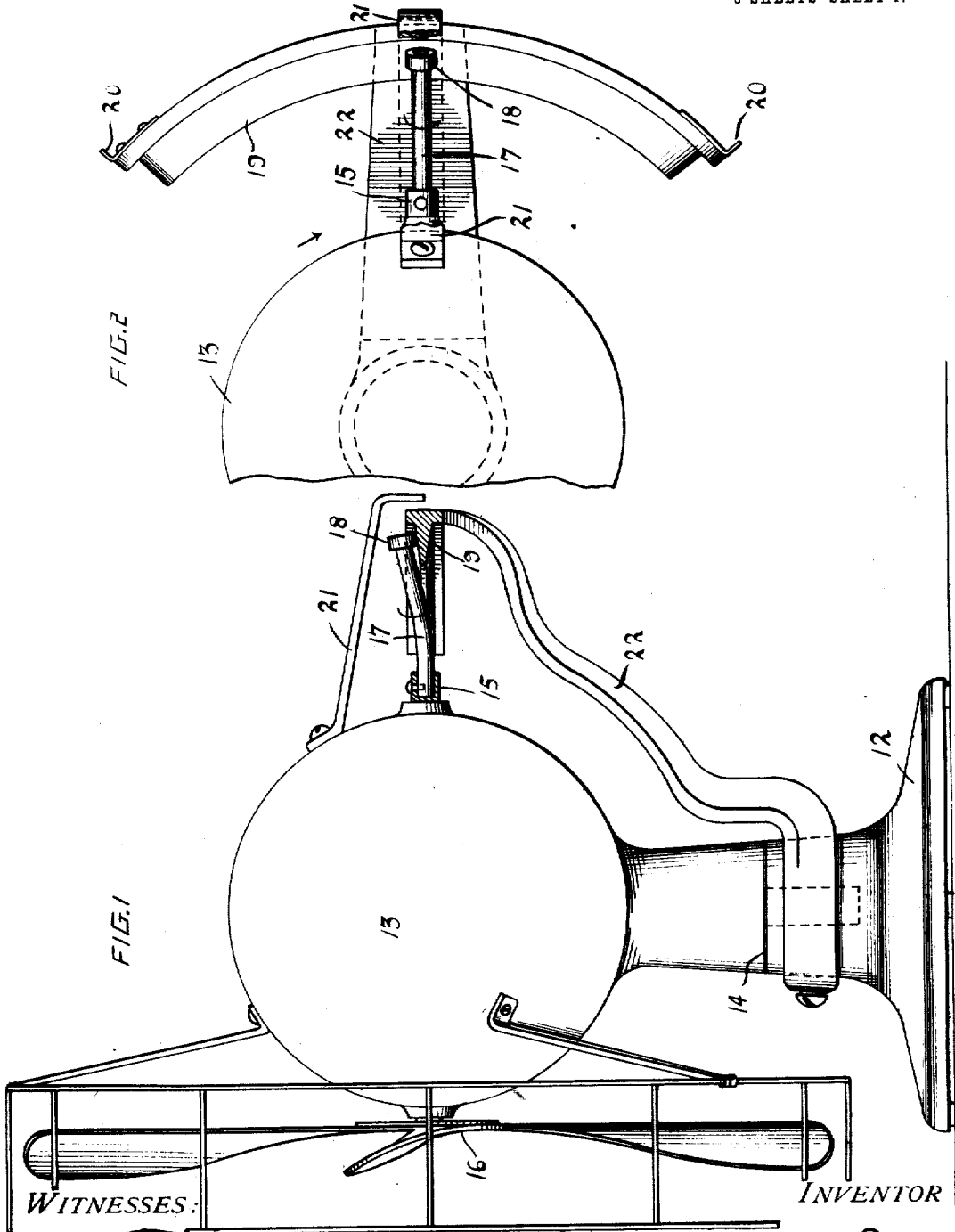


W. B. LASKEY.
 AUTOMATIC FAN.
 APPLICATION FILED OCT. 15, 1910.

1,021,536.

Patented Mar. 26, 1912.

