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VENTILATING FAN

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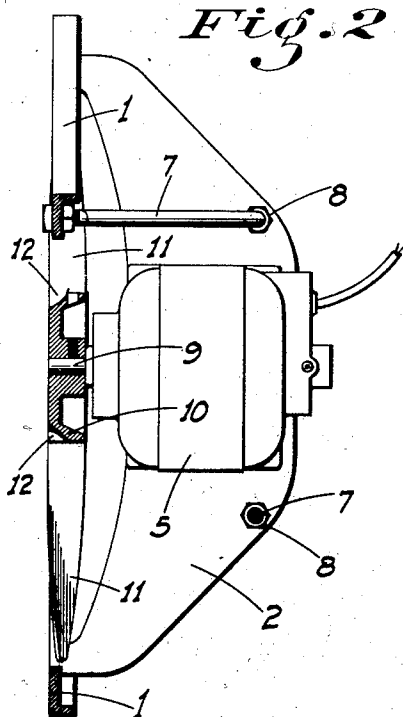
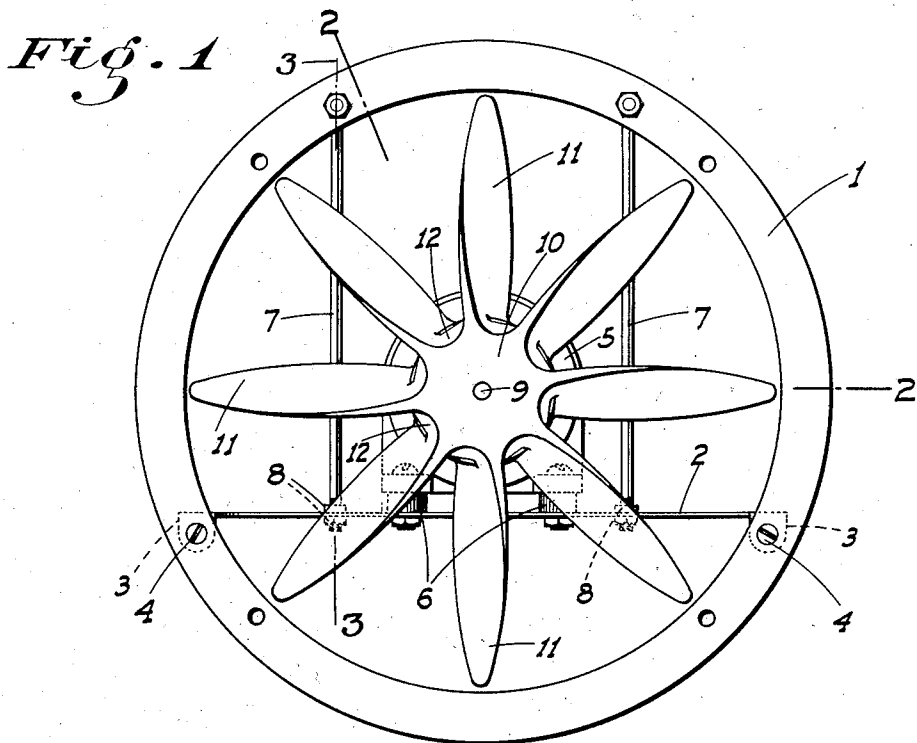
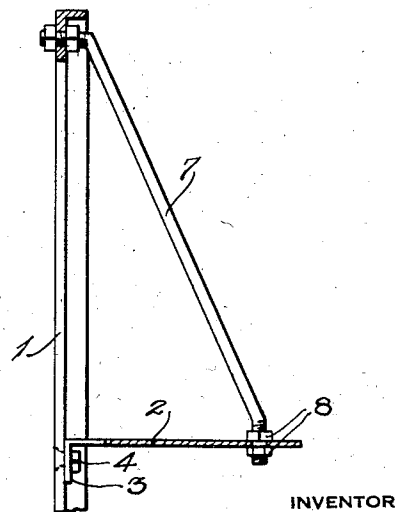


Fig. 3



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VENTILATING FAN

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2 Claims. (Cl. 230—273)

This invention relates to air circulating or ventilating fan units such as are usually mounted at the terminal of an air conduit in the area to be ventilated to exhaust the air from such area or to draw the air from the conduit into the area.

