

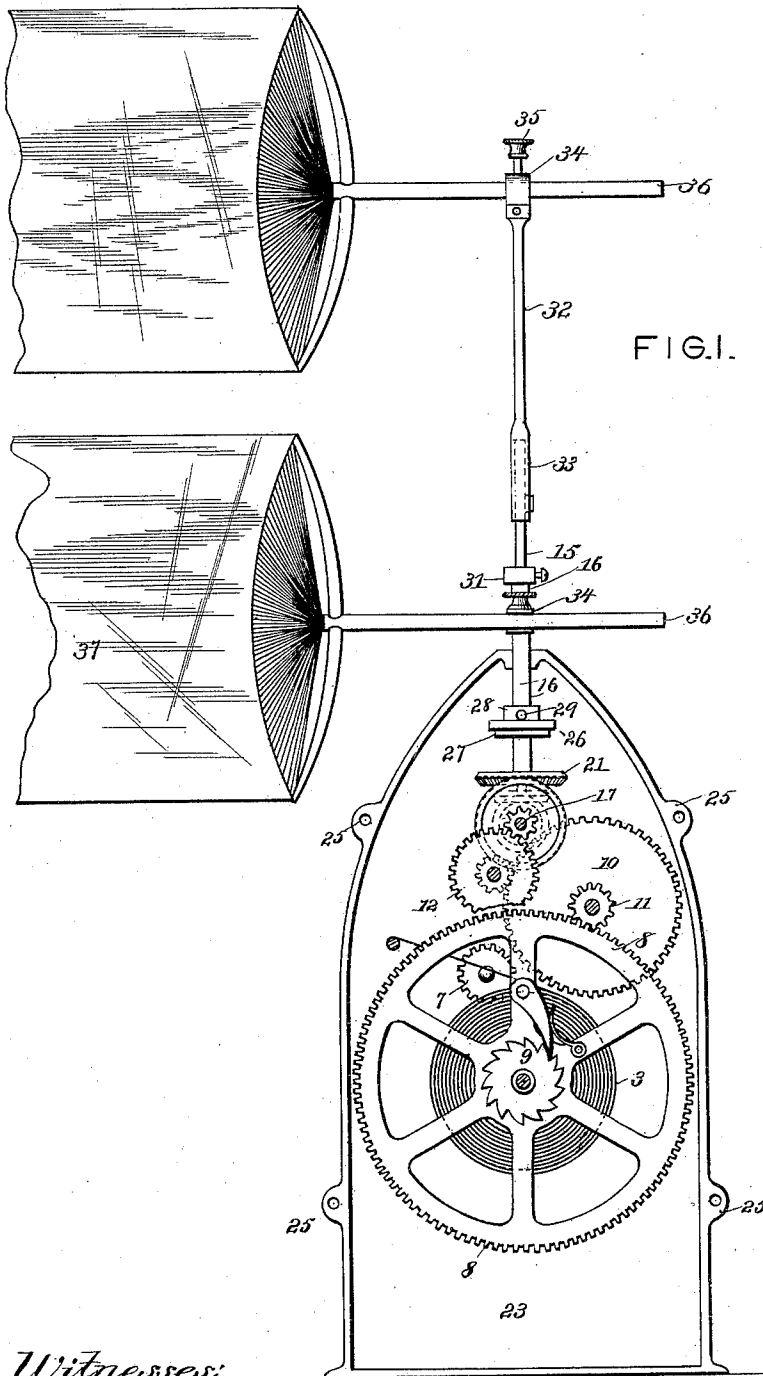
(No Model.)

2 Sheets—Sheet 1.

R. H. L. ARRINGDALE.
AUTOMATIC FAN.

No. 463,089.

Patented Nov. 10, 1891.



Witnesses:
Harry S. Rohrer,
George E. Cruise.

Inventor:
Richard H. L. Arringdale
By Knight Bros.
Attorneys.

