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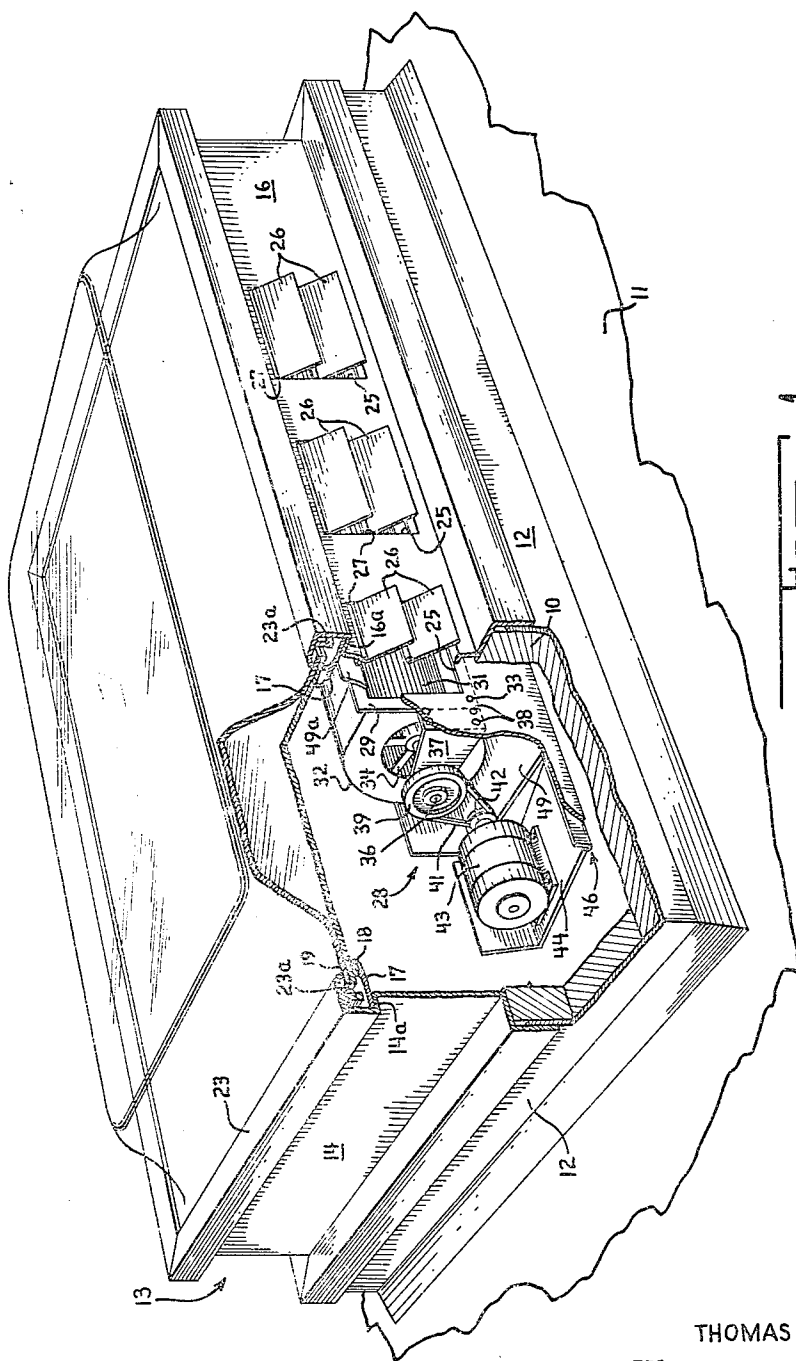
T. R. FIELD

3,064,548

COMBINED SKYLIGHT AND VENTILATOR

Filed Jan. 22, 1960

2 Sheets-Sheet 1



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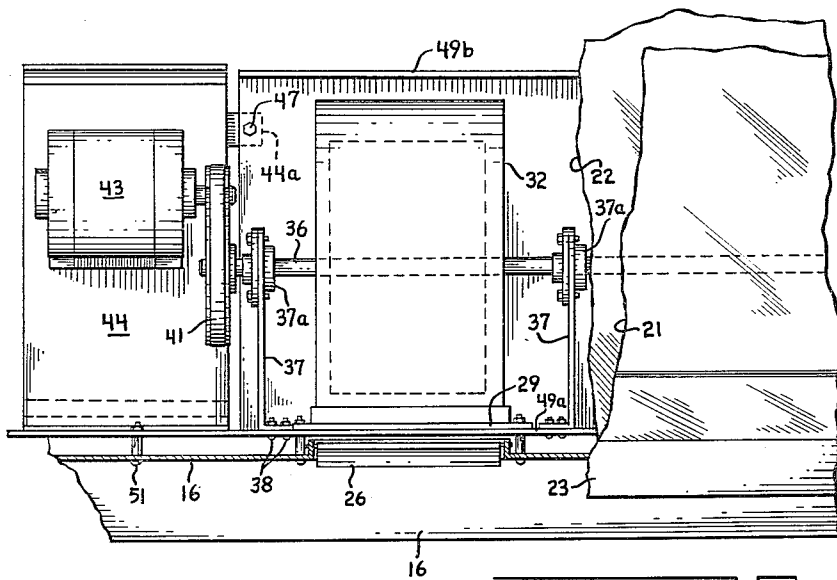


