

No. 613,054.

Patented Oct. 25, 1898.

D. L. & R. H. BATES.

ELECTRIC FAN.

(Application filed July 21, 1898.)

(No Model.)

2 Sheets—Sheet 1.

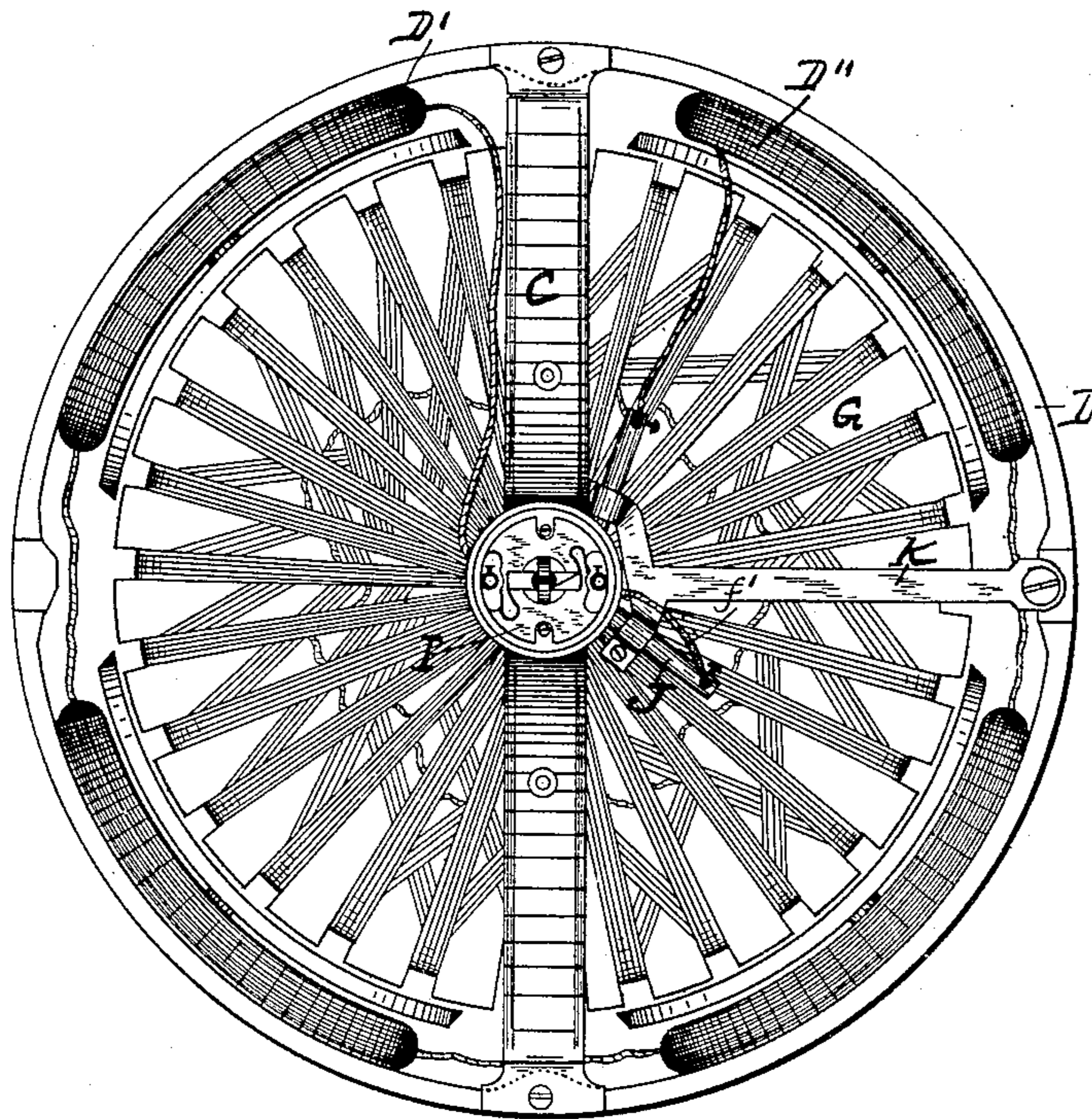


Fig. 1.

