F. C. FISCHER.

MEANS FOR REPAIRING COMMUTATORS.

APPLICATION FILED SEPT. 19, 1910.

992,865.

Patented May 23, 1911.

2 SHEETS—SHEET 1.

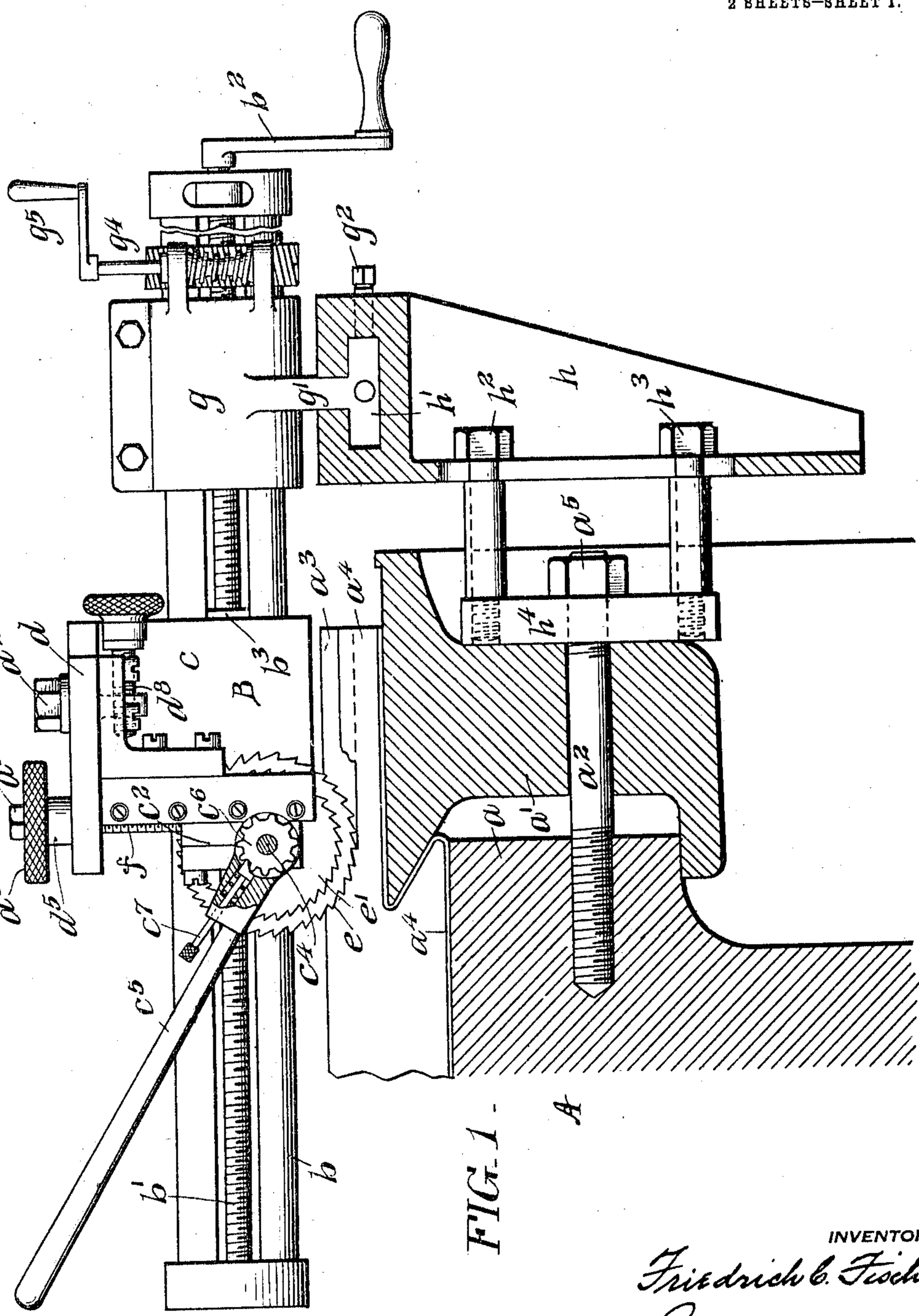

FIG. 1.

