

H. U. BADEAU & F. P. POOLE.

PLUG FUSE.

APPLICATION FILED DEC. 19, 1908.

920,005.

Patented Apr. 27, 1909.

Fig. 1.

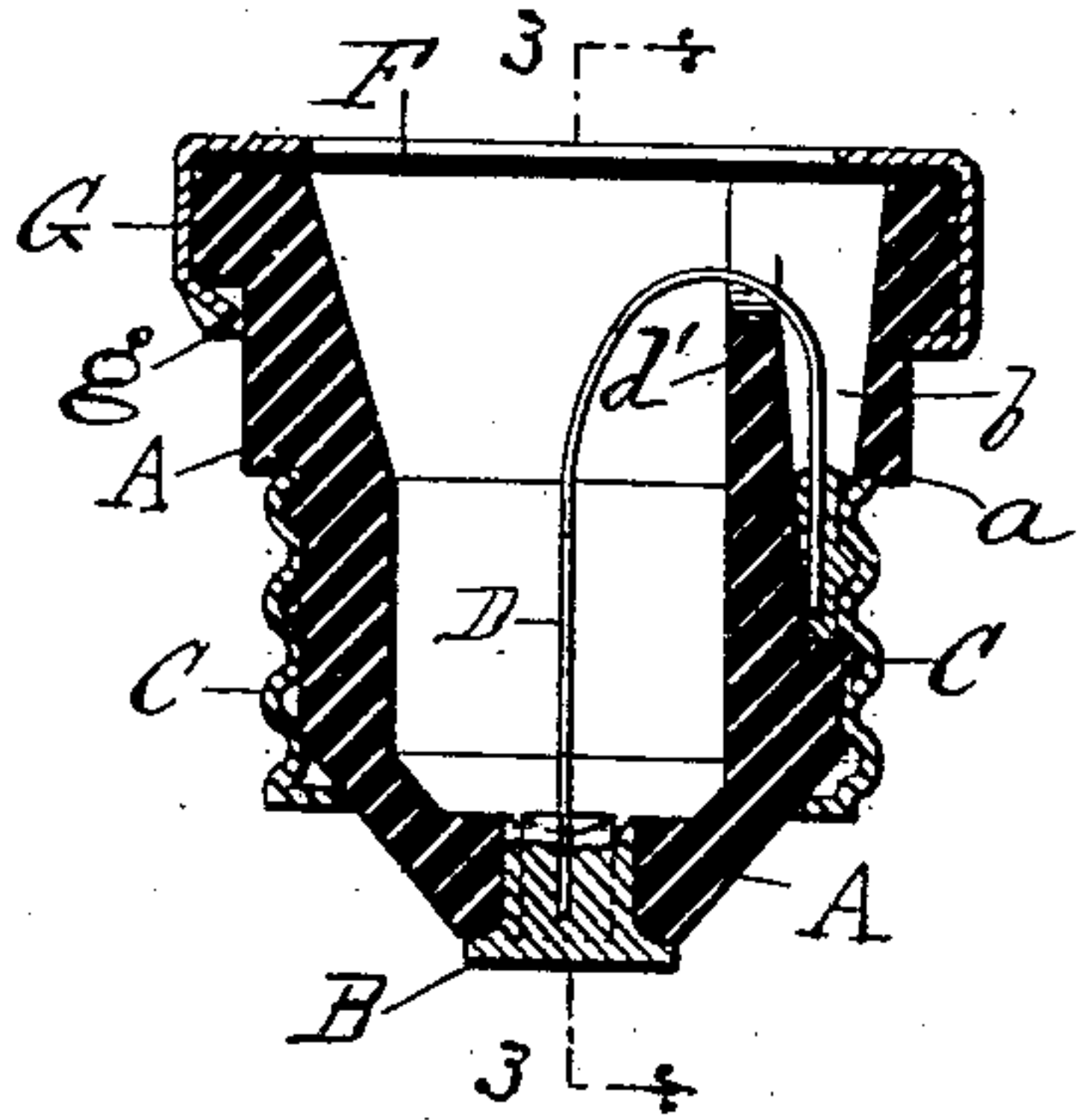


Fig. 2.

