cannot easily be ignited and thrown back by the enemy.

I am aware that there is no novelty in the employment of a friction-primer for the ignition of time-fuses of explosive shells when so arranged as to be ignited by the sudden shock of discharge when fired from a piece of ordnance.

I am also aware that hand-grenades have been ignited by friction-primers with long lanyards attached, and also that time-fuses lighted by hand have been used to ignite hand-grenades. Therefore I do not claim, broadly, the employment of a friction-primer to ignite time-fuses, but simply a new application and arrangement of parts with reference to and in connection with my method of ignition.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the recess E, the metallic disk D, the hook-slot F, the water-proof cap G, and the opening-tape H, all arranged substantially as and for the purposes set forth.

JOHN S. ADAMS.

Witnesses:

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