No. 797,878. PATENTED AUG. 22, 1905.

C. P. WATSON.

SHELL FUSE.

APPLICATION FILED JULY 30, 1904.

Fig. 1.

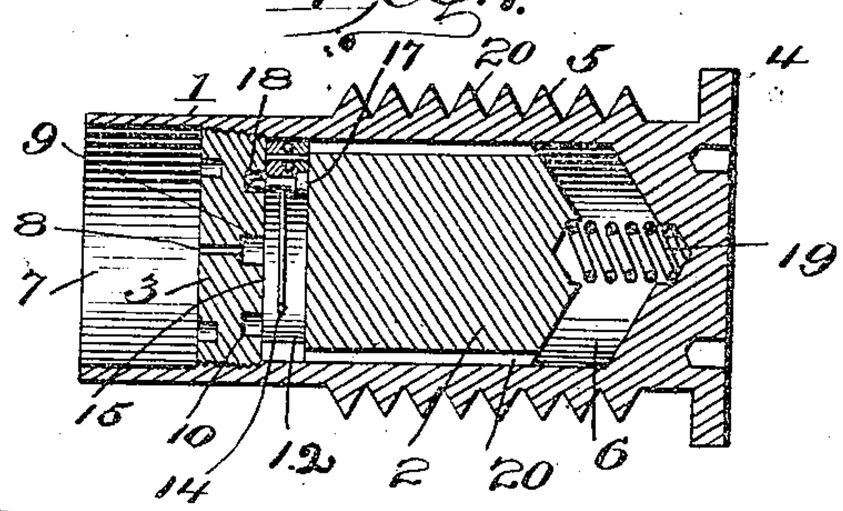


Fig. 2.

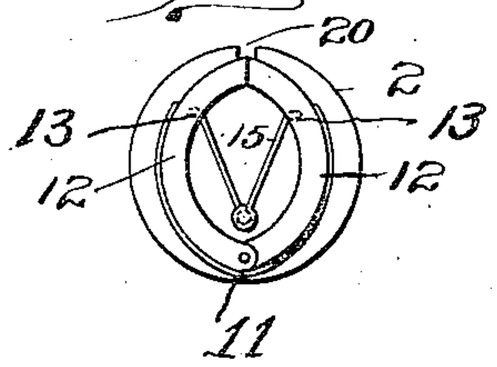


Fig. 3.

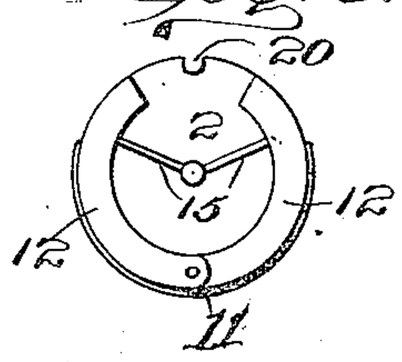


Fig. 4.

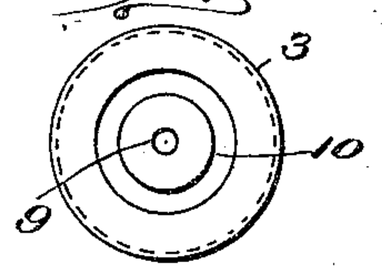


Fig. 5.

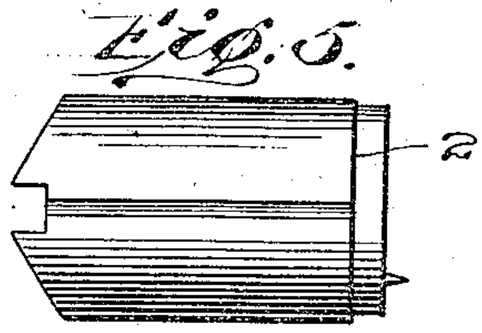


Fig. 6.

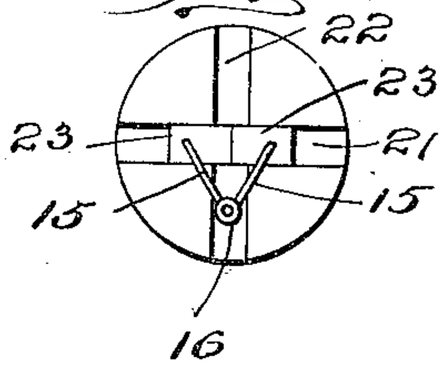


Fig. 8.

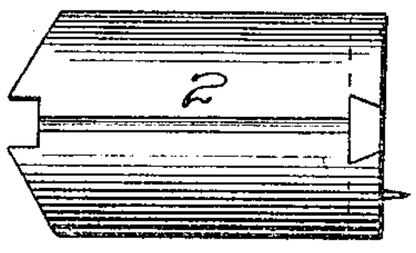
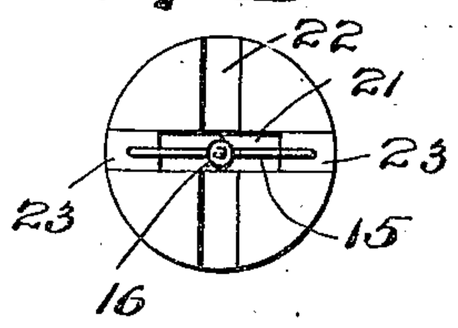


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

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SHELL-FUSE.

No. 797,878. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed July 30, 1904. Serial No. 219,095.

To all whom it may concern:

Be it known that I, CHARLES P. WATSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Shell-Fuses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to shell-fuses; and it has for its especial objects the element of safety and the insurance of a positive arming of its parts.

