Aug. 1, 1950 I. GREEN 2,517,303

VENTILATOR ASSEMBLY

Filed May 20, 1949 2 Sheets-Sheet 1

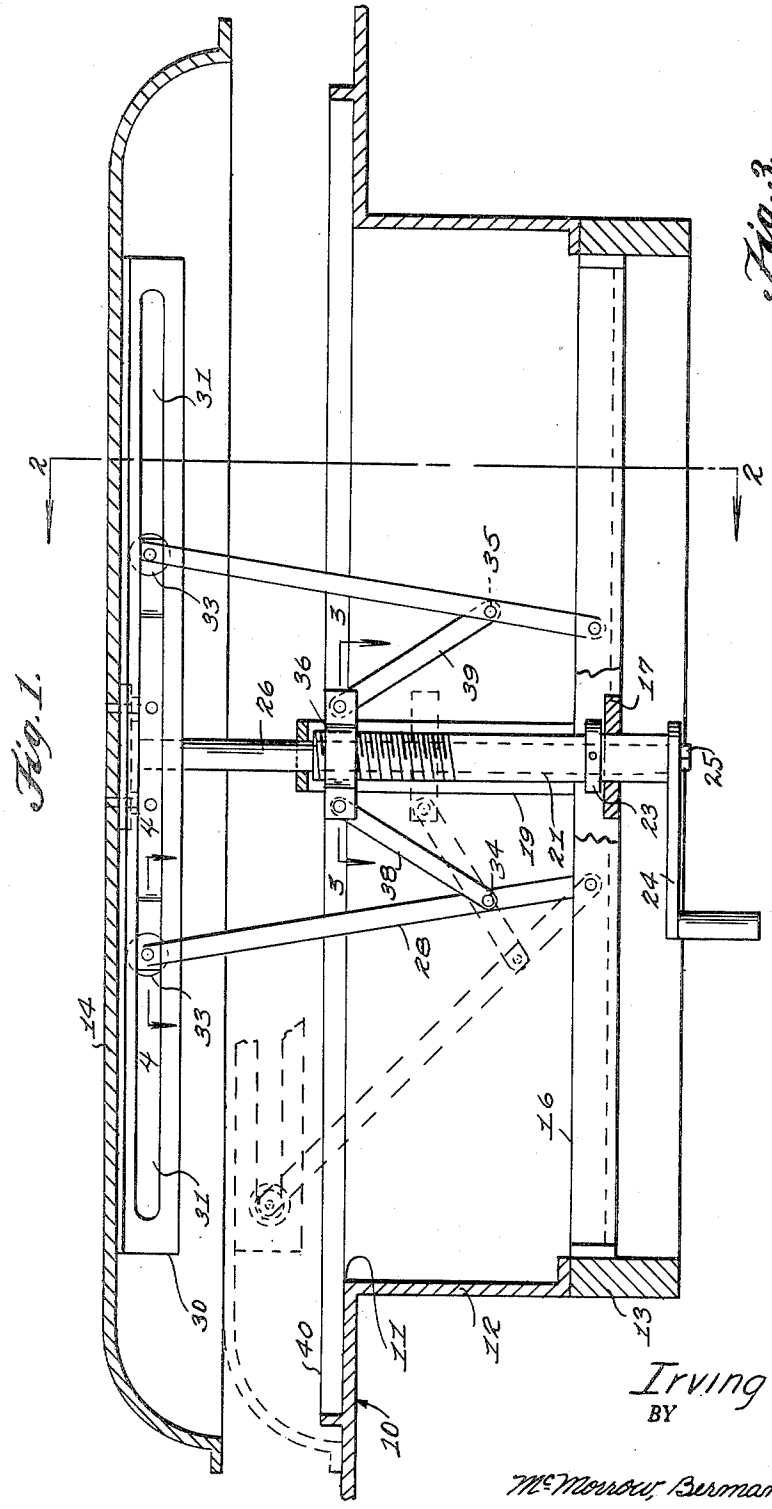


Fig. 1.

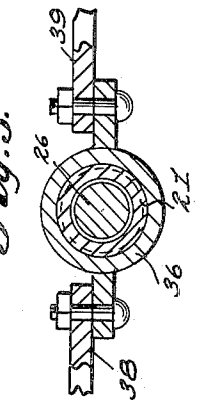


Fig. 3.

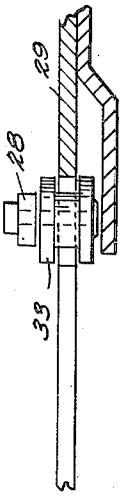


Fig. 4.

