Oct. 30, 1934. C. W. ROBERTS 1,978,649

BUS BAR AND BUSHING CONNECTION

Filed Feb. 11, 1930

Fig. 1.

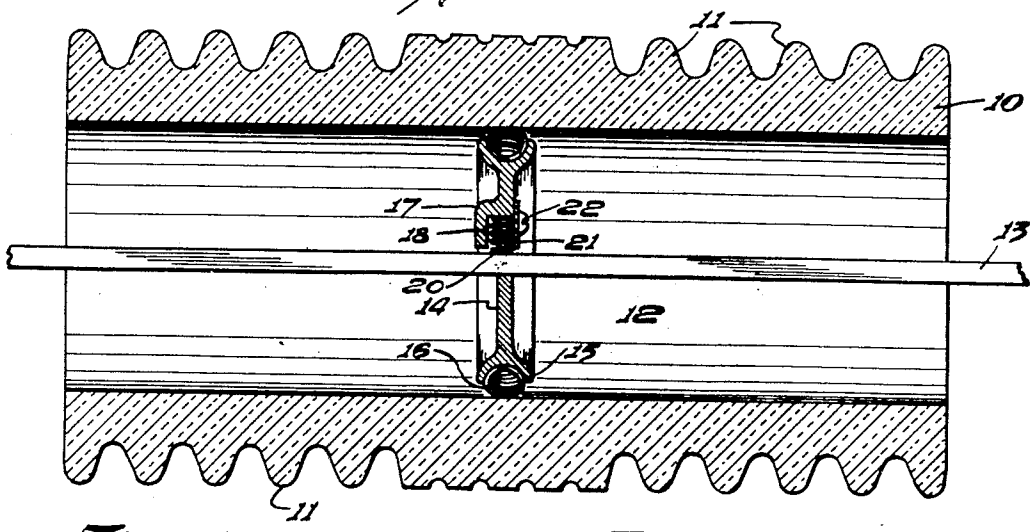


Fig. 4.

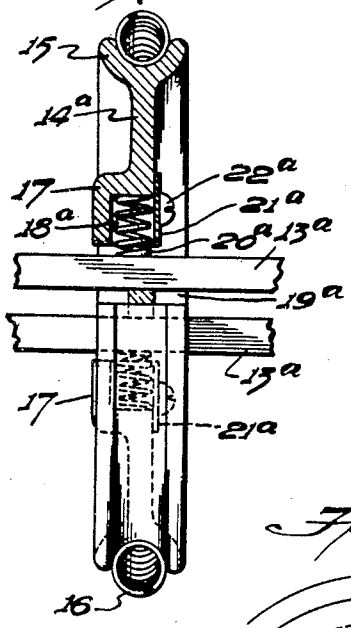


Fig. 3.

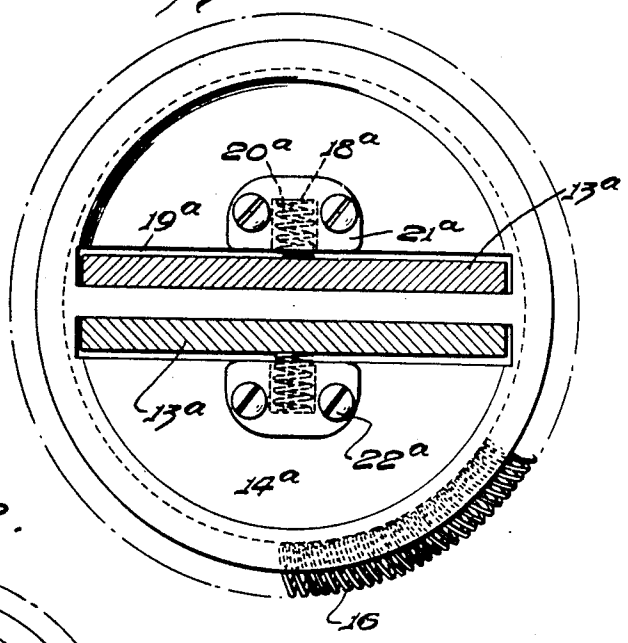
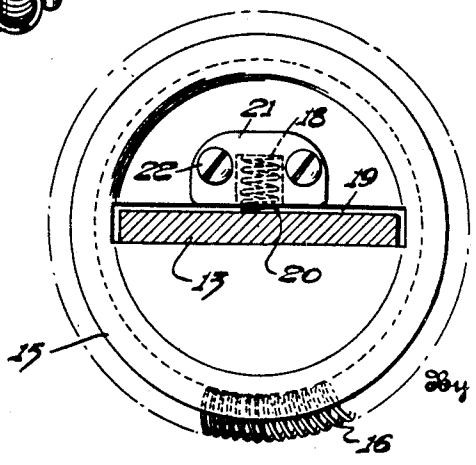


Fig. 2.



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UNITED STATES PATENT OFFICE

1,978,649

BUS BAR AND BUSHING CONNECTION

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8 Claims. (Cl. 173—318)

The invention relates to connections between bus bars and bushings.

It is well known that it is desirable to make an electrical contact between a bus bar passing through a bushing and a conducting surface on the inside of the bushing in order that corona formation and subsequent splitting of the bushing will be avoided. The fundamental principle of connecting an energized bus bar with the side wall of a bushing is neither new nor unique and the proposition need therefore not be discussed in minute detail. It is also known that it is desirable to support a bus bar mechanically within and with respect to the bushing through which it passes so that it will be adequately supported and properly centered.

