M. AUFIERO.

COMMUTATOR.

APPLICATION FILED APR. 5, 1915.

1,207,359. Patented Dec. 5, 1916.

Fig. 1.

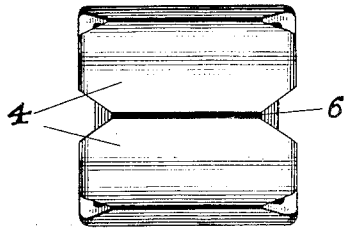


Fig. 2.

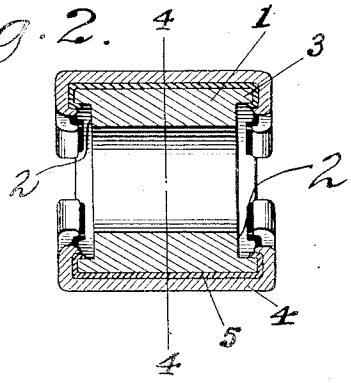


Fig. 3.

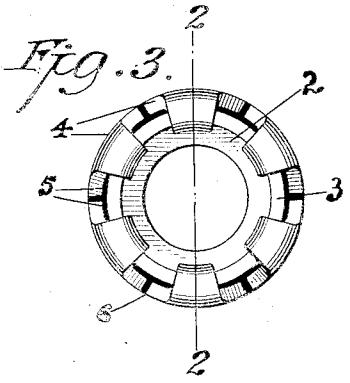


Fig. 4.

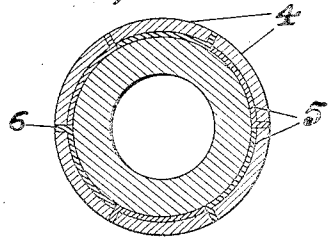


Fig. 5.

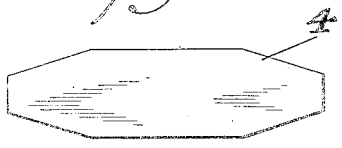
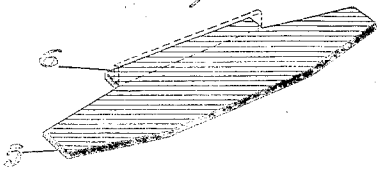


Fig. 6.



WITNESSES

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COMMUTATOR.

1,207,359. Specification of Letters Patent. Patented Dec. 5, 1916.

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To all whom it may concern:

Be it known that I, MICHAEL AUFIERO, a citizen of the United States, and a resident of the borough of Brooklyn, Kings county, State of New York, have invented new and useful Improvements in Commutators, of which the following is a specification.

This invention relates to commutators of the character employed in electro-dynamic machines and has for its object to provide a commutator construction of a design which is cheap to manufacture and which is specially adapted for use with very small electric motors such as used for actuating signals, indicators, switches and other like instruments.

In recent years there has been a demand for small electric motors, particularly for the operation of the so-called mechanical signal or warning horns for automobiles. Difficulty has been experienced in the construction of these commutators for these motors, particularly in obtaining a perfect insulation between the adjacent sections of the commutator and also between the sections and the core. The ordinary construction of commutators such as employed in larger motors, if adapted to the scale of these motors, would necessitate work of the fine character employed in watch making, and thereby involve a cost of manufacture entirely out of proportion to the price at which the articles could be sold. Also with such commutators there is a tendency of the insulation between the edges of the commutator sections to work loose and drop out leaving the sections in contact.

My improved commutator is specially designed to guard against damage or displacement to the insulation between the edges of the adjacent commutator sections.

With the above objects in view my invention consists of the construction hereinafter described and shown in the accompanying drawings which disclose a preferred embodiment of my invention, it being understood however that the invention is not limited to the structure shown except in so far as defined in the appended claims.

In the said drawings Figure 1 is a side elevation of my improved commutator; Fig. 2 is a vertical section on the line 2—2 of Fig. 3; Fig. 3 is an end view of the commutator shown in Fig. 1; Fig. 4 is a transverse section on the line 4—4 of Fig. 2; Figs. 5 and 6 are detailed views of the detached blanks for the contact sections and insulating sections respectively.

