

Aug. 2, 1949.

D. J. THORELL

2,478,026

TOOL FOR BEVELING COMMUTATOR SEGMENTS

Filed May 13, 1947

Fig. 1.

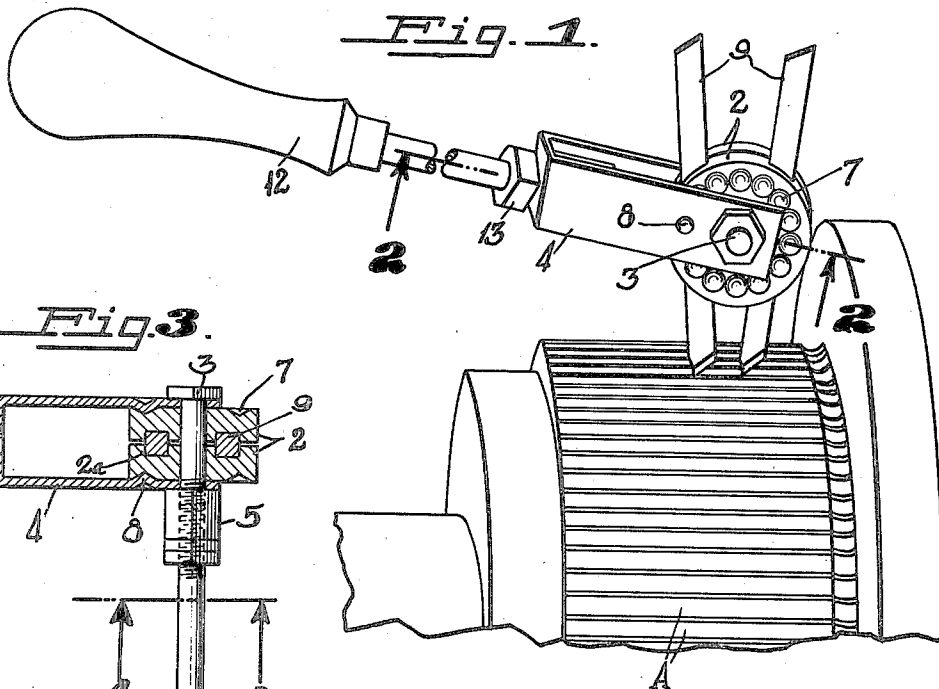


Fig. 2.

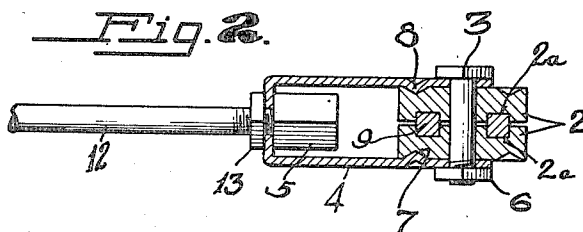


Fig. 4.

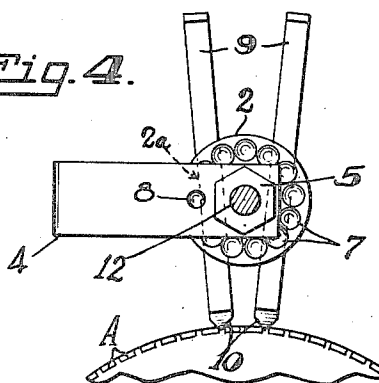
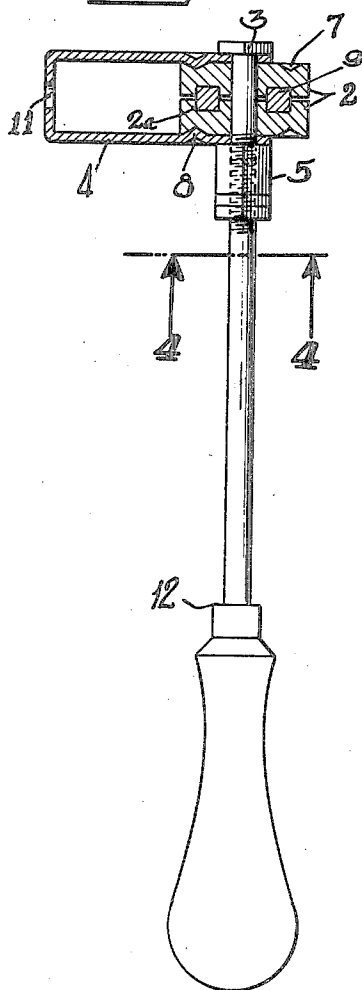


Fig. 3.



