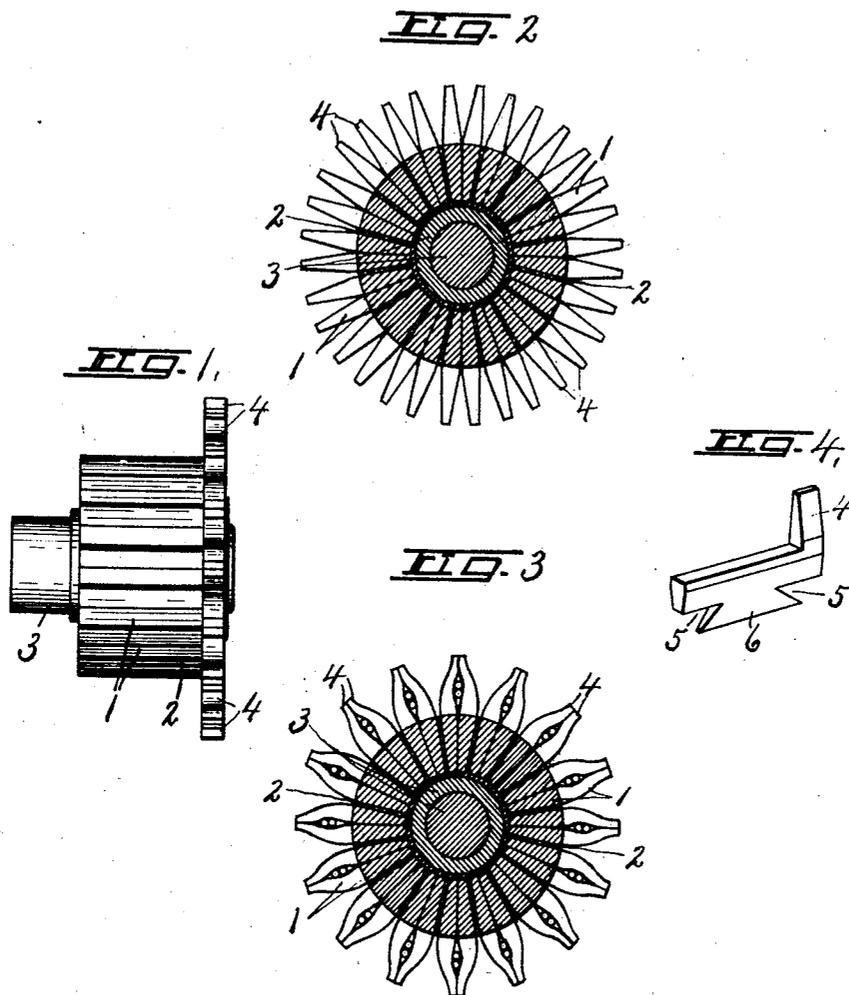


A. E. DOMAN.
COMMUTATOR.
APPLICATION FILED DEC. 18, 1918.

1,406,448.

Patented Feb. 14, 1922.



INVENTOR
A. E. Doman
BY
Howard P. Denson
ATTORNEY

UNITED STATES PATENT OFFICE.

ALBERT E. DOMAN, OF SYRACUSE, NEW YORK, ASSIGNOR TO DYNETO ELECTRIC COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

COMMUTATOR.

1,406,448.

Specification of Letters Patent. Patented Feb. 14, 1922.

Application filed December 18, 1918. Serial No. 267,367.

To all whom it may concern:

Be it known that I, ALBERT E. DOMAN, a citizen of the United States of America, and resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Commutators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in commutators for dynamos, motors and in other relations where a device of this character might be of service and refers more particularly to the construction and relation of the conducting and insulating segments and to the method of attaching the armature wires to the conducting segments.

Heretofore, so far as I am aware, the armature wires have been soldered to their respective commutator segments as the only means of securement and the main object of the present invention is to provide a more expeditious, economical and reliable means for securing these wires to their segments without the use of extra material and at the same time to provide a more convenient means for attaching wires of different gage.

In other words I have sought to utilize portions of commutator segments as the means by which the wires may be firmly clamped thereto and thereby to reduce the cost of manufacturing and to increase the general efficiency of the commutator.

Other objects and uses will be brought out in the following description.

