No. 799,004.

PATENTED SEPT. 5, 1905.

A. E. HOVEY.

MECHANICAL FAN.

APPLICATION FILED OCT. 11, 1904. RENEWED AUG. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

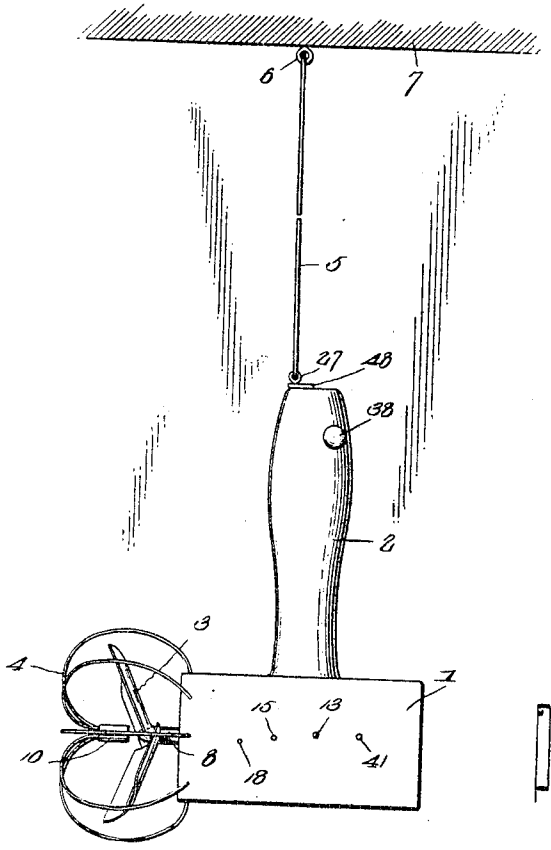
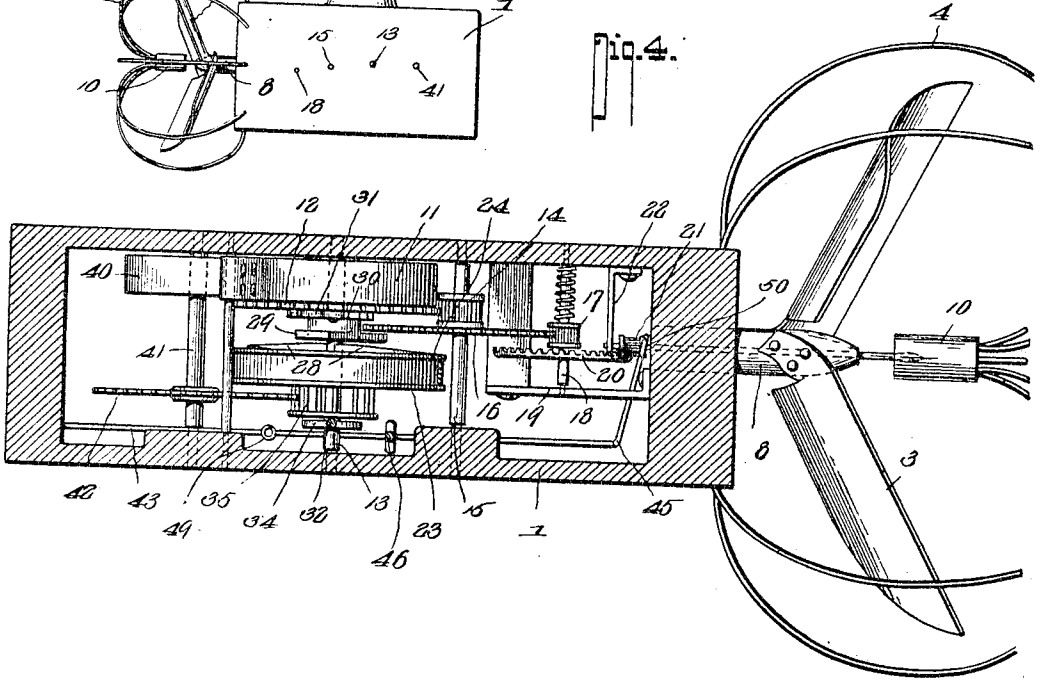


