

No. 636,565.

Patented Nov. 7, 1899.

J. SACHS.  
SAFETY FUSE.

(Application filed Nov. 14, 1898.)

(No Model.)

Fig. 1.

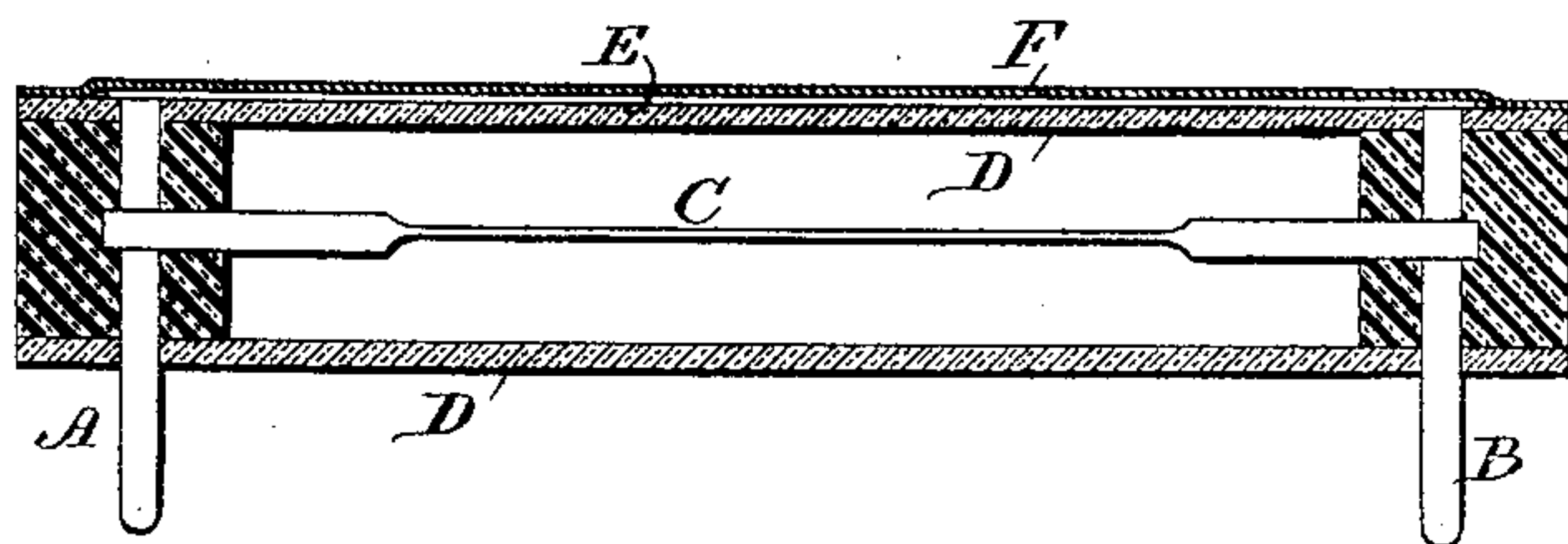
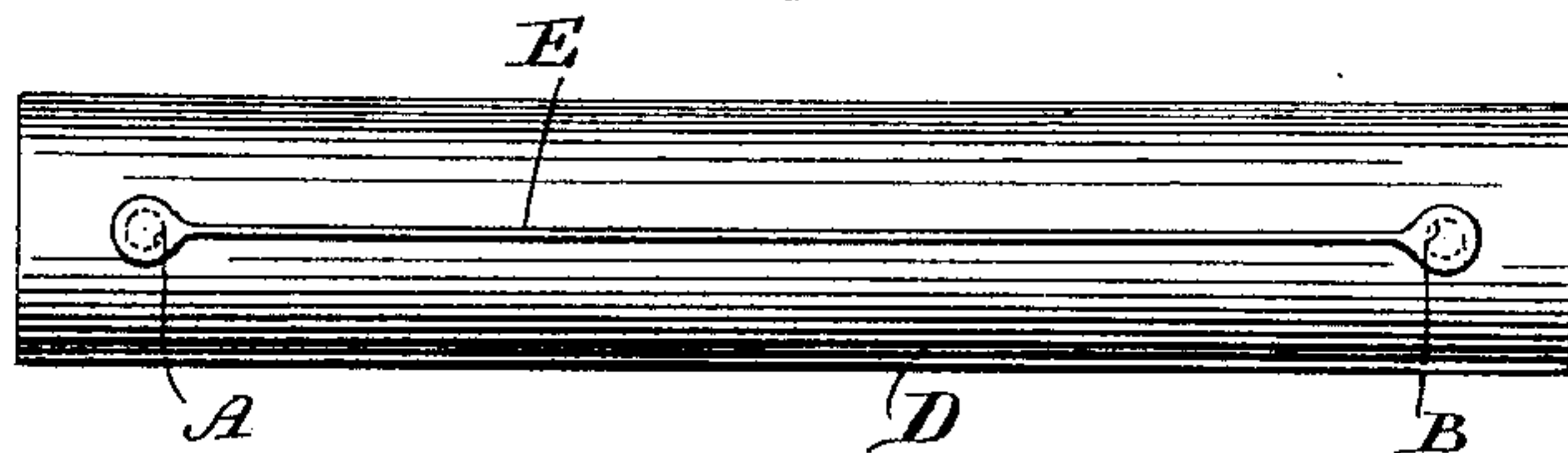


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH SACHS, OF NEW YORK, N. Y.

