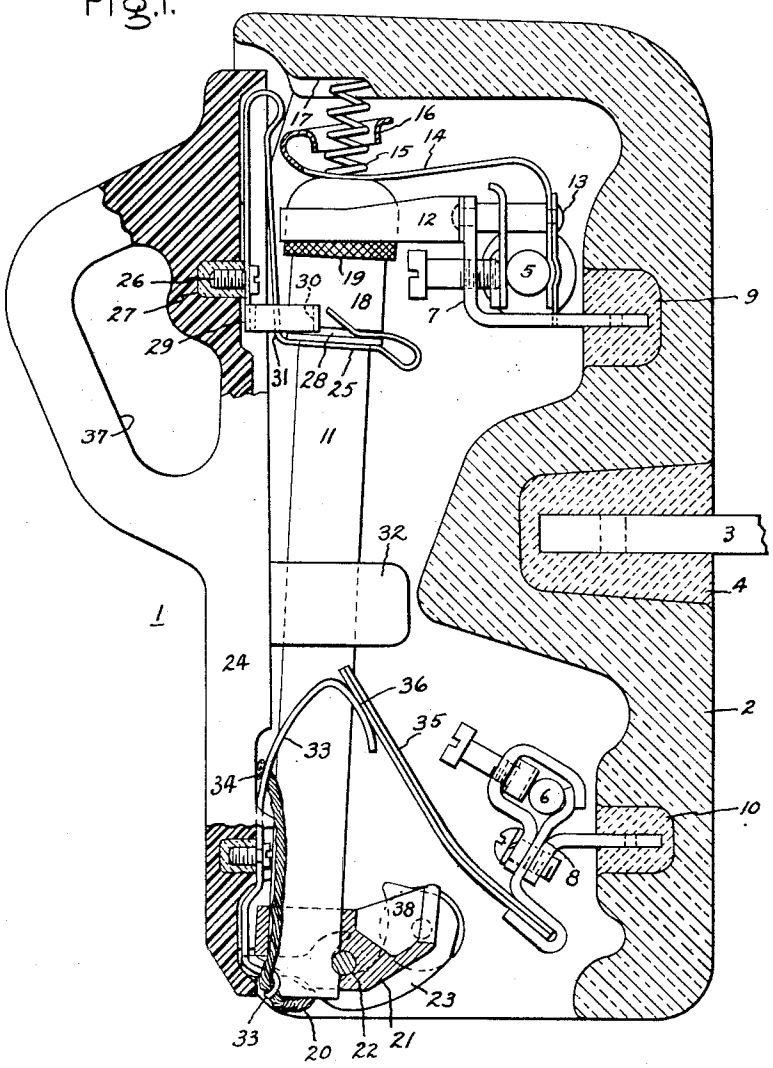
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ELECTRIC CUTOUT

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Fig. 1.



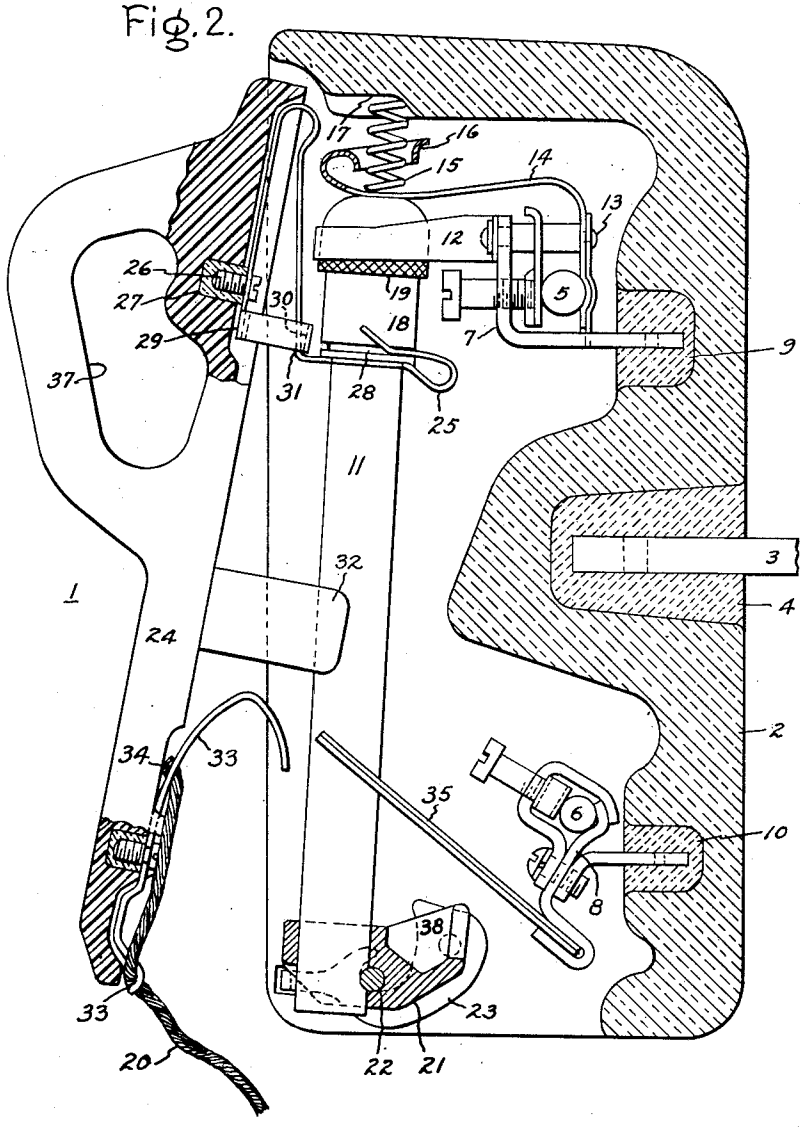
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Fig. 2.



