

W. H. BUELL.
PRIMER FOR SMALL ARM AMMUNITION.
APPLICATION FILED MAY 23, 1910.

962,888.

Patented June 28, 1910.

Fig. 1.

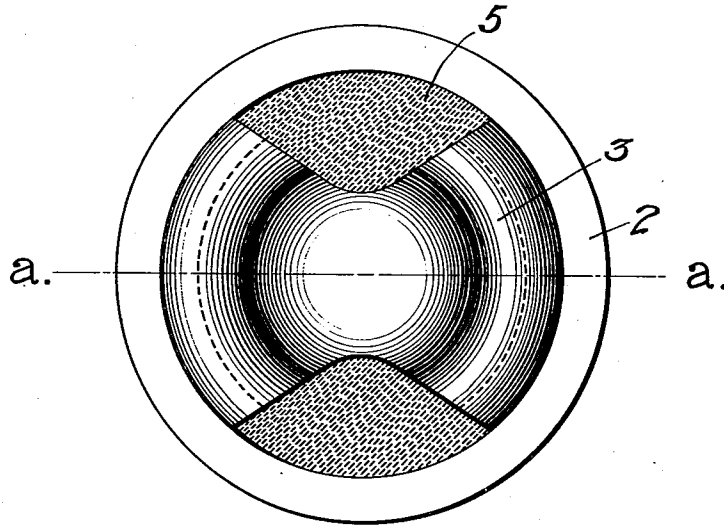
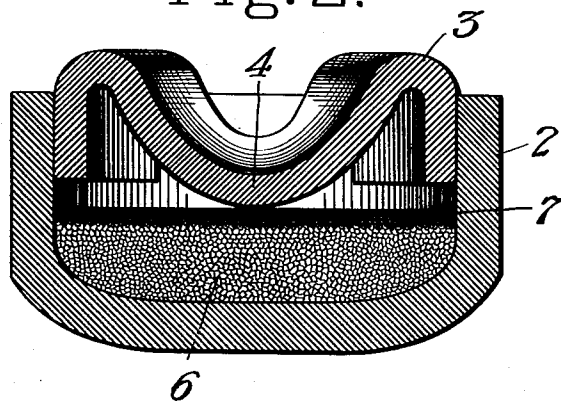


Fig. 2.



WITNESSES:-

C. J. Reed.
C. L. Reed

INVENTOR,

William H. Buell

BY

Seymour H. Carr

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM H. BUELL, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO WINCHESTER REPEATING ARMS CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

PRIMER FOR SMALL-ARM AMMUNITION.

962,888.

Specification of Letters Patent. Patented June 28, 1910.

Application filed May 23, 1910. Serial No. 563,002.

To all whom it may concern:

Be it known that I, WILLIAM H. BUELL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Primers for Small-Arm Ammunition; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a plan view of a primer constructed in accordance with my invention. Fig. 2 a view thereof in vertical section on the line *a—b* of Fig. 1.

My invention relates to an improvement in primers for ammunition for small arms, the object being to produce a simple and reliable primer constructed with particular reference to improved means for holding the primer-mixture in place, and to heightening the igniting and detonating force of the primer-mixture without decreasing its sensitiveness to the blow of the hammer of the arm.

With these ends in view my invention consists in a primer for ammunition for small arms, the said primer having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claim.

In carrying out my invention as herein shown, I employ a drawn sheet-metal primer-cup 2 and a sheet-metal anvil 3 having curved ends and made of such size as compels it to be sprung into the said cup in which it is retained by the spring tension thus produced. The central portion of the anvil is struck inward to form an operating-apex or point 4, while its sides are cut away to form two oppositely located flaring openings 5 for the escape of the flame produced by the ignition of the primer-mixture 6.

It will be understood that the position of the anvil 3 and the amount of the primer-mixture 6 will be regulated so that the apex 4 of the anvil will be separated by a very narrow space from the surface of the primer-mixture.

For the retention of the primer-mixture in place, I employ an explosive binder 7 consisting of a chemical compound which is

explosive by virtue of its chemical composition rather than on account of its being a mechanical mixture. After the primer-mixture 6 has been introduced into the cup, the binder 7 in the form of a viscous fluid, is applied to the surface of the mixture in sufficient amount to form a continuous film completely covering the primer-mixture and adhering at its edges to the inner walls of the cup. I speak of the binder as having the form of a film as its exposed upper surface is smooth and continuous, but its lower surface will be somewhat incorporated with the primer-mixture since the binder, when applied, is sufficiently fluid to find its way into the interstices of the upper layer of the particles forming the primer-mixture.

In preparing the binder I have secured excellent results by using an explosive nitrate in a suitable liquid solvent. Thus, I may employ any of the nitrates of cellulose, starch or sugar in a suitable solvent, or any of the explosive nitro derivatives of petroleum products in a suitable solvent. These explosive nitrates may be dissolved in any solvents which may be found suitable for the purpose, such as amyl acetate, wood alcohol, acetone, various forms of denatured alcohol, nitrobenzole, nitrotoluol or mixtures of these solvents with each other, or with benzin or gasoline. The proportions of explosive nitrate and solvent will depend upon the character and strength of the materials employed as well as the specific requirements of use in each instance, it only being essential that the explosive binder shall at the time of use have that degree of viscosity which will permit the penetration of the binder into the top layer of the particles forming the primer-mixture. Enough of the binder remains, however, above or on top of the mixture to form a continuous film or coating constituting, as it were, a protecting and confining varnish, using the term "varnish" in its broadest sense. It is impossible to state exact proportions for the reason that very slight differences in the methods of the manufacture of the nitrates in question, produce products which even when used in the same proportion, give different viscosities. But I have secured satisfactory results with a solution of a viscosity of 122 seconds plus or minus 10 seconds at 90 degrees Fahrenheit as taken by a Saybolt viscometer.

What I wish to particularly emphasize is, that my improved product is not merely a varnish for the condensation and confinement of the primer-mixture, but that it is
5 an explosive binder, and being explosive in its own character heightens the igniting and detonating force of the primer-mixture instead of impairing it as is the case with the expedients before used.

10 I claim:—

In a primer for small arms ammunition, the combination with a drawn sheet-metal cup, of a sheet-metal anvil having curved ends and adapted to be sprung into the cup
15 in which it is retained by spring tension and having its sides cut away to provide for the escape of the flames, and struck inward at its center to form an operating apex, a

primer mixture located in the cup, and an explosive binder interposed between the
20 apex of the anvil and the body of the primer-mixture and forming a continuous film or coating over the primer-mixture and adhering at its edges to the side walls of the cup, the said film making contact with the apex
25 of the anvil and having a smooth outer surface but having its inner surface incorporated with the upper layer or layers of particles forming the primer-mixture.

In testimony whereof, I have signed this
30 specification in the presence of two subscribing witnesses.

WILLIAM H. BUELL.

Witnesses:

DANIEL H. VEADEN,
THOMAS C. JOHNSON.