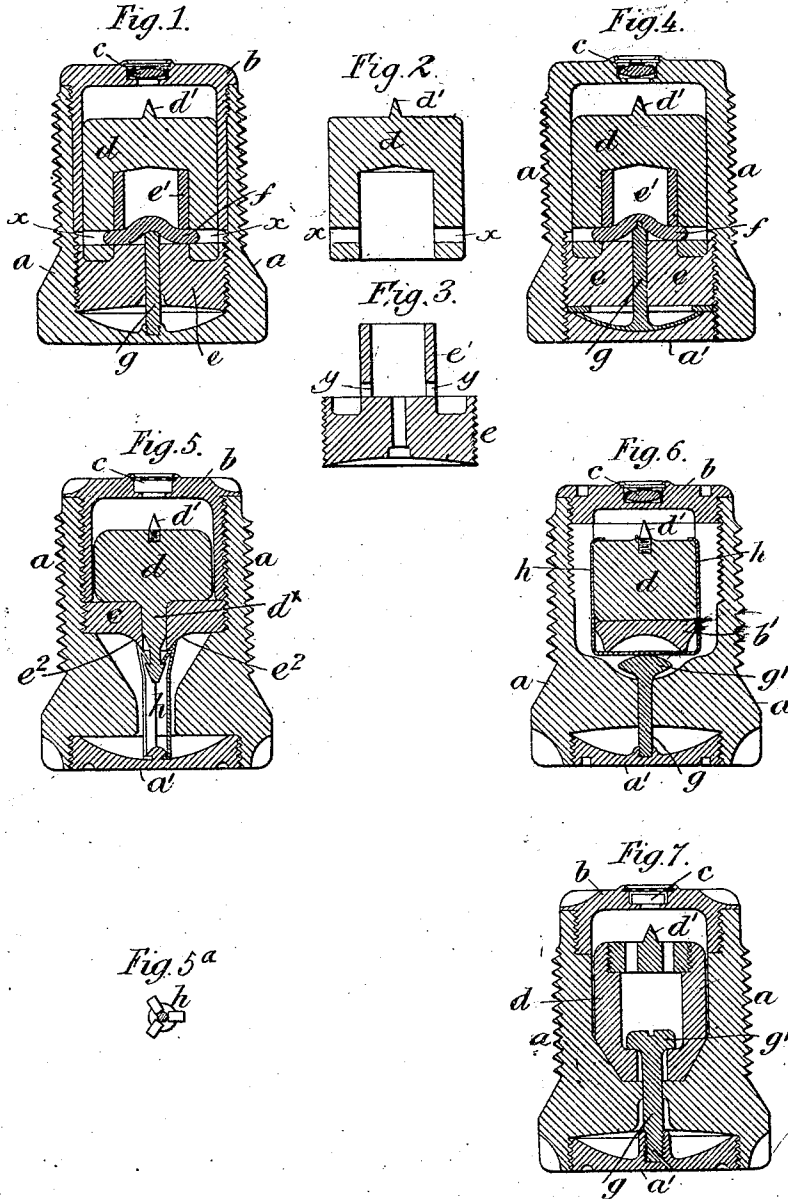


(No Model.)

K. K. MALMSTRÖM.
PERCUSSION FUSE.

No. 451,598.

Patented May 5, 1891.



Witnesses.
Baltus D. Long
W. Miller.

Inventor.
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By his attys.
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UNITED STATES PATENT OFFICE.

KARL KUNO MALMSTRÖM, OF WESTMINSTER, ENGLAND.

PERCUSSION-FUSE.

SPECIFICATION forming part of Letters Patent No. 451,598, dated May 5, 1891.

Application filed November 11, 1890. Serial No. 371,068. (No model.)

To all whom it may concern:

Be it known that I, KARL KUNO MALMSTRÖM, engineer, a subject of the King of Sweden, residing at 32 Victoria Street, in the city of Westminster, England, have invented certain new and useful Improvements in Percussion-Fuses, of which the following is a specification.

This invention has for its object improvements in percussion-fuses.

I make these fuses in such manner that they are "armed" or rendered active by the pressure of the powder-gases on the base of the fuse while the same is in the gun. This pressure bends the metal of which the base of the fuse is composed, and by so doing releases locking devices and liberates a striker, which, by its forward movement when the projectile strikes, fires the bursting charge. According to one arrangement I form a cylindrical cavity in the rear of the striker and fit within it a hollow or tubular stud fixed to the fuse-body. A locking device or wire passes through this stud and its ends enter holes in the striker. A pin abuts on this wire and also upon the base of the fuse. When the gun is fired, the pressure in the gun bends inward the metal forming the base of the fuse, the pin is thus thrust forward, the wire is displaced, and the striker is liberated, ready for action.

This arrangement is represented in longitudinal section by Figure 1 of the annexed drawings. Figs. 2 and 3 illustrate certain details of this mechanism. Figs. 4, 5, 6, and 7 show modifications. Fig. 5^a is a section through the lower part of the striker, showing the triple head of the clip engaging therewith.

