June 24, 1958 H. C. MARCROFT 2,840,631

ANIMAL GUARD FOR ELECTRICAL EQUIPMENT

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Fig. 1

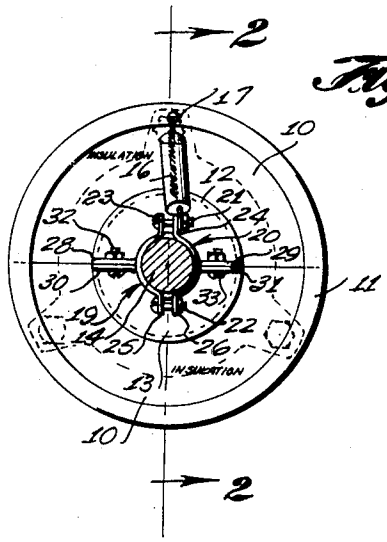


Fig. 3.

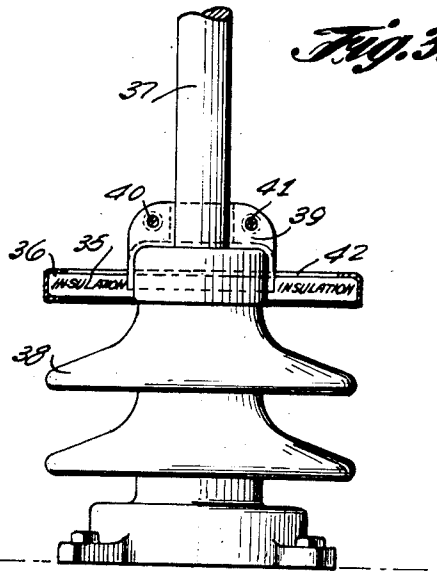
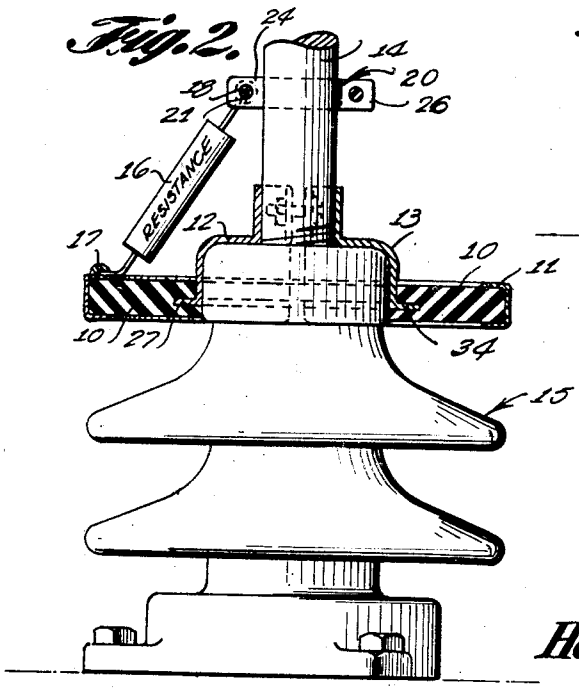


Fig. 2.



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ANIMAL GUARD FOR ELECTRICAL EQUIPMENT

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3 Claims. (Cl. 174—140)

This invention relates to insulators or electrical bushings such as used on transformers, circuit breakers, capacitors, and the like, and in particular a disc of ceramic, plastic, or other suitable material having a conducting band providing a rim around the outer edge and having an impedance, such as a resistor or condenser connecting the band with a clamp or other means to the electrical-conducting stud of the bushing.

The purpose of this invention is to reduce damage to electrical bushings due to an electric power arc caused by a flash of lightning or by an animal standing upon a tank of the apparatus and touching the bushing cap, where the electric system in which the parts are included is grounded at some part of the installation, such as the neutral terminal of an associated transformer, in a system known as a "grounded neutral" system.

An animal standing on the tank of a transformer or the like and touching the bushing cap causes an electric power arc or short circuit which damages both the bushing, the cap of which is engaged by the animal and similar bushings of associated equipment, and consequently, causes extensive power interruptions. With this thought in mind this invention contemplates a shield or guard positioned over the live cap at the upper end of an electrical bushing, the rim of which guard is connected by an impedance to the main stud of the bushing, whereby the possibility of an animal standing on the tank of the equipment and touching the bushing cap or live conductors is substantially eliminated.

The object of this invention is, therefore, to provide means for forming and installing guards or protecting shields over electrical bushings of a transformer or the like whereby an animal, such as a squirrel will engage a guard or shield instead of the bushing.

Another object of the invention is to provide a guard for preventing animals contacting electrical equipment in which the guard is adapted to be installed on equipment now in use.