BY

INVENTOR
David J. Thorell
J. E. Tralucco
ATTORNEY.

UNITED STATES PATENT OFFICE

2,478,026

TOOL FOR BEVELING COMMUTATOR SEGMENTS

David J. Thorell, Burlingame, Calif.

Application May 13, 1947, Serial No. 747,769

5 Claims. (Cl. 90-24)

1

This invention relates to an improved tool for beveling the segments of commutators.

An object of my invention is to provide an improved, simple, efficient and inexpensive tool for accurately and uniformly beveling the segments of commutators.

Another object of my invention is to provide an improved tool for beveling commutator segments, embodying an adjustable holder for supporting a pair of cutting elements in different relative positions, whereby the same tool may be employed in cutting uniformly beveled surfaces on commutator segments of different sizes.

Other and further objects of my invention will be pointed out hereinafter, or will be indicated in the appended claims, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application I have elected to show herein certain details of a tool for cutting beveled surfaces on commutator segments representative of my invention; it is to be understood, however, that the embodiment of my invention herein shown and described is for the purposes of illustration only, and that therefore it is not to be regarded as exhaustive of the variations of the invention.

In the accompanying drawings:

Fig. 1 is a perspective view of a tool embodying the principles of my invention, showing diagrammatically the manner in which it may be used;

Fig. 2 is a sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is sectional view corresponding substantially to Fig. 2, but showing the handle connected to an end of the pivot pin rather than to the U-shaped carrier; and

Fig. 4 is a sectional view taken on the line 4-4 of Fig. 3.

Referring to the drawings, the numeral 2, 2 designates two independently adjustable discs or other suitably shaped elements mounted for rotative adjustment on an axle bolt 3 which is supported on the end of a U-shaped carrier 4. The discs are positioned between and in contact with the two opposed legs of the U-shaped carrier 4, and either of two nuts 5 or 6 screwed on the threaded end of the bolt serves to clamp and said legs of the carrier firmly against the discs 2. The outer face of each disc is formed with a series of equally spaced indentations 7 which are arranged in circular formation with the axle bolt 3 as a center. The opposed legs of the U-shaped carrier 4 are each formed with an inwardly protruding member 8 which is adapted to become lodged in any one of the indentations 7 of a contacting or

2

adjacent disc 2. The U-shaped member 4 is preferably made from a suitable resilient metal, and the opposed legs thereof when not urged by the bolt and nut means toward each other normally extend in slightly diverging directions. Thus, when the nut is unscrewed the legs of the U-shaped member will automatically spread slightly apart and permit the protruding members 8 to be sufficiently disengaged from the particular indentations 7 of the discs with which they were then engaging to permit the independent or simultaneous rotation of the said discs.

The discs 2 at their inner opposed sides are each provided with a pair of diverging slots 2a, which are arranged in corresponding relationship, with the slots of one disc positioned opposite the slots of the other disc. Slotted diverging guide means is thereby provided for adjustably holding a pair of elongated cutters 9, the adjacent ends of which are formed with suitably beveled cutting edges 10 as shown in Fig. 4. When the nut is screwed on the bolt 3 and the opposed legs of the U-shaped member 4 are brought into clamping relationship with the discs 2 the cutters 9 are normally held against relative displacement.

By adjusting the relative positions of the cutters 9 the cutting edges 10 of the said cutters may be adjusted closer to or farther from one another to permit the use of the beveling tool with electrical devices wherein the commutator segments or bars A vary in size or are spaced differently. In this respect it will be noted that since the slotted guides are in diverging relationship the cutters may be slidably adjusted so their cutting edges 10 may be positioned closer to or farther from one another. In the event the maximum separation of the cutting edges 10 is required for a certain job, the cutters 9 may be reversed to cause their said cutting edges to project from the discs at the sides thereof where the guide slots are most widely separated. The discs 2 are capable of being rotated as a unit to adjust the position of the cutters with respect to the U-shaped carrier 4. Thus if the cutters are required to operate in a restricted area, they may be positioned so their cutting edges extend somewhat beyond the ends of the legs of the U-shaped carrier.

