

June 15, 1948.

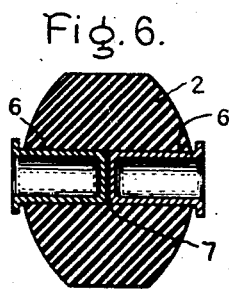
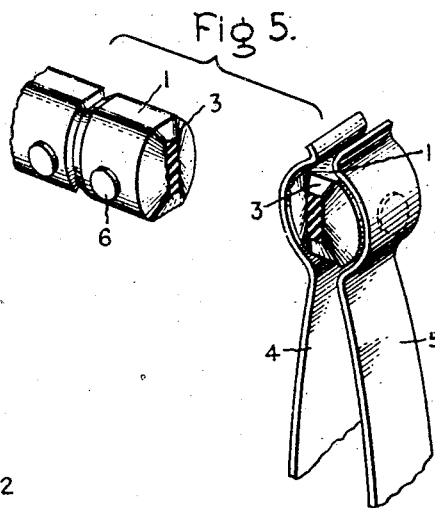
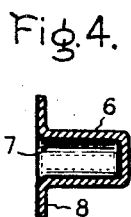
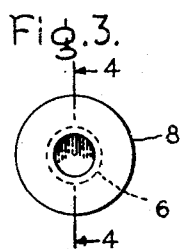
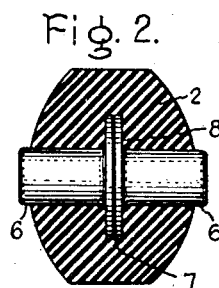
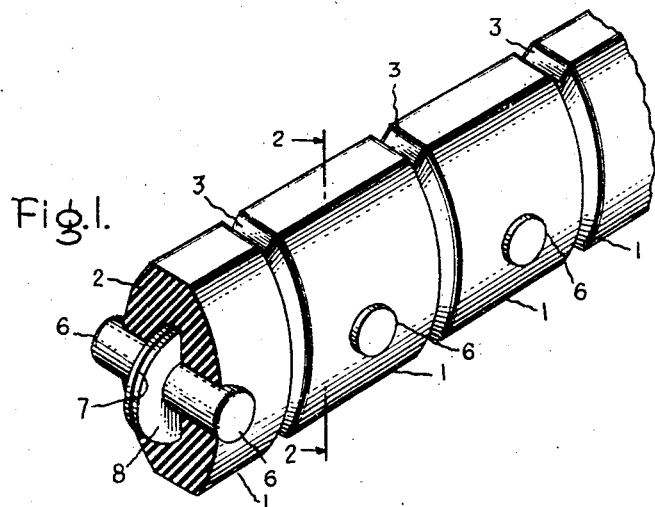
H. E. BUTLER

2,443,442

LAMP CUT-OUT

Filed Feb. 25, 1947

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 7.

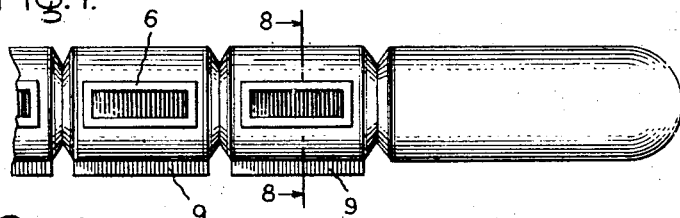


Fig. 9.

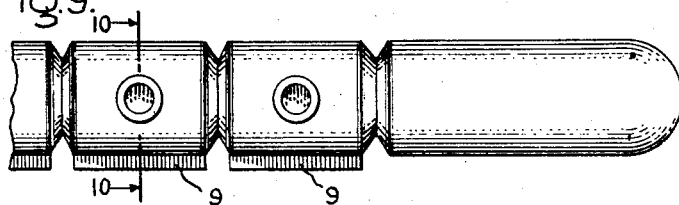


Fig. 8.

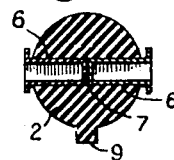


Fig. 10.

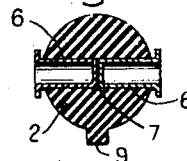


Fig. 11.

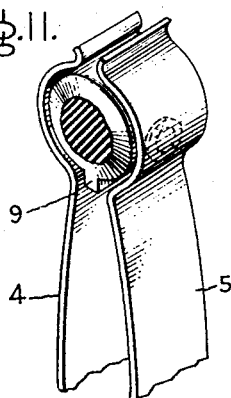


Fig. 12.

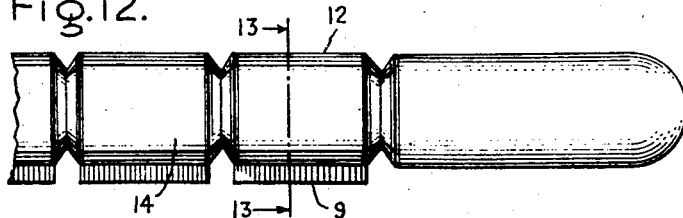
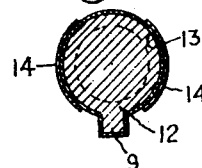


Fig. 13.



