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H. W. TROST

2,378,518

VENTILATOR

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FIG. 1

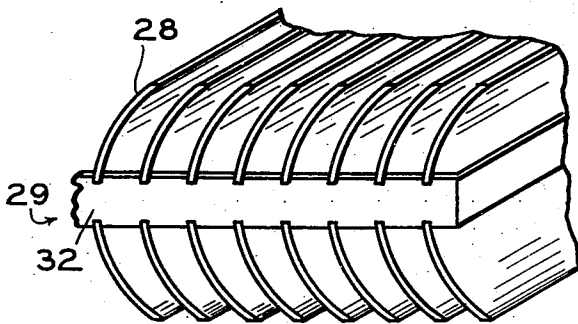
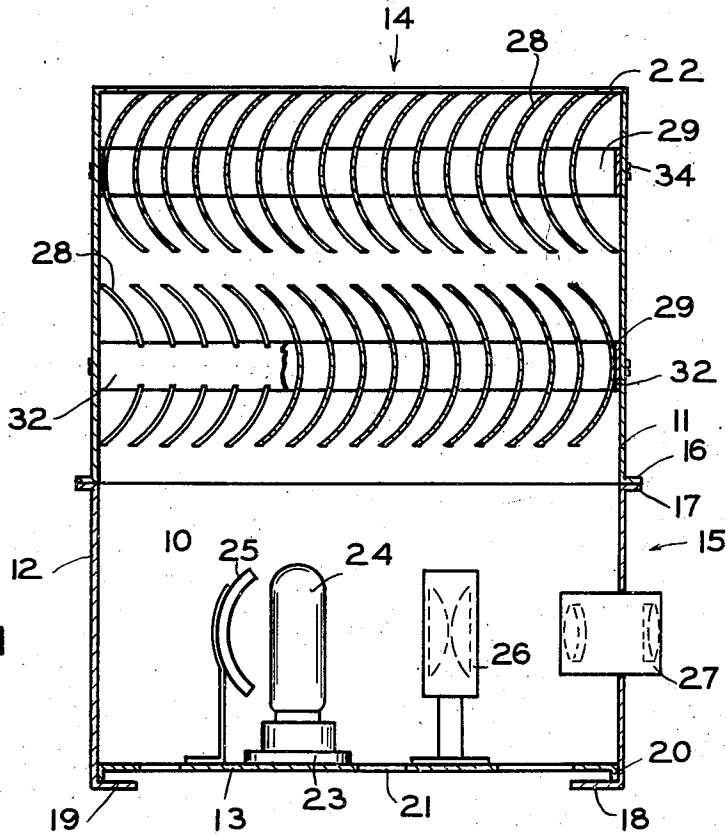


FIG. 2

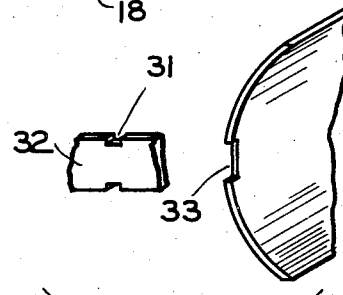


FIG. 3

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VENTILATOR

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5 Claims. (Cl. 98—121)

This invention relates to ventilators and more particularly to ventilators having means for permitting the passage of air therethrough while preventing the passage of light therethrough.

Although the present invention for illustration purposes has been embodied in a projection apparatus, it is not to be restricted to such an apparatus, for it will be obvious that it can be used wherever it is desired to preclude light but yet allow the passage of air currents.

In prior devices of the type herein described, louvers generally arcuately bent and formed with anti-reflection surfaces have been so closely spaced that light could not pass through the same. Many of these prior devices proved very efficient as light traps but, as they also restricted the passage of air currents therethrough, they could not be used where it was necessary for cooling purposes to pass air freely through the louvers.

The spaced louvers of these prior devices, as they were arcuately bent, formed zigzagged passages which preclude the passage of light but which created eddy currents and restricted the passage of air. The angular turns of the passages so formed often caused back pressure to build up within the same and, in some devices, it was extremely difficult to even force air through the same.