3 SHEETS-SHEET 1.



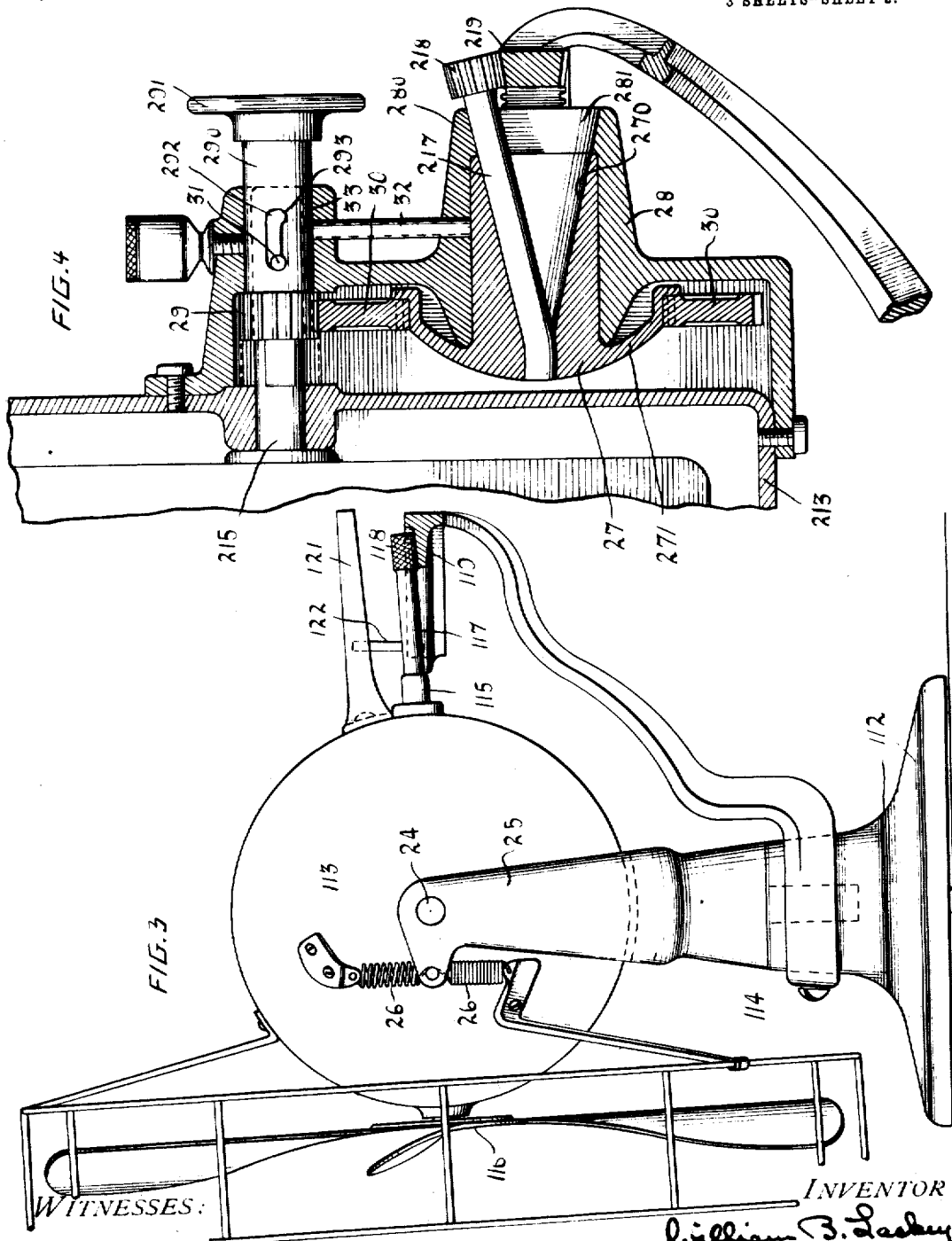
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 3 SHEETS-SHEET 2.

