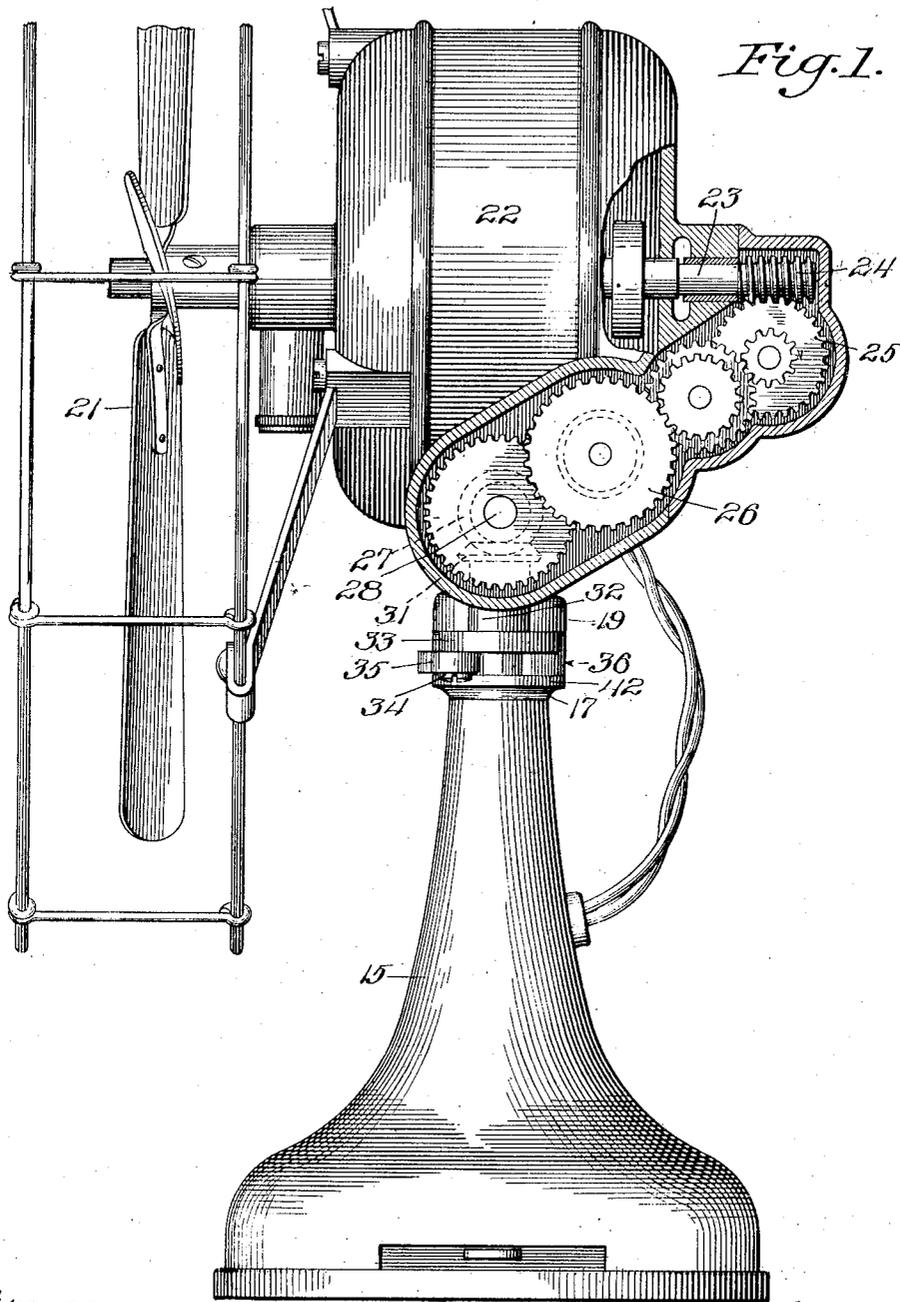


E. S. PILLSBURY.
OSCILLATING ELECTRIC FAN.
APPLICATION FILED JAN. 19, 1912.

1,332,002.

Patented Feb. 24, 1920.
2 SHEETS—SHEET 1.



