Nov. 3, 1953 J. BENDER, JR., ET AL 2,658,158

COMMUTATOR

Filed Aug. 3, 1950

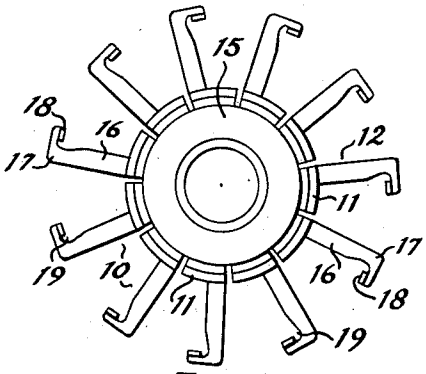


Fig. 1

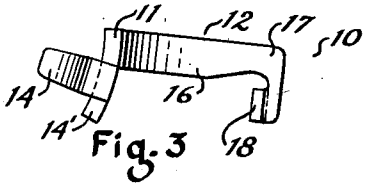


Fig. 3

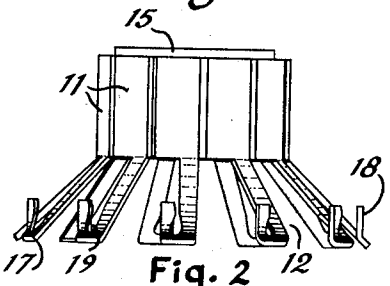


Fig. 2

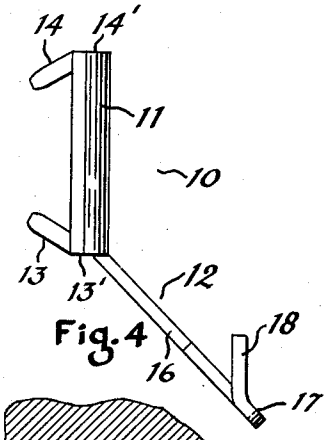


Fig. 4

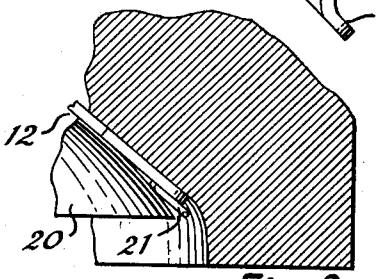


Fig. 8

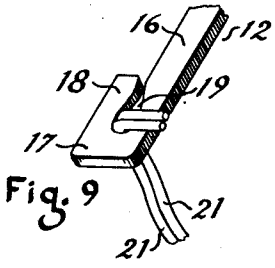


Fig. 9

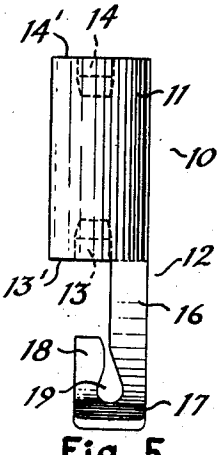


Fig. 5

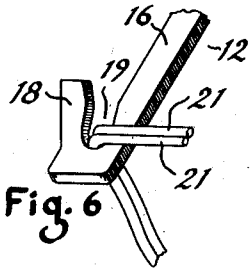


Fig. 6

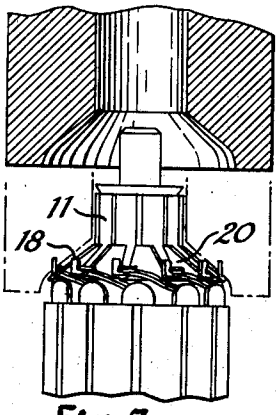


Fig. 7

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UNITED STATES PATENT OFFICE

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COMMUTATOR

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3 Claims. (Cl. 310—234)

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Our invention relates to commutators and relates more particularly to commutators which are adapted for use on frictional horsepower motors, although not necessarily limited thereto.

It is an object of our invention to provide an improved commutator which will be simple to manufacture and to assemble with the armature coil.

Another object of our invention is to provide an improved commutator which will efficiently lock the armature wire or wires in place.

A further object of my invention is to provide a commutator of the type described which may be assembled with a minimum of effort.