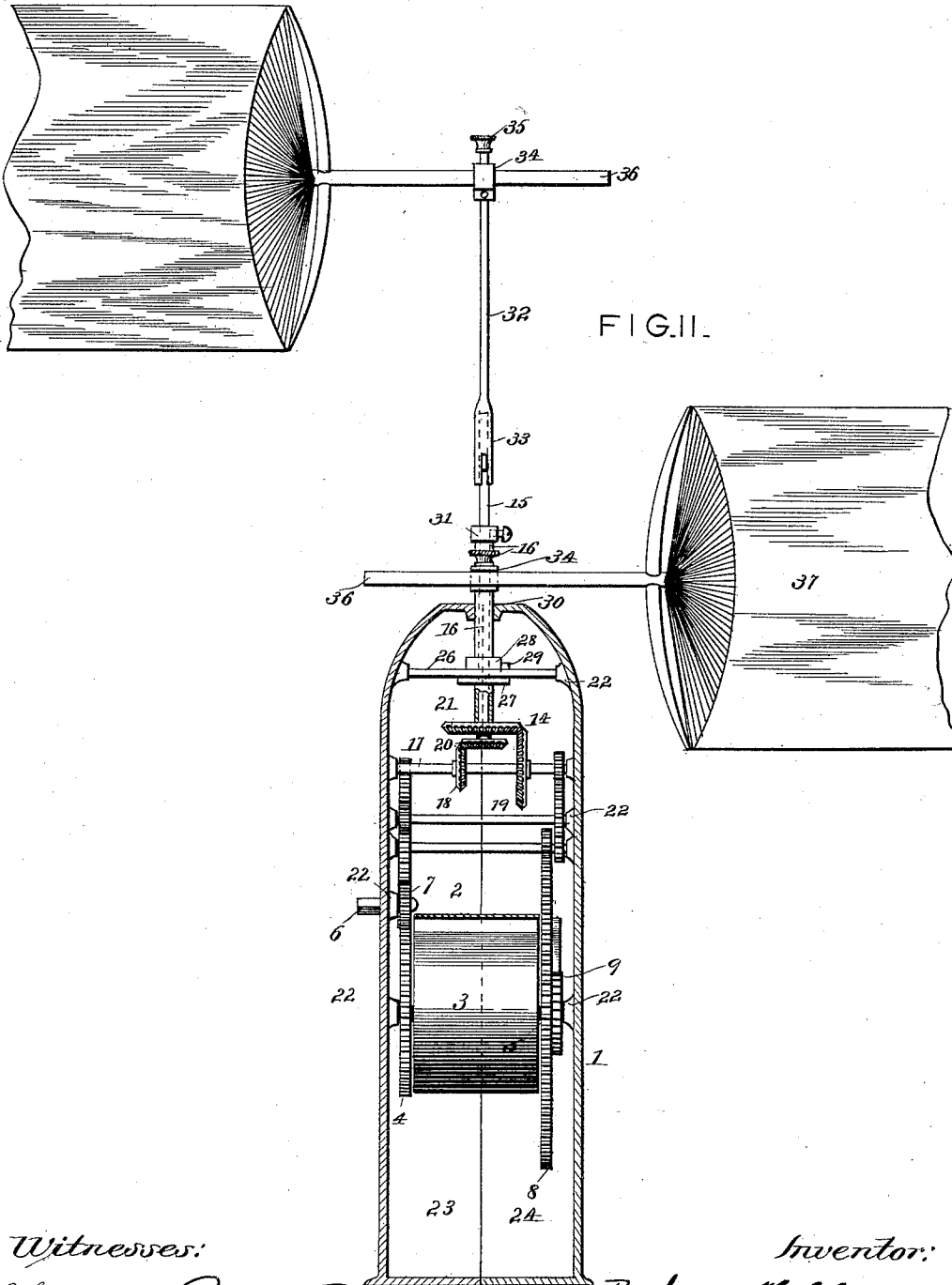
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UNITED STATES PATENT OFFICE.

RICHARD H. L. ARRINGDALE, OF RADFORD, VIRGINIA.

AUTOMATIC FAN.

SPECIFICATION forming part of Letters Patent No. 463,089, dated November 10, 1891.

Application filed January 30, 1891. Serial No. 379,690. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. L. ARRINGDALE, a citizen of the United States, residing at Radford, in the county of Montgomery and State of Virginia, have invented certain new and useful Improvements in Automatic Fans, of which the following is a specification.

My invention relates to automatic fans having rotary shafts, upon which may be mounted detachably fans of ordinary construction and a suitable motor for driving said shafts, the fan being adapted for cooling the person or for use as a fly-fan.

The objects of my invention are to construct a fan of simple mechanism, neat in appearance, and adapted to give cross-currents of air or currents in opposite directions; and my invention consists in mounting in a suitable casing a motor preferably driven by a strong spring, two concentric vertical shafts, each having a socket for the reception of a fan, and suitable gearing between the motor and said shafts, whereby the latter are driven in opposite directions.