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

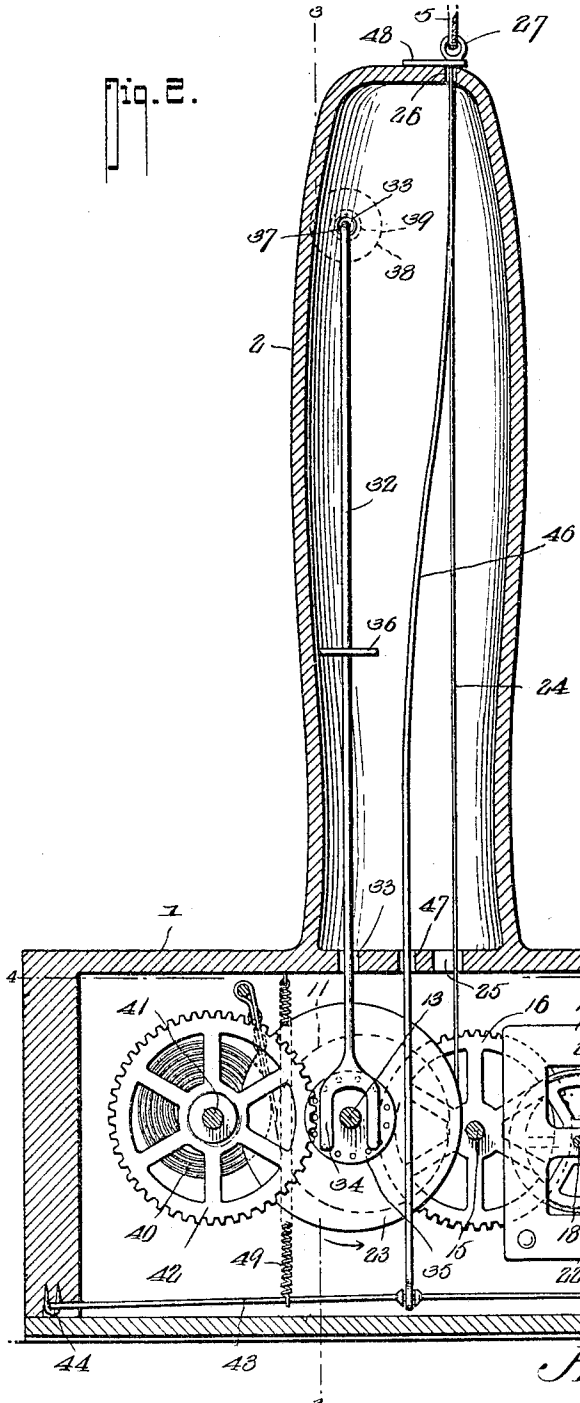
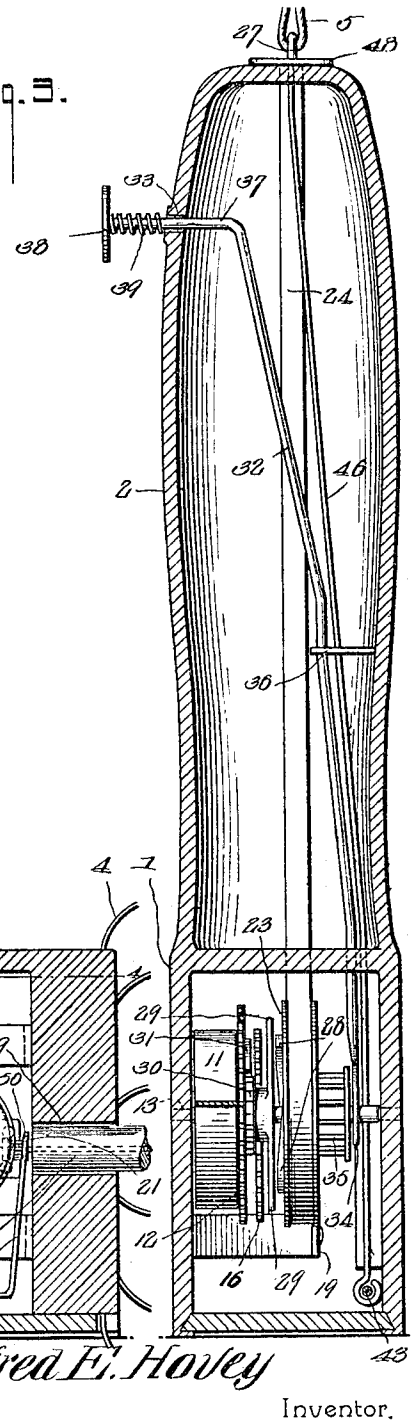