Witnesses:

Harry S. Gaither
C. W. Anderson

Inventor:

Edwin S. Pillsbury

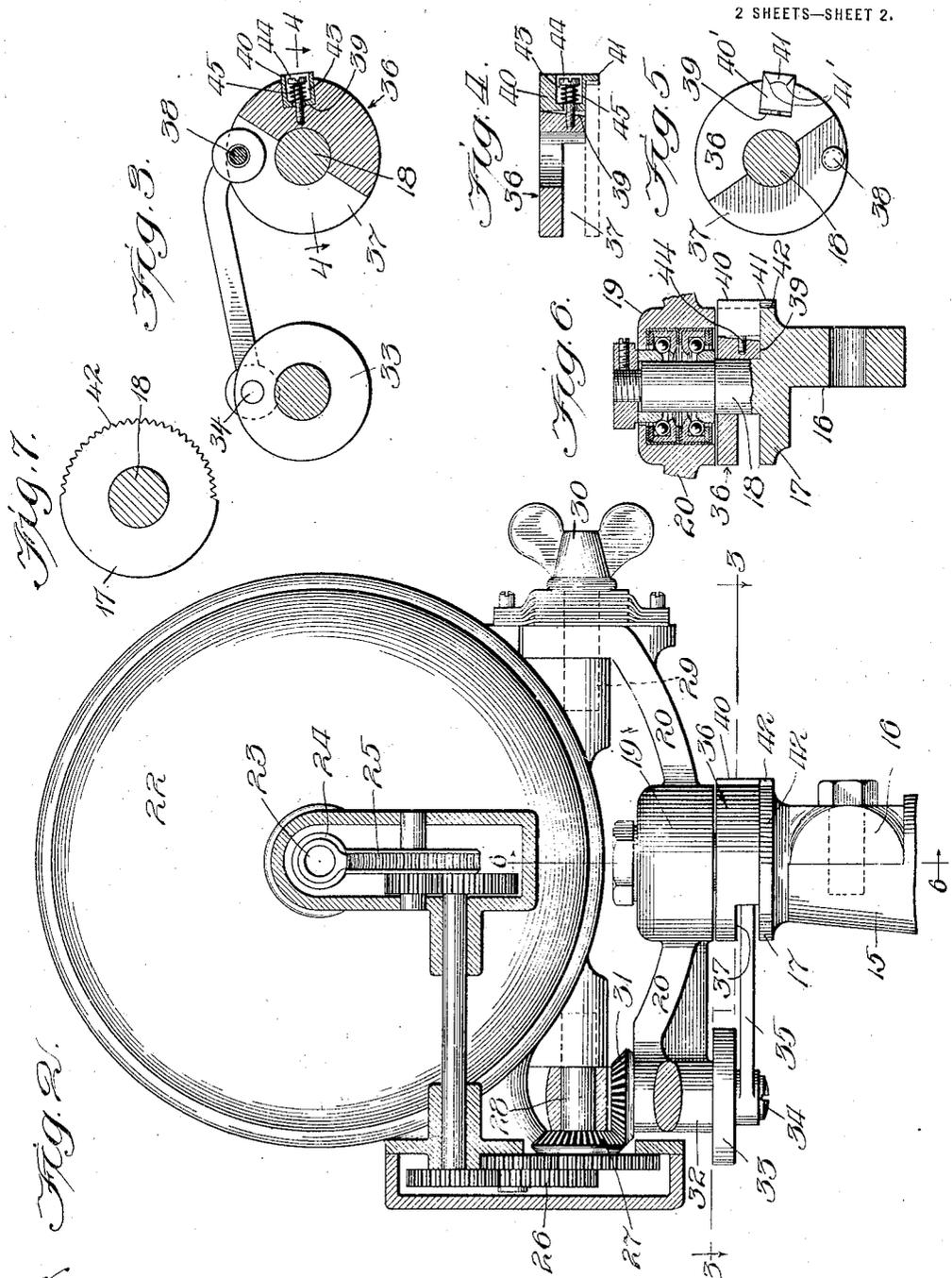
Shurden, Wilkinson, Scott & Richmond
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Witnesses:
Harry Scatter
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UNITED STATES PATENT OFFICE.

EDWIN S. PILLSBURY, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO CHARLES H. J. DILG, OF NEW YORK, N. Y.

OSCILLATING ELECTRIC FAN.

1,332,002.

Specification of Letters Patent. Patented Feb. 24, 1920.

Application filed January 19, 1912. Serial No. 672,148.

To all whom it may concern:

Be it known that I, EDWIN S. PILLSBURY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Oscillating Electric Fans, of which the following is a specification.

The principal object of my invention is to provide a new and improved mechanism for oscillating an electric fan. Another object of my invention is to provide an oscillating mechanism comprising a yielding element so that the fan may not become damaged if it is blocked in any particular position. A further object of my invention is to provide an oscillating fan that may be quickly adjusted so that the mean position shall be in any desired horizontal direction. Still another object of my invention is to provide oscillating mechanism such that the fan may be tilted at any desirable vertical angle while the axis of the oscillation remains vertical. All these objects and various others will be made clear in the following specification and claims, taken in connection with the accompanying drawings.

