

E. B. CUTTEN.
ELECTRIC FAN.

No. 483,545.

Patented Oct. 4, 1892.

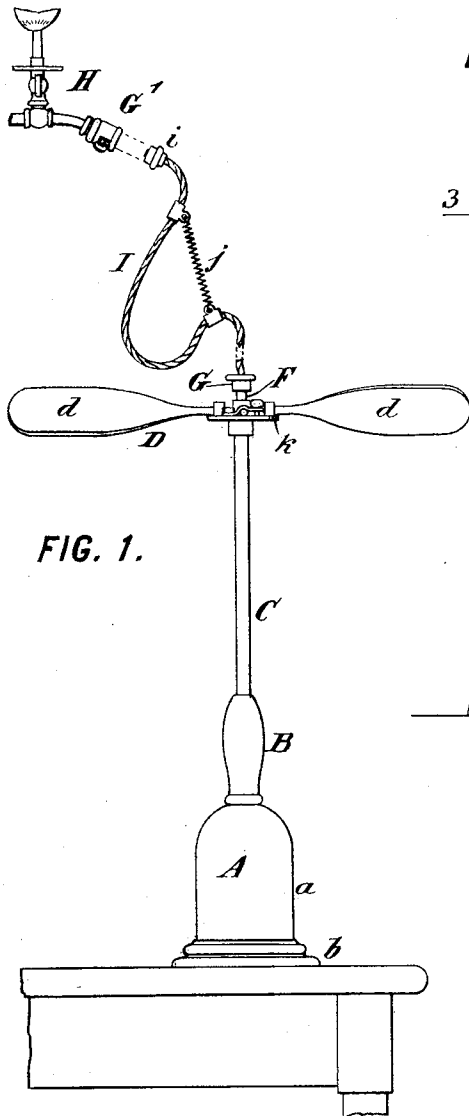


FIG. 1.

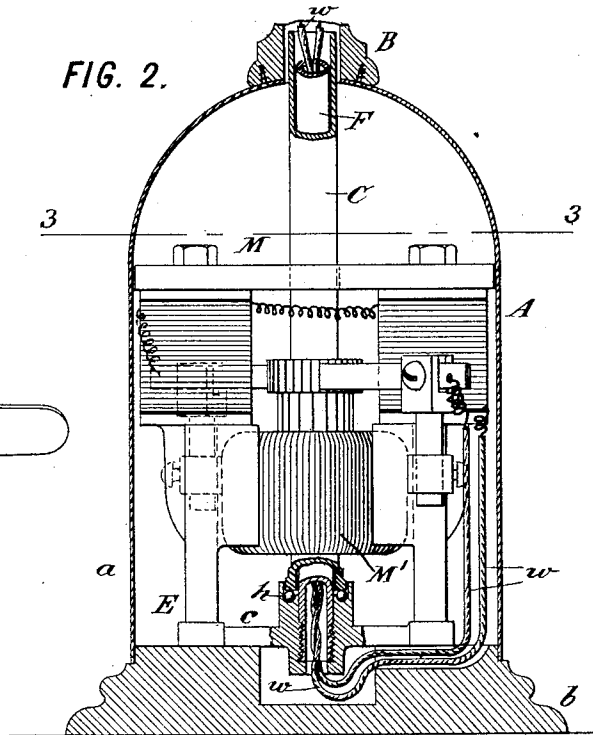


FIG. 2.

FIG. 3.

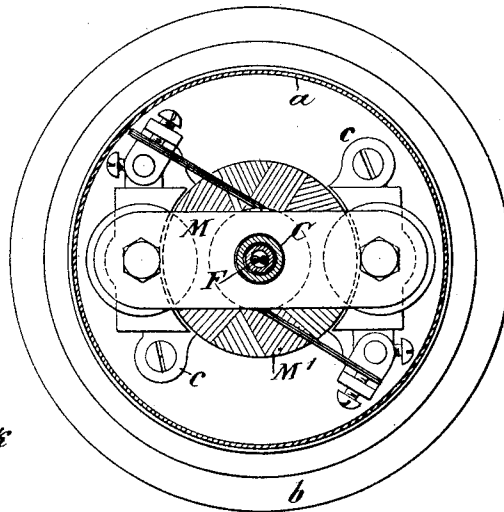


FIG. 4.

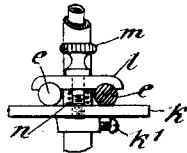
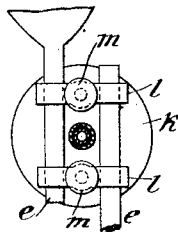


FIG. 5.



