

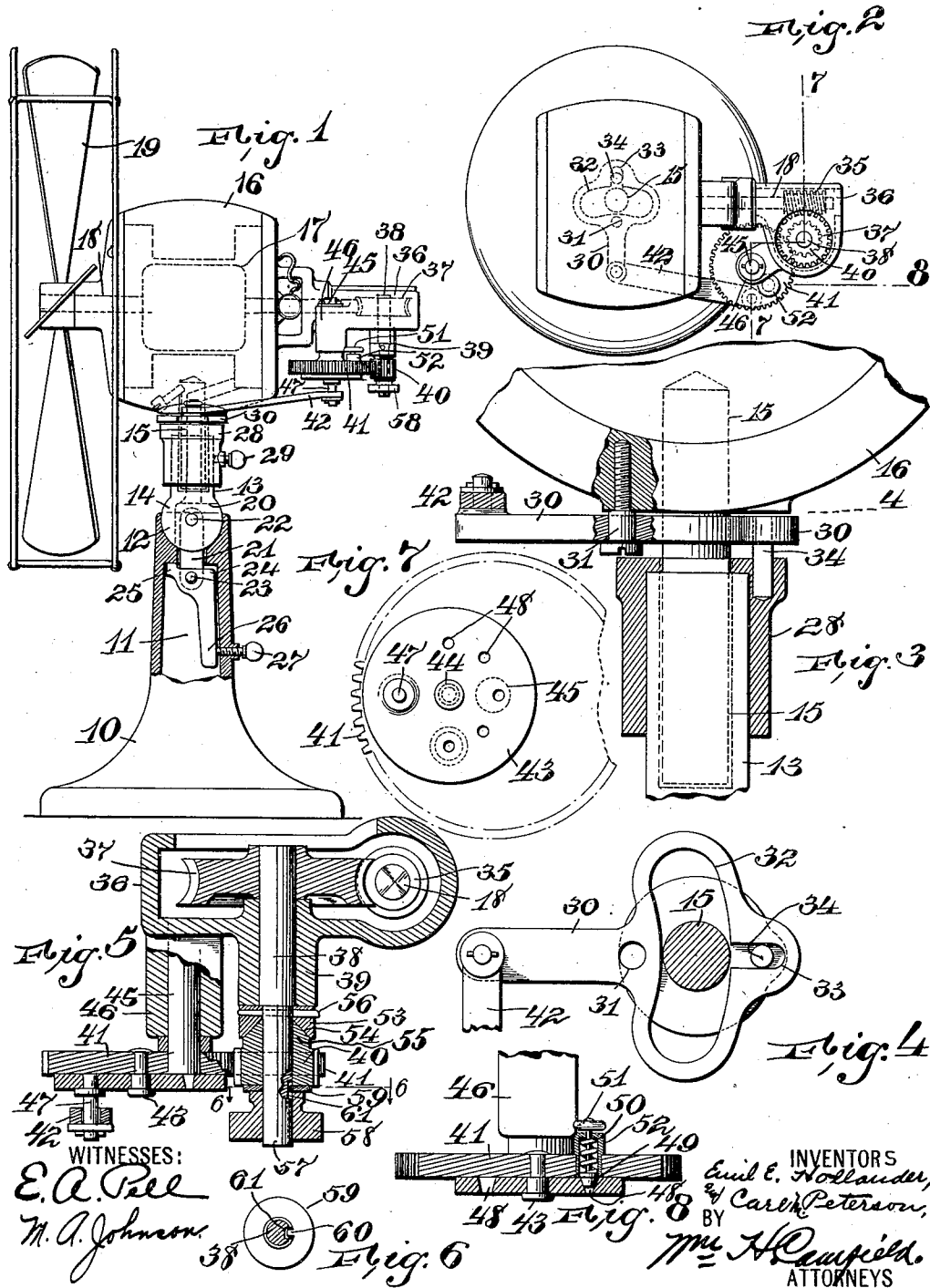
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OSCILLATING FAN.

APPLICATION FILED JAN. 12, 1911.

1,005,429.

Patented Oct. 10, 1911.



UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed January 12, 1911. Serial No. 602,156.

To all whom it may concern:

Be it known that we, EMIL E. HOLLANDER and CARL M. PETERSON, citizens of the United States, residing at Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Oscillating Fans; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to a fan, and provides a fan which has a motor frame mounted on a stand, which motor frame carries a motor which in turn rotates the fan blades, and the invention also consists in an oscillating device which is operated from the motor shaft and which can be regulated so as to swing the motor frame, and consequently the blades, to different distances and to either side so as to distribute the currents of air in different directions.