The central connecting portion of the U-shaped carrier 4 is provided with a hole 11 through which the threaded end of a handle 12 is adapted to extend, and suitable means such as an outer nut 13 and the elongated nut 5 may be employed to secure the handle to the carrier. When the handle 12 is connected to the central portion of the carrier 4 the cutters may be operated in tandem

3

formation to bevel the adjacent edges of two commutator segments A, as shown in Fig. 1. When so positioned the two cutters, engaging with the commutator segments at separated points one behind the other, are adapted to be conveniently held in suitable contacting relation with the said segments as the tool is drawn to the left during a cutting or beveling operation.

When it is desired that the tool be used to bevel four edges of the same number of commutator segments at one time, the handle 12 may be detached from the end of the carrier 4 and connected to the axis bolt 3 by means of the elongated nut 5. As shown in Figs. 3 and 4 the cutters 9 may be positioned so their cutting edges 10 engage with four different commutator segments A at a time, and by drawing the handle in a direction, parallel to the said segments the cutters can be operated to bevel four edges of the engaged commutator segments simultaneously.

My improved tool may be used for various other purposes, such as to cut strips of paper or other material placed between the commutator segments, and in addition to its use in cutting beveled surfaces on the segments it may be used to undercut the mica or other insulation between the said segments.

Various other kinds of nuts other than the elongated nut 5 may be used to connect the handle 12 to the carrier 4. It is also to be noted that the discs 2 may be detached from the carrier, thus permitting discs and the cutters to be operated as a unit independently of the carrier and handle.

What I claim is:

1. In a tool for cutting beveled surfaces on commutator segments, a carrier having opposed sides, a pair of discs rotatably mounted between the sides of the carrier on which the discs are mounted, a pair of slotted guide means formed in the adjacent sides of the discs, a pair of cutter bars slidably mounted in the guide means and having adjacent ends formed with cutting edges, means engaging with the axial member for bringing the opposed sides of the carrier into clamping relation with the discs, whereby the discs may be urged toward each other to normally secure the cutter bars against relative displacement, and handle means secured to the carrier.

2. In a tool for cutting beveled surfaces, the combination as set forth in claim 1, together with cooperating means formed on the discs and the opposed sides of the carrier for normally preventing the rotative movement of the discs when the said sides are in clamping relation with respect to the said discs.

4

3. In a tool for cutting beveled surfaces on commutator segments, a U-shaped carrier having opposed legs, an axle member secured to the opposed legs of the carrier, a pair of discs mounted for rotative adjustment on the axle member, the said discs having slotted diverging guide means in their opposed adjacent sides, cutter bars adjustably mounted in the guide means and arranged in contacting relation with the discs and means for urging the legs of the U-shaped carrier inwardly into frictional engagement with the discs, whereby the discs may be prevented from rotating and the said discs may be brought into frictional engagement with the cutter bars to prevent their relative displacement,

4. In a tool for cutting beveled surfaces on commutator segments, a carrier having opposed legs and handle means, an axle member secured to and extending between the legs of the carrier, a pair of clamping elements mounted for rotative adjustment on the axle, a pair of cutters adjustably mounted between and in frictional engagement with the clamping elements, and means for urging the legs of the carrier inwardly into frictional engagement with the clamping elements, whereby the clamping elements may be held against rotation and the said elements may be brought into frictional engagement with the cutter bars to prevent the relative displacement thereof.

5. In a cutting tool, a carrier, a cutter holder comprising two opposed relatively adjustable members, the said members being mounted for rotative adjustment on the carrier, a pair of cutter bars normally clamped between the opposed members of the holder, and means for urging the opposed members toward each other, whereby the said members may be clamped into frictional engagement with the cutter bars to prevent the relative displacement thereof.

DAVID J. THORELL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,145,091	Mansfield	Jan. 24, 1939

FOREIGN PATENTS

Number	Country	Date
19,607	Great Britain	Oct. 1, 1901
508,130	Great Britain	June 27, 1939