FIG. 3

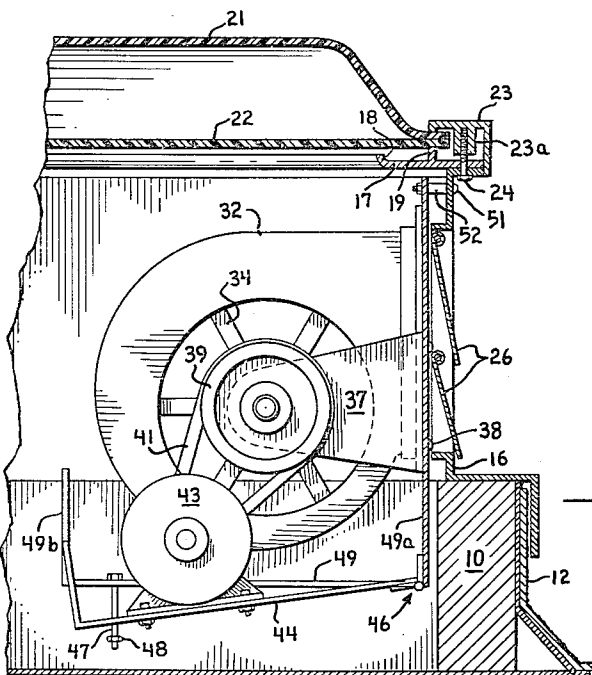


FIG. 2

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3,064,548

## COMBINED SKYLIGHT AND VENTILATOR

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4 Claims. (Cl. 98—43)

This invention relates generally to roof mounted ventilating or air exhausting apparatus and in particular to a unitary ventilating and skylight assembly.

The invention disclosed and claimed herein is an alternate form of the combined skylight and ventilator disclosed and claimed in my copending application Serial No. 4,135, filed January 22, 1960.

Conventionally, ventilators and skylights are installed separately on building roofs on separate curb constructions. The assembly of the present invention brings together in a unitary apparatus the ventilator and skylight whereby these components can be installed on a single curb. There have been combinations of skylights and small propeller type ventilators heretofore, however, these had the limitations that they were unsatisfactory in applications requiring movement of substantial volumes of air, and the propeller type fan operating against a conventional louver arrangement did not provide dependable ventilation against heavy wind pressures.

It is an object of the present invention to provide a ventilator-skylight assembly which can be installed on a single curb construction with the components arranged to provide a relatively low exterior contour and a finished appearance when viewed from the interior of the building being vented.

A further object of the present invention is to provide an assembly of the type described in which the centrifugal blower units are aligned along one margin of the assembly so that the blower units may be individually powered by an electric motor or may be driven in unison by a single motor powered shaft.

A further object of the present invention is to provide an assembly of the type referred to in which a sound attenuating baffle plate minimizes the noise transmitted from the blower units to the interior of the building being vented.

A further object of the present invention is to provide an assembly of the type referred to in which the discharge from the blower units is directed downwardly away from the skylight component and the area of discharge from the assembly is substantially below the skylight component whereby deposit build-up on the skylight is minimized.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

FIG. 1 is a perspective view of the combined skylight and ventilator of the present invention, with a portion broken away to show the internal structure.

FIG. 2 is a side sectional view of a portion of the structure shown in FIG. 1.

FIG. 3 is a top plan view of the ventilator component of the structure.

Referring initially to FIG. 1, there is shown at 10 a curb structure which is generally rectangular in configuration and encircles an opening in the roof 11 of a building structure. The curb is conventionally constructed of wood or concrete and supports the combined ventilator and skylight assembly of the present invention. Outwardly flared flashing 12 conventionally encircles the curb structure to guard against the entry of rain and moisture.

