

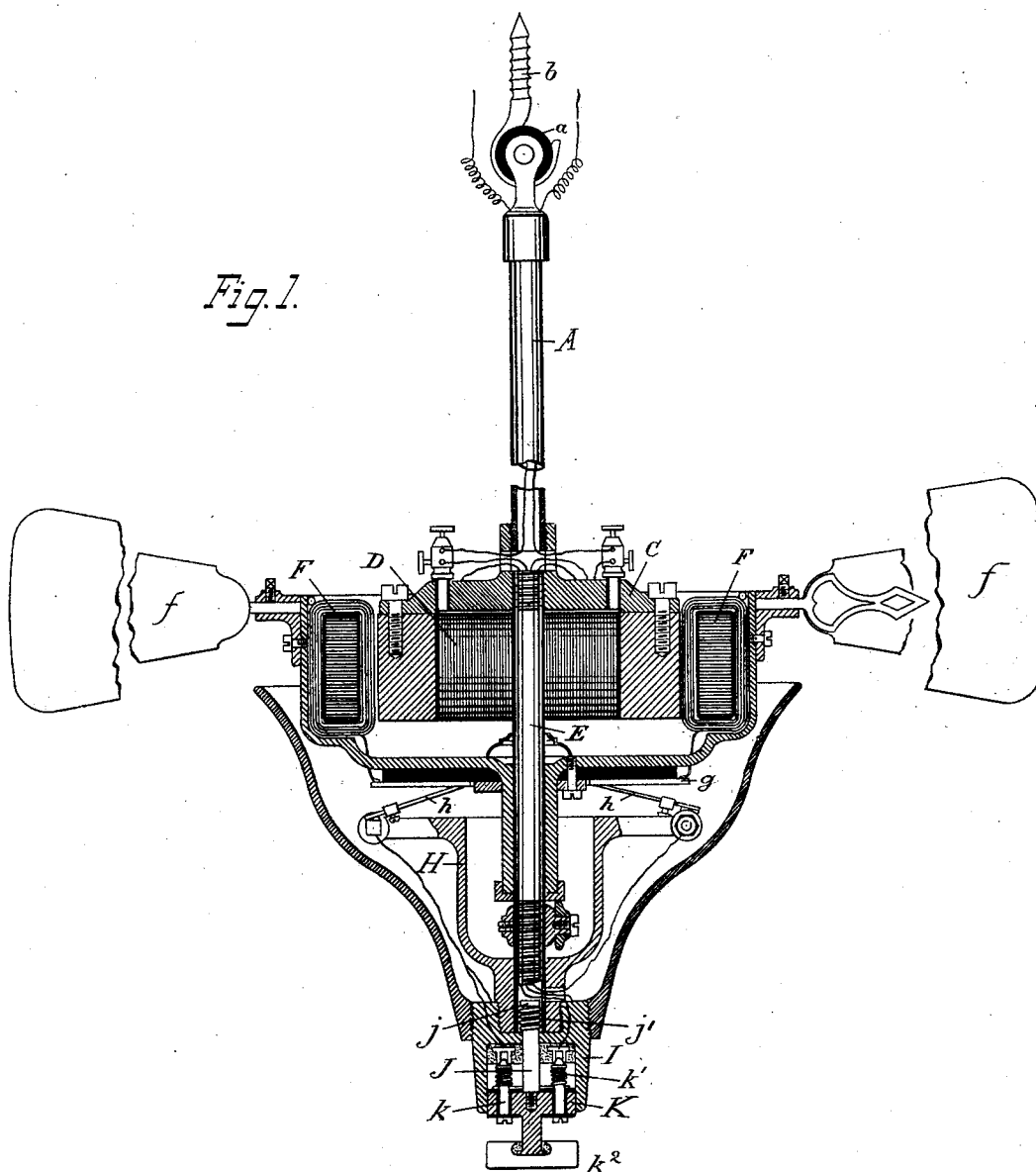
(No Model.)

3 Sheets—Sheet 1.

E. H. BENNETT, Jr.
ELECTRIC FAN.

No. 510,466.

Patented Dec. 12, 1893.



WITNESSES:

C. M. Smead
A. S. Cushman

INVENTOR

Edwin H. Bennett, Jr.

BY

Maclean, Calkins & Randall
his ATTORNEYS.

