

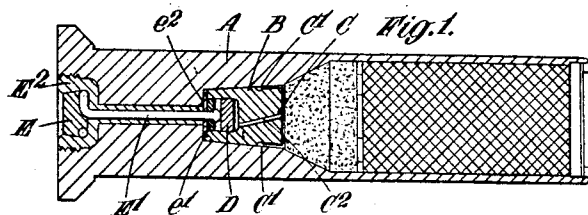
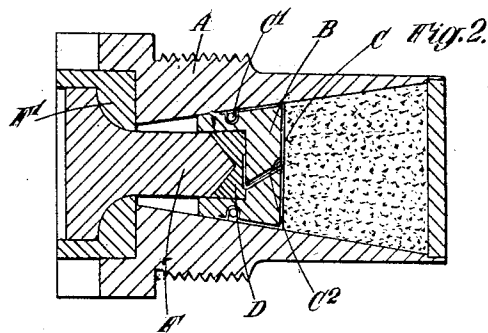
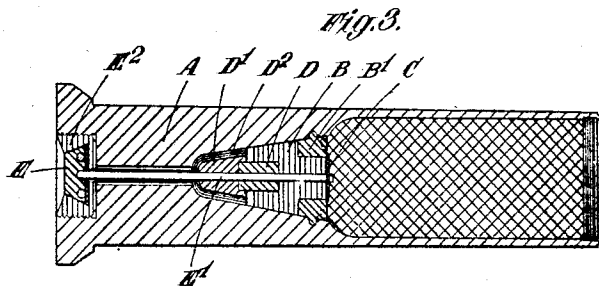
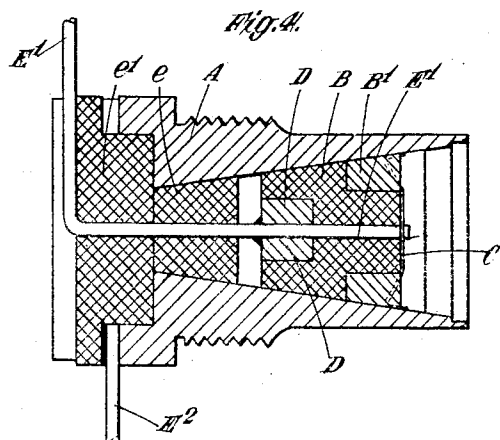
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ELECTRIC PRIMER AND VENT SEALING TUBE

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## UNITED STATES PATENT OFFICE.

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## ELECTRIC PRIMER AND VENT-SEALING TUBE.

Application filed May 8, 1923. Serial No. 637,616.

*To all whom it may concern:*

Be it known that we, OWEN DAVID LUCAS and FREDERICK GEOFFREY LEES JOHNSON, both subjects of the King of Great Britain, residing at Vickers House, Broadway, Westminster, in the county of London, England, have invented certain new and useful Improvements in or Relating to Electric Primers and Vent-Sealing Tubes, of which the following is a specification.

This invention relates to electric primers and vent sealing tubes particularly those of the so-called "wireless" type.

According to the invention the fuse wire, which is preferably of tungsten, is carried by a block or plug (preferably conical) with the free end or ends of the said wire disposed upon the outer surface of the said block so that when the latter is pressed into a seating (also preferably conical) provided for it in the body of the primer or tube, efficient contact is secured between the said fuse wire and the said body. The fuse wire preferably extends diametrically across the front face of the conical block so that there are two free ends of this wire arranged, as stated above, on the surface of the block. When the block is made of insulating material the said free ends of the fuse wire may be held in position on the block by a fixing ring or wire which enters a groove in the outer surface of the block. The said ring or wire is preferably made of tin so that it will readily deform during the pressing of the block into position in its seating. In an alternative arrangement the ends of the wire are passed through cuts formed in a block of readily deformable metal which is carried by a block of insulating material.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, in which:—

Figure 1 is an axial section shewing a vent sealing tube constructed in accordance with this invention.

Figure 2 is a view similar to Figure 1 shewing a primer constructed in accordance with this invention.

Figures 3 and 4 are views similar to Figures 1 and 2 shewing modified constructions thereof.

A is the body of the sealing tube or

primer, B is the conical block pressed into a conical seating in the said body from the front end thereof and C is the fuze wire which in the examples shewn extends diametrically across the front face of the said block, with the free ends arranged on the conical surface of the block.

