Nov. 14, 1933. A. G. OREAR 1,935,179

VENTILATING APPLIANCE

Filed Aug. 25, 1930

Fig. 1

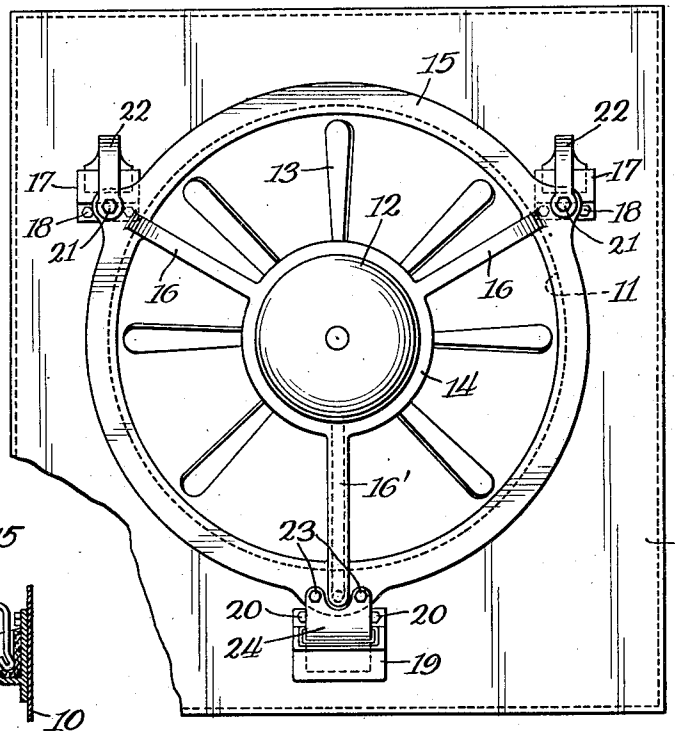


Fig. 4

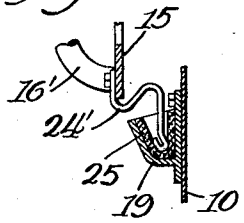


Fig. 2

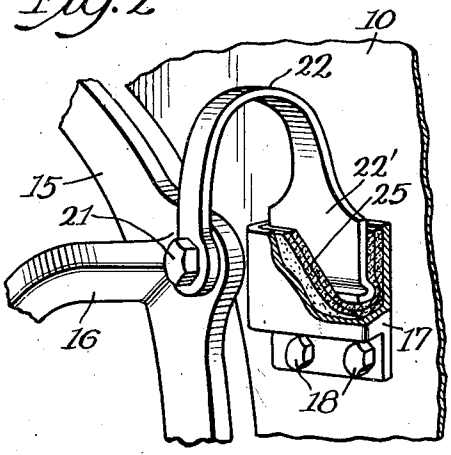
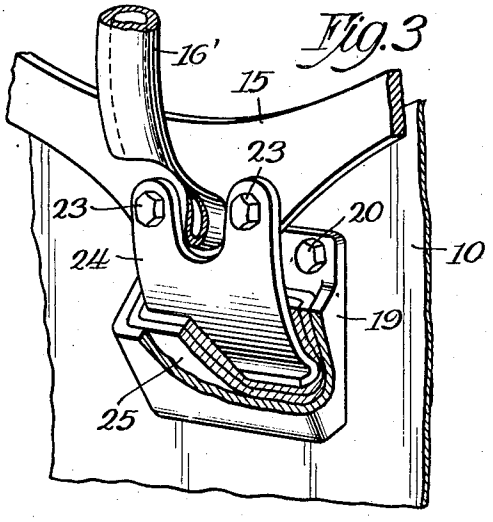


Fig. 3



Inventor
Andrew G. Orear
By Fisher, Clapp, Soames & Pond Attys.

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UNITED STATES PATENT OFFICE

1,935,179

VENTILATING APPLIANCE

Andrew G. Orear, Glendale, Calif., assignor to Ilg Electric Ventilating Company, Chicago, Ill., a corporation of Louisiana

Application August 25, 1930. Serial No. 477,507

4 Claims. (Cl. 230—273)

This invention relates to a popular and well known type of ventilating apparatus, which, briefly described, comprises an electric motor and direct driven fan, a motor-supporting frame, and a panel to which the frame is bolted or otherwise fastened, the panel having an opening to accommodate the fan and usually being mounted in an opening in a wall of the room served by the apparatus.

Notwithstanding the efforts of designers and manufacturers of such apparatus to secure a good balance of the rotating parts (fan and motor armature), these devices are frequently objectionably noisy in operation due mainly to vibratory and oscillatory effects in the motor, fan, supporting frame and panel set up by the rapidly rotating and oscillating parts. Efforts have heretofore been made to obviate this objection by means of a spring suspension of the fan motor on the motor-supporting frame, but, so far as I am aware, such efforts have been to but a small extent successful, owing I believe to the fact that the springs must be sufficiently heavy and stiff to maintain the motor and fan in true running position, and when so made, their vibration and noise absorbing capacity is but slight.

