W. H. BUELL.

CHARGE FOR PRIMERS.

APPLICATION FILED AUG. 31, 1917.

1,311,872. Patented Aug. 5, 1919.

Fig: 1.

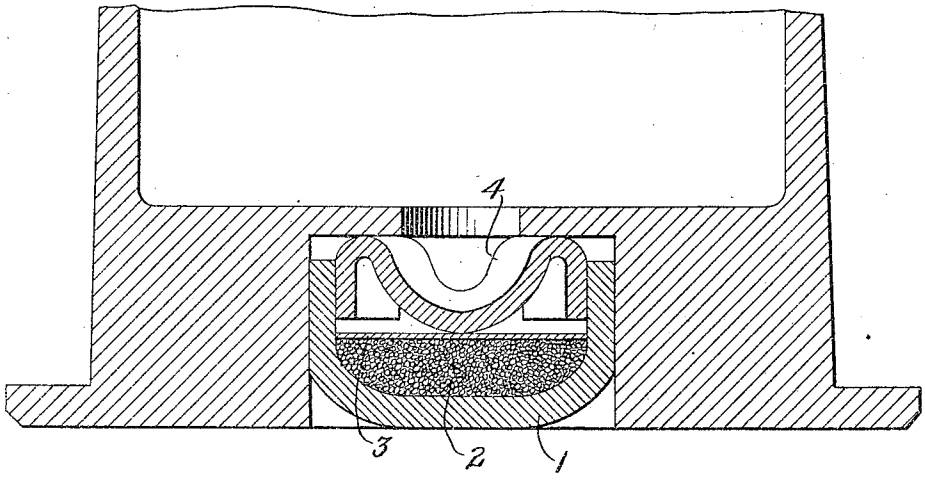


Fig: 2.

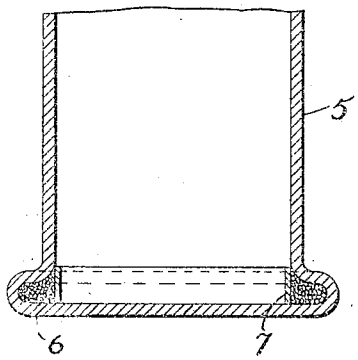
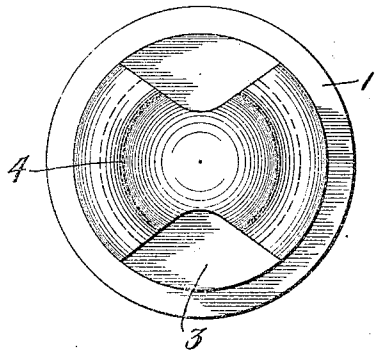


Fig: 3.



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CHARGE FOR PRIMERS.

1,311,872. Specification of Letters Patent. Patented Aug. 5, 1919.

Application filed August 31, 1917. Serial No. 189,116.

To all whom it may concern.

Be it known that I, WILLIAM H. BUELL, of New Haven, in the county of New Haven, and in the State of Connecticut, have invented a certain new and useful Improvement in Charges for Primers, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to priming charges for igniting powders of various kinds, including smokeless and black powders, especially as used in connection with center-fire and rim-fire ammunition, as, for example, small arms ammunition.

The object of my invention is to provide a priming charge which is specially adapted for use in firearms, and particularly small arms.

The object of my invention is especially to provide a priming charge adapted to produce a progressive explosion without too great a local pressure and producing sufficient heat to insure a rapid and even ignition of the powder in the cartridge, so that the powder will be completely ignited within the barrel of the firearm, thus obviating variations in ballistics, muzzle flashes, etc.

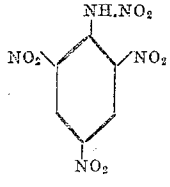
A further object is to avoid the possibility of amalgamation between the constituents of the priming charge and the brass shell or other adjacent parts, which takes place in the case where fulminate of mercury is present.

A further object is to provide priming charges adapted to produce a hotter flame and better ignition of the so-called progressive powders, and which are also very sensitive.

