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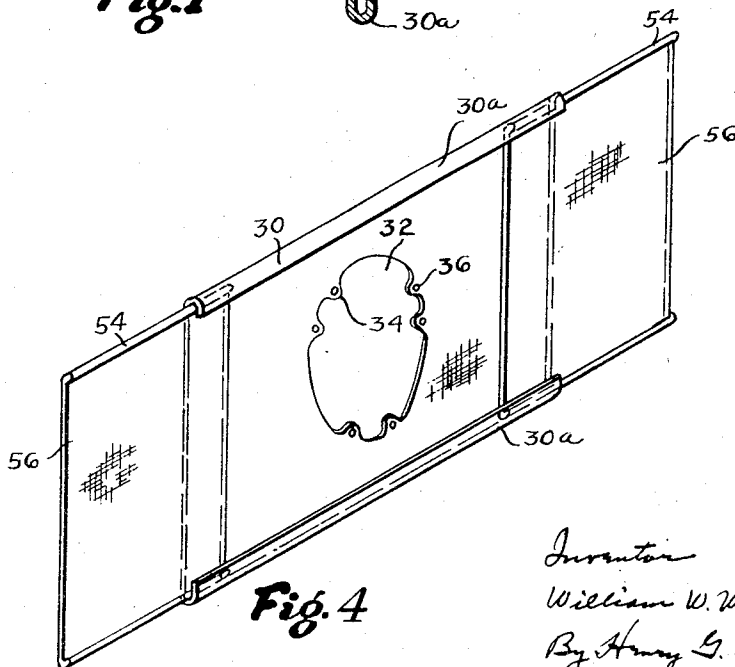
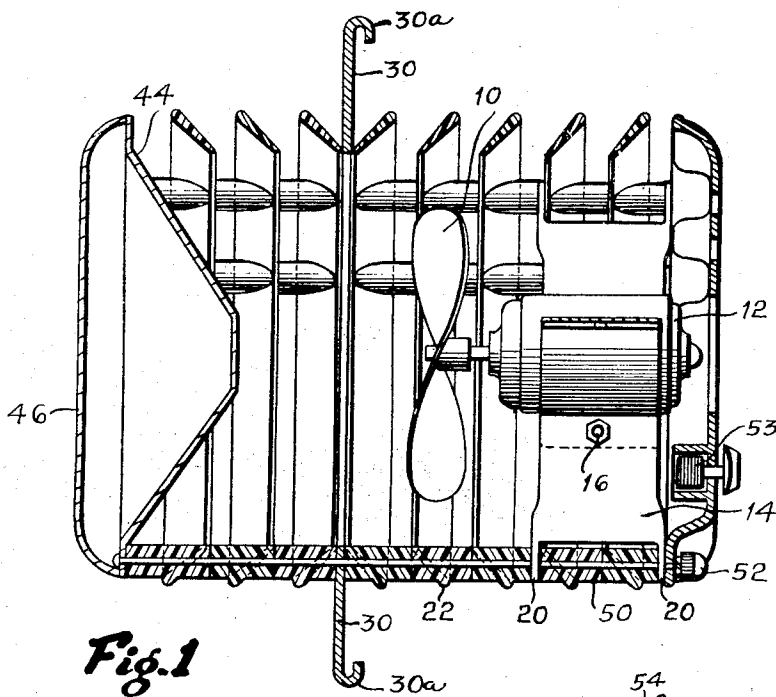
W. W. WELCH