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UNITED STATES PATENT OFFICE

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ELECTRIC CUTOUT

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2 Claims. (Cl. 200—114)

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Our invention relates to an electric cutout and, more particularly, to an electric cutout combined with a fuse of the expulsion type.

In an electric cutout of this type, it is generally desirable to have some visual indicating means to signal when the fuse has blown.

It is also desirable that an auxiliary air gap be placed in the circuit after the fuse interrupts the current to prevent gradual electrical deterioration of the organic insulations customarily used for the doors and fuse tubes of cutouts. It is also desirable to have a strong mechanical supporting structure for the fuse element, since, when the fuse element interrupts the circuit, gases are generally expelled forcibly from the fuse enclosure and the resulting forces at the enclosure may otherwise cause damage.

It is, therefore, an object of this invention to provide a fuse cutout having a visual indication of circuit interruptions as well as an auxiliary circuit opening and a simple, rugged, yet light weight, supporting structure for the fuse tube.

The invention, therefore, consists broadly in a cutout in which the bottom of the cutout door swings outwardly upon interruption of the circuit by the fuse and severance of the fuse link and in which this outward movement of the door provides a discontinuity in the circuit through the cutout which is in series with the discontinuity created by severance of the fuse link. The fuse tube itself, however, remains stationary during and after circuit interruption by the cutout. The tube and door may be completely removed from the cutout housing by means of a switch pole for replacement of the burned out fuse link.

For a more complete understanding of the invention, reference should be had to the following specification and the accompanying drawings in which Fig. 1 is a sectional view of the cutout of this invention in the closed position, and Fig. 2 is a view corresponding to Fig. 1 with the cutout in the circuit interrupted position.

Referring more particularly to Fig. 1, there is shown a cutout designated as a whole as 1, having a casing 2 of a suitable insulating material, such as porcelain, which is adapted to be supported by means of a bracket 3 which may be attached to a structure such as an electrical distribution line pole (not shown). Bracket 3 may be fastened to casing 2 by means of a pocket of cement 4. The electrical connections are brought into the cutout through suitable openings in the sides of casing 2. The ends of the conductors making these connections are shown at 5 and 6.

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These conductor ends are clamped in suitable cable clamps respectively designated as 7 and 8. Each of these clamps has a threaded clamping screw to fasten the cable end securely. The clamps 7 and 8 are fastened by means of cement pockets, indicated at 9 and 10, in the interior of the casing. The pockets 4, 9, and 10 have slightly roughened inner surfaces to hold the cement more securely.

Cable clamp 7 serves as a support for the upper end of a fuse tube 11. This supporting function is accomplished by means of a U-shaped clip 12 which is fastened to clamp 7 by a rivet 13. Clamp 7 also supports a spring member 14 which bears down on the upper end of tube 11 to assist clip 12 in establishing a good electrical contact with the upper end of tube 11. The pressure of spring member 14 on the upper end of the tube is augmented by a compression coil spring 15 which is guided by an eyelet opening at 16 in the bent-over end of spring member 14. The end of spring 15 fits into a suitable depression at 17 in housing 2.

The upper end of tube 11 is equipped with a metallic contact cap 18 which may be disassembled by means of a knurled flange at 19 in order to clamp a fuse link within tube 11. The lower end of the fuse link is shown at 20 as it emerges from the lower end of tube 11. A special supporting clamp 21 surrounds and supports the lower portion of tube 11. This clamp includes a pivot pin 22 which extends through the clamp and protrudes on each side thereof for engagement in two support members 23 which are fastened in the sides of casing 2 for this purpose. Since the cutout is shown in section, only one of these support members 23 is visible. Pin 22 also engages a notch in fuse tube 11 which effectively locks tube 11 and clamp 21 together.