The assembly of the present invention includes a frame, indicated generally at 13, which is formed of metal end

members 14 and side members 16. At their lower margins the members 14 and 16 are formed so as to overlie the upper margin of the curb and to extend downwardly in overlying relation to the curb. The members 14 and 16 have substantial depth, and the rectangular frame formed by the members may be anchored to the curb by means of fastener brackets (not shown), such as those described in my copending application mentioned above. The upper marginal portions of the members 14 and 16 are bent outwardly as indicated at 14a and 16a to provide a ledge supporting a member 17. The member 17 is preferably an aluminum extrusion and is provided with an upturned inner marginal edge 18 and an integral vertical leg 19. Overlying and supported on the leg or ridge 19 is a skylight component which includes a generally rectangular, light-passing upper skylight element 21 and a lower light-passing skylight element 22. The upper element has a generally dished configuration and is disposed upon the frame 13 so that its convex surface faces outwardly. The elements 21 and 22 are sized to overlie all of the area bounded by frame 13. These elements may be formed of any suitable transparent or translucent material, such as Lucite, Plexiglas or the like. It will be understood that for some installations the lower element 22 may be omitted. In installations where moisture condensation is a problem, the dead air space between the upper and lower elements provides the required thermal insulating characteristics.

Clamping means are provided for securing the skylight component upon the frame and this clamping means takes the form of a further aluminum extrusion 23 which is generally L-shaped in cross sectional configuration. As may best be seen in FIG. 2, the extrusion 23 is tightened against the skylight element 21 by means of screws 24 which extend through the portions 14a and 16a of the frame members, through the extrusion 17, and are threaded into apertures in the vertical portion 23a of the extrusion 23. As will be evident from FIG. 2, the marginal portion 18 of the extrusion 17 forms a condensation gutter. The vertical legs or ledges 23a and 19 may be cut out at the corners of the structure to permit moisture to move to the exterior of the assembly as described in my copending application mentioned above.

The side member 16 of the frame 13 is provided with a series of rectangular apertures 25. The apertures are closed by backdraft dampers 26 which are pivotally supported on hinges whose axes are indicated at 27. In FIG. 1 the dampers are in the position assumed when appreciable air pressure exists at their rear face. It will be understood that when such air pressure does not exist, the dampers hang generally vertically, closing off the apertures 25. The apertures 25 accommodate the discharge from a series of blower units one of which is indicated generally at 28. The blower units are preferably of the centrifugal type and are provided with a mounting flange 29 which borders the outlet aperture 31 of the unit. The mounting flange 29 serves to support the blower unit housing 32, the flange being bolted by means of bolts 33 to the front, vertically extending portion 49a of a plate 49 to be subsequently described in further detail. The blower units include an impeller 34 supported for rotation on a shaft 36. The shaft is journaled in bearings 37a (FIG. 3) mounted on brackets 37 which are rigidly attached to the side member 16 by means of bolts 38. The housing is provided with a central aperture forming the inlet for the blower and through which the shaft 36 extends. The end of the shaft 36 has keyed thereto a pulley 39 which is driven by a pulley 42 through a belt 41. The pulley 42 is driven by an electric motor 43 which is mounted on a plate 44. The motor mounting plate 44 is pivotally supported by means of a hinge 46 carried by the adjacent portion 49a of the plate 49.

As may best be seen in FIGS. 2 and 3, the plate 44 is provided with a sidewardly extending tab 44a which freely accommodates the shank of a bolt 47, the bolt carrying thereon a nut 48 and extending through an aperture in the sound attenuating baffle plate 49. As may be seen in FIG. 2, the baffle plate 49 has a vertical portion 49a, previously mentioned, which is supported on the side member 16 by means of bolts 51 carrying suitable spacers 52 for properly positioning the plate adjacent the side member 16. The plate 49 extends transversely beneath the blower unit and is provided with an upturned marginal portion 49b. The plate 49, by means of bolt 47, thus provides a safety catch for the motor support plate 44. In normal operation the weight of the motor is carried by the belt 41 to maintain its tension.

While only one blower unit has been described in detail and shown in FIG. 1, it will be understood that a series of blower units all operated from the same shaft 36 are positioned adjacent each of the apertures 25 in the side member 16. While the preferred form of the invention utilizes blower units which are ganged or driven from a single power shaft, it will be understood that individually powered blower units might also be utilized. It will be further understood that while only one series of blower units, adjacent the side member 16, have been shown in FIG. 1, the side member (not shown) opposite the side member 16 may also be provided with venting apertures and one or a series of blower units, identical to those described, may be supported so as to discharge through these apertures.