2,441,737

PLASTIC VENTILATOR FAN

Filed Jan. 3, 1944

2 Sheets-Sheet 1



Inventor
William W. Welch
By Henry G. Sybring
His Attorney

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2 Sheets-Sheet 2

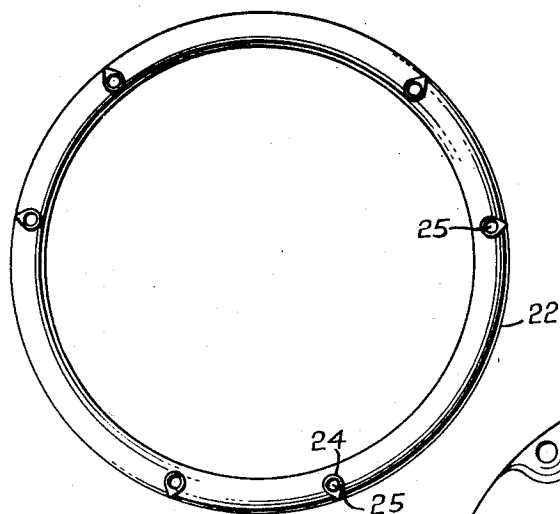


Fig. 3

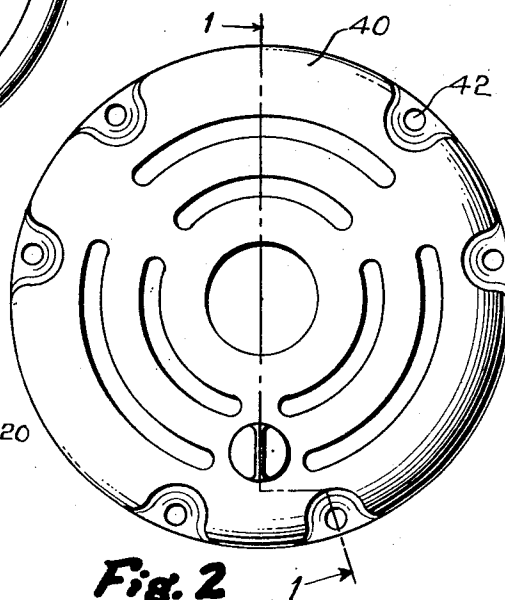


Fig. 2

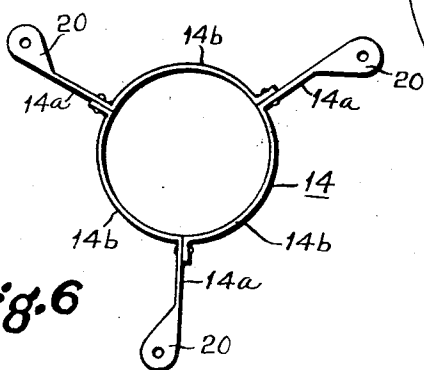


Fig. 6

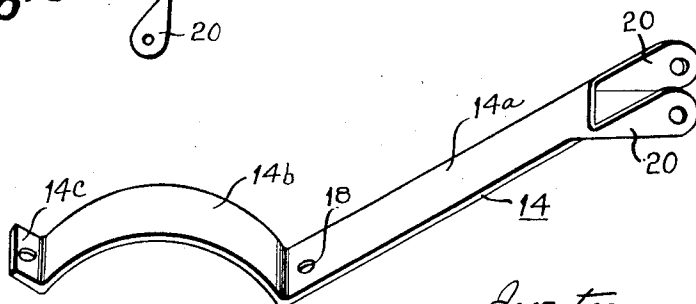


Fig. 5

Inventor
William W. Welch
By *Henry G. Dwyer*
His Attorney

UNITED STATES PATENT OFFICE

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PLASTIC VENTILATOR FAN

William W. Welch, Cincinnati, Ohio

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9 Claims. (Cl. 230-273)

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This invention relates to electric fans and more particularly to electric fans used as ventilators.

An object of this invention is to provide a plastic window ventilator wherein the supports and the housing for the fan are made of plastic molding material.

Another object of this invention is to provide a window ventilator or the like having a conical member mounted on the outside of the fan, so that the fan forces the air against the conical member to thereby reduce the usually objectionable static noises.

Another object of this invention is to provide a window ventilator that is mounted upon a composite plastic baffle assembly, or other suitable sheet material, wherein the parts may first be cut to the required size to fit the particular opening and then formed so as to provide adjustable sliding contacts.

Another object of this invention is to provide a ventilator fan assembly wherein the support is made from a plurality of hoops positioned side by side and held together so as to support the electric fan mechanism thereon.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawings,

Figure 1 is a horizontal cross sectional view of the ventilator taken substantially on the line 1-1 of Figure 2.

Figure 2 is a view of the end frame removed from the ventilator assembly.

Figure 3 is a view of one of the hoops.

Figure 4 discloses the baffle assembly with the fan and its mounting removed therefrom.

Figure 5 is a perspective view of one of the brackets used in supporting the motor.

Figure 6 is an end view of the bracket assembly drawn on a reduced scale and removed from the ventilator.

Referring to the drawings, the reference character 10 indicates a fan driven by an electric motor 12, both the fan and the motor being shown as representative of electric fans and motors that may be used in ventilators. The motor 12, having the fan 10 attached thereto, is mounted in a plurality of brackets 14, each of which includes a standard 14a and an arcuate portion 14b, terminating in a flange 14c. The arcuate portions 14b encircle the motor and are held together by bolts 16 passing through the apertures in the flanges 14c and apertures 18 in the adjacent brackets. Three such brackets may

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be used in supporting the motor. The end of each standard 14a is provided with a pair of apertured ears 20. The ears of these standards are attached to a cylindrical supporting structure which will now be described. The bracket arrangement for supporting the motor has been shown merely for the purpose of illustration, without any intention of limitation. Any suitable supporting means may be used for supporting the motor.

This cylindrical supporting structure includes a plurality of annular hoops 22, each of which includes a plurality of bosses or spacing projections 24, these bosses or spacing projections being arranged in pairs around the periphery of the hoops. An aperture 25 extends through each boss. The hoops may be substantially identical to the hoops shown in the Fukal Letters Patent No. 2,294,399 and No. 2,310,772.

