(No Model.)

F. A. WESSEL.

DYNAMO ELECTRIC MACHINE OR MOTOR.

No. 452,420. Patented May 19, 1891.

Fig. 2.

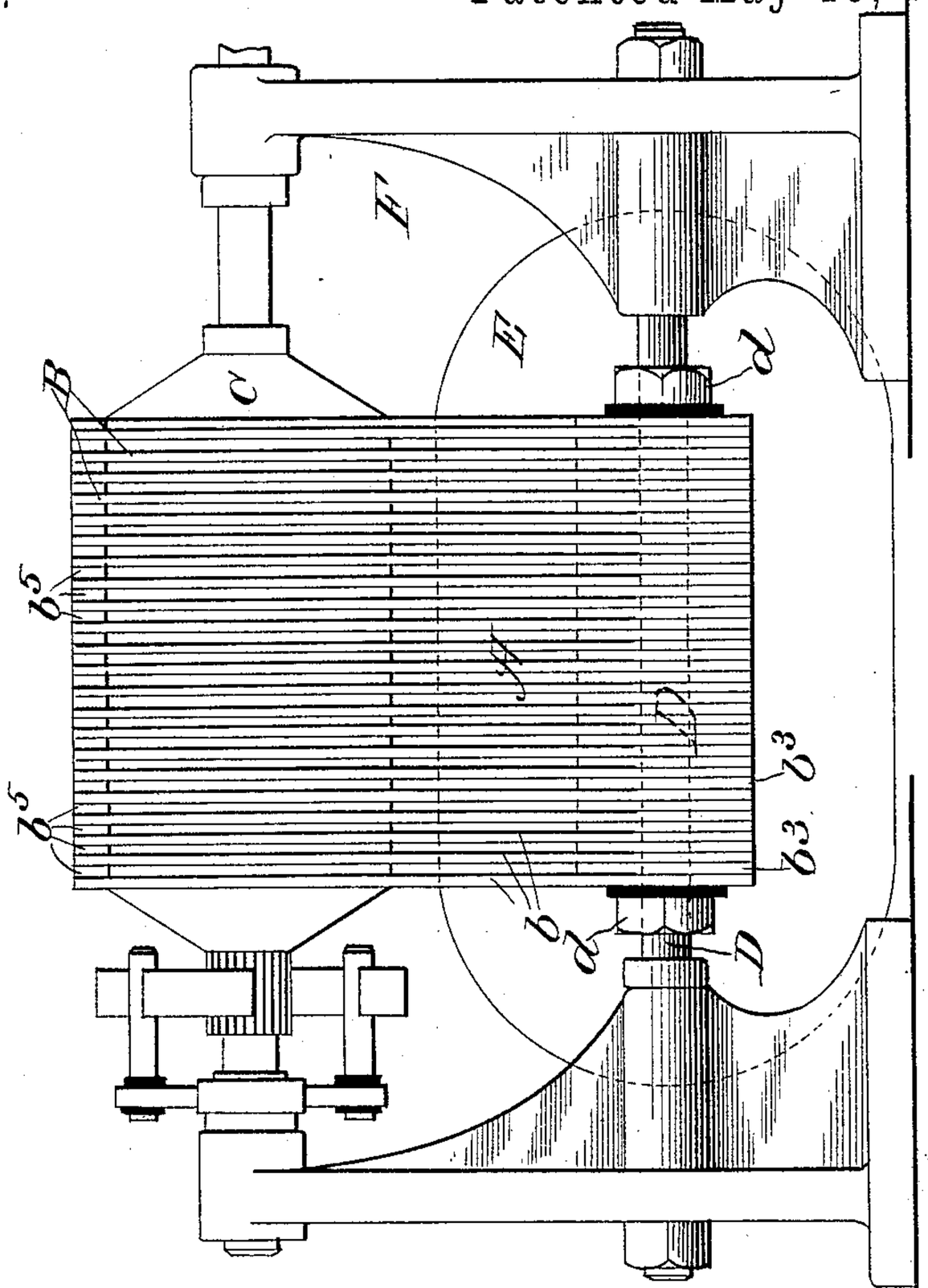
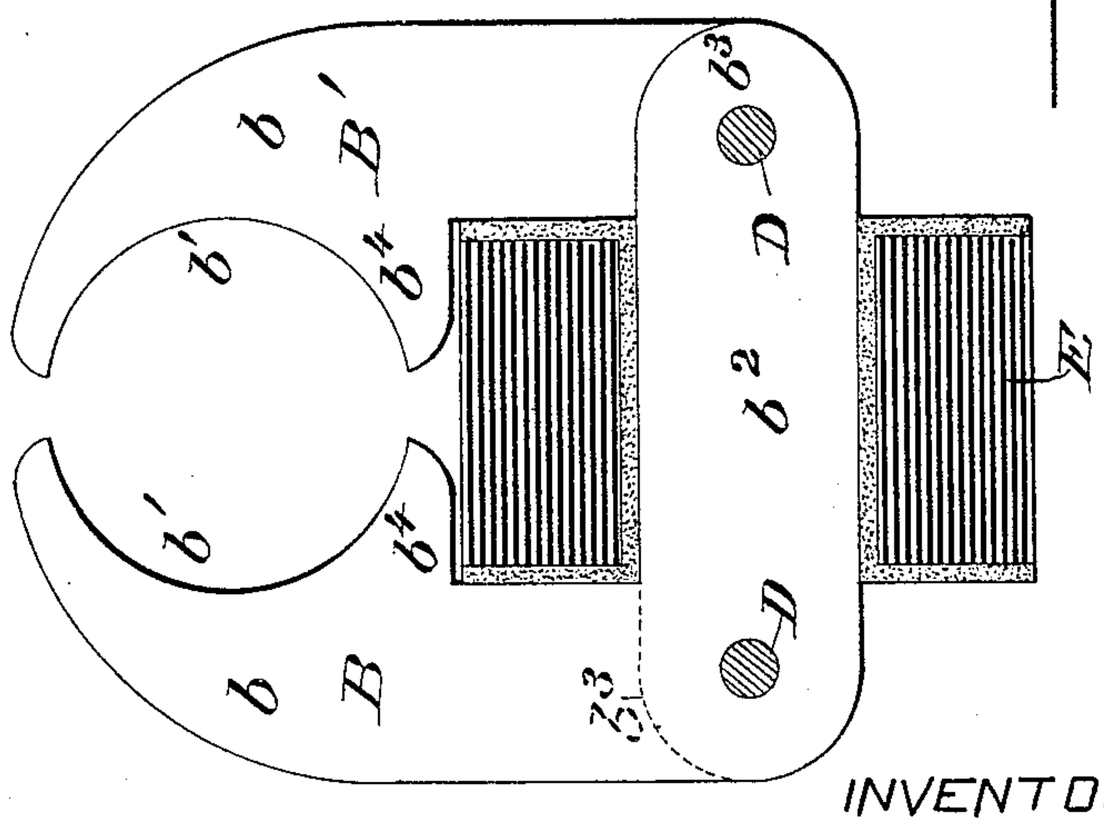


