

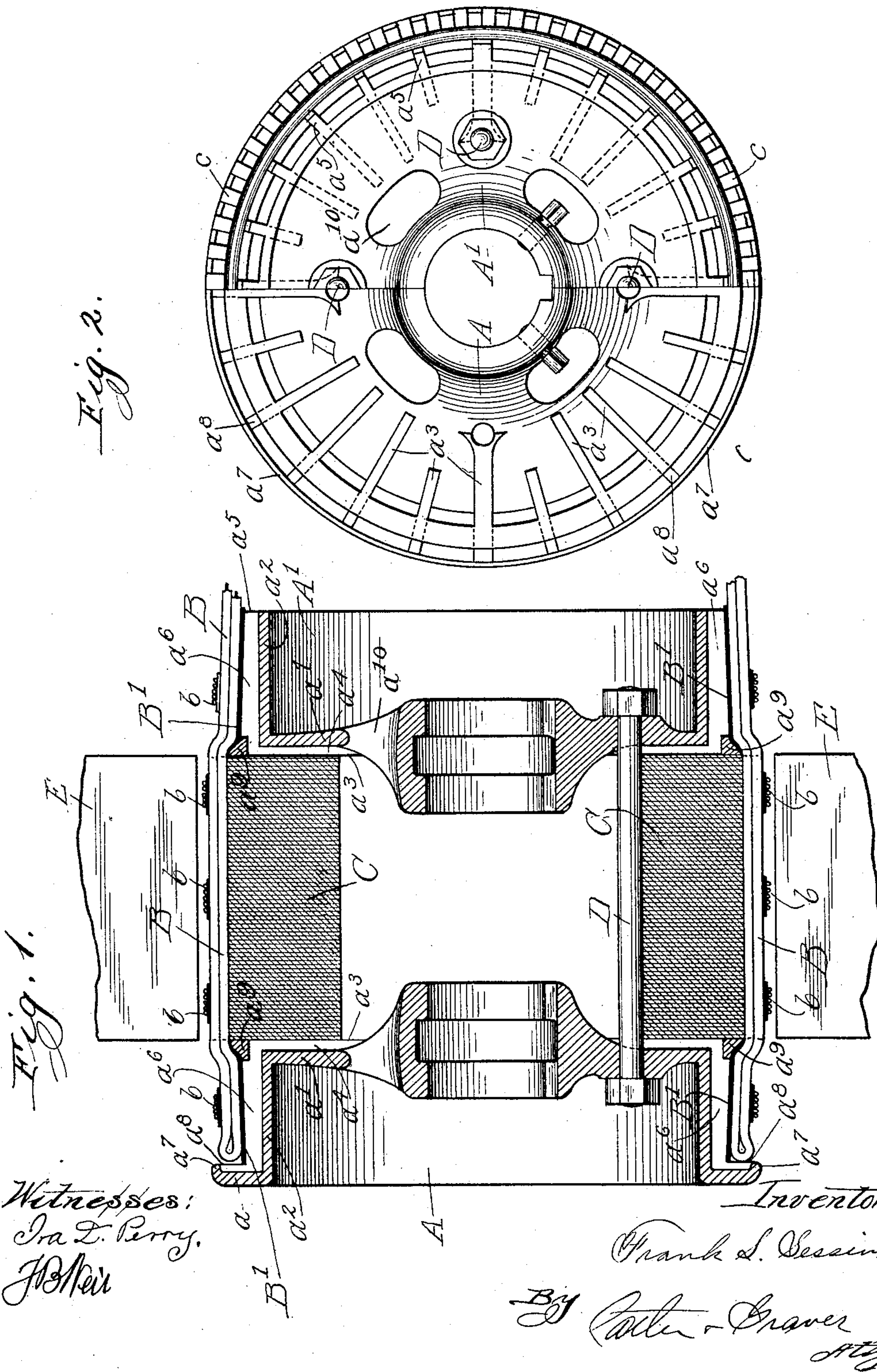
No. 704,975.

Patented July 15, 1902.

F. L. SESSIONS.
ARMATURE.

(Application filed May 29, 1899. Renewed Mar. 26, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

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ARMATURE.

SPECIFICATION forming part of Letters Patent No. 704,975, dated July 15, 1902.

Application filed May 29, 1899. Renewed March 26, 1902. Serial No. 100,082. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. SESSIONS, of Oakpark, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Armatures, of which the following is a specification.

This invention relates to improvements in the armatures of dynamo-electric machines, and more particularly to certain features of
10 armature construction which pertain to their ventilation, or, in other words, to the provision of air passages or channels through which air will be forced by the centrifugal action resulting from the rotation of the ar-
15 mature, and thus tend to keep down the temperature in the armature and adjacent portions of the machine.

The invention consists in the improved armature construction hereinafter described, and more particularly pointed out in the ap-
20 pended claims.

