No. 815,964.

PATENTED MAR. 27, 1906.

B. S. LUTHER.

ELECTRIC FUSE.

APPLICATION FILED APR. 24, 1905.

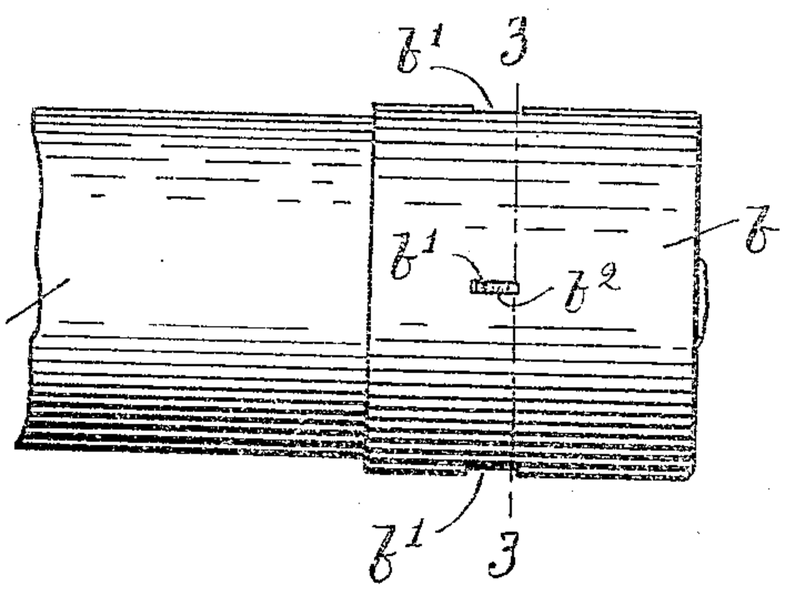

Fig. 1.

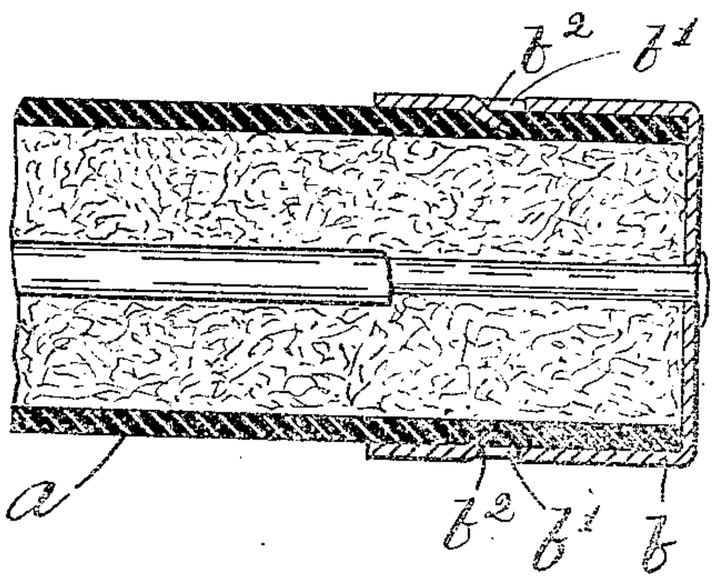

Fig. 2.

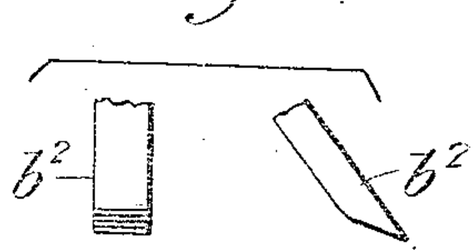

Fig. 5.

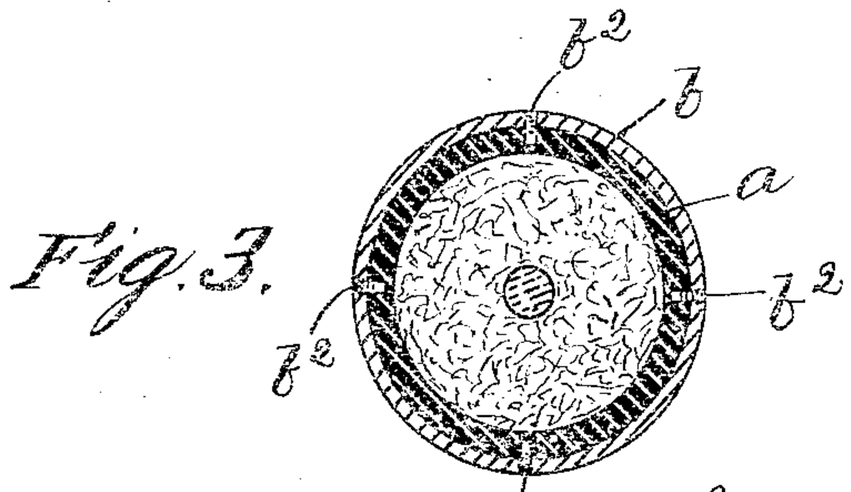

Fig. 3.

Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC FUSE.

No. 815,964. Specification of Letters Patent. Patented March 27, 1906.

Application filed April 24, 1905. Serial No. 257,119.

To all whom it may concern:

Be it known that I, BENJAMIN S. LUTHER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Electric Fuses, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

Electric fuses as ordinarily manufactured comprise a tubular cylindrical shell or case of insulating material and metallic caps fitted upon the opposite ends thereof, which are secured thereto by short pins driven through holes in the caps into the shell or case. This method of securing the end caps to the shell or case is very objectionable for many reasons—as, for instance, the pins are very small and difficult to handle, they frequently loosen and fall out, owing to the shrinkage of the shell or case, and when driven into the shell or case the heads thereof form projections on the cylindrical body portion of the end caps which offer obstructions when thrusting or sliding the fuses into certain forms of end supports adapted to receive them, whereupon said heads are first removed, leaving only the shanks of the pins to hold the end caps.

This invention has for its object to provide means for securing the end caps to the shell or case which are not liable to loosen and which are located within the caps, so that no external projections are formed on the cylindrical body portion thereof.

The invention consists, essentially, in cutting and projecting inwardly into the material of the shell or case integral portions of the cap, which portions are formed as spurs with chisel-pointed ends and approximately parallel sides and which are extended in a direction toward the outer end of the cap.

Figure 1 shows in side elevation a sufficient portion of an electric fuse to illustrate my invention. Fig. 2 is a longitudinal section of the fuse shown in Fig. 1, showing the fastening on the end cap. Fig. 3 is a cross-section of the fuse shown in Fig. 1, taken on the dotted line 3 3. Fig. 4 is a modification to be referred to. Fig. 5 represents views of one of the spurs broken off.

a represents the tubular cylindrical shell or case of insulating material, and *b b* the metallic end caps fitted upon the opposite ends thereof. To secure the end cap to the shell or case in accordance with my invention, the cap will be placed thereon and by a suitable tool an integral portion of the cylindrical body of the cap will be cut and projected inward into the material of the shell or case. The punching-tool will be made of suitable shape to produce a small rectangular hole, as *b'*, (see Fig. 1,) in the cylindrical body of the cap and to cut three sides of said hole and to drive in the material from the other side, so that the integral portion thus cut and bent inward will form a spur, as b^2, (see Figs. 2, 3, and 5,) with approximately parallel sides and with a chisel-pointed end. The end of the spur is formed with a chisel-point by the material thereof being drawn from it as the spur is formed. The spur b^2 will project inward from that end of the hole *b'* remote from the outer end of the cap, hence will extend in a direction toward the outer end of the cap, and when so extended will prevent the cap from being pulled off of the shell or case, it being understood that as the spur is projected into the material of the shell or case by the punching-tool said material will have a tendency to crowd in and around the spur and thereby essentially embed the spur, in the material of the shell or case. The caps will be secured by as many spurs as desired—as, for instance, the caps of a fuse of ordinary size will have four spurs. The spurs thus formed being integral with the cap cannot fall out, and, furthermore, being formed within the cap the cylindrical body thereof is devoid of external projections.

Referring to Fig. 4, two oppositely-disposed spurs or integral portions are cut and projected into the shell or body. In this form the punching-tool which acts upon the cap will form a rectangular hole, cutting two sides of it and bending inward the other two sides.

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

1. In an electric fuse, a cylindrical shell or case, an end cap thereon having integral portions thereof with approximately parallel sides and chisel-pointed ends cut and projected inward into the material of the shell or case, substantially as described.

2. In an electric fuse, a cylindrical shell or case, an end cap thereon having integrally-formed spurs projected inward into the material of the shell or case, and extended obliquely in a direction toward the outer end thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN S. LUTHER.

Witnesses:
L. H. HARRIMAN,
B. J. NOYES.