

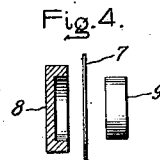
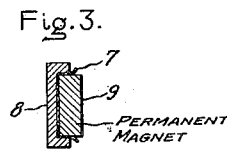
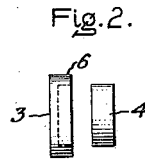
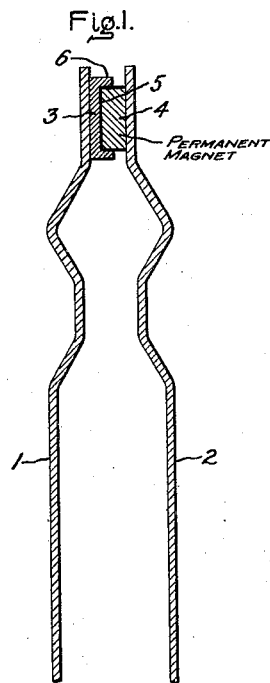
March 25, 1930.

H. E. BUTLER

1,752,258

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. 317,023.

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 breakdown potentials.

A further object of my invention is to provide a disk type film cutout which can be manufactured with accuracy for any desired breakdown 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 disk 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 magnetically. To this end, I form either one or both of the metal pieces from a material which is permanently magnetized. Preferably, I form only one of the pieces of material which is permanently magnetized and form the other piece of any suitable magnetic material. As dielectric between the pieces I may employ a substance such as lacquer, for example, sprayed onto one or both of the pieces or I may employ a separate material, such as a thin sheet substance.

In the drawing, Fig. 1 is a vertical, sectional view of a disk film cutout embodying my invention; Fig. 2, is a perspective, exploded view of the parts which form the cutout shown in Fig. 1; Fig. 3 is a sectional view of a modified form of disk film cutout, and Fig. 4 is an exploded perspective view of the parts forming the structure shown in Fig. 3. All the views are on a greatly enlarged scale in order to better 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 series street lighting and between the extremities of which the film cutout is located.

Referring to Figs. 1 and 2, the two metal pieces of the film cutout, here shown as disks, are indicated at 3 and 4 and the material which forms the insulating film between the pieces is indicated at 5. The insulating film is shown as being in the form of a suitable coating on the member 4. Such a coating may be sprayed on and may comprise a suitable substance such as shellac, or the like. The member 3 is formed from suitable magnetic material, such as cold rolled steel. The member 4 is formed of magnetic material well-adapted to be magnetized and to hold its magnetism. Preferably, I utilize a substance

such as cobalt steel for the member 4. The member 3 is provided with a surrounding flange 6 within which the member 4 is located, such flange serving to keep the members from moving sidewise relatively to each other. The member 3 is thus in the form of a shallow cup. When the members 3 and 4 are assembled with the dielectric material between them, they are held in position magnetically, the magnetic attraction being sufficiently strong to prevent them from becoming separated.

In Figs. 3 and 4 is shown a modification of the invention wherein the dielectric is in the form of a thin sheet of dielectric material 7, held between two disks 8 and 9, which corresponds to disks 3 and 4 of Figs. 1 and 2. Material 7 may be thin paper, cloth or other suitable sheet material.

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. 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 separated by an insulating film, said metal pieces being held together magnetically.

2. A film cutout comprising metal pieces with an insulating film between them, both of said pieces being formed from magnetic material and at least one of said pieces being permanently magnetized.

3. A film cutout comprising a cupped metal piece, a second metal piece located in said cup, and dielectric material separating said pieces, at least one of said pieces being permanently magnetized whereby said two pieces are held together magnetically.

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

HENRY E. BUTLER.

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