In the accompanying drawings, Figure 1 is an axial section of an armature constructed in accordance with my invention. Fig. 2 is
25 an end view of the armature, the right half of the figure showing an exterior view of the right-hand section or spider as seen in Fig. 1, and the left half a view of the inner surface of the left-end section or spider, the right-end
30 section being assumed as cut away on a vertical line through the axis to expose such interior surface of the left-end section.

In said drawings, A and A' designate two annular end sections or spiders, each of which
35 is bored out axially to fit upon a supporting and driving shaft (not herein illustrated) and which are herein shown as identical in construction in all respects, except that the left-end section A is in this instance provided at
40 its outer peripheral margin with an annular flange a , that is omitted from the right-end section to more readily permit the end of the windings B to be connected with the commutator-bars. (Not herein illustrated.) Be-
45 tween the spiders A and A' an annular core C, usually built up of a large number of laminae of sheet-iron or steel punchings, is secured concentrically by bolts D, that extend through the inner webs a' of the spiders and clamp

them together upon the core. The latter is
50 slotted or grooved at its periphery to provide a uniform series of teeth c , between which the windings B are inserted in the usual manner and bound securely therein by any suitable means, such as the wrappings b of wire
55 shown in Fig. 1. The ends of the windings B on either side of the core lie around the outer annular surface of the cylindric webs a^2 of the spiders A and A' and are also bound in place by wrappings b of wire or by equivalent
60 securing means.

The parts thus far described will be understood to be of familiar construction and constitute in themselves no part of the present invention except as hereinafter explained. It
65 will also be understood that the illustration of the windings B shown in Fig. 1 is conventional merely, it being assumed for the sake of clearness of illustration that said windings are looped back through the same slot in
70 which they started, which is obviously not in accord with actual practice.

The feature of the present improvement lies in a peculiar construction of the spiders A and A', by which ventilating air ducts or
75 spaces are provided at the ends of the core C and beneath the outer ends of the windings B, where they overlie the flanges a^2 of said spiders. To this end the inner face of each spider is provided with outwardly-extending
80 ribs a^3 , against which the end surfaces of the core C bear, leaving intervening spaces or channels a^4 , which extend inwardly beyond the interior circumference of the core C and communicate with the interior space thereof.
85 From the outer ends of the ribs a^3 continuing ribs a^5 extend laterally along the periphery of the cylindric flanges a^2 of the spiders beneath the ends of the windings B, leaving
90 channels a^6 , similar to and in continuation of the channels a^4 between them. On the right-hand or commutator end of the armature such channels open directly into the outer atmosphere, and the same construction may obtain
95 at the other end also, but as a further improvement the marginal flange a herein shown as provided instead and as formed with an inwardly-turned peripheral lip a^7 .

The ribs a^5 are then continued outwardly along the inner face of the flange a to meet this lip, as shown at a^8 , so that the channels may be said to open out at this end on the inner side of the flange a^7 at the ends of the windings B. The latter lie upon the tops of the ribs a^5 , being insulated therefrom by an annular wrapping B', of insulating fiber, which substantially covers the channels a^6 .

The inner ends of these channels where they join the channels a^4 on the inner surfaces of the spiders are furthermore herein shown as bridged on each spider by an annular rib a^9 , which forms a complete circumferential bearing for the adjacent outer edge of the core C.

Ventilation with the construction thus described will obviously result from centrifugal action when the armature is rotated. The air will be drawn into the center of the armature through suitable openings a^{10} in the webs a' of the spiders and flow thence outwardly through the ducts or channels a^4 and a^6 upon each side of the core and beneath the ends of the windings. At the commutator end of the machine the air will be discharged outward between the commutator-bars, while at its other end it will flow up around and inwardly over the ends of the windings in the direction of the poles E of the dynamo. Such a flux of air will therefore tend to keep down the temperature not only in the armature itself, but in the poles and other adjacent parts of the machine toward which the currents are directed.

It will be understood that various changes may be made in the details of construction by which the ventilating-channels are pro-

vided in the manner and locations described without departing from the broad spirit of the invention claimed. It will also be understood that the foregoing scheme of armature ventilation will not interfere with and may be employed in connection with other well-known methods of ventilating armatures and cores, if so desired.

I claim as my invention—

1. An armature comprising end spiders and an intermediate core and windings extending across the periphery of the core and spiders, and provided with ventilating air ducts or channels extending outwardly between the spiders and core and then laterally along the spiders beneath the windings, and an annular flange on the end of one spider for directing the air-currents outwardly against the surrounding portions of the machine, substantially as described.

2. The combination with the spiders A and A', core C and windings B, of the ribs a^3 and a^5 forming the air-ducts a^4 and a^6 between the spiders and core and beneath the windings, annular flange a^7 provided with an in-turned lip a^8 and along the inner surface of which the air-ducts are continued, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 20th day of May, A. D. 1899.

FRANK L. SESSIONS.

Witnesses:

HENRY W. CARTER,
ALBERT H. GRAVES.