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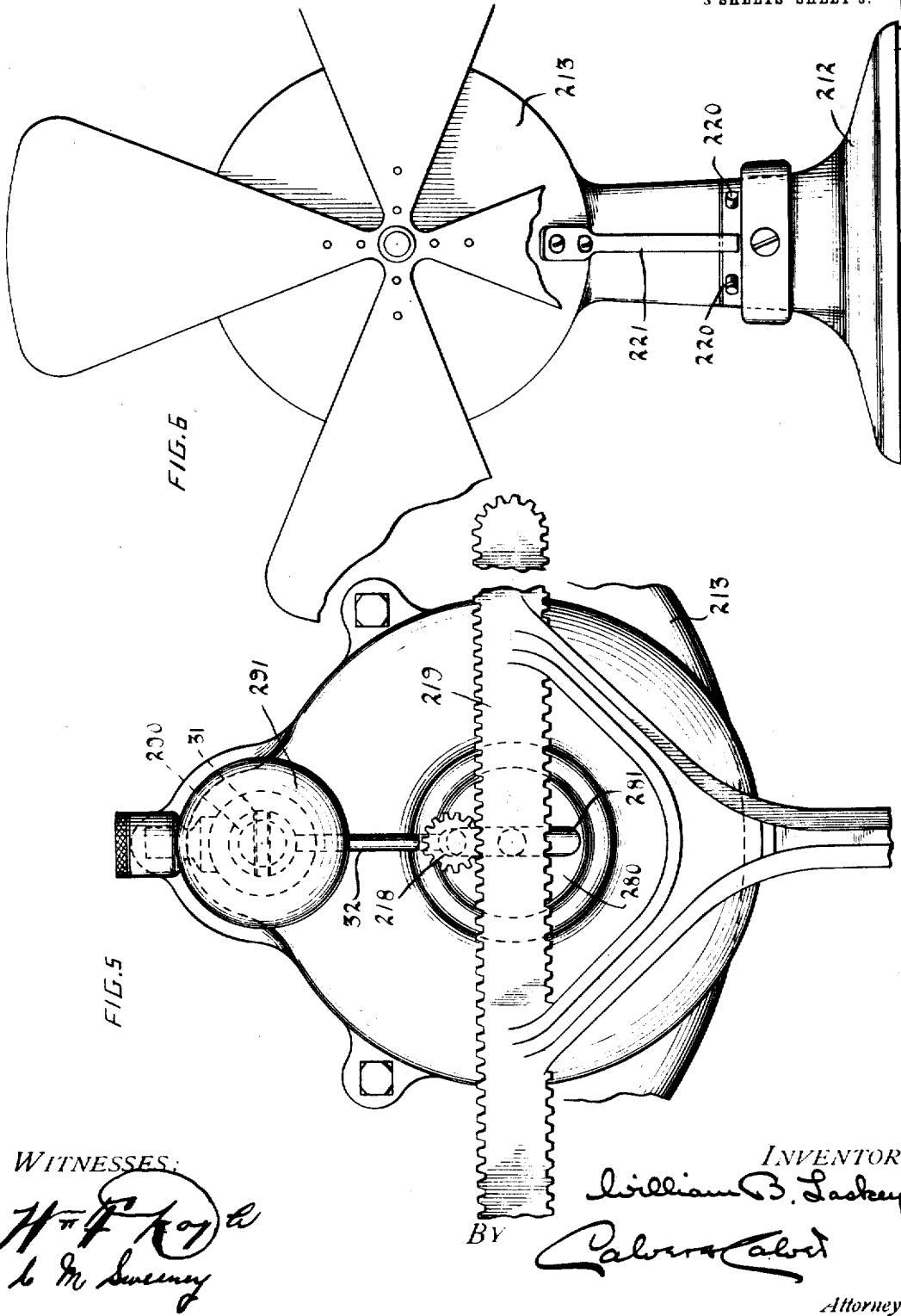
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC FAN.

1,021,536.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed October 15, 1910. Serial No. 587,194.

To all whom it may concern:

Be it known that I, WILLIAM B. LASKEY, a citizen of the United States, residing at Marblehead, in the county of Essex and State of Massachusetts, have invented or discovered certain new and useful Improvements in Automatic Fans, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to automatic fans, and is directed more particularly to electric fans of the oscillating or laterally reciprocating type.

Some of the objects of the invention are to provide a fan of this type which will be simple and inexpensive of construction, substantially noiseless in its operation, having few or no parts which are likely to wear out quickly, and which may be easily lubricated. These and other objects of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of certain forms or embodiments thereof illustrated in the accompanying drawings. It will be understood, however, that the constructions described and shown have been chosen for illustrative purposes merely, and that the invention may be embodied in other forms without departing from the spirit and scope thereof.

15 In said drawings, Figure 1 is a side elevation, partly in section, of a fan constructed in accordance with the invention. Fig. 2 is a plan view of the track and certain cooperating parts shown in Fig. 1. Fig. 3 is a view similar to Fig. 1 showing a modification. Fig. 4 is a vertical section, on an enlarged scale, of certain parts constituting a further modification. Figs. 5 and 6 are rear and front views, respectively, on a reduced scale, of a fan employing the mechanism shown in Fig. 4.