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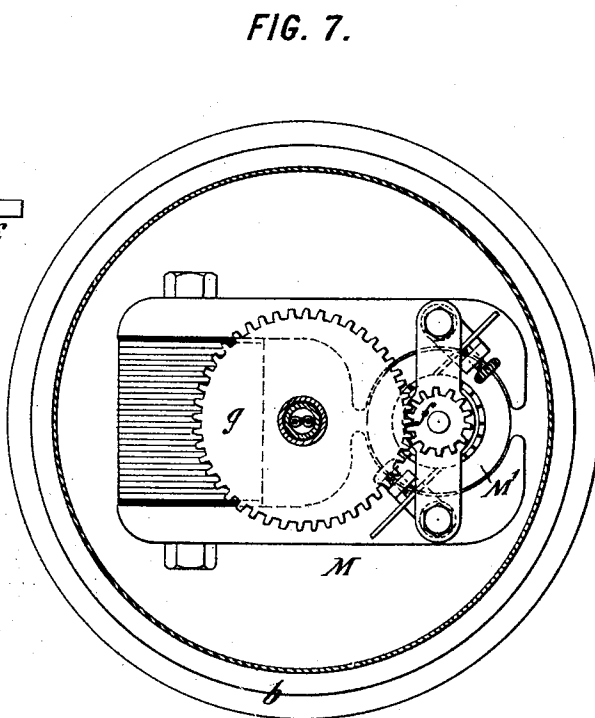
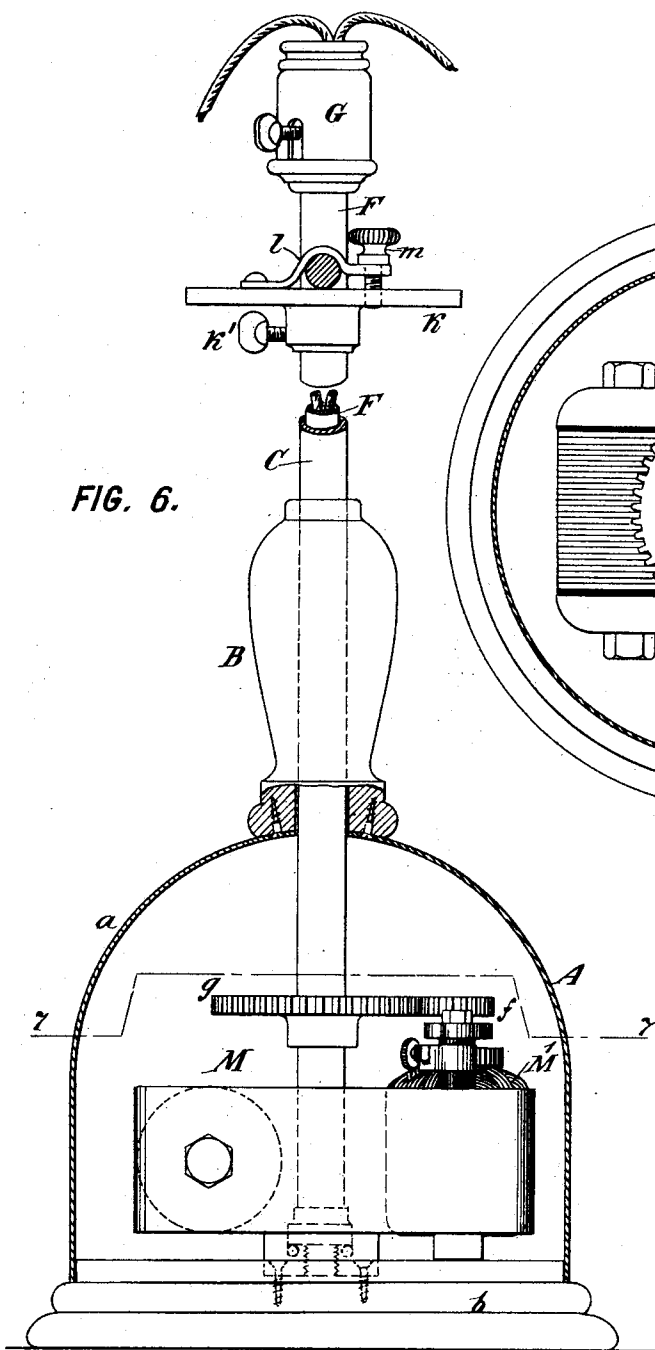
By his Attorneys,

Arthur G. Draper & Co.

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UNITED STATES PATENT OFFICE.

ELISHA B. CUTTEN, OF NEW YORK, N. Y.

ELECTRIC FAN.

SPECIFICATION forming part of Letters Patent No. 483,545, dated October 4, 1892.

Application filed May 22, 1891. Serial No. 393,683. (No model.)

