E. J. ARMSTRONG.

ELECTRIC DYNAMO AND MOTOR.

APPLICATION FILED DEC. 18, 1909.

1,009,951. Patented Nov. 28, 1911.

Fig. 2.

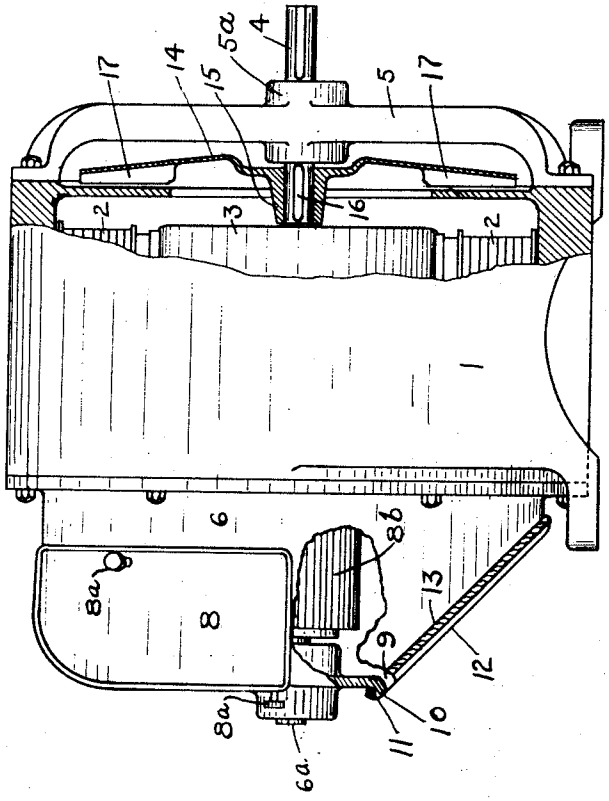
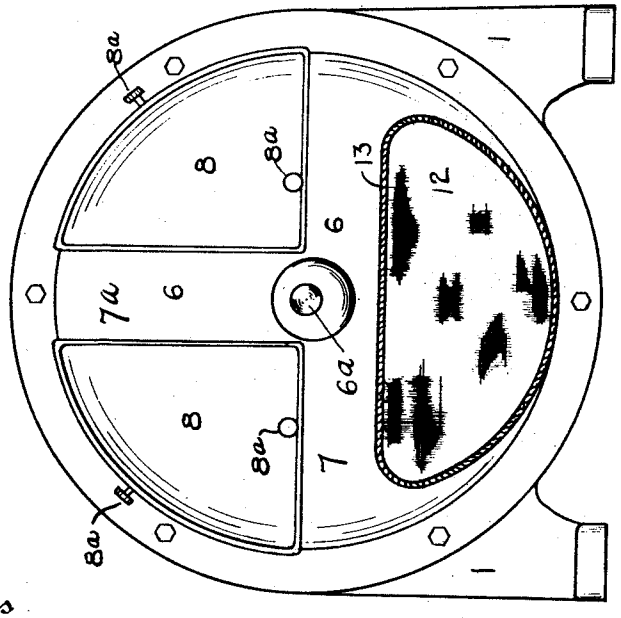


Fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRIC DYNAMO AND MOTOR.

1,009,951. Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed December 18, 1909. Serial No. 533,784.

To all whom it may concern:

Be it known that I, EDWIN J. ARMSTRONG, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Electric Dynamos and Motors, of which the following is a specification.

This invention relates to electric dynamos and motors, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The object of the invention is to provide in a simple and efficient manner a mechanism which will protect the working parts of a machine of this type from the injurious effects of dust, especially shop dust. Machines of this type, especially electric motors, are coming into very general use for driving individual machines in shops. For this purpose they are necessarily brought into close relation with tools in operation in a shop creating more or less dust, usually dust carrying metals. This is very injurious to the machines of this type, especially the commutators of said machines. It is not practical to so inclose the machines as to exclude a circulation of air, as such an arrangement would result in the injurious heating of the machine. To overcome this difficulty, I provide a simple and efficient means for compelling a constant current of air through the machine in one direction, and filtering the air before it enters the machine, thus insuring a current of pure air, and the absence of dust.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows an end view of such a dynamo or motor; Fig. 2 a side elevation partly in section of the dynamo or motor.

