

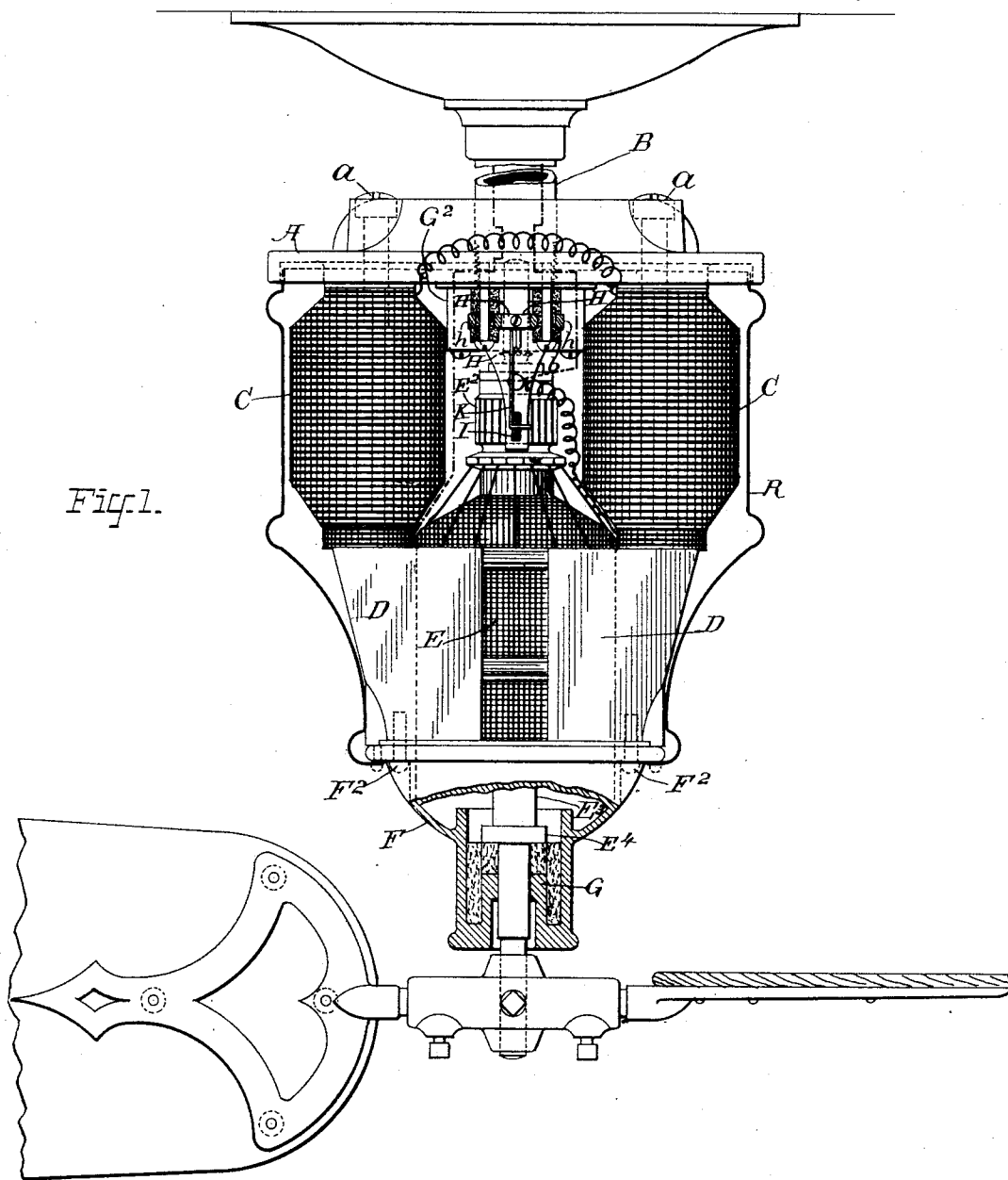
(No Model.)

2 Sheets—Sheet 1.

W. HOCHHAUSEN.
CEILING FAN MOTOR.

No. 512,821.

Patented Jan. 16, 1894.