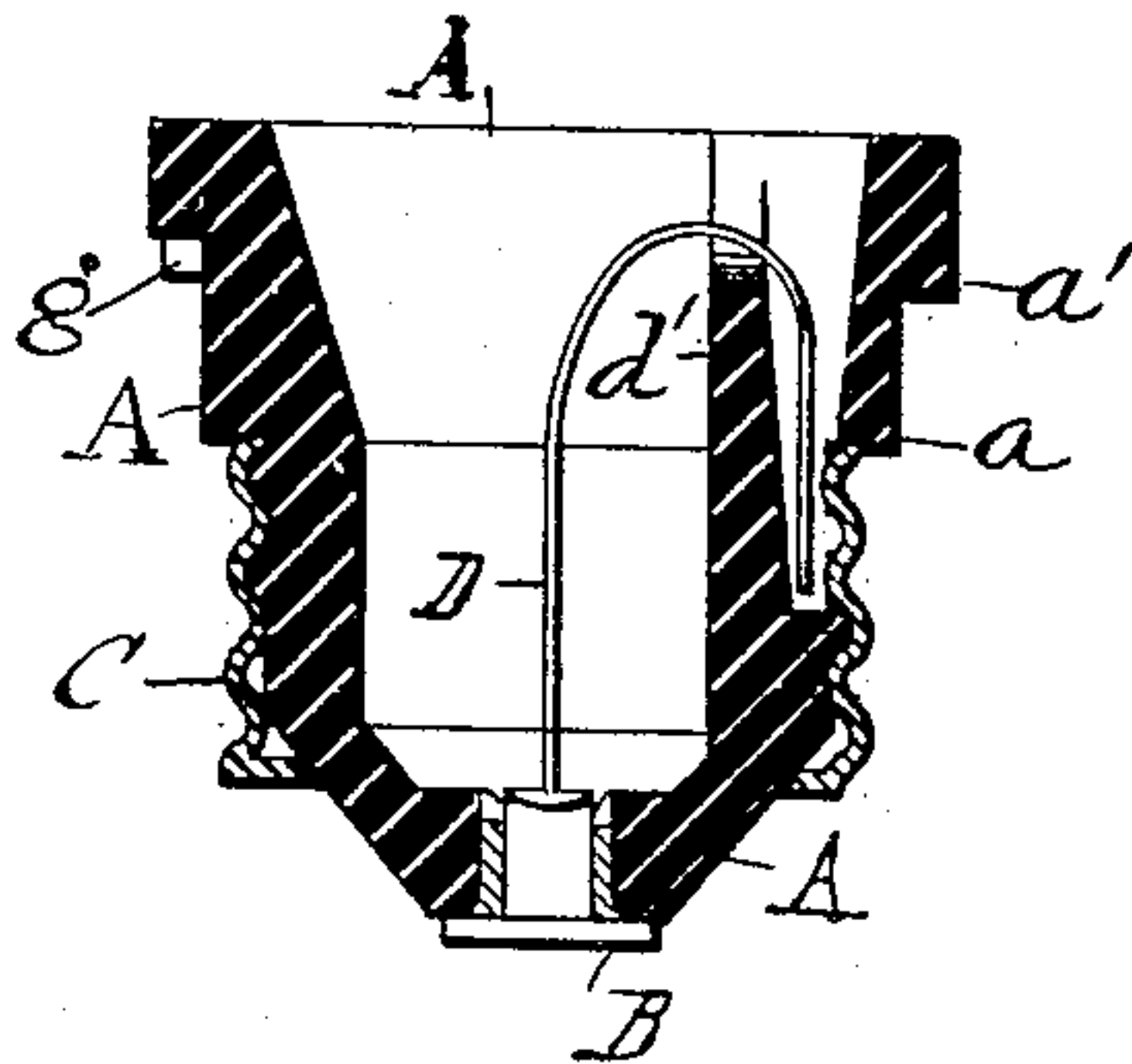


Fig. 3.

