

(No Model.)

H. J. SMITH & E. L. ZALINSKI.

ELECTRIC PRIMER.

No. 405,684.

Patented June 18, 1889.

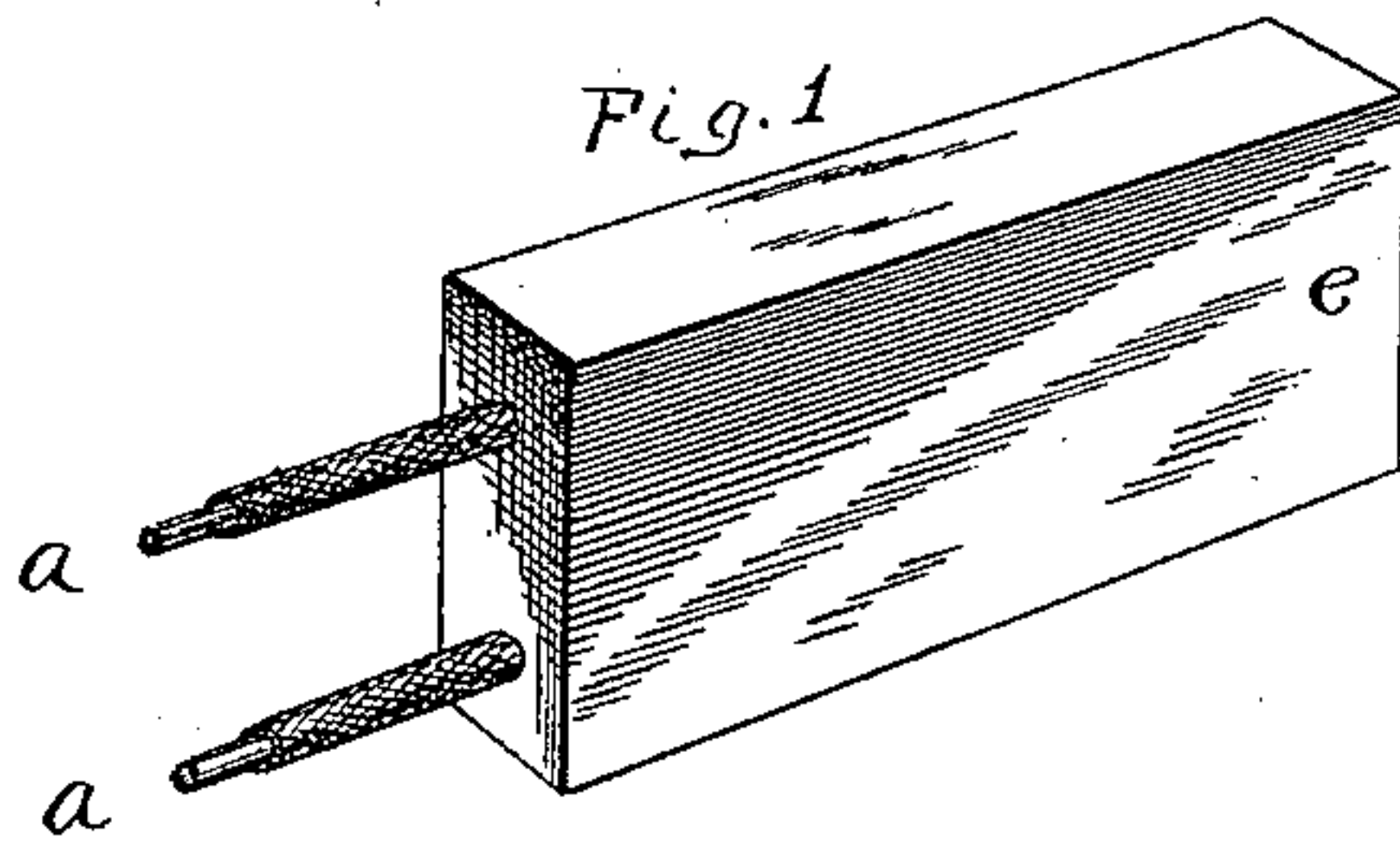
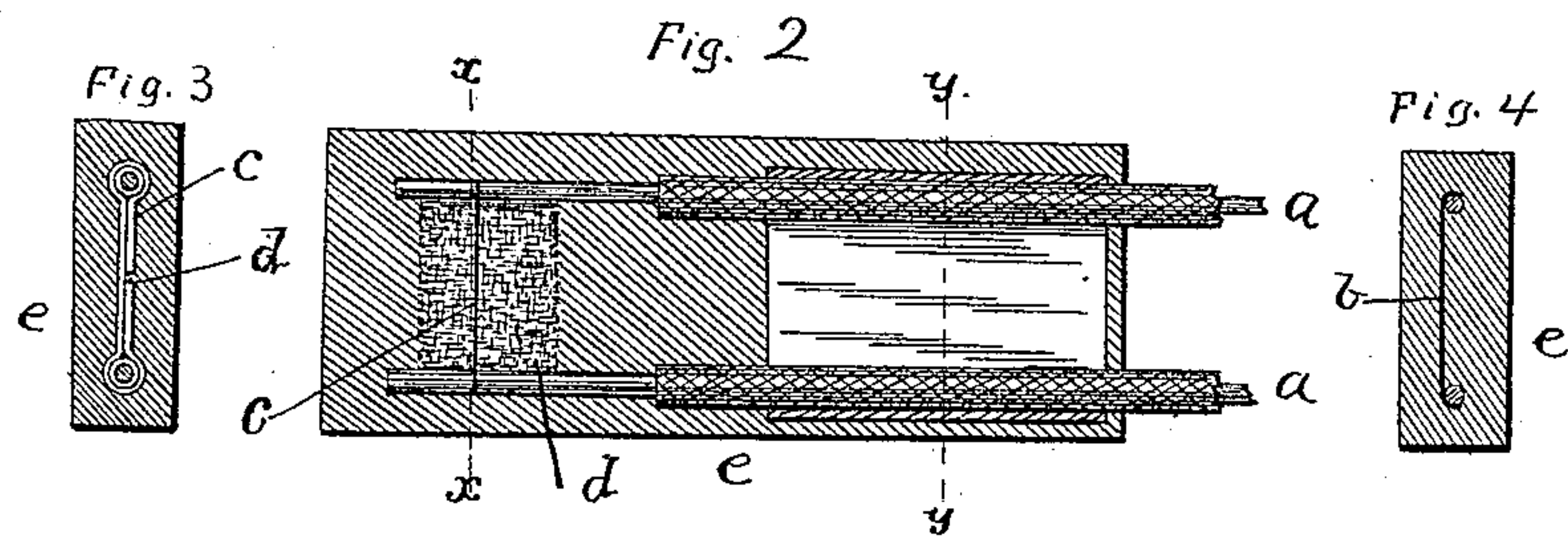


