

No. 610,852.

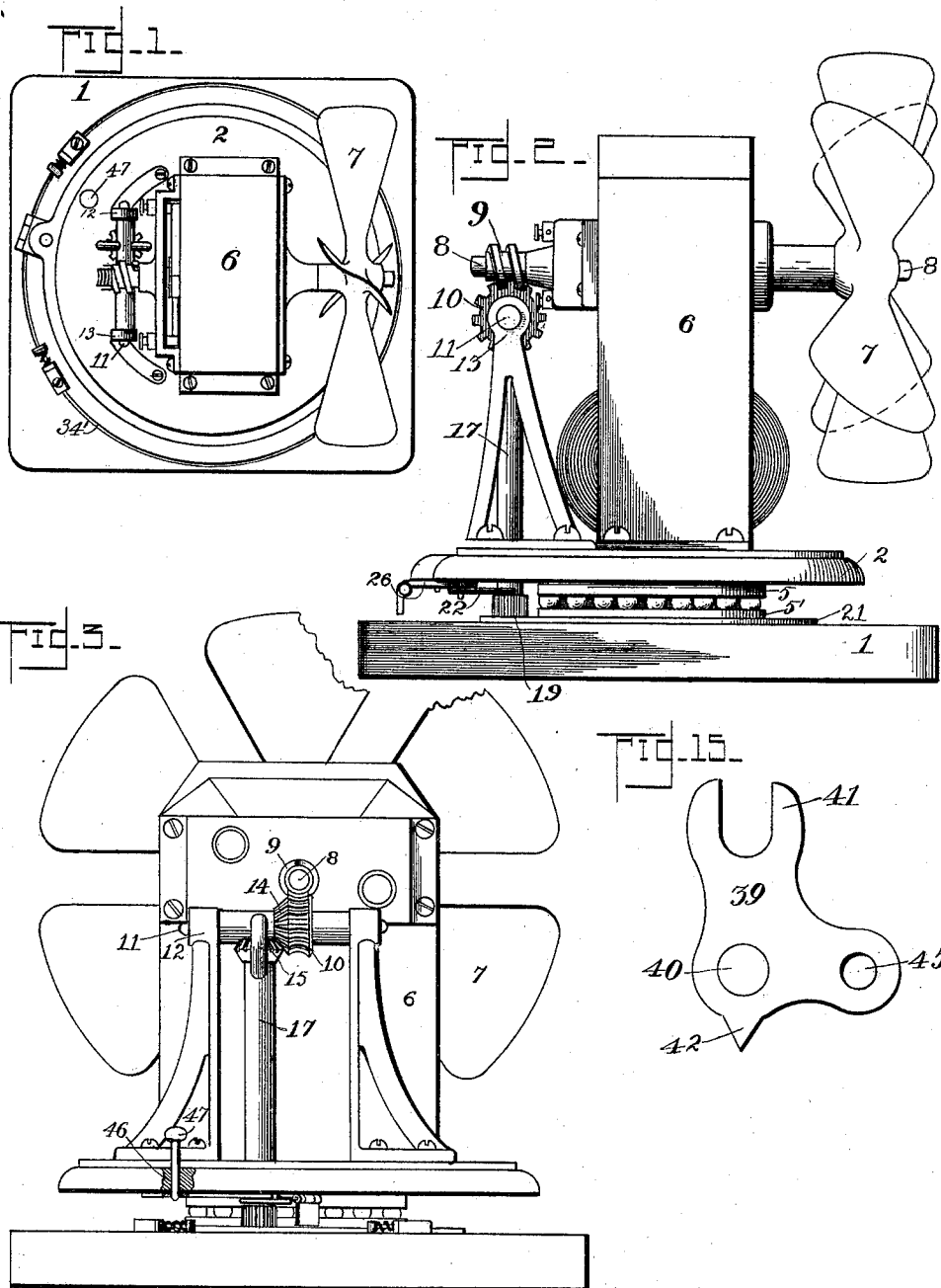
Patented Sept. 13, 1898.

M. ROLLE.
VENTILATING FAN.

(Application filed Oct. 12, 1897.)

(No Model.)