A further object of my invention is to provide charges containing a tetra-nitro-anilin, and specifically trinitro-nitranilid having the formula:—

$$C_6H_2(NO_2)_3NH.NO_2$$

which may be represented graphically as follows:—



Among its other advantages, this compound contains an unusually large percentage of oxygen, which aids proportionately in bringing about the combustion of any of the fuel ingredients present, thus producing a hot and uniform flame.

While priming charges may be made in many different ways in accordance with my invention, I will describe only, hereinafter, certain examples of priming charges made in accordance with my invention.

For example, I may make a priming charge containing:—

	Parts by weight.
Trinitro-nitranilid	15
Potassium chlorate	55
Antimony sulfid	30

Another composition which I may use as a priming charge will be:—

	Parts by weight.
Trinitro-nitranilid	10
Sulfo-cyanate of lead	25
Potassium chlorate	50
Antimony sulfid	15

It is to be understood, however, that the proportions may be varied as found desirable and to take into account the trade variations in the strengths of the ingredients.

Furthermore, in the place of the sulfo-cyanate of lead, other sulfo-cyanates, as for example the sulfo-cyanate of copper, may be used; and, in the place of potassium chlorate, some other oxidizing agent, as for example, potassium perchlorate, or potassium nitrate, or perchlorate of barium, or peroxid of barium, may be used.

Furthermore, other ingredients may be added, if desired, as, for example, powdered glass, which renders the mixture more sensitive.

While priming charges of this character are capable of being used in many different ways and may be used in containers of many different types, I have shown only certain types of primers containing such charges in the accompanying drawings, in which

Figure 1 shows a primer made in accordance with my invention and adapted to be applied to center-fire ammunition;

Fig. 2 shows a rim-fire shell provided with a charge of this character.

Fig. 3 is a plan view of the primer shown in cross section in Fig. 1.

In the drawings, referring particularly to

Fig. 1, I have shown the primer cup 1, in which a charge 2 of the priming composition has been seated by moistening it with a solution of gum, as, for example, gum arabic or gum tragacanth, and then introduced into the cup 1 by heavy pressure. Thereafter the charge may be covered with a layer 3 of paper or tinfoil or a thin film of collodion or gum, as, for example, gum arabic or gum tragacanth. An anvil 4 may then be inserted in the cup.

As shown in Fig. 2, a rim-fire shell 5 may be provided with a priming charge 6 by giving the priming charge a coating of the gum solution above referred to in connection with Fig. 1 and then seating it in the annular rim of the shell by centrifugal force. The priming charge may then be covered by a layer 7 of collodion or gum, as, for example, gum arabic or gum tragacanth.

Priming charges made in this manner have not only the characteristics above referred to, but are homogeneous in character, and produce a flame without an excess of pressure, but having the proper velocity and the intensity of heat to ignite the main charge before imparting to it any appreciable motion before ignition. Furthermore, the effect is to produce the maximum pressure within the breech of the firearm and not to delay the ignition until the charge is near the muzzle of the barrel, where the barrel is least adapted to withstand high pressures. Furthermore, such priming charges leave a minimum amount of harmful residue in the barrel, or none at all.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit of my invention.

I claim:—

1. A priming charge containing trinitro-nitranilid.

2. A priming charge containing trinitro-nitranilid and an oxidizing agent.

3. A priming charge containing trinitro-nitranilid and potassium chlorate.

4. A priming charge containing trinitro-nitranilid, an oxidizing agent, and a fuel.

5. A priming charge containing trinitro-nitranilid, potassium chlorate, and a fuel.

6. A priming charge containing a tetra-nitro-anilin, an oxidizing agent, and antimony sulfid.

7. A priming charge containing a tetra-nitro-anilin, potassium chlorate, and antimony sulfid.

8. A priming charge containing a tetra-nitro-anilin, an oxidizing agent, a fuel, and a metallic sulfo-cyanate.

9. A priming charge containing a tetra-nitro-anilin, potassium chlorate, a fuel, and a metallic sulfo-cyanate.

10. A priming charge containing a tetra-nitro-alinin, an oxidizing agent, a fuel, and lead sulfo-cyanate.

11. A priming charge containing a tetra-nitro-anilin, potassium chlorate, a fuel, and lead sulfo-cyanate.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM H. BUELL.

Witnesses:
P. E. STRICKLAND,
H. J. HAWKE, Jr.