Fig. 1.



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DYNAMO-ELECTRIC MACHINE OR MOTOR.

SPECIFICATION forming part of Letters Patent No. 452,420, dated May 19, 1891.

Application filed November 19, 1890. Serial No. 371,909. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND A. WESSEL, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Dynamo-Electric Machine and Motor, of which the following is a specification.

My invention relates to the field-magnets of dynamo-machines, and has special reference to the arrangement and construction of the cores of such magnets.

The object of my invention is to produce a laminated magnet-core whose laminæ are simple and cheap of construction and readily assembled and dismounted, and which at the same time is effective in operation.

It is, moreover, my object to produce a magnet-core which shall obviate the generation of heat, which heretofore existed in laminated cores, and which was a source of annoyance and injury.

For this purpose my invention consists in making the laminated core of separate laminæ for each pole-piece, which laminæ are L-shaped and counterparts of each other, and whose transverse legs are adapted to be piled one upon the other, so as to form the yoke or keeper of the field-magnet.

My invention, moreover, consists in a field-magnet whose pole-pieces consist of laminæ with intervening air-spaces, which permit the ready circulation of air and thus prevent heating and consequent injury to the dynamo. This feature of my invention, in the present instance, is the result of the peculiar structure of the laminæ, but might be produced in a variety of other ways, as will be understood.

My invention, moreover, consists in such further features as will be pointed out below and covered in the claims.

In the drawings accompanying this specification, Figure 1 represents a vertical longitudinal section of a field-magnet embodying my invention in its preferred form. Fig. 2 represents an end elevation of a dynamo with my laminated field-magnet in position.

