H. J. SMITH.

ELECTRIC-FUSE.

No. 173,681. Patented Feb. 15, 1876.

Fig. 1.

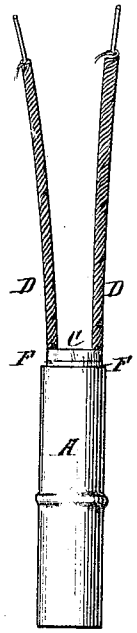


Fig. 2.

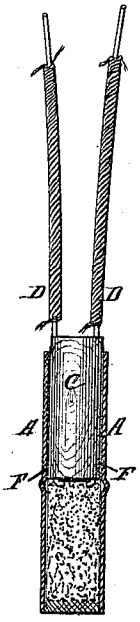


Fig. 3.

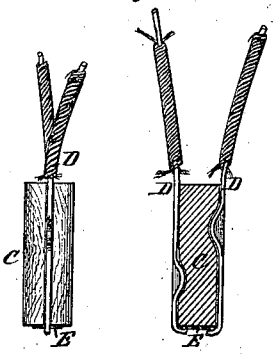
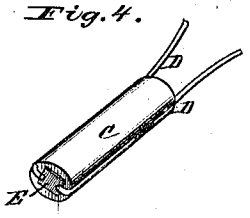


Fig. 4.



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UNITED STATES PATENT OFFICE.

H. JULIUS SMITH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELECTRIC FUSES.

Specification forming part of Letters Patent No. 173,681, dated February 15, 1876; application filed February 3, 1876.

To all whom it may concern:

Be it known that I, H. JULIUS SMITH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electrical Fuses, of which the following is a specification:

This invention relates to certain improvements in frictional electric fuses, its object being to produce a fuse of sufficient conductivity to carry the electric current easily through the charge, whereby all tendency of the current to leave the wires and take the ground circuit will be obviated, and a current of sufficient intensity transmitted through the fuse to ignite a charge of any kind of explosive or fulminate, and, further, to cheapen the construction of the fuse by the employment of inferior and less expensive conducting-wires cheaply insulated, which the increased conductivity of my improvement enables me to employ.

My invention consists, first, in the combination, with the conducting-wires, between their terminals within the fuse, of a sheet of gold, silver, or other suitable foil, for the purpose of conveying the current through the charge, as hereinafter more fully set forth; second, in the combination, with the casing, of an insulating-block of wood or other material, grooved or slotted on opposite sides, forming recesses for the reception of the conducting-wires, and a support for the foil which connects their terminals, substantially as hereinafter set forth; third, in the combination, with the casing and insulating-block, of an intermediate insulating-casing, to prevent contact between the wires and casing, substantially as hereinafter described; fourth, in the combination, with the insulating-block, of the conducting-wires, bent or crimped to prevent their withdrawal from their recesses, or the turning or shifting of the same, so as to throw their ends off the connecting-sheet of foil, as more fully hereinafter set forth; fifth, in combination with the fuse and explosive compound, the connecting-sheet of foil and iron conducting-wires, insulated with cotton or other cheap insulating materials, substantially as hereinafter described.

In the drawing, Figure 1 represents an elevation of my improved fuse; Fig. 2, a view partly in elevation and partly in section. Fig. 3 represents an elevation and a section of the insulating-block, and Fig. 4 represents a perspective view of the block and conducting-wires.

The letter A represents a casing of metal or other suitable material, provided with a shoulder about midway between its two ends. The casing is preferably made of such diameter and length that an ordinary blasting-cap will fit neatly upon the forward end of the same, the extent to which it can be forced down upon said tube being limited by the shoulder to prevent danger. The letter C represents an insulating-block, of wood or other insulating material, extending about half-way into the casing, and recessed or slotted longitudinally on opposite sides for the reception of the conducting-wires D D. Said conducting-wires are constructed, preferably, of iron or other cheap metal, and insulated by means of cotton or other inexpensive textile material, which may be coated with any resinous substance to increase its insulating properties and render it water-proof. The conducting-wires are, preferably, bent or crimped, as shown in Fig. 3, to prevent the shifting or turning of the same in the recesses. The letter E represents the connecting-strip or sheet of gold, silver, or other foil, which is cemented or otherwise secured on the end of the insulating-block, the terminals of the wires C being bent down over opposite edges of the same, as clearly indicated in Fig. 4. In order to prevent the electric current from passing from the wires to the casing, an intermediate insulating-casing, F, of any suitable material, is interposed between the two. The forward end of the casing A constitutes the charge-chamber, and may be filled with any explosive or fulminate, after which the open end may be cemented or otherwise closed.

The fuse, as thus constructed, offers little or no resistance to the passage of the electric current, and therefore it is unnecessary to employ the most perfect conductors and insulating materials, which are expensive, and render the fuses too costly for many ordinary purposes; and, further, by the action of the current upon

the foil, the charge is invariably fired, as the foil is heated and volatilized by the passage of the current, creating a heat of sufficient intensity and duration to ignite the least sensitive explosives. By this means I can construct the fuse with a single charge-chamber and avoid the necessity of employing a series of chambers for charges of different degrees of sensitiveness, as in the fuses heretofore constructed; and, further, by dispensing with the extremely sensitive and dangerous fulminates heretofore found necessary, I produce a fuse that is attended with no danger whatever.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with the conducting-wires of a frictional electric fuse, a connecting-sheet of gold, silver, or other suitable foil interposed between the terminals of said wires, substantially as described.

2. In combination with the casing A, the insulating-block, grooved or recessed longitudinally for the reception of the connecting-wires, and forming a support for the foil, substantially as described.

3. The combination of the casing, intermediate insulating-casing, and insulating-block, containing the wires and foil, substantially as described.

4. In combination with the recessed insulating-block, the wires bent or crimped as shown, for the purpose described.

5. In combination with the fuse containing the explosive compound, the connecting sheet of foil, and the iron conducting-wires, insulated by means of cotton or other cheap insulating material, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

H. JULIUS SMITH.

Witnesses:

JAMES L. NORRIS,

JOS. L. COOMBS.