Referring to the drawings in which like characters represent like parts throughout the several views, 1 indicates the core of the commutator which is to be attached to the shaft of a motor or dynamo or other device for rotation therewith. The core may be made of metal or other suitable material and comprises a short cylinder or ring having each end countersunk as indicated at 2 to provide longitudinal extending flanges 3 spaced from the surface of the shaft when the commutator is in position to an extent somewhat greater than half the thickness of the ring.

The contact sections 4 of the commutator are preferably cut of sheet metal and are of the shape shown in Fig. 5 with the middle portion having parallel edges equal to the length of the ring or core and tapering end portions of a length sufficient to be bent around the flanges 3 as more particularly shown in Figs. 2 and 3. Each contact section has a separate section 5 of insulating material such as compressed fiber, the said insulating material being substantially of the same size and shape as the contact section, except that along one edge of its middle rectangular part it is provided with a tongue or extension 6 of a width equal to the thickness of the contact sections when folded at right angles to the face of the insulating strip.

The contact sections which are six in number are curved transversely to correspond with the periphery of the core 1 and are assembled thereon with an insulating strip between each contact piece and the core, the tongues 6 of the insulating strip projecting radially outward between the adjacent edges of the contact pieces. The tapered ends of the contact sections and the insulating strips are then crimped around the flanges 3 and the ends of the core as indicated more particularly in Figs. 2 and 3, to hold the contact sections rigidly in place on the core. When so assembled each contact face is insulated from the adjacent piece by the tongue 6, and each piece is insulated from the core by the main face of the insulating strip. As the ends of the contact sections are tapered they are spaced from each other beyond their middle rectangular portions and are insulated from the core by the interposed ends of the insulating strips. By

having the tongues 6 which separate the several contact sections integral with the portions of the strip beneath the plates they are held permanently in place without liability of working loose or being thrown out centrifugally. The contact pieces are comparatively thin so that the edges of the adjacent pieces do not offer sufficient clamping surface to hold the insulating strip between. By forming the contact sections of brass or copper they may very easily be bent around the flange of the core without difficulty or the use of special tools, the entire commutator forming a rigid unitary structure without screws or other fastening devices. A neater construction is however provided by cutting away the superfluous insulating material in the manner indicated.

The design of the insulating strip and contact section may obviously be otherwise varied, and the details of construction in other particulars may be modified without departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a commutator, the combination of a core, a plurality of separate contact sections surrounding said core, separate and detachable insulating strips of sheet material between each contact section and the core, said insulating strips having extensions projecting between the adjacent edges of the several contact sections, said contact sections having their ends crimped over the ends of said core to thereby hold said insulating strips in assembled position.

2. In a commutator, the combination of a core, a plurality of contact sections surrounding said core and extending longitudinally thereof, insulating material interposed between said contact sections and said core with integral projections between said adjacent contact sections, said contact sections and insulating material being crimped over the ends of said core to hold said sections in place thereon.

3. In a commutator, the combination of a core, a plurality of separate contact sections extending longitudinally thereof, separate insulating strips for each contact section, said strips comprising a main portion of a length and width substantially equal to the length and width of the contact section lying between said sections and said core, and a tongue along one longitudinal edge of said strips projecting between the adjacent edges of said contact sections, said contact sections and insulating strips being crimped over the ends of said core to hold the sections in position thereon.

4. In a commutator, the combination of a core, a plurality of contact strips surrounding said core and extending longitudinally thereof, each contact strip comprising a middle portion of a length equal to the length of the core and reduced end portions projecting beyond said core at each end, insulating strips between each contact section and the core and having portions between the adjacent edges of the contact strips, the projecting ends of said contact sections and insulating strips being crimped over the ends of said core.

5. In a commutator, the combination of a cylindrical core having a longitudinal extending annular flange at each end, a plurality of contact strips surrounding said core and extending longitudinally thereof, each contact strip comprising a middle portion of a length equal to the length of the core, and reduced end portions projecting beyond said core at each end, insulating strips between each contact section and the core and having portions between the adjacent edges of the contact strips, the projecting ends of said contact sections and insulating strips being crimped over said flange.

Signed at Brooklyn, in the county of Kings and State of New York this 19 day of March, 1915.

MICHAEL AUFIERO.

Witnesses:
EMANUEL AUFIERO,
VIOLET S. BERKE.