For the purpose of illustrating my invention and explaining its nature, I have shown one specific embodiment thereof in the accompanying drawings, and I now proceed to explain the same.

Referring to these drawings—

Figure 1 is a general side elevation, partly in section, of an electric fan embodying my invention.

Fig. 2 is an end elevation of the same, also partly in section.

Fig. 3 is a horizontal section, looking down, taken on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3.

Fig. 5 is a bottom view of the parts shown in Fig. 4.

Fig. 6 is a detail vertical section taken on the line 6—6 of Fig. 2.

Fig. 7 is a plan view of a detail.

The fan stands on the base or support 15, to which the head 17 is attached by means of the joint 16, this joint permitting the parts to be assembled, as shown in the drawings, or to have the base 15 turned at 90° so that it can be supported against a vertical wall. The head 17 carries the stud 18, on the upper part of which the member 19 is rotatably mounted. This member carries two

oppositely projecting arms 20 that support the fan motor 22 carrying the fan 21.

The shaft 23 of the motor 22 carries a worm 24 at its end, which engages the worm wheel 25 and, through a train of reducing gears 26, transmits rotation to the bevel gear wheel 27 on the shaft 28.

In alinement with this shaft 28 is the screw stud 29, which may be manipulated by means of the winged head 30. The shaft 28 and the stud 29 are supported on the ends of the respective arms 20 and constitute a horizontal axis about which the motor 22 may be tilted in a vertical plane.

One arm 20 carries a beveled gear wheel 31 that is engaged by the gear 27. The shaft for this gear wheel is journaled in the sleeve 32 and carries a crank disk 33 at its lower end. The stud 34 in the disk 33 constitutes a wrist pin which engages one end of the link or connecting rod 35. The other end of the link 35 is engaged by the stud 38, attached to the collar 36 that loosely surrounds the stud 18 between the head 17 and the member 19. This collar 36 has a portion of one side cut away, as indicated by the reference numeral 37, and the stud 38 is in this cutaway portion.

The collar 36 has a deep notch 39 at one side, in which lies a dog 40 with a downwardly projecting tongue 41 carrying two teeth 41' that engage the notches 42 around the periphery of the head 17. This dog has a socket 43 in which lies a coil spring 45. The screw 44, acting upon the spring 45, holds the dog in the notch 39 and holds the teeth in engagement with the notches 42. As the motor 22 revolves and drives the fan 21, a slow rotation is given through the gearing described to the crank disk 33. The stud 38 being fixed, the reciprocation of the link 35 causes the motor 22, and the fan 21 with it, to oscillate about the stud 18 as an axis.

In case any obstacle should be presented to this movement, as, for example, if the cage of the fan struck against an object, then the thrust or pull on the link 35 instead of oscillating the motor 22 and the fan 21 would oscillate the collar 36 around the stud 18. The engagement of the teeth 41' with the notches 42 is sufficient to hold the collar 36 against such oscillation, unless the thrust or pull of the link 35 becomes excessive. In the latter case the teeth of the dog 40 simply

jump along from notch to notch of the series of notches 42.

In case it is desired to have the general direction of the blast from the fan changed, in other words, to change the mean position of the fan, the attendant can seize the cage and shift it while the fan is running or idle. This will simply slide the teeth 41' over the notches 42 until they are brought to a suitable point of adjustment.

By means of the winged head 30 of the clamping screw the fan can be tilted up or down at any desired angle. It will be seen that the bevel gears 27 and 31 maintain the continuity of the gear train for any tilting adjustment desired. No matter whether the fan is tilted up or down, it oscillates always about the stud 18 as a vertical axis.

I claim:—

1. In an oscillating electric fan, in combination, a base, a motor frame, a rotor and fan carried thereby, a support for said frame carried by said base, said support comprising means to facilitate tilting the frame on a horizontal axis and turning it about a vertical axis, a train of mechanism from the rotor to the base to oscillate the support and parts carried thereby relatively to the base, said mechanism comprising a reciprocally acting link and comprising means to facilitate tilting the frame on the horizontal axis and further comprising a yielding connection to the base so as to hold in any particular one of a plurality of definite relative positions but adapted to yield to an abnormal force and permit said elements to assume another one of said definite relative positions.

2. In an oscillating electric fan, in combination, a support, a stator pivoted on said support so as to tilt about a horizontal axis, a rotor and fan carried by said stator, and transmitting mechanism to oscillate the fan extending from the rotor to the support, said mechanism comprising a gear wheel with its axis coinciding with the horizontal tilting axis of said stator.