Many devices heretofore proposed have been a compromise, in that, the light preclusion feature has been sacrificed to gain a more free passage for the air.

To obviate the difficulties brought about by the zigzag course of the passages formed between the louvers, it has been proposed to reduce the angularity of the bends and to improve the light preclusion, the edges of the louvers were spaced apart a distance less than the medial portions of the same. This formation and positioning of the louvers restricted the passages adjacent the discharge ends thereof and produced back pressure particularly acute in forced air systems.

It is the primary object of the present invention to provide a ventilator which will prevent all light from passing therethrough but permit the free flow of air therethrough.

These and other objects and advantages of the invention reside in certain novel features of construction, arrangement and combination of parts as will hereinafter be more fully explained and pointed out in the appended claims.

In the drawing:

Fig. 1 is a side elevation in section of a pro-

jection apparatus embodying the present invention.

Fig. 2 is a perspective view of the ventilator showing the method of attaching the louvers to their supporting elements.

Fig. 3 is an exploded view showing an end portion of one of the louvers and its supporting member.

In the preferred embodiment of the invention, 10 the lamp housing or casing of the projection apparatus is preferably formed by four vertical walls and a bottom wall, 10 indicating one of the side walls, 11 the front side wall, 12 the rear side wall, and 13 the bottom wall. To facilitate 15 the assembly of the projection apparatus, the casing is formed with an upper section or container 14 housing the ventilating means of the present invention and a lower section or container 15 in which are mounted the conventional optical 20 elements of a projection system, the sections being securely joined to prevent the escape of light therefrom by the engagement of their respective flanges 16 and 17 in any suitable manner.

The front and rear side walls 11 and 12 of the 25 section 15 have inturned flanges 18 and 19, respectively, to support the projection apparatus. The bottom wall 13 of the casing is bent at its edges to form downwardly extending flanges 20 engaging the side walls of the section 15 and 30 seating upon the flanges 18 and 19. The bottom wall has openings 21 serving as entrances for air into the casing and the top of the casing is open to permit the heated air to escape from the interior of the casing. Narrow inturned flanges 22 35 of the side walls of the housing are provided to form stop members for locating a portion of the ventilating means in the casing.

Mounted upon the bottom wall 13 is a lamp 40 base 23 carrying a lamp 24 and current is supplied to the lamp by a cord, not shown. A reflector 25 is mounted behind the lamp 24 to direct rays of light from the lamp through the condensing lens system 26 mounted on the bottom wall and the projection lens system 27 carried in the front side wall 11 of the casing. 45

To preclude the light emitted by the lamp from escaping the casing and to permit the free flow of air currents through the casing to dissipate the heat emitted by the lamp from the interior of the casing, the ventilating means of the present invention is mounted in the section 14 of the projection casing. These ventilating means comprise arcuately-shaped louvers 28 having substantially the same radius of curvature and 50 spaced equidistant from each other in two par-

allel rows, the curved surfaces of the louvers in one row being oppositely disposed relative to the curved surfaces of the louvers in the other row. Also, each louver in each row is positioned with its curved ends disposed before the medial portion of the preceding louver and in alignment with the medial portion of a louver in the superimposed row. Hence, a chord connecting the ends of a louver will intersect the middle portion of the next adjacent louver.

Referring to Figs. 2 and 3, the louvers are held within the section 14 of the housing by split metal bands 29. These bands have notches 31 formed on their parallel side walls 32 in which are received spaced edge portions 33 of the louvers, the interlocking engagement of these portions of the louvers with the bands causing the louvers to be rigidly held within the bands. The metal bands are formed square to engage the inner surfaces of the side walls of the housing and are fastened to the front and rear side walls of the housing by screws 34 passing through openings in these walls and engaging tapped openings in the bands.

