

A. F. BECKER.  
ELECTRIC FAN.  
APPLICATION FILED APR. 12, 1904.

2 SHEETS—SHEET 1.

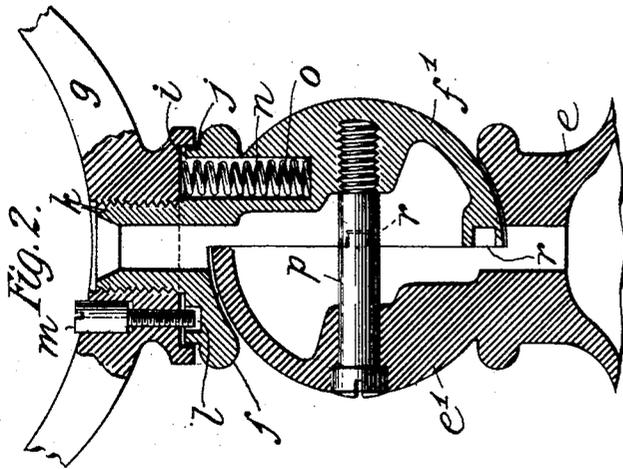


Fig. 2.

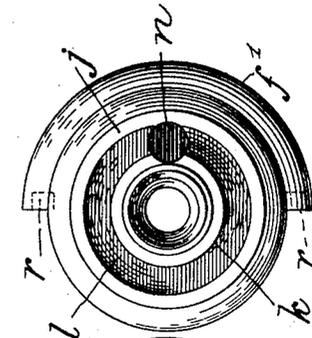


Fig. 4.

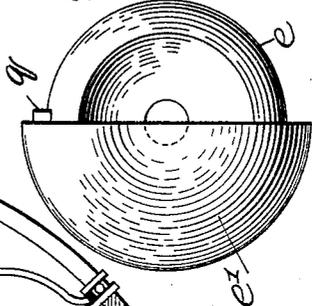


Fig. 3.