## SAFETY-FUSE.

SPECIFICATION forming part of Letters Patent No. 636,565, dated November 7, 1899.

Application filed November 14, 1898. Serial No. 696,406. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH SACHS, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented an Improvement in Safety-Fuses, of which the following is a specification.

Safety-fuses have heretofore been employed in electric circuits, the fuse to be melted or disrupted by an excess of current, so as to prevent injury to translating devices in the circuit, and such safety-fuses have been placed within tubes, so as to prevent injury from the melted metal or from any flame or electric arc that may exist between the terminals by the passage of the electric current; but it is not easily ascertained which safety-fuse in an electric circuit may have become disrupted, because the case prevents the injured safety-fuse being noticed.

In carrying out the present invention I make use of two or more metallic conductors in the complete safety-fuse, the joint capacity of which is such that the fuse will be melted or disrupted before injury occurs to any of the translating devices in the electric circuit, and when the current is in excess, so that the safety-fuse is brought into action, one of the wires will be first disrupted, and the current passing by the second wire prevents the formation of an electric arc by the melting or disrupting of the first wire, and this second wire is fine and on the outside of the case holding the main wire, and it is disrupted, broken, melted, or so rapidly injured that an electric arc is not liable to be formed, and the disrupted condition of the inclosed wire will be appreciated by the disrupted outside wire being visible.

In the drawings, Figure 1 represents by a sectional view the fuse in the form adapted to general use with the main fusible strip within a case and the fine fuse outside, and Fig. 2 is an exterior view of the same.

The terminals A and B are of any desired character, and the fusible strip C is of metal and adapted to be melted by the passage of the electric current, if such current is in excess, so as to break the circuit before any of the translating devices in the circuit are liable to injury.

The case D may be of any desired charac-

ter, and I refer to my application Serial No. 693,595 to illustrate terminals and case and safety-fuse connections which may be made use of, or any desired character of safety-fuse may be employed with the addition of the present improvement.

The second conductor E is preferably a fine wire having a resistance that renders such wire adapted to act in connection with the fusible strip C, and this second wire is on the outside of the case, and it may be protected by or embedded in a covering, such as a piece of thin asbestos paper F, which will be torn or injured by the passage of the current through the second wire E. This thin or asbestos paper is not shown in Fig. 2. If now an excess of current passes through the safety-fuse, the fusible strip C is melted or disrupted; but an arc may not be formed in so doing, because the second route for the electric current exists through the wire E, and the current being concentrated on this thin wire will cause the same to be substantially and instantly destroyed; but the volume of the same is not sufficient to cause any risk of fire; but the fact of this second wire E being destroyed is easily visible outside the case, so that the injured safety-fuse may be removed and another one substituted.

I find a convenient manner of making the exterior conductor is to take a piece or strip of foil and fasten it to a strip of asbestos or similar paper and apply the same with the end portions of the foil in contact with the circuit-terminals, and the passage of the current disrupts this foil and by breaking the paper renders the injury to the safety-fuse visible.

I do not limit myself to any particular details of construction so long as the first fusible wire or connection is destroyed substantially without the formation of an arc and the second strip or wire is fused or destroyed and the tendency to produce an arc and the risk of fire are reduced to a minimum.

I do not limit myself to the particular details of construction so long as the fuse-wire is within a case and there is a second wire or strip outside the case, so that the disruption of the fuse within the case is appreciated by the disruption of the strip or wire outside the case.



I claim as my invention—

1. The combination with a tubular casing having closed ends and projecting terminals therein, of two fuse-wires between and connecting the terminals, the one passing longitudinally through and within the casing between the closed ends and the other extending visibly along the outer surface of the casing between the terminals, substantially as specified.

2. An electric safety cut-out having a fusible wire, a casing for inclosing the same, a second conductor exterior to the casing and also connecting the terminals and a covering to the second conductor, substantially as set forth.

3. The combination with a tubular casing having closed ends and projecting terminals therein, of two fuse-wires between and connecting the terminals and varying in diameter and resistance, the larger being within the casing and the smaller upon the outer surface of the casing, substantially as set forth.

4. The combination with a tubular casing

having closing end plugs between which and within the casing is a space, projecting terminals passing through said end plugs, fuse-wires between and connecting the terminals, one being wholly within the casing and extending through the space, and the other upon the outer surface thereof, substantially as set forth.

5. The combination with a tubular casing having end plugs therein closing the same with a space between the plugs, the projecting terminals passing through and secured to the end plugs, a low-resistance wire wholly within the casing connected to the terminals and extending through the space and a high-resistance wire connected to the terminal ends upon the outer surface of the casing, substantially as set forth.

Signed by me this 9th day of November, 1898.

JOSEPH SACHS.

Witnesses:

GEO. T. PINCKNEY,  
E. E. POHLÉ.