

No. 843,930.

PATENTED FEB. 12, 1907.

F. B. COCK.  
NON-ARcing MUFFLED FUSE.  
APPLICATION FILED JUNE 12, 1905.

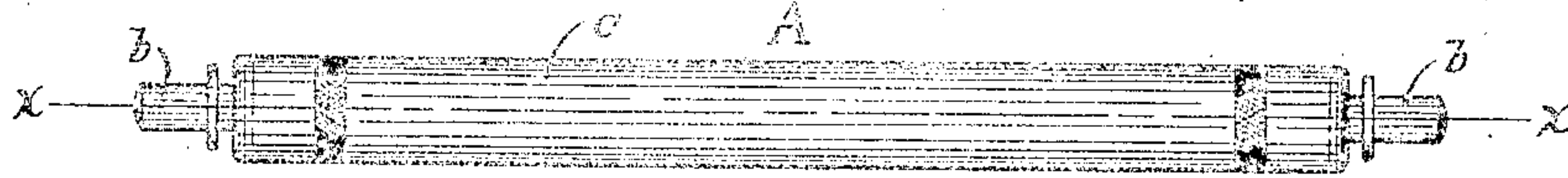


Fig. 1.

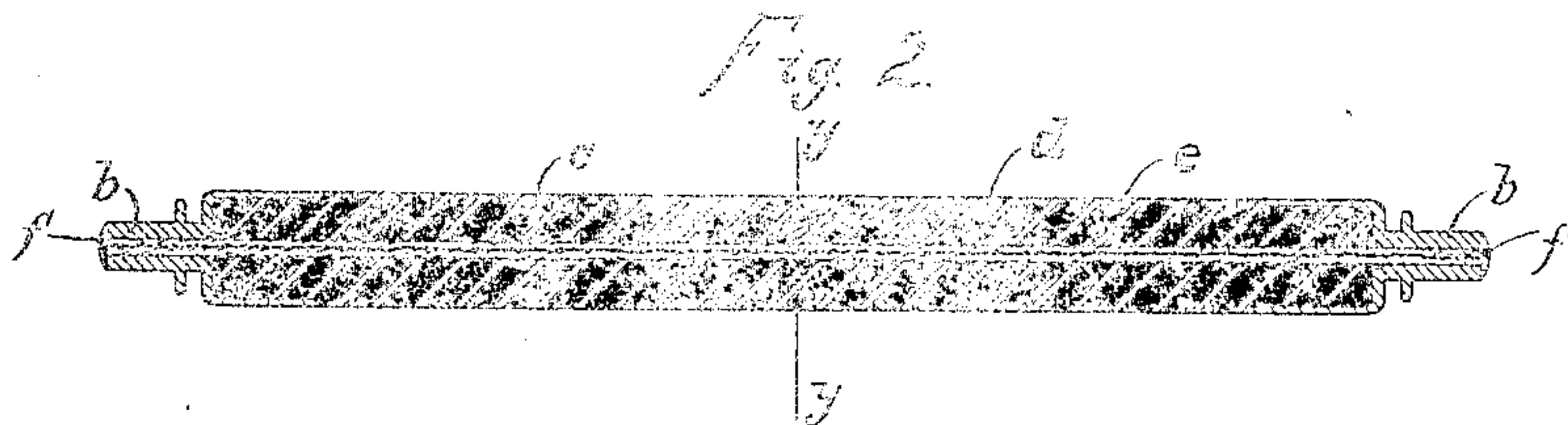


Fig. 2.

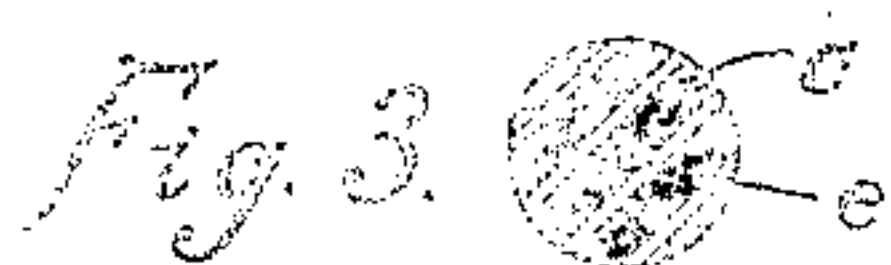


Fig. 3.

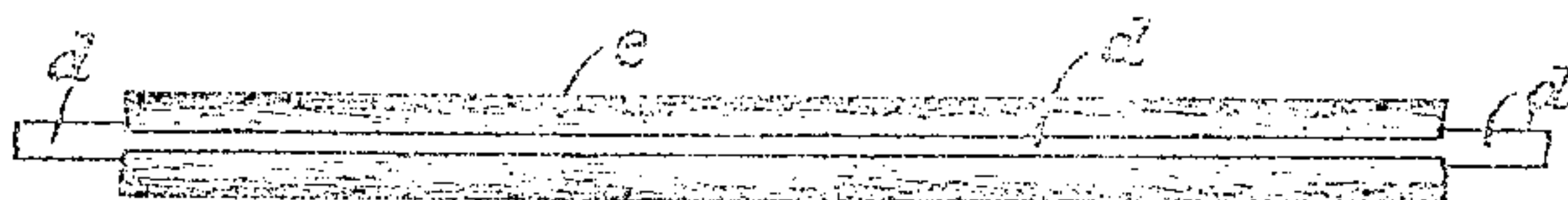


Fig. 4.



