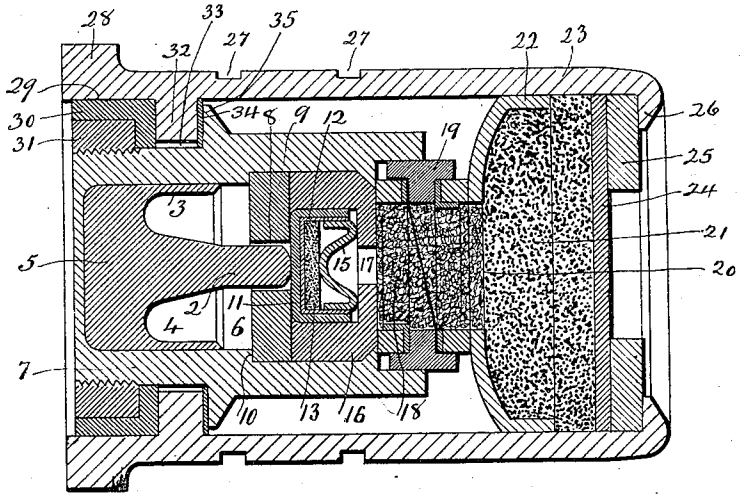
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COMBINED PERCUSSION AND ELECTRIC PRIMER.

APPLICATION FILED NOV. 23, 1903.

NO MODEL.



Witnesses.
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No. 753,035. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

THOMAS G. BENNETT AND WILLIAM MASON, OF NEW HAVEN, CONNECTICUT, ASSIGNORS TO WINCHESTER REPEATING ARMS CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

COMBINED PERCUSSION AND ELECTRIC PRIMER.

SPECIFICATION forming part of Letters Patent No. 753,035, dated February 23, 1904.

Application filed November 23, 1903. Serial No. 182,240. (No model.)

To all whom it may concern:

Be it known that we, THOMAS G. BENNETT and WILLIAM MASON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in a Combined Percussion and Electric Primer; and we do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents a view in longitudinal section of our improved primer.

Our invention relates to an improvement in that class of primers adapted to be fired either by percussion or by an electric current and known in the art as "combined percussion and electric primers," the object of the present invention being to produce a strong, reliable, and sensitive primer, constructed with particular reference to preventing the rearward escape of gas through leakage or piercing.

With these ends in view our invention consists in a combined percussion and electric primer having certain details of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

As herein shown, our invention is embodied in a primer in other respects closely following the primer shown and described in United States Patent No. 712,826, granted November 4, 1902, to William Mason, one of these joint applicants. Reference, therefore, to that patent may be had for a fuller description of the details of the construction of the primer than it seems necessary for us now to give here.

In carrying out our invention we employ a firing-plunger comprising a centrally-arranged forwardly-projecting stem 2, an elastic annular forwardly-extending gas-check flange 3, surrounding the base of the said stem, which projects beyond it, a deep annular forwardly-opening gas-check chamber 4, and a heavy impact-receiving head 5, having a flat impact-receiving outer face. The said part is located in the bottom of the chamber 6 of a brass receiving-cup 7, which has a relatively thin bottom wall and corresponds to the receiving-cup shown and described in the said prior patent, except that it is longer than the same and has no forwardly-projecting firing-boss. At its forward end the stem 2 passes through the central opening 8 of a primer-sustaining or primer-breeching washer 9, which is also located in the said chamber 6, the edge of its rear face being abutted against a shoulder 10 formed therein. The forward end of the stem 2 rests upon a percussion-primer of any approved construction and comprising, as herein shown, an outer cup 11, an inner cup 12, of thinner metal, containing the priming mixture 13, and an anvil 15. This primer is located within a cup-shaped anvil-block 16, corresponding to the anvil-block of the prior patent aforesaid, but shorter. The said block 16 is located within the chamber 6 aforesaid and has its open or primer-receiving end breeched against the forward face of the primer-sustaining or primer-breeching washer 9. It is formed with a flash-hole 17, leading to the guncotton 18 of the electric primer, which may be of any approved construction, but which in the form shown herein is so fully described in the said prior patent that it is unnecessary to reiterate that description here other than to say that it consists of several parts combined with a doubly-cupped non-conducting receiving-ring 19, which fits within the extreme forward end of the chamber 6 of the receiving-cup 7, from which a portion of the electric primer projects. From the guncotton 18 the fire passes through a flash-hole 20 to the powder 21 in a powder-cup 22, which is located within the forward end of the primer shell or body 23, the powder being retained in place by a disk-shaped powder-wad 24, held in place by a brass so-called "crimp-washer" 25, retained by a flange or crimp 26, formed by spinning or crimping inwardly the beveled end or edge of the said body 23, which is provided with gas-

