

C. W. DUNHAM.
MANUFACTURE OF COMMUTATORS.
APPLICATION FILED MAR. 16, 1917.

1,233,764.

Patented July 17, 1917.

FIG. 1

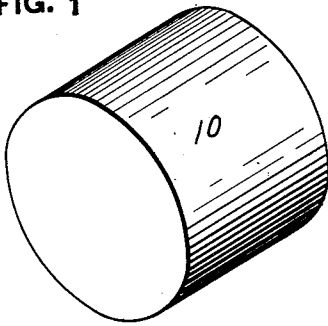


FIG. 2

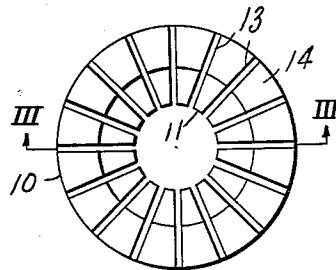


FIG. 4

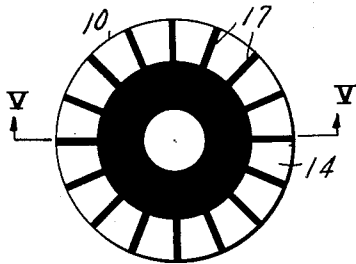


FIG. 3

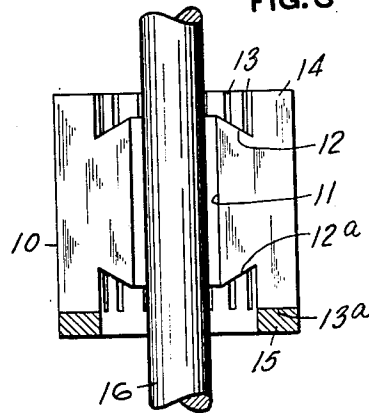


FIG. 5

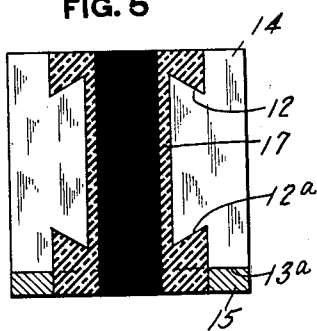
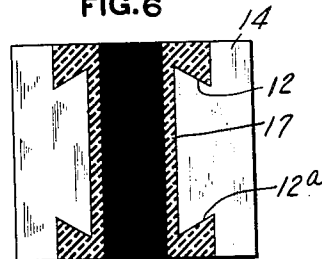


FIG. 6



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES W. DUNHAM, OF EDGEWOOD BOROUGH, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

MANUFACTURE OF COMMUTATORS.

1,233,764.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES W. DUNHAM, a citizen of the United States, residing at Edgewood borough, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Manufacture of Commutators, of which the following is a specification.

My invention relates to commutators for dynamo-electric machinery, that is, for motors, generators and the like, and particularly to a method of manufacturing such commutators.

I will discuss one method of manufacture embodying my invention, and will then point out the novel features thereof in claim.

In the accompanying drawings, Figure 1 is a view showing in perspective a metal blank, from which the commutator is to be made. Fig. 2 is a view showing this blank in end elevation after the first operations have been performed thereon. Fig. 3 is a sectional view on the line III—III of Fig. 2, showing also a mandrel in place in the blank, the blank now being ready for the application of insulating material. Fig. 4 is an end elevation showing the blank with the insulating material therein, and Fig. 5 is a sectional view on the line V—V of Fig. 4. Fig. 6 is a view similar to Fig. 5 but showing the commutator in finished condition.

Similar reference characters refer to similar parts in each of the several views.

Referring first to Fig. 1, the reference character 10 designates a blank of electro-conductive material, preferably copper, in the form of a cylindrical block. This block is first provided with a central axial bore 11 (Figs. 2 and 3) the diameter of which is greater than that of the shaft on which the commutator is to be mounted. Each end of the block is then countersunk to form recesses 12, 12^a, the recess 12^a being somewhat deeper than recess 12. The next operation consists in cutting radial slots 13 in the blank, each slot extending from the central bore to the outer circumference, and from one end of the blank to a plane 13^a near the

other end. These slots thus divide the blank into segments 14 which are united by a ring of metal 15.

A mandrel 16 is then placed in the axial bore 11, this mandrel being of the same diameter as the shaft upon which the commutator is to be mounted. The blank and mandrel are next placed in a suitable receptacle wherein insulating material may be forced under pressure into the slots 13 and into the space between the mandrel and the central bore. The insulating material may be of any suitable kind, such, for example, as bakelite. During this step in the process, the blank and mandrel are, of course, held firmly in such positions that the axes of the two coincide.

After the insulating material has hardened or set, the mandrel is withdrawn, leaving the device in the condition in which it is shown in Figs. 4 and 5, the insulating material being designated 17. The commutator is then completed by removing the ring 15 of metal, preferably by machining, so that the segments are completely insulated from each other. The commutator in this completed condition is illustrated in section in Fig. 6. When the commutator is placed on the motor or generator shaft, each segment will be insulated, of course, from the shaft by the ring of insulating material in the axial bore of the commutator.

One important feature of this method of manufacture is that the insulating material for the entire commutator is molded in place at one time, that is, by the one step in the process the segments are insulated from each other and from the commutator shaft.

Having thus described my invention, what I claim is:

The method of manufacturing commutators which consists in producing a cylindrical blank having an axial bore larger than the shaft on which the commutator is to be mounted, cutting radial slots in said blank extending from the outer surface to the bore, and from one end to a plane near the other end, placing in the bore a mandrel

substantially of the same size as the shaft on
which the commutator is to be mounted,
filling the slots and the space between the
mandrel and the bore with insulating mate-
5 rial, and subsequently removing the mandrel
and cutting off the solid end of the blank.

In testimony whereof I affix my signature
in presence of two witnesses.

CHARLES W. DUNHAM.

Witnesses:

A. HERRMAN WEGNER,
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