It will be apparent that by this arrangement of the louvers, no direct path for the rays of light is had through the louvers. In order to positively preclude light from escaping from the casing through the louvers, the surfaces of the louvers are coated with an anti-reflection film, which may comprise a matte black lacquer having light-absorbing properties. Accordingly, rays of light incident upon the louvers will be absorbed and prevented from passing to the outside of the lamp casing.

Furthermore, the formation and positioning of the louvers afford smooth curved passages for the free and unrestricted circulation of air currents therethrough. Thus, when the lamp, which is of the high intensity projection type, is lit, heat is generated and cool outside air is drawn by convection through the openings in the bottom wall of the casing and about the optical elements in the interior of the casing, the heated air passing freely through the passages formed by the louvers to the outside of the casing. As no sharp bends are encountered by the air currents in their passage through the louvers, eddy currents are not created and the free and unrestricted flow of air is insured through the louver passages in such quantity that the air within the housing does not become unduly heated. As a result, the life of the lamp is considerably increased and the expansion of the condensing lens system in its mounting will be minimized, preventing any possibility of the breakage of the same from this source. Also, the casing is not overheated and the operator may safely handle the projection apparatus without danger of burning his hands. Throughout the specification and claims I have used the term "louver" to designate the lower plates.

From the foregoing, it will be apparent that I am able to attain the objects of my invention and provide a ventilator which will positively preclude light and allow the free and unrestricted passage of air currents therethrough. Various modifications can, of course, be made without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. In a ventilator, in combination, a container having a ventilating opening therein; and spaced parallel rows of arcuately-shaped louvers mounted within said opening, said rows being oppositely

positioned with the louvers in endwise relation to each other and to the flow of air through the opening, said louvers having the same radius of curvature and spaced equidistant from each other in each of said rows, the concave surfaces of the louvers in one row oppositely disposed relative to the concave surfaces of the louvers in the other row to form discontinuous passages for air therethrough while preventing the passage of light therethrough.

2. In a ventilator, in combination, a container having a ventilating opening therein; and spaced parallel rows of arcuately-shaped louvers mounted within said opening, said rows being positioned one above the other and with the louvers of one row in endwise relation to those of the other row and in endwise relation to the flow of air through the opening, the louvers in each of said rows spaced from each other with the ends of each louver positioned before the medial portion of the adjacent louver and with the arcuate surfaces of the louvers in one row positioned opposite to the arcuate surfaces of the louvers in the other row to form discontinuous passages for air therethrough while preventing the passage of light therethrough.

3. In a ventilator, in combination, a container having a ventilating opening therein; spaced parallel rows of arcuately-shaped louvers carried within said opening, said rows positioned opposite each other with the louvers of one row in endwise relation to those of another row and the flow of air through the opening, the louvers in each of said rows spaced from each other with the ends of each louver disposed before the medial portion of an anterior louver; the ends of each louver in one row being in alignment with the medial portion of a louver in the other of said rows to form passages for air therethrough while preventing the passage of light therethrough; and means engaging the curved peripheries of said louvers and secured to said container for holding said louvers in said position.

4. In a ventilator, in combination, a container having a ventilating opening therein; a plurality of arcuately-shaped louvers having substantially the same radius of curvature and having a notch in each of their curved peripheral edge portions; a plurality of bands having notches engageable with the spaced edge portions of said louvers for holding said louvers in spaced relation; and means for mounting said bands in said container with the louvers disposed in parallel rows within said ventilating opening and with the curved surfaces of the louvers in one row oppositely disposed relative to the curved surfaces of the louvers in the other row whereby said louvers form passages for air therethrough while preventing the passage of light therethrough.

5. A ventilator comprising two spaced rows of louvers positioned opposite each other in endwise relation to each other and to the flow of air, each row comprising a plurality of spaced arcuately curved louvers, the concave surfaces of all of the louvers in one row facing in the opposite direction from the concave surfaces of all of the louvers in the other row, the louvers being positioned so that the chord connecting the ends of each louver will intersect the medial portion of the next adjacent louver in the row whereby the free passage of air is permitted but the passage of light rays therethrough is prevented.

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