

(No Model.)

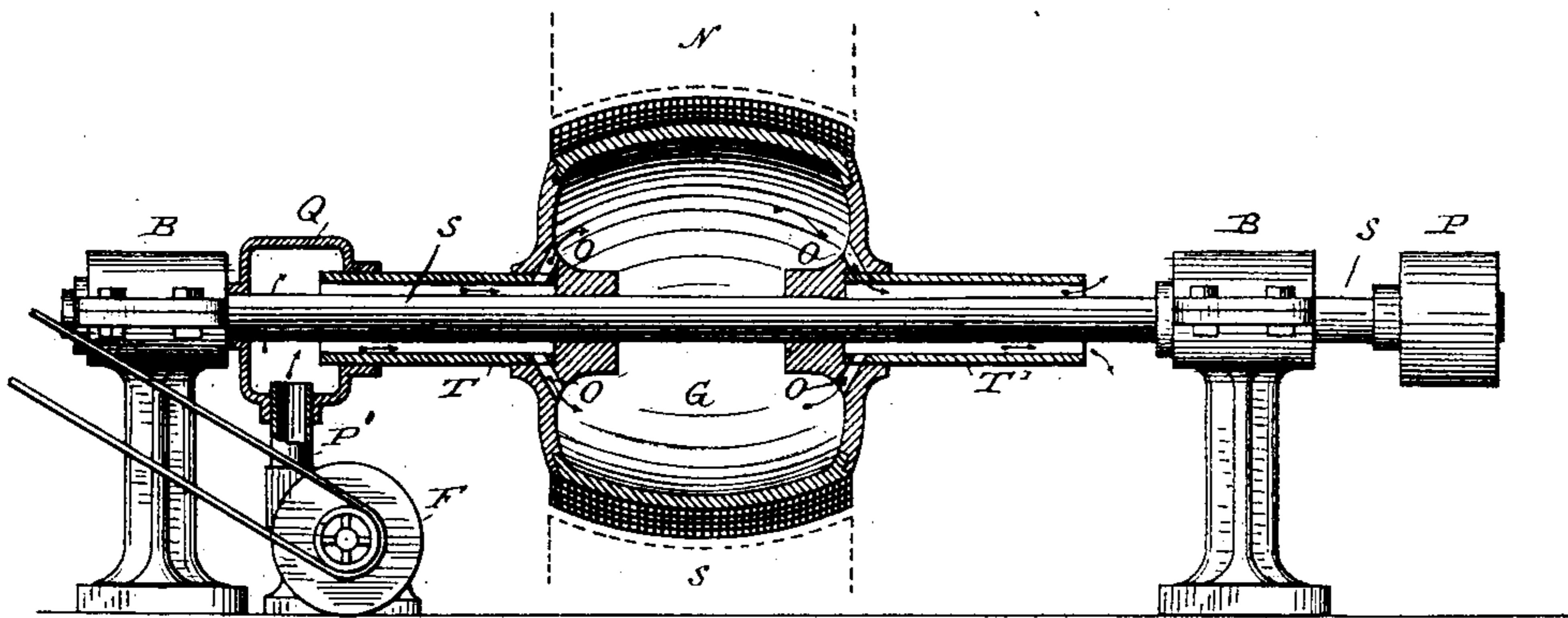
E. THOMSON.

VENTILATING ARMATURES FOR DYNAMO ELECTRIC MACHINES.

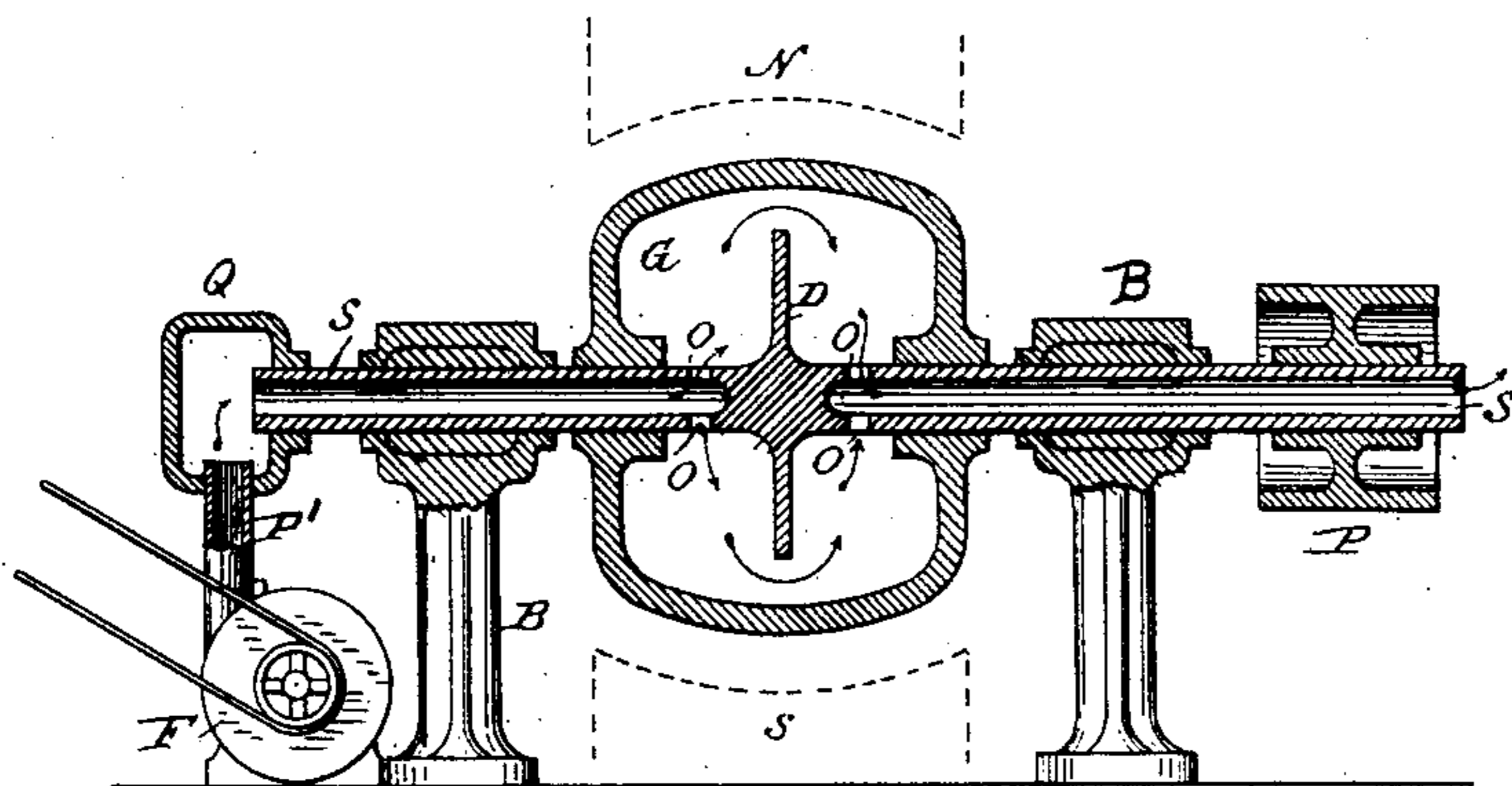
No. 482,397.

