

No. 636,871.

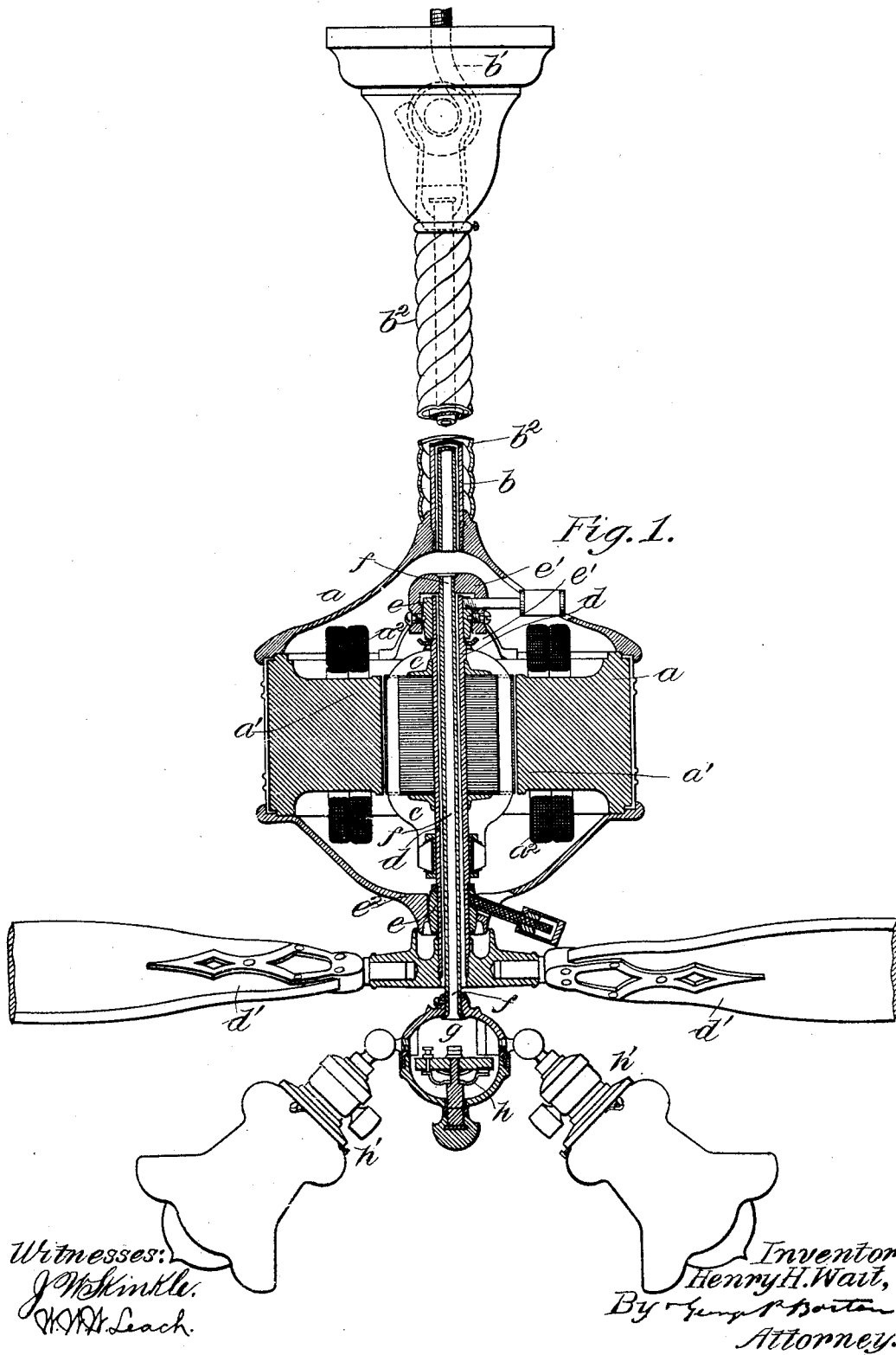
Patented Nov. 14, 1899.

H. H. WAIT.
CEILING FAN MOTOR.

(Application filed Jan. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.



No. 636,871.

Patented Nov. 14, 1899.

H. H. WAIT.
CEILING FAN MOTOR.

(Application filed Jan. 10, 1898.)

(No Model.)

