

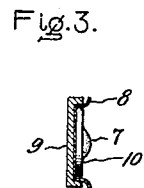
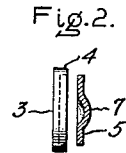
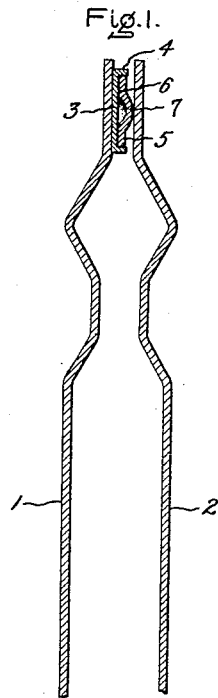
March 25, 1930.

H. E. BUTLER

1,752,259

FILM CUT-OUT

Filed Nov. 3, 1928



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UNITED STATES PATENT OFFICE

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FILM CUT-OUT

Application filed November 3, 1928. Serial No. 317,024.

The present invention relates to circuit controllers of the type termed usually "film cutouts" and especially to film cutouts of the disk type. Film cutouts of the disk type 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 December 30, 1902.

Disk film cutouts as heretofore made comprise two plates of thin metal between which is located a suitable insulating material, 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 of this type, 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 insulation, this being due to the fact that the coating may be applied unevenly, or to the fact that in one instance the coating is thinner 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 the desired voltage is difficult to produce.

The difficulties above referred to are especially noticeable in connection with the manufacture of disk film cutouts for low voltage circuits, it being especially difficult to obtain a uniform product which will operate reliably on low voltage series circuits.

One object of my present invention is to provide an improved construction of disk film cutout which will enable the cutout to be manufactured readily and at the same time provide cutouts having uniform break-down potentials.

A further object of my invention is to provide a disk type film cutout which can be manufactured with accuracy for any desired

break-down voltage, it being adapted to be made for low voltage circuits as well as for relatively high voltage circuits.

According to my invention, I form my improved film cutout from two metal pieces, separated by a film of insulating material, but instead of uniting the parts by an adhesive as heretofore, I altogether dispense with the use of an adhesive and instead unite the two pieces mechanically. To this end, I form one of the metal pieces with flange means which engages the other metal piece and serves to hold the two pieces together mechanically, the two pieces being separated by a film of dielectric material either in the form of a suitable substance such as lacquer or the like sprayed over one of the pieces, or in the form of a separate piece of thin paper, cloth or the like located between the two pieces.

In the drawing, Fig. 1 is a vertical sectional view of a film cutout embodying my invention; Fig. 2 is an exploded view of the parts which form the cutout shown in Fig. 1, and Fig. 3 is a sectional view of a modification. All the views are on a greatly enlarged scale in order better to illustrate the invention.

Referring to the drawing, 1 and 2 indicate the usual contact arms of a series incandescent lamp receptacle, such as is in common use for incandescent street-lighting and between the extremities of which the film cutout is located.

Referring to Figs. 1 and 2, 3 indicates a metal piece having a flange 4, and 5 indicates a second metal piece located inside the flange and held assembled relatively to the piece 3 by the flange. The pieces 3 and 4 are separated by an insulating film indicated at 6 in Figs. 1 and 2. The film is shown as being in the form of a casting of a suitable substance such as shellac, or the like. The piece 5 is provided with a central, struck-out portion as indicated at 7 for engagement with the contact arm 2, the portion 7 projecting beyond extremities of the flange so that it holds the contact arm 2 from engagement with the flange. The piece 3 is in substance cup-shaped and may, with advantage, be formed from thin copper. The piece 5 may be formed from a metal such as cold rolled steel.

In constructing the cutout the inner portion of the piece 3 or the surface of the piece 5, as found desirable, is coated with the dielectric 4, after which the piece 5 is put in position and the flange of the piece 3 squeezed against it. The dielectric coating 4 is arranged, of course, so that the two pieces are electrically insulated from each other.

In Fig. 3 is shown a modified construction wherein the dielectric film, instead of being in the form of a substance sprayed onto one of the pieces is in the form of a thin piece of paper, cloth or similar material 8 having the desired dielectric strength. In making the construction shown in Fig. 3, the two pieces which are designated 9 and 10 may be squeezed together with the dielectric material between them.

By my invention, it will be seen that I am enabled to provide a film cutout comprising only the two metal pieces and the dielectric film between them, the use of an adhesive being avoided. By this arrangement, I am enabled to select and provide a dielectric film material which is uniform in dielectric strength and which will puncture at the desired voltage value. As a result, I am enabled to provide film cutouts which will in all cases be uniform in dielectric strength. This means that I am enabled to provide a uniform product for any desired voltage value.

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

1. A film cutout comprising metal pieces with an insulating film between them, one of said pieces being provided with flange means which engages the other piece for holding the pieces in the assembled relation relatively to each other.

2. A film cutout comprising a cupped metal piece, a second metal piece located in said cup, and dielectric material separating said pieces, the side wall of the cupped metal piece engaging the second-named metal piece for holding the two together.

In witness whereof, I have hereunto set my hand this 2nd day of November, 1928.

HENRY E. BUTLER.

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