The invention is further designed to provide a connection between the motor frame and the base that permits the motor frame to be tilted at different angles so that the base can be fastened to a table or other flat support, or it can be fastened to the wall or a vertical support and the fan blades arranged to direct the currents of air in any required direction.

The invention is further designed to provide an oscillating device that is compact, does not project very far from the motor frame on the stand, and that is simple and positive in its operation.

The invention is further designed to provide an improved friction device whereby the oscillating mechanism can be disconnected from the fan operating motor so as to make the fan a fixed one that will not oscillate.

The invention is also designed to provide an adjustable device by means of which the throw of the oscillating device can be changed, and provides for a quick changing, and also one in which the oscillation can be stopped by giving the oscillating mechanism no throw at all, in lieu of disconnecting the oscillating device from the motor shaft.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a side view of a fan of our improved construction with the base shown partly in section. Fig. 2 is a top view of the same, and to save space the fan blades have been left off the drawing. Fig. 3 is a detail of the oscillating mechanism which is arranged around the pivotal connection on which the motor frame is mounted. Fig. 4 is a section on line 4, in Fig. 3, and Fig. 5 is a section on line 7, 7, in Fig. 2. Fig. 6 is a section on line 6, in Fig. 5, and Fig. 7 is a bottom view of a gear, this view illustrating the device by which the throw of the oscillating mechanism is varied. Fig. 8 is a section on line 8, in Fig. 2 to show the locking device for the disks illustrated in Fig. 7.

The device comprises a suitable stand, which stand consists of the base 10 which is hollowed out as at 11, and which is provided, at its top, with a socket 12. A rod 13 has a ball 14 which fits in the socket 12. The rod 13 has inserted therein a pivot 15 on which is mounted a motor frame 16, so that by means of the pivot the motor frame 16 is supported in swinging or pivotal relation on the stand. In the motor frame is a motor 17 which rotates a motor shaft 18 which in turn is supplied with the blades 19 which form the fan proper. The ball and socket arrangement at the top of the base is designed to permit a tilting of the motor frame and the blades in relation to the base so that the base can be rested on a horizontal surface, such as a table, or it can be fastened on a vertical support, such as the wall, or on a suitable inclined surface, with the fan tilted in different directions.

To lock the ball 14 in the socket 12 we provide the following structure. The ball is slotted as at 20. A bar 21 is pivoted on one end, as at 22, to the ball 14, and on the other end as at 23, to an L-shaped lever 24, which L-shaped lever is arranged in the hollowed portion 11, and has one end, as at 25, formed into a nose which rests against the base, and the other end of the L-shaped lever 24 is formed into a lever 26 against which is arranged to be exerted a pressure to lock the ball 14 in the socket 12 by pulling down on the bar 21. This pressure-exerting means is preferably a screw 27 which can be made in the form of a thumb-screw, and when it is screwed in place the end 25 is forced against the base and acts as a fulcrum, and the L-shaped lever then pulls

down on the bar 21 and exerts a pulling strain on the ball 14 and binds it in the socket 12. The motor frame 16 is mounted on the top of the pivot 15 and has its bottom spaced from the top end of the stand. We prefer to form the top end of the stand by placing a thimble 28 at the top of the rod 13, the thimble being placed rotatably on the rod and being fastened in place, at any point in its rotation, by a thumb-screw 29. It will be understood, however, that we do not deem it a necessity to provide the thimble 28.

A lever 30 is pivotally connected intermediate of its ends as at 31, this pivotal connection being between the lever and the motor frame, the lever having a slot 32 through which the pintle 15 passes and having a recess 33 on the side of the pintle opposite the pivotal connection 31. A pin 34 is secured to the stand and projects up into the recess 33. It will thus be seen that when the lever 30 is swung the motor frame is swung also on account of the pivotal connection 31, and the recessed end 33 of the lever, having a sliding movement on the pin 34, permits the swing of the lever and the reciprocation or oscillation can be extensive, that is, the fan is swung through a large arc. The mechanism for operating the lever 30 consists of a crank mechanism which is adjustable. The preferred form is as follows.