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED E. HOVEY, OF CASS LAKE, MINNESOTA, ASSIGNOR OF ONE-HALF TO OLE FERGUSON, OF CASS LAKE, MINNESOTA.

MECHANICAL FAN.

No. 799,004. Specification of Letters Patent. Patented Sept. 5, 1905.

Application filed October 11, 1904. Renewed August 9, 1905. Serial No. 273,492.

To all whom it may concern:

Be it known that I, ALFRED E. HOVEY, a citizen of the United States, residing at Cass Lake, in the county of Cass and State of Minnesota, have invented a new and useful Mechanical Fan, of which the following is a specification.

This invention relates to mechanical fans, and while capable of use in many relations it is particularly adapted to barber-shops for drying the face and scalp after shaving and shampooing.

It is furthermore designed to provide for hanging the fan in an elevated position above the head of the barber, so as not to interfere with his general work and at the same time to be in position to be conveniently reached and drawn down for use.

Further objects of the invention are to normally maintain the fan inactive, to effect winding of the spring-motor which runs the fan when the device is being drawn down into position for use, to set the fan in operation after it has been brought into position for use, to effect automatic elevation of the fan when released, and to automatically stop the fan upon being released by the operator.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation illustrating the hanging of the device in its normal position. Fig. 2 is an enlarged longitudinal sectional view of the device, the rotatable fan member being omitted for lack of room. Fig. 3 is a sectional view on the line 3 3 of Fig. 2. Fig. 4 is a plan section on the line 4 4 of Fig. 2.

Like figures of reference designate corresponding parts in each and every figure of the drawings.

The motor and its coöperating parts of the present device are contained within a casing 1, from the middle of which rises a tubular handle 2, which contains the controlling parts of the device and is employed for handling the fan, so as to direct the air-blast in any desired direction. The rotary fan 3, which may be of any preferred construction, is mounted externally at one end of the case and is protected by means of a cage 4, carried by the case and embracing the fan. A cord, chain, or the like 5 is connected to the device at the upper end of the handle and is suspended from a bracket, screw, or the like 6, secured to the ceiling 7 in any suitable manner. As best indicated in Figs. 2 and 4, it will be seen that the fan shaft or arbor 8 extends through an opening 9 in the front of the case, which constitutes one bearing for the shaft, while its forward end is mounted in a bearing 10, carried by the front of the cage 4, whereby the fan-shaft is effectually braced, so as to run smoothly.

For driving the fan there is a motor which includes a coiled spring 11, connected to a drive-gear 12, which is mounted to turn loosely upon a shaft 13, carried by the opposite sides of the case. A pinion 14 is in mesh with the gear 12 and is carried by a shaft 15, upon which a relatively large gear 16 is mounted and is in mesh with a pinion 17, carried by a shaft 18, which has one end mounted in one side of the case and its opposite end supported in a bracket 19, which is secured to the upright sides of the case. A crown-gear 20 is upon the shaft 18 and meshes with a pinion 21, carried by the inner end of the fan-shaft, said inner end portion being supported in a bracket 22, carried by the case.

