

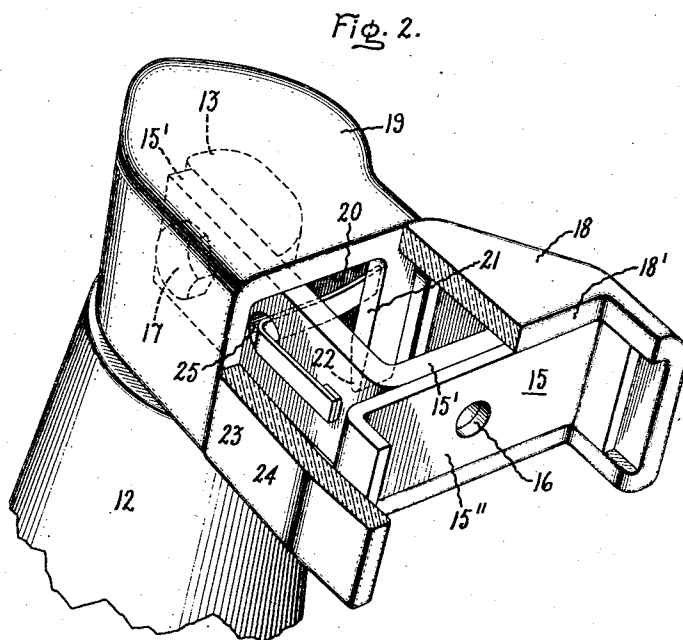
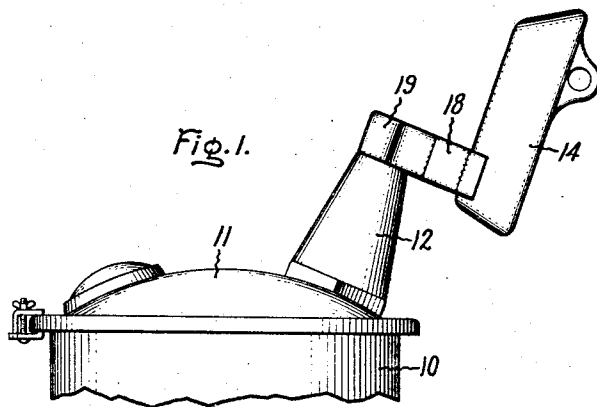
Oct. 8, 1946.

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2,409,042

INSULATING GUARD

Filed Dec. 5, 1942



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## UNITED STATES PATENT OFFICE

2,409,042

## INSULATING GUARD

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Application December 5, 1942, Serial No. 467,974

5 Claims. (Cl. 174—138)

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My invention relates to an insulating guard for insulating the exposed conducting portions of a circuit interrupting device and is in the nature of an improvement on my prior Patent 2,163,398 assigned to the same assignee as the present application.

Service outages frequently result from faults which have been initiated by foreign objects establishing a low resistance path from conducting parts of an electrical apparatus to ground. To cite a specific example, in the case of distribution transformer installations which have fuse cutouts or similar circuit interrupting devices mounted on the bushings thereof as is disclosed in my prior patent referred to above, it has been observed that birds are prone to alight on the transformer covers and attracted by the bright metal conducting parts, peck at them and thus initiate an arc-over. For preventing service interruptions from causes such as these, it is desirable to provide a simple means for covering or guarding the exposed conducting portions of electrical apparatus to prevent foreign objects from adversely affecting such apparatus.

It is therefore an object of my invention to provide a simple, inexpensive insulating guard which is firmly held in position to protect exposed conducting portions of electrical apparatus.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention, reference may be had to the accompanying drawing in which Fig. 1 is a view of the upper portion of an electrical apparatus embodying my invention and Fig. 2 is an enlarged perspective view partly in section of the insulating guard of my invention illustrated in Fig. 1.

Although for the purpose of illustrating my invention in the drawing, it has been shown as adapted for application to the high voltage bushing of a transformer and the supporting mechanism for a fuse cutout, it will be obvious that the invention is not to be necessarily so limited. It will become apparent as the description proceeds that the insulating guard of the present invention may be applicable for the protection of exposed conducting parts of electrical apparatus generally.

Referring now to Fig. 1 the transformer 10 is illustrated as being provided with a cover 11 upon which is mounted a high voltage bushing 12 hav-

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ing a terminal 13 at the upper end thereof, clearly shown in Fig. 2 of the drawing. A suitable circuit interrupting device 14 which may be similar to the circuit interrupting device illustrated in my prior Patent 2,163,398 referred to above, is mechanically supported from terminal 13 by means of a support generally indicated at 15 which comprises an L-shaped member 15' suitably welded to a U-shaped member 15''. The U-shaped member 15'' is adapted to embrace the housing of the circuit interrupting device 14 which is provided with a suitable conducting stud such as is indicated in my prior patent referred to above which cooperates with the opening 16 in support 15 to rigidly fasten circuit interrupting device 14 to terminal 13. As is disclosed in my prior patent circuit interrupting device 14 is preferably a fuse cutout having one terminal thereof electrically connected with the supporting stud which cooperates with opening 16 in support 15 so that support 15 electrically interconnects terminal 13 and circuit interrupting device 14. Support 15 is suitably fastened to terminal 13 as by means of a bolt 17.

