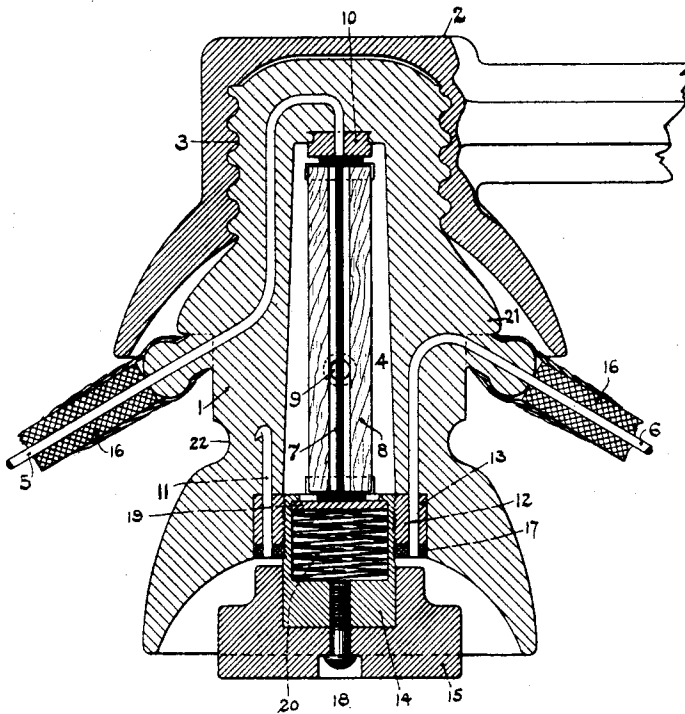


(No Model.)

C. F. SCOTT & H. P. DAVIS.  
COMBINED INSULATOR AND FUSE HOLDER.

No. 541,459.

Patented June 25, 1895.



WITNESSES:

*Geo Brown Jr*  
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# UNITED STATES PATENT OFFICE.

CHARLES F. SCOTT AND HARRY P. DAVIS, OF PITTSBURG, PENNSYLVANIA,  
ASSIGNORS TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING  
COMPANY, OF SAME PLACE.

## COMBINED INSULATOR AND FUSE-HOLDER.

SPECIFICATION forming part of Letters Patent No. 541,459, dated June 25, 1895.

Application filed July 16, 1894. Serial No. 517,691. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES F. SCOTT and HARRY P. DAVIS, citizens of the United States, residing in Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in a Combined Insulator and Fuse-Holder, (Case No. 604,) of which the following is a specification.

Our invention relates to means for the protection of electrical apparatus from the destructive effects of excessive currents, and the particular object of the present invention is the provision of a form of combined insulator and safety plug or fuse holder which shall be available for outdoor use and shall afford the advantages of compactness and simplicity of construction.

Our invention is illustrated in the accompanying drawing which is a vertical section through an illustrative form of combined insulator and fuse-holder.

The drawing must be understood to show merely one form of insulator adapted to the use above described, and this invention is not limited to the particular details of the form of insulator which contains the plug.

At 1 is shown an insulator, preferably of glass, of a form well known for out-of-door use, which is provided with a flange or petticoat 21 and which is adapted to be supported by means of a holder 2 at the top thereof. In the form shown the connection between the insulator and its holder is effected by means of the screw thread 3. The central portion of this insulator is hollowed out to form an opening or chamber 4, and embedded in the glass are the two wires 5 and 6, which enter the glass immediately beneath the flange or petticoat 21 and which, when connected by means of a fuse, compose a portion of the circuit to be protected.

Within the opening or chamber 4 is placed the fuse 7, which is surrounded by a tube or chamber 8, which we have found it well to make of wood or other rather elastic material. The elasticity of this chamber is useful when the fuse is blown, as it takes up the expansive effort of the heated air and gases resulting from the destruction of the fuse. In or-

der to permit of the escape of these gases, a hole is made through the tube 8, and a corresponding opening may be made in the glass, as shown at 9.

The wire 5 is carried to the top of the opening 4, where it is provided with some sort of enlargement. As shown in the drawing, a plug 10 is employed at this point. This plug or enlargement extends slightly into the chamber 4, and is adapted to make contact with the top of the fuse 7, as shown. The contact is made secure by the pressure of the chamber or tube 8, which is itself kept snugly in place by means of the connecting and securing device shown at the bottom of the insulator. This connecting and securing device may be made in various ways and should combine the functions of providing an electrical connection between the fuse 7 and the wire 6, and that of holding the fuse and its chamber in the opening 4. One simple way of securing these objects is to carry the wire 6 down below the glass, as shown at the right of the figure, and to place a corresponding wire or other projection on some other point in the periphery, preferably diametrically opposite the wire 6, as shown at 11. The metal plug, which we prefer to place in the form of a ring 12, is provided with two apertures which register with the wires 11 and 6, and being slipped upon these wires, the ends of the wires are opposite as shown, and the ring is thus secured from either turning or slipping out of the insulator. Of course for this purpose it is well to enlarge the opening 4, and thus form a shoulder 13, against which the ring 12 may abut. Beneath this ring 12 is placed an insulating ring 17, the two forming a compound ring which is provided with an interior screw thread with which engages an exteriorly threaded hollow metal plug 14. This plug is provided with a spring 20 upon which rests the plate 19 which directly supports the tube 8 and its contained fuse. In order to insure safety in handling the device, the plug 14 is provided with an insulating head 20, the two being fastened together by means of a screw 18.

