

March 19, 1946.

C. POFF

2,396,749

FAN

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3 Sheets-Sheet 1

Fig. 1.

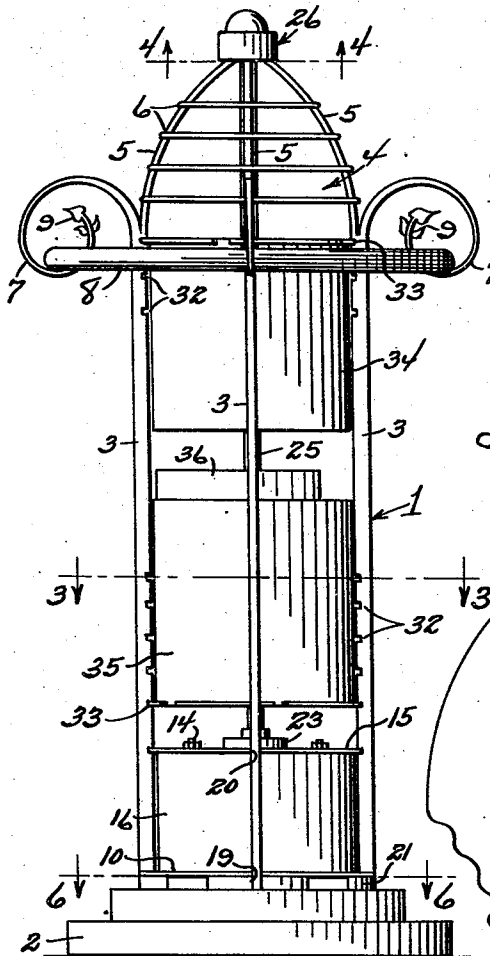


Fig. 2.

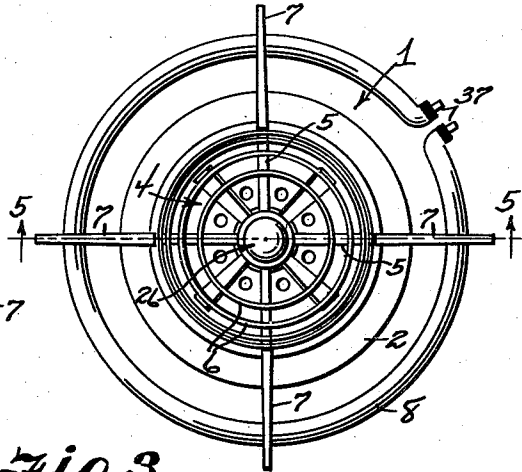


Fig. 3.

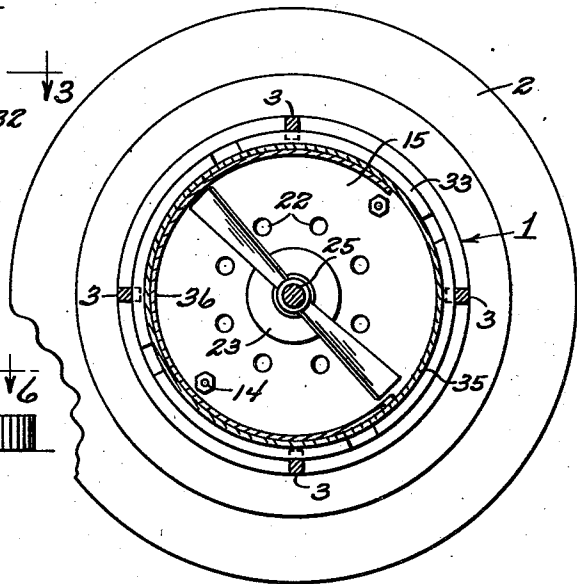
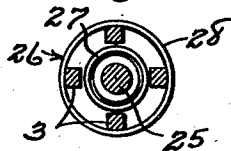


Fig. 4.



