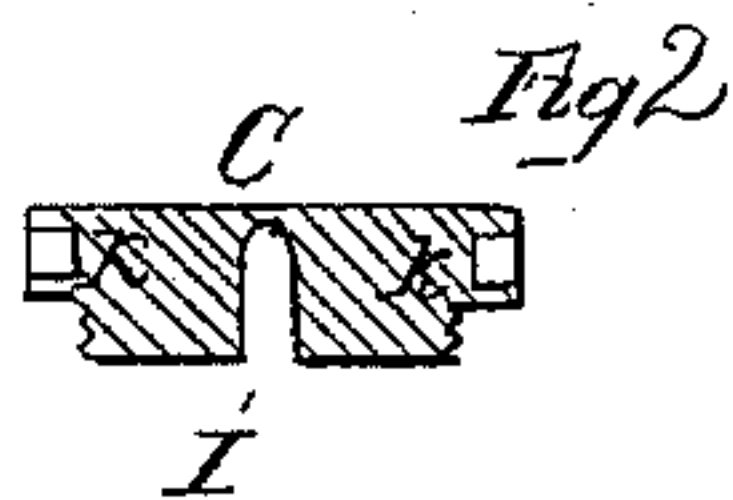
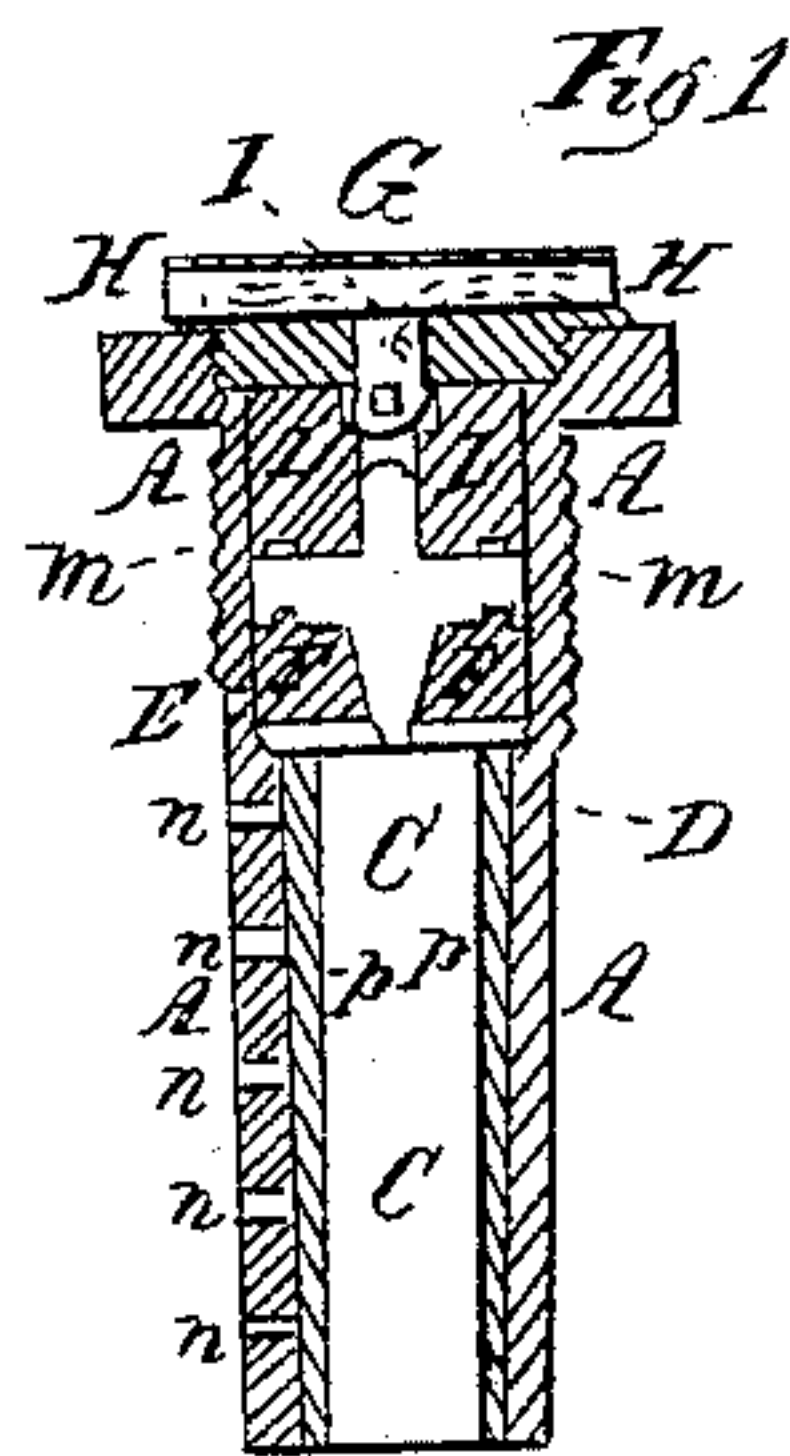


W. S. SMOOT.

Shell-Fuse.