3 Sheets—Sheet 1.



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FIG. 4.

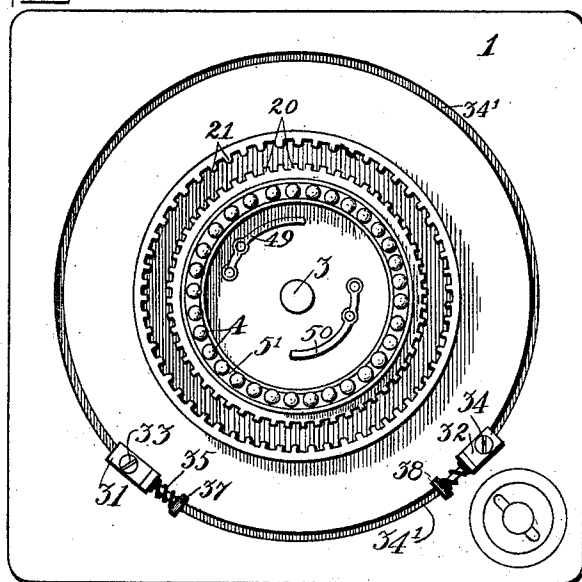


FIG. 11.

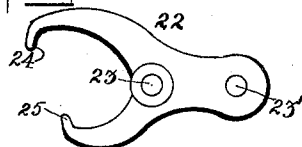


FIG. 12.

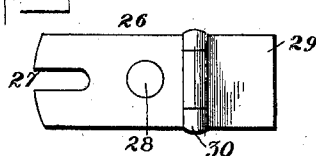


FIG. 5.

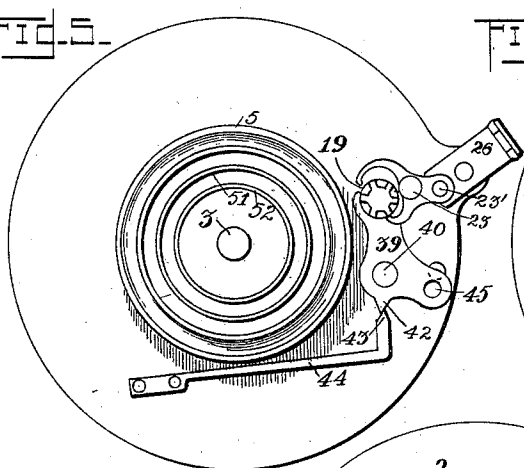


FIG. 6.

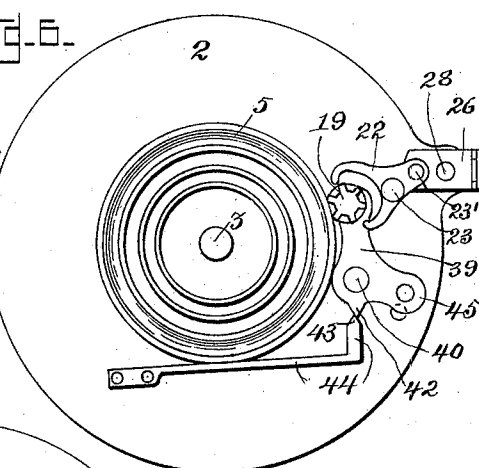
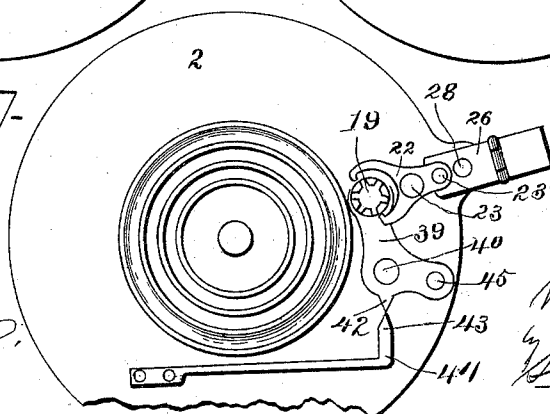


FIG. 7.



