United States Patent [19]

White

[11] **3,726,221**

[45] **Apr. 10, 1973**

[54] **PERCUSSION PRIMER ANVIL**

[75] Inventor: **Wilmer White**, Haddonfield, N.J.

[73] Assignee: **The United States of America as represented by the Secretary of the Army**

[22] Filed: **June 2, 1971**

[21] Appl. No.: **149,304**

[52] **U.S. Cl.** **102/45**

[51] **Int. Cl.** **F42b 5/26**

[58] **Field of Search** 102/38, 39, 45, 86.5

[56] **References Cited**

UNITED STATES PATENTS

2,021,498	11/1935	Campbell	102/45
148,366	3/1874	Hobbs	102/45
98,278	12/1869	Leet et al.	102/45
120,196	10/1871	Hobbs	104/45

FOREIGN PATENTS OR APPLICATIONS

5,384	1913	Great Britain	102/45
4,214	1885	Great Britain	102/45

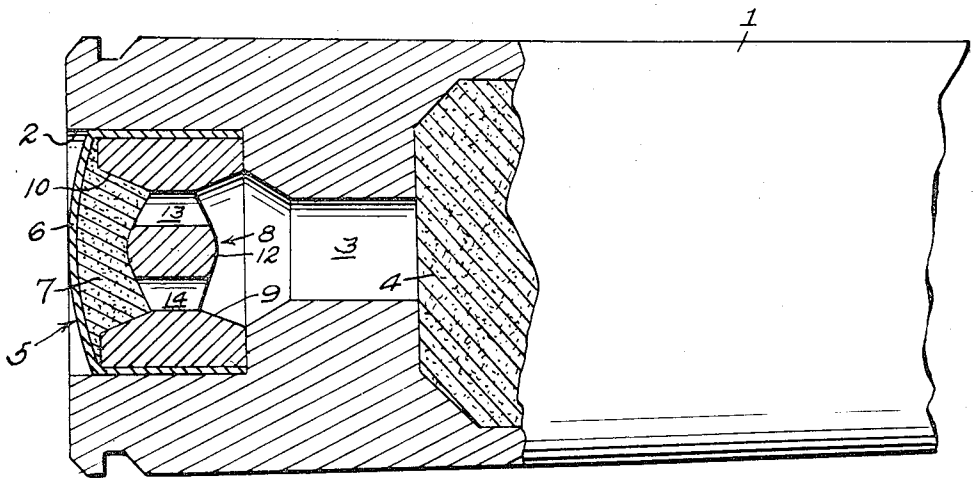
Primary Examiner—Robert F. Stahl

Attorney—Harry M. Saragovitz et al.

[57] **ABSTRACT**

A fail-proof anvil for use in a percussion type primer of a cartridge consisting of a cylindrical metal member having both ends of identical configuration. Each end is recessed then converging towards its center to a rounded point. Flash passages are provided to permit combustion products of the initiating charge to initiate the cartridge propellant. The anvil design prevents accidental inverted insertion thereof in a primer during its assembly.

3 Claims, 3 Drawing Figures



PATENTED APR 10 1973

3,726,221

Fig. 1.

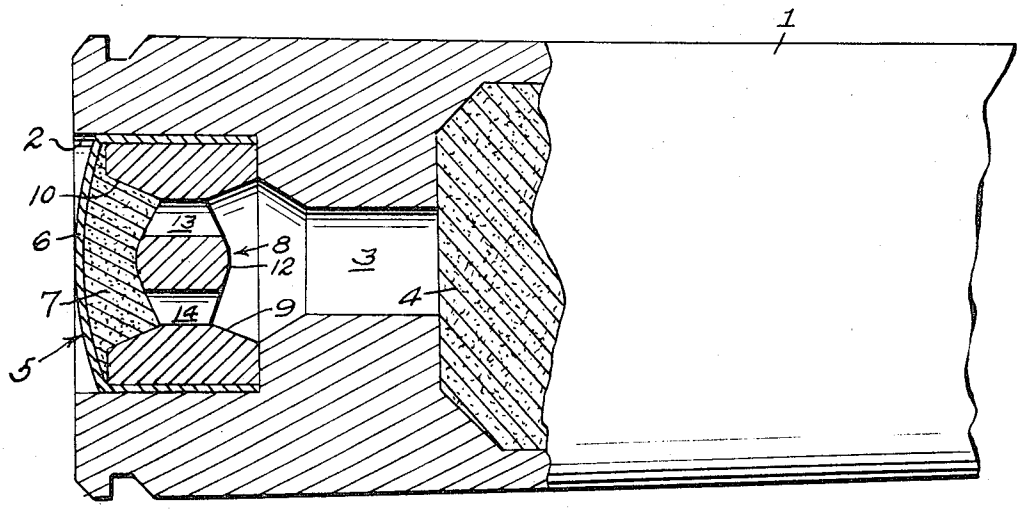


Fig. 2.