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UNITED STATES PATENT OFFICE

2,443,442

LAMP CUTOUT

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Application February 25, 1947, Serial No. 730,850

4 Claims. (Cl. 200-118)

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My invention relates to electric lamp cut-outs, and more particularly to magazine rod type film cut-outs for electric lamp shunting contacts.

In series electric lighting circuits and the like, it is usual to provide in each lamp base a pair of resilient lamp shunting prongs, or contacts, arranged normally to be insulated from each other by a cut-out element including a film of copper oxide or other voltage-limiting dielectric medium which is subject to electrical break-down upon the occurrence of a predetermined excessive voltage. A typical lamp base with such shunting contacts is illustrated in Patent 2,078,793, issued to H. J. Flaherty on April 27, 1937. The type of cut-out element currently generally used is a small disk or wafer-like element comprising a pair of conducting buttons normally separated by a copper oxide film. Such wafer-like cut-out elements, while highly effective and satisfactory in operation, are generally rather difficult to handle because of their small size. These elements are commonly about the size of a five or ten cent piece, and must often be handled by a linesman wearing a pair of bulky insulating gloves.

Accordingly, it is a principal object of my invention to provide a new and improved magazine rod type electric lamp cut-out which may be readily removed and replaced without individual handling of the separate cut-out elements.

It is a particular object of my invention to provide a new and improved, sectionalized rod type, magazine cut-out element which may be readily handled by an operator wearing bulky insulating gloves.

My invention itself will be more fully understood and its various objects and advantages further appreciated by referring now to the following detailed specification taken in conjunction with the accompanying drawing in which Fig. 1 is a cut-away perspective view of a magazine type cut-out embodying my invention; Fig. 2 is a cross-sectional view taken along the line 2-2 of Fig. 1; Fig. 3 is an end view of a single contact element of the cut-out shown at Figs. 1 and 2; Fig. 4 is a cross-sectional view taken along the line 4-4 of Fig. 3; Fig. 5 is a perspective view illustrating the manner in which the cut-out elements of Figs. 1 to 4 are inserted between lamp prongs; Fig. 6 is a cross-sectional view of a film cut-out rod similar to that of Fig. 1 but illustrating another embodiment of my invention; Fig. 7 is a side view of a film cut-out rod illustrating a further embodiment of my invention; Fig. 8 is a cross-sectional view taken along the lines 8-8 of Fig. 7; Fig. 9 is a side view of a film cut-out rod

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illustrating still another embodiment of my invention; Fig. 10 is a cross-sectional view taken along the line 10-10 of Fig. 9; Fig. 11 is a perspective view showing the film cut-out of Fig. 9 inserted between a pair of lamp shunting prongs; Fig. 12 is a side view of a film cut-out rod illustrating still another embodiment of my invention; and Fig. 13 is a cross-sectional view taken along the line 13-13 of Fig. 12.

Referring now to the drawing, and particularly, to Figs. 1-5, inclusive, I have there shown one embodiment of my invention comprising a plurality of film cut-outs 1 formed as sections of a rigid sectionalized rod of moulded insulating material 2, the rod being substantially cylindrical in cross-section and having spaced apart portions 3 of reduced cross-sectional area. The sectionalizing portions 3 of the insulating rod, being of reduced cross-sectional area, are of less mechanical strength than the intermediate sections of the rod, and thus facilitate separation of the various sectional cut-outs. The insulating rod is preferably of oblate cross-sectional configuration, as illustrated at Figs. 1, 2 and 5, to facilitate proper positioning of the cut-out between a pair of lamp shunting prongs 4 and 5, as illustrated at Fig. 5.

The individual cut-outs are formed by setting into each rod section 1, as by moulding or the like, a pair of electric conducting inserts or contact bridging pins 6, the pins being disposed transversely of the rod 2 in end-to-end relation with their outer ends protruding slightly on opposite sides of the insulating rod. The protruding outer ends of the pins 6 provide contact with the lamp prongs 4 and 5. The adjacent inner ends of the contact bridging pins 6 are normally insulated from each other by a thin film 7 of copper oxide or other suitable voltage-limiting dielectric medium characterized by electrical breakdown at a predetermined voltage. To ensure retention of the pins 6 in the moulded rod 2, the inner ends of the pins 6 are flanged as at 8.

At Figs. 3 and 4, I have shown detailed views of a single bridging pin 6. It will be observed that in the embodiment of the invention shown at Figs. 1-5, each pin 6 is formed as a flanged cup having its inner surface coated with a thin film 7 of copper oxide. The bridging pins 6 are moulded into the rod 2 with their flanged ends adjacent and their closed ends protruding from opposite sides of the rod.