Referring to Figs. 1 and 2, 12 denotes a suitable base on which is mounted a suitable fan motor 13, preferably an electric motor. The base 12 and motor 13 are preferably connected by a suitable ball bearing 14. The armature or fan shaft 15 which is rotated by the motor 13 carries at its outer end a fan 16 of any suitable construction. In this form of the invention the fan shaft 15, which also serves as the driving shaft for the oscillating mechanism, is provided at its rear end with a flexible extension preferably comprising a section of flexible and resilient

shafting 17 which may, it desired, be provided at its end with a covering or roller 18 of frictional material, such as leather or rubber.

Coöperating with the rotating end of the flexible shafting 17 is a track 19 suitably supported, as by an upright 22, from the base 12 and arranged in the arc of a circle substantially concentric with and perpendicular to the axis of oscillation of the motor 13. The upper and lower surfaces or portions of the track 19, which are connected at the ends of the track, are arranged on opposite sides of the normal axis of the shaft 15, so that the roller 18 will at all times be held in yielding engagement with these surfaces by the flexure of the resilient shafting 17. The track 19 and motor 13 are provided with coöperating stops for limiting the operation of the motor 13, said stops preferably comprising a pair of projections 20 supported at the ends of the track 19 and coöperating with an arm 21 carried by the motor 13.

The operation of the mechanism thus far described is as follows: The parts being in the position shown in Fig. 1, the roller 18 is held in yielding engagement with the upper surface of the track 19 and the rotation of the shaft 15 will cause this light roller to rotate in engagement with this surface, thereby causing the motor 13 to be turned on the bearing 14 slowly in one direction or the other, depending upon the direction of rotation of the shaft 15. This movement is continued until the arm 21 strikes one of the stops 20 when the lateral movement of the motor 13 will be arrested. The roller 18, still rotating in engagement with the track 19, will travel around the end thereof until the lower surface of said track is reached, when the motor 13 will be turned on its bearing 14 in the opposite direction until the other end of the track is reached, when the operations above described are substantially repeated.

In the construction shown in Fig. 3 the base 112, motor 113, fan shaft 115, fan 116, track 119, stop arm 121 and stops 122, all are or may be substantially the same as in the form of the invention last described, except as will be obvious from the drawings or as hereinafter referred to. In this form of the invention, however, the motor 113 is pivoted at 24 to uprights 25 journaled in the bearing 114, and is normally held in a

substantially central position by springs 26 connecting said motor and uprights. The motor shaft 115 is in this instance provided with a rigid extension 117 having an end 118 engaging the track 119. The operation of this form of the invention will, it is thought, be obvious, the springs 26 cooperating with the rigid shaft extension 117 to produce substantially the effect of the flexible extension 17 of the form of the invention shown in Figs. 1 and 2.

In the form of the invention shown in Figs. 4, 5 and 6 a driving shaft 27 is provided, separate from the fan shaft 215, in the form of a short stud shaft mounted to rotate in a bearing 28 and formed with an axially disposed tapered recess 270. The shaft 27 is driven from the shaft 215 by means of spur or frictional gears 29 and 30, the latter being secured to a spider or flange 271 formed on the shaft 27. The rotating member 218 is carried by a shaft extension 217 flexibly secured to the shaft 27 for rotation therewith, as by forming said extension of a section of flexible shafting secured at the apex of the recess 270. As shown in Figs. 4 and 5 the track 219 and rotating member 218 are formed as a cooperating rack and pinion.

In order that the oscillating mechanism may be rendered operative or inoperative at will means are preferably provided whereby the gears 29 and 30 may be thrown into and out of engagement. To this end the gear 29 is formed with a sleeve 290 surrounding the shaft 215 and provided at its outer end with a knob or handle 291 by which the sleeve may be moved longitudinally of the shaft to engage or disengage the gears 29 and 30. In order that the shaft 215 and sleeve 290 may rotate together said shaft is provided with a pin or lug 31, entering a slot 292 in said sleeve, said slot being formed at its ends with recesses 293, on the side toward which the shaft 215 rotates, to receive the pin 31 and hold the sleeve and gear in adjusted position.