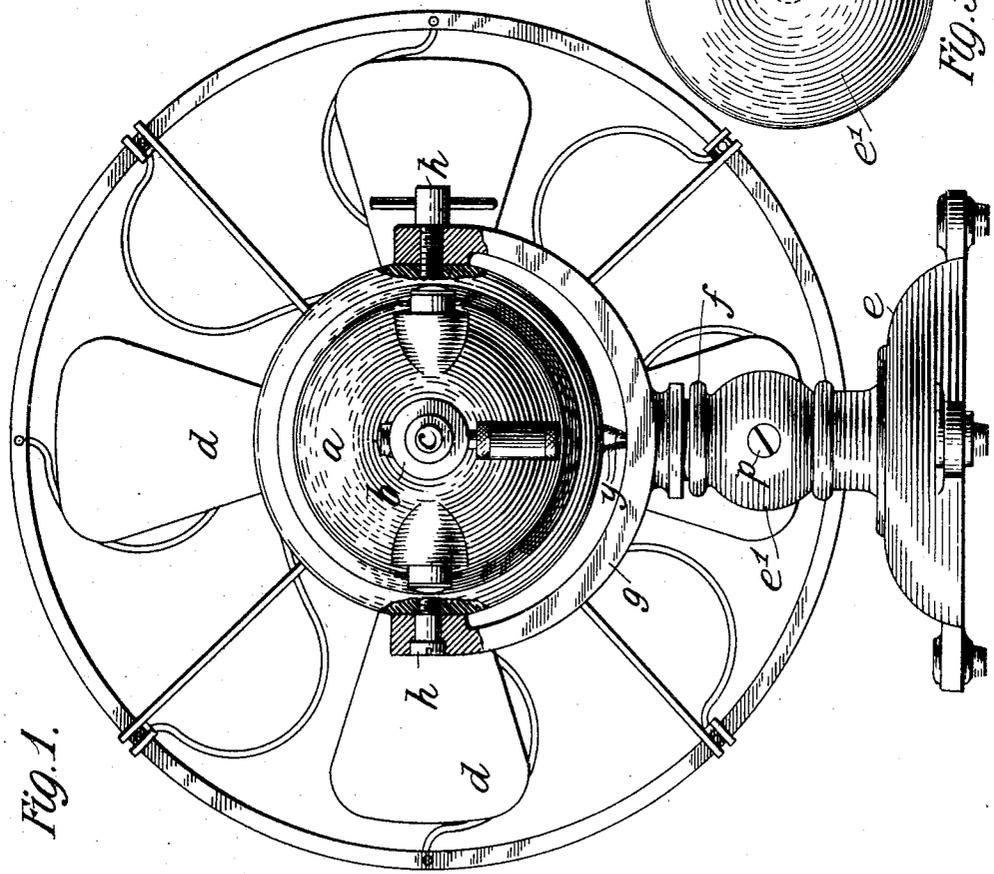


Fig. 1.

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2 SHEETS—SHEET 2.

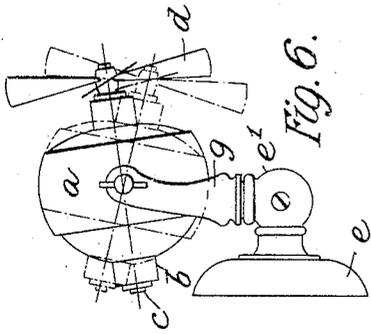


Fig. 6.

Fig. 7.

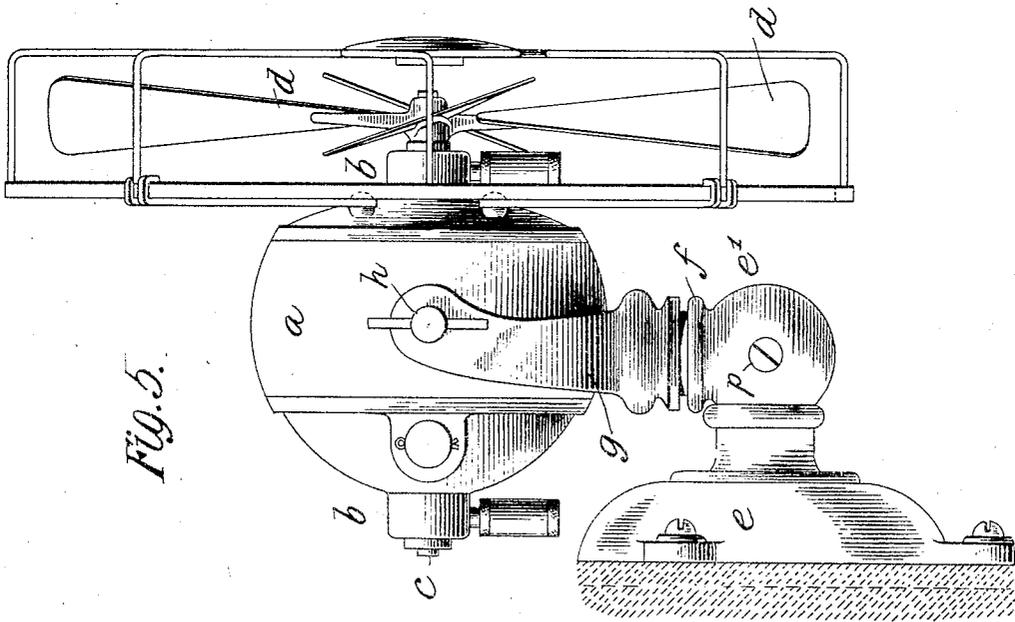
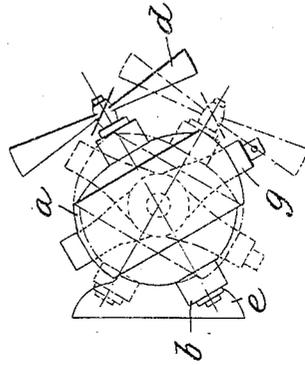


Fig. 5.

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# UNITED STATES PATENT OFFICE.

ADOLPH F. BECKER, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO DIEHL MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

## ELECTRIC FAN.

SPECIFICATION forming part of Letters Patent No. 782,816, dated February 21, 1905.

Application filed April 12, 1904. Serial No. 202,833.

