E. MARELLI.
OSCILLATING SUPPORT FOR FANS AND THE LIKE.
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Inventor:
Ecole Marelli.

Attorney.
UNITED STATES PATENT OFFICE.

ERCOLE MARELLI, OF MILAN, ITALY.

OSCILLATING SUPPORT FOR FANS AND THE LIKE.


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To all whom it may concern:

Be it known that I, ERCOLE MARELLI, a subject of the King of Italy, resident of Milan, in the Kingdom of Italy, No. 10 Via Santa Radegonda, have invented new and useful Improvements in Oscillating Supports for Fans and the like, of which the following is a specification.

This invention relates to oscillating supports for fans and the like, and it has for its object to provide improved means whereby an oscillating motion adjustable at will and by infinitesimal degrees may be imparted to various apparatus and, in particular, electrical fans.

To the accomplishment of this object the invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description serve to illustrate the principles thereof.

In the drawings:

Figure 1 is a view partly in section, partly in elevation, of the box containing the gear for driving the improved support;

Figure 2 is a plan view of the gear comprising the driving pinion and the two rings cooperating therewith;

Figures 3 and 4 are a sectional elevation and a plan view, respectively, of the locking mechanism for the gear rings;

Figure 5 is a sectional elevation of the rotary cover of the gear box;

Figure 6 is an underside view of the mechanism for varying the amplitude of the oscillating movements of the support;

Figure 7 is a sectional elevation on an enlarged scale of a hand controlled device which may be combined with the locking mechanism above referred to; and

Figures 8 and 9 are side views of electrical fans mounted on a wall bracket and on an upright standard respectively, and provided with an oscillating support according to my invention.

Referring more particularly to Figures 1, 8 and 9, my improved support comprises a box having a stationary base A which may be secured to a bracket X (Fig. 8), a standard Y (Fig. 9) or any other suitable supporting means, and an oscillating cover B, which may be locked against movement, the revolving pinion a will turn around the shaft C in a clockwise direction, the ring c being also carried in the same direction. Assuming now that the rings b and c are alternately locked and set free, such means comprising a stationary plate d secured to the vertical shaft C and provided

The cover B is rotatably mounted on a vertical shaft C secured to the stationary base A. To impart an oscillatory motion to the cover and the parts connected thereto I provide a continuously rotating shaft E, which is preferably driven by the motor M of the fan. The shaft E has a universally jointed extension I which passes through a sleeve S in the cover B and carries a pinion a which extends between, and is in permanent engagement with, two concentric gear rings b and c, provided with external and internal teeth respectively, and rotatably mounted on the shaft C. The embodiment shown herein the rings b and c are inserted between and guided by upstanding flanges A' and A" on the base A.

It will be understood that if the rings b and c are free to rotate and the pinion a is continuously driven in the same direction, say in a clockwise direction as shown by the arrow in Fig. 2, the rings will be moved in opposite directions while the shaft e and consequently also the cover B will remain stationary.

If one of the rings, b for example, is locked against movement, the revolving pinion a will turn around the shaft C in a clockwise direction, the ring c being also carried in the same direction. If on the other hand the ring c is held stationary and b free to rotate, the pinion a will turn around the shaft C in an anticlockwise direction, the ring b being now carried in the same direction. In both cases the cover B will, of course, follow the movements of the pinion a around the shaft C.

Assuming now that the rings b and c are alternately locked and set free the continuous rotation of the pinion a will be converted into an oscillating movement about the shaft C.

In Figures 3 and 4 I have illustrated one convenient means whereby the rings b and c may be alternately locked and set free, such means comprising a stationary plate d secured to the vertical shaft C and provided...
with a slot $d'$ in which a horizontal locking bolt $e$ is adapted to slide. This locking bolt is provided on its lower and upper sides with projections $f$ and $g$ respectively, which are preferably diamond-shaped in cross-section. As shown in Fig. 3 the projection $f$ extends downwardly between the rings $b$ and $c$ and is adapted alternately to engage the spaces between the teeth on the respective rings as the bolt $e$ is reciprocated by a mechanism hereinafter described.