2 Sheets—Sheet 2.

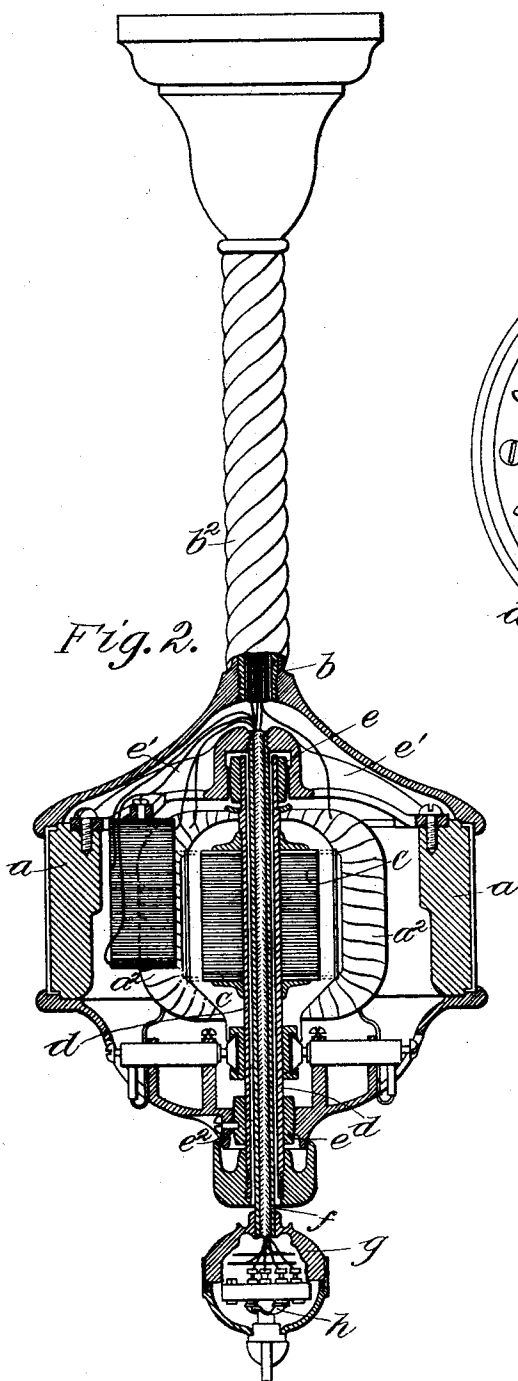


Fig. 2.

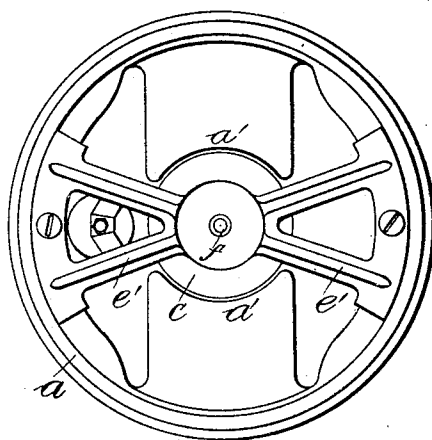


Fig. 3.

Witnesses:

J. H. Shinkle,
W. W. Leach

Inventor:
Henry H. Wait,
By *Wm. Barton*,
Attorney.

UNITED STATES PATENT OFFICE.

HENRY H. WAIT, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
ELECTRIC COMPANY, OF SAME PLACE.

CEILING-FAN MOTOR.

SPECIFICATION forming part of Letters Patent No. 636,871, dated November 14, 1899.

Application filed January 16, 1899. Serial No. 702,269. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. WAIT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Ceiling-Fan Motors, (Case No. 12,) of which the following is a full, clear, concise, and exact description.

My invention relates to electric motors, and more particularly to the class commonly known as "fan-motors," my invention being especially designed for use in connection with ceiling-fan motors, which usually run at slow speed, carrying blades having several feet sweep. Generally speaking, ceiling-fans are much more satisfactory in operation than the high-speed "buzz-fans," but they are of such size that they are sometimes considered objectionable on account of the amount of space occupied. For this reason it is often desirable that they be conveniently combined with a chandelier or electric-light support.

The object of this invention is to provide means whereby a chandelier, switch, or similar device may be suspended from the motor-frame without interfering in any way with the operation of the motor-shaft and, indeed, without any connection therewith. It has been usual heretofore to journal the motor-shaft directly upon the rod or tube which forms the support for the chandelier or switch.

In accordance with my invention the frame of the motor is stationarily mounted upon the end of a tube, such as a gas-pipe, suspended in the manner of a chandelier from the ceiling. The armature-shaft is provided with a longitudinal bore extending entirely through the same and is journaled to rotate in bearings mounted upon the motor-frame. A portion of this shaft extends downward outside of the motor-frame, and it is to this projecting portion that the fan-blades are attached, extending at right angles thereto. A stationary rod or pipe passes entirely through the bore of the armature-shaft, so that the latter surrounds it like a sleeve. The rod or pipe, however, is entirely independent from the shaft, being supported at its upper end by suitable brackets on the motor-frame. The lower end of the pipe may support a switch or electric-light fixture, the wires for which

run through this inner stationary tube. A resistance-coil of a rheostat may be located within the motor-frame, and suitable conductors may connect the resistance-coil with the switching mechanism before referred to.

