May 3, 1932. A. W. PHELPS 1,856,723

MANUFACTURE OF BRUSH RIGGING

Filed Dec. 17, 1928

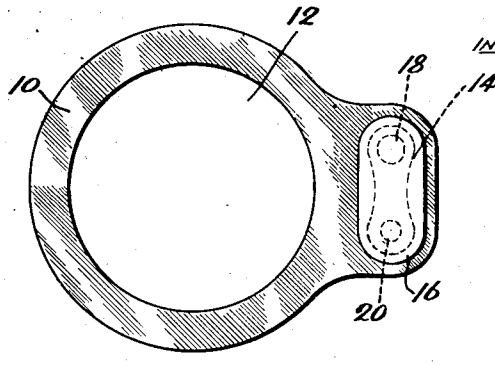

Fig. 1.

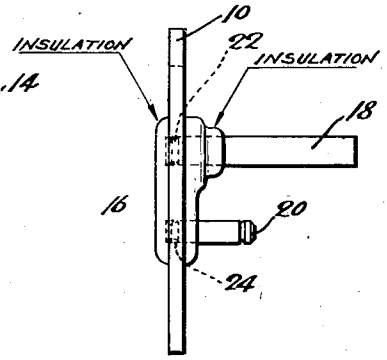

Fig. 2.

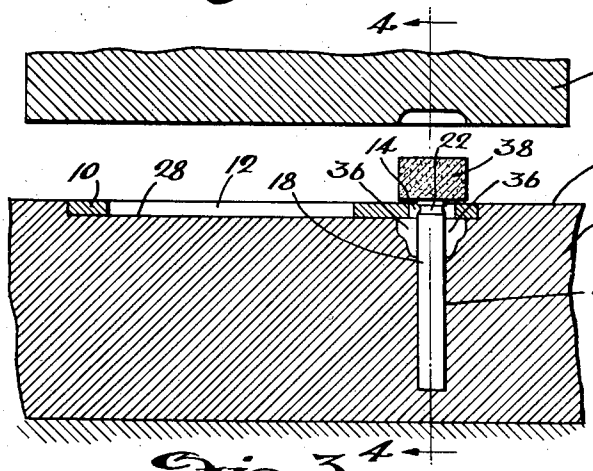

Fig. 3.

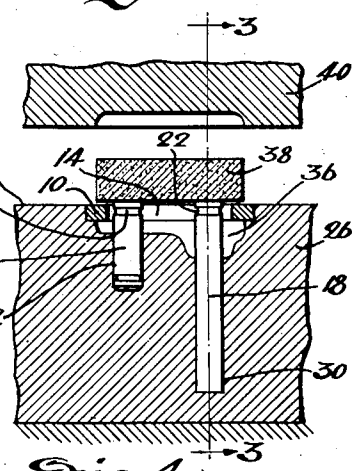

Fig. 4.

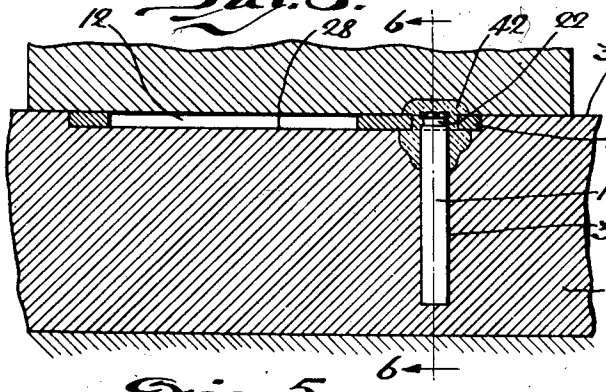

Fig. 5.

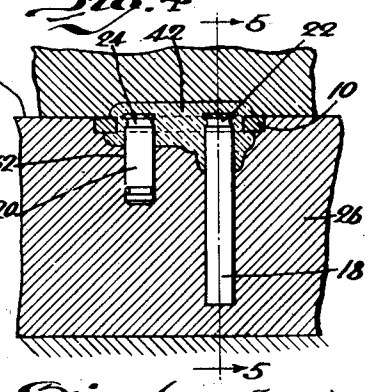

Fig. 6.

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UNITED STATES PATENT OFFICE

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MANUFACTURE OF BRUSH RIGGING

Application filed December 17, 1928. Serial No. 326,693.

This invention relates to the manufacture of third brush rigging for a generator.

An object of this invention is to provide, as a new article of manufacture, a brush carrying rigging where the metal parts are anchored in a relatively rigid position, but spaced from each other by means of a phenol condensation product, which has been molded around the surfaces of juncture of the parts. These parts are held in position by a pair of annular recesses, one in the pin and one in the stud, these recesses being embedded in and filled with the phenol condensation product so as to prevent axial movement of the pin and the stud. The molded phenol condensation product has been sealed around the aperture in the brush carrying bracket so that it is rigidly anchored in place and cannot be removed.

