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FLASHOVER PREVENTING MEANS FOR BRUSH HOLDER OF A DYNAMOELECTRIC MACHINE

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Fig. 1

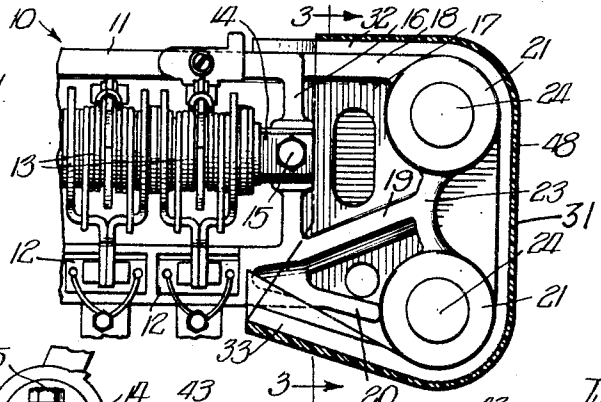


Fig. 2

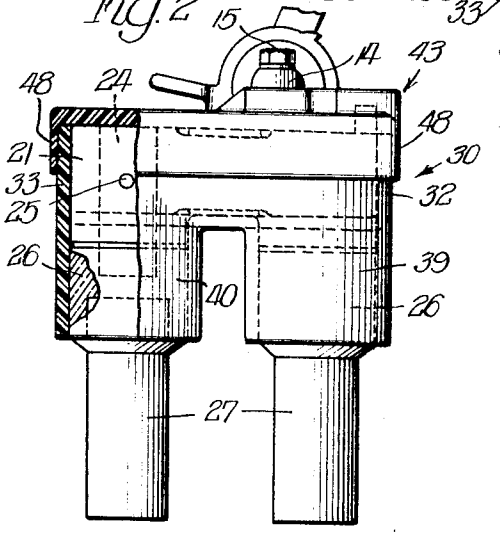


Fig. 3

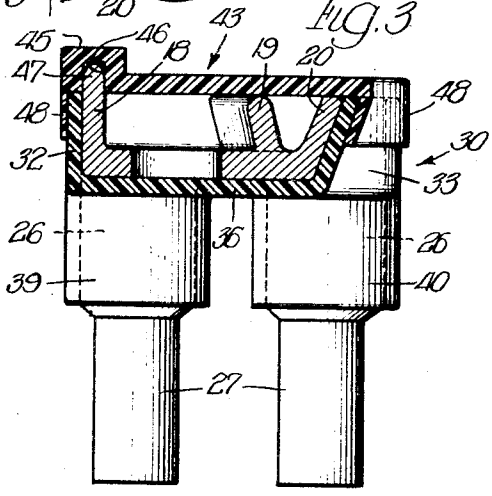
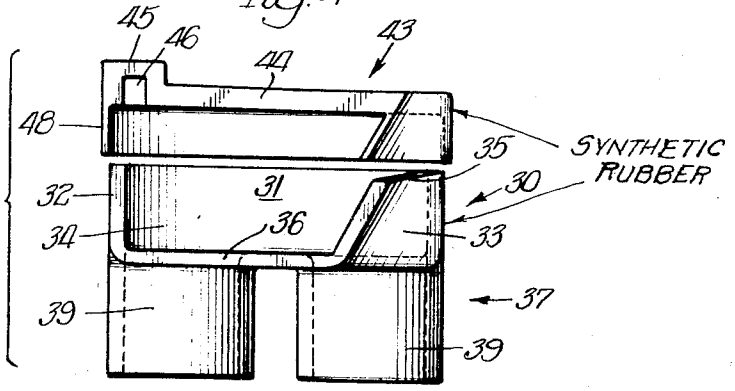


Fig. 4



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FLASHOVER PREVENTING MEANS FOR BRUSH HOLDER OF A DYNAMOELECTRIC MACHINE

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3 Claims. (Cl. 310—239)

This invention relates, generally, to dynamoelectric machines, and it has particular relation to means for preventing flashover between each of the brush holders and parts of the frame of the machine at a different potential.

Brush holders for dynamoelectric machines, particularly those used on diesel powered railway locomotives, are likely to flashover to adjacent parts of the machine at a different potential. This is particularly likely to occur because of the close clearances which must exist due to space limitations and the likelihood of entrance of dust and dirt resulting from operating under unfavorable conditions. Experience indicates that flashover is most likely to occur between the frame of the machine and that portion of the brush holder which extends beyond the commutator and is supported by one or more rigid insulators on the frame.

Accordingly, among the objects of this invention are: To prevent flashover between the brush holders of a dynamoelectric machine and adjacent portions of the frame at a different potential; to enclose that portion of each brush holder where the flashover is most likely to occur with an insulating barrier; and to employ a two part insulating means for this purpose formed of flexible material, such as synthetic rubber particularly neoprene.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawing and it comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention, reference can be had to the following detailed description, taken together with the accompanying drawing, in which:

Figure 1 is a top plan view of a portion of a brush holder of typical and well-known construction illustrating how the barrier of the present invention can be applied thereto;

Figure 2 is a view, in end elevation, looking from right to left with regard to Figure 1, certain parts of the barrier being broken away in order to show more clearly the details of construction;

Figure 3 is a detail sectional view taken generally along the line 3—3 of Figure 1; and

Figure 4 is a view showing the two part insulating means or barrier in end elevation, detached from the brush holder and shown one above the other to illustrate how they are arranged to be telescoped with respect to each other.