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*Fig. 1.*



*Fig. 2.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## VENTILATING-ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 482,397, dated September 13, 1892.

Application filed April 2, 1885. Serial No. 160,999. (No model.)

*To all whom it may concern:*

Be it known that I, ELIHU THOMSON, a citizen of the United States, and a resident of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Ventilating-Armatures of Dynamo-Electric Machines, of which the following is a specification.

My invention relates to a means for ventilating the armatures or armature-carriers of dynamo-electric machines or motors, so as to prevent injurious effects from heating.

My invention is designed especially for application to the hollow armature or armature-carrier of dynamo-electric machines upon which armature or carrier-coils of wire are wound.

The invention is applicable to armature cores or carriers of any desired form, and is not limited in that respect.

In the accompanying drawings, which illustrate the application of the invention to a hollow spherical or cylindrical armature of the form now employed by me, Figure 1 is a longitudinal section through the armature and the tubular extensions or conduits by which the current of air is introduced into and withdrawn from the interior of the armature. Fig. 2 is a longitudinal section of a modified form of the invention.

Referring to Fig. 1, S S indicates the armature-shaft revolving in suitable bearings B B and provided with the ordinary driving-pulley P.

The armature core or carrier indicated at G is shown as consisting of a hollow iron shell constructed in one piece or made in two or more pieces joined together at their periphery and wound in a direction transverse to the armature-axis with strips of sheet-iron or with iron wire.

The conducting-wire, wound in a direction parallel with the axis, is omitted from the drawings for the sake of simplicity.

The hubs of the hollow cylinder or carrier are secured to the shaft in any desired way.

Extending from one of the armature-heads is a hollow cylinder T, embracing the armature-shaft, but separated therefrom by a space through which air may pass to the interior of

the armature through openings O O, which, as indicated, pass through the hub of the armature-carrier and form a communication between the interior of the sleeve T and the interior space of the armature-carrier. At the opposite end of the carrier similar openings O O are formed which communicate with the interior of a sleeve T'. These sleeves serve to support the conducting-wire that is wound upon the armature parallel to the shaft and to keep the same out of contact with said shaft, at the same time leaving spaces for the introduction and withdrawal of the air.

In the drawings is shown an air-chamber Q, supported on the bearing B or otherwise mounted and formed, as shown, so as to almost close the end of the sleeve T, but at the same time to permit free rotation of the said sleeve. The chamber Q is supplied by a pipe P' with a stream of air from a blower or fan F, connected with the pipe P' and driven by any suitable power. The air passes through the chamber Q and from thence through the sleeve T to the inner space of the armature and thence through the sleeve T' to the external air, thus producing a rapid and free circulation in the interior of the armature, so as to convey away any heat that may be produced during the operation of the machine.

In the modification of my invention shown in Fig. 2 the tubular extensions are formed by making the armature-shaft itself hollow. At a portion of the shaft within the armature is interposed a wall or division, and to the sides of said division and at any desired point openings O O are formed to permit ingress and egress of air into the hollow space within the armature-carrier. It is preferable to mount upon the armature-shaft a disk D, as indicated, so as to virtually divide the hollow space into two communicating apartments, and to thus cause a circulation of the air in such a way that it shall come into contact with the interior surfaces and to thus more effectually cool the armature. The chamber Q and pipe P' are placed at one end of the shaft, as shown, the current of air passing in at one end and out of the other, as indicated by the arrows. By reversing the action of the air-supply devices so as that they shall

work by exhaust instead of by pressure the operation will be the same, except that the direction of the air-current will be reversed.

It will be observed that the hollow shaft S, 5 Fig. 2, forms in effect the tubular extension, performing all the functions of the cylinders T T' of Fig. 1.

What I claim as my invention is—

10 The combination, with the hollow armature, of the tubular extensions T T', encircling the armature-shaft at opposite ends of

the armature, a box or casing Q in which the end of one extension revolves, a pipe P', connected with said box, and a blower F, as and for the purpose described.

Signed at Lynn, in the county of Essex and State of Massachusetts, this 27th day of March, A. D. 1885.

ELIHU THOMSON.

Witnesses:

M. L. THOMSON,  
W. O. WAKEFIELD.