FUSE FOR SHELLS.

No. 426,210. Patented Apr. 22, 1890

Fig. 1.

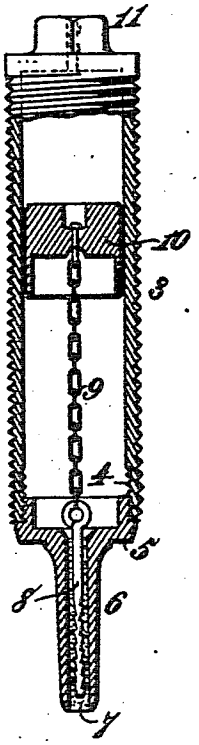
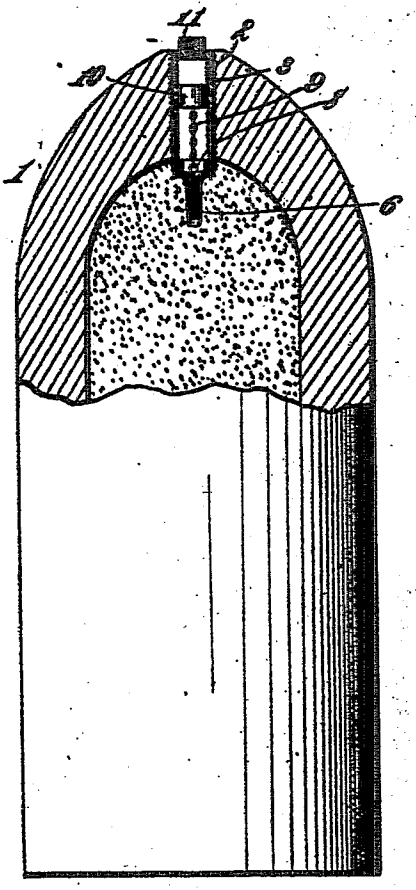


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE PHILLIPS, OF CORSICANA, TEXAS.

FUSE FOR SHELLS.

SPECIFICATION forming part of Letters Patent No. 426,210, dated April 22, 1890.

Application filed September 3, 1889. Serial No. 322,849. (No model.)

To all whom it may concern:

Be it known that I, GEORGE PHILLIPS, a citizen of the United States, residing at Corsicana, in the county of Navarro and State of Texas, have invented new and useful Improvements in Fuses for Shells, of which the following is a specification.

This invention relates to that type of percussion-fuses wherein a fuse-tube is secured in the point or end of a shell and contains a plunger connected with a friction-wire embedded in the fulminate in such manner that when the flight of the shell is suddenly arrested the friction-wire is drawn forward by the plunger, thereby igniting the fulminate and setting fire to the powder-charge for bursting the shell.

In prior percussion-fuses the plunger has been provided with a central orifice, through which the friction-wire passes, the forward end of the latter having a shoulder or enlargement, against which the plunger strikes if moved slightly forward, thereby disturbing the friction-wire and igniting the fulminate. It has been practicably demonstrated by tests that serious objections exist in such percussion-fuses, for the shell frequently bursts at the muzzle of the gun by reason of the plunger untimely and improperly disturbing or operating the friction-wire, this effect being mainly due to the fact that the plunger acts directly on the friction-wire, and when a shell reaches the muzzle it in a measure checks and produces a slight forward movement of the plunger, which is sufficient to cause premature explosion. Again, with the prior construction it has been found in some instances that shells fail to burst when their flight is suddenly arrested, by reason of the fact that the plunger, acting gradually and directly on the friction-wire, lacks sufficient force or power to instantly draw the wire forward, and hence the fulminate is not ignited.

The objects of my invention are to avoid the objections alluded to and to provide novel means which not only insure bursting of the shell, but avoid premature bursting at the muzzle of the gun. To accomplish these objects, my invention involves the features of construction, the combination or arrangement of devices, and the principles of operation hereinafter described in detail, and specifically set forth in the claim, reference being made to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view, partly in side elevation, of a percussion-fuse embodying my invention. Fig. 2 is a sectional elevation of a shell having the improved fuse applied thereto.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, where—

The numeral 1 indicates a shell of any suitable or known construction, having an orifice 2 at its point or front end, into which is screwed or otherwise inserted the fuse-tube 3, provided at its inner end with a female screw-thread 4, engaged by the male screw-thread on a disk 5, having a tubular extension 6, that contains the fulminate or friction composition 7. This composition is closely packed in the tubular extension about a serrated friction-wire 8, which terminates at its outer end in an eye located in juxtaposition to the disk. In the fuse-tube is arranged the sliding plunger 10, and between the plunger and the friction-wire is interposed a flexible link-chain 9, one end being attached to the wire and the other end centrally connected with or to the plunger. The length of the flexible chain or cord is sufficient that when extended the plunger will stand at some distance from the inner end of the friction-wire. I prefer a chain of such length that the plunger will stand in the fuse-tube about one-third the length thereof from its outer end, which end is made as a screw-plug 11, having a central passage about one-sixteenth of an inch in diameter.

If a shell provided with my improvement be fired from a piece of ordnance, the plunger moves rearward, and when the flight of the shell is suddenly arrested the plunger springs forward and by means of the flexible chain obtains considerable momentum before acting on the firing-wire, in consequence of which the wire is suddenly jerked out of the fulminate or friction composition, in contradistinction to being gradually drawn out, as in those fuse-tubes where the plunger is directly engaged with the friction-wire. The flexible chain thus provides safe means where-

by the requisite force or power is secured for the correct action of the friction-wire at the proper time.

The shell is prevented from bursting at the muzzle of the gun, for the reason that when the shell checks, as it were, at the muzzle the plunger can advance a considerable distance without acting on the friction-wire, while at the instant of firing the plunger can move freely backward without danger of disturbing the friction-pin.

The chain is made, as usual, of links loosely connected, and to accommodate it in its collapsed state the plunger may be chambered at its inner end and the disk carrying the tubular extension may be of cup shape, the construction being such that when the plunger is at the limit of its backward movement the rim formed by the chamber rests against the rim formed by making the disk cup-shaped, as will be obvious.

Having thus described my invention, what I claim is—

The combination, with a fuse-tube, a friction-wire embedded in the fulminate or friction composition, and a plunger, of a flexible safety-chain interposed between and flexibly connecting the front end of the friction-wire with the plunger, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE PHILLIPS.

Witnesses:
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