Other objects of my invention and the invention itself will become readily apparent by reference to the description of the invention which follows, in which description reference will be had to the accompanying drawings, wherein:

Fig. 1 is a top plan view of the commutator shell of our invention;

Fig. 2 is a side view of the commutator shell of Fig. 1;

Fig. 3 is an enlarged top view of a segment of the shell of Fig. 1;

Fig. 4 is an enlarged side view of the segment of Fig. 3;

Fig. 5 is an end view of the segment of Fig. 4;

Fig. 6 is a fragmentary perspective view of one of the segments in open position showing leads of the armature passing therethrough;

Fig. 7 is a side view of the assembled commutator of our invention immediately prior to the locking of the leads shown in Fig. 6 and showing a tool for locking the same in adjacent relation to said commutator;

Fig. 8 is an enlarged fragmentary view of the tool of Fig. 7 in section, showing the tool in its final forming position and the segment in locked relation to certain of said leads;

Fig. 9 is a view similar to that of Fig. 6 but showing a segment in a closed position, the leads being locked therewith.

Referring now to the drawings in all of which like parts are designated by like reference characters, the commutator shell of my invention is formed either in segments or in a blank split into segments and the segments, designated at 10, are formed of a suitable conducting material, as for example copper. Each segment, as best shown in Figs. 3, 4 and 5, is provided with an arcuate body portion 11, an integrally formed substantially flat J-shaped radially outwardly extending leg portion 12, and a pair of lugs or tangs 13 and 14 extending radially inwardly of the body portion

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11. The lug 13 provided on the lower edge 13^1 of each of said segments initiates adjacent said leg portion 12 and is disposed inwardly angularly and upwardly of said edge and the leg 14 is aligned in spaced relation therewith, initiating on the upper edge 14^1 of the body portion 11, and disposed angularly inwardly and downwardly of said edge.

The lugs 13 and 14 serve as anchors about which a cylindrical core of insulation 15 is molded in a manner well known to the art.

The leg portions 12 of our invention are each provided with a radially outwardly extending flat leg portion 16 and a notched foot 17 having an upwardly projecting nib 18 bent at an angle to the remainder of the foot and to the leg, as best shown in Figs. 4 and 6.

When all of the body portions of the segments, which are shown as eleven in number, are secured to the core 15, forming a cylindrical shell therefor, as shown in Figs. 1, 2 and 7, the legs 12 extend downwardly and radially outwardly thereof, their ends generally describing an outer circle as shown in Fig. 1. They are disposed upon the upper coil end of the armature 20 and a pair of lead wires 21 therefrom are then projected through the opening 19 in each foot, entering said opening from the underside of the said foot. The leads are locked within the nib end of the foot, either by pressing the tail of the nib down with a hand tool, such as pliers, or by means of a round hollow cup, as shown in Figs. 7 and 8, whereby all of the nibs of the several segments are simultaneously pressed down, forming a good mechanical bond.

After the wires are thus locked in place, the excessive wire can be cut off either individually or collectively.

Although we have illustrated and described our invention in connection with a preferred embodiment thereof, we are, however, aware that numerous and extensive departures may be made therefrom, without, however, departing from the spirit of our invention or the scope of the appended claims.

What we claim is:

1. A commutator segment comprising a commutator segment bar having a transversely arcuate outer surface and a lug integrally formed therewith extending from an end thereof, said lug being substantially entirely of flattened, and of J-shaped form, said lug comprising a long supporting arm, a relatively shorter supported arm, and a web integrally joining the outermost ends of the arms, the shorter arm initially extending from said web in a direction which is di-

vergent from the plane of the longer arm, said arms having substantially opposing side edges defining a passage disposed between the arms which is initially of substantially greater width than the thickness of terminal wires to be secured thereto and adapted to loosely receive said terminals and said shorter arm adapted to be subsequently bent into the plane of said longer arm to wedgingly compress any said terminal wires between the said side edges of said arms.

2. A commutator segment comprising a commutator bar portion and a flattened, substantially J-shaped lug extending integrally outward from an end of said bar portion, the shorter arm of said lug being re-entrantly extending towards said bar portion from a web portion at the end of the longer arm, the laterally opposing edges of said arms being initially in different planes which extend divergently from said web portion, and said shorter arm adapted to be bent to cause it to be disposed progressively closer to the plane of the longer arm to lessen the distance between opposing side edges of the two arms, to wedgingly clamp a wire terminal between the arms.

3. A commutator segment comprising a commutator bar having a rearwardly extending terminal connector lug formed integrally therewith, said lug comprising two integrally joined flattened metal arms disposed in laterally interspaced relation and being normally extended in intersecting planes, and adapted responsive to bending of at least one of said arms to be disposed approximately in a common plane, said arms having opposing side edges between which a wire terminal may be loosely disposed before bending of any of said arms, one of said arms being bent whereby said side edges are brought substantially closer together during such bending to compressively wedgingly clamp such wire terminal between the arms.

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RICHARD TIPPLE.

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