WITNESSES

W. J. Thines
Carl H. McE.

D. L. Bates..
R. H. Bates
INVENTORS.

By R. J. McCarty
ATTORNEY

No. 613,054.

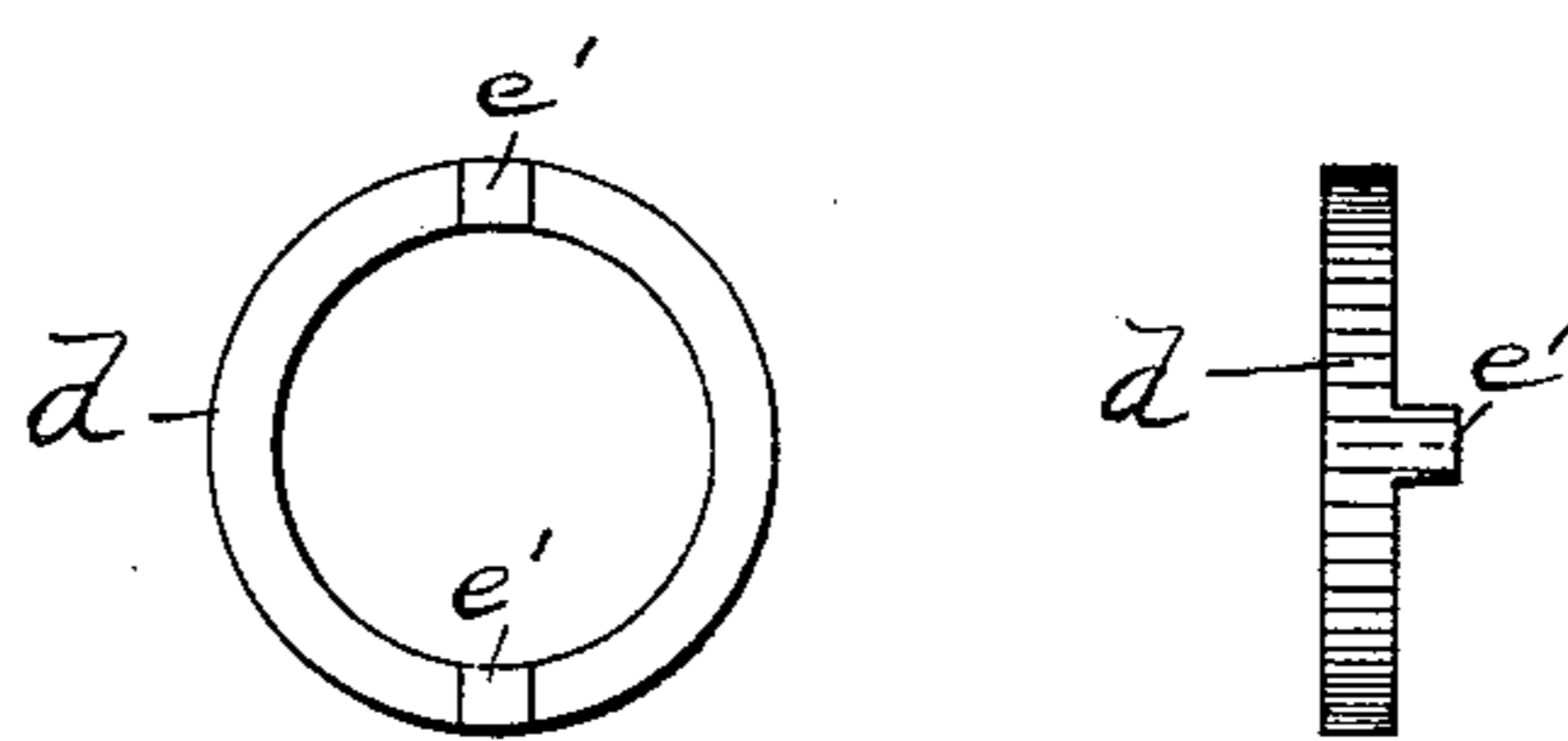
