

No. 740,790.

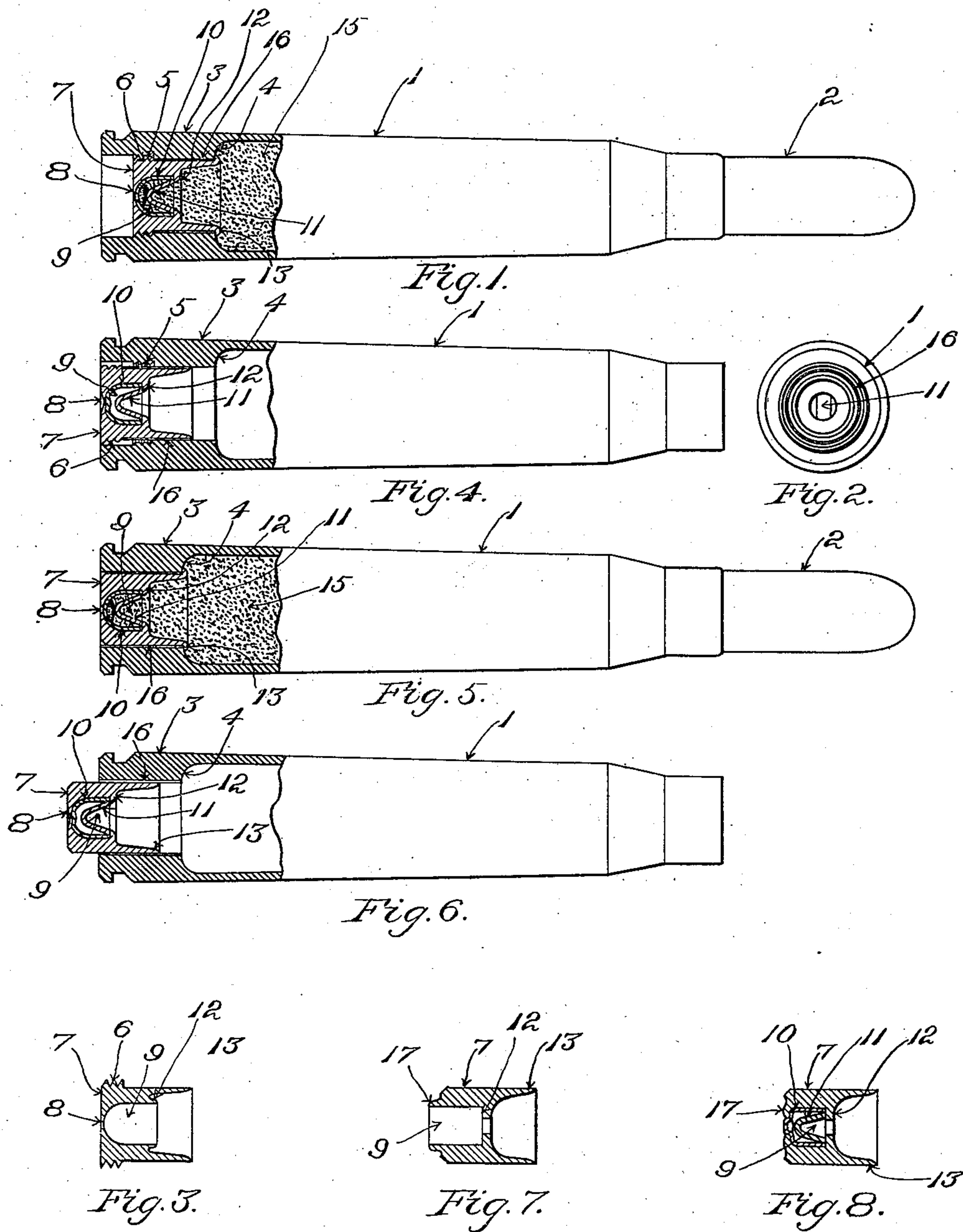
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CARTRIDGE.

APPLICATION FILED FEB. 11, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 740,790, dated October 6, 1903.

