

No. 709,854.

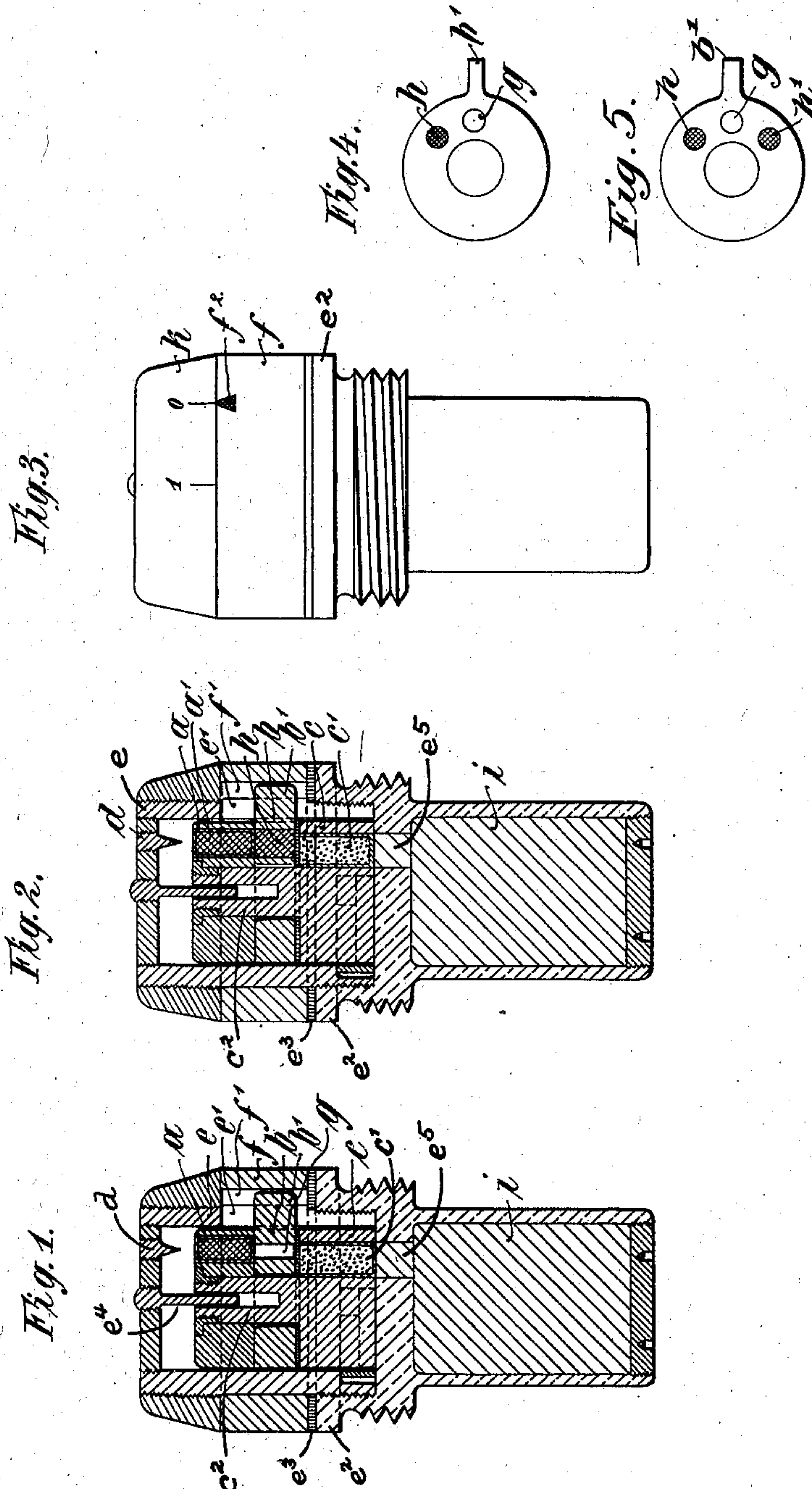
Patented Sept. 23, 1902.

C. PUFF.

EXPLOSIVE PROJECTILE OR SHELL FOR ORDNANCE.