It will be appreciated that with a motor constructed in accordance with my invention the armature-shaft may be provided with self-aligning journals mounted upon the motor-frame and it is possible to employ an iron-clad armature with much smaller clearance between the armature and the pole-pieces than if the armature were journaled upon a central rod or tube serving the combined purpose of a bearing and a support, as has been proposed heretofore.

My invention will be described more particularly by reference to the accompanying drawings, wherein—

Figure 1 is a sectional elevation of the ceiling-fan motor embodying my invention. Fig. 2 is a similar view, the section being taken in a plane at right angles to the plane of Fig. 1; and Fig. 3 is a plan showing the brackets, a portion of the cover being removed.

The same reference-letters are used to indicate the same parts in all the figures.

The motor-frame *a* is mounted upon the lower end of a gas-pipe *b*, which may be suspended from a hook *b'* in the ceiling, and an ornamental casing *b²* may inclose the pipe *b*, as usual. Pole-pieces *a' a'* are formed upon the motor-frame and are enveloped by the field-coils *a² a²*.

The armature *c* is mounted upon a hollow shaft *d*, which is journaled to rotate in self-aligning bearings *e e*, the upper bearing being supported by the bracket *e'*, mounted upon the motor-frame, and the lower bearing being similarly supported by an extension or bracket *e²* of said frame. To the lower end of the armature-shaft *d* are attached the fan-blades *d' d'*, extending at right angles thereto.

Passing through the hollow armature-shaft *d*, but entirely independent therefrom, is a tube or pipe *f*, carrying at its lower end the support *g* for the switch *h* and the electric-light fixtures *h' h'*, which pipe *f* is stationarily supported at its upper end from the brackets *e'*.

I have found it very convenient to mount

a resistance-spool within the casing of the motor, where it will be out of the way, and this may be connected by wires passing through the tube *f* with the switch *h*, thus
 5 constituting a rheostat which may be used for controlling the speed of the motor.

It will be understood that the term "electrical fixture" when used in the claims is to be taken in the sense of a chandelier, switch,
 10 or the like, which it might be desired to suspend from the fan-motor support.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

15 1. The combination in an electric ceiling-fan, a magnet-frame and brackets mounted on the frame, journals formed in said brackets, an armature within the frame having a tubular shaft journaled in said bearings, and
 20 a fixture-support projecting freely through said shaft and carried in the upper bracket, substantially as described.

2. In a combined ceiling-fan and fixture-support, a field-magnet frame and brackets
 25 secured thereto above and below the frame, a centrally-located fixture-support rigidly secured in said upper bracket, projecting through the lower bracket, and carrying an electric fixture beneath the frame, bearings
 30 carried in the said brackets and an armature having a tubular shaft journaled in said bearings, said shaft surrounding said fixture-support but being independent thereof, substantially as described.

35 3. In a combined ceiling-fan and fixture-support, a field-magnet frame and brackets secured thereto above and below the frame, a centrally-located tubular fixture-support rigidly secured in said upper bracket, projecting
 40 through the lower bracket, and carrying an

electric fixture beneath the frame, and electric-circuit conductors terminating in the fixture threaded through said tubular support, bearings carried in the said brackets and an
 45 armature having a tubular shaft journaled in said bearings, said shaft surrounding said fixture-support but being independent thereof, substantially as described.

4. In combination, in a ceiling-fan and fixture-support, a field-magnet frame and brackets
 50 secured thereto above and below the frame, bearings carried in the said brackets, an armature inclosed by the frame having a tubular shaft journaled in said bearings and projecting below the lower bearing, and fan-blades
 55 carried on the projecting end of the shaft, a central fixture-support having one end rigidly secured in said upper bearing and having its other end projecting below the fan-blades, and an electric fixture carried there-
 60 on below the blades; whereby the rigidity of the bearings is assured while the fixture-support is rendered independent thereof, as described.

5. The combination with a frame carrying
 65 field-magnets; an armature mounted on a hollow shaft, and bearings for supporting its upper and lower ends; of a fixture-supporting shaft projecting freely through the hollow armature-shaft and secured at its upper end
 70 only to the field-magnet frame, whereby the fixture-supporting shaft may vibrate laterally without imparting movement to the armature or its field-magnets.

In witness whereof I hereunto subscribe my
 75 name this 21st day of December, A. D. 1898.

HENRY H. WAIT.

Witnesses:

GEORGE P. BARTON,
 WINFIELD W. LEACH.