Fig. 5

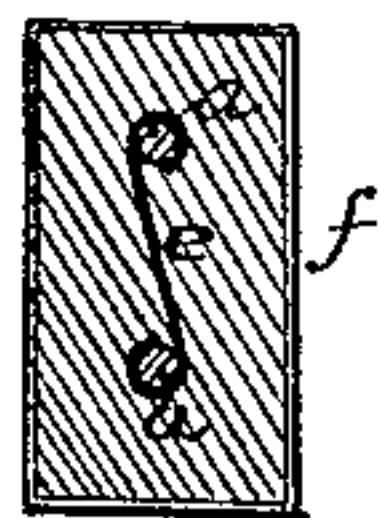
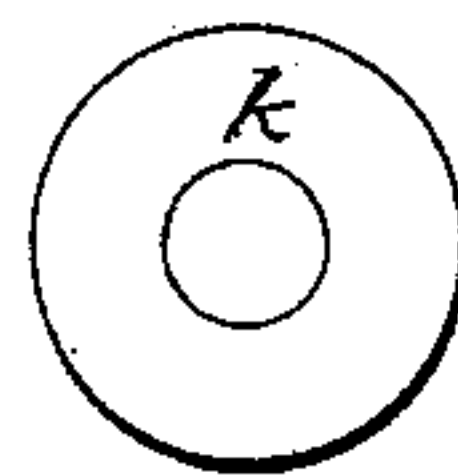
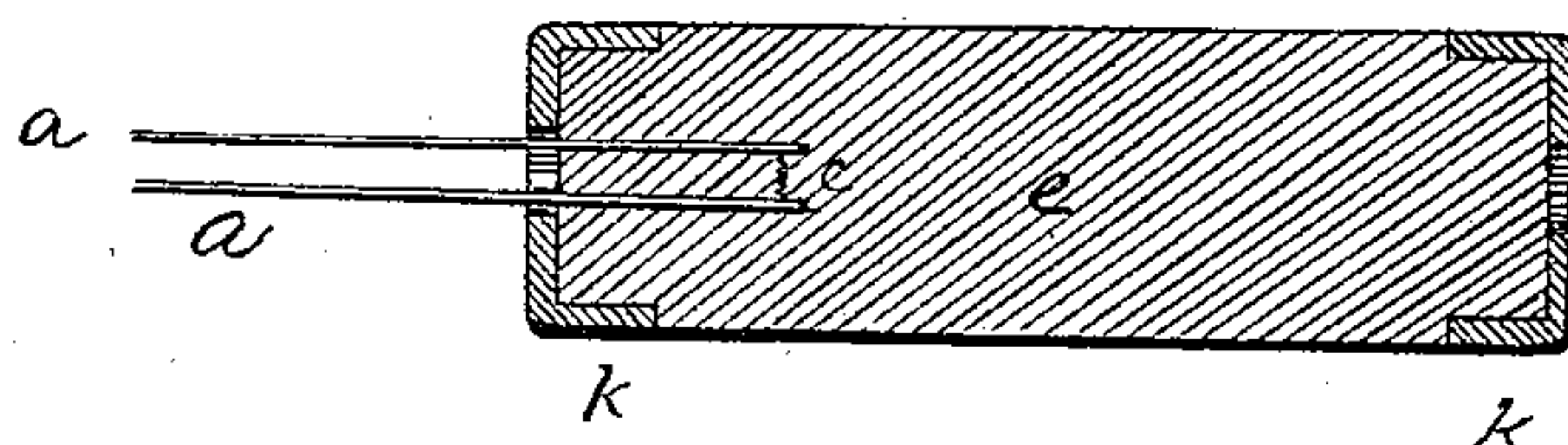