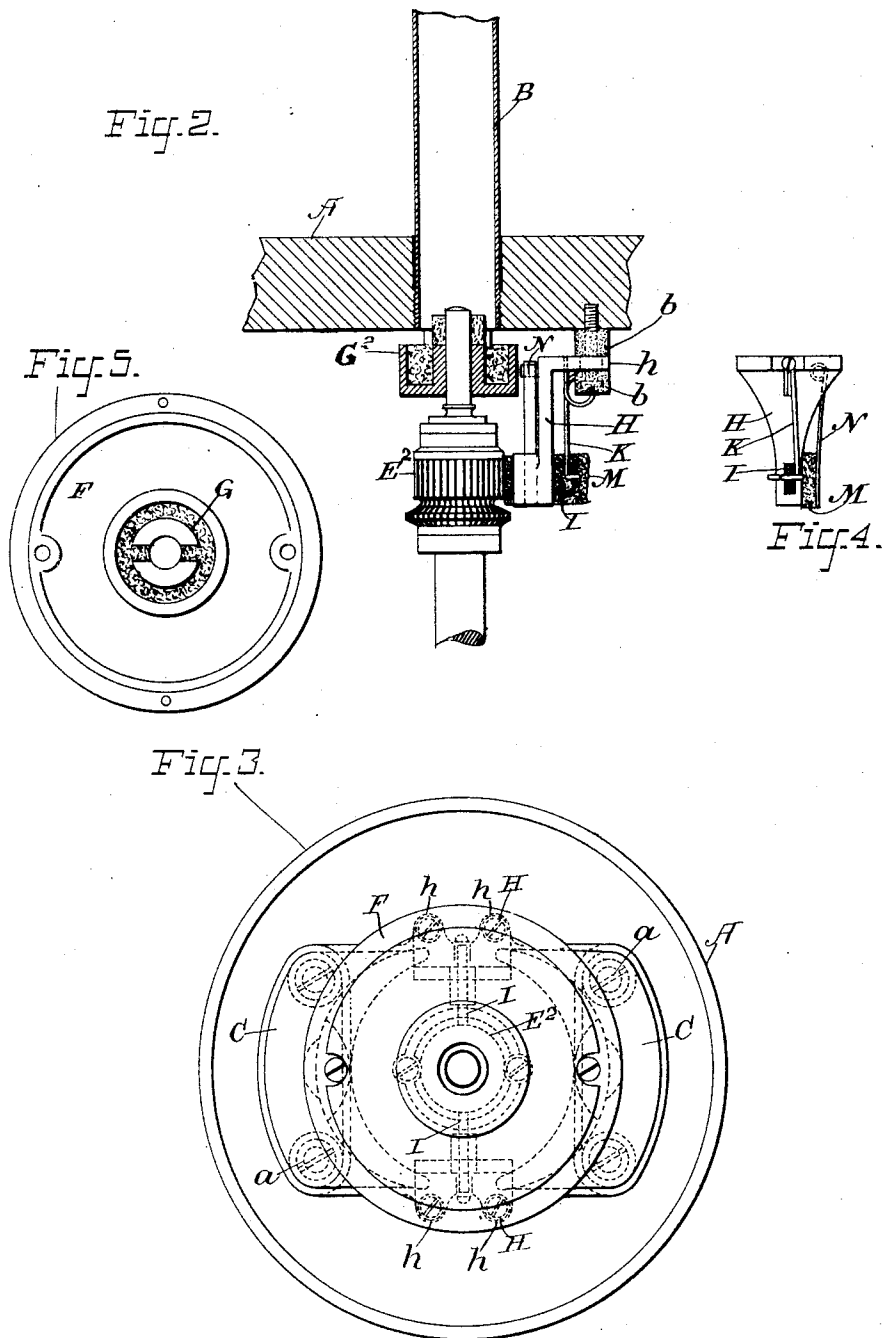
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W. HOCHHAUSEN.
CEILING FAN MOTOR.

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ATTEST:

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UNITED STATES PATENT OFFICE.

WILLIAM HOCHHAUSEN, OF BROOKLYN, NEW YORK.

CEILING FAN-MOTOR.

SPECIFICATION forming part of Letters Patent No. 512,821, dated January 16, 1894.

Application filed September 4, 1891. Serial No. 404,779. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOCHHAUSEN, 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 Ceiling Fan-Motor, of which the following is a specification.

My invention relates to electric fan motors and particularly to electric motors designed to be suspended from a ceiling and to operate a fan beneath.

The object of my invention is to secure a simple, compact and cheap construction, as well as to allow for continued lubrication of the armature bearing without danger of scattering the oil or lubricant, or allowing the lubricant to drip from the machine.

A further object of my invention is to provide for the ready detachment of the armature from the apparatus in case the necessity for repair arises.