The shaft 18 has a worm 35 thereon which is mounted in the sleeve 36, the sleeve forming a casing for some of the gears and being secured to the motor frame, as will be seen from Figs. 1 and 2. A worm-gear 37 is in mesh with the worm 35, the worm-gear 37 rotating on a shaft 38 which is shown more particularly in Figs. 2 and 5, the shaft 38 rotating in a bearing 39 formed on the sleeve 36. A pinion 40 is adapted to rotate with the shaft 38 and is in mesh with a gear 41, to which is secured, on one end, a link 42 which is secured on its other end to the lever 30. It will thus be seen that as the fan motor rotates, the connection through its shaft and the gears causes the link 42 to reciprocate and swing the lever 30, which lever in turn swings on the pin 34 and forces the motor frame around on its pivot.

To vary the throw of the oscillation we provide a connection between the gear 41 and the link 42 that is illustrated in detail in Figs. 5, 6, 7 and 8. In this construction we provide the gear 41 with a disk 43 which is rotatably mounted on the gear, as for instance by means of the rivet or pin 44. The pivotal connection or element on which the disk rotates is eccentric to the shaft 45 on which the gear is secured, this shaft 45 being mounted in a bearing 46 on the sleeve 36. A pin 47 on the disk 43 provides means for pivotally attaching the end of the link 42 thereto. Concentric to the center 44 of the

disk 43, and on the inner side thereof, that is, on the side toward the shaft 45, is a series of concentric perforations 48 which form means for regulating the position of the disk to vary the throw of the crank by drawing the pin 47 nearer the center of the gear by the rotation of the disk 43. To hold the disk by means of these perforations or holes 48 we provide a spring latch 49 which is normally operated by the spring 50 and has a finger-piece 51 thereon, this spring being inclosed in a suitable casing 52 which is secured to the gear 41, as will be understood. It will be seen from this structure that when the disk is in the position shown in Figs. 5 and 7, the crank or gear 41 is arranged to give the largest throw to the link and thus give the greatest amount of oscillation. By moving the disk 43 so that the pin 47 is moved around to a point in line with the center of the shaft 45, the oscillation will be so slight as to be hardly noticeable.

When the oscillating device is to be disconnected from the motor shaft so as to become inoperative, we secure the pinion 40 to the shaft 48 by means of a friction clutching mechanism consisting of a disk 53 which is internally beveled as at 54, and we provide the pinion 40 with a beveled lug 55. The disk 53 is fastened to the shaft 38 by a suitable pin 56. The lower end of the shaft 38 is screw-threaded as at 57, and a thumb-nut 58 is screwed thereon, and when operated, transmits its motion to the pinion 40, which pinion 40 is loose on the shaft 38 and forces it in close frictional contact with the beveled disk 53, and the parts are rotatably connected together. To prevent the untwisting of the thumb-nut 56 we provide a washer 59 which has a tongue which in turn fits into a slot 61 which is formed in the shaft 38. The disk being unable to turn acts to lock the nut 58 when it is turned up tight to hold the parts in operative connection. It will be understood that this construction gives a considerable amount of throw or oscillation. When the lever 30 is swung by the reciprocation of the link 42, the leverage is such, due to the link being fastened to the outer end of the lever 30, that the work of the motor and the transmitting or operating mechanism for the oscillating device is easy.

Having thus described our invention, what we claim is:—

1. A fan comprising a stand, a pivot on the stand, a motor frame mounted to swing on the pivot, a motor in the frame, blades operated by the motor, a motor shaft, a lever connected with the motor frame and adapted to swing it on the pivot of the motor frame, a link connected at one end to the end of the lever, a crank mounted on the motor frame and connected with the other end of the link, the crank comprising

a gear-wheel, a disk rotatably arranged on the gear and having its pivotal point eccentrically arranged on the gear, the disk being the element to which the end of the link is secured, the link being secured pivotally at a point eccentric on the disk, the disk having a series of concentrically arranged perforations therein, a spring latch on the gear and adapted to be seated in any of the perforations of the disk whereby the disk is locked at different points in its rotation, and means for rotating the gear from the motor shaft.

2. A fan comprising a base with a socket in its top, a rod having a ball to fit in the socket, the ball having a recess, a bar pivoted in the recess of the ball and extending

into the base, the base being hollow, an L-shaped lever pivotally connected with the lower end of the bar, one end of the L-shaped lever bearing on the base, means in the base for bearing on the other end of the L-shaped lever whereby the lever is forced to cause a binding of the ball in the socket, and a motor frame mounted on the rod.

In testimony, that we claim the foregoing, we have hereunto set our hands this 11th day of January, 1911.

EMIL E. HOLLANDER.
CARL M. PETERSON.

Witnesses:

WM. H. CAMFIELD,
E. A. PELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."