At one side of the spring 11 and upon the shaft 13 is a winding-drum 23, around which is wound a belt or cord 24, which passes upwardly through an opening 25 in the top of the case into the handle and thence outwardly through an opening 26 in the top of the handle, where it is provided with an eye 27, to which the suspending-cord 5 is connected. By this arrangement and a connection between the drum and the spring 11, as will be hereinafter described, said spring is wound up when the device is drawn down from its elevated position by reason of the rotation of the drum in the direction of the arrow due to the unwinding of the belt 24, which is connected to the suspending element 5.

For connecting the winding-drum and the spring 11 that face of the drum which is next to the spring is provided with a pair of arcuate cam or ratchet ribs 28, which are designed to coöperate with radial arms 29, carried by

the hub of a small ratchet-wheel 30, loose upon the shaft 13 and interlocked with the gear 12 by a spring pawl or dog 31, carried by the gear 12. The drum 23 is of course shiftable longitudinally upon the shaft 13, so as to engage and disengage its cam or ratchet ribs 28 with the arms 29, whereby the drum may be interlocked with the spring 11 through the medium of the connection just described for the purpose of winding the spring 11 when the drum is rotated by drawing the entire device downward from its normal elevated position.

In order that the drum may be shifted upon the shaft 13, a shifting-lever 32 is provided with its upper portion contained within the handle 2 and projected downwardly through an opening 33 in the top of the case, the lower end of the lever being provided with a fork 34 to straddle the shaft 13 and bear against the outer end of a pinion 35, carried by the outer side of the drum. The lever 32 is fulcrumed intermediate of its ends upon a bracket 36, carried within the handle, and its upper end is provided with a lateral extension or arm 37, working through a suitable perforation in one side of the handle adjacent its upper end and having a head or finger piece 38 upon its outer end, with a helical spring 39 interposed between the head and the handle, so as to normally and yieldably hold the forked end of the shifting-lever away from the drum, thereby to normally maintain the drum and the spring disconnected. By pressing inwardly upon the head or finger piece 38 the lower or forked end of the lever will shift the drum upon the shaft 13 into connection with the spring 11 for winding the same. When the device is being drawn down into position for use, the finger-piece 38 should be be pressed so as to shift the drum into connection with the spring in order that the latter may be wound up during the downward movement of the device, after which the finger-piece should be released to permit of the drum backing away from the spring in order that the latter may unwind, and thereby transmit rotary motion to the fan through the medium of the train of gears hereinbefore described.

In order that the device may be automatically run up to its normal elevated position, a coiled spring 40 is mounted upon a shaft 41, carried within the case in rear of the main spring 11, there being a gear 42 carried by the shaft and in mesh with the pinion 35 carried by the drum, whereby the spring 40 is wound up by the rotation of the winding-drum 23 when the device is being drawn down into position for use. During the use of the device the spring 40 is maintained under tension; but just as soon as the device is released the spring 40 is of course released and tends to rotate the drum 23 in a direction to wind the belt 24 thereon, whereby the entire device will be automatically run up to its original normal position, and by reason of the ratchet connection between the drum and the spring 11 the latter will be unaffected by the upward movement of the device.

In order that the rotation of the fan may be immediately stopped when the device is released and permitted to run up to its normal position, a brake mechanism is provided including a spring-arm 43, lying below the spring-motor, (best shown in Fig. 2,) with one end connected to the rear end of the case, as at 44, and its front forward end provided with an upstanding branch 45 and extending across the pinion 21. A trip-rod 46 is connected to and rises from the intermediate portion of the spring-arm through an opening 47 in the top of the case and also through the opening 26 in the top of the handle into position for contact with a trip-plate 48, carried by the upper projected end of the belt 24 external of the handle. A helical spring 49 is connected to the arm 43 and to the top of the case, so as to place the desired upward tension upon the arm in order that it may readily spring upward when the trip-rod 46 is disengaged from the trip-plate 48. When the device is at its upper limit, the trip-rod 46 is depressed by contact with the trip-plate 48, thereby forcing the spring-arm 43 downwardly and pressing the brake portion 50 thereof upon the top of the pinion 21, so as to retain the latter stationary, and thereby lock the entire motor and prevent rotation of the fan. Upon drawing the device downwardly the trip-rod 46 of course recedes from the trip-plate 48, whereby the spring-arm 43 is released and springs upwardly, thereby removing the brake portion 50 from the pinion 21, and thus releasing the motor, which continues to operate until the spring runs down or until the device is permitted to run up to its normal elevated position.