*To all whom it may concern:*

Be it known that I, ADOLPH F. BECKER, a citizen of the United States, residing at Elizabeth, in the county of Union 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.

This invention relates to an improvement in that class of electric fans in which the operative portion, comprising the casing in which is journaled the armature-shaft carrying the propeller-wheel, is mounted upon the standard by such means as to render it adjustable in different directions; and its object is primarily to increase the capability of adjustment for all conditions under which its use is required.

The invention consists, primarily, in a fan of the class described in which the operative member is supported upon the standard by means of trunnions and the supporting-standard is formed in sections having pivotal and split-ball connections, whereby the fan-shaft may be tilted at different inclinations upon the supporting-standard. The adjacent section is capable of rotation to vary the axial direction of operation of the fan, and the standard is otherwise adjustable for use as a bracket when applied to a side wall or other vertical support.

The invention further includes certain specific features of construction of the adjustable connections between the parts of the fan.

In annexed drawings, Figure 1 is a rear elevation of a fan embodying my present improvement, with its standard adjusted suitably for resting upon a desk or table. Fig. 2 is a sectional elevation, upon an enlarged scale, of the pivotal and split-ball connections of the standard. Figs. 3 and 4 are plan views, respectively, of the component members of the split-ball connection of the supporting-standard upon the same scale. Fig. 5 is a side elevation of the fan with its standard adjusted for use as a bracket for attachment to a side wall; and Figs. 6 and 7 are respectively side and plan views of the fan, upon a greatly-reduced

scale, to illustrate the scope of adjustment afforded by the present improvement.

The operative member of the fan comprises a motor-frame *a*, having bearings *b*, in which is journaled the armature-shaft *c*, carrying a propeller-wheel *d*. The supporting-standard is formed of a base-section *e*, an intermediate section *f*, and a yoke-section *g*, the latter being provided with trunnion-screws *h*, tapped into the motor-frame, by means of which the latter is enabled to be tilted to vary the inclination of the motor-shaft and the fan carried thereby.

The trunnion-screws *h* are represented as disposed upon an axial line which intersects that of the fan-shaft *c* substantially at the center of the motor-frame *a*, and this arrangement thus insures that the equilibrium of the motor-frame upon its base shall not be disturbed by tilting the fan so as to throw the center of gravity laterally beyond the base. This is a particularly desirable feature in case the fan is to be used with the vertical adjustment of its standard represented in Fig. 1 and resting upon a wall-bracket with its frame so tilted as to direct the current from its fan-blades downwardly at a considerable angle with the horizontal.

The yoke-section is provided with an annular recess *i*, which is entered by a hub *j* upon the upper portion of the intermediate section *f*, which has a tubular projection *k* fitted to a similarly-threaded aperture in the yoke-section *g*. The hub *j* is provided in its upper side with an annular groove *l*, entered by the lower end of a stop-screw *m*, carried by the yoke *g*, and the intermediate section *f* is formed with a spring-socket *n*, containing a spiral spring *o*, the upper end of which engages the bottom of the recess *i* in the yoke-section and produces thereon a frictional drag to resist the turning of the yoke upon the threaded projection *k*, while engagement of the projecting lower end of the stop-screw *m* with the upper end of the spring *o* prevents the yoke from making a complete rotation in either direction, and thereby prevents the twisting-off of the flexible conducting-cables

$y$ , passing through the hollow component members of the standard to the usual switch in the base-section thereof.

It is evident that other forms of pivotal joint between the yoke and intermediate sections would perform the required function; but I prefer to employ the screw-joint described in order that by backing off the screw  $m$  sufficiently the conducting-cables  $y$  having been temporarily disconnected, the yoke may be rotated sufficiently to adjust the pressure of the spring  $o$  to give the requisite frictional resistance to the relative turning of the sections between which it is interposed, after which adjustment the stop-screw  $m$  may be returned to operative position and the motor again connected with the base  $e$  by means of the cables  $y$ .