The invention consists in the novel features of construction and combination of parts as hereinafter more particularly described and then specified in the claims.

In the accompanying drawings—Figure 1, is a side elevation of an apparatus embodying my invention a part being shown in vertical section. Fig. 2, is a vertical section and detail side elevation of the parts at the upper end of the armature shaft. Fig. 3, is a plan of the apparatus looking upward. Fig. 4, is a side view of one of the brackets carrying the commutator brush. Fig. 5, is a plan of the lower bearing of the armature shaft.

A, indicates a head consisting of a plate, preferably of iron from which the field magnets of the motor are suspended being attached directly to said head by means of bolts or screws *a*.

In ordinary forms of motor the head A, may constitute the magnetic yoke piece connecting the two cores of the field magnet. The head A, is itself attached to the lower end of a tube B, which in turn is suspended from the ceiling in any suitable manner. This tube B, is shown as broken away in order to bring all the parts within the compass of the drawings. The said tube forms a passage for the conducting wires which supply the operating current to the motor and being carried down through said

tube are attached in any proper way to the terminals of the electric motor as well understood in the art.

C, C, indicate the two legs or sides of a field magnet the cores of which, being bolted to the head A, in vertical position and parallel to one another, terminate in the two pole pieces D, D, between which the armature E, of the machine rotates in the usual manner. The armature may be wound or constructed after any desired fashion and have its wires connected to the segments of the commutator cylinder E², upon which bear the commutator brushes or blocks to be presently described.

E³, indicates the armature shaft which rotates in suitable journal bearings attached respectively to the head A, and to a cap or support fastened directly to the field magnets beneath the same. The lower support or journal bearing bracket is indicated at F, and is formed preferably as a cap piece which closes in the parts below the field magnet. The support F, is attached by screws or bolts indicated at F², to the field magnet as, for instance, when the pole pieces are inverted, as shown, directly to said pole pieces.

G, is the bushing or tube which forms a journal box for the shaft E³. At E⁴, the shaft is provided with an offset or collar which rests upon the top of the tube or bushing G, so that the latter at its upper end forms a vertical bearing for the armature shaft by which the said armature and shaft are supported against downward movement. The tube or bushing G, also forms the side bearing for the armature, holding the same in central position with relation to the field magnet.

Around the bushing or bearing G, is formed a cavity as shown which constitutes an oil reservoir and is preferably filled with some absorbent material like felt. The tube or bushing G, is cut or slotted at its top said cut extending from the top a considerable distance downward and forming a passage between the oil cup or cavity and the armature shaft. The absorbent filling the space indicated furnishes a constant oil supply, the vertical as well as the horizontal surfaces being kept well lubricated. The oil cup and bearings thus formed are preferably made as shown in one piece with the cap or bracket

F. A similar bearing for the upper end of the armature shaft is indicated at G², and is attached by suitable screws or bolts to the lower side of the head A. The construction of this bearing is shown more clearly in Fig.

2. It is similar to that at the lower end with the exception that it is not formed with any vertical bearing for the armature shaft so that the latter may be slipped downward when the lower vertical bearing upon which the armature is entirely supported is removed.

H, H, are the brush supporting arms or brackets for the commutator of the machine. These arms or brackets are fastened to the lower side of the head A, as shown, being, for that purpose, provided with suitable ears h, which are held between blocks of insulating material b, the whole being fastened to the head by means of a screw passing through the block and ears, as indicated. The commutator brush itself may consist of a block I, of carbon or other suitable material which is held in contact with the commutator cylinder by means of a spring K, fastened at one end to the arm or bracket H, and at its free end bearing on said block.

M, indicates a lubricating rubber of any suitable material which bears constantly upon the commutator cylinder E, and is designed to lubricate and prevent cutting of the surface of the commutator blocks or pieces. This lubricating rubber preferably consists of a piece of felt or other absorbent which is held in position, as indicated, by means of a spring N, fastened to one of the commutator brush arms H, and bearing at its free end upon the rubber so as to hold it firmly in position between the spring and the arm.

R, indicates a suitable sheet metal case designed to protect the parts of the motor. This case at its upper end engages with the head A, and at its lower end is fastened to the under side of a flange upon the bracket or cap F. The case being larger at its upper end it can be readily slipped down by disconnecting it from the flange upon the cap F.

It will be seen that the only thing necessary in order to remove or detach the armature is to detach the cap F, from the field magnet poles. It will also be seen that the apparatus is very compact.

I do not limit myself to any particular number of field magnet cores nor to any particular construction of armature.