3. In an oscillating electric fan, in combination, a support, a stator pivotally mounted thereon to tilt about a horizontal axis, a rotor and fan carried thereby, speed reducing gears from the rotor comprising a gear wheel having its axis coinciding with the horizontal tilting axis, and a crank driven by said gears and engaging a fixed point to oscillate the fan.

4. In an oscillating electric fan, in combination, a base, a motor and frame therefor pivotally mounted upon the base, and means for oscillating the motor frame comprising a crank operated by the motor and a connecting rod connected at one end to the crank and having a yielding connection at its other end with the base, whereby the angular relation of the motor frame on the base may be instantly adjusted manually.

5. In an oscillating electric fan, in combination, a base, a motor frame, a fan carried thereby, and mechanism to oscillate the frame relatively to the base, said mechanism comprising a reciprocally acting link with one end pivotally connected to an eccentric stud carried by the base, said stud being adjustable around the base, and a shallow notched collar and a spring dog engaging the same to hold said stud yieldingly at any desired point of adjustment.

6. In an oscillating electric fan, in combination, a base, a motor frame, a rotor therein, a fan carried thereby, gearing driven by said rotor, a reciprocally acting connecting rod with one end driven by said gearing, a notched collar carried by the base, a spring dog yieldingly engaging the same, and an eccentric connection for the other end of said connecting rod, said connection being held yieldingly by said collar and dog.

7. In an oscillating electric fan, in combination, a base, a motor frame, a rotor therein, a fan carried thereby, gearing driven by said rotor, a reciprocally acting connecting rod with one end driven by said gearing, an eccentric connection on the base for the other end of said connecting rod, said connection being adapted to rotate around the axis of the base, and yielding means to hold said connection at any desired angular adjustment.

8. In a fan machine, the combination of a support, a rotary fan mounted thereon so that it may oscillate with reference thereto, means for producing vibratory movement associated with one of the aforesaid parts, and means for connecting said vibratory movement producing means with the other of said parts to cause the fan to oscillate said connecting means yieldingly secured to said latter part so that it may shift with reference to said latter part to shift the region of oscillation of the fan angularly with reference to the support.

9. In a fan machine, the combination of a support, a rotary fan mounted thereon so that it may oscillate with reference thereto, means for producing vibratory movement associated with one of the aforesaid parts, and means for connecting said vibratory movement producing means with the other of said parts to cause the fan to oscillate said connecting means secured to said latter part by yielding friction, so that the region through which the fan oscillates in consequence of the connection may be automatically shifted and readjusted angularly with reference to the support when the oscillation of the fan is obstructed.

10. In a fan machine, the combination of a support, a rotary fan mounted thereon so that it may oscillate with reference thereto, means for producing vibratory movement associated with one of the aforesaid parts, and

means for connecting said vibratory movement producing means with the other of said parts to cause the fan to oscillate comprising a member associated with said latter part and yieldingly secured thereto by friction, so that when the oscillating fan encounters an obstruction said member may be automatically shifted and the region of oscillation of the fan thereby shifted and readjusted with reference to the support to avoid further interference from such obstruction.

11. In a fan machine, the combination of a support, a rotary fan mounted thereon so that it may oscillate with reference thereto, means for producing vibratory movement associated with one of the aforesaid parts, and means for connecting said vibratory movement producing means with the other of said parts to cause the fan to oscillate, said connecting means comprising two members yieldingly secured together in a definite relation so that they may yield and depart from such definite relation when the oscillation of the fan is obstructed until the cycle of oscillation proceeds far enough to withdraw the fan from the obstacle.

12. In a fan machine, the combination of a support, a rotary fan mounted thereon so that it may oscillate with reference thereto, means for producing vibratory movement associated with one of the aforesaid parts, and means for connecting said vibratory move-

ment producing means with the other of said parts to cause the fan to oscillate, said connecting means comprising a member yieldingly secured to said latter part so that it may shift with reference thereto so as to alter the region of oscillation of the fan when the fan is obstructed.

13. In an oscillating electric fan, in combination, a base, a motor and frame therefor pivoted on said base so as to tilt about a horizontal axis, a crank operated by the motor, and a connecting rod connecting the crank with the base and occupying a plane parallel to the horizontal tilting axis in all relative positions of the motor frame and base.

14. In an oscillating electric fan, in combination, a base, a motor and frame therefor pivoted on said base so as to tilt about a horizontal axis, speed reducing gears operated by the motor and including a crank operated by the motor, and a connecting rod connecting the crank with a point on the base and occupying a plane parallel to the horizontal tilting axis in all relative positions of the motor frame and base.

In testimony whereof I have subscribed my name.

EDWIN S. PILLSBURY.

Witnesses:

H. W. JEAMINO,
JOHN F. CREAN.