WITNESSES

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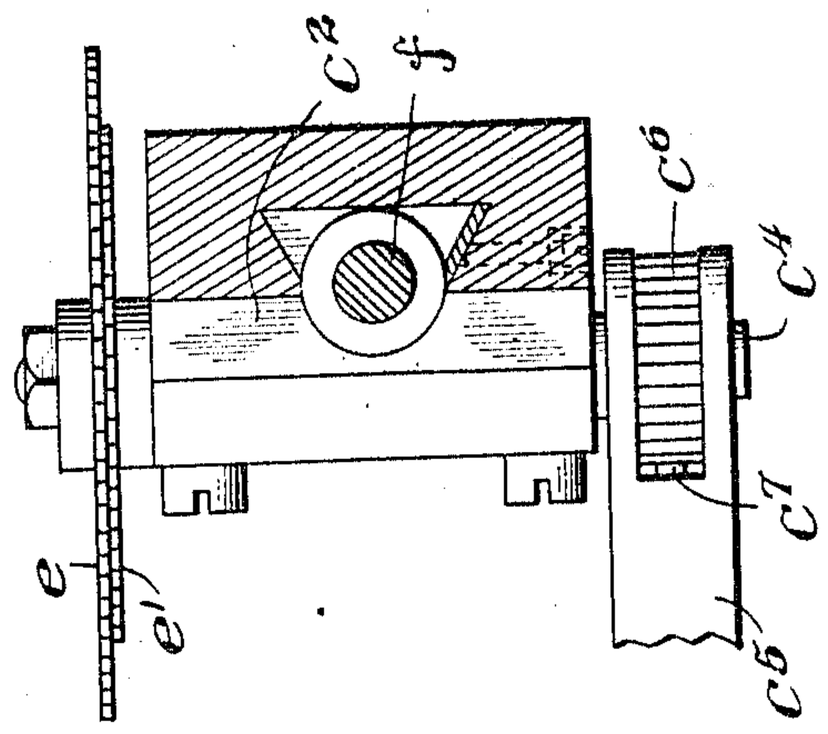
2 SHEETS—SHEET 2.

FIG. 3.