Referring now particularly to Figures 1, 2, and 3 of the drawings, it will be observed that the reference character **10** designates, generally, a brush holder of conventional construction. The brush holder **10** includes a casting **11** which is formed of good conducting material,

such as brass or bronze, and having sufficient strength to withstand the stresses applied thereto. The brush holder **10** is arranged to slidably carry brushes **12** which are arranged to engage the surface of the commutator rotating therebelow, as will be understood readily. The brushes **12** are urged into contact engagement with the surface of the commutator by brush springs **13** which are mounted on a transversely extending rod **14**. One end of the rod **14** is shown as being secured by a bolt **15** to a rib **16** which is cast integrally with the casting **11**. Also cast integrally with the rib **16** is a horizontally extending web **17** which extends underneath the springs **13**. Along the sides of the web **17** are arms **18**, **19**, and **20** which are cast integrally therewith and with the rib **16**. The arms **18**, **20** are formed integrally with cylindrical bosses **21** which, as shown, are interconnected by a rib **23** that is integral with the arm **19**. Steel support studs **24** extend centrally through the cylindrical bosses **21** and are secured therein by transverse holding pins, one of which is indicated at **25** in Figure 2. Also as there shown, the lower ends of the steel support studs **24** extend into porcelain insulators **26** and are secured therein by suitable adhesive means. The porcelain insulators **26** are carried by brass support studs **27** which extend upwardly thereinto and are secured thereto by suitable adhesive means. It will be understood that the brush holder **10**, just described, is of conventional construction and per se forms no part of the present invention.

As pointed out above, it is likely that flashover may take place between the brush holder **10** and adjacent parts of the frame of the dynamoelectric machine which are at a different potential. It is particularly likely that the flashover will take place between the cylindrical bosses **21** and the parts of the frame adjacent thereto at opposite potential. In accordance with this invention provision is made for covering the bosses **21** and adjacent parts of the brush holder **10** so as to avoid the likelihood of flashover.

For this purpose an insulating sleeve **30** is employed which has an upper portion **31** that, as shown in Figure 1, extends around the cylindrical bosses **21** and has end portions **32** and **33** overlying the arms **18** and **20**, respectively. There is an opening **34** between the end portions **32** and **33** through which the web **17** and arms **18**, **19**, and **20** project. As shown in Figure 4, the end portion **33** has a downwardly inclined upper edge **35**. The purpose of this is to conform to the correspondingly downward sloping of the upper edge of the arm **20**. A shelf **36**, formed integrally with the upper portion **31** of the insulating sleeve **30**, extends underneath the web **17** and preferably extends far enough so that its inner edge overlies the adjacent ends of the commutator bars. Depending from the upper portion **31** of the insulating sleeve **30** is a bifurcated portion **37**. This portion **37** comprises a pair of tubular extensions **39** which are formed integrally with the shelf **36**, and, as shown in Figures 2 and 3, are arranged to enclose the lower portions of the cylindrical bosses **21** and the porcelain insulators **26**. It will be understood that the tubular extensions **39** need not extend entirely over the procelain insulators **26** although this is the preferred construction.

With a view to enclosing the top of the insulating sleeve **30**, there is provided an insulating cover **43**. It will be observed in Figures 2, 3, and 4 that the cover **43** has a flat central portion **44** which is arranged to overlie the upper ends of the cylindrical bosses **21** and also the upper surfaces of the arms **18**, **19**, and **20**. An upstanding portion **45** is formed integrally with the central portion **44** and it has a slot **46** therein for accommodating the upper portion **47** of the arm **18**, which extends above the level of the corresponding surfaces of the arms **19** and **20** adjacent the rib **16**. Formed integrally with the insulating cover **43** is a relatively thin depending flange **48** which, as shown

in Figure 3, is arranged to telescope over the upper end of the insulating sleeve 30 and to have a friction fit therewith.

The sleeve 30 and cover 43 have been indicated and described as being formed of insulating material. Preferably they are formed of a flexible insulating material, such as synthetic rubber of which neoprene is a preferred material. However, it will be understood that other similar insulating materials can be employed. Since the insulating cover 43 is flexible, it can be deformed readily to interfit closely with the downwardly inclined edge 35 of the end portion 33. Also because of the flexible character of the material used for the sleeve 30 and cover 43, they can closely overlie the portions of the brush holder 10 which they are intended to cover.

For illustrative purposes, it is pointed out that the wall thickness of the sleeve 30 and cover 43 is about one-fourth inch. The flange 48 may have a thickness of about one-sixteenth inch. It will be understood that these dimensions can be varied as the situation requires. The insulating sleeve 30 and insulating cover 43 are molded in correspondingly shaped dies in accordance with conventional molding practice.

Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matters shown in the accompanying drawing and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. Means for providing an insulating barrier enclosing one end of a brush holder having a pair of cylindrical bosses adapted to be carried by a pair of insulators mounted on the frame of a dynamoelectric machine adjacent the commutator thereof, said bosses being joined by an integral web and having arms extending therefrom to support the brushes, said barrier preventing flashover between said brush holder and portions of said frame at a different potential, said means comprising, an insulating sleeve for enclosing the outer upper portions of said bosses with an integral depending bifurcated portion for enclosing the lower portions of said bosses and an integral shelf underlying said arms, one side of said sleeve being open to accommodate said arms, and an insulating cover overlying said sleeve, said cover having a depending flange overlying and coextensive with the upper periphery of said sleeve.

2. The invention, as set forth in claim 1, wherein the sleeve and cover are formed of flexible insulating material, the flange frictionally grips the sleeve, and the flange is thinner than the remainder of the cover.

3. The invention, as set forth in claim 2, wherein the sleeve and cover are formed of synthetic rubber.

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