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To all whom it may concern:

Be it known that we, FRANKLIN K. YOUNG, residing at Boston, county of Suffolk, State of Massachusetts, and JAMES E. SHERIFF, residing at Brooklyn, New York city, in the county of Kings and State of New York, citizens of the United States, have invented certain new and useful Improvements in Cartridges, of which the following is a specification.

It is an established fact that when a gun is fired the projectile starts before the maximum pressure of the gases generated by the explosion is reached.

In the use of certain kinds of automatic firearms and guns in which the backward force of the gases generated by the explosion actuates the breech mechanism it is desirable that the movement of the breech mechanism shall not begin until after the bullet has started on its course; and the object of the present invention is to produce a cartridge by means of which the object just mentioned may be attained. This is best accomplished by inserting in the head of the cartridge a gas-checking plug cupped out to receive the anvil and primer and fastened in by solder, crimping, screw-thread, or other suitable means in such manner that it will resist the force of the gases up to a high degree of pressure equal to or somewhat less than the maximum pressure generated, but sufficient to retard movement of the plug until the bullet shall have started on its course. The pressure will then overcome the fastenings of the gas-checking plug and drive it backward, thereby actuating the breech mechanism.

The invention will now be fully described by reference to the accompanying drawings, and the novel features will be particularly pointed out in the claims at the end of the specification.

In the drawings, Figure 1 is a longitudinal central section of a cartridge embodying the invention. Fig. 2 is a front end view of Fig. 1. Fig. 3 is a detail of the gas-checking plug before it is inserted into the cartridge-case. Fig. 4 is a longitudinal section showing the position and appearance of the plug after it is thrown rearward by the explosion, the

threads being stripped and the flange straightened out. Fig. 5 is a longitudinal section showing a modification of Fig. 1, the threads being omitted, the plug being held by the solder and flange. Fig. 6 shows the form illustrated in Fig. 5 after the plug has been thrown back. Fig. 7 shows a modified form of the plug before inserted in the cartridge and before the primer is inserted. Fig. 8 shows the primer secured in the plug by crimping over the end.

Referring now to the drawings, the cartridge-case 1 is a hollow cylinder open at each end and contracted at the forward end to receive the projectile 2. Back of the projectile in the interior of the cartridge-case is the charge of powder or other explosive material. The wall of the cartridge-case, at the rear part thereof, is made thicker than the body of the case, the thickened portion 3 extending interiorly and forming at the inner end a shoulder 4. Preferably the thickened wall of the case is formed with a female screw-thread 5 on the interior surface for a portion of its length to fit a corresponding male thread 6 on the rear part of the plug 7. The plug 7 is cupped out, being open at the inner end and preferably having a thin wall 8 at the outer or rear end at its center. The recess 9 in the plug is shaped to receive a primer 10, and within the primer is an anvil 11. The wall 8 at the end is sufficiently thin in the center so that the firing-pin when driven forward will indent the said end and drive the primer against the anvil with sufficient force to ignite the detonating compound 15. Projecting from the inner face of the plug is an annular flange 12, which, as shown in the detail view, lies longitudinally within the cartridge-case before the primer is inserted.

The exterior surface of the plug and the interior of the cylindrical portion of the cartridge-case in which it fits should be coated with hot solder before inserting the plug into the case. The plug is then inserted within the rear end of the case, the threaded portion of the plug being screwed into the threaded portion of the case and the surplus solder being squeezed out as the plug is turned in, leaving a thin coating of solder on the plug,

which unites with a coating on the cartridge-case, causing the two to cohere, forming a single film of solder 16. After the plug is in position the inner end is crimped over, as can
 5 be done by inserting a tool from the projectile end of the case before the charge is inserted, forming a flange 13, which butts against the shoulder 4 on the case. The primer 10 is then inserted in position in the
 10 plug, and the flange 12 is bent radially inward, forming a shoulder, which holds the primer in position, as shown in Fig. 1. The engagement of the flange 13 with said shoulder 4, the
 15 adhesion caused by the solder, and the engagement of the threaded portion of the plug with the internal threads on the case all unite to resist the initial force of the pressure
 20 caused by the expansion of the gases generated by the explosion up to a high degree, while the projectile, which is comparatively unrestrained, will begin to move immediately after the ignition of the powder. This restraining or checking influence may be produced by the combined use of the screw-
 25 threads, solder, and flange or by the use of any one or two of them. Figs. 5 and 6 show the omission of the screw-threads. The degree of restraint should be regulated according to the explosive force of the cartridge
 30 and can be varied by varying the number of screw-threads and by varying the thickness of the flange 13 or by varying the area of the soldered surface.