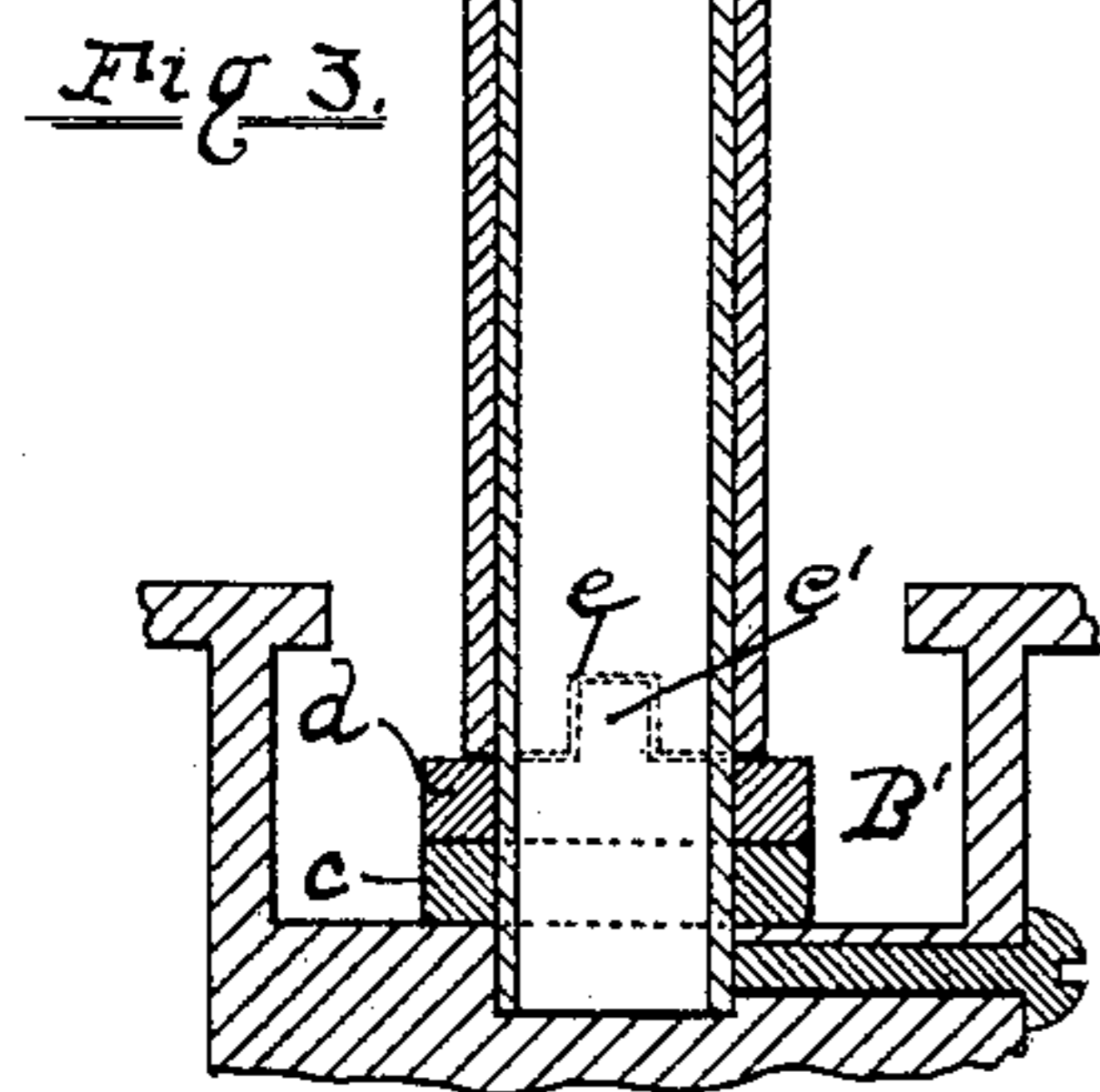
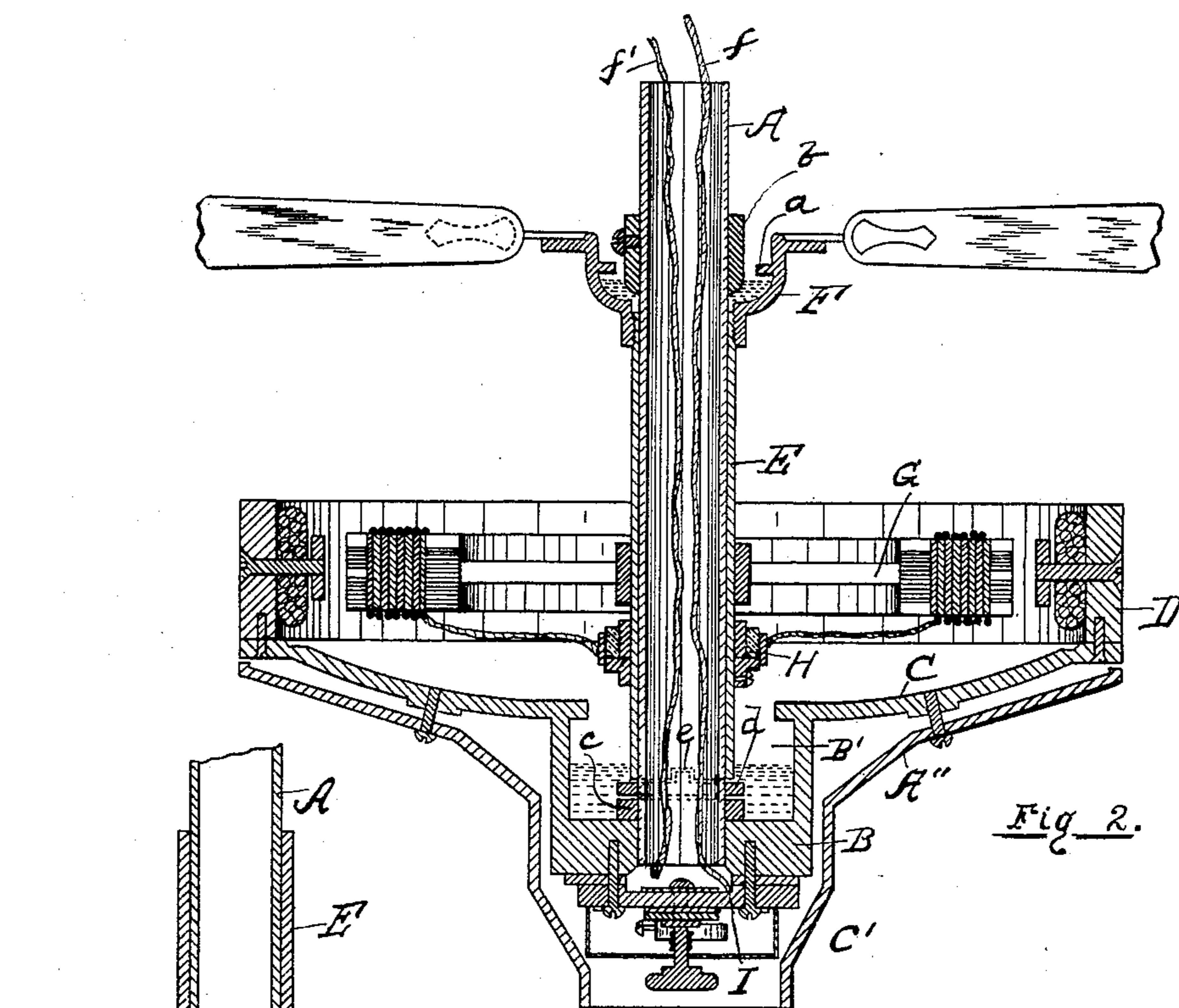
Patented Oct. 25, 1898.