In these drawings it will be observed that the field-magnet A is composed of a number of L-shaped plates or laminæ B and B′, whose upper ends constitute, when the laminæ are assembled, the north and south poles, respectively, of the magnet. The plates B and B′ are the counterparts of each other, being preferably cut or stamped out by the same die, or in any other convenient and desirable way. They consist each of an L-shaped angular plate having an arm or pole-piece *b*, having an arc-shaped concave cheek *b′* for facing the armature C of the dynamo, and a transverse piece b^3 at an angle, preferably a right angle, thereto, and preferably occupying the same plane therewith. This piece I will term the "yoke-piece," because when the laminæ are assembled it forms the yoke or keeper of the field-magnet A. The cheek-pieces *b′*, as shown, overhang the upright pole-pieces *b*, and so as to form a shoulder at b^4, whose lower edge is preferably at right angles with the inner edge of the upright *b*. These angular laminæ are assembled to form the field-magnet by piling them upon each other, so that the pole-pieces, preferably of the alternate laminæ or sections, will occupy the positions of the north and the south pole, and their yoke-pieces overlap each other and alternately extend in opposite directions from the pole-pieces *b* through the field-magnet coil E of the machine. This will be evident from the figures of the drawings, where b^3 designates the ends of these yoke-pieces. The field-magnet coil E, which surrounds the yoke-piece portion of the plates, is preferably first wound upon a suitable bobbin and the plates or laminæ assembled in proper relation to one another by inserting the yoke portions thereof through the coil, the yoke portions of the plates at opposite ends of the coils alternating with one another. When the laminæ or sections are thus piled up or assembled, they are secured in position by bolts D, passing through perforations near the two ends of each yoke-piece, and nuts *d*, threaded onto the ends of the bolts. Of course any other means of securing the yoke-pieces together may be applied without departing from my invention. The field-magnet so constructed is mounted in any proper frame F, for which purpose it is desirable to fasten it in said frame by means of the bolts D, which are passed through the laminæ and are provided with nuts *d*.

As will be seen by reference to the draw-

ings, when the laminæ are assembled the upper edges of the yoke-pieces b^2, the inner edges of the upright or pole pieces b', and the lower edges of the shoulders b^4, form a rectangular space, or one substantially so, within which the upper half of the magnetic coil E, which is wound around the transverse keeper or yoke formed of the yoke-pieces b^2 is inclosed, snugly fitting therein. I am thus enabled to obtain a very compact arrangement of the machine, which is a very desirable feature.

The laminæ constructed in accordance with my invention are simple in form, and the sections for the north and the south poles, as seen, are identical in form, and are so formed that the yoke or keeper and pole-pieces are all formed by simply assembling the sections in the manner indicated. The form of these sections is, moreover, simple and may be cut out of the blank by comparatively inexpensive dies. From this and the fact that only one form of section is to be cut out it will be seen that the cost of production is reduced to a minimum. From the manner of assembling these sections, as above described, it follows that the pole-pieces b of each pole are separated at their field portion by intervening air-spaces b^5, which allow a ready circulation of air and consequently prevent the liability existing heretofore to generate heat in this part of the magnet and the consequent damage to the machine.

I do not limit myself to the precise form of the L-shaped plates, since the same may be modified, still preserving that feature, which consists in making each of an L shape, one arm of which is long enough to form one complete section of the yoke-piece and extends entirely through the coil wound on such yoke piece.

What I claim as my invention is—

1. In a field-magnet for dynamos, &c., a laminated magnet-core composed entirely of L-shaped laminæ of the same form and dimensions applied upon each other and having their yoke pieces or extensions overlapping each other and extending in opposite directions entirely through the field-magnet coils wound upon them, in combination with fastening-bolts passing through said L-shaped pieces at the angle of the pieces whose pole portions are at one end of the coil and through the ends of the L-shaped pieces whose pole portions are at the opposite end of the coil, as and for the purpose described.

2. The combination, in an electric motor or dynamo, of a field-magnet consisting of identically-formed L-shaped plates B B', having yoke portions or extensions b^2, overlapping one another and all of sufficient length to extend entirely through the magnetizing-coil, a magnetizing-coil E, wound over the yoke portions, and bolts D, passing through the ends of the yoke portions or extensions of the plates at the opposite side of the coil from the end carrying the pole portions.

Signed at New York, in the county of New York and State of New York, this 1st day of November, A. D. 1890.

FERDINAND A. WESSEL.

Witnesses:
WM. H. CAPEL,
THOS. F. COUREY.