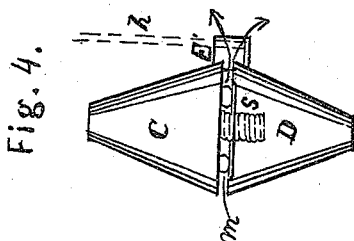


G. P. GANSTER.  
CONCUSSION FUSE FOR EXPLOSIVE SHELLS.

Patented June 13, 1865.



James W. Myers  
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# UNITED STATES PATENT OFFICE.

GEORGE P. GANSTER, OF NEW YORK, N. Y., ASSIGNOR TO WM. FOSTER, JR.,  
OF SAME PLACE.

## IMPROVEMENT IN CONCUSSION-FUSES FOR EXPLOSIVE SHELLS.

Specification forming part of Letters Patent No. **48,167**, dated June 13, 1865; antedated June 9, 1865.

*To all whom it may concern:*

Be it known that I, GEORGE P. GANSTER, of New York city, in the county of New York, in the State of New York, have invented a new and Improved Concussion-Fuse; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, like letters representing like parts in the several figures.

The nature of my invention consists in so constructing a concussion-fuse that it shall be safe during carriage or transportation, safe against explosion by any accidental fall, and can even be thrown, with its shell, without exploding it, unless a stop be released before it leaves the hand; but this being done, upon striking it explodes with destructive effect.

In the drawings, A represents an axial section of a hand-grenade having one of my fuses.

D is the screw-plug, closing a hole through which the charge is introduced after the fuse has been fixed through the fuse-hole.

B B' is what I call my "fuse" or "exploding device," (shown partly in section,) and consisting of several parts, two halves having conical recesses or seats for two cones, C and D. The lower half, or B', enters a hole, (in the bottom of the grenade, at H, opposite the fuse-hole,) which serves to steady it. The other or upper half, B, screws (in at the fuse-hole) down onto the top of the other.

On the base of cone C, I insert several friction-match heads, *m*, covered with fulminate composition. The lower cone, D, I call the "anvil" or "plunger." The two are kept apart by a spiral spring, S, inserted in a cavity in D, and extending above it. This is strong enough to prevent contact between D and the match-heads from any fall—say a distance of six feet; but there is another stop, E, operated by a wire, *h*, passing up through B, then bent down at right angles, as at *h'*. The thumb, pressing against this handle *h'*, can give the wire *h* and stop E a motion of rotation some ninety degrees, as shown in Figure 3. In Fig. 1 the stop E is on. In Figs. 3 and 4, E' shows it off. This E is a safety-stop, to be rotated so as to interpose between the two cones and

keep them apart until the grenade is about being thrown. By a pressure of the thumb on handle *h'* stop E is thrown out from between the two cones, as at E', just previous to throwing. Spring S is sufficient to prevent contact until the grenade strikes. When the grenade strikes after being thrown, no matter in what position it falls, it is evident the two cones will come together, as shown in Fig. 4, and the blow of the anvil D upon the match-heads unfaillingly ignites them and explodes the charge in the shell, the fire passing through an opening alongside of stop E. (Shown by the arrows.)

On the head of plug B there are two slots or recesses, *t*, for the wire handle *h'* to spring into, so as not to be too easily displaced. When the stop E is in its normal position I use an additional locking-bolt, *l*, for it, which will be seen inserted in the head of B. Until this bolt *l* is pressed down by the thumb handle *h'* cannot be pushed aside; but both can be done at once by the thumb when the grenade is in the hand. This bolt *l* serves as an additional safety-guard against accident, as it more certainly keeps the stop E between the cones during transportation or handling. In the base of cone C several small holes are drilled, of such a size that the match-heads *m*, which are about a quarter of an inch long, can be firmly pressed, the fulminate composition being below the base.

To prevent the powder of the charge getting in between the cones, which might prevent the ignition of the matches, the opening alongside of the stop E can be closed in any suitable way, but so as to be blown open when the matches are exploded. To assist in this I generally have a little powder sized on face of anvil D.

My drawings are intended to represent a two-pound hand-grenade.

The operation is as follows: After taking the grenade into the hand, the thumb of right hand presses down locking-bolt *l*, and at the same time pushes aside wire handle *h'*, thus releasing stop E, throwing it out from between the cones, as at E'. The spring S is sufficient to prevent contact between anvil-cone D and match-heads *m* during handling or throwing;

but after it strikes, when thrown from the hand, as seen at Fig. 4, the ignition of the matches fires the charge through the hole in which stop E rotates.

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

The use of two cones, C and D, operating

in a double-coned chamber, substantially as shown and described.

GEORGE P. GANSTER.

Witnesses:

JOHN S. HOLLINGSHEAD,

JOHN D. BLOOR.