check cannelures 27 in the usual way. The rear end of the said body 23 is formed with a rim or head 28, which locates the primer in the cartridge-shell, (not shown,) which is recessed to receive the primer. The rear end of the body 23 is formed with a recess 29, receiving a cup-like washer 30, of insulating material, which in turn receives an internally-threaded receiving-cup nut 31, which in turn receives and holds in place the receiving-cup 7, the rear end of which is threaded to adapt it to be screwed into the said nut 31. The washer 30 bears against the rear face of an abutment-ring 32, formed integral with and extending inward into the rear end of the body 23. This abutment-ring, it will be observed, is just a trifle larger in diameter than the diameter of the rear end of the receiving-cup 7, whereby an insulating air-space 33 is formed. The forward face of the ring 32 receives a mica insulating-disk 34, which provides for the insulation from the body 23 of a beveled gas-check flange 35, made integral with and encircling the cup 7 and positioning, as it were, the cup within the body.

When our improved primer is used as a percussion-primer, the central portion of the bottom of the receiving-cup 7 is struck a blow in the usual manner by a firing-pin of some sort forming an element of the firing mechanism of the gun in which the primer is used. The cup yields at this point, and the firing-plunger is forced forward, causing its stem 2 to detonate the priming mixture in the percussion-primer. The flame thus produced ignites the guncotton 18, which in turn sets fire to the powder 21.

In case our primer is used as an electrical primer the guncotton will be ignited in the usual way by an electric current, as fully described in the said prior patent.

Under our improved construction the heavy primer-sustaining or primer-breeching washer 9 breeches up the percussion-primer so solidly that when a cartridge containing our combination-primer is fired the primer thereof is prevented from moving rearward under pressure of gas; but its side walls may expand against the inner walls of the cup-shaped anvil-block, whereby the side walls of the percussion-primer will themselves form a gas-check to prevent the rearward escape of gas. However, should an extreme pressure be developed and some gas escape rearward back of the percussion-primer the gas will then enter the gas-check recess in the firing-plunger, the gas-check flange of which will expand against the walls of the receiving-cup, whereby any gas is prevented from reaching the head of the combination-primer. On the other hand, should the stem of the firing-plunger pierce the percussion-primer and allow gas to escape rearwardly it would simply enter the gas-check recess of the firing-plunger and expand the gas-check flange thereof and cut off the rearward movement of the gas, so that under no conditions can any gas escape rearwardly through the combination-primer and enter the firing mechanism of the gun. The leakage of any gas rearward is taken care of by the gas-check 35, encircling the receiving-cup, as fully set forth in the prior patent referred to.

It is apparent in carrying out our invention that some changes from the construction herein shown and described may be made. We would therefore have it understood that we do not limit ourselves to such a construction, but hold ourselves at liberty to make such departures therefrom as fairly fall within the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A primer having a shell or body, a receiving-cup located therein and having a relatively thin bottom wall, and a firing-plunger located within the said cup and having an impact-receiving head which rests upon the said wall of the cup, a centrally-arranged forwardly-projecting stem, a forwardly-projecting gas-check flange surrounding the said stem which projects beyond the edge of the flange, and a forwardly-opening annular gas-check recess surrounding the base of the stem.

2. In a combined percussion and electric primer, the combination with the shell or body, of a receiving-cup located therein and insulated therefrom, a percussion-primer located within the said receiving-cup, a primer-sustaining or primer-breeching washer located within the said cup and having the percussion-primer breeched against its forward face, and means passing through the said washer for detonating the percussion-primer.

3. In a combined percussion and electric primer, the combination with the shell or body, of a receiving-cup located therein and insulated therefrom, a percussion-primer located within the said cup, a primer-sustaining or primer-breeching washer located within the said cup and having the percussion-primer breeched against its forward face, and a firing-plunger located in the bottom of the cup and comprising a stem, a gas-check flange surrounding the same, a gas-check recess surrounding the base of the stem, and an impact-receiving head.

4. In a combined percussion and electric primer, the combination with the shell or body, of a receiving-cup located therein and insulated therefrom, a firing-plunger located in the bottom of the said cup and comprising a forwardly-projecting stem, a forwardly-opening gas-check recess surrounding the base of the stem, a forwardly-projecting gas-check flange forming the outer wall of the said re-

cess, and an impact-receiving head, a primer-sustaining or primer-breeching washer located within the cup and having the said stem passed through it, a cup-shaped anvil-block breeched against the said washer, a percussion-primer located within the said block and also breeched against the said washer, and an electric primer mounted in the forward end of the cup.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

THOMAS G. BENNETT.
WILLIAM MASON.

Witnesses:
DANIEL H. VEADER,
H. F. BEEBE.