In order that my invention may be fully understood, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure I is a side elevation of my device, the casing being in axial section, and Fig. II is a similar view in a plane at right angles to that of Fig. I.

1 represents the casing, and 2 the motor, which consists of the spring 3, having winding-wheel 4 and shaft 5, the winding-arbor 6, geared to winding-wheel by pinion 7, and a drive-wheel 8, connected to the spring-shaft 5 by means of pawl and ratchet 9. The train of gearing for increasing the rotation consists of a spur-wheel 10, having pinion 11, gearing with the drive-wheel 8, the wheel 12, having pinion 13, gearing with the periphery of wheel 10, and the changing gear 14, making connection between the wheel 12 and the oppositely-rotating shafts 15 16, said changing gear consisting of the horizontal shaft 17, carrying the differential wheels 18 19, and the wheels 20 21, rotating in a horizontal plane, secured to the shafts 15 16, respectively, bearing the same relation or proportionate size to the wheels 18 19, and adapt-

ed to intermesh with said wheels in any suitable manner. The two pairs of wheels 18 20 and 19 21, which rotate in planes at right angles, may be connected either by forming beveled cog surfaces upon them or making one a crown-wheel and the other a spur-wheel, or in any other suitable manner. The wheels 18 and 19 gear with opposite sides with the wheels 20 and 21, and it will therefore be seen that the shafts 15 and 16 rotate in opposite directions. The wheels 18 and 20 are made in precisely the same proportion as the wheels 19 and 21, and although the pair last mentioned is of larger diameter than the first pair, it will be seen that the shafts 15 and 16 rotate at precisely the same rate.

In mounting the several shafts within the casing, lugs 22 are formed on the inner surface, and these are perforated for the reception of the ends of the respective shafts. The casing 1 is formed in two halves 23 24, each provided with corresponding lugs 25, through which are passed rivets to secure the two halves together. The shafts are all arranged transversely to the plane in which the case is separated, and it will therefore be seen that their ends can be inserted in the perforations made to receive them as the halves of the casing are put together.

26 represents the transverse shelf secured in lugs 22, and this is perforated for the passage of shaft 16, which has lower collar 27 fixed to it and an upper collar 28 removably attached to it by means of a pin 29. The shaft 16 is further provided with a bearing 30 in the upper end of the casing. The shaft 15 is journaled within the shaft 16 and is supported therein by a removable collar 31. The shaft 15 is prevented from being drawn upward through shaft 16 by means of its lower horizontal gear-wheel 20. The upper portion 32 of the shaft 15 is removably attached to said shaft by means of a split sleeve 33, neatly fitted over the end of said shaft 15. Each of the shafts is provided at suitable points with clamping-sockets 34, having screws 35 for the reception of handles 36 of fans 37, which fans, as stated, may be of any ordinary or preferred form.

The shafts being made to rotate at the same rate in opposite directions, the fans will be

made to cross each other at two points on opposite sides, one fan being far enough above the other to permit the rotation and passing of the fans without interference. The fans
5 being made to cross constantly at the same two points, it is obvious that the machine may be placed so as to deliver the cross-currents at the same time on opposite sides of the person. By rotating the machine as a
10 whole ninety degrees from such position the currents may be received alternately. Aside from the above adaptation of my device, it is obvious that the reversely-roating fans will operate more effectively than a single fan or
15 a pair of fans on opposite ends of the same horizontal arm.

While I have shown a single fan extending from each shaft, I desire it understood that a double fan may be applied to each shaft without departing from the spirit of my invention. The fans may, if desired, be inclined to deflect the current of air slightly downward, and, if desired, the fans may be driven at different rates of speed by simply altering
25 the ratio between the two paths of gear-wheels

which translate the vertical into the horizontal rotation.

I am aware that propellers have been constructed with concentric shafts revolving in opposite directions and carrying propeller
30 wheels or blades, so that the said wheels will mutually counteract the vertical or gyratory effect of each other upon the fluid while the intended and principal purpose of said propellers is exerted longitudinally in the line of
35 their common axis.

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

In an automatic fan, the combination of a
40 suitable motor, the reversely-rotated vertical shafts driven by said motor, and vertical fans extending laterally from the respective shafts and adapted to send cross-currents in a horizontal direction, substantially in the manner
45 and for the purposes set forth.

RICHARD H. L. ARRINGDALE.

Witnesses:

GEORGE E. CRUSE,
HERVEY S. KNIGHT.