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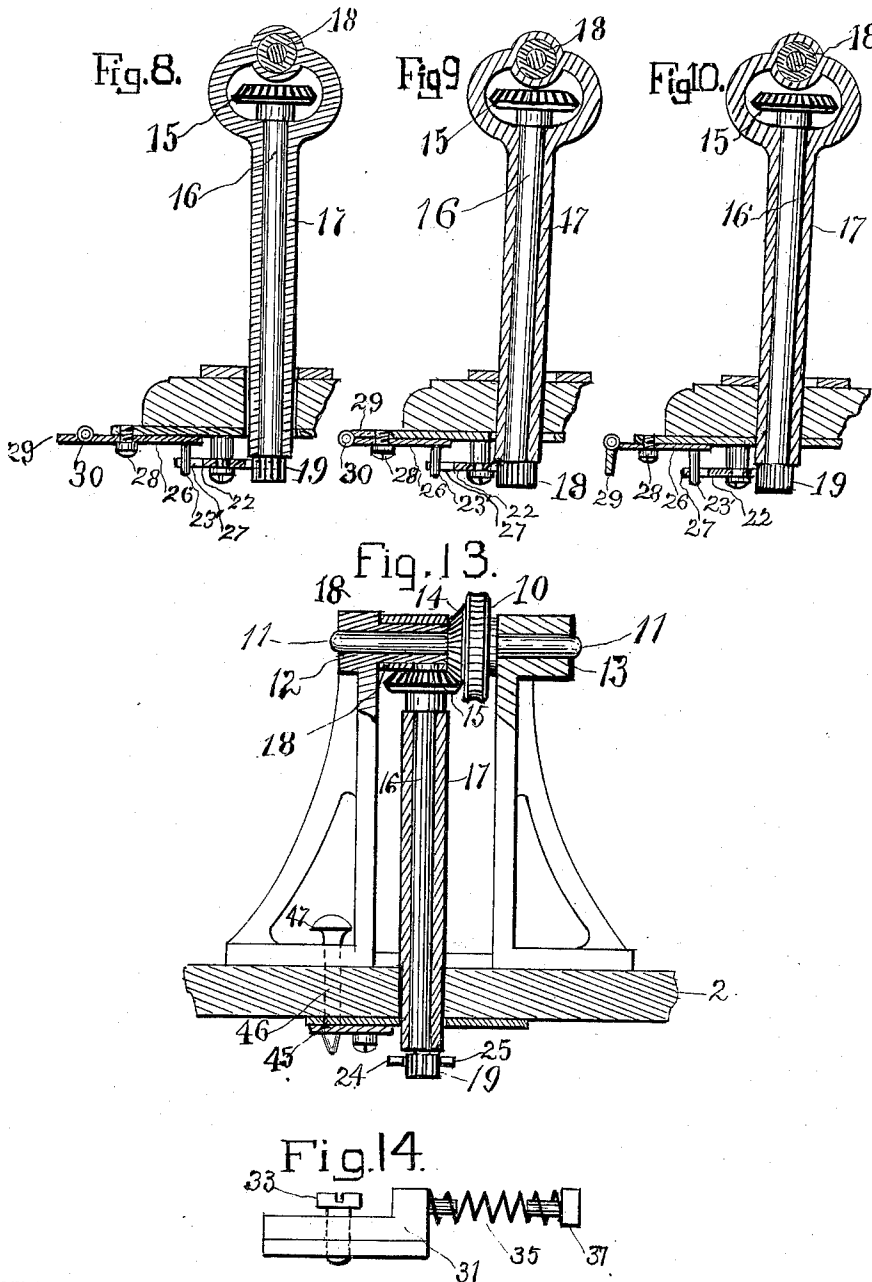
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

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VENTILATING-FAN.

SPECIFICATION forming part of Letters Patent No. 610,852, dated September 13, 1898.

Application filed October 12, 1897. Serial No. 654,955. (No model.)

To all whom it may concern:

Be it known that I, MAX ROLLE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ventilating-Fans; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to ventilating-fans for circulating air in apartments, and has for its object the convenient adjustment of such fans to change the direction of air-current propelled by them, so that they can be set to automatically change the direction of current angularly by reciprocating it in arcs of varying extent or to rotate throughout an entire circle or to remain fixed in a single direction.