The inner or forward portion of the wall of
 35 the gas-check plug should be sufficiently thin so that the pressure of the gases will expand it against the walls of the cartridge-case 1 to prevent leakage of gases.

When the pressure of the gases reaches
 40 such a degree as to overcome the restraint on the plug, the plug will be thrown rearward, shearing the threads, stripping the solder, and straightening out the flange 13 or breaking the plug away from the flange.

45 In a cartridge constructed as described the rear end of the cartridge will be water-tight and air-tight.

In the modification Figs. 7 and 8 the primer is inserted from the rear end and the flange
 50 17 is crimped over to hold it in, as shown in Fig. 8, the flange 12 being already in form to serve as a rest for the inner end of the primer. The flange 13 can be crimped up against the shoulder 4, as in Fig. 1, and solder may also be employed.

What we claim is—

1. In a cartridge, in combination with a shell having an aperture through the head and a cupped-out gas-checking plug in said aperture movable rearwardly in said head, and a
 60 primer secured in said plug, a positive connection between the plug and the shell, substantially as described.

2. A cartridge having in combination, a
 65 shell with an opening through the head, a rearwardly-movable cupped-out gas-checking plug in said opening, a primer secured in said

plug so that if either the primer or the plug moves the other must move with it, a projectile in the opposite end of the shell and a
 70 charge between the projectile and the primer, substantially as described.

3. In a cartridge, in combination with a case having an opening through the head, a cupped-out gas-checking plug in said opening
 75 and movable rearwardly in said case, a primer secured in said plug, a flange on the inner end of said plug which engages a shoulder on the inner wall of the case, a screw-thread on a portion of said plug which engages with an
 80 internal thread on said case, and solder connection between said plug and case, substantially as described.

4. In a cartridge, in combination with a case having an opening through the head, a
 85 cupped-out gas-checking plug in said opening movable rearwardly in said case, a primer secured in said plug, and a flange on the inner end of said plug which engages a shoulder on the inner wall of the case, substantially
 90 as described.

5. In a cartridge, in combination with a case having an opening through the head, a cupped-out gas-checking plug in said opening, and secured therein by a flange on one of said
 95 members crimped into engagement with a shoulder on the other member, substantially as described.

6. In a cartridge, in combination with a case having an opening through the head, a gas-
 100 checking plug in said opening movable rearwardly in said case and having external screw-threads which engage with internal screw-threads on the case, and a primer secured in said plug, substantially as described.

7. In a cartridge, in combination with a case having an opening through the head, a cupped-out gas-checking plug in said opening, and a primer secured in said plug, the head
 105 of said primer extending to the end wall of the plug, substantially as described.

8. In a cartridge, a case having an opening through the rear end, a hollow gas-checking plug secured in said opening, a primer secured within said plug, a shoulder on the interior
 110 surface of said case, and a flange on said plug which engages with the shoulder on said case and retards the movement of said plug under the pressure generated by the gases, substantially as described.

9. In a cartridge, a case having an opening through the rear end, a hollow gas-checking plug secured in said opening, a shoulder on the interior surface of said case, a flange on
 115 said plug which engages with the shoulder on said case and retards the movement of said plug under the pressure generated by the explosion, a primer within said plug, and a flange on the inner periphery of the plug which is turned to secure the primer within
 120 the plug, substantially as described.

10. A cartridge having in combination, a shell with an aperture through the head, a rearwardly-movable cupped-out gas-check-

5 ing plug held in said aperture and closing the aperture, a primer secured in said plug in such manner that if either the primer or the plug moves they must both move, a projectile in the opposite end of the shell, a charge between the projectile and the primer, and a separable connection between the plug and the shell, substantially as described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

FRANKLIN K. YOUNG.
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Witnesses:

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