The upper portion of the base-section and lower portion of the intermediate section together form a split-ball of which one-half is afforded by each of such parts. The opposed parts of the split ball are secured together by means of the clamp-screw  $p$ , entering a suitable hole in the ball member  $e$  upon the base-section and tapped into the inner part of the opposed ball member  $f'$  of the intermediate section. The two members of the split-ball joint are held positively in each of their positions of adjustment by means of a dowel-pin  $q$  upon the opposed edge of one entering either of several holes  $r$  in the adjacent edge of the other member. By loosening the clamp-screw of the split-ball joint sufficiently for the withdrawal of the dowel-pin  $q$  from its hole, turning the members upon the screw  $p$  as a pivot until the dowel-pin comes into registration with another of the holes provided to receive it, and then again tightening the clamp-screw  $p$ , the standard may be adjusted from the straight form (illustrated in Fig. 1,) to the bracket form (illustrated in Figs. 5 and 6,) the rigidity of the standard being maintained through its several adjustments, while it is securely locked in each of such adjustments to prevent accidental shifting.

It will thus be seen that without in any manner affecting the effectiveness of action of the operative member of the fan it may be adjusted for use either as a desk or wall fan, as indicated in Figs. 1 and 5, it may be tilted and adjusted for either of such uses at varying angles from the horizontal, as represented in full and dotted line positions in Fig. 6, or it may shifted axially in any inclination from the horizontal and in either use as a desk or wall fan by merely turning it in opposition to the frictional drag produced by the spring  $o$ , as illustrated in the full and dotted line positions in Fig. 7.

It is evident that the present improvement is capable of embodiment in somewhat-different forms from that shown and described herein, and it is therefore to be understood that

the invention is not limited to the precise details of construction described above.

The term "pivotal joint" as employed herein is intended to designate, broadly, a turning joint intermediate two relatively movable members, one of which is rotatable upon the other on a fixed axis either with or without longitudinal movement along such axis, the screw-joint specifically shown and described herein being one species of such a pivotal joint in which the screw-threads insure a longitudinal movement of one member upon the other simultaneously with its rotary motion.

Having thus set forth the nature of the invention, what I claim herein is—

1. An electric fan consisting of an operative member including a motor-frame carrying a rotary shaft and a sectional supporting-standard therefor comprising a yoke-section embracing said motor-frame and connected therewith by trunnions arranged substantially in a line intersecting the axis of said shaft at the center of said frame, an intermediate section connected with said yoke-section by a pivotal joint, and a base-section connected with said intermediate section by a split-ball joint.

2. In an electric fan, the combination with the operative member including a motor-frame, of a supporting-standard for the same comprising two sections connected together by a pivotal joint, and a spring for imposing a frictional resistance to rotation between said sections.

3. In an electric fan, the combination with the operative member including a motor-frame, of a supporting-standard for the same comprising two sections rotatably connected together by a screw-joint, and a spring interposed between said members for imposing a frictional resistance to rotation between said sections.

4. A standard for electric fans comprising two sections connected together by a pivotal joint, one of said sections being provided with a socket opposite the other section, and a spring inserted in said socket and engaging each of said sections at its opposite ends.

5. A standard for electric fans comprising two sections connected together by a pivotal joint, one of said sections being provided with a socket opposite the other section, a spring inserted in said socket and engaging each of said sections at its opposite ends, and a stop for limiting the relative rotation of said sections.

6. A standard for electric fans comprising two sections connected together by a pivotal joint, a friction-spring carried by one of said sections and normally pressing against the other said section, and a stop-screw carried by the other said section and adapted to engage said spring for limiting the relative rotation of said members.

7. A standard for electric fans comprising

two sections rotatably connected together by  
a screw-joint, each of said sections carrying  
one of the interengaging members of a stop  
device for limiting the relative rotation of said  
5 section.

8. A standard for electric fans comprising  
two sections each carrying one of the opposed  
parts of a split-ball connection, a clamp-screw  
for securing said parts together, and a dowel-  
10 pin upon the one and suitable holes in the other

of said parts for locking the same in different  
positions of axial adjustment.

In testimony whereof I have signed my name  
to this specification in the presence of two sub-  
scribing witnesses.

ADOLPH F. BECKER.

Witnesses:

B. C. KENYON,  
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