To effect these several desiderata, this invention consists in a fan and connected motor fastened upon a turn-table having a vertical axis and a stationary base, suitable switches and conduits conveying electric current to the motor, a gearing operated by the motor engaging reversibly in toothed gearing upon the supporting-base, and adjustable mechanism for automatically reversing the direction of the turning motion of the turn-table and fan on the base, also susceptible of adjustment for continuous rotation thereon, as hereinafter described and shown in the accompanying drawings, in which—

Figure 1 shows a plan view of the invention; Fig. 2, a side elevation thereof; Fig. 3, an end elevation thereof; Fig. 4, a plan view of the base; Fig. 5, an inverted plan view of the turn-table with the gear engaged for turning in one direction; Fig. 6, an inverted plan view of the reversing-gear as engaged for turning in the opposite direction; Fig. 7, a like view with gears disengaged, so as to remain stationary. Fig. 8 shows an enlarged vertical section of the reversing-gear as disengaged or set for leaving the turn-table in a stationary position. Fig. 9 shows a like view of the reversing-gear as set for continuous rotation. Fig. 10 shows a like view of the reversing-gear as set for reversing or reciprocating motion. Figs. 11 and 12 are detached views of the levers for changing the engage-

ment of the gearing for reciprocating and turning the turn-table. Fig. 13 is a partial section, enlarged, of the supports for the shaft for transmitting motion to the reversing-gear. Fig. 14 is an enlarged view of one of the adjustable stops for controlling the reversing-gear, and Fig. 15 is an enlarged view of a lever for holding the reversing-gear in position of engagement and disengagement.

Referring to the drawings, 1 represents the base.

2 is the turn-table, guided by a central pivot 3 and supported by balls 4, rolling in annular raceways 5 and 5' on the base 1 and turn-table 2.

6 is a motor fastened to the turn-table 2 and carrying and turning a fan 7.

8 is the arbor of the motor 6, upon the end of which arbor 8 is fitted and fastened an endless screw 9, which rotates with it and engages in a worm-wheel 10 on an arbor 11, turning in bearings 12 and 13. A beveled wheel 14 is secured to the arbor 11, so as to turn with the worm-wheel 10. The bevel-wheel 14 engages with and turns another bevel-wheel 15 and arbor 16, supported in a bearing-sleeve 17, which swings as a pendulum on a sleeve 18 on the bearing 12 of the arbor 11, so that the bevel-wheels 14 and 15 remain constantly in proper engagement.

Upon the lower end of the arbor 16 is a pinion 19, which pinion 19 engages alternatively in annular racks 20 and 21, secured to the base 1. The teeth of the rack 20 are external and those of the rack 21 are internal, and the racks 20 and 21 are of such diameters as to leave an intermediate space in which the pinion 19 can rotate without touching either. The pinion 19 is of such length that a portion of the teeth are above the racks 20 and 21. A lever 22, supported on a pivot 23, attached to the turn-table 2, has two hooked prongs 24 and 25 of unequal length, which alternately engage in the teeth of the pinion 19 as the lever 22 is turned by the stops 31 and 32, being engaged by a lever 26 hereinafter described, and when so engaged the rotation of the pinion as engaged with either prong 24 or 25 forces the pinion out of engagement with the rack and ready to pass into engagement with the other rack by the operation of a spring 44 and lever 39, hereinafter described,

the sleeve 17 swinging upon the sleeve 18 in so doing.