In Fig. 1, *a* is the fuse-body, usually of brass, and adapted to be screwed into the base of the projectile. *b* is a cap screwed in to close the body *a* in front. *c* is a primer or patch of fulminate lodged in a recess in the cap *b* and protected in the usual manner. *d* is the striker. It is armed in front with the point *d'* to strike and explode the fulminate. *e* is a stud-piece, of hard metal, screwed into the fuse body and carrying the tubular stud *e'*. *f* is a soft-metal wire or locking device inserted through holes *x* and *y* in the striker and stud, respectively, and then bent to the form shown.

It locks the striker fast to the stud. *g* is a steel pin passing through a hole in the stud-piece and abutting at one end upon the flexible or bendable base of the fuse-body and at the other end on the wire *f*. When the gun is fired, the base of the fuse-case is deformed and the pin *g* thrusts the wire *f* into the interior of the hollow stud *e'* and frees the striker. When the projectile strikes, the striker goes forward and fires the bursting charge in the usual way. The flexible or bendable bottom may be part of the base-body, as in Fig. 1, or may be screwed fast into it, as in Fig. 4, so as to remain immovable when in action, except in so far as it is bent or deformed by the pressure.

In this arrangement the cap *b* is dispensed with, the fulminate-patch being set in a recess in the body *a*. The body is closed in rear by a base-plug *a'*, screwed in. The base-plug is deformed or bent when the gun is fired and the operation is the same as in Fig. 1.

Sometimes in place of the wire and pin I employ locking devices in the form of catches to take hold of a stem projecting from the striker. These catches are upon a piece which is thrust forward by the base of the fuse when it becomes bent, and so the catches are brought against inclines within the fuse, which cause them to release their hold of the stem. This arrangement is illustrated by Fig. 5. The striker *d* has a stem *d'* projecting from it rearward through a central hole in the piece *e*. The base-plug *a'* has a spring clip *h* riveted to it. (Shown in plan by Fig. 5^a.) The clip has arms which tend inward. They terminate in claws which take hold of a head upon the stem *d'*. When the gun is fired and the base-plug is deformed, the clip is thrust against inclines *e² e²* on the piece *e*, and these open the clip and release the pellet; or I may arrange the catches in such manner that the pressure of a pin moved by the flexible base of the fuse upon a part in connection with the catches causes them to spring apart and release the striker. This arrangement is illustrated by Fig. 4. Here the cap *b* is provided with a cross-piece *b'*, on which the striker *d* is seated, and it is held down upon its seat by a clip *h*, which in this case consists of a narrow steel band bent twice at right

angles. It passes beneath the cross-piece and has claws at its end, which rest upon the front of the striker. When the head *g'* of the pin *g* thrusts upon the center part of the clip, its arms separate and release the striker; or, according to another arrangement illustrated by Fig. 5, I form a head *g'* upon the pin *g* and cause this to be received into a cavity within the striker *d*. This pin *g*, so long as it retains the position in which it is originally placed, locks the striker fast within the fuse-body; but when the base of the fuse-body is bent by the pressure of the powder-gases upon it the pin is driven forward, and its head *g'* no longer prevents the striker moving so far as to bring its point *d'* into contact with the patch of fulminate *c*, by which the bursting charge of the projectile is ignited.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I would state that I am aware that fuses have before been made in which the release of the striker has been obtained by the pressure of the powder-gases in the gun-cham-

ber, causing the movement of a plug in a cavity into which it is fitted; but with this arrangement there is always some danger of the passage of the powder-gases into the interior of the fuse, and the fuse-case not being hermetically closed is in other respects objectionable.

What I claim is—

1. A percussion-fuse formed with a bendable or yielding base in operative connection with locking devices, which, when the gun is fired, are released and set free, and a striker to ignite the fulminate or primer, substantially as described.

2. A percussion-fuse having a bendable or yielding base or end in operative connection with a wire which normally holds a striker away from a primer, and which, when the gun is fired, is released to set free the striker to ignite the fulminate or primer, substantially as described.

KARL KUNO MALMSTRÖM.

Witnesses:

HERBERT V. JORDAN,
F. A. NOËL.

Correction in Letters Patent No. 451,598.

It is hereby certified that in Letters Patent No. 451,598, granted May 5, 1891, upon the application of Karl Kuno Malmström, of Westminster, England, for an improvement in "Percussion-Fuses," an error appears in the printed specification requiring the following correction, viz.: In line 37, page 2, the clause "are released and set free, and a striker," should read *are released, and set free a striker*; and that the Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 12th day of May, A. D. 1891.

[SEAL.]

Countersigned:

C. E. MITCHELL,
Commissioner of Patents.

CYRUS BUSSEY,
Assistant Secretary of the Interior.

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CYRUS BUSSEY,
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