Pivoted on the plate $d$ are two levers $h$ and $k$ the adjacent ends of which are provided with toothed sectors in engagement with one another (Fig. 4). The opposite ends of these levers are yieldingly connected by a coil spring $l$ the extremities of which are attached to pins $m$ and $n$ on the levers $h$ and $k$ respectively. With this arrangement it will be seen that the two levers form a toggle and that the spring $l$ will always tend to break such toggle on either side of the line joining the axes on which the levers $h$ and $k$ are pivoted. The lever $k$ has a lateral extension $k'$ provided with a slot or aperture $i$ through which extends the projection $g$ formed on the upper side of the locking bolt $e$. Thus, when the lever $k$ is swung in either direction, the spring $l$, through the intermediary of the pin and slot connection $g$, $i$, will cause the stop $f$ to be firmly pressed between the teeth of either of the rings $b$, $c$, thereby effectively locking such ring against rotation.

To control the swinging movements of the levers $h$ and $k$ I provide on the lower side of the cover $B$ two concentric rings $p$ and $q$ (Figs. 5 and 6) provided with external and internal teeth respectively, and adapted to rotate in opposite directions on the hub $V$ of the oscillating cover under the action of a pinion $o$ which may be operated by hand by means of the turning knob $z$. The rings $p$ and $q$ are provided with abutments designated by $r$ and $s$ respectively, which are adapted to strike against the pin $n$ when the cover $B$ revolves about the shaft $C$. With this construction, if it be assumed that the projection $f$ is in locking engagement with the gear ring $b$, the driving pinion $a$ and with it the cover $B$ and its attached parts will be rotated in a clockwise direction until the abutment $r$ will strike against the pin $n$, thereby making the toggle $h$, $k$, which, immediately thereafter, will be broken by the spring $l$, the levers $h$ and $k$ being swung from the position shown in full lines in Fig. 4 to that shown in dotted lines. The locking bolt $e$ will be moved to the left and the projection $f$ withdrawn from between the teeth of ring $b$ and brought into engagement with the teeth of ring $c$. This will cause a reversal in the direction of the movement of pinion $a$ and cover $B$ around the shaft $C$, these parts being now rotated in an anti-clockwise direction until the projection $f$ strikes against the pin $n$, when the toggle $h$, $k$ will again be successively made and broken and the projection $f$ engaged with the teeth on ring $b$, this process being repeated at each end of the stroke limited by the positions of the adjustable abutments $r$ and $s$.

The amplitude of the oscillatory movement of the cover $B$ can be varied to any desired extent by rotating the knob $t$ which permits of obtaining a very fine adjustment. It will be observed that the knob $t$ may be operated while the support is in motion without interfering with its smooth operation.

It may be desirable to stop the operation of the oscillating support without stopping the driving motor. In Fig. 7 I have illustrated a convenient means whereby the locking member $e$ may be readily disconnected from both gears $b$ and $c$ and the support arrested without interfering with the operation of the fan. To this end I provide in a recess in the base $A$ a block $u$ having a substantially conical cavity $v$ the opening of which is considerably wider than the conical end of the projection $f$. This block $u$ is located underneath the bolt $e$ and the axis of the cavity $v$ is substantially equidistant from the gear rings $b$ and $c$. A handle $H$ engaging in a helical groove $j$ in the base $A$ permits of raising and lowering the block at will. When it is desired to move the locking member out of the path of the gear rings $b$ and $c$ the block $u$ is raised by means of the handle $H$. The conical surfaces on the projection $f$ and cavity $v$ are thus caused to engage one another, the projection $f$ is moved away from whichever ring was engaged thereby until its axis coincides with that of the cavity $v$, and it is held out of engagement with the gear rings until the handle $H$ is operated to lower the block $u$ and allow the locking member $e$, $f$ to respond again to the action of the spring $l$. When the projection $f$ is engaged by the block $u$ in the manner just described the two rings $b$ and $c$ are set in motion in opposite directions and the oscillation motion of the pinion $a$ and cover $B$ is brought to a stop as soon as the inertia of the oscillating parts is spent.