The cutout is equipped with a cover 24 of suitable insulation material such as a cloth filled phenolic resin which is supported on tube 11 by means of a spring member 25. Member 25 is fastened to cover 24 by means of a screw threaded fastening 26 which fits into an insert 27 in cover 24, and to tube 11 by means of an opening through which the tube passes, and a circumferential groove at 28 in cap member 18 into which the bent-over ends of spring member 25 fit. Spring member 25 serves as a pivot for movement of the lower end of the cover 24 outwardly, as shown in Fig. 2, and as a biasing spring for biasing the cover to this outward position. The outward movement is limited by a bracket 29, which is formed integrally with

spring member 25 having inturned ends at 30 which engage with the lower end of spring 25 near the attachment to tube 11 at point 31. This action is clearly shown in Fig. 2.

Cover 24 is positioned with respect to tube 11 by projections at 32 which extend into the cutout casing and straddle tube 11.

The fuse link 20 mentioned above, as it emerges from the bottom of tube 11, is fastened to two spring contact members 33, only one of which is visible in the drawing. The link 20 is passed through a hook portion at the bottom of one of the spring members 33 and then is wedged between the spring members and the cover at 34. Attached to cable clamp 3 are two spring contact leaves 35, which, when the cutout is closed, are in contact making engagement with spring members 33 at 36.

The lower end of cover 24 is held in the position shown in Fig. 1 adjacent the lower end of tube 11, against the outward bias of spring member 25, by means of the fuse link 20. If the cutout operates to interrupt the circuit being protected, the fuse link is destroyed and spring member 25 then moves cover 24 outwardly to the position shown in Fig. 2. Tube 11 does not move from the position shown during this operation. The contacts between members 33 and leaves 35 are also disconnected so that the circuit is safely and permanently interrupted and leakage current cannot flow in tube 11 and door 24 to char the insulation thereof.

When the service man desires to replace the fuse link 20, he may, by use of a disconnect pole which may be inserted in the opening 37 in cover 24, pull the upper end of tube 11, including cap member 18, out of engagement with spring members 12 and 14. The tube and the cover may then be moved about pivot pin 22 until the cover has rotated approximately 180° so that the tube is hanging downwardly from the cutout casing 2. At this time the switch pole may be inserted in a special opening at 38 in supporting clamp 21, by means of which the supporting clamp and the entire tube assembly including the cover 24 may be removed completely from the cutout by unhooking the pivot pin 22 from the support brackets 23. Fuse link 20 may then be renewed and the tube and cover assembly replaced in the casing by a reversal of the above disassembly step to put the cutout back into the normal operating condition shown in Fig. 1.

It will be seen from the above description that this invention provides an improved fuse cutout structure which may properly use a lighter, more economical casing without danger of mechanical failure from the forces generated as the circuit is interrupted. Since the tube is not mounted for pivotal movement during the interruption, the mounting for the tube can be more secure without the necessity for additional weight and bulk. Further, an auxiliary break is provided in the cutout circuit and a visual indication is provided by the outward movement of the lower end of the cutout cover. The movement of the cover is not sufficient, however, to expose the working parts of the cutout to the weather. Thus, the cutout structure is protected against damage from weathering, even

though it is left in the interrupted position for an appreciable period of time.

While a certain embodiment has been shown and described, it will, of course, be understood that various modifications may be made without departing from the invention. The appended claims are, therefore, intended to cover any such modifications within the true spirit and scope of the invention.

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

1. An electric cutout comprising a casing of insulating material, first and second electrical connectors secured to the interior of said casing, a fuse supported within said casing, a casing cover supported upon said fuse, a contact cap connected to one end of said fuse, spring contact fingers extending from said first connector for engagement with said contact cap, a fuse link positioned in said fuse and having a conductor extending from the lower end thereof, a spring member for connecting said cover to the upper portion of said fuse, said spring member biasing said cover for movement to swing the lower end of said cover outwardly away from said fuse, a spring contact member supported on said cover, said fuse link conductor being wedged between said spring contact member and said cover to secure the lower portion of said cover against outward movement under the bias of said spring member, said fuse link being adapted to release said cover upon operation of said cutout and destruction of said link, a contact associated with said second connector and arranged for contact making engagement with said spring contact member upon inward movement of said cover and for disengagement upon outward movement of said cover.

2. An electric cutout comprising a casing of insulating material, upper and lower electrical connectors secured to the interior of said casing for the reception of incoming and outgoing conductors, a fuse pivotally supported within said casing, a casing cover supported upon said fuse, a contact cap connected to one end of said fuse, spring contact means extending from said upper connector for engagement with said contact cap, a fuse link in said fuse having a conductor extending from the lower end thereof, a spring member for connecting said cover to the upper portion of said fuse, said spring member biasing said cover for movement to swing the lower end of said cover away from said fuse, said fuse link conductor being fastened to said cover to restrain said movement of said cover, said fuse link being adapted to release said cover upon operation of said cutout and destruction of said link, a contact member supported on the lower portion of said cover in contact with said fuse link conductor, a second contact member associated with said lower connector and arranged for contact making engagement with said first contact member before destruction of said fuse link and for disengagement upon said destruction.

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