To all whom it may concern:

Be it known that I, ELISHA B. CUTTEN, residing in the city, county, and State of New York, have invented certain new and useful
5 Improvements in Electric Fans, of which the following is a specification.

This invention relates to electrically-driven fans, or those driven by electro-motors, for use in restaurants or elsewhere to establish a
10 current of air and drive away flies. Electro-motor fans are commonly constructed to be mounted on brackets or other supports, the blades or wings of the fan being commonly revolved on a horizontal axis. Such fans are
15 stationary, being mounted once for all in a given place.

My invention provides an improved construction of electric fan which can be connected with any incandescent-lighting system and which is portable, so that it may be placed on a table or desk and may be easily disconnected and carried to another position. According to my invention I construct the fan with a base, in which the motor is arranged,
25 and with a vertical shaft driven by the motor standing above the base to any desired height and carrying the blades of the fan. The shaft is made tubular and through it passes a stationary bar or post, on the top of which is
30 fixed an electric-lamp socket or other equivalent means for connecting electric wires, and from the terminals in this socket two wires extend down through the post, which is made tubular for the purpose, and pass from the
35 lower end thereof to the terminal connections of the motor. The fan being placed on a table or elsewhere in any convenient or desired position, it is connected with a source of electric energy by means of a suitable cable provided with blocks or terminals, that at one end fitting the socket at the top of the fan and that at the other end adapted to enter any ordinary incandescent-lamp socket. The fan is proportioned to be driven by a current
45 sufficiently approximating that which is used to feed an ordinary incandescent lamp, so that when thus connected in a lamp-circuit it does not affect the operation of the lamps burning on said circuit.

50 Figure 1 of the accompanying drawings is an elevation on a small scale, showing my electric fan and the means for connecting it to

the lamp-socket of an electrolier. Fig. 2 is a vertical transverse section through the base of the fan. Fig. 3 is a horizontal section there-
55 of on the line 3 3 in Fig. 2. Figs. 4 and 5 are respectively a fragmentary side elevation and plan showing the details of the device for attaching the fans or wings to the shaft of the electric fan. Fig. 6 is a fragmentary eleva-
60 tion of a modified construction of fan, the lower part being partly in vertical section. Fig. 7 is a horizontal section thereof on the line 7 7 in Fig. 6.

Referring to the drawings, let A designate
65 the base or mechanism case; B, a fixed tubular handle mounted on the top thereof and projecting vertically upward; C, the revolving tubular shaft passing out from the mechanism case through the hollow handle B, and D the
70 fan, consisting of wings or blades *d d*, having stems *e e*.

The mechanism case A consists of a shell or casing *a*, fastened beneath to a base plate or block *b*, which may be of wood. Within
75 this mechanism case is an electromotor, designated as a whole by the letter M. This motor is constructed with a fixed frame E, part of which serves as the field-magnet of the motor. The base-plate *c* of this frame, which is fast-
80 ened down securely to the base-block *b*, is formed with a central boss, in which is firmly secured or otherwise fastened the lower end of a stationary vertical post F, which passes
85 up through the tubular shaft C and projects from the top thereof above the fan, as shown in Fig. 1. This post is made tubular in order that the wires *w w*, leading to the motor, may be carried down through it, as clearly shown
90 in Fig. 2. These wires terminate at the top in a lamp-socket or other suitable terminal connection G. (Shown best in Fig. 6.) The tubular shaft revolves around and is steadied and supported by stationary post F. The armature M' of the motor is connected to this
95 shaft in such manner as to rotate the shaft by its rotation. It may either be fixed directly on the tubular shaft, as shown in Figs. 2 and 3, or it may be mounted on a separate armature-shaft and connected to the tubular
100 shaft C by gearing, as shown in Figs. 6 and 7, the former construction being preferable, except when it is desired that the armature shall revolve at a higher speed than the fan, in

which case the construction shown in Figs. 6 and 7 will be preferred, wherein a small pinion *f* is fixed on the armature-shaft and gears with a larger gear *g*, fixed on the shaft C. In either construction the armature may be wound as a Gramme ring or Siemens drum, or any other type known to electromotors, and the construction of the field-magnet and commutator of the motor may be such as used with any of the numerous known types of motors, or may be varied to suit any special requirements, its particular construction being immaterial to my invention. The lower end of the tubular shaft C is provided with a stepped bearing in the base-frame *c*, and to render this bearing as frictionless as possible balls *h* are inserted in a groove formed in the boss, as clearly shown in Fig. 2.

My improved electric fan is designed to be connected to any electrical fixture or electrolier in place of an incandescent lamp.