The object of my invention is to provide a mounting for a motor driven fan which is capable of adjustment in order that the motor and fan may be adjusted radially of the axis of the rigid supporting ring within which the fan rotates. It is my purpose to provide a motor driven fan assembly which without accurate machining may be properly centered in the rigid supporting ring.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a front view of my improved fan unit.

Fig. 2 is a sectional plan substantially on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical section taken on line 3—3 of Figure 1.

Referring now more particularly to the characters of reference on the drawing, the numeral 1 denotes the supporting frame of the unit preferably in the form of a rigid ring adapted to be mounted about the end of an air conduit or about any opening through which the air is intended to pass.

Disposed behind the ring and extending transversely thereof some distance below the center of the fan is a thin plate 2 having downwardly bent ears 3 at its sides engaging the adjacent portion of the ring on its back face and secured thereto by screw bolts 4 or the like. This plate forms the support for an electric motor 5 disposed concentric with the ring and bolted to said plate. Rubber blocks or washers 6 are disposed between the plate and the motor to absorb the vibrations of the latter and prevent such vibrations from being transmitted to the metal plate, frame-ring and thence to the conduit to which the ring is attached.

Rods 7 are secured to the plate adjacent its back end and to the sides of the motor and extend thence upwardly and forwardly to the ring to which they are bolted. The securing means between the rods and the plate preferably com-

prises vertically adjustable nuts 8 on said rods on both sides of and engaging the plate so that the latter in the axial plane of the ring may be easily set or adjusted so as to be parallel to the ring axis.

The fan is mounted on the forward end of the motor shaft 9 as usual. This fan comprises a disc-like hub 10 from which airplane-type blades 11 radiate. The motor and fan are disposed relative to the ring 1 so that the tips of the blades are substantially in alignment with the ring and the diameter of the fan is sufficiently less than the bore of the ring so that with any slight vibrative movement of the motor due to its rubber mounting and the resilient supporting plate, said blades will not catch against the ring.

The hub 10 is as wide as the width of the blades axially of the hub at the base of the blades, and with a plurality of blades the hub must obviously be of considerable diameter to accommodate all the blades. When the hub at its front end is sharp edged between the blades as is usually the case, I have found that a considerable whip of the air as it passes between the blades is had, which disturbs the desired smooth flow of air and sets up a certain amount of noise. I have therefore eliminated this objectionable action by relieving or cutting away the hub at the front between the adjacent edges of adjacent blades for substantially half the width of the hub as shown at 12. Each such relief or cut away portion is preferably curved circumferentially of the hub in concave relation to the hub curvature and the ends of the cut away portion merge smoothly into the adjacent faces of the corresponding blades, as shown in Fig. 1.

This feature alone increases the efficiency and silence of operation of the unit to a considerable degree, and in combination with the thin motor supporting plate, interference to the flow of air to the fan is reduced to a minimum, air whine is practically eliminated, and the efficiency of the unit as a whole is materially increased with a lesser expenditure of power.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A ventilating fan unit comprising a rigid
5 frame ring, a relatively thin flexible plate secured at its ends to the ring, a motor mounted on the plate and adapted to be set concentric with the ring, a fan on the motor shaft disposed circumferentially within the ring, rods secured at one
10 end to the ring and having their opposite ends projecting through the plate substantially at right angles thereto, and adjustment nuts on the rods engaging the faces of the plate.

2. A ventilating fan unit comprising a rigid
15 frame ring, a relatively thin flexible plate secured to the ring to one side of the central axis

thereof, the surface plane of the plate lying at right angles to the back of the ring, a motor fastened on and supported solely by the plate and adapted to have its axis set concentric with the ring axis, a fan secured on the motor shaft
5 and disposed circumferentially within the ring, rigid connecting rods, one leg of each rod being fixed to the ring at right angles thereto, and the other leg extending through the plate to the side of the motor, and adjustment nuts on the
10 latter legs bearing against the plate whereby through the movement of the nuts the flexible plate may be flexed in one direction or the other to adjust the motor to positively fix its axis concentric with the axis of the ring.

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