It will now be understood that when the main spring 11 has run down it may be rewound by permitting the device to ascend and then drawing the same downwardly, this operation being repeated as often as required to wind the spring 11 to any desired degree.

In using the device, the main spring 11 being wound or partially wound and the entire device in its normal elevated position, the handle 2 is grasped and the device drawn downwardly, thereby removing the trip-plate 48 from the trip-rod 46 and permitting the brake to spring away from the pinion 21, thereby releasing the spring-motor, so as to rotate the fan, the device then being manipulated by the handle 2 to direct the blast of the fan in any direction. When the fan operation has been completed, the handle is released and the device is permitted to automatically run up to its original position, so as to be out of the way when not required for use. Should the main spring 11 run down,

the finger-piece 38 is pressed when the device is being drawn down, so as to shift the winding-drum into connection with the spring 11 in order that the latter may be wound during the downward movement of the device.

From the foregoing description it will be understood that the present device includes two separate spring-motors, one for actuating the fan and the other for elevating the device, both of the springs being simultaneously wound by the winding-drum 23, and the winding of the spring is automatically performed by drawing the device downwardly, thereby dispensing with the employment of a key or keys for winding the spring.

Having fully described the invention, what is claimed is—

1. In a mechanical fan, the combination of a frame, a rotary fan carried thereby, a spring-motor for the fan, a flexible suspending element, a winding-drum with the suspending element wound thereon and provided with a clutch connection with the spring of the motor, and another spring-motor having a gear connection with the drum to reverse the rotation of the drum for winding the suspending element thereon to elevate the device.

2. A mechanical fan having a spring-motor for actuating the fan, means to support the device in an inoperative position, means to wind the spring of the motor by the movement of the device from its inoperative position to an operative position, and means for automatically returning the device to its inoperative position.

3. In a mechanical fan, the combination of a frame, a fan carried thereby, means for maintaining the device in an inoperative position, a spring-motor for the fan, means for winding the spring of the motor by the movement of the device from its inoperative position to an operative position, and means rendered operable by the movement of the device from its inoperative position to its operative position to automatically return the device to its inoperative position.

4. In a mechanical fan, the combination of a frame, a fan carried thereby, means for normally maintaining the device in an inoperative position, a spring-motor for the fan, a winding element connected to the supporting means and rendered active to wind the spring of the motor when the device is moved from an inoperative to an operative position, and a spring-motor connected to the winding element for operating the same to return the device to its inoperative position.

5. In a mechanical fan, the combination of a frame, a fan carried thereby, a motor for the fan, means for supporting the fan in an inoperative position, and means for energizing the motor by the movement of the device from its inoperative to its operative position.

6. In a mechanical fan, the combination of a frame, a fan carried thereby, a motor for the fan, means for supporting the device in an inoperative position and including a belt, and a winding-drum having the belt wound thereon and connected with the motor for energizing the same by the movement of the device from its inoperative to its operative position.

7. In a mechanical fan, the combination of a frame, a fan carried thereby, a motor connected to the fan, means for suspending the device in an elevated position and including a belt, and a winding device carried by the frame with the belt wound thereon and connected to the motor for energizing the same when the device is being drawn down into an operative position.

8. In a mechanical fan, the combination of a frame, a fan carried thereby, a spring-motor carried by the frame and connected to the fan, a winding-drum carried by the frame, a suspending device including a belt wound upon the drum, a clutch connection between the drum and the motor for winding the spring thereof when the device is drawn downwardly from its normal elevated position, and a spring-motor connected to the drum for winding the suspending-belt thereon when the device is released, said spring-motor being energized by the rotation of the drum when the device is drawn downwardly from its normal elevated position.