D. L. & R. H. BATES.
ELECTRIC FAN.

(Application filed July 21, 1898.)


(No Model.)

2 Sheets—Sheet 2.



WITNESSES

W. J. Hines
Carl H. Hoe.


D. L. Bates.
R. H. Bates.
INVENTORS.
By R. J. McCarty,
ATTORNEY.

UNITED STATES PATENT OFFICE.

DANIEL L. BATES AND RUSSELL H. BATES, OF DAYTON, OHIO.

ELECTRIC FAN.

SPECIFICATION forming part of Letters Patent No. 613,054, dated October 25, 1898.

Application filed July 21, 1898. Serial No. 686,483. (No model.)

To all whom it may concern:

Be it known that we, DANIEL L. BATES and RUSSELL H. BATES, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Electric Fans; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in electric fans in which the fan-blades are mounted above the armature and field-magnets.

The object of the invention is to simplify the construction and otherwise improve the efficiency of fans of this character.

To these ends the invention has specific reference to a sleeve upon which the armature, commutator, and fan-blades are carried, and to oil-cups at the upper and lower ends of said sleeve, the capacity of the latter oil-cup being substantially greater than that of the upper oil-cup, so that any overflow of oil or splashing while the fan is rotating is avoided.

The improvements further have reference to the bearing for the sleeve in the lower oil-cup and to means for protecting the switch from breakage during the handling of the motor in packing, shipping, and setting up.

In the accompanying drawings, Figure 1 is a bottom view of the motor and switch. Fig. 2 is a vertical mid-sectional view of our improved fan. Fig. 3 is an enlarged sectional view of the lower oil-cup, tubular motor-support, sleeve, and washers; Fig. 4, plan and edge views, respectively, of the metallic bearing ring or washer.

In the specification similar letters of reference indicate corresponding parts.

The tubular support A is screw-threaded at its upper end for an attachment with a depending ceiling-pipe (not shown) and has its lower end rigidly secured in the bottom B of the lower oil-cup B', which is an integral part of the spider or support C of the stationary support or ring D of the field-magnet coils.

E designates a sleeve inclosing the tubular

support A, and attached to the upper end of which is a combined fan-blade holder and oil-cup F, having an internal oil-retaining flange *a*. Above the said oil-cup, on the tubular support A, is a collar *b*, which prevents the sleeve E and attachments from slipping off said tubular support. The sleeve E supports the armature G and commutator-sections H about midway of its length and projects down into the lower oil-cup B' and is provided at its lower end with a bearing consisting of a vulcanized-fiber washer *c*, that incloses the lower end of the tubular support A and rests upon the bottom of the lower oil-cup, and a metallic washer *d*, that rests upon said fiber washer, both washers being submerged in oil, as is also the lower end of the supporting-sleeve E. The lower end of said sleeve interlocks with the washer *d* by means of notches *e*, of which there is one in opposite sides of said sleeve, and lugs or projections *e'*, of which there are two projecting from the upper side of said washer.

The rotating armature, it will be seen, is mounted at or near the middle of the sleeve. This equalizes the strain due to the rapid rotations of the armature and insures a proper alinement of the parts, thereby increasing the efficiency of the motor. The oil is fed to the tubular shaft or support A and the sleeve E in the upper oil-cup F, from whence it feeds by force of gravity between said tube and sleeve to the lower oil-cup. As before stated, the capacity of the latter cup is much greater than that of the upper cup. Any excess of oil that may be fed to the upper cup cannot overflow the lower cup. Consequently the oil is at all times confined to its proper place and the liability of its splashing is obviated, which liability would be great if the lower oil-cup did not exceed in capacity the upper cup.