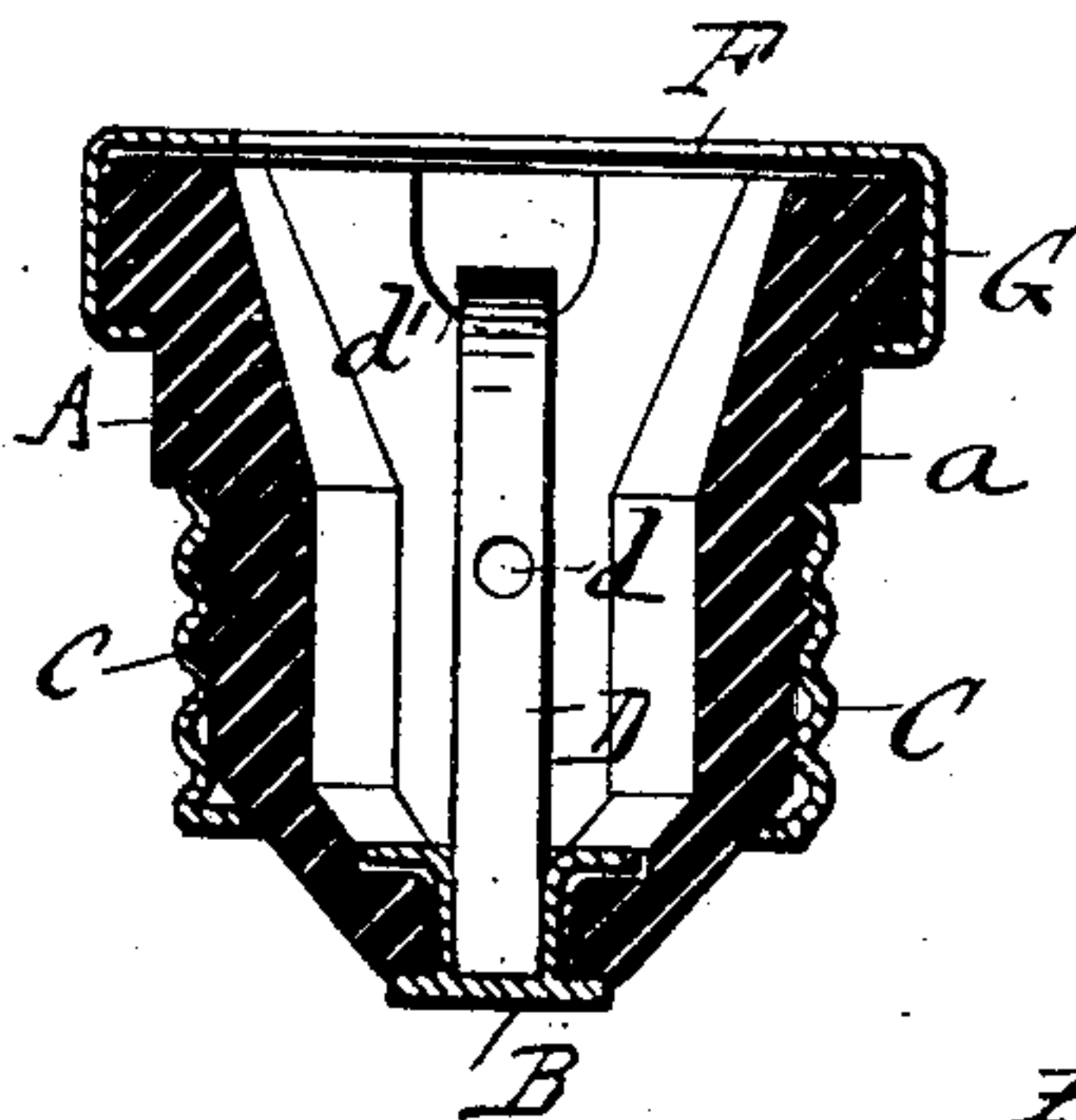


Fig. 4.

