

April 2, 1929.

H. J. BERTRAM

1,707,596

COMMUTATOR

Filed March 24, 1928

Fig. 1.

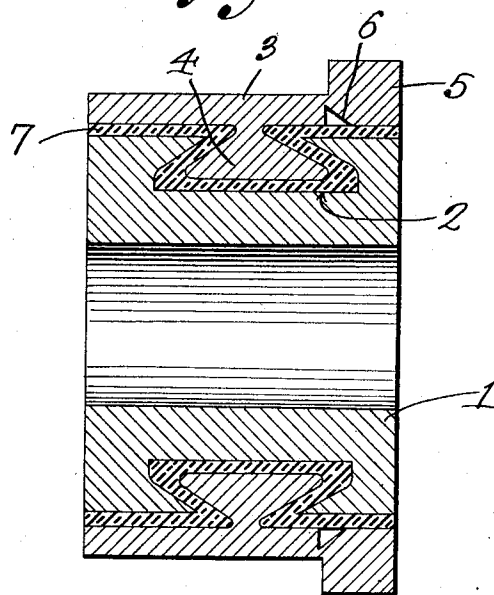


Fig. 2.

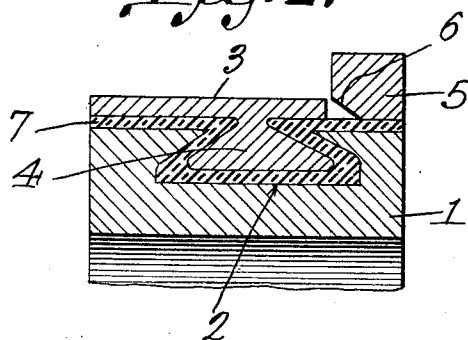
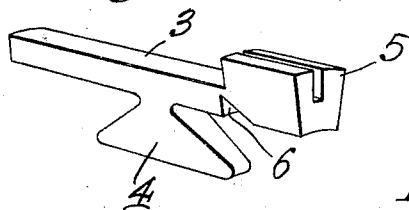


Fig. 3.



Henry J. Bertram
Inventor

By *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

HENRY J. BERTRAM, OF KANSAS CITY, MISSOURI.

COMMUTATOR.

Application filed March 24, 1928. Serial No. 264,436.

This invention relates to a commutator, one of the objects being to provide a commutator which, after being worn to a predetermined depth so as to render inefficient the contact between the brushes and the segments of the commutator, said segments will become separated when any attempt is made to dress down the commutator.

Commutators as constructed at the present time are designed to give practically unlimited service. The segments of the commutator, however, taper inwardly toward the center of the core and, as these segments become worn on their exposed surface, the width of the segments diminishes. Thus, ultimately, the brushes used in connection with the commutator do not make proper contact because the segments are too narrow where engaged by the brushes. Arcing is set up under the brushes and the commutator is frequently overheated and the armature winding caused to burn out. Thereafter, should the armature be rewound and an undersized commutator used, the same objectionable results would take place.

It is an object of the present invention to so construct the segments of the commutator that, after they have been dressed down to a predetermined thickness, the riser will be separated from the segment proper so that it becomes impossible to again use the commutator.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangements of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a section through a commutator embodying the present improvements.

Figure 2 is a section through a portion of the commutator showing one of the segments separated after being turned down following excessive wear.

Figure 3 is a perspective view of one of the segments.

Referring to the figures by character of reference 1 designates the core or spool of the commutator provided with an annular dove-

tailed groove 2. Arranged around this core or spool are the usual segments 3 held to the core or spool by dovetails 4 extending into the groove 2. At one end of each segment is provided a riser or enlargement 5 for connection of the lead wires of the armature and formed in the inner surface of each segment close to the riser is an angular or tapered notch 6. The depth of the notch depends on the amount of wear or service to which the segment is to be subjected. Obviously if the notch terminates close to the outer or working surface of the segment said segment will not last as long as where the notch terminates at a point more remote from said space. Each segment is insulated from the core or spool 1 by insulating material 7 which extends under and at the sides of the segments in the usual way.

It will be understood that when the segments become worn as a result of service they will be dressed down until the outer surfaces thereof are rendered smooth. Obviously each dressing of the segments will reduce the diameter of the commutator and, as the segments are tapered transversely, each reduction of the diameter of the commutator will cause the width of the outer or working face of each segment to be correspondingly reduced.

After a predetermined amount of wear has been received by the commutator and said commutator has been dressed down to a predetermined point, the notch 6 in each segment will become exposed through the outer surface thereof, thereby dividing the segment into two spaced parts which obviously will break the circuit through the segment. Thus the commutator will be rendered unfit for further use and expensive and useless rewindings will not be made.

A great advantage resulting from the use of this improved commutator is the fact that when the armature once becomes defective, the customer, who has requested rewinding thereof, must necessarily obtain a new armature instead of a rewound one with undersized commutator. This will consequently eliminate a great portion of the armature rewinding which now takes place and will tend to revert the armature replacement business to the original manufacture.

What is claimed is:

1. A commutator including a spool, an annular series of segments mounted thereon and connected thereto, said segments includ-

ing means for dividing the segments transversely when said segments are reduced to a predetermined thickness.

2. A commutator including a spool, an annular series of segments extending therearound, cooperating means carried by each segment and the spool for holding the segment to the spool, each segment having a depression in the under side thereof between the cooperating means and one end of the segment whereby said segment is divided transversely when said segment is reduced to a predetermined thickness.

3. A commutator including an annular series of segments each having means at one end for engagement with a wire of an armature, there being a depression in the underside of each segment between said end and the brush contacting surface of the segment whereby said segment is divided transversely when said segment is reduced to a predetermined thickness.

4. A commutator including a spool and an

annular series of segments mounted on the spool, each segment having a depression in its inner portion adapted to entirely separate the end portions of the segments when the commutator is reduced to a diameter less than normal but greater than the diameter of the spool.

5. A commutator including segments each having a groove or depression in its under side for dividing the segment into two separate pieces when said segment is reduced to a predetermined thickness.

6. A commutator including segments each adapted to receive current at one point and deliver current at another point, said segment having means whereby the flow of current through the segment is interrupted when the segment is reduced to a predetermined thickness.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

HENRY J. BERTRAM.