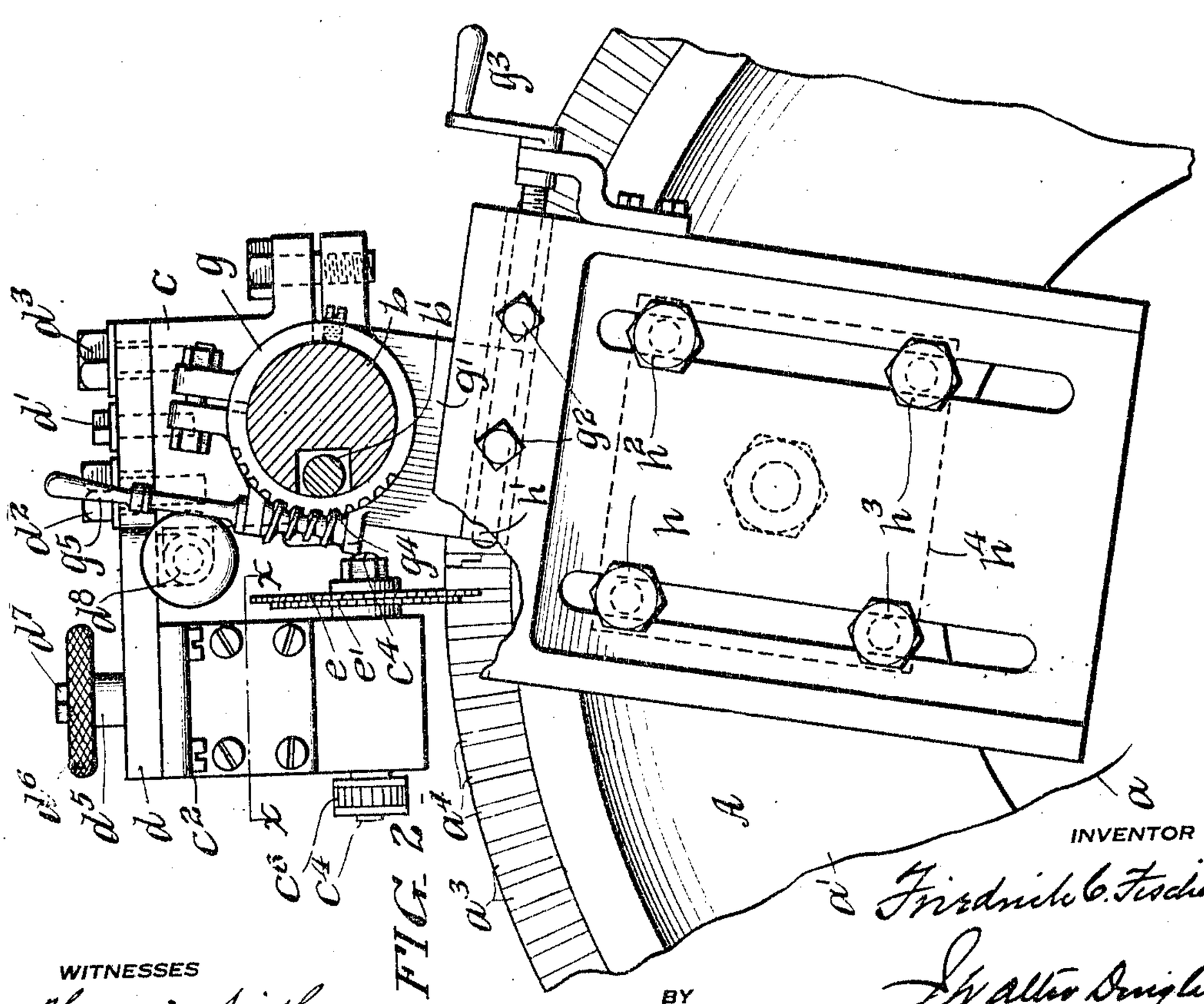


FIG. 2.

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MEANS FOR REPAIRING COMMUTATORS.

992,865. Specification of Letters Patent. Patented May 23, 1911.

Application filed September 19, 1910. Serial No. 582,655.

To all whom it may concern:

Be it known that I, FRIEDRICH C. FISCHER, a subject of the Emperor of Germany, but who have declared my intention of becoming a citizen of the United States, now residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Means for Repairing Commutators, of which the following is a specification.

My invention has relation to means to repair the segments or parts of a commutator so as to restore the same to normal working condition; and in such connection the invention relates to the constructive arrangement of such means for the defined purpose.

A commutator is generally arranged with copper bars and mica sections arranged longitudinally side by side about the axis thereof. The mica commonly used being termed "micanite", consisting of small pieces of mica held together by shellac or varnish. As often happens bits of copper, carbon or particles of oil deposit on the micanite as well as in small cracks or crevices of the same, thus furnishing a good conducting path to the copper bars of the commutator and hence the current leaking from one copper bar to the other results finally in what is termed "pitting". The almost universal practice to correct pitting is to scrape out the formed cracks or crevices and to fill the same with French chalk, powdered mica, silicate of soda or the like, but this has been very unsatisfactory because soon leakage begins beneath the portion of the commutator packed with such material.

The principal objects of my invention are first, to provide means to act upon "pitted" mica or micanite segments or parts of a commutator to form at one time any desired shape of incision to receive a mica or micanite insert part or segment corresponding in shape or form to the incision provided by said means; and second, to provide means having different adjustments to enable one to cut in segments of a commutator at one time irregular shaped tongues, grooves or incisions which are formed to fit and to have secured insert parts or segments corresponding in shape or form to the provided tongues, grooves or incisions therefor.

The nature and scope of my present invention will be more fully understood from the following description taken in connection with the accompanying drawings, in which—

Figure 1, is a view partly in section and in elevation of means embodying main features of my invention to provide irregular shape grooves, tongues or incisions in a mica or micanite segment of a commutator. Fig. 2, is an end elevation, partly in section of Fig. 1; and Fig. 3, is a transverse section on the line x, x, of Fig. 2.

Referring to the drawings A, represents a portion of a commutator, showing sectional parts a and a^1, bolted to each other at a^2, and copper or other metal inserts or segments a^3, adjoining mica or "micanite" insert segments or parts a^4, of the commutator A.