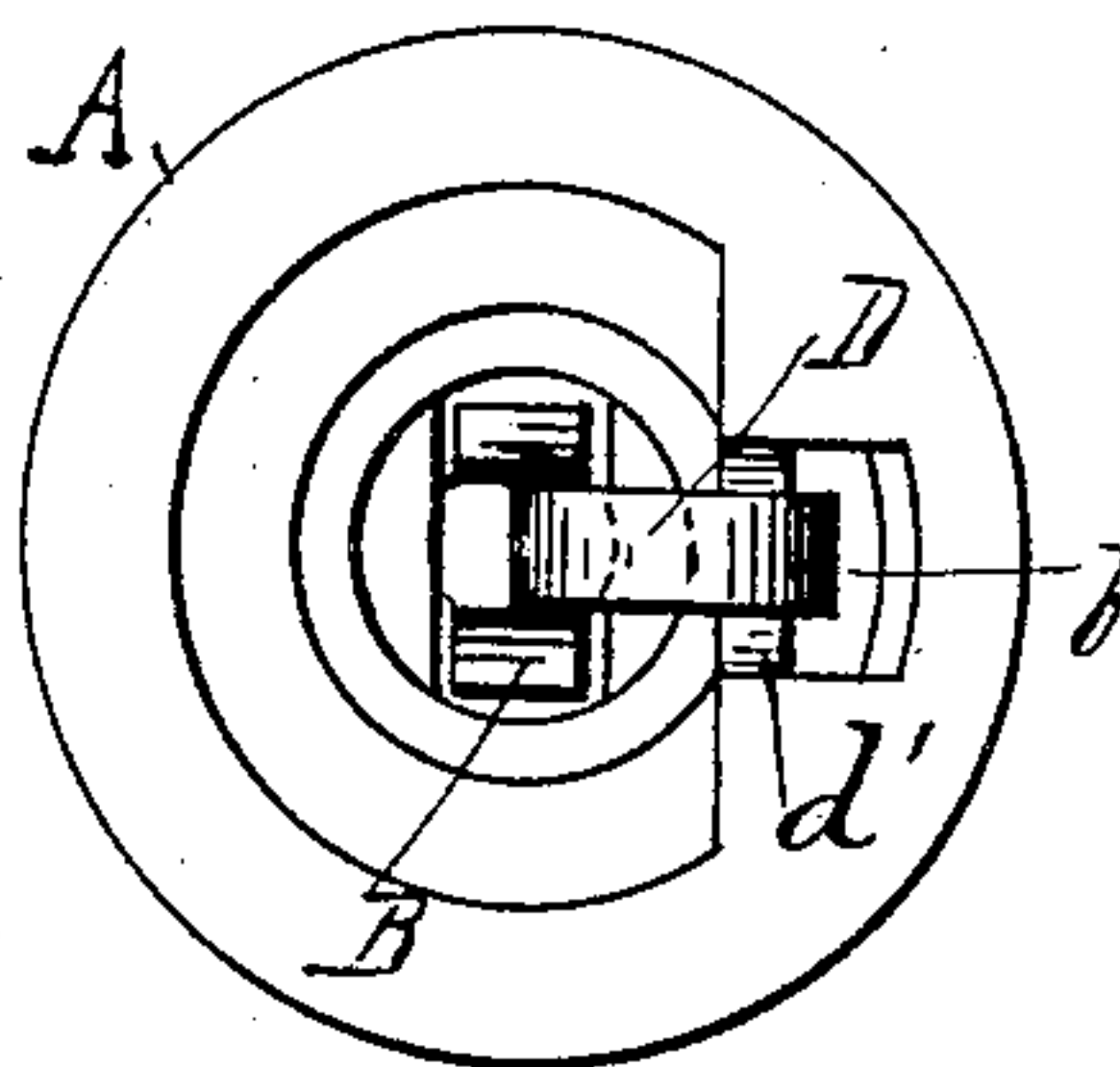