One object of my present invention is to provide a cushioned spring or flexible mounting for ventilating apparatus of this type that will more effectively reduce or eliminate the vibration and noise which accompanies its operation, and I have found that this can be accomplished by locating the cushioning means in, and making the same a part of, the means by which the motor supporting frame is attached to the panel, or directly to the wall of the room where the usual panel may be omitted; and this is especially true where the cushioned attaching means takes substantially the form hereinafter described and shown in the accompanying drawing.

Another object of the invention is to provide a simplified and improved means for mounting the motor carrying frame on the panel or wall, whether the cushioning means be incorporated therein or not, whereby the frame can be applied and removed by the simple bringing together or separation of interfitting parts on the frame and panel respectively, and without requiring the use of bolts, clamps or other like fastening devices.

In order that the invention may be clearly understood, I have, in the accompanying drawing, illustrated one simple and practical embodiment thereof, and referring thereto—

Fig. 1 is a rear elevational view of a ventilating outfit of the type referred to, showing the motor supporting ring frame attached to the panel by my improved cushioned connecting means.

Fig. 2 is a perspective elevation of a fragment of the ring frame and the right hand upper connecting device shown in Fig. 1 (the left hand connecting device being a duplicate thereof).

Fig. 3 is a similar perspective elevation of a fragment of the ring frame and the lower connecting device.

Fig. 4 shows a modification of the flexible support shown in Fig. 3.

In the drawing, 10 designates a sheet metal panel such as is commonly secured in a correspondingly shaped opening in a wall, this panel having a circular opening 11 to accommodate the fan. The fan and motor unit comprises an electric motor conventionally illustrated at 12, a direct driven fan 13 fast on the armature shaft of the motor, and a motor supporting frame comprising, in the instance shown, an inner ring-shaped saddle 14 embracing the motor, a peripheral ring 15, spider arms or spokes 16 connecting the two rings at the top, and an arm or spoke 16' connecting the rings at the bottom, which may be hollow, as indicated, to serve also as a vent pipe for air cooling the motor.

Describing now my improved cushion support for the motor supprting frame, 17 designates each of a pair of upper socket members that are attached to the panel 10 as by bolts 18, and 19 designates a lower similar socket member attached to the panel 10 as by screw bolts 20. These socket members 17 and 19 are preferably located adjacent to the periphery of the fan opening 11. Attached to the peripheral ring 15 of the motor supporting frame, as by bolts 21 are a pair of upper arms 22, and attached to the lower portion of the peripheral ring 15, as by bolts 23 is a depending arm 24. The upper arms 22 preferably take the form of suspension hooks, as clearly shown in Fig. 2, the free ends thereof being widened, as shown at 22', and engaging within the socket members 17; and the lower arm 24, which has the character and function of a flexible strut member similarly engages within the lower socket member 19. It will be seen that by reason of this construction, the motor, fan and motor-supporting frame can be applied to the panel by a simple lowering movement after registering the free ends of the arms 22 and 24 with their respective socket members, and it can be removed and withdrawn by a simple lifting movement.

As shown in Figs. 2 and 3, the socket members 17 and 19 are preferably lined with one or more

layers of vibration absorbent material, such as soft rubber or felt, this material being designated by 25. As a result of this, the vibrations of the motor-supporting frame set up by the rapid revolution of the fan and its shaft are absorbed by the socket linings 25 and are not to any appreciable extent transmitted to the panel 10. This, of course, greatly reduces the noise and insures a smooth and quiet operation of the fan. At the same time, the described cushion connections of the motor frame to the panel prevent lateral or radial displacement of the fan motor and its supporting frame so that the fan is always maintained in true running position relatively to the panel opening.

In Fig. 4 I show a modification of the lower socket-engaging arm wherein said arm 24' has an S-form, rendering the same more flexible than the arm 24 of Figs. 1 and 3.

Where the motor supporting frame may be connected directly to the wall of a building, instead of to a panel set in the wall, the wall of course takes the place of the panel in relation to the ventilating appliance, and the term "panel" as used herein is intended to include such a wall.

The drawing illustrates one simple, practical, specific embodiment of the principle of the invention, but I do not limit the latter to the structural details shown, except to the extent clearly indicated in the specific claims.

I claim:

1. The combination with a panel, a fan motor and fan, and a ring frame in which said motor is mounted, of socket members on said panel and arms on said frame engaged with and disengaged from said socket members by simple lowering and lifting movements of said frame.

2. The combination with a panel, a fan motor and fan, and a ring frame in which said motor is mounted, of socket members on said panel, said socket members being lined with vibration absorbent material, and arms on said frame at their free ends adapted to engage with said socket members.

3. The combination with a panel, a fan motor and fan, and a ring frame in which said motor is mounted, of a pair of upper socket members and a lower socket member attached to said panel, a pair of arms functioning as suspension hooks attached to the upper portion of said frame the free ends of which are adapted to engage with said upper socket members, and an arm functioning as a strut attached to the lower portion of said frame the lower end of which is adapted to engage with said lower socket member.

4. The combination with a panel, a fan motor and fan, and a ring frame in which said motor is mounted, of a pair of upper socket members and a lower socket member attached to said panel, a pair of arms functioning as suspension hooks attached to the upper portion of said frame the free ends of which are adapted to engage with said upper socket members, and an arm functioning as a strut attached to the lower portion of said frame the lower end of which is adapted to engage with said lower socket member; all of said socket members being lined with vibration absorbent material.

ANDREW G. OREAR.