At Fig. 5, I have illustrated the manner in which a film cut-out section such as shown at Figs. 1-4 is positioned between a pair of resilient lamp shunting prongs 4 and 5. In inserting a cut-

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out, the end section of an integral rod of sectionalized cut-outs is inserted between the prongs with the protruding bridging pins 6 in engagement with opposite prongs. The rod is then broken off at the next sectionalizing portion 3, leaving the inserted cut-out in place between the prongs. It is evident from Fig. 5, that in replacing a used or defective cut-out, the end of the sectionalized rod of cut-outs may itself be used to effect the old cut-out while inserting the new cut-out.

At Fig. 6, I have shown a cross-sectional view of a sectionalized cut-out rod similar to that shown at Fig. 1, but in which the contact bridging pins 6 are set into the rod sections with their flanged ends outward and their closed ends adjacent each other. With such disposition of the conducting pins 6, only the outer surface of the closed end of each pin need be coated with the copper oxide film 7. If desired for manufacturing convenience the oxide film 7 may extend along the outer side surfaces of the pins 6, so long as the exposed flange is left uncoated.

At Figs. 7 and 8, I have shown still another embodiment of my invention in which the sectionalized rod of insulating material 2 is of circular cross-section and provided at one side with a radially protruding positioning flange 9. The conducting inserts or bridging pins 6 are inserted with their flanged ends outward as at Fig. 6, and are of rectangular rather than circular cross-section, as illustrated at Fig. 7.

At Figs. 9 and 10, I have illustrated still a further embodiment of my invention in which the sectionalized rod of insulating material 2 has a cross-sectional configuration similar to the rod of Figs. 7 and 8, but in which the bridging inserts or pins 6 are of circular cross-section and moulded into the rod in the manner of the pins 6 at Fig. 6.

At Fig. 11, I have shown a fragmentary perspective view of a pair of lamp shunting prongs 4 and 5 having clamped therebetween a sectional film cut-out comprising a rod of circular cross-sectional configuration with a positioning flange 9, such as illustrated at Figs. 7, 8, 9 and 10. The operation of the positioning flange is evident from Fig. 11.

At Figs. 12 and 13, I have shown a still further embodiment of my invention in which a magazine rod type film cut-out is formed as a sectionalized rod 12 of electric conducting material. Each section is coated with a film 13 of copper oxide. To protect the oxide coating 13 from damage by engagement with the contact prongs I provide outer sectional electrode coating 14 of metal on opposite sides of each rod section. The sectional metallic electrode coatings 14 serve to protect the copper oxide film from adverse weather conditions and from chipping by abrasion. The sectionalized cut-out of Figs. 12 and 13 may be used in conjunction with shunting prongs of the type shown at Figs. 5 and 11. In this form of the invention a positioning flange 9 or a position determining configuration of the cut-out is desirable to ensure that the electrode coatings 14 engage the prong contacts 4 and 5.

While I have described only certain preferred embodiments of my invention by way of illustration, many modifications will occur to those skilled in the art and I, therefore, wish to have it un-

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derstood that I intend in the appended claims to cover all such modifications which fall within the true spirit and scope of my invention.

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

1. A magazine rod type cut-out for insertion between electric lamp shunting prongs comprising a rigid sectionalized rod of insulating material substantially cylindrical in cross-section having set into each section a transverse bridging pin formed of a pair of electrically conductive inserts normally insulated from each other by a voltage-limiting dielectric medium.

2. A magazine rod type cut-out for insertion between electric lamp shunting prongs comprising a rigid sectionalized rod of moulded insulating material, said rod having spaced apart separating portions of reduced cross-sectional area and being of substantially uniform cross-sectional configuration between said portions, and a pair of electric conducting bridging inserts set into each section of said rod transversely in end to end relation and normally insulated from each other solely by a voltage-limiting dielectric film, said inserts having head portions protruding from opposite sides of said rod for engagement with said prongs.

3. A magazine rod type film cut-out for insertion between electric lamp shunting prongs comprising a rigid sectionalized rod of moulded insulating material, said rod having spaced apart separating portions of reduced cross-sectional area and being of substantially uniform cross-sectional configuration between said portions, each section of said rod having set therein a pair of contact bridging pins disposed transversely in end-to-end relation and having head portions protruding from opposite sides of said rod for engagement with said prongs, the adjacent ends of said pins being normally insulated from each other by a film of copper oxide.

4. A magazine rod type cut-out for insertion between electric lamp shunting prongs comprising a substantially cylindrical rigid sectionalized rod of moulded insulating material having spaced apart separating portions of reduced mechanical strength, each section of said rod having moulded therein a pair of transversely disposed electric conducting inserts in end-to-end relation, the adjacent ends of said inserts being normally insulated from each other by a film of copper oxide and the remote ends of said inserts protruding from opposite sides of said rod for engagement with said prongs.

HENRY E. BUTLER.

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