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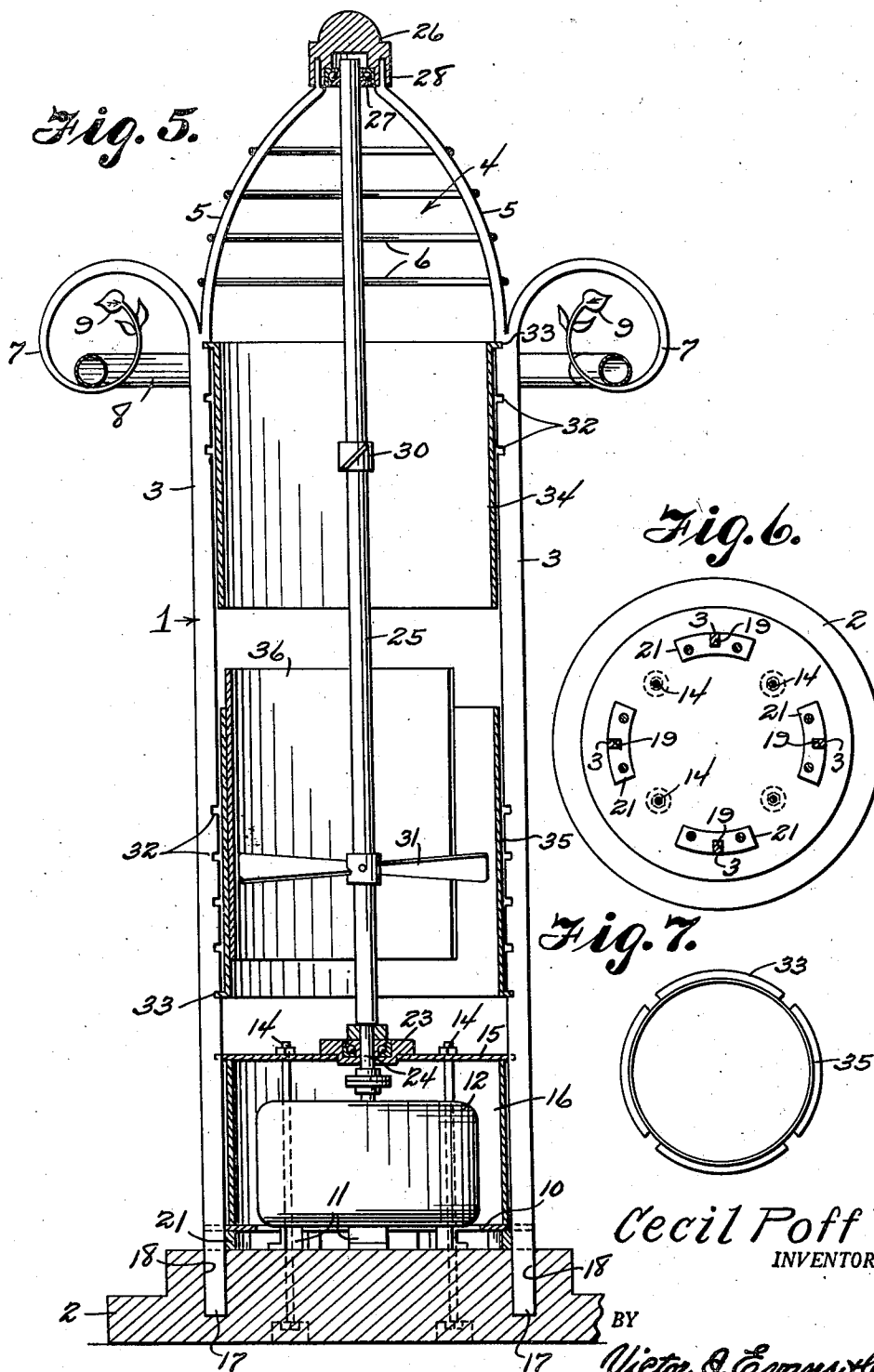
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Fig. 8.