1 marks the frame of the machine; 2 the field which in the machine shown is the stationary element; 3 the armature which in the machine shown is the movable element. The armature is mounted on the shaft 4. This shaft is carried by the supplemental frames 5 and 6, adapted to the field frame 1, the bearings 5^a and 6^a being arranged for this shaft in said supplemental frames 5 and 6. The frame 6 is made up of the horizontal arms 7 and the upright arms 7^a, leaving an opening at the bottom and two openings at the top. The openings at the top are closed by removable closure plates 8, these being secured to the supplemental frame 6 by the thumb screws 8^a.

The opening 9 at the bottom is surrounded by a shoulder 10, and this shoulder has the annular grooves 11. An air filter 12, preferably of textile fabric, is drawn over the shoulder 10 and has its edges secured in the annular grooves 11 by the cord 13. A fan is arranged at the opposite end of the machine. This is made up of the web 14 which closes the greater portion of the opening in the frame, thus forming a housing for the motor or dynamo when the machine is at rest. The web has a hub 15 which is fixed on the shaft 4 by means of a key 16. The web has the fan blades 17 near its periphery. These blades are of small area as it is only necessary to insure a small current of air in the direction of the fan through the filtering material. The web 14 closing the central part of the fan, prevents any return eddy toward the machine.

The removable plates 8 form openings when removed which permit of ready access to the commutator 8^b. By placing the air filter at the bottom, less of the dust is retained by it, than would be the case if it were on the upper side of the machine, and when the machine is at rest, the most injurious particles will release themselves from the filter. The removable plates taken with the supplemental frame, form an inclosing casing containing the filter 12. This construction does not increase the room taken up by the machine, and is readily available with machines used, as in ordinary shop practice, in limited space.

While I have shown a commutator it will be understood that other forms of connection between the moving element of the machine and the circuit may be used with some types of machines.

What I claim as new is:

1. In an electric dynamo or motor, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; a casing secured to the frame at one end of the machine, and comprising an air filter; said frame and casing forming a closure for the movable parts of the machine and a fan for inducing a flow of air first through the filter and then through the machine.

2. In an electric dynamo or motor, the combination of a frame carrying the station-

ary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connection for the movable element of the machine arranged at one end of the machine; a casing secured to the frame inclosing said end of the machine having said connection and comprising an air filter; a bearing for the shaft arranged in said casing; and a fan for inducing a flow of air first through the filter and then through the machine.

3. In an electric dynamo or motor, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connection for the movable element of the machine arranged at one end of the machine; a casing secured on the frame, inclosing the end of the machine having said connection, said casing comprising an air filter; and a fan at the opposite end of the machine for inducing a flow of air first through the filter and then through the machine.

4. In an electric dynamo or motor, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connector for the movable element of the machine arranged at one end of the machine; a casing secured to the frame, inclosing said end of the machine and comprising an air filter and having a movable closure plate giving access to said connection; and a fan at the opposite end of the machine for inducing a flow of air first through the filter and then through the machine.

5. In an electric motor or dynamo, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connection for the movable element of the machine arranged at one end of the machine; a casing secured to the frame, inclosing one end of the machine having an air filter in sheet form with its outer surface facing downwardly; and a fan at the opposite end of the machine for inducing the flow of air first through the filter and then through the machine.

6. In an electric dynamo or motor, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connection for the movable element of the machine arranged at one end of the machine; a fan arranged at one end of the machine having a central web forming a housing for the end of the machine with fan blades near its periphery; said fan having its blades pitched to draw air through the machine and means for filtering the air as it enters the opposite end of the machine.

7. In an electric dynamo or motor, the combination of a frame carrying the stationary element of the machine; a shaft on which the movable element of the machine is mounted; an electrical connection for the movable element of the machine arranged at one end of the machine; a fan arranged at one end of the machine, said fan being arranged to induce a flow of air through the machine; and means for filtering the air as it enters the opposite end of the machine.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWIN J. ARMSTRONG.

Witnesses:
MARGARET M. BEIGLE,
R. L. GORDON.