B, is the repair means, embodying in constructive arrangement my said invention, and comprising a slotted longitudinal supporting framing b. b^1, is a revoluble threaded shaft which is journaled in each end of said framing and at the right hand end beyond the framing is provided with a hand-crank b^2. The framing b, carries a block or head c, connected with a traveler nut b^3, internally threaded to travel along the threaded shaft b^1. This block or head c, is provided with a cap-plate d, pivotally connected at d^1, thereto. The cap-plate d, is provided with two tightening bolts d^2 and d^3, Fig. 2, to position the cap-plate d, to the block or head c, against turning, except when required. By removing the two bolts d^2 and d^3, the cap-plate d, can be swung on the pivot d^1, so as to change the position of the saws with respect to the segment to be acted upon by them.

On the left hand side of the block or head c, in Fig. 1, is provided a bearing block c^2, through the lower portion of which extends a cross-shaft c^4. The shaft c^4, carries at one end saws e and e^1, clamped together, one preferably smaller than the other and working in unison. These saws clamped together on said shaft in cross-section therefore occupy a staggered relationship to each other.

Threaded into the bearing block c^2, is a vertical threaded bolt f, extending through the cap-plate d, and a sleeve d^5, and at the upper end of said bolt it is provided with a milled head d^6, and nut d^7. This arrangement furnishes a means to raise and lower the bearing block c^2, and therewith the two clamped together saws, either up or down as may be required to bring them into a po-

sition to act upon a particular part of a defective or pitted segment of the commutator to permit of the forming of an irregular-shaped groove or incision therein.

On the shaft c^4, is loosely mounted a lever-arm c^5. c^6, is a ratchet-wheel rigidly secured to said shaft and c^7, is a pawl arranged in connection with said lever-arm c^5, to normally engage the ratchet-wheel c^6, so as to move the saws in unison step-by-step in such a manner as that by the action of the saws as arranged in Fig. 1, an irregular groove or incision in a pitted segment or part of the commutator A, can be made to receive a corresponding insert part or segment, which is suitably cemented or secured therein.

d^8, is a threaded bar extending inwardly through bearings of the cap-plate d, and block c, and which bar by actuating the same enables alining of the saws e and e^1, to be made in a parallel relation to the segments or parts of the commutator.

The supporting framing b, carries a sleeve g, having an inverted T-shaped hanger g^1, engaging a corresponding shaped bearing h^1, of a bracket h, provided with tightening bolts g^2, Fig. 1, and a hand-crank g^3, Fig. 2. This arrangement provides the means to slidably adjust the saws accurately to a position required in respect to a particular segment or part of a commutator to be acted upon thereby in the forming of an irregular groove or incision therein. The bracket h, is clamped by bolts h^2 and h^3, to a plate h^4, which plate is mounted on a bolt a^2, securing each of the sections a and a^1, of the commutator A, by a lock-nut a^5, as shown in Fig. 1. The sleeve g, is provided with gear-means g^4, turned by a crank g^5, to oscillate the supporting-framing b, and consequently the clamped saws e and e^1, with respect to the center of the commutator.

The mode of operation of said means as hereinbefore explained and as illustrated, is as follows:—Manipulating the hand lever c^5, revolves the clamped together saws e and e^1, step-by-step and turning the crank b^2, impels the saws forward by the feeding of the block c, along the support b, thereby effecting by the saws a cut in the particular defective mica or micanite segment or part a^4, of such an irregular shape, as may be desired. It should be borne in mind that the saws first have to be lowered into required position in respect to the defective part to be acted upon, by operating the head d^6, to lower the saws onto the defective or pitted part to be removed. When the different adjustments of the said means have been made a manual movement of the saws in unison will effect an irregular-shaped groove or incision in the pitted or defective mica or micanite part, such as shown for example in Fig. 1, to receive a corresponding shaped insert part or segment, which is secured by cementing to place therein, whereby such insert part or segment then becomes an integral part of the commutator so as to restore the commutator to a condition for practical use.

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent is:—

A machine for repairing commutators, comprising in combination, a bracket, a sleeve carried by the bracket, a framing journaled in the sleeve, manually controlled means for rotatively adjusting the framing in the sleeve, a block or head slidably carried by said framing, means for adjusting the block or head longitudinally of the framing, a saw carried by the block or head and means for rotating the saw.

In witness whereof, I have hereunto set my signature in the presence of two subscribing witnesses.

FRIEDRICH C. FISCHER.

Witnesses:
JOHN J. KELLY,
MARY AGNES KELLY.