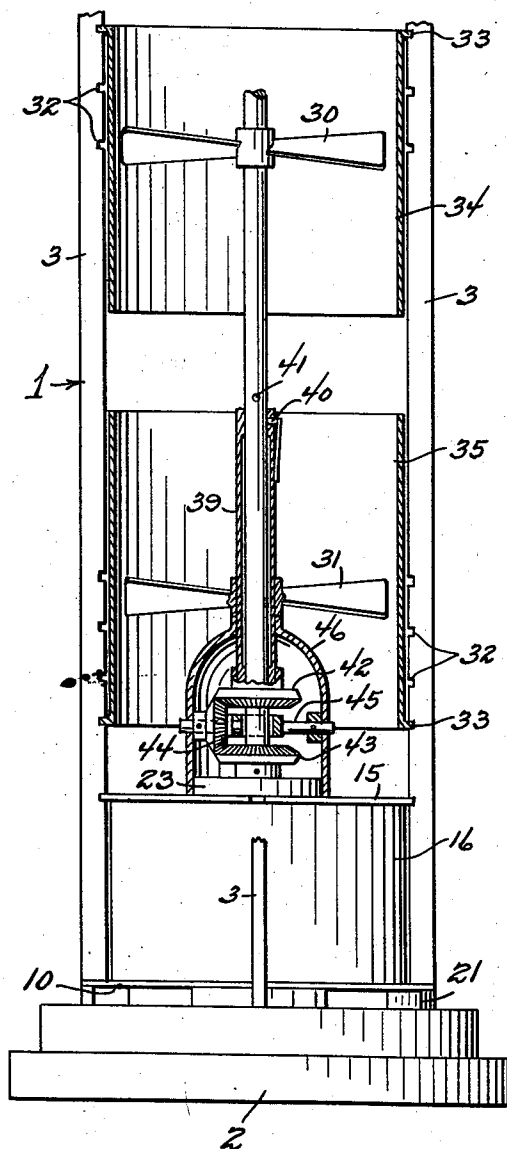
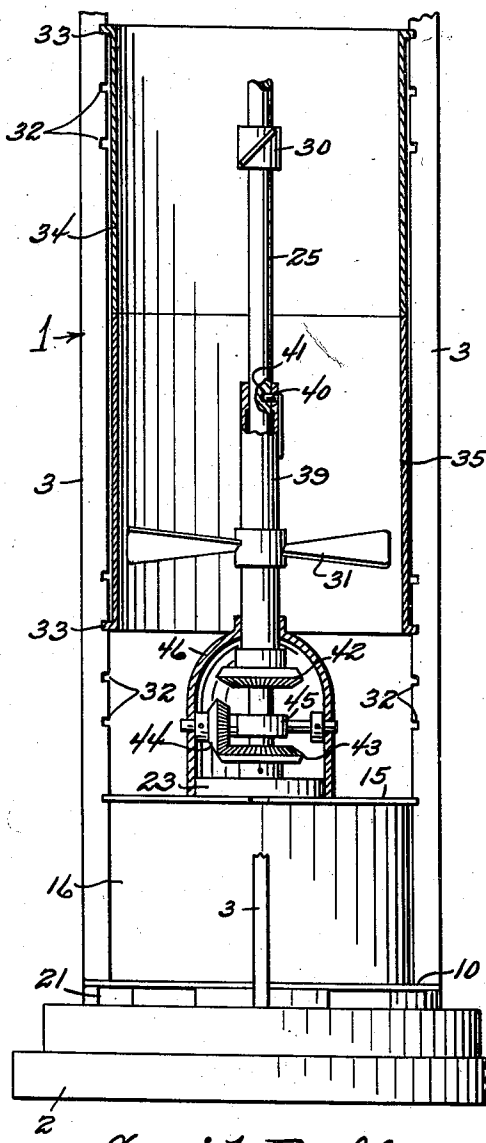


Fig. 9.



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Application August 7, 1944, Serial No. 548,373

8 Claims. (Cl. 230—259)

My present invention has reference to improvements in air circulating fan mechanisms, and more particularly, it is my purpose to provide means for increasing the range and effectiveness of circulation, to improve upon the drive mechanism, to simplify and refine and render more practical and effective the supporting structure for the fan and power plant, and to provide means for directing air currents so that the desired effects are attained where most needed.

Among the many objects and advantages of my invention may be briefly defined the following: (1) to provide an improved arrangement of dual, vertically spaced fans for inducing and directing most effective air circulation, (2) to provide improved shields for directing and increasing circulation, (3) to design and construct a supporting structure which has increased efficiency in inducing air circulation, and which is improved in strength, simplicity and appearance, (4) to provide improved drive means, and (5) to render more practical, efficient and desirable fan structures of this broad character. However, changes may be made in form, size, shape, arrangement and construction of parts without departing from the spirit and scope of my invention and the purview of the claims appended hereto.