Another object of this invention is to provide a die having a pair of apertures, one for the pin and one for the stud and a recess for the brush carrying bracket. This die also has a cavity permitting the phenol condensation product to flow around the end of the pin and the end of the stud and around the aperture in the brush carrying bracket whereby the phenol condensation product, upon being heated, may be forced to flow into the cavity, thereby joining the pin, the stud and the bracket together into a unitary brush carrying rigging.

Another object of this invention is to join the brush holding pin or arm and the spring stud into the brush carrying bracket by molding a dielectric material such as a phenol condensation product or synthetic resin around these parts at their surfaces of juncture. This is accomplished by assembling the brush holding arm or pin, the spring stud and the brush carrying bracket into recesses provided therefor in a mold or die, the recesses being so arranged that the pin or arm, the stud and the bracket are separated then forcing a phenol condensation product into a cavity provided therefor in the die, by means of a cooperating die so that the phenol condensation product will flow around the pin, the stud and the bracket in order to hold these parts in an insulated relation to each other upon the solidification of the phenol condensation product. The results of this process are a large saving of time, a decrease in the number of parts, and a better brush carrying rigging.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawings:

Fig. 1 shows a plan view of the brush carrying rigging.

Fig. 2 is an end view of the brush carrying rigging.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 4, and shows the parts assembled in the mold previous to the molding operation.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3 previous to the molding operation.

Fig. 5 is a sectional view, on the line 5—5 of Fig. 6.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

Referring to the drawings, the reference character 10 indicates the supporting member, such as a metallic brush carrying bracket, which has an aperture 12 through which the armature shaft (not shown) passes. It also has an oblong aperture 14 on which is molded a unit of insulating material 16 supporting the brush carrying arm or pin 18 and the spring stud or pin 20. The brush carrying pin 18 and the stud 20 have annular recesses 22 and 24 respectively which prevent axial movement of the pin 18 and stud 20 after the recesses have been filled with an insulating material and this has solidified, anchoring the parts in a relatively rigid position.

A die or mold 26 has a recess 28 into which fits the brush carrying bracket 10. It also has a pair of apertures or recesses 30 and 32 into which are inserted the pin 18 and the stud 20, respectively. In Figs. 3 to 6 inclusive, it may be clearly seen that the upper surface of the brush carrying bracket 10 is

flush with the upper surface 34 of the die 26.

A suitable insulating material for this purpose has been found to be a phenol condensation product or a suitable synthetic resin which changes its physical state from a solid to a plastic upon the application of heat and pressure and solidifies upon being cooled.

In the die 26 and surrounding a portion of the pin 18 and stud 20 and the aperture 14 is a cavity 36 provided to receive the phenol condensation product so as to anchor and insulate from each other the pin 18, stud 20 and brush carrying bracket 10. A pellet, or pre-formed block of molding compound 38 made from phenol resin, is placed over the cavity 36 by the operator. The pellet is forced by the die member 40 into the cavity 36, the dies 26 and 40 being heated by suitable means not disclosed and pressure applied to member 40 so as to force this plastic composition to flow into the cavity 36, filling all parts thereof as indicated by the reference character 42 in Figs. 5 and 6. The die may be held in this position a predetermined interval of time, permitting this plastic composition to set or undergo a change from a plastic to a hard rigid insulating composition. The dies are then separated and the assembled brush carrying rigging is removed from the die 26 and is now ready for use. The cooling of the brush rigging may take place before or after removal from the die, or both before and after. The parts used for a second rigging are then assembled in the die 26 and the process repeated.

From the above it may be clearly seen that all riveting, all insulating washers and all tubular insulating members are eliminated from the process in the manufacture of this rigging. The resulting rigging is far superior to the one produced by the old method, is neat in appearance and is far cheaper.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A brush carrying rigging for a third brush generator, comprising in combination, a brush carrying bracket having two apertures, anchoring means anchored in one of said apertures, a pin with an annular recess embedded in the anchor, a stud having an annular recess embedded into the anchor, whereby the bracket, the pin and the stud are held in a relatively rigid position.

2. A brush carrying rigging for a third brush generator, comprising in combination, a brush carrying bracket having an aperture, a unit of insulating means anchored in said aperture, a pin embedded in said unit for supporting a brush, and a spring stud embedded in said unit, the pin, the stud and the bracket being insulated from each other.

In testimony whereof I hereto affix my signature.

ALVA W. PHELPS.