It will also be readily understood that the form of the bearings for the armature shaft may be varied and that the position of the field magnet cores might be inverted thus bringing the poles pieces uppermost. I prefer, however, for the sake of compactness, to mount the field magnet cores in the way shown with the pole pieces lowermost the space between the field magnet coils being utilized for the commutator the brush supporting arms of which are attached directly to the head A.

What I claim as my invention is—

1. The combination substantially as described, of the supporting head, the field magnet cores bolted thereto, a journal bearing cap closely fitted at its periphery to the field magnet, and the armature having its vertical bearing on said cap.

2. In an electric fan motor, the combination with the field magnet pole pieces, of a journal bearing cap for the armature shaft closely fitted and detachably secured to the lower end of the pole pieces and having an oil cup or cavity.

3. The combination substantially as described with the vertical armature shaft, of the end bearing support therefor fastened to the field magnet pole pieces, and having the annular oil cavity, provided with a slot in its inner wall as and for the purpose described.

4. In an electric fan motor the combination with the vertical armature shaft, of the combined horizontal and vertical bearing having an oil chamber outside of it, and provided with a cut or slot extending from its top downward to contain the oil supply wick and connected to the field magnet.

5. The combination substantially as described in a fan motor, of the supporting head, the field magnets secured thereto, and a journal bearing cap or head for the armature shaft closely fitted and detachably secured to said field magnet beneath the same, as and for the purpose described.

6. The combination in a fan motor, of a supporting head attached to the lower end of a wire carrying tube, in a manner such that the tube passes through said head and delivers the wires on the under side thereof an electric motor having parallel field magnet cores attached beneath said head, and a vertical armature shaft having a journal bearing detachably fastened to said field magnets beneath the same.

7. The combination substantially as described in a fan motor, of the supporting head, the vertical parallel field magnets, the armature rotating between the pole pieces of said field magnet, and a vertical bearing for the armature shaft mounted in a closely fitting support and detachably secured directly to the field magnets beneath the same.

8. The combination in a fan motor, of the two field magnet cores depending from a suitable supporting head with their pole pieces downward, and a cap fastened to the lower end of said field magnet and having a vertical armature shaft bearing and oil cavity or cup made in one piece with it.

9. The combination substantially as described, with a vertical armature shaft, of the cap at its lower end furnished with an oil cavity, surrounding the horizontal bearing of the armature, and a vertical bearing for the armature at the top of the horizontal bearing, as and for the purpose described.

10. The combination in a fan motor, of the field magnet supporting head, a lubricating oil box and bearing secured to the bottom

side of the head, and an armature shaft journaled in said bearing, as and for the purpose described.

11. The combination in a fan motor, of the field magnet supporting head, a commutator brush arm depending vertically from the head but insulated therefrom and terminating in a socket or brush support having a horizontal opening, a brush in said guide or opening, and a spring mounted on the bracket and tending to force the brush against the commutator, as and for the purpose described.

12. In a fan motor, the combination substantially as described, of the supporting tube carrying the supply wire and having at its lower end a supporting head, through which it passes to deliver the wires on the under side thereof a field magnet having two vertical cores secured to the lower side of said head and depending vertically therefrom parallel to one another, a journal bearing for the armature shaft of the motor also fastened beneath said head, and a lower journal bearing carried by the bracket or support detachably secured to the lower end of the field magnet.

13. The combination in a fan motor, of a field magnet depending from a suitable supporting head, a journal bearing carried by a support detachably secured to the under side of the field magnet, an armature having its vertical bearing entirely on said lower sup-

port, an upper journal bearing for said armature secured to the head which carries the field magnet, and annular oil-cups formed by said journal bearings as and for the purpose described.

14. The combination substantially as described, with the commutator cylinder, of the lubricating rubber, the commutator brush support, and the spring for holding the rubber against the bracket but in constant connection with the commutator cylinder.

15. The combination of the supporting head, the field magnet cores depending therefrom, the cap inclosing the lower armature bearing, and the case fitted to said head and inclosing the field magnets, substantially as set forth.

16. The combination of the supporting head, the field magnet cores depending therefrom, the journal bearing cap for the armature secured to the lower end of said cores, and a case fitted to said head and secured to said cap, as and for the purpose described.

Signed at New York, in the county of New York and State of New York, this 14th day of July, A. D. 1892.

WILLIAM HOCHHAUSEN.

Witnesses:

WM. H. CAPEL,
THOS. F. CONREY.