In order to prevent the fan and motor mechanism from dragging behind the rotating member 218, due to the inertia of the former and the flexible mounting of the latter, the bearing 28 is preferably provided with a guide 280 having a slot 281 adapted to receive the shaft extension 217 and limit movement of the rotating member relative to the motor mechanism longitudinally of the track 219. In this form of the invention the stops 220 for limiting the oscillation of the fan are carried by the base 212 and are successively engaged by a spring finger piece 221 depending from the motor 213. For supplying lubricant to the bearing 28 an oil pipe 32 may, if desired, be provided leading from the bearing 33 of the fan shaft 215.

It will be observed from the foregoing that in all of the forms of the invention above described the fan is oscillated in opposite directions by means of a rotating member carried by the fan shaft, which member rotates in engagement successively with two surfaces or portions of a track with which it is held in preferably yielding engagement, said surfaces or portions being arranged to be engaged by said member on opposite sides of the latter, so that when said member, which is rotated continuously in one direction, is in engagement with one of said portions the fan will be moved in one direction, and when said member is in engagement with the other of said portions the fan will be moved in the opposite direction.

In the forms of the invention shown in Figs. 1, 2, and 3 the oscillation is effected by the frictional engagement between the shaft extension, constituting the rotating member, and the track. For this reason it is desirable that the operative end of the shaft extension be covered with some frictional material, as shown at 18 in Fig. 1 and at 118 in Fig. 3, although this is found not to be necessary and may be omitted as shown in Fig. 2.

Having thus described my invention I claim and desire to secure by Letters Patent:

1. In an automatic fan, the combination with a base, a fan motor mounted to oscillate on said base, and a driving shaft rotated by said motor, of a track supported by said base and arranged with its length substantially parallel to the plane of oscillation of said motor, and a rotating member carried by said shaft, said rotating member and track being held in yielding engagement with each other.

2. In an automatic fan, the combination with a base, a fan motor mounted to oscillate on said base, and a driving shaft rotated by said motor, of a track supported by said base and having two opposite portions arranged with their length substantially parallel to the plane of oscillation of said motor, and a rotating member carried by said shaft and movable transversely of said track to engage the respective portions thereof, said member engaging said portions at its opposite sides.

3. In an automatic fan, in combination, a base, a fan motor mounted to oscillate on said base, a driving shaft rotated by said motor and having an axially arranged tapering recess, a track supported by said base, a rotating member cooperating with said track, and means connecting said rotating member with said driving shaft at the apex of said recess for causing the same to rotate in unison with said shaft, said means permitting movement of said member transversely of said track.

4. In an automatic fan, in combination, a base, a fan motor mounted to oscillate on said base, a driving shaft rotated by said motor and having an axially arranged tapering recess, a track supported by said base, a rotating member cooperating with said track, means connecting said rotating member with said driving shaft at the apex of said recess for causing the same to rotate in unison with said shaft, said means permitting movement of said member transversely of said track, and a guide for limiting movement of said rotating member relative to said motor longitudinally of said track.

5. In an automatic fan, in combination, a base, a fan motor mounted to oscillate on said base, a driving shaft rotated by said motor and having an axially arranged tapering recess, a rack supported by said base, a pinion adapted to cooperate with said rack, and a flexible and resilient shaft by which said pinion is carried and secured to said driving shaft at the apex of said recess.

6. In an automatic fan, in combination, a base, a fan motor mounted to oscillate on said base, a fan shaft rotated by said motor, a driving shaft, gears connecting said shafts, said gears being movable into and out of interengagement, a track supported by said base, and a rotating member carried by said

driving shaft, said rotating member and track being relatively movable in a direction transverse to said track.

7. In an automatic fan, in combination, a base, a fan motor mounted to oscillate on said base, a fan shaft rotated by said motor, a driving shaft, a gear on said driving shaft, a sleeve rotating with said fan shaft and longitudinally movable thereon, a gear carried by said sleeve and movable thereby into and out of engagement with said first named gear, a track supported by said base, and a rotating member carried by said driving shaft, said rotating member and track being relatively movable in a direction transverse to said track.

8. In an automatic fan, the combination with a base, a fan motor mounted to oscillate on said base, and a driving shaft rotated by said motor, of a track supported by said base and having opposite surfaces lying wholly on opposite sides of the normal axis of said shaft, and a rotating member carried by said shaft and cooperating with the opposite surfaces of said track successively.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM B. LASKEY.

Witnesses:

HORACE L. BROUGHTON,
PHILIP B. LASKEY.