

(No Model.)

L. BELL.
ARMATURE FOR INDUCTION MOTORS.

No. 516,795.

Patented Mar. 20, 1894.

FIG. 1.

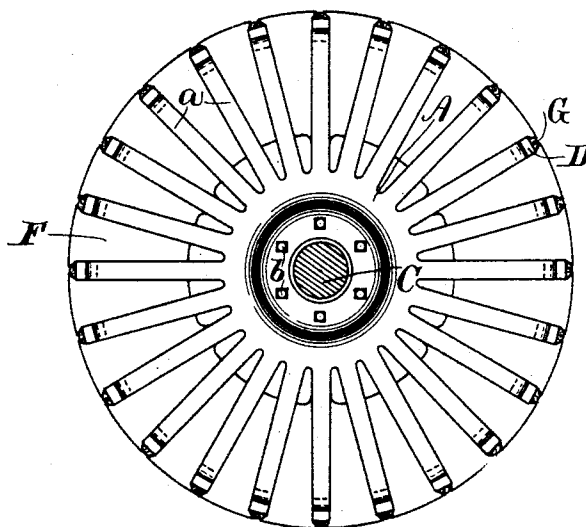


FIG. 2.

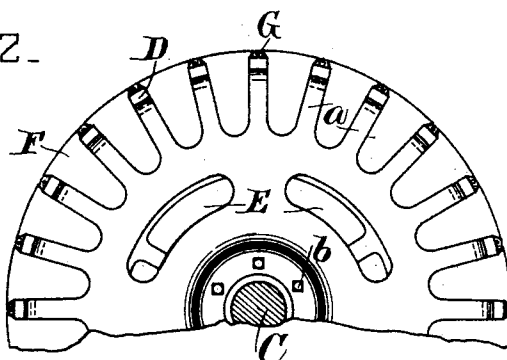


FIG. 3.

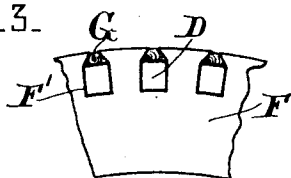


FIG. 4.

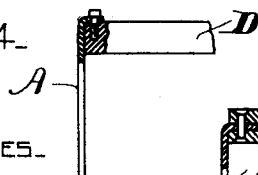
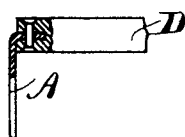


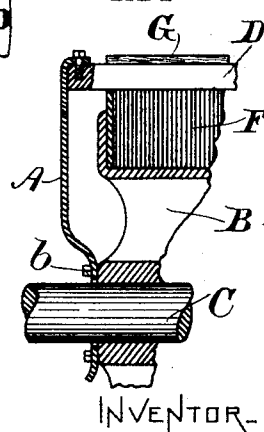
FIG. 5.



WITNESSES.

Alec F. Macdonald.
St. J. Livermore

FIG. 6.



Louis Bell
by Bentley & Blodgett
Attys.

UNITED STATES PATENT OFFICE.

LOUIS BELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF SAME PLACE.

ARMATURE FOR INDUCTION-MOTORS.

SPECIFICATION forming part of Letters Patent No. 516,795, dated March 20, 1894.

Application filed April 3, 1893. Serial No. 468,766. (No model.)

To all whom it may concern:

Be it known that I, LOUIS BELL, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Armatures, of which the following is a specification.

My invention relates to armatures for induction motors, in which the coils are short-circuited, its object being to introduce resistance to the short-circuited coils for the purpose of enabling the motor to start readily.

My invention is especially adapted for use in small motors, where the resistance necessary in starting entails so slight a loss of power if maintained in circuit as to be negligible, so that it is unnecessary to provide switches, automatic or otherwise, as employed in large motors, to cut out the resistance after synchronizing speed is attained.

In carrying out my invention I employ what is commonly known as the "squirrel-cage" armature, in which the coils consist of copper bars extending across the laminated core, said bars being short-circuited by connections between their respective ends. These connections are made through disks on each side of the armature of conducting material of such quality and dimensions as to afford the resistance needed to attain a sufficient starting torque. These disks are carried on the hub of the armature and connected at their peripheries to the ends of the copper bars. To vary the resistance, slots of greater or less depth may be cut in the disks at will, so as to eliminate more or less conducting material. This will be shown more particularly in the accompanying drawings, in which—

Figure 1 is an end view of the armature showing the face of the disk in full. Fig. 2 is a similar view showing a modification in the shape of the disk. Fig. 3 is a portion of the armature slightly enlarged, showing the laminated core and the position of the copper bars which form the short-circuited coils. Figs. 4 and 5 are details showing different methods of attaching the disks to the copper rods, and Fig. 6 is a portion of the armature

and disk in section showing more clearly the construction thereof.

Referring to Fig. 1, the disk A is bolted to the armature-spider, B (Fig. 6) by means of the bolts *b*, and is provided with a circular central aperture through which the shaft C of the armature projects. In this figure the disk is shown star-shaped having slots cut in from the periphery between the points *a* where the disk is connected to the ends of the copper rods D. The disk may be made of German silver or some such metal of relatively poor conductivity, or of any conducting material capable of affording the desired resistance. In Fig. 2 the disk is shown with much less metal cut away between the points *a* than in Fig. 1, thus shortening the path of the current and decreasing the resistance, which may be varied in this way at will to suit the needs of the motor of which the armature is to form a part.

In Fig. 2 the apertures E in the disk are for the purpose of ventilating and cooling the armature. In Fig. 1 these are dispensed with since the spaces between the points *a* extend inwardly so far as to afford all the ventilation needed. The disks A may be electrically connected to the copper rods in any convenient way. For example, in Fig. 4 a point of the disk is shown bent over and connected by a screw to the top of the rod, while in Fig. 5 the portion bent over is inserted in a transverse slot in the end of the rod and secured by a rivet.

Figs. 3 and 6 show more clearly the construction of the armature, composed of a laminated core F having under cut notches F' in which the rods D are secured by wooden wedges G, the ends of said rods being connected to one another by the disk as above described.

Armatures of this description are easily and inexpensively constructed, the disks described not only affording the required resistance, but serving to support and hold together the other portions of the armature, and giving a neat appearance to the whole when completed.

What I claim as new, and desire to secure by Letters Patent, is—

1. An armature for induction motors, comprising a core, copper bars extending longitudinally along the surface thereof, and a metal disk of relatively high resistance to which said bars are connected, as described.
2. In an armature for induction motors, the combination with conductors D, of conducting disks A of greater electrical resistance than said conductors and connected thereto, whereby a closed circuit through resistance is afforded, as and for the purpose described.
3. In an armature for induction motors, having a core and conductors thereon, a disk at each end of said armature, of material affording greater electrical resistance than said conductors, connected to the respective ends of

said conductors and common to all, whereby the armature coils are short-circuited through a resistance, as and for the purpose described.

4. In an armature for induction motors, having a cylindrical core and conductors thereon, a disk of metal of relatively high resistance at each end of said armature having arms connected to the conductors, between which the metal of the disk is cut away so as to form electrical connections for the conductors through the arms, of the desired or necessary resistance.

In testimony whereof I have hereto set my hand this 17th day of March, 1893.

LOUIS BELL.

Witnesses:

A. O. ORNE,

W. H. BENTLEY.