The conductor-wires *f f'* are inclosed in the tubular support A and connect, respectively, with one side of the switch I and the brush-holder J. The other side of the switch and brush-holder J are connected, respectively, with field-magnet coils D' and D''. The brush-holder arm or support K is attached to the field-magnet ring or support D. It will be seen that the switch I is placed upon the bottom of the lower oil-cup, a point that naturally comes in contact with the floor or other place

upon which the motor is placed in handling it preparatory to unpacking and setting it up. This has frequently caused the breakage of the switch, and to avoid such we have extended the basket or case A'' down around and below the lowest point of said switch in the form of a housing C', which provides a support for the motor and an absolute protection to the switch. The basket is secured to the spider or support C. By attaching the primary oil-feeding cup F on the upper end of the sleeve, where access thereto is easy, the entire bearing from the upper to the lower oil-cups may be conveniently oiled without detaching any of the parts.

The tubular support A may be a solid shaft or support. In either event the sleeve E, rotating around said support, forms a bearing the entire length of said sleeve E.

Having described our invention, we claim—

1. In an electric-fan motor, the combination with a central motor-support, of a sleeve or tubular support for the armature, fan-blades, and commutator, the said sleeve or armature-support surrounding the motor-support and providing a bearing for the armature and fan-blades substantially the length of the motor-support, a combined oil-cup and fan-blade support attached to the upper end of said sleeve, and a stationary oil-cup at the lower end of said sleeve in which the latter has a bearing, substantially as described.

2. In an electric fan, the combination with an armature, and a tubular stationary support, of a sleeve inclosing said support and to the central portion of which the armature is attached, a combined oil-cup and fan-blade support on the upper end of said sleeve above the armature, a support for the field-magnets providing an oil-cup into which the lower end of said sleeve projects, the said lower oil-cup having a capacity greater than the oil-cup at the upper end of the sleeve, a vulcanized fiber washer in said lower oil-cup, a metallic washer resting thereon, and means on the latter washer, and on the lower end of the sleeve for interlocking said washer and sleeve substantially as specified.

3. In an electric fan, the combination with a stationary tubular support, a rotating ar-

mature, and commutator-sections; of a sleeve providing a support for the armature, commutator-sections, and the fan-blades, an oil-cup above the armature at the upper end of the sleeve and into which the oil is initially fed, a field-magnet ring or support, a spider supporting said field-magnet ring, an oil-cup in said spider having a greater capacity than the oil-cup above the armature, a vulcanized fiber washer in said lower oil-cup, a metallic washer resting thereon, and means for interlocking the lower end of the sleeve and the said metallic washer, substantially as specified.

4. In an electric fan, the combination with a motor-support, of a sleeve supporting the armature, fan-blades and commutator-sections, and forming a bearing substantially the length of the motor-support, an oil-cup at the upper end of said sleeve, a ring or annular support for the field-magnets and brush-holder; a spider or support for said ring, an oil-cup in said spider, a bearing in said oil-cup for the sleeve, a switch below said oil-cup, and a basket or inclosing case having an extended portion surrounding said switch and providing a housing for the protection of said switch, substantially as specified.

5. In an electric fan, the combination with a motor-support, of a sleeve or tubular support for the armature, fan-blades, and commutator, the said sleeve or support surrounding said motor-support, and forming a bearing substantially the length of the motor-support, an oil-cup at the upper end of said sleeve, and an oil-cup of greater capacity at the lower end of said sleeve, a spider supported on the motor-support and in which said lower oil-cup is formed, a field-magnet ring supported by said spider, and a brush-holder supported on said field-magnet ring, substantially as specified.

In testimony that we claim the foregoing as our own we hereto affix our signatures in presence of two witnesses.

DANIEL L. BATES.
RUSSELL H. BATES.

Witnesses:

W. B. NEVIN,
R. J. McCARTY.