9. In a mechanical fan, the combination of a frame, a fan thereon, a spring-motor for the fan, a winding-drum, a clutch connection between the drum and the spring of the motor, one of the elements of the clutch having a ratchet connection with the spring, and a suspending-belt wound upon the drum.

10. In a mechanical fan, the combination of a frame, a fan carried thereby, a spring-motor for the fan, a clutch element connected with the spring, a winding-drum having a clutch element, means for shifting the winding-drum to engage and disengage the clutch elements, and a suspending-belt wound upon the drum.

11. In a mechanical fan, the combination of a frame, a fan carried thereby, a spring-motor for the fan, a winding-drum shiftable into and out of engagement with respect to the spring of the motor, a suspending-belt wound upon the drum, and a shifting-lever in coöperative relation with the drum to shift the same and provided with a finger-piece projected externally of the frame.

12. In a mechanical fan, the combination of a frame, a device carried thereby, a spring-motor for the fan, a winding-drum shiftably mounted upon the spring-shaft of the motor, a clutch connection between the drum and the spring, a suspending-belt wound upon the drum, and a shifting-lever having one end bifurcated to straddle the spring-shaft and

engaging the drum for shifting the same with the opposite end of the lever projected externally of the frame into position for access.

13. In a mechanical fan, the combination of a case having a handle rising therefrom, of a fan carried by the case, a spring-motor within the case and connected to the fan, a winding-drum within the case and having a clutch connection with the spring of the motor, a suspending-belt wound upon the drum and projected through the top of the handle, and a drum-shifting device having a finger-piece projected externally through the handle.

14. In a mechanical fan, the combination of a frame, a fan carried thereby, a spring-motor for the fan, a winding-drum having a clutch connection with the spring of the motor and provided with a gear, another spring geared to the gear of the winding-drum, and a suspending-belt wound upon the drum.

15. In a mechanical fan, the combination of a case having a handle rising therefrom, of a fan carried by the case, a spring-motor housed within the case and connected to the fan, a winding-drum having a clutch connection with the spring of the motor and provided with a gear, another spring geared to the gear of the drum, a suspending-belt wound upon the drum and projected through the top of the handle, and a shifting-lever to shift the winding-drum into and out of engagement with the spring of the motor and provided with a finger-piece projected externally through the handle.

16. In a mechanical fan, the combination with a frame, of a fan carried thereby, a motor connected to the fan, suspending means to permit vertical movement of the device, a brake for the motor and provided with a trip member, and a trip member carried by the supporting means for contact with the trip member of the brake.

17. In a mechanical fan, the combination of a frame, a fan carried thereby, a motor for the fan, a spring-pressed brake for the motor, a trip member for the brake, suspending means for the device to permit vertical movement thereon, and a trip member carried by the suspending device for engagement with the trip member of the brake to apply said brake.

18. In a mechanical fan, the combination of a frame having a handle rising therefrom, suspending means extending through an opening in the top of the handle to permit vertical movement of the device thereon, a trip carried by the suspending device and located above the handle, a fan carried by the frame, a motor connected to the fan, a brake for the motor, and a trip device connected to the brake and projected through the top of the handle into position for engagement by the first-mentioned trip device at the upper limit of the fan to apply the brake.

19. In a mechanical fan, the combination of a frame, a fan carried thereby, a motor for the fan, a spring-actuating drum, a suspending-belt wound upon the drum, a brake for the motor, a trip carried by the suspending-belt, and another trip connected to the brake and in the path of the first-mentioned trip.

20. In a mechanical fan, the combination of a frame having a handle rising therefrom, a fan carried by the frame, a spring-motor for the fan, a shiftable winding-drum having a clutch connection with the spring of the motor, another spring geared to the winding-drum, a drum-shifting lever having a finger-piece projected laterally through the handle, a suspending-belt wound upon the drum and projected through the top of the handle, a trip carried by the suspending-belt above the handle, a brake for the motor, and a trip-rod connected to the brake and projected through the top of the handle into position for engagement with the trip on the belt at the upper limit of the device.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALFRED E. HOVEY.

Witnesses:
J. E. TAPLEY,
J. P. DARGAN.