Another important object of the invention is to provide a protecting guard for an electrical bushing whereby beneficial effects from lightning flashovers are attained and wherein an animal contacting the guard is killed or receives a severe jolt so that the possibility of further attempts to contact the bushing is substantially eliminated.

A further object of the invention is to provide an animal guard for electrical equipment, such as bushings in which the device is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a disc of insulating material having a continuous conducting band on the peripheral edge with clamping elements secured to the disc and adapted to suspend the disc from the bushing stud or cap, and a resistance or other impedance connected between the band and the main connection of the bushing, by a clamp or otherwise.

Other features and advantages of the invention will

appear from the following description taken in connection with the drawing, wherein:

Figure 1 is a plan view looking downwardly upon the upper end of an electrical bushing showing a guard positioned over the bushing and also showing the guard with a rim thereof connected by means of an impedance to the terminal of the bushing,

Figure 2 is a side elevational view of the electric bushing shown in Fig. 1 showing a guard mounted on the bushing, the guard and clamping elements thereof being shown in section, and the parts being shown on an enlarged scale.

Figure 3 is a side elevational view similar to that shown in Fig. 2 illustrating a modification where the impedance or resistance is replaced with a conducting glaze on the upper surface of the guard and wherein the parts are shown on a reduced scale.

Referring now to the drawing wherein like reference characters denote corresponding parts the improved electrical bushing or insulator guard of this invention includes a disc **10** of insulating material having a rim **11** of material providing a good electrical conductor extended around the peripheral edge, a cup-shaped element formed with sections **12** and **13** clamped to a terminal or stud **14** of a bushing **15** and a resistance or other impedance **16** connected to the rim **11** by brazing or the like or with a bolt or rivet **17**, and also connected to the electrical conducting stud **14** such as by a bolt **18** of a clamp formed with U-shaped sections **19** and **20** and secured in clamping relation with the stud with bolts **21** and **22**, the bolt **21** extending through flanges **23** and **24** and the bolt **22** through flanges **25** and **26**.

The edge of the section **12** of the supporting element of the disc **10** is connected to the insulator by suitable means, such as with a flange **27** that is embedded in the disc **10** and in this arrangement the upper part of the section is provided with flanges **28** and **29** that are secured to corresponding flanges **30** and **31** of the section **13** with bolts **32** and **33**. The lower edge of the section **13** is also provided with a flange **34** that is embedded in the material of the disc **10**.

In the design illustrated in Figure 3 a disc **35** having a rim **36** is secured to a stem **37** of a bushing **38** with clamping elements **39** having bolts **40** and **41** extended therethrough, similar to the elements **12** and **13** whereby the disc **35** is secured over the insulator or bushing. In this design the upper surface of the disc **35** is coated with a glaze, as indicated by the numeral **42** which provides resistance thereby performing the function of the resistance of impedance **16**, of the design shown in Figures 1 and 2.

The guard may be provided in different designs to cover insulators or bushings of different types and designs and the guards may be secured over the bushings or insulators by other suitable means. Other means may also be used for providing resistance or impedance to replace the resistance **16** or the glaze **42**.

It will be understood that other modifications, within the scope of the appended claims, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. In a guard for electrical equipment, the combination which comprises an insulator including a bushing having a plurality of sections and having a stem extended upwardly therefrom, a cup-shaped element mounted on the stem and extended over the inner hub portion of the uppermost section of said bushing, a disc of insulating material carried by the cup-shaped element, a rim of material capable of conducting electricity mounted on the periphery of the disc, a clamp secured to the stem

and spaced upwardly above the upper end of the bushing, and an impedance extended from the rim of the disc to the clamp on the stem of the bushing.

2. In a guard for electrical equipment, the combination which comprises an insulator including a bushing having a plurality of sections and having a stem extended upwardly therefrom, a split cup-shaped element mounted on the stem and extended over the inner hub portion of the uppermost section of said bushing, said cup-shaped element having a flange extended from the lower edge, a disc of insulating material positioned on the flange of the cup-shaped element and extended horizontally therefrom, a rim of material capable of conducting electricity mounted on the periphery of the disc, a clamp secured to the stem and spaced upwardly above the upper end of the bushing, and an impedance extended from the rim of the disc to the clamp on the stem of the bushing.

3. A guard for insulators or electrical bushings comprising a disc of insulating material, a continuous rim of conductive material extended around the peripheral edge of the disc and overlapping the edges of upper and lower

surfaces thereof, a stud extended upwardly from the central portion of the bushing, an inverted cup-shaped element extended upwardly from the central portion of the disc, over the central portion of the bushing, and positioned to be clamped around the stud extended upwardly from the bushing for suspending the disc above and in spaced relation to the bushing, a clamp mounted on the stud and spaced upwardly from the inverted cup-shaped element, and a resistance positioned with the upper end connected to the clamp spaced above said inverted cup-shaped element and with the lower end connected to the rim on the periphery of the disc.

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