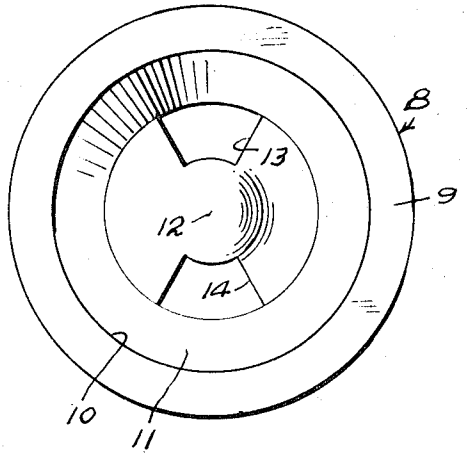
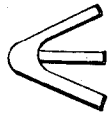


Fig. 3.



Prior art

INVENTOR,
Wilmer White

BY: Harry M. Saragovitz,
Edward J. Kelly &
Herbert Berl
ATTORNEYS.

PERCUSSION PRIMER ANVIL

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to an anvil for use in a percussion type cartridge primer and more particularly to an anvil having identical ends which can be inserted in a primer by either end and thus eliminate the possibility of inserting it in an inverted position accidently. The percussion type primer consists of an assembly in the base of the cartridge and includes a cup, an initiating charge and an anvil. A blow from the firing pin of a weapon on the head of the cup forces in the cup and compresses the initiating charge against the anvil and the combustion products exit through flash passages to fire the cartridge propellant. The anvil in the caliber .30 percussion primer, as an example, consists of a small irregular shaped part having three feet, or prongs, as in FIG. 3, which converge to a rounded point. In assembly, it was possible to insert the anvil in an inverted position which caused misfire of the round. Usually, when detected by visual inspection, their position was corrected by hand.

The present invention is designed to overcome this costly and time consuming error by providing an anvil wherein both ends were alike so that inverted insertion is impossible. Once inserted the anvil is properly positioned, thus requiring no correction as well as reducing the inspection time. Another advantage is that the anvil of this invention will not be off center or cocked. Further the anvils can be inserted by a mechanical operation, hence adaptable to mass production. Finally the design of the present invention provides the opportunity for peripheral sensitivity (rim fire); thus increasing the flexibility of the design of weapons utilizing percussion type primers.

It is therefore a principal object of this invention to provide an anvil for a percussion type primer that cannot be inserted into the primer in an inverted position accidently.

Another object is to provide an anvil having identical configuration at both of its ends.

A further object is to provide an anvil that cannot become off centered.

A still further object is to provide an anvil for a percussion type primer that will always function.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawing, in which:

FIG. 1 is a partial section taken through the rearward portion of a cartridge and showing the anvil of this invention applied thereto;

FIG. 2 is an end view of the anvil, and,

FIG. 3 is a side view of a type in present use, for which the anvil of this invention is designed to replace.

Referring in detail to the drawing in which like reference numerals designate like parts throughout the several views, reference character 1 indicates a cartridge including a case 1 having a recess 2 in its base, a flash passage 3 and a propellant 4. A primer, generally indicated by 5 is disposed in recess 2 and consists of a cup 6 and an initiating charge 7. The anvil of this invention is indicated generally by 8 and is positioned forwardly of charge 7 and adjacent flash passage 3.

Anvil 8 comprises a cylindrical metal body 9 which has an identical configuration at both ends, hence only one end need be described herein. Body 9 is recessed as at 10 to form a bezel 11. At the lowest point of bezel 11, the surface converges upwardly to a rounded point 12 at its center; as shown. The recess 10 is concentric with the periphery of body 9 and forms a circumferential rim at each end of the body 9 which extends beyond the adjacent central point 12, as shown in the drawing. The cup 6 has a slightly convex outer end surface to be engaged by a firing pin and this convexity provides a space between the end of the cup and the adjacent circumferential rim which is filled with part of the initiating charge 7, as shown, to thereby provide peripheral sensitivity as well as the usual center sensitivity.

A pair of flash ports 13 and 14 are provided in anvil 8 and are arcuate in shape, as shown. The central width of the anvil 8 is substantially less than its overall length whereby a substantial recess is formed to accommodate the initiating charge 7 as will be observed from FIG. 1. Anvil 8 fits snugly in cup 6 so that it cannot be dislodged from its proper position therein and cause malfunction.

Having thus described the best embodiment of the invention presently contemplated; what is claimed is:

1. The combination with a cartridge which includes a case and a propellant in the case, the case having a base provided with a primer recess and a flash passage connecting the recess with the propellant, of a percussion primer in said recess, said primer comprising an outer cup of a size and shape to fit snugly within the recess, an anvil disposed within the cup and having a periphery of a size and shape to fit snugly within the side walls of the cup, said anvil being double-ended, each end of which is provided with a recessed central portion forming a raised rounded point in its center, the recessed central portion of the anvil providing a circumferential rim which is spaced axially beyond the adjacent raised rounded point in the recessed portion of the anvil, the anvil having a flash port within the circumferential rim and connecting the recessed portions at each end of the anvil, and an initiating charge disposed in the primer between and in contact with the outer end of the cup and the adjacent circumferential rim, recessed portion and rounded point of the anvil to provide a primer having central and peripheral sensitivity.

2. The device of claim 1 in which the outer end of the primer cup is of convex formation to provide a substantial space between the adjacent circumferential rim and the convex end of the cup for the reception of part of the initiating charge.

3. The device of claim 1 in which the primer recess in the cartridge case, the primer cup and the primer anvil are all of cylindrical shape.

* * * * *