It will be seen that if the fuse 7 is blown, it can be replaced with perfect safety, inasmuch

as the wires 5 and 6 are insulated up to the glass, as indicated at 16, and the plug 10 is so far out of reach as not to permit of any danger to the operator.

5 Of course it will be understood that any form of insulator well known in the art may be employed, and that the whole device as shown is designed to take the place of the ordinary glass insulators used in various places out of doors.

10 One of the principal uses of this device is in connection with converters, and it may be substituted for one or both of the glass insulators generally employed for supporting the primary wires.

15 It is necessary in an insulator for outdoor service to provide a means of support for a line wire which has sufficient strength to resist the strains and the wearing action due to the swinging of such wire. The desired result may be effected by passing the line wire about the insulator in the groove 22, securing the same and making a suitable connection between it and either the wire 5 or the wire 6.

25 The other wire may then be connected to properly continue the circuit.

It will usually be convenient to place the device near the converter or other apparatus to be protected, in which case the connecting wire will be so short that it may be carried directly from either the wire 5 or the wire 6 without additional support.

30 It will generally be advisable to connect the wire from the dynamo with the wire 5 leading to the inner terminal of the fuse in order that there may be no danger from the live terminal when the fuse and its supports are removed.

35 In replacing the fuse which has been blown out, the plug 14 is removed and the tube 8 is then withdrawn and a new fuse inserted. The chamber is then returned to the opening 4 and pressed to its place by screwing up the plug 14. It thus appears that no contact is made with the fuse until the operator is protected by the insulating head 15.

What we claim is—

40 1. An insulator having a fuse-holding chamber formed in the body thereof, combined with suitable conducting wires embedded in and supported by said insulator and having separated terminals in said chamber, a fuse having one end in contact with one of said terminals and a plug having a resilient support for said fuse and making electrical connection with the other terminal, substantially as described.

2. An insulator provided with a fuse holding chamber, connecting wires embedded in and supported by said insulator and having separated terminals, a fuse making direct contact at one end with one of said terminals, and means for yieldingly supporting the fuse and establishing electrical connection between the same and the other connecting wire, substantially as described.

3. An insulator provided with an opening, connecting wires secured to said insulator one of which abuts upon said opening, a fuse and an elastic inclosing tube therefor of less diameter than the opening, means for holding said fuse and tube in said opening and effecting electrical connection through the fuse between the two connecting wires, substantially as described.

4. A glass insulator provided with an opening, connecting wires sealed into said insulator, one of which abuts upon the opening, a fusible wire and a tube of elastic material surrounding the same, said tube and insulator being perforated for the outlet of gas and air; in combination with a metal plug adapted to hold the tube and fusible wire in place and make electrical connection between the two connecting wires through the plug, substantially as described.

5. An insulator provided with an opening, a fusible plug and support therefor adapted to be held in said opening, two pins projecting from the insulator and a plug 14 holding the fusible wire and its support in place and provided with perforations registering with said pins, substantially as described.

6. An insulator provided with an opening, a fusible wire and support therefor adapted to enter said opening, a connecting wire abutting upon said opening and adapted to make contact with said fusible wire, a second connecting wire projecting from the insulator and a pin also projecting from the insulator; in combination with a metallic ring having perforations registering with said pin and said second-named connecting wire, and a metallic plug with an insulating head screwing into said ring and making contact with said fusible wire, substantially as described.

7. An insulator provided with an opening, and connecting wires; in combination with a fusible wire adapted to make connection with said connecting wires, and a support or chamber for said fusible wire composed of material of considerable elasticity as compared to the body of the insulator and of a diameter considerably less than that of the opening, substantially as described.

8. An insulator provided with a central opening and a flange or petticoat; in combination with a fusible plug adapted to be held in said opening, and connecting wires passing into said insulator at points under said petticoat and adapted to make connection with said fusible wire, substantially as described.

In testimony whereof we have hereunto subscribed our names this 14th day of July, A. D. 1894.

CHAS. F. SCOTT.  
HARRY P. DAVIS.

Witnesses:

JAMES WM. SMITH,  
HUBERT C. TENER.