In Fig. 1, H designates a combined gas-fixture and electrolier having the usual incandescent-lamp socket G' for the insertion of an electric lamp. To connect my fan, this lamp is removed from the socket and a plug or terminal at one end of a conducting-cable I is introduced into the socket G' in place of the lamp. The corresponding plug at the other end of the cable I is inserted in a socket G in the top of the post F. Upon turning on the current it passes through the wires in the cable I and through the wires *w* within the tubular post F to the electromotor M in the base, in the manner clearly shown in Fig. 2. A fan thus connected may be lifted by its handle B and moved from one table or place to another within the limit of the length of the cable I. In order to provide sufficient slack for this purpose, the cable is looped somewhat in the manner shown in Fig. 1, and has applied to it a spring *j* to hold up the loop or slack and prevent the cable from falling into the way of the revolving wings *d d* of the fan. As the electric fan is moved farther from the electrolier, from which it draws its current, the cable I is straightened out, distending the spring *j*. The cable I might be made of spring-wire to the same effect.

These separate fans or wings *d d* are attached to the shaft C in such manner that they may be raised or lowered on the shaft to different heights, and so that the wings may be turned to different angles and moved out or in to different radial positions. For this purpose I employ clamps, fastening their stems *ee* to a disk *k*, which is fastened on the shaft C by a set-screw *k'*, so that it may move to different heights. Fig. 6 shows a clamp consisting of a spring-arm *l*, mounted over the disk *k*, and pressed down by a thumb-screw *m* to engage the end of the stem or handle of one of the fans *d*. I prefer, however, the construction shown in Figs. 4 and 5, wherein two clamps *ll*, consisting each of a yoke bridging across between the two stems, which are laid parallel, as in Fig. 5, and pressed down each by a

thumb-screw *m*, as shown. Beneath each clamp is a small spring *n*, which acts to raise it when the screw is relaxed, so as to permit of the easy removal or adjustment of the stems.

My improved electric fan has the advantages of portability, being readily removable from table to table in a restaurant or elsewhere, and its electric connections are made in such manner as to avoid carrying them through or against the table, so that the movement of the fan from one position to another does not interfere with its connections. By carrying the connecting-wires down through the standard or post within the revolving shaft I avoid all bottom connections, and consequently avoid carrying electric wires into close contact with a table or desk, where their presence would be objectionable. The conducting-wire is arranged entirely overhead, where it is wholly out of the way and where it admits of moving the fan from one position to another.

My improved fan has also the great advantage that it may be connected wherever incandescent lamps are used without the running of special wires or circuits. For this purpose the connecting-cable I will be made of different lengths to adapt the fan for different positions, according to the distance that is desired to be operated from the lamp-socket with which it is to be connected.

My improved electric fan may be modified in many ways in matters of detail, in the construction of the motor, and in the general construction and arrangement of the working parts of the fan, and particularly in the means for connecting it with a source of electric energy, without thereby departing from those features which are essential to my invention.

I claim as my invention the following-defined novel features or combinations, substantially as hereinbefore specified, namely:

1. A portable electric fan comprising a base containing an electromotor, a vertical shaft projecting upwardly from said base and connected within the base to said motor, so as to be rotated thereby, a fan carried by said shaft, and a connecting-socket mounted at the top of said shaft and comprising electric terminals in connection with the terminals of the motor.

2. A portable electric fan comprising a base, an electromotor inclosed in said base, a tubular handle attached to said base and projecting upwardly, by means of which the motor may be lifted, a vertical revolving shaft passing out from the base through said tubular handle connected within the base to said motor, so as to be driven thereby, and a fan mounted on said shaft.

3. A portable electric fan consisting of a base, an electromotor therein, a vertical revolving shaft extending upwardly from said base and connected to said motor, so as to be driven thereby, and electric conductors extending down through said shaft and connecting with said motor.

4. A portable electric fan consisting of a base, an electromotor therein, a fixed post extending from said base vertically upward, a tubular shaft mounted over said post and driven by said motor, a fan mounted on said shaft, and a socket or terminal connection at the upper part of said post, with means for conducting an electric current downward from said terminals in said socket to the terminals
10 of the motor.

5. A portable electric fan consisting of a base, an electromotor therein, a fixed tubular post projecting upwardly from said base, electric wires passing down through said post and
15 connected to the terminals of said motor, a tubular shaft mounted over and revolving around said post and driven by said motor, and a fan carried by said shaft.

6. The combination, with a portable electric

fan having a terminal socket above the wings 20 of the fan, of a connecting-cable comprising two wires terminating at opposite ends in plugs or terminals for connection the one with said socket and the other with the socket of an electric-light fixture, and a spring for tak- 25 ing up the slack in said cable, whereby the fan may be moved from place to place within the limit of the length of said cable without disconnecting it from the source of electric
30 current.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELISHA B. CUTTEN.

Witnesses:

GEORGE H. FRASER,
ARTHUR C. FRASER.