In order to prevent a foreign object such as a bird from standing on the cover 11 of transformer 10 and pecking at support 15 or terminal 13 to initiate a bushing arc-over, I provide an insulating guard which comprises two separate insulating members 18 and 19. Insulating member 18 is adapted to completely enclose a portion of the exposed parts of U-shaped member 15'' and is in the shape of a tube somewhat rectangular in cross section with a notched-out or recessed portion 18' so as to closely fit around the housing of the circuit interrupting device 14. Insulating member 18 is slipped over support 15 after support 15 is suitably fastened to circuit interrupting device 14 but before arm or support 15' is fastened to terminal 13 as by bolt 17. Preferably insulating member 18 is made of suitable ceramic material such as porcelain or the like.

Insulating member 19 is preferably constructed of the same material as insulating member 18 and is somewhat cup-shaped with an open bottom and one open side 20 which cooperatively engages with the opening in the adjacent end of tubular insulating member 18. Adjacent one edge of opening 20 is a suitable abutment 21 having a wedge shaped end 22 adjacent the lower opening of insulating member 19. After the circuit interrupting device 14 is suitably mounted on terminal 13 by virtue of support 15, and insulating member 18 is in place, insulating member or cap 19 is slipped over terminal 13 and the exposed

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portion of support 15 to completely enclose the conducting parts electrically interconnecting transformer 10 and circuit interrupting device 14.

In order to prevent the wind or any other means from blowing or moving cap 19 out of position, which in turn would permit insulating member 18 to move out of position, I provide a latching or retaining means 23 which comprises a spring member of L-shaped construction having one end thereof welded to member 15' as indicated at 24. The other end of latching means 23 extends through an opening 25 in member 15' so as to engage the abutment 21 in the manner indicated in Fig. 2 with sufficient pressure, not only to prevent cap 19 from slipping away from insulating member 18 in a generally horizontal direction, but also from being accidentally moved away from terminal 13 in a generally vertical direction as by the wind or the like. With this arrangement a lineman can readily remove insulating cap 19 by lifting it upwardly to expose terminal 13. The wedge shaped portion 22 of abutment 21 permits the ready application of insulating cap 19 so as to permit spring member 23 to frictionally engage abutment 21 without requiring additional means to deflect spring means 23 so that cap 19 may be moved into position. It will be observed that the insulating guard described not only completely encloses the exposed parts of the support 15 and terminal 13, but is very simple to apply, and in addition provides a very pleasing appearance. The latching means described assures that the insulating guard remains in position against the action of the wind, etc.

Having described my invention in what I consider to be a preferred embodiment thereof, I desire to have it understood that the specific form shown is merely illustrative and that I intend in the following claims to cover all such modifications as 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. In combination with an electrical device, an insulator including an electrical terminal at one end thereof, a circuit interrupting device, a supporting arm for said circuit interrupting device mounted on said terminal and electrically interconnecting said circuit interrupting device and said terminal, a resilient member mounted on said arm, a guard of insulating material enclosing the exposed parts of said terminal and arm for preventing foreign objects from adversely

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affecting said circuit interrupting device, and means including said resilient member engaging said guard to hold said guard in position on said arm.

2. In combination with an electrically conducting supporting arm having exposed portions, a guard for preventing foreign objects from coming in contact with the exposed portions of said arm comprising a first insulating member for completely enclosing a portion of said arm, a second insulating member for enclosing the remaining exposed portions of said arm, and a spring member supported by said arm frictionally engaging a portion of said second member for holding said second insulating member in position, said first insulating member being held in position by said second insulating member.

3. In combination with an electrically conducting supporting arm having exposed portions, a cap for enclosing an exposed portion of said arm, said cap including an abutment, a spring member supported by said arm and arranged frictionally to engage said abutment to hold said cap on said arm, and means including a wedged shaped portion on said abutment to enable said cap to be readily positioned on said arm without interference from said spring member.

4. In combination with an electrical device, an insulating bushing including an electrical terminal at one end thereof, a circuit interrupting device, a supporting arm for said circuit interrupting device mounted on said terminal and electrically interconnecting said circuit interrupting device and said terminal, and a guard of insulating material comprising a first portion for said supporting arm and a second portion for said terminal, said first portion being held in position by said second portion.

5. In combination with an electrical device, an insulating bushing including an electrical terminal at one end thereof, a circuit interrupting device, a supporting arm for said circuit interrupting device mounted on said terminal and electrically interconnecting said circuit interrupting device and said terminal, guard means of insulating material for preventing foreign objects from coming in contact with the exposed portions of said arm, said guard means being so constructed and arranged that said arm is at least partially encircled, and means including one of said portions of said arm for holding said guard means in position thereon.

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