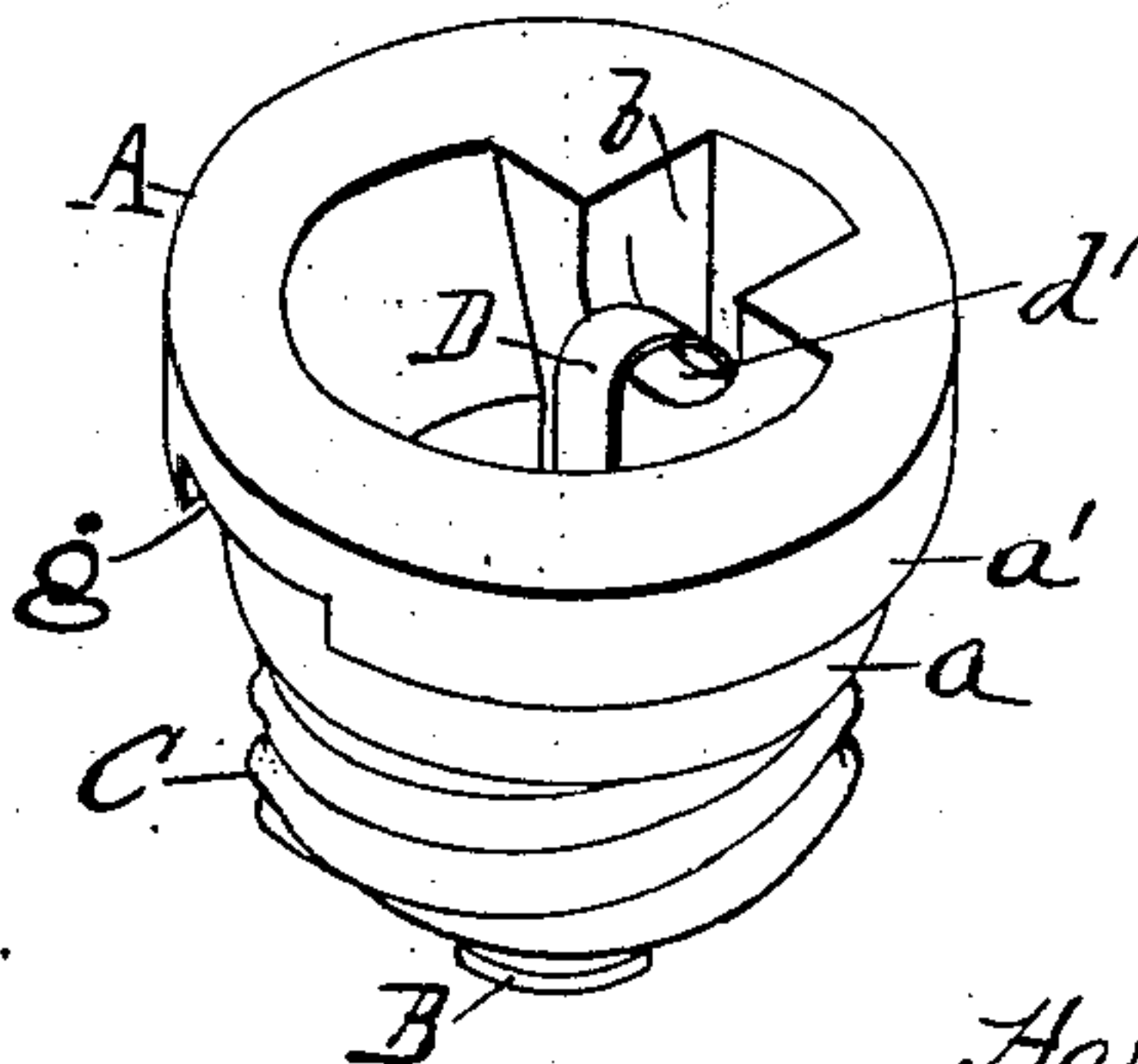