With these and other objects in view the invention consists generally in interposing a barrier adapted to be acted upon centrifugally between a movable plunger or hammer and the detonating-cap and specifically in a movable firing-pin and special means for normally holding said firing-pin out of contact with the detonating-cap.

The invention further consists of a novel construction and arrangement of the several parts, as will be hereinafter fully explained, and briefly stated in the claims.

In the drawings, Figure 1 is a central longitudinal section of my improved fuse; Fig. 2, a front or face view of the barrier in closed position; Fig. 3, a similar view in open position; Fig. 4, an inner face view of the primer-plug; Fig. 5, a side view of the hammer or plunger; Figs. 6 and 7, end views of the hammer, showing modified form of barrier in closed and open position; and Fig. 8, a side view of the hammer.

Referring to the several views, the numeral 1 indicates the stock, 2 the plunger, and 3 the primer-plug. The stock is provided with the usual flanged head 4 and screw-thread 5 for securing it in the shell. The stock is bored to provide a plunger-chamber 6 and a priming-chamber 7, the two chambers being separated by the primer-plug, which is provided with a firing-channel 8, leading from the detonating-cap 9 to the priming-chamber. The inner face or rear end of the primer-plug is provided with an annular groove 10 for a purpose to be hereinafter explained.

A barrier 11, composed of two jaws 12, hinged together at one end, is pivoted on the front end of the plunger. The under edge of each jaw is provided with a kerf or slot 13, ending, preferably, in an annular socket 14, in which is seated the ball end of spring-levers 15, the other end of each lever being pivoted or hinged on a pin 16, having a flat head 17 and a point 18, the head resting on the face or end of the plunger and the point normally seated in the groove 10 of the primer-plug, the whole constituting a "flying" firing-pin. The point 18 is maintained in the groove 10 by the pressure exerted by a spring 19, which has one end seated in a recess in the end wall of the plunger-chamber and the other end in a similar recess in the rear end of the plunger. In this position it will be noticed that the point 18 is held both out of engagement and out of alinement with the detonating-cap, and consequently all danger of accidental or premature explosion of the detonating-cap is prevented, thus insuring perfect safety in handling a shell fitted with the fuse.

When the shell is fired from a gun, the sudden shock causes the plunger to "set back" and withdraw the point 18 from the annular groove 10, leaving the jaws free to be acted upon by centrifugal force. As the jaws fly out the levers 15 are caused to open and bring the flying firing-pin into alinement with the detonating-cap, so that when the shell encounters an object the firing-pin will be forced against the cap by the sudden and forceful forward movement of the plunger.

In order that the plunger may not be retarded in either its rearward or forward movement by the cushioning of air, I provide the plunger with one or more grooves or channels 20, preferably in its outer surface, whereby the air may freely pass from one end to the other.

In Figs. 6, 7, and 8 I have shown a modified form of plunger and barrier. The face or front end of the plunger is provided with grooves 21 and 22, running at right angles to each other, and seated in one of the channels is a pair of slidable blocks 23 23, to which are suitably attached the spring-levers of the flying firing-pin. In this form it will be noted that the slidable blocks in normal or unarmed position completely protect the detonating-cap and that the firing-pin rests in the groove 22 out of all danger of engagement with said

detonating-cap until the slidable blocks are acted upon by centrifugal force.

In practicing my invention I do not wish to be understood as limiting myself to pivoting the barrier to the plunger, as it may be pivoted to the face of the primer-plug and the groove 10 made in the face of the plunger.

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

1. In a shell-fuse, the combination with a stock, a plunger movable therein, and a cap-carrying plug, of a pivoted barrier interposed between the plunger and the cap-carrying plug, and a flying firing-pin carried by the barrier and controlled thereby.

2. In a shell-fuse, the combination with a stock, a plunger movable therein, and a cap-carrying plug, of a pair of jaws interposed between the plunger and cap-carrying plug, and a flying firing-pin attached to said jaws.

3. In a shell-fuse, the combination with a stock, a plunger movable therein, and a cap-carrying plug, of a pair of jaws pivoted to the plunger, and a flying firing-pin connected to the jaws.

4. In a shell-fuse, the combination with a stock, a plunger movable therein, and a cap-carrying plug, of a pair of jaws pivoted to the plunger, a flying firing-pin connected to the jaws and means normally holding the firing-pin away from the cap.

5. In a shell-fuse, the combination with the stock, a plunger movable therein, and a cap-carrying plug, of a pivoted barrier interposed between the plunger and cap-carrying plug, a flying firing-pin connected to the barrier and controlled thereby, and means normally holding the firing-pin out of contact with the cap.

6. In a shell-fuse the combination with the stock, a plunger movable therein, and a cap-carrying plug, of a barrier interposed between the plunger and cap-carrying plug, a flying firing-pin connected to the barrier, means normally holding the jaws in closed position, and means normally holding the firing-pin out of engagement with the cap.

7. In a shell-fuse, the combination with the stock, a plunger movably seated therein, and a cap-carrying plug, of a pair of jaws pivoted to the plunger, a firing-pin, and a pair of levers loosely connected to the firing-pin and to the jaws.

8. In a shell-fuse, the combination with the stock, a plunger normally seated therein, and a cap-carrying plug, of a pair of jaws pivoted to the plunger, a firing-pin, a pair of levers connecting the firing-pin with the jaws, and means normally holding the firing-pin out of contact with the cap.

9. In a shell-fuse, the combination with the stock, a plunger movably seated therein, and a cap-carrying plug, of a barrier interposed between the plunger and cap-carrying plug, a flying firing-pin connected to the barrier, and an annular groove arranged in the cap-carrying plug to receive and normally hold the firing-pin out of contact with the cap.

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

CHARLES P. WATSON.

Witnesses:

U. G. VOGAN,

JAS. J. MCAFEE.