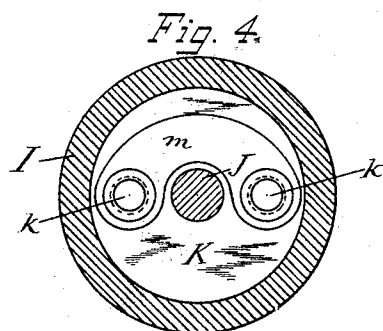
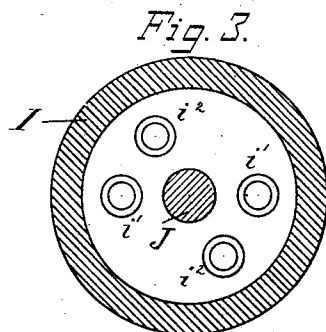
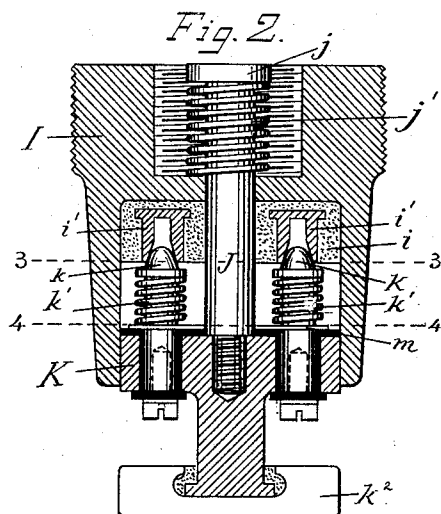
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3 Sheets—Sheet 2.

E. H. BENNETT, Jr.
ELECTRIC FAN.

No. 510,466.

Patented Dec. 12, 1893.



WITNESSES:

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(No Model.)

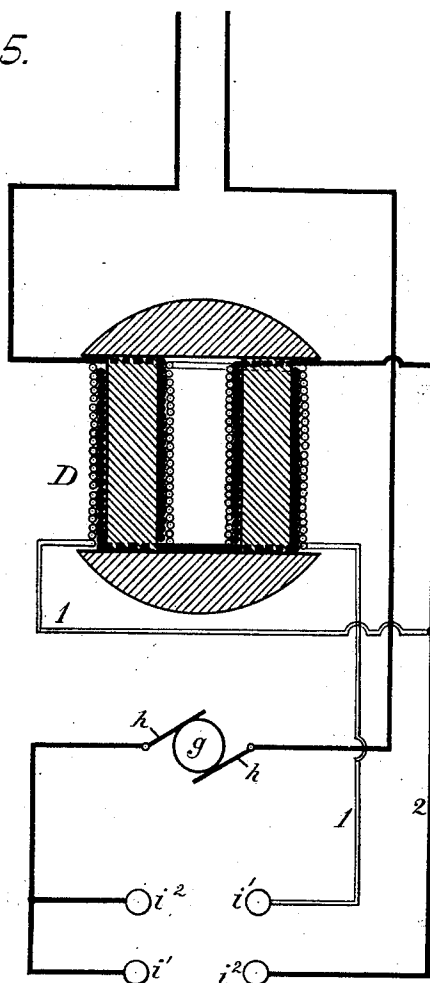
3 Sheets—Sheet 3.

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Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN H. BENNETT, JR., OF BAYONNE, NEW JERSEY.

ELECTRIC FAN.

SPECIFICATION forming part of Letters Patent No. 510,466, dated December 12, 1893.

Application filed October 17, 1891. Serial No. 408,969. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. BENNETT, JR., a citizen of the United States, residing at Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Electric Fans, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide an electric fan with a suitable resistance switch contained within itself or mounted on and forming part of the fan and by which the speed of rotation of the fan may be regulated to secure different speeds, or altogether suspended; thereby avoiding the use of switches which are independent of the fan.

In carrying my invention into effect I attach to the lower end of the support or casing of a suspended electric fan a stationary contact holder the lower face of which is recessed for the reception of suitable contact blocks or pieces preferably embedded in plastic insulating material in said recess and connected by suitable conductors with the fan motor; these contact pieces being in two or more sets, the conductors forming the circuit of one set affording a greater resistance in the circuit or motor, in any well known way, than the conductors forming the circuit of another. Below the stationary contact holder is a movable holder preferably made in the form of a button or hand piece adapted to be partially turned to cause the contacts carried thereby to engage either set of contacts mounted in the stationary holder, or to be entirely disconnected therefrom. Thus the switch will form a part of the fan proper so that when a fan is put up no switch or regulating device separate therefrom need be provided.