In the drawings wherein I have illustrated a preferred form of my invention:

Figure 1 is a side elevation of my invention;

Figure 2 is a top plan view;

Figure 3 is a transverse section on the line 3—3 of Figure 1;

Figure 4 is a transverse section on the line 4—4 of Figure 1;

Figure 5 is a vertical section on line 5—5 of Figure 2 and shows the air guide and deflecting sleeves, the fans and vertical drive shaft and the motor and supporting frame;

Figure 6 is a transverse section on the line 6—6 of Figure 1;

Figure 7 is a detail of the base support and guide ring for the vertical side frames;

Figure 8 is a vertical section of the gear transmission wherein the fans are in gear to reversely rotate, and

Figure 9 is a vertical section where the lower fan is out of gear and latched or keyed to rotate with the vertical drive shaft and in unison and in the same direction as the upper fan.

In the drawings wherein like characters of reference are used to designate like or similar parts:

The numeral 1 designates a vertical fan stand having a base 2, diametrically opposed vertical

frames 3, and an open dome shaped top 4, having arcuate diametrically opposed frame members 5 to which are attached spaced annular ribs 6. The frame members 5 may or may not be integral with the vertical frames 3 and the ribs may be welded, riveted or otherwise attached to frame members 5. As shown in Figures 1 and 5, outwardly, downwardly, inwardly and upwardly curved supports 7 for neon lighting member 8 are also provided on frames 3 as well as suitable decorations 9, these supports may be integral with frames 3.

Mounted on a base plate 10, see Figure 6, having supporting feet 11 is an electric motor 12, suitable openings 13 being provided in the base plate for bolts 14 which engage the top 15 supported on the cylindrical side walls 16 about the motor to form a housing for the motor. The heads of the bolts 14 extend through the base, as shown in Figure 5, and are countersunk. Vertical frames 3 have their bottom ends 17 seated in openings in the base as at 18 and are seated in notches 19 and 20 in the base plate 10 and top 15 respectively. The base plate 10 is raised from base 2 by notched blocks 21 to give the motor free air circulation. As shown in Figure 3, the top 15 is provided with suitable ventilating openings 22, and centrally on the top is an anti-frictional bearing member 23 through which the vertical drive shaft 24 of the motor extends. This shaft is splined or keyed to the vertical driven shaft 25. Shaft 25 extends to the top of the dome 4 which has a cap 26 carrying anti-frictional bearing member 27 for the top end of the shaft as shown in Figures 4 and 5. The cap has notches in which the upper ends of frame members 5 are seated, and retained by an annular collar 28. An annular notched plate 29 is provided at the base of the frame. The base or ends of frames 3 may be notched to fit in the notches of blocks 21 to securely hold frames 3 on the base.

Keyed or pinned or otherwise attached to the vertical driven shaft 25—or fan shaft, are spaced upper and lower fans 30 and 31 respectively. As shown in Figures 1 and 5, these rotate with the fan shaft. The vertical frames 3 each have a series of spaced notches 32 in any set of which the flanged edges 33 of upper and cylindrical sleeves 34 and 35 engage to mount the sleeves on the frames. The sleeves are relatively long and are arranged about the fans 30 and 31, and may be adjusted up and down to vary the currents thrown by the fans, or brought together as shown in Figure 9, to form a single elongated air duct to increase the range of circulation. A semi-

circular sleeve 36 gives a directional effect to the current between the two fans, and is slightly sprung out to frictionally engage the sides of the sleeves 34 and 35 to be held in place. As shown in Figure 2, the neon lighting member 8 has the usual terminals 37 and contacts 38, or as an alternative, a chandelier effect may be supplied. In operation, the motor 12 is attached to a suitable source of current and drive fan shaft 25 which rotates the fans. By having wide bands or sleeves 34 and 35 the air currents have a proportionately wider range than with narrow sleeves, and the distance they are set apart regulates the intensity of outward flow. To remove the motor 12, it is merely necessary to remove one frame 3. The directional sleeve 36 may be raised to meet the upper sleeve if desired, and is sprung to securely maintain its position.