In the construction shewn by Figure 1 the block B is made of ebonite or other suitable insulating material and the free ends of the fuze wire C are held in place by a fixing ring or wire C<sup>1</sup> (preferably of tin) disposed in a groove in the conical surface of the said block. Thus when the block is forced into position in its conical seating, the ring or wire C<sup>1</sup> is deformed and it and the fuze wire C are pressed firmly into contact with the seating. The centre portion of the fuze wire is connected by a conducting wire C<sup>2</sup> (passing through a hole in the block B) to a contact piece D which is preferably composed of tin pressed into an undercut cavity in the rear part of the block B. The contact piece D is electrically connected to a second contact piece E in the rear part of the body of the tube by a wire E<sup>1</sup>, made of copper for example, arranged axially within the tube. The second contact piece E is preferably composed of tin pressed into an undercut cavity in an insulating bushing E<sup>2</sup> which has an extension or sleeve serving to insulate the wire E<sup>1</sup> from the tube. The front end of the wire E<sup>1</sup> is riveted over a metal washer e<sup>1</sup> between which and the body of the tube an insulating washer e<sup>2</sup> (of mica for example) is disposed. The contact piece D is pressed firmly into contact with the riveted end of the wire E<sup>1</sup> by the forcing of the block B into position in its recess.

In the construction shewn by Figure 2 the second mentioned tin contact piece E and the copper wire E<sup>1</sup> are replaced by a brass or other relatively hard metal rod F having a coned or pointed end on to which the tin contact piece D carried by the aforesaid block B is forced when the block is being pressed into position as aforesaid. The said rod is insulated from the body of the primer by an insulating bushing F<sup>1</sup> and the latter and the rod may be secured in position in any desired manner.

It will be observed that in both Figures 1 and 2 the aforesaid conical block B, together with the fuze wire C, the fixing wire

or ring C<sup>1</sup>, the tin contact piece D in the rear part of the block and the conducting wire C<sup>2</sup> connecting this contact piece to the fuze wire, constitute a self-contained unit which considerably facilitates the assembly of the block with the body of the primer or tube.

In the construction shewn by Figures 3 and 4 the fuze wire C is secured in position by being passed through cuts in a block B<sup>1</sup> of tin carried by the insulating block B, these cuts being made at a small angle to the face of the block B<sup>1</sup> and the metal of the latter then pressed over the wire to secure it in place. The free ends of the wire are bent forwards to lie on the conical surface of the tin block B<sup>1</sup> for being pressed firmly against the body A as aforesaid. The fuze wire, prior to being passed through the cuts, is given a turn around a groove near the end of a central conducting wire E<sup>1</sup>, the head being then slightly riveted over to secure the fuze wire at this point. A block D of tin surrounds the conducting wire E and is disposed within the rear part of the insulating block B. In Figure 3 the rear end of the said block D is pressed against a copper core D<sup>1</sup> (insulated from the body A by a sheath D<sup>2</sup> of suitable non-conducting material) so as to grip the conducting wire E, the pressure exerted on the front faces of the blocks B and B<sup>1</sup> also pressing part of the tin block B<sup>1</sup> into a circumferential groove in the conical recess in the body A as shewn in Figure 3. In this figure the arrangement at the rear end of the conducting wire is generally similar to that of Figure 1. In Figure 4 the tin block D is soldered to the conducting wire E<sup>1</sup> and the latter is carried out to the rear through insulating bushings e, e<sup>1</sup>. Another conducting wire E<sup>2</sup> is soldered to the body A. This construction is not intended for guns but for flares or other purposes where spring contact is not required to be made with the rod F of Figure 2.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In an electric primer or vent sealing tube, the combination with the metal body and the fuze wire, of a conical block which is pressed into a conical recess in said body from the front end of the latter and between the outer surface of which block and the wall of the recess part of said wire is pressed.

2. In an electric primer or vent sealing tube, the combination with the metal body,

of a conical block pressed into a conical recess in said body, a central conducting member passing through said block and a fuze wire connected to said member and disposed upon the front surface of said block with the ends of said fuze wire gripped between said block and the wall of said recess.

3. In an electric primer or vent sealing tube, the combination with the metal body, of a conical block pressed into a conical recess in said body from the front end of the latter, a central conducting member passing through said block and a fuze wire connected to said member and disposed upon the front surface of said block with the ends of said fuze wire gripped between said block and the wall of said recess.

4. In an electric primer or vent sealing tube, the combination with the metal body and the fuze wire, of a block which fits into a recess in said body and between the outer surface of which and the wall of the recess part of said wire is pressed, an insulating bushing in the rear part of said body, a contact piece of readily deformable metal pressed into an undercut cavity in said bushing and an insulated conductor interposed between said contact piece and said fuze wire.

5. In an electric primer or vent sealing tube, the combination with the metal body and the fuze wire, of a block of readily deformable metal pressed into a recess in said body with part of the fuze wire disposed between the outer surface of said block and the wall of said recess, and a block of insulating material carrying the first-mentioned block.

6. In an electric primer or vent sealing tube, the combination with the metal body and the fuze wire, of a block of readily deformable metal pressed into a recess in said body with the ends of said fuze wire passed through cuts in said block, and a block of insulating material carrying the first-mentioned block.

7. In an electric primer or vent sealing tube, the combination with the metal body and the fuze wire, of a block of readily deformable metal pressed into a recess in said body with the ends of said fuze wire passed through cuts in said block and disposed between the outer surfaces of said block and the wall of said recess, and a block of insulating material carrying the first-mentioned block.

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