In operation, with the assembly of the present invention installed upon a curb structure bordering an opening in the roof of a building structure, the blower units will draw air upwardly into the assembly of the present invention and will move the air over the upwardly extending plate 49. The blower units will discharge the air through apertures 25, with the dampers 26 assuming their positions of FIG. 1 when the blower units are in operation.

From the foregoing it will be evident that the assembly of the present invention provides a combined skylight and ventilator in which either ganged or individual powered blower units may be utilized, with the number of units being limited only by the length dimension of the skylight. The sound attenuating baffle plate serves to minimize the transmission of noise from the blowing units into the structure being ventilated. The discharge of the blower units occurs at an area substantially below the skylight component to minimize the build-up of deposits on the skylight. The general arrangement is such that at least a portion of the blower units is dropped within the curb structure so that the over-all height of the complete assembly above the roof is held to a minimum.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as modifications may readily suggest themselves to persons skilled in this art and within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. A unitary ventilator and skylight assembly adapted for mounting on a preconstructed curb structure which frames an opening in a building roof, said assembly comprising an elongated housing having side walls, end walls and a roof member, said roof member comprising a light-passing skylight element having a dish configuration with its convex surface facing outwardly and sized to overlie all of the area bounded by said side walls, means extending between the marginal area of said skylight element and the upper margins of said end and side walls for sealing said skylight element to said walls, a sound-attenuating baffle plate generally L-shaped in cross-section having a vertical portion secured to said housing side wall and extending closely adjacent the inner face thereof and

a horizontal portion extending into the area bounded by said housing, centrifugal type blower units supported on said vertical portion of said baffle plate and overlying said horizontal portion, said side walls having back-draft dampered apertures therein registering with apertures in said baffle plate through which said blower units discharge, said baffle plate horizontal portion having a marginal flange extending upwardly beyond the lower margin of the adjacent blower units, whereby gases are drawn into said assembly through the base of said housing, pass over the said marginal flange of said baffle plate and are discharged through said housing side wall apertures below said skylight element.

2. A unitary ventilator and skylight assembly adapted for mounting on a preconstructed curb structure which frames an opening in a building roof, said assembly comprising an elongated housing having side walls, end walls and a roof member, said roof member comprising a light-passing skylight element sized to overlie all of the area bounded by said side walls, means extending between the marginal area of said skylight element and the upper margins of said end and side walls for sealing said skylight element to said walls, a sound-attenuating baffle plate generally L-shaped in cross-section having a vertical portion secured to said housing side wall and extending closely adjacent the inner face thereof and a horizontal portion extending into the area bounded by said housing, centrifugal type blower units supported on said vertical portion of said baffle plate and overlying said horizontal portion, said side walls having apertures therein registering with apertures in said baffle plate through which said blower units discharge, said baffle plate horizontal portion having a marginal flange extending upwardly beyond the lower margin of the adjacent blower units, whereby gases are drawn into said assembly through the base of said housing, pass over the said marginal flange of said baffle plate and are discharged through said housing side wall apertures below said skylight element.

3. A unitary ventilator and skylight assembly adapted for mounting on a preconstructed curb structure which frames an opening in a building roof, said assembly comprising an elongated housing having side walls, end walls and a roof member, said roof member comprising a light-passing skylight element sized to overlie all of the area bounded by said side walls, means extending between the marginal area of said skylight element and the upper margins of said end and side walls for sealing said skylight element to said walls, a sound-attenuating baffle plate generally L-shaped in cross-section having a vertical portion secured to said housing side wall and extending closely adjacent the inner face thereof and a horizontal portion extending into the area bounded by said housing, centrifugal type blower units supported on said vertical portion of said baffle plate and overlying said horizontal portion, said side walls having apertures therein registering with apertures in said baffle plate through which said blower units discharge, whereby gases are drawn into said assembly through the base of said housing and are discharged through said housing side wall apertures below said skylight element.

4. A unitary ventilator and skylight assembly adapted for mounting on a curb structure which frames an opening in a building roof, said assembly comprising an elongated housing having side walls, end walls and a roof member, said roof member comprising a light-passing skylight element sized to overlie all of the area bounded by said side walls, means extending between the marginal area of said skylight element and the upper margins of said end and side walls for sealing said skylight element to said walls, a sound-attenuating baffle plate having a generally vertical portion secured to said housing side wall and extending closely adjacent the inner face thereof and a generally horizontal portion extending into the area bounded by said housing, blower units supported on said vertical portion

of said baffle plate and overlying said horizontal portion, said side walls having apertures therein through which said blower units discharge, whereby gases are drawn into said assembly through the base of said housing and are discharged through said housing side wall apertures below said skylight element. 5

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