In the accompanying drawings Figure 1 is a sectional elevation of a fan with my invention applied thereto. Fig. 2 is a detail vertical section of the contact holders. Fig. 3 is a section on line 3—3 of Fig. 2, looking upward, and Fig. 4 a section on line 4—4 looking downward. Fig. 5 is a diagrammatic view to illustrate my invention.

A denotes a depending fan-supporting tube provided at its top with a suitable eye to be engaged by the supporting hook *b* and between which and said hook a block or ring *a*

of insulating material is preferably interposed to prevent any escape of the electric current should the said hook accidentally come in contact with an iron beam or other conductor.

Secured to the lower end of the tube A is a suitable support C for the field magnet D, and to said support C is also attached the shaft or tube E on which the rotary armature F, carrying the fan blades *f*, is mounted; the said armature being provided with a suitable disk commutator *g* with which the brushes *h*, supported by arms of the oil-cup H, are in contact.

To the lower end of the oil-cup H is screwed the stationary contact holder I provided in its lower face with a recess in which, in suitable insulating plastic material *i*, are embedded contacts *i'* and *i''*.

J denotes a rod extending somewhat loosely through an aperture in the holder I and provided at its upper end with a head *j* between which and a shoulder at the bottom of a recess formed in the said holder I is interposed a coil-spring *j'* normally serving to lift said rod and the movable contact holder K rigidly secured to the lower end thereof and carrying the contacts *k* which are preferably loosely mounted therein and pressed upward by springs *k'* to hold said contacts yieldingly against the contacts *i'* or *i''* independently of each other and of the yielding pressure secured by the spring *j'* so that any possibility of missing proper engagements of the contacts is avoided. The contacts *k* are preferably insulated from the holder K, as shown, and are electrically connected by a conducting bar or plate *m*, and the said holder K is provided with an operating disk or handle *k''* preferably of insulating material or insulated from the said holder.

With the parts constructed and mounted as above described it will be obvious that by pulling down slightly on the handle *k''*, to disengage the contacts *k* of the movable holder from the contacts of the stationary holder, the said movable holder will be free to be partially rotated to remove the movable contacts from one set of the stationary contacts and bring them into position to engage the other set of the said stationary contacts to change the speed of the motor; or by placing said movable holder in such position that its contacts

will be out of engagement with any of the stationary contacts the current will be shut off altogether.

The varying resistance to the speed of the motor from the connections to the different sets of stationary contacts may be effected in any suitable or well-known manner, as by circuits of different conductivity or added windings to the coils of the field magnet to increase the magnetism thereof, and thereby diminish the speed of rotation of the armature. Both of these methods are illustrated by the diagram (Fig. 5) which shows the added windings, denoted by light lines, of the coils of the field magnet D as being connected in the circuit 1 running to and from the contacts i' ; the non-resistance circuit 2, which gives the full speed of the motor, being connected with the contacts i^2 , and the said light lines 1 representing conductors, say of German silver, of greater resistance than those represented by the dark lines 2 which will supposedly represent ordinary copper conductors.

It will of course be understood that the switch for shutting off the current might be used without the resistance for regulating the speed of the motor and I do not therefore wish to limit my invention to the switch applied directly to the fan in connection with the resistance although this connection of the two is deemed the preferable form of my invention.

I claim—

1. A suspended electric fan provided with a resistance for varying its speed, and the fan or fan support being provided with a switching device placed below the blades of the fan.
2. The combination with a suspended elec-

tric fan, of a stationary contact block attached to the bottom or lower portion of the fan below the blades of the latter and having several contacts or sets thereof, a movable contact holder arranged adjacent to the said stationary holder and provided with one or more contacts adapted to be placed in engagement with either of the contacts of the stationary holder, and a resistance with which one contact or one set of contacts of the stationary holder is in electrical connection.

3. The combination with a suspended electric fan, of a switch placed below the blades thereof and consisting of the stationary contact holder I provided with suitable contact pieces, the movable contact holder K provided with one or more contacts k , the rod J loosely mounted in the stationary contact holder and the spring j' for yieldingly pressing said movable contact holder toward the stationary holder.

4. The combination with a suspended electric fan, of a switch placed below the blades thereof and consisting of the stationary contact holder I provided with the contacts i' and i^2 , the rod J passing loosely through said holder, the spring j for holding said rod elevated, the movable holder K attached to the lower end of said rod and provided with the spring-pressed contacts k insulated from the holder K, and the conducting bar or plate m connecting the said contacts.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN H. BENNETT, JR.

Witnesses:

EDWARD BRYCE,
H. C. FORMAN.