Means are also preferably provided for positively stopping the movement of the cover $B$ when the block $u$ is raised, such means comprising, in the embodiment illustrated in Fig. 7, a braking member $s$ slidably mounted in a recess $w$ in the base $A$ and adapted to press against the inner side of the cover $B$ with its outer end $y$ when its inner beveled end is engaged by a correspondingly beveled surface $u$ on the member $u$.

It will be understood that in its broader aspects this invention provides a supporting
member, such as the cover B, which receives an oscillatory motion from a continuously revolving pinion carried thereby, through the intermediary of a pair of concentric gears controlled by an automatic locking device.

While the invention has been described with particular reference to certain details of construction the same is therefore not to be considered as limited thereto as many changes can be made and still fall within the scope of the following claims.

I claim:

1. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said supporting member, said pinion engaging both gear rings, and means for successively and alternately locking each ring.

2. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said supporting member, said pinion being in permanent engagement with both gear rings, means for successively and alternately locking each ring, and means on said supporting member for controlling the operation of said locking means.

3. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said supporting member, said pinion engaging both gear rings, means for successively and alternately locking each ring, and adjustable means for timing the operation of said locking means.

4. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said supporting member, said pinion engaging both gear rings, means for successively and alternately locking each ring, and manually controlled means for rendering said locking means inoperative.

5. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said supporting member, said pinion engaging both gear rings, means for successively and alternately locking each ring, manually controlled means for rendering said locking means inoperative, and a brake for said supporting member controlled by said manually operated means.

6. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings mounted on said base, said rings being provided with external and internal teeth respectively, a continuously revolving pinion mounted on said supporting member, said pinion being in permanent engagement with both gear rings, a locking member slidably mounted in said base, a toggle operatively connected with said locking member, a spring tending to break said toggle on either side of its made position to force said locking member into engagement with either of said gear rings, and abutments on said supporting member adapted to alternately engage said toggle and operate the same in opposite directions.

7. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings mounted on said base, said rings being provided with external and internal teeth respectively, a continuously revolving pinion mounted on said supporting member, said pinion being in permanent engagement with both gear rings, a locking member slidably mounted in said base, a toggle operatively connected with said locking member, a spring tending to break said toggle on either side of its made position to force said locking member into engagement with either of said gear rings, and said abutments being adapted to alternately engage said toggle and operate the same, and a manually controlled pinion engaging both toothed rings.

8. An oscillating support comprising a stationary base, a supporting member rotatably mounted on said base, two concentric gear rings mounted on said base, said rings being provided with external and internal teeth respectively, a continuously revolving pinion mounted on said supporting member, said pinion being in permanent engagement with both gear rings, a locking member slidably mounted in said base, a projection on said locking member adapted to engage said gear rings, said projection having a conical end, means controlled by said supporting member for causing said projection to engage alternately said gear rings, and manually operative means adapted to co-operate with the conical end of said projection to move the same and hold it out of engagement with said gear rings.

9. An oscillating support comprising a box having a stationary base and a cover rotatably mounted on said base, two concentric gear rings rotatably mounted on said base, a continuously revolving pinion carried by said cover, said pinion engaging both gear rings, means for successively and alternately locking each ring, said gear rings, pinion
and locking means being inclosed in said box, manually controlled means operable from the outside for timing the operation of said locking means, and manually controlled means operable from the outside for rendering said locking means inoperative, both said manually controlled means being adapted to operate without stopping the rotation of said pinion.

In testimony whereof I affix my signature.

ERCOLE MARELLI.

Witnesses:

ILO C. FUNK,

LUIS J. HERNANDEZ.

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