H. J. SMITH.

ELECTRIC-FUSE.

No. 173,680. Patented Feb. 15, 1876.

Fig. 1.

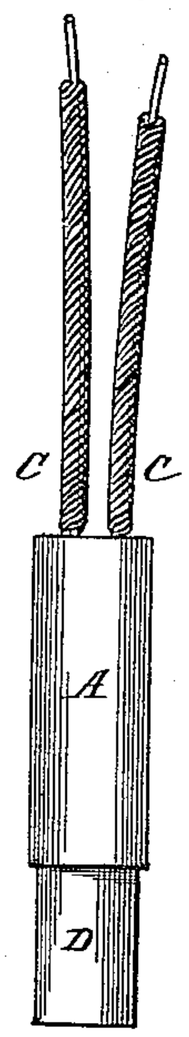


Fig. 2.

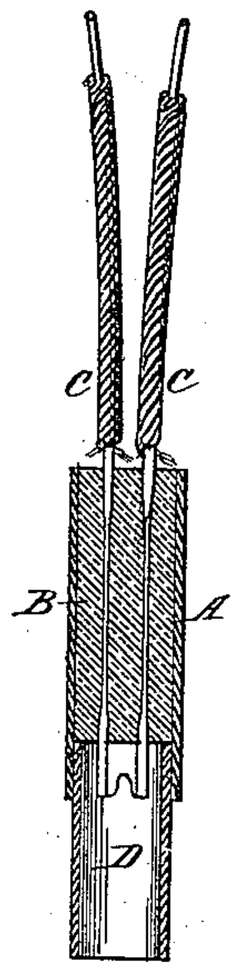


Fig. 3.

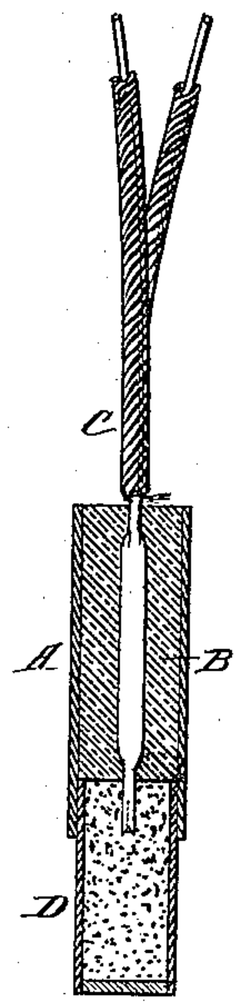
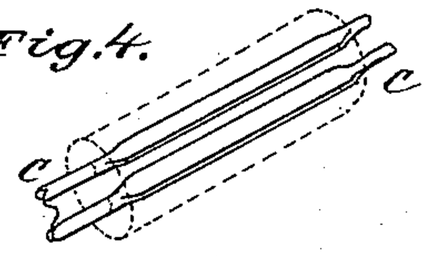


Fig. 4.



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H. JULIUS SMITH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELECTRIC FUSES.

Specification forming part of Letters Patent No. **173,680**, 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 electric fuses for igniting explosive charges, its object being to provide a safe and efficient fuse that may be cheaply constructed, and may be charged with any explosive substance alone, or employed in connection with the ordinary fulminates with absolute safety; and it consists, first, in an improved method of constructing the ends of the conducting wires for the reception of the platinum connecting-wire, so that the same may be held in position during the operation of soldering, and firmly retained in such position after soldering, as more fully hereinafter set forth; second, in an improved method of constructing the casing of the fuse to admit of readily reaching the ends of the connecting-wires for the purpose of enabling the connecting platinum wire to be readily attached thereto, as hereinafter more fully described; third, in an improved method of constructing the casing of the fuse, to adapt it to the reception of the ordinary fulminate fuse-cap, and allow the same to be securely placed thereon without danger, as more fully hereinafter specified; fourth, in an improved method of constructing and securing the conducting-wires in the insulating compounds or packing of the fuse-casing, to prevent the turning or shifting of the same, which would break or disarrange the platinum connecting-wire, and render the fuse useless.

In the drawing, Figure 1 represents an elevation of my improved fuse. Fig. 2 represents a vertical and horizontal section through the fuse; Fig. 3, a vertical section at right angles to the section shown in Fig. 2; Fig. 4, a perspective view of the insulating-packing and wires.

The letter A represents a small tube or cylindrical casing of metal or other suitable material, and B, a packing of sulphur or other insulating material, extending from one end nearly to the other of said casing. C C represents the conductors, which may consist of wires of any suitable metal properly insulated. I prefer to employ, however, on account of cheapness, conducting-wires of iron, preferably of malleable iron, and insulated by a covering or wrapping of cotton or other cheap textile material, which may be coated with a suitable resinous substance, to increase its insulating properties and render the covering waterproof. The said wires are embedded in the insulating-packing at sufficient distance from the sides of the casing to prevent any liability of the current passing to the same, and project, through the insulating-packing, slightly beyond the forward end of the casing, and are notched or slotted at their extremities to form a seat for the platinum connecting-wire and hold the same during and after the operation of soldering. The projecting ends of said wires admit of ready access to the same for the purpose of allowing the platinum wire to be placed in its seat, and for the application of the soldering-tool. In order to prevent the turning or shifting of the conducting-wires, which would break or disarrange the delicate platinum connecting-wire, I flatten, bend, or crimp those portions of the conducting-wire within the insulating compound, by which they will be held firmly in position under all circumstances. The letter D represents an auxiliary tubing or casing for containing the explosive charge, which preferably consists of ordinary powder, although any other explosive or fulminate may be employed. Said auxiliary tube may be of such diameter as to fit into the end of said tube, and to construct the auxiliary tube of such diameter as to form a nipple over which an ordinary fuse-cap or blasting-cap will neatly fit, the end of the tube A forming a shoulder against which the mouth of the cap will rest when in position, and prevent the cap from being forced down to such an extent as to bring the end of the auxiliary tube D into contact with the fulminate in the cap, and thus obviate all danger in securing the cap upon the fuse. The fuse, as thus constructed, is designed to be used either with or without the fuse-cap, and, as before stated, the tube D is filled or packed with powder or other explosive, after which the end is secured by cement or in any other convenient manner. In this shape it is ready

for use, but, when circumstances require, the fuse-cap containing fulminate can be readily placed upon the end of the tube D, as herein before described.

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

1. In an electric fuse, the conducting-wires, slotted at their ends as described, for the purpose of forming a seat for the platinum connecting wire, to retain the same in place during and after the operation of soldering, substantially as described.

2. In combination with the casing A, the conducting-wires C C, projecting beyond the forward end of said casing, to admit of ready access to said wires for the purpose of securing the platinum connecting-wire, substantially as described.

3. The combination of the casing A and auxiliary casing D, forming the charge-chamber of the fuse, substantially as described.

4. The combination of the casing A and auxiliary casing D, setting within the forward end of the same, the latter constructed of proper diameter and length to form a nipple for a blasting-cap, the two being relatively arranged so that the casing A will form a shoulder to prevent the cap from being forced on too far, substantially as described.

5. In combination with the insulating-packing, conducting-wires, flattened, bent, or crimped, to prevent turning or twisting of the same, 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.