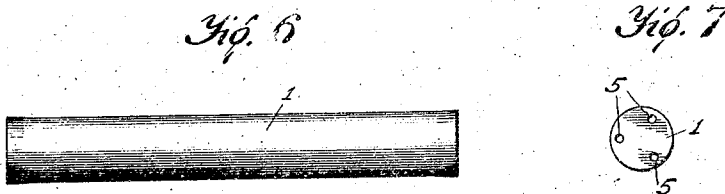
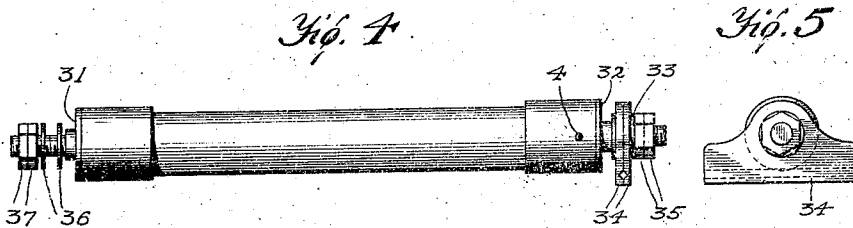
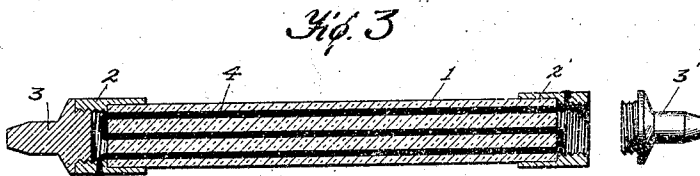
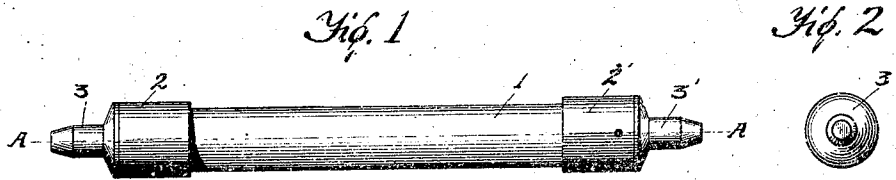


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FUSE.
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941,020.

Patented Nov. 23, 1909.



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UNITED STATES PATENT OFFICE.

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FUSE.

941,020.

Specification of Letters Patent.

Patented Nov. 23, 1909.

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To all whom it may concern:

Be it known that I, FRANK G. JONES, a citizen of the United States of America, and a resident of Muskegon, county of Muskegon, and State of Michigan, have invented a new and useful Improvement in Fuses, of which the following is a specification.

My invention provides an improved form of electrical fuse, especially adapted to uses in telephone construction, although not necessarily so limited.

I provide a porcelain fuse wire support and install upon the ends of the porcelain support conducting caps as terminals for the fuse wire. Within the porcelain support I provide a tortuous channel for the fuse, thus attaining a desirable length of fuse without involving an undesirable length of porcelain support.

In the drawings Figure 1 shows side view of the fuse of my invention: Fig. 2 shows end view of same: Fig. 3 shows section of Fig. 1 on the line A A: Figs. 4 and 5 show respectively side and end views of my fuse equipped with an alternative type of connecting terminals; and Figs. 6 and 7 show side and end views respectively of the porcelain body of my improved fuse.

Describing first the fuse of Figs. 1, 2 and 3, 1 is a porcelain cylinder having three lateral channels; 2 2' are ferrules upon the ends of the porcelain cylinder; 3 3' are shouldered end studs or terminals caps for attachment to the ferrules. Ferrules 2 and 2' are drilled to receive the ends of the fuse wire. The fuse is assembled by passing the fuse wire 4 through the three channels serially and passing its ends through the holes in the ferrules 2 2' which previously have been placed upon the porcelain cylinder. The ends of the fuse wire then are soldered outside the ferrules. The shouldered studs 3 3' then are placed and the fuse is completed ready to be installed for service in a device clamping the end studs or shoulders to hold the fuse and to complete the circuit through those parts, such fuse holding devices being well known in the art.

In Figs. 4 and 5 are shown an alternative type of connecting devices for the ends of the fuse. The end stud 31 is similar to the end stud 3 except that it is threaded; the end stud 32 is like 31 and carries washers 33, clips 34, and nut 35. End stud 31 carries washers 36 and nuts 37. This design of terminal is adapted for line fuses at telephone

substations, the clamps 34 being attached to the line wire and the nuts 37 clamping the conductor leading to the telephone instrument.

The ferrules may be attached to the porcelain rod by any desired mechanical method; by means of cement, by forcing the ferrules upon the rod, by crimping the ferrules upon the rod, or the ends of the porcelain cylinder may be slightly enlarged so that end caps such as 2 and 2' may be forced on and crimped or spun down slightly, thus giving positive grip of the end cap upon the porcelain cylinder without subjecting the porcelain to such clamping strains as would render it liable to danger of breakage.

The attachment of the terminal studs to the ferrules likewise may be made by any preferred mechanical means, by screw threads as shown, or by a bayonet fastening, or merely by a tight frictional fit, the sole limitation being that the terminal studs be detachably secured to the ferrules. By securing the end caps removably, the fuse may be opened for inspection or for installation of a new fuse wire after the blowing of the fuse.

In Figs. 6 and 7, detail of the porcelain portion of the fuse is shown. This structural part may be of any insulating material, but preferably should be weatherproof and non-combustible. There may be as many holes 5 as desired. The channels 5 in Fig. 7 are positioned differently from those in the sectional view of Fig. 3, producing a stronger porcelain rod. The advantages of confining the fuse wire in a small duct are well understood as also are the advantages of a long piece of fuse wire as compared with a shorter piece. Both of these advantages I secure by my improved design of fuse, and further obtain the advantage of a complete device having a standard length and of strong mechanical construction.

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

1. In a mounted fuse, a fuse support having an enlargement near the end thereof; a ferrule upon the end of said support and spun or crimped over the enlargement thereof; longitudinal channels through said support; and a fuse wire within said channels and connected to said ferrule, substantially as described.

2. A fuse wire support; ferrules upon the

end of said support, said ferrules being internally threaded; shouldered binding post studs externally threaded and screwed into said ferrules; and a fuse wire within said support, the terminals of said fuse wire being connected to said ferrules, substantially as described.

3. In a strong current protector, a porcelain rod having a plurality of longitudinal holes therethrough, a fuse wire running serially back and forth through said longitudinal

holes; metallic terminals for said fuse wire rigidly attached to the ends of said porcelain tube; and detachable terminal studs engaging said metallic fuse terminals.

Signed by me at Muskegon, county of Muskegon and State of Michigan, in the presence of two witnesses.

FRANK G. JONES.

Witnesses:

J. A. KENNY,

ALBERT O. ANDERSON.