As clearly shown in Figure 1, five hoops have been located on the fan side of a baffle 30 and three hoops on the opposite side of the baffle 30. The number of hoops on each side of this baffle has been shown merely for the purpose of illustration. The number of hoops may be changed. The baffle 30 is provided with a ventilating opening 32 having a plurality of inwardly directed ears 34 associated with suitable apertures 36. The ears 34 are arranged in pairs and register with the projections 24 of the hoops, the apertures 36 registering with the apertures 25 extending through the projections and the hoops.

In order to conceal the motor, an end member 40 provided with a plurality of apertures 42 arranged in pairs, extends over one end of the hoop assembly. A conical deflecting cone 44 and a capping member 46 extend over the opposite end of the hoop assembly. When the ventilator is used in a window or any other type of an opening in an outside wall or in a partition, the conical member 44 and the capping member 46 are located on the outside of the wall. The conical member and the hoops on the same side of the baffle, which hoops are inclined parallel to the elements of the conical member, cooperate to form what may be referred to as a "no draft" ventilator assembly when the fan is not in use. For some reason this arrangement of the conical member and the inclination of the hoops on the outside is very effective in preventing rain, sleet and snow from passing through the ventilating opening, even though no shutter is used.

The conical member 44, by being positioned on the outside and directly in front of the propeller blades, prevents wind from blowing directly upon

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the fan blades, thereby eliminating static wind noises which are very objectionable in connection with many ventilating fans now on the market. One of the big advantages of this fan assembly is the quietness of operation through the use of the cone.

The ears 20 of the brackets 14 project between the hoops, the apertures in the ears registering with the apertures 25, so that the entire assembly may be held together by a plurality of bolts or rods 50, having threaded thereon nuts 52. These bolts or rods extend through the apertures 25, through the apertures 36 in the baffle 30, through the apertures in the ears 20 in the brackets 14, through the apertures 42 in the end member 40 and through suitable apertures in the margin of the conical member 44 and are attached in any suitable manner to member 46. A switch 53 for controlling the fan motor may be mounted in any suitable position, as for example, in member 40, as clearly shown in Figure 1.

This entire assembly may be mounted in a window opening or any other opening in a wall, such as a transom, so as to draw air from one side of the wall to the opposite side. This may be an outside wall or a partition, as for example, exhausting air from a hotel room into a corridor or ventilation shaft. This permits rapid replacement of the hot air in a sleeping room by exhausting the air from the room so as to draw in cooler air.

In order to facilitate installation, the baffle member 30, which may be made from a plastic or semi-plastic material, or any other suitable material, formed to the proper contour and assembled into the fan unit, is shorter than the average opening into which it is to be mounted. Members 56, which consist of one piece of plastic or semi-plastic material, or any other suitable material, and provided with beads 54, are severed from larger pieces to the proper size for the particular installation. These pieces have a sliding contact with the channels in the margins of member 30, so as to be adjustable to fit the exact width of the window opening. For some purposes, several sizes of members 56 may be kept in storage. When an order is received, members 56 of the proper size are selected from the supply on hand and used with the particular installation. If the ventilator is to be installed in an extremely wide window, pieces 56 would be much longer than if the ventilator were to be installed in a window not much wider than the length of members 30.

As clearly shown in Figure 1, the hoops are inclined, so as to point in the general direction toward the center of the ventilating opening in the baffle. This results in an assembly wherein the hoops are inclined in the general direction of the air streams. The air is drawn from the inside between the hoops and through the openings in the end member 40 located to the right of the baffle as shown in Figure 1. This results in the air exhausted by the ventilator being drawn from the room in all directions toward the fan. The air intake is substantially in radial directions, all pointing toward the opening in the baffle. The exhaust air, in passing through the opening in the baffle, is directed outwardly through the hoops located on the left side of the baffle, as shown in Figure 1. The air, upon being exhausted through the opening in the baffle 30, is forced against the conical member 44 and dispersed radially in general directions parallel to the elements of the conical member. This dis-

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persions of the air results in a quiet operation of the fan. Quietness of fans is very desirable. Especially is quietness desirable when the fans are used for exhausting air from sleeping rooms. Fan noises are very annoying, especially to persons trying to sleep. The fan disclosed herein, utilizing the deflecting cone 44, satisfies the requirements for quiet operation.

The openings in member 40 have been shown as arcuate in this particular disclosure; but need not be arcuate, as any other suitably shaped openings may be used within the purview of this invention. The hoops 22, the end member 40, the conical member 44, the capping member 46 and the baffle members 30 and 56 are all preferably made from some moldable material or from any other suitable material.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. In a ventilating assembly having a fan driven by an electric motor, the combination of a vertically disposed baffle member having an air circulating opening, said baffle member having a plurality of apertured ears projecting inwardly into the opening, with a plurality of identical hoops having apertured bosses, the apertures through the bosses registering with the apertures in the ears of the baffle, retaining rods extending through the apertures for clamping the hoops and the baffle into a rigid structure, said hoops surrounding the fan and the motor, and bracket means for supporting the motor in fixed spaced relation with respect to the hoops so that as the fan propels the air it forces the air through the opening in the baffle.

2. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle having an opening, said baffle having a plurality of apertures surrounding the opening, a plurality of identical annular hoops having apertures, said hoops being inclined towards the opening in the baffle, said hoops surrounding the fan and the motor, means for holding the hoops in spaced relation from each other, the apertures in the hoops registering with each other and with the apertures in the baffle, retaining rods extending through the apertures for clamping the hoops and the baffle into a rigid structure, and means for supporting the motor and the fan within said hoops so as to cause the fan to circulate air through the opening in the baffle, the inclination of the hoops causing the air to flow inwardly towards the center of the opening on one side thereof and outwardly upon the opposite side thereof.

3. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle having an air circulating opening therein, a plurality of identical hoops arranged side by side, some of the hoops being mounted on one side of the baffle and other hoops on the opposite side of the baffle so that the hoops surround the fan and the motor, the opening through the hoops registering with the opening in the baffle, means for clamping the hoops and the baffle into a rigid structure, and

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means for supporting the motor within the hoops, so that the fan circulates air through the opening in the baffle.

4. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle having an air circulating opening therein, said baffle having apertured ears extending into the opening, a plurality of identical hoops arranged side by side, the opening through the hoops registering with the opening in the baffle, said hoops surrounding the fan and the motor, means extending through the apertures in the ears for clamping the hoops and the baffle into a rigid structure, means for supporting the motor within the hoops so that the fan circulates air through the opening in the baffle, and means extending over the end hoop for shielding the motor.

5. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle assembly including a center portion having an air circulating opening therein and adjustable portions engaging the center portion for adjusting the size of the baffle, a plurality of identical hoops arranged side by side, the opening through the hoops registering with the opening in the baffle, said hoops surrounding the fan and the motor, means for clamping the hoops and the baffle into a rigid structure, means for supporting the motor within the hoops so that the fan circulates air through the opening in the baffle, and a conical member extending across the opening in the hoops with the apex directed towards the fan.

6. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle having an air circulating opening therein, said baffle having apertured ears extending into the opening, a plurality of hoops arranged side by side, there being a plurality of hooks on each side of the baffle, said hoops surrounding the fan and the motor, the opening through the hoops registering with the opening in the baffle, means extending through the apertures in the ears for clamping the hoops and the baffle into a rigid structure, means for supporting the motor within the hoops, so that the fan circulates air through the opening in the baffle, means extending over the end hoop for shielding the motor, and a conical member extending across the opening in the hoops with the apex directed towards the fan.

7. A ventilating fan assembly having a fan driven by an electric motor, the combination including a vertically disposed baffle assembly including a center portion provided with channel-shaped margins along two sides thereof, said center portion having an air circulating opening therein, and a pair of adjustably mounted baffle portions having beads slidably mounted in said channels so as to permit adjustment of the baffle assembly to accommodate window openings of

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various sizes, a plurality of hoops arranged side by side, there being a plurality of hoops on each side of the baffle, said hoops surrounding the fan and the motor, the opening through the hoops registering with the opening in the baffle, means for clamping the hoops and the baffle into a rigid structure, and a plurality of brackets attached to the hoops for supporting the motor of the fan.

8. A ventilating fan assembly having a fan driven by an electric motor, the combination including a baffle assembly including a center portion provided with channel-shaped margins along two sides thereof, said center portion having an air circulating opening therein, and a pair of adjustably mounted baffle portions having beads slidably mounted in said channels so as to permit adjustment of the baffle assembly to accommodate window openings of various sizes, means for supporting the fan and the motor so as to exhaust air through the opening in the baffle, and means located on the outside of the baffle for dispersing the exhausted air, said means including a conical member having the apex directed toward the fan to disperse the air in directions substantially parallel to the elements of the conical member.

9. A ventilating fan assembly having a fan driven by an electric motor, the combination including a baffle assembly including a center portion provided with channel-shaped margins along two sides thereof, said center portion having an air circulating opening therein, and a pair of adjustably mounted baffle portions having beads slidably mounted in said channels so as to permit adjustment of the baffle assembly to accommodate window openings of various sizes, means attached to the baffle for supporting the fan and the electric motor in position to exhaust air through the opening in the baffle, and air dispersing means mounted on the exhaust side of the baffle, said air dispersing means including a conical member having its apex directed toward the fan, against which conical member the exhaust air is dispersed in directions substantially parallel to the elements of the conical member.

WILLIAM W. WELCH.

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