Fig. 6



Witnesses,

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UNITED STATES PATENT OFFICE.

HENRY JULIUS SMITH, OF POMPTON, NEW JERSEY, AND EDMUND L. ZALINSKI, OF THE UNITED STATES ARMY.

ELECTRIC PRIMER.

SPECIFICATION forming part of Letters Patent No. 405,684, dated June 18, 1889.

Application filed November 4, 1887. Renewed November 17, 1888. Serial No. 291,152. (No model.)

To all whom it may concern:

Be it known that we, HENRY JULIUS SMITH, residing at Pompton, in the county of Passaic and State of New Jersey, and EDMUND LOUIS ZALINSKI, of the United States Army, have invented certain new and useful Improvements in Electric Primers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to primers—such as are fired by an electric current—and is intended to furnish a cheap and reliable primer for cannon, for blasting-charges, shell-fuses, &c.

The invention consists in the construction, combination, and arrangement of parts, substantially as hereinafter set forth.

Heretofore primers of this character have been made with two wires insulated, a platinum bridge connecting the two, a bit of gun-cotton surrounding the bridge, and loose powder around the gun-cotton inclosed in a quill or a small metallic tube. The objection to primers of this kind is that they are expensive to make, and owing to the delicate character of the platinum bridge, which is not well supported, the primers are easily broken.

Figure 1 is a perspective view, much enlarged, of a primer made according to this invention. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a cross-section on line *x x*, and Fig. 4 is a cross-section on the line *y y*; Fig. 5, a section showing the film of varnish over the powder-cake. Fig. 6 is a modification.

The reference-letters *a a* designate electric wires, which are insulated in any usual manner. The two wires are held parallel to each other, near their ends, by a clamp-piece *b*, which may be of hard rubber, or of metal if care be taken that the metal be insulated from the wires. The wires at or near their ends are connected by a thread or bridge of platinum or similar metal having considerable resistance to the passage of electricity. This bridge *c* becomes heated when a cur-

rent of electricity passes through it from wire to wire. The bridge is supported by a piece *d*, of compressed gun-cotton or other material of similar character, which may be readily ignited. The clamp *b* and the bridge *d* and its support are embedded in a cake *e* of compressed gunpowder. This mass of powder is compressed about the wires and bridge of the primer, and holds all the parts firmly in position. The outside of the powder-cake may be covered with a collodion or other coating or varnish.

The powder-cake can be of any suitable size and form. As heretofore constructed the primers are about one-fourth of an inch in length.

The powder-cake becomes very hard and supports the platinum bridge, as a covering of loose powder cannot do, so that the bridges do not break in handling. The powder being entirely combustible, leaves no residuum in the vent of a gun, as is sometimes the case where quills or tubes are used.

The ends of the primer may be re-enforced by ferrules or caps *k*, of xylonite or similar combustible material.

The primer is used by placing it in the vent of the gun, or in a cartridge or fuse, and connecting the wires *a a* to an electric battery, in usual manner.

What we claim is—

1. An electric primer of the character described, in which the bridge is inclosed in and rigidly supported by a cake of compressed powder.

2. The combination, in an electric primer, of the terminals of two insulated wires, a bridge connecting the two, a supporting-clamp for the wires, and a cake of compressed powder inclosing the bridge and clamp.

3. The combination, in an electric primer, of two insulated wires, a platinum bridge connecting the wires, a film of easily-ignited material in contact with the bridge, and a cake of compressed powder inclosing the whole.

4. The combination, in an electric primer, of the electric wires, a platinum bridge con-

necting the same, a cake of compressed powder inclosing the wires and bridge, and a film of varnish covering the powder-cake.

5 The combination, in an electric primer, of the electric wires, a platinum bridge connecting said wires, a cake of compressed powder supporting said bridge, and combustible ferrules surrounding said powder, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

H. JULIUS SMITH.
EDMUND L. ZALINSKI.

Witnesses:

JOHN J. GRIFFIN,
STANLEY DWIGHT.