(Application filed Dec. 9, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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EXPLOSIVE PROJECTILE OR SHELL FOR ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 709,854, dated September 23, 1902.

Application filed December 9, 1901. Serial No. 85,199. (No model.)

To all whom it may concern:

Be it known that I, CARL PUFF, a citizen of the Kingdom of Prussia, German Empire, residing at Lindenufer 32, Spandau, Germany, have invented a new and useful Improvement in Explosive Projectiles for Ordnance, of which the following is a specification.

My invention relates to improvements in fuses.

10 The object of my invention is to provide a fuse in which either a delay action or a direct action of the fuse may be obtained, according to the manner in which the fuse is adjusted, while at the same time permitting a simple construction readily adjusted from the exterior of the fuse.

With this general object in view and some others which will be obvious to those skilled in the art my invention consists in the features, details of construction, and combination of parts which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

25 In the accompanying drawings, Figure 1 is a vertical longitudinal section of a percussion-fuse constructed according to the present invention, showing the same with the delay-action device removed or put out of action. Fig. 2 is a figure similar to Fig. 1, but with the delay-action device interposed in the path of the fuse. Fig. 3 is an elevation of a percussion-fuse, showing the means for adjusting the delay-action device. Fig. 4 is a plan of the rotatable carrier with its delay-action device, and Fig. 5 a similar view of a device having a plurality of delay-action devices.

Referring to the drawings, e is a fuse-case, 40 to the upper end of which is secured a cap-ring k , below which ring the fuse-case is provided with a slot e' , Figs. 1 and 2, an adjustable ring f being mounted movably upon the fuse-case below the cap-ring k and arranged to cover the slot e' in the fuse-case. 45 The adjustable ring f is capable of rotation about the fuse-case and is held against longitudinal movement between the cap-ring k and a projection or extension-flange e^2 , 50 formed on the fuse-case. A packing-ring may be inserted between the adjusting-ring

f and the flange e^2 , as shown at e^3 . The inner face of said adjusting-ring is provided with a recess f' , arranged opposite the slot e' in the fuse-case. Within the fuse-case is provided a firing-pin and a fulminate. In the preferred form of my invention the firing-pin is secured to the front end of the fuse-case, as indicated at d , Figs. 1 and 2. The fulminate is carried by the plunger, as indicated at a . This plunger comprises a base portion c , a standard c^2 , preferably formed integral with the base portion, and a fulminate-carrier a , threaded to the post or standard. The said fulminate-carrier has a socket, in which is inserted the fulminate a' in line with the firing-pin. In the present construction the base portion c is also provided with a socket, in which may be inserted a primer, as indicated at c' , Figs. 1 and 2. The plunger is provided with an axial guideway, into which extends one end of a guide-pin e^4 , projecting from the front of the fuse-case.

Between the base portion c and the fulminate-carrier a of the plunger is mounted a carrier b , movable in relation to the plunger, and in the present instance rotatable or angularly movable about the standard c^2 in a plane at right angles to the axis of the plunger, said carrier having a suitable projection or tongue which extends outward through the slot e' in the fuse-case and into the recess f' in the adjusting-ring, said tongue being indicated at b' , Figs. 1, 2, and 4. Between the rotatable carrier and the face of the base portion may also be inserted a packing-ring c^3 .

The rotatable carrier b is provided with a plurality of bores or openings, comprising either two or more, one of which is left open, as indicated at g , Fig. 4.

When but two bores are employed in the carrier b , the remaining bore is provided with a slowly-burning composition, which forms a delay-action device, whereas if more than two bores are provided each of those bores other than the open one is provided with a delay-action device, this plurality of delay-action devices having different burning periods, which result may be obtained by providing pellets of different compositions, so that the rates of burning of the delay-action devices will be different. One of these delay-action

devices is shown at h , Figs. 1, 2, and 4. A carrier provided with a plurality of delay-action devices $h h'$ is shown at Fig. 5.