As shown in Figures 8 and 9, the fans may be caused to rotate in opposite directions to cause collision of opposing air currents and to reduce torque or twist which is especially undesirable with light structures. In this form the lower fan 31 is mounted on a sleeve 39 which is slidable on fan shaft 25 and carries a spring latching pin 40 for engagement in openings 41 in the shaft 25 to fix the sleeve on shaft 25 if it is desired to have the fans rotate in the same direction together. On the lower end of sleeve 39 is a beveled gear 42, and a similar gear 43 is keyed to shaft 25. A pinion 44 is mounted on a carrier 45 journaled in gear housing 46 above the motor housing.

When the sleeve 39 is released from shaft 25 to move down to mesh beveled gear 42 with pinion 44 fans 30 and 31 rotate in opposite directions, making it possible to suspend light structures by a flexible cord without twisting. For such position, the base may be modified in design and the structure made relatively longer. When sleeve 39 is raised and pin 40 engaged in an opening 41 to couple the sleeve to the shaft, both fans rotate together and in the same direction, moving a current downwards and deflecting it at the base. The cylindrical sleeves 34 and 35 may be drawn together providing a single air duct through which a current may flow out over a stand or table (Fig. 9). The semi-circular sleeve 36 may be lowered to reach the base giving a directional effect to the current when desired.

It is believed that the operation and advantages of my invention will be apparent from the foregoing, but it is emphasized that interpretation of the scope of my invention should only be conclusive when made in the light of the subjoined claims.

I claim:

1. A fan mechanism comprising a vertical open frame having a top and a base, a motor on the base, a vertical fan shaft coupled with the motor and supported at the top of the frame, a plurality of spaced fans carried by the shaft, current deflectors adjacent and about the fans, spaced notches in said frame, said deflectors being

flanged to engage in certain of such notches whereby said deflectors can be adjustably arranged and the top of the frame having inwardly bent elements connected by spaced annular bars and joined at the top by a cap.

2. The invention as defined in claim 1 wherein outwardly, downwardly, inwardly and upwardly curved members are carried by the frame elements, and an illuminating device is carried by said curved members.

3. The invention as defined in claim 1 wherein the motor has a housing member formed, having a top and a base, and a cylindrical side between the top and base, bolts connecting the top and base, and air circulation spaces, provided for the motor to cool the same.

4. The invention as defined in claim 1, wherein the vertical frame members are removably attached to a base, and the base carrying notched spacing blocks for the motor.

5. A fan mechanism comprising a vertical open frame having a top and a base, a motor on the base, a vertical fan shaft coupled with the motor and supported at the top of the frame, a plurality of spaced fans carried by the shaft, cylindrical deflector elements adjustably carried by the frame and arranged adjacent and about the fans and a semi-cylindrical deflector moveably and frictionally engaging the first mentioned deflector, the disposition of which directs currents of and laterally with respect to the first named deflector.

6. A fan mechanism comprising a vertical open frame, having a top and a base, a motor on the base, a vertical fan shaft coupled with the motor, a fan on said shaft, a sleeve on the fan shaft, a fan on the sleeve, means for coupling the second fan with the motor to rotate opposite to the first fan, and means for coupling the second fan to the first fan whereby said fans rotate in the same direction in unison, and said frame and top being open to permit circulation of air, and adjustable deflector sleeves about the fan and carried by the frame.

7. The invention as defined in claim 6, wherein the means coupling the sleeve to the motor to be driven in a direction opposite the fan on the shaft, includes a bevel gear on the shaft, a bevel gear on the sleeve, and a pinion either meshed or not meshed with the pinion on the sleeve, and a latch on the sleeve to couple the sleeve with the shaft when the sleeve bevel gear is unmeshed with the pinion to drive the sleeve with the shaft.

8. The invention as described in claim 5 wherein the adjustable sleeves about the fan are adapted to be brought together as a unit forming a single elongated air duct functioning to increase the range of circulation, and means for coupling said first fan on the shaft, and means for coupling the second fan to the first fan whereby the fans are adapted to be rotated in unison to throw an air current downward, deflecting at the base.

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