

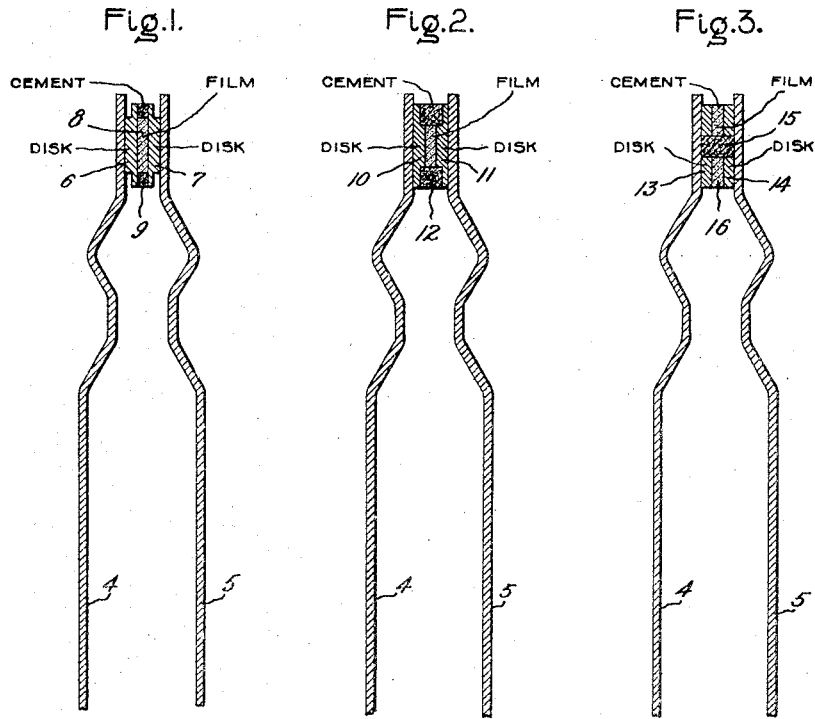
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FILM CUT-OUT

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# UNITED STATES PATENT OFFICE.

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## FILM CUT-OUT.

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The present invention relates to circuit controllers of the type termed usually "film cutouts." Film cutouts are used extensively in connection with series lighting circuits and the manner of their use is well understood by those familiar with such lighting circuits. The arrangement employed usually is well illustrated in the patent to Howell, 717,201, dated Dec. 30, 1902. The film cutout comprises two plates of thin metal, usually round, between which is located a suitable insulating substance such as thin paper, cloth or the like, the plates and insulating material being united by an insulating adhesive such as shellac, for example.

In manufacturing film cutouts, it is the practice to coat the insulating material with an adhesive and then place the coated material between the two plates, the adhesive serving to stick the parts together. With this arrangement, it has been found that there is sometimes considerable variation in the dielectric strength of the insulating film, this being due to the fact that the coating may be applied unevenly or to the fact that in one instance, the coating is thicker than in another instance. As a result, in some cases the film will rupture at too low voltage while in other cases it will not rupture until the voltage reaches an undesirably high value. A uniform product which will rupture always at a desired voltage is difficult to produce.

One object of my present invention is to provide an improved construction of film cutout which while enabling the cutouts to be manufactured readily at the same time provides cutouts having a uniform break down potential.

A further object of my invention is to provide a film cutout which can be manufactured readily for any desired break down voltage so that it is adapted to be made for low voltage circuits as well as for relatively high voltage circuits.

According to my invention, instead of coating the material which forms the dielectric film with the adhesive which serves to attach it and the two metal plates together, I use the dielectric film and the adhesive separately, the film being located

over one portion of the surfaces of the plates and the adhesive being located over another portion of the surfaces of the plates. In other words, instead of cementing the film to the metal plates, I place the film between the two plates and then cement the plates to each other so that while the film is squeezed between them, it is not itself covered with the cement. By this means, I can use a film material having an exact known dielectric strength and this dielectric strength will not in any way be varied or impaired by the cement which holds the two metal plates together. As a result, therefore, film cutouts constructed according to my invention will have great uniformity of dielectric strength.

In the drawing Fig. 1 is a vertical sectional view of a film cutout embodying my invention, and Figs. 2 and 3 are similar views showing modifications.

Referring to the drawing, 4 and 5 indicate the usual contact arms of a series incandescent lamp receptacle such as is in common use for incandescent series street lighting and between the extremities of which the film cutout is located.

Referring to Fig. 1, 6 and 7 indicates the two metal plates of the film cutout, 8 indicates the material which forms the film, and 9 indicates the adhesive or cement for holding the two plates together. In this modification, it will be seen that the film material 8 is arranged at the central portion of plates 6 and 7 and that the adhesive 9 is located between the metal plates and around the outer edge of film material 8. The adhesive has a higher dielectric strength than does the material 8 so that the rupture, when it occurs, will take place in the film material.

Fig. 2 is an arrangement similar to that shown in Fig. 1 except that the outer edges of the metal disks 10 and 11 are cut away somewhat to form a groove 12 of a width somewhat greater than the distance between the remaining portion of the plates. This permits of the use of slightly more adhesive in fastening the plates together. In Fig. 3 is shown an arrangement wherein the plates 13 and 14 are provided with central openings in which the adhesive 15 is located, the film material 16 being located around the

adhesive and being provided with a central opening through which the adhesive extends.

In connection with all three modifications, it is to be understood that the views are on an enlarged scale and are exaggerated somewhat for purposes of illustration.

In connection with each of the modifications, it will be seen that the film material is not coated with the adhesive but that in each instance they are separate from each other so that in no case can the adhesive affect the dielectric strength of the film material.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention may be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. A film cutout comprising metal plates united by an adhesive and provided with an insulating film between them, the adhesive and film, being separate from each other.

2. In a film cutout, metal plates, a film of insulating material between them, and means independent of the film of insulating material fastening the plates together.

3. In a film cutout, metal plates, a film of insulating material between them which film covers only a portion of the surfaces of the plates, and adhesive on the remaining portion of said plates for fastening the plates together.

In witness whereof, I have hereunto set my hand this 23d day of December, 1926.

HENRY E. BUTLER.