On the lever 22 is a pin 23', which engages in a slot 27 in a lever 26, (see Figs. 5, 6, 7, and 12,) turning upon a pivot 28, attached to the turn-table 2. The opposite or outer end 29 of the lever 26 is attached to it by a hinge 30, which when turned downwardly, as shown in Fig. 10, contacts with the stops 31 and 32, (shown in Figs. 3, 4, and 14,) secured adjustably by screws 33 and 34 in a circular groove 34'. The screws 33 and 34 screw through the stops 31 and 32 and press against the bottom of the groove 34'. Springs 35 are attached to the stops 31 and 32, having preferably rubber cushions 37 and 38 to contact with the end 29 of the lever 26, so that such contact is made silently. When the end 29 of the lever 26 is turned upward, so as not to contact with the stops 31 and 32, as shown in Figs. 8 and 9, the turn-table rotates continuously, because the pinion 19 remains continuously in engagement in the same rack 20 or 21. A lever 39, (shown in Figs. 5, 6, 7, and 15,) attached by a pivot 40 to the turn-table 2, has a forked end 41, which embraces the lower end of the sleeve 19, and a pointed arm 42, against which is constantly pressed the pointed end 43 of a spring 44, attached to the turn-table 2. When the pointed lever-arm 42 is in middle position of its motion, as shown in Fig. 7, the pinion 19 is disengaged from both of the racks 20 and 21; but as it is moved by motion acquired from the sleeve 17 and levers 22 and 26 from either stop 31 or 32 engaging either hook 24 or 25 in the pinion 19 the point 42 passes the point 43 of the spring 44, which spring 44 reacting completes the motion of the sleeve 17 and arbor 16 and causes the engagement of the pinion 19 in the opposite rack and at the same time moves the pinion 19 out of engagement with the hook 24 or 25.

In the lever 39 is a hole 45, which registers when the lever 39 is in central position with another hole 46 (shown in section on Fig. 3) in the turn-table 2, into both of which holes 45 and 46 a cylindric pin 47, having a conical lower end, fits. When the pin 47 is inserted in the holes 46 and 45, the lever 39 is held in central position, and the pinion 19 is thus held out of engagement from both of the racks 20 and 21, and as a consequence the turn-table, fan, and motor remain stationary, under which condition the air-current propelled by the fan is continuously in the same direction.

When the fan is used in central location in an apartment in which it is desired to direct the current radially in all directions, the end 29 of the lever 26 is turned upward and the fan and turn-table turned continuously.

When it is desired to direct the air-current in a limited part of the apartment, the lever end 29 is turned downward, so as to contact with the stops 31 and 32, and the stops are adjusted so as to limit the arc in which the turn-table reciprocates to include only the portion

of the apartment in which the air-current is desired. The electric current to the motor is supplied through a switch 48 to springs 49 and 50 on the base 1, which springs contact with conducting-rings 51 and 52, electrically connected with the brushes of the motor 6.

Certain features shown and described in this application being covered by my application Serial No. 597,140, the same are not herein claimed.

Having described my invention and the operation thereof, what I claim is—

1. In a ventilating-fan, a base, a turn-table rotatably supported thereon, a motor and fan attached thereto supported on the turn-table, an annular internally-toothed rack, and an annular externally-toothed rack, attached to the base, in combination with a pinion rotated by said motor, between said racks, a bearing supporting said pinion pendulously, and adjustable means of automatically engaging said pinion alternatively in either rack substantially as set forth and described.

2. In a reversing mechanism for changing the direction of action of a ventilating-fan, an endless screw rotated constantly by the fan-arbor, a worm-wheel, an arbor and a beveled wheel turned by said screw, a bearing pendulously supported on the same axis as the bevel-wheel, a second beveled wheel turned by the first, a shaft turned thereby fitted in the pendulously-supported bearing, and having a pinion upon the lower end, annular stationary racks adapted to gear in said pinion, a forked lever provided with prongs engaging alternatively in said pinion, to disengage said pinion from either rack, a spring and lever arranged to engage said pinion in the opposite rack, and adjustable stop arranged to actuate the forked lever as and for the purpose set forth.

3. In a gearing for adjusting and varying the direction of action of ventilating-fan mounted upon a turn-table, two annular racks, a pinion and means of rotating said pinion, a forked lever engaging said pinion, to disengage the pinion from either rack and a pointed lever and a spring having an opposing point arranged to engage the pinion in the opposite rack, in combination with a pin fitting through apertures in said pointed lever, and in the turn-table to hold the pinion out of engagement with the rack as set forth.

4. In a gearing for controlling the motion of ventilating-fans mounted upon a turn-table, adjustable stops secured to a stationary base, the reversing-gear, a lever controlling the reversing-gear and actuated by said stops, in combination with a hinged terminal section of said lever for suspending the reversing action, and causing continuous rotation, of the fan and turn-table as set forth.

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Witnesses:

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