A. SCHMID & N. TESLA.
ARMATURE FOR ELECTRIC MACHINES.

Fig. 2.

Witnesses
George Brown Jr.
Wm. Smith

Inventor
Nikola Tesla

By His Attorney
Charles A. Tenny
ARMATURE FOR ELECTRIC MACHINES.

Application filed June 28, 1889. Serial No. 315,037. (No model.)

To all whom it may concern:

Be it known that we, ALBERT SCHMID and NIKOLA TESLA, citizens, respectively, of the Republic of Switzerland and Smiljan, Lika, border country of Austria-Hungary, now residing in Allegheny and Pittsburg, both in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Armatures for Electric Machines, (Case No. 310,) of which the following is a specification.

The invention relates to the construction of armatures for electric generators and motors, and the object is to provide an electrically efficient armature, the construction of which is simple and economical, and in which the coils of insulated conducting wire or ribbon may be conveniently wound or formed into bobbins so located with reference to the body of the armature as to afford as good results as possible.

For certain purposes it is desirable to construct the armatures of electric generators and motors with their cores of magnetizable material projecting through the coils into close proximity to the field-magnet poles. When armatures are constructed in this manner, some means are necessary for holding the coils in position and preventing them from being thrown out by centrifugal force.

This invention aims to provide such means in an armature having polar projections, and also to form an armature in such manner as to expose a large area of core-surface to the field-magnet poles.

The invention consists, in general terms, in forming an armature-core which is preferably built up of laminae of magnetizable material insulated from each other, with diverging slots or openings for receiving the armature wire or ribbon, which slots are connected with the exterior of the armature by openings through which the wire may be laid in the slots, and in placing the wire in such slots in the proper manner.

We are aware of the United States Patents No. 327,797, granted to Innisch, and No. 292,077, granted to Wenstrom, and the British patent of Coepeer, No. 9,013 of 1887, and do not claim the constructions shown and described therein.

The invention will be described more particularly in connection with the accompanying drawings, in which—

Figure 1 is an end view, partly in section, of an armature embodying the features of the invention, and Fig. 2 is a plan of the armature.

Referring to the figures, F F indicate field-magnet poles, and A represents the body or core of an armature composed, in this instance, of laminae of magnetizable material built up in any suitable manner, the laminae being preferably separated by intervening strata of insulating material. The individual plates or laminae are constructed with radial 65 openings c, extending a short distance from the surface, and with slots or openings b, which extend in different directions from the openings c. The slots diverge from each other at such angles as to cause the two slots upon the opposite sides of each web e thus formed to lie in the same chord of the circle of the armature. The plates may also be stamped or formed with openings G to remove the unnecessary metal. After the plates are formed they are laid up in the proper manner to form the entire armatur-core, the slots b being placed opposite each other to form continuous openings through the entire length of the armature. These openings may be lined by pockets h of insulating material—such, for instance, as vulcanized fiber—and the wires are then wound into the slots from the openings c and around the respective webs e. Winding-clip k may be placed at the respective ends of the armature opposite each web e to hold the wires in the proper positions as they are wound in the slots and down upon the armature ends.

The wires having been wound into their proper positions, they may be held more securely in position by means of blocks K of non-magnetic material, placed at intervals or extending through the entire slots or openings c and projecting into the slots b.

An armature constructed in the manner...
described is found to be very efficient in its
operations and at the same time simple in its
construction.

The connections between the armature-coils
and the conductors or collecting-plates may
be made in any usual well-known manner, ac-
cording to the purposes desired to be served.
We claim as our invention—
1. A core for electrical machines, composed
of plates of magnetizable material separated
by insulation, said plates having diverging
slots for receiving the armature-conductors
and an opening to the exterior of the plate at
the origin of the diverging slots.

2. A core-plate for electrical machines,
stamped with diverging slots at intervals near
its periphery and an opening to the periphery
at the angle formed by each two diverging
slots.

3. A core for electrical machines, composed
of plates of magnetizable material separated
by insulation, said plates having diverging
slots for receiving the armature-conductors
and an opening to the exterior of the plate at
the origin of the diverging slots, the width of
such openings being approximately equal to
the width of the slot.

4. An armature-core for electric machines,
consisting of plates of magnetizable material
separated by insulation, having radial open-
ings at intervals, slots diverging from said
openings for receiving armature-coils, and
winding blocks or clips at the ends of the core.

5. An armature-core for electrical appar-
tus, composed of plates of magnetizable ma-
terial separated by insulation and having
radial openings at intervals, slots extending
in opposite directions from said openings for
receiving wires, and insulating-linings for said
slots.

6. An armature for electric machines, con-
sisting of a laminated core formed with di-
verging slots for receiving the wires, said slots
leaving intervening webs, and coils of wire
wound in said slots.

7. An armature for electric machines, con-
sisting of a laminated core formed with di-
verging slots for receiving the wires, said slots
leaving intervening webs, coils of wire wound
in said slots, and non-magnetizable material
closing the openings of the adjacent slots out-
side the wires, substantially as described.

8. An armature for electric machines, con-
sisting of a core having its outer surface con-
tinuous except for narrow longitudinal open-
ings at intervals and having slots diverging
from said openings, armature-coils wound in
said slots, and blocks or strips of non-mag-
netizable material closing the openings and
forming with the metal of the armature a prac-
tically continuous surface.

In testimony whereof we have hereunto
subscribed our names this 25th day of June,
A. D. 1889.

ALBERT SCHMID.
NIKOLA TESLA.

Witnesses:

W. D. UPTGRAFF,
CHARLES A. TERRY.