It is with the above facts in view that I have devised the present invention which has for its general object the provision of a novel insert adapted to be placed within a wall or other similar bushing in electrical and physical contact therewith and also in mechanical and electrical engagement with the bus bar or bars.

An important object of the invention is to provide an insert of this character which will closely frictionally engage the inner surface of the bushing, regardless of slight variations in the diameter thereof and which will also have proper and perfect contact with the bus bar or bars even though they may vary in their dimensions.

Another object of the invention is to provide a device of this character which when inserted will remain in place without any necessity for the employment of auxiliary or extraneous fastening means, friction being the sole force relied upon.

An additional object is to provide a device of this character which will be simple and inexpensive to make, easy to install, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing in which:

Figure 1 is a longitudinal section through a bushing equipped with my device showing one form thereof,

Figure 2 is an end elevation with the bus bar in section,

Figure 3 is a view similar to Figure 2 but showing two bus bars, and

Figure 4 is a side elevation thereof with parts broken away and in section.

Referring more particularly to the drawing, the numeral 10 designates a wall or other similar bushing which is generally provided with a corrugated outer surface 11 and a smooth cylindrical bore 12 which in the carrying out of the present invention is intended to be provided with a metallic or other conducting coating. The numeral 13 designates the bus bar which extends through the bushing and which is to be supported therein. To accomplish the desired result I preferably make use of a disk-like body member 14 which in the present instance is represented as having a shape similar to that of a grooved pulley, or in other words having a peripheral flange 15 which is concaved for the retention of a helical spring 16 which is arranged in the form of a ring and which frictionally engages within the grooved periphery. The hub portion 17 of the disk-like body is shown as formed with a socket 18 communicating with a slot 19 through which the bus bar 13 passes, and located within this socket is a coil spring 20 bearing against and making electrical contact with the bus bar. Any means may be provided for holding the spring in place and in the present instance I have disclosed for this purpose a metal plate 21 held as by screws 22. As the body 14 is of conducting material it is quite apparent that there will be an electrical connection between the bus bar and the conducting surface on the inside of the bushing. The spring 20 insures contact between the bus bar and the body and the ring shaped helical spring 16 insures firm mechanical and electrical connection with the wall of the bore. Clearly the bus bar is mechanically supported in centered position within the bushing. In cases where it has been proposed to use a bus bar rectangular in cross section difficulty has been experienced in mounting it satisfactorily within the bushing but by my device this becomes an extraordinarily simple matter.

In Figures 3 and 4 I have illustrated a slight modification in which the body 14^a is formed with two slots 19^a for the reception of bus bars 13^a, there being two sockets 18^a containing springs 20^a retained in place by metal plates 21^a fastened as by screws 22^a.

Regardless of the number of slots and bus bars it is apparent that the operation is identically the same. Attention is called to the fact that the springs contacting with the bus bar or bars will insure proper contact even though there may be variations in the dimensions of the bars. Furthermore as the ring shaped helical spring around the periphery of the body is compressible there

is bound to be good contact with the bore of the bushing even though there may be considerable variation in the diameter thereof, of course within certain limits.

From the foregoing description and a study of the drawing it will be apparent that I have thus provided a very simply constructed, inexpensive and easily applied device for the purpose specified which will be highly efficient in every respect. It is believed that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that the disclosure is merely an exemplification of the principles involved as the right is reserved to make all such changes in the details of construction as will widen the field of utility and increase the adaptability of the device provided such changes constitute no departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, I claim:

1. Means for mounting a bus bar within an insulating bushing, comprising a body member adapted to conform to the bore of the bushing and apertured for the passage of the bus bar, a coil spring surrounding the periphery of the body and adapted to bear compressingly against the wall of the bore of the bushing, and spring means carried by the body and adapted to bear against the bus bar.

2. Means for mounting a bus bar within a bushing insulator having a conducting inner surface, comprising a body member of conducting material apertured for the passage of the bus bar, spring means carried by the body and entering the aperture and adapted to compressingly engage the bus bar, and spring means carried by the body at its periphery and adapted to compressingly engage the wall of the bore of the bushing.

3. In combination with a bushing insulator and a bus bar extending therethrough, a connection therebetween comprising conducting means embodying spring means frictionally engaging the bus bar and having other spring means in frictional engagement with the interior wall of the bushing.

4. In combination with a bus bar within a bushing insulator, a conducting member surrounding the bus bar, spring means carried by said member and engaging the bus bar, and other spring means carried by said conducting member and engaging the wall of the bore of the insulator.

5. Means for holding a bus bar in a bushing insulator through which it extends, comprising a conducting member adapted to be located adjacent the bus bar and formed with a pocket, spring means confined within said pocket and adapted to engage against the bus bar, and other spring means confined to said member and adapted to engage the wall of the bore of the insulator.

6. Means for mounting a pair of spaced bus bars within a bushing through which they extend, comprising a metallic member of disk form provided with spaced slots adapted to receive the respective bus bars, spring elements contained within said disk at the outer sides of the slots therein and adapted to bear against the bus bars, and a coil spring seated about the periphery of the disk and adapted to bear against the wall of the bore of the bushing.

7. Means for mounting a bus bar within an insulating bushing, comprising a body member apertured for the passage of the bus bar, a spring mounted on the body and adapted to bear compressingly against the wall of the bore of the bushing, and other spring means carried by the body and adapted to bear against the bus bar.

8. Means for mounting a bus bar within a bushing insulator, comprising a body member apertured for the passage of the bus bar, spring means carried by the body and adapted to compressingly engage the bus bar, and other spring means carried by the body at its periphery and adapted to compressingly engage the wall of the bore of the bushing.

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