Patented Oct. 28, 1862.

No. 36,806.



*Wm. N. Nutter*  
*J. A. Beale* } *Witnesses*

*W. S. Smoot*

# UNITED STATES PATENT OFFICE.

W. S. SMOOT, OF WASHINGTON, DISTRICT OF COLUMBIA.

## IMPROVEMENT IN COMBINED TIME AND CONCUSSION FUSE FOR SHELLS.

Specification forming part of Letters Patent No. 36,806, dated October 28, 1862.

*To all whom it may concern:*

Be it known that I, W. S. SMOOT, of Washington, in the District of Columbia, have invented an Improvement in Combined Time and Concussion Fuses for Shells; and I hereby declare that the following is a full and exact description of my invention, and the mode of operation thereof, reference being had to the accompanying drawings.

Figure 1 represents a tranverse section of the fuse. A A A A is a tubular metallic fuse-stock. In the bottom of the metallic stock is the paper case *p p*, containing the column of composition C C. Above the paper case *p p* is screwed a metallic disk, D, said disk having a hole bored through its center. A hole, E, is bored through the side of the fuse-stock A A, just above the disk D, but so as to reach within the shell when the fuse is screwed into its seat, said hole being closed by the tightly-fitting ring F. Into the top of the fuse-stock is screwed the piece of metal G, said piece of metal being perforated by the two holes H H and I, and having a groove, K, Fig. 2, upon that part of it which projects from the fuse-stock, the groove K and the holes H H and I to be filled with priming and quick-match. To this piece of metal G a perforated disk, L, is fastened, by quick-match or some other slight fastening, said disk fitting loosely into the fuse-stock, and having in it a groove, *m m*, filled with percussion-powder. The holes *n n n n n* may be bored at regular intervals through the fuse-stock below the metal disk D, so as to allow the paper case *p p* to be pierced for regulating the length of the fuse, as desired.

The mode of operation of the fuse is as follows: The shock of the discharge tears the metal disk L from its fastenings, and causes it to descend upon the ring F with sufficient force to ignite the percussion-powder in the groove *m m*, said percussion-powder igniting the column of fuse composition C C, which then burns out of the hole H H into the open air. Should the percussion-powder in the groove *m m* fail to ignite, the fuse would be lighted by means of the priming in the groove K and holes H H and I. Should the shell strike its target before the fuse composition C C is burned out, the inertia of the ring F would

cause it to move forward, thus opening the hole E at the same time that the vents H H are stopped up, and the gas from the burning fuse would drive down into and explode the shell.

The advantages of this fuse over all others are the following: First, by using a fuse-stock the same externally as that at present in use, this fuse can be applied to shells already in the field, it not being necessary to drill them out expressly for it; second, my time-fuse, being ignited both by windage and by concussion, is far more certain of being fired than one depending entirely upon the somewhat capricious nature of fulminate; third, the same reasons which render this so certain as a time-fuse operate also to render the ignition of the shell, on striking, more certain than by any other arrangement; fourth, after the burning of the fulminate used to ignite the time-fuse, there is more left to be affected by the heat of the burning fuse and engender premature explosions, as is the case where percussion devices are combined with time-fuses, while at the same time the lessening the amount of fulminate to be carried is a great desideratum, particularly on shipboard; fifth, this fuse can be made cheaper than any other approximating to these advantages.

I am aware that it is not new to combine with time-fuses a device for permitting the fire of such fuses to communicate with the shell on the concussion of striking its object, and this I do not claim; but

What I claim as my invention, and desire to secure by Letters Patent of the United States of America, is--

1. The improvement in the means of igniting time-fuses by combining the windage and concussion principles, substantially as and for the purposes set forth.

2. The improvement, in time-fuses, of providing them with a communication with the shell closed by a sliding valve or plunger just above the point at which the fuse ignites, substantially as and for the purposes set forth.

W. S. SMOOT.

Witnesses:

W. MCNAMEE,  
J. A. BEALL.