Fig. 5.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## NON-ARCING MUFFLED FUSE.

No. 843,930.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed June 12, 1905. Serial No. 254,937.

To all whom it may concern:

Be it known that I, FRANK B. COOK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Non-Arcing Muffled Fuses, of which the following is a specification, reference being had to the accompanying drawings, illustrating same.

My invention relates to electric fuses, and more particularly to filled or non-arcing fuses, my principal objects being to provide improved means for stopping the arc, for reducing the force of the explosion, and for reducing the flash when the fuse is blown.

This invention is an improvement on my fuse shown in application, Serial No. 215,942, filed July 9, 1904, but may be adapted to any type of tubular or inclosed fuses.

The bore in the fuse is preferably made small, so as to give a small air-space in the casing. A fluffy or spongy substance is placed through the bore alongside the fusible conductor, so as to fill up the bore and press against the fusible conductor and embed same therein. When the fusible conductor is fused, the fluffy substance takes up the gases produced, and thereby stops the force of the explosion, and also expands and fills up the space left by the fusing of the fusible conductor, and thereby stops the arc by interposing obstacles in the path of the current. I preferably use a fluffy asbestos string to fill the bore in the tube; but other substances may be used instead. The tube and the end caps are preferably sealed up tightly, so as not to admit air. As the force of the explosion is taken up by the fluffy material and as the latter also stops the arc, there is no flash from the fuse nor any noticeable report when the fuse blows.

In the drawings, Figure 1 is a side view of the fuse preferably used. Fig. 2 is a longitudinal cross-sectional view of the fuse, taken on line *x x* of Fig. 1. Fig. 3 is a transverse cross-sectional view of the fuse, taken on line *y y* of Fig. 2. Fig. 4 is an enlarged view of a portion of the fuse-wire and the spongy material which fills the bore in the tube, and Fig. 5 is an end view of Fig. 4.

Like characters refer to like parts in the several figures.

The fuse A of the invention comprises a dowel or rod *c*, terminal caps *b b*, fitted to the ends thereof, a small bore extending lengthwise through the end caps and dowel, and a

fusible conductor *d*, and fluffy or spongy material *e*, pulled through the bore and filling same. The dowel *c* is made of insulating material, and preferably of fireproof material. The caps *b b* are secured to the dowel *c* so as to make air-tight joints with same, and the fuse-wire *d* is soldered to the caps *b b* at *f f*, so as to completely seal up the bores in caps *b b*. The fluffy resilient string *e* presses the fuse-wire *d* against the side of the bore through which they are inserted, and the string *e* completely fills up the said bore around the fuse *d*. The fuse *d* embeds itself in the spongy material *e*, as shown in Figs. 4 and 5.

When the fuse *d* blows or is fused by an abnormally large current, it forms gases and a few small metallic balls or particles, which take up a very small amount of the space originally occupied by the fuse-wire. The fluffy asbestos string *e* being porous takes up the gases thus formed and acts as a cushion to take up the force of the explosion. The fluffy material *e* being also elastic or spongy and being normally somewhat compressed, completely fills up the space which was occupied by the fuse-wire, and thereby cuts off the flow of electricity and stops the arc, which might otherwise continue under a high voltage.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an inclosed electric fuse, a tubular casing, suitable terminals for the ends of the casing, and a fusible conductor and an asbestos string extending through the tube side by side and filling same, the asbestos being squeezed into the tube whereby the fusible conductor is embedded in the asbestos, the fusible conductor being secured to the said terminals.

2. An inclosed fuse comprising a suitable tube or casing, terminal caps on the ends of the casing, and a bore extending longitudinally through the casing and end caps, a fluffy asbestos cord extending through the bore in the casing and end caps and filling same, and a fuse-wire extending through the bore in the casing and end caps, side by side with the asbestos cord, and soldered to the end caps so as to seal the outlets to the said bore, the fuse-wire being embedded in the asbestos and compressing same whereby the latter expands and fills up the space normally occupied by the fuse-wire when the

latter is fused, the porous asbestos also taking up the gases formed by the fusing of the fuse-wire.

3. An inclosed fuse comprising a suitable tube or casing, and a fusible conductor and an asbestos cord extending through the tube, side by side, and filling same under a slight pressure whereby the fusible conductor is embedded in the cord.

10 4. An inclosed fuse comprising a suitable tube or casing having a small bore therein, and a fusible conductor, and asbestos cord extending through the bore, side by side, the conductor being embedded in the cord and  
15 the latter completely filling the bore and being somewhat compressed.

5. An inclosed fuse comprising a suitable tube or casing, and an asbestos cord and a

fusible conductor extending through the tube side by side, the said cord being squeezed 20 into the tube.

6. An inclosed fuse comprising a suitable tube or casing, an asbestos cord and a fusible conductor side by side in the tube.

7. An inclosed fuse comprising a suitable 25 tube or casing, an asbestos cord and a fusible conductor in the tube, the said cord being squeezed into the tube.

As inventor of the foregoing I hereunto subscribe my name, in the presence of two 30 subscribing witnesses, this 9th day of June, 1905.

FRANK B. COCKE.

Witnesses:

FREDERICK R. PARKER,  
H. B. HALL.