Fig. 5.



WITNESSES

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# UNITED STATES PATENT OFFICE.

HARRY U. BADEAU AND FREDERICK P. POOLE, OF BRIDGEPORT, CONNECTICUT, ASSIGNORS  
TO THE BRYANT ELECTRIC COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION  
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## PLUG-FUSE

No. 920,005.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed December 19, 1908. Serial No. 463,371.

*To all whom it may concern:*

Be it known that we, HARRY U. BADEAU and FREDERICK P. POOLE, both citizens of the United States of America and both residing in the city of Bridgeport, in the county of Fairfield, in the State of Connecticut, have invented certain new and useful Improvements in Plug-Fuses, of which the following is a specification.

Our invention relates to the class of electrical fuses which are commonly termed plug fuses, and which comprise a cup-shaped body of porcelain or other insulating material carrying on the outside terminals to enter and engage with an Edison or other suitable type of receptacle and closed by a cap and containing within the insulating body a fuse connecting the terminals.

In a trial practice it has been found necessary either to provide fuse plugs with vent holes or to fill the plug with smothering powder around the fuse. The vent holes are objectionable because they allow the escape of fire therethrough, and the use of the powder is objectionable because of expense and other reasons.

The object of our invention is to so construct a plug fuse that without using any powder or other filling material, vent holes may be dispensed with and thereby danger of fire greatly reduced and this without liability of bursting the plug when the fuse burns out. This object we attain in the manner which we will now describe.

In the accompanying drawings Figure 1 is a vertical section of our improved fuse plug; Fig. 2 is a corresponding section showing the plug in the course of construction; Fig. 3 is a section on the line 3—3, Fig. 1; Fig. 4 is a plan view of the plug when the cap has been removed; Fig. 5 is a perspective view of the plug when the cap has been removed.

A is the cup shaped body of porcelain or other suitable insulating material having secured in its lower end a central terminal or contact B, and around the outside of its body a screw shell C to adapt it for application to the Edison type of receptacle or socket. The exterior of the porcelain where the screw shell C is to be held has preferably formed upon it threads or portions of threads with which the screw shell may engage so that the latter cannot be removed except by turning it upon the body.

D is a flat strip of fusible material having at a suitable point a part of reduced cross-section, as by perforating it at *d*, Fig. 3, to provide the requisite capacity to melt on an abnormal increase of current. One end of this fuse strip D is soldered to the end of the terminal B, while the other passes up over the bridge *d*<sup>1</sup> in the shell into a pocket *b*, where it is soldered to the screw shell C. We have shown it soldered to the inside of the shell, but this forms no part of our invention, so long as sufficient solder is provided, so that practically no vent hole is left at that point.

As will be seen on reference to Fig. 5, the mouth of the cup-shaped body is formed without any radial grooves or notches which are commonly provided for vent purposes, so that when the mica or other suitable sheet F is placed over the mouth of the cup, no intentional vent is left from the interior of the fuse plug. The mica cover is held in place as usual by an annular flanged ring G, the lower end of which is flanged under the shoulder *a*<sup>1</sup> of the cup-shaped body after it has been put in place, and this ring may be prevented from turning by bending a portion of it into the notch *g*, Figs. 1, 2 and 5, formed on the underside of the shoulder *a*<sup>1</sup>, preferably at a point diametrically opposite the well *b*.

We have discovered, and by careful tests have proved that a plug fuse thus constructed without any filling, and without any vent holes, can be relied on to work perfectly and with certainty. The reason why we are thus able to dispense with vent holes and with filling is due to the combination of the ventless unfilled covered plug with a flat fuse strip with the reduced cross-section, giving a definite melting point well down in the cup in place of the ordinary fuse wire of round cross-section. We believe the explanation to be that thereby we get the very smallest amount of metal allowable to be fused and therefore a moderate quantity of gases produced, while on the other hand, the cubic capacity of the plug is relatively large, allowing room for expansion and at the same time the cover of the fuse plug has a certain amount of elasticity and yields to some extent to the pressure, and finally, if the internal pressure produced is greater than can be taken care of by the elements named, that pressure will then start the



flanged ring a little and will open it and its turned-in flange slightly—sufficiently to prevent danger of bursting the plug, but at the same time this pressure is so distributed  
5 around the entire circumference of the mouth of the plug that there is no danger of any fire escaping and no danger of a burst. The ring will simply become loosened a little.

10 We claim as our invention—

1. A ventless fuse plug, having a cup-shaped insulating body with terminals and containing within it only a flat fuse strip, having at a point within the cup a reduced  
15 cross-section for the melting-point, in combination with an inclosing cover.

2. A ventless fuse plug, having an unfilled cup-shaped body with terminals and an internal fusible flat strip, having at a point  
20 within the cup a reduced cross-section for

the melting point, in combination with an inclosing cover, adapted to yield a little without allowing the fire to escape when the fuse blows.

3. A ventless fuse plug, having an unfilled cup-shaped insulating body with terminals and an internal fusible flat strip having at a point within the cup a reduced cross-section for the melting point, in combination with a flexible covering disk and a  
25 flanged retaining ring, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses.

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Witnesses:

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