In the construction illustrated in the drawings the fuse-case is shown extended rearward to form a chamber for an auxiliary large priming charge i , this being especially applicable when using the fuse for insensitive high-explosive bursting charges, such as lydite. The passage-way from the fulminate through which the igniting device or fulminate may act to cause the ignition of the main charge (formed by the socket in the base portion c of the plunger) is continued by an opening in the rear wall of the plunger-chamber, said continuation of the passage-way being shown in the drawings as provided with a plug e^5 , which may readily be blown rearward by the explosion of the primer c' .

The adjustable ring f and the cap-ring k are provided with suitable graduations and index, the index being shown at f^2 on the ring f and the graduations at "0" and "1," respectively, on the cap-ring k . (See Fig. 3.)

Where more than one delay-action device is employed, additional graduations are provided on the cap-ring.

In using my improved fuse if a direct action be desired the ring f is moved until the index f^2 is brought into line with the graduation "0," as shown in Fig. 3, whereby the rotatable carrier b will be so adjusted that the open bore g will be in line between the fulminate and the shell charge. When a delay action is desired, the ring f is rotated to bring the index f^2 into line with the graduation "1," whereby the delay-action device h will prevent the direct communication of the ignition from the fulminate to the shell charge.

Where the carrier b is provided with a plurality of delay-action devices of different burning periods, the ring f is adjusted to bring the index f^2 in line with the graduation, which indicates that the respective delay-action device is caused to be interposed between the fulminate and the shell charge. When the shell strikes its target, the impact causes the plunger to be thrown to the front, thus bringing the fulminate and firing-pin together and causing the ignition of the fulminate, which ignition is communicated to the shell charge in a manner obvious to those skilled in the art, either through the open bore g , if this be in the line of communication between the ignition device and the shell charge, or through the delay-action device at that time interposed in said line of communication.

It will be noted that by my invention an exceedingly simple construction is provided, and in view of the fact that the rotatable carrier is mounted on the plunger the weight of said carrier is added to that of the plunger, thus insuring a strong blow on the fulminate without requiring unnecessary weight in the fuse, as would be the result if the carrier were mounted independent of the fuse. Moreover, since the carrier is mounted to move in

a plane at right angles to the axis of the plunger and fuse, the setback at the time of firing will tend to increase the friction between the rear face of said rotary carrier and the packing-ring, thus preventing any accidental angular movement of said carrier and insuring that it will stay in the position to which it has been adjusted. Moreover, by providing a plurality of delay-action devices of different burning periods I retain the simple construction and yet provide a fuse which may be used for different delay actions against different targets.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within said case and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a delay-action device, a carrier mounted on the plunger and supporting the delay-action device, said carrier having an open bore through which the fulminate may communicate with the shell charge, and means for rotating said carrier whereby either the open bore or the delay-action device may be alined with the fulminate.

2. In a fuse, the combination, with the fuse-case, a fulminate and a firing-pin within said case, and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a carrier journaled upon the plunger and provided with an open bore, a delay-action device mounted on said carrier, and means for adjusting the delay-action device or the open bore into alinement with the fulminate.

3. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within said case, and a plunger arranged to bring the firing-pin and the fulminate together, said plunger having a central standard, of a carrier rotatable on said standard and provided with an open bore, a delay-action device mounted in said carrier, and means for rotating said carrier from the exterior of the fuse-case.

4. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within the same, and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a carrier movably mounted on the plunger and provided with a tongue and an open bore, a delay-action device mounted in said carrier, and a ring movably mounted on the exterior of the fuse-case and arranged to engage the tongue of the carrier, whereby the same may be rotated.

5. In a fuse, the combination, with a fuse-case having a longitudinal slot, a cap-ring threaded onto said fuse-case, and an adjusting-ring movable about the fuse-case below the cap-ring, said adjusting-ring having an internal recess opposite the slot in the fuse-case, of a fulminate and a firing-pin within the fuse-case, a plunger arranged to bring said fulminate and firing-pin together upon im-

pact, a delay-action device, and a carrier upon which said device is mounted, said carrier having an open bore through which the ignition device may communicate with the shell charge, and also having a tongue extending through the slot in the fuse-case and into the recess in the adjusting-ring.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL PUFF.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.