In the drawings:

Figure —1— is a side elevation of a commutator embodying the features of my invention.

Figure —2— is a transverse sectional view of the same.

Figure —3— is a sectional view similar to Figure —2— showing the tangs of the segments as compressed upon the interposed ends of the armature wires.

Figure —4— is a perspective view of one of the segments.

The commutator segments and the blank or bar from which it is made is similar to that set forth in my Patents, Nos. 1,282,051 and 1,282,052 issued Oct. 22, 1918, but the method of assembling the conductor segments and attaching the armature wires thereto are distinguished from those patents in that the conducting segments are assem-

bled in pairs circumferentially around the commutator shaft with relatively thin insulator segments between the several pairs while those of each pair are in electrical contact and are provided with bendable jaws or tangs between which the corresponding ends of the armature wires are firmly clamped thereby to establish the necessary electrical connection without extra fastening means such as solder although the latter may be used in connection with the clamping jaws if desired.

The blank or bar from which the segments are made may be of any desired length and is of the same cross-sectional size and form from end to end corresponding to the maximum cross-sectional width, thickness and form of the required segment and is preferably thicker along its longitudinal center than at the opposite edges so that the opposite longitudinal and halves thereof are wedge-shape or tapered transversely from the longitudinal center, the angle between the opposite faces of each half depending upon the number of segments employed to complete the cylindrical commutator.

The commutator is therefore made up of a series of identical conductor segments —1— and insulating segments —2— assembled in compact relation circumferentially around a supporting shaft —3—, said conducting segments being arranged in pairs and the inner halves of each pair being in electrical contact from end to end while the inner halves of the several pairs are separated by the insulators —2— of substantially the same radial width thus forming the cylindrical part or main body of the commutator, the major portion of the outer halves of the conductor segments being cut away along their longitudinal centers thus leaving relatively short radially projecting tapered jaws or tangs —4— on the inner ends of the conducting segments in circumferential alinement.

The opposite ends of the inner edge of each segment are cut away at —5— to form a dove-tail base —6— adapted to be engaged by similar but reversely arranged shoulders on the frame of the commutator for retaining the segments in their assembled relation.

The conducting segments —1— are therefore identical and interchangeable and when assembled with the insulating segments form a complete commutator in which ad-

jacent faces of the radial tangs —4— di-
 verge outwardly and permit the ends of the
 armature wires of different gage to be in-
 serted between the jaws or tanks of each
 5 electrically connected pair after which the
 jaws of the several pairs are firmly pinched
 together or compressed upon the interposed
 wires to establish the desired electrical con-
 nection between said wires and commutator.
 10 This manner of securing the wires to the
 conducting segments of the commutator as-
 sures not only a more rigid and reliable me-
 chanical connection but also produces a more
 efficient electrical connection by reason of
 15 the direct metal to metal contact of the con-
 nected parts which are usually both made of
 copper and are therefore easily compressible
 into close and reliable contact.

On the other hand in case the armature
 20 wires should become impaired from any
 cause they may be readily disconnected from
 the commutator by simply springing the
 jaws or tangs apart and again reclamped
 upon the replaced wires by suitable pliers
 25 without extra fastening means.

Another advantage of this construction is
 that even though the armature wires may be
 soldered between the jaws, the latter when

pinched upon the wires will aid materially
 in preventing radial displacement of said 30
 wires by centrifugal force in case the solder
 should become loosened.

I claim—

A commutator comprising conductor seg-
 ments arranged in pairs about a common 35
 axis, those of each pair having lengthwise
 body-portions in contact, each segment hav-
 ing at one end an integral radially project-
 ing tang portion of substantially the same
 40 circumferential thickness at the base as the
 body-portion and gradually tapered toward
 its outer end whereby the adjacent faces of
 the tangs of each pair diverge outwardly at
 an acute angle from the base to permit the
 45 wires to be tightly wedged between the ad-
 jacent faces of each pair by inward pres-
 sure, the outer ends of said tangs of each
 pair being brought together at the outside
 of the wires to hold the wires in operative
 50 engagement with said faces.

In witness whereof I have hereunto set my
 hand this 11th day of December, 1918.

ALBERT E. DOMAN.

Witnesses:

H. E. CHASE,

ETHEL M. WILLIAMS.