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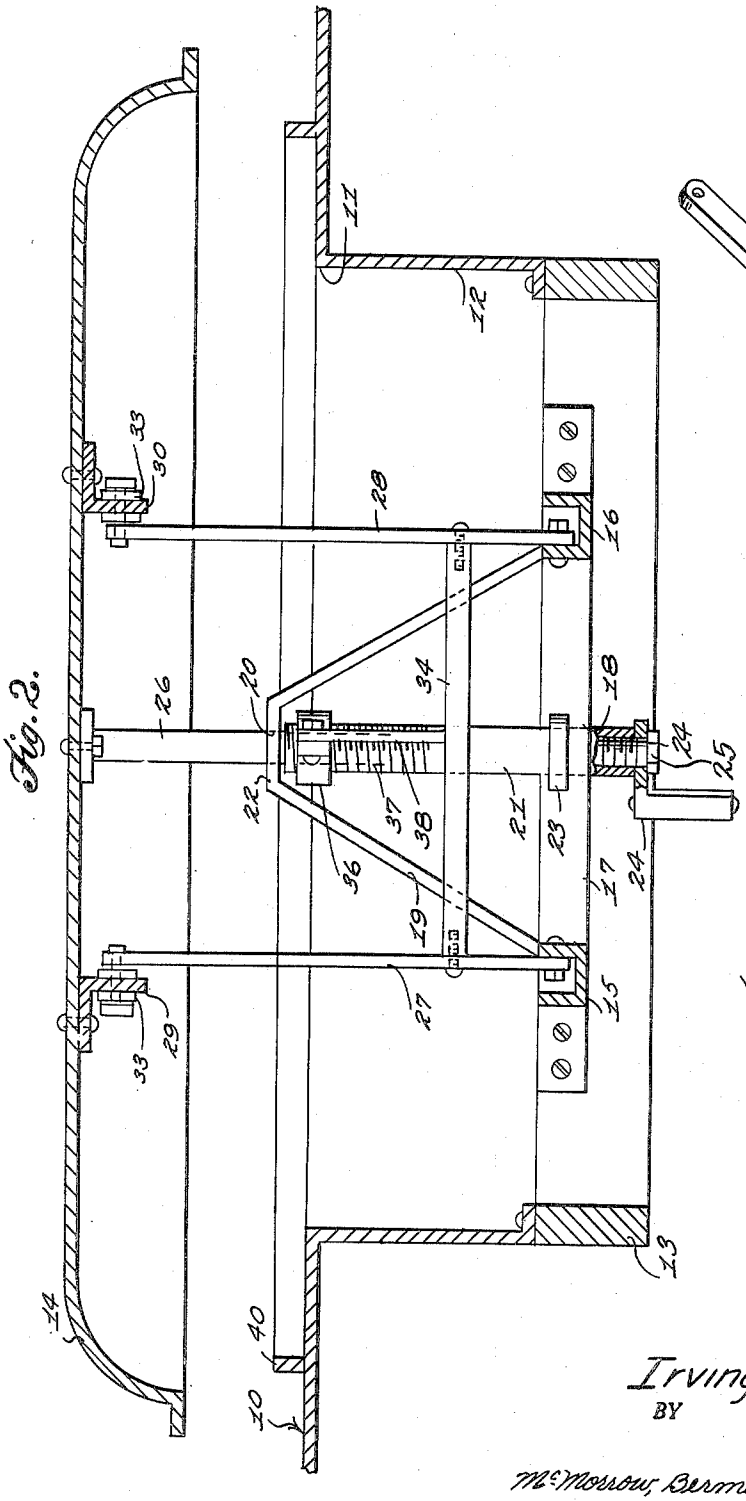


Fig. 2.

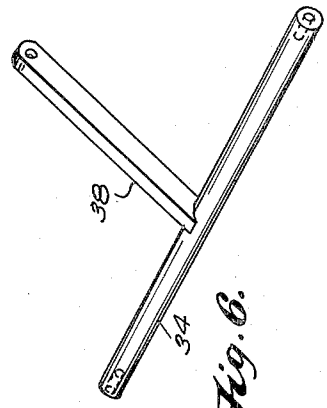


Fig. 6.

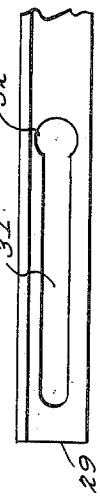


Fig. 5.

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UNITED STATES PATENT OFFICE

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VENTILATOR ASSEMBLY

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Application May 20, 1949, Serial No. 94,403

2 Claims. (Cl. 98—8)

1

This invention relates to ventilator assemblies, and more particularly to manually-operated ventilator assemblies for use in vehicles, such as busses, trailers, and boats.

It is among the objects of the invention to provide an improved ventilator assembly including a vertically movable, dished cover which overhangs the ventilator opening in a vehicle roof, top or deck, on all sides sufficiently to prevent rain from entering the opening under normal wind conditions, while permitting a free flow of air through such openings, and which includes manually-operated cover-moving means which eliminates the usual cover-mounting hinges and other easily breakable parts and which imparts a large movement to the cover in proportion to the manual movement of the cover-moving means, in which the cover is rigidly supported in both closed and opened positions and which assembly may be easily substituted for an existing ventilator assembly without material modification of the vehicle structure, and is simple, durable, and economical in construction, and not subject to malfunctioning in use.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawings, wherein—

Figure 1 is a longitudinal, medial cross-section through a ventilator assembly illustrative of the invention, the section plane being substantially vertical when the assembly is in operative position;

Figure 2 is a substantially medial, transverse cross-section of the ventilator assembly illustrated in Figure 1, and is taken substantially on the line 2—2 of Figure 1;

Figure 3 is a transverse cross-section of a fragmentary portion of the assembly taken substantially on the line 3—3 of Figure 1, and illustrating constructional details;

Figure 4 is a longitudinal cross-section of a fragmentary portion of the assembly taken substantially on the line 4—4 of Figure 1 to illustrate constructional details;

Figure 5 is a side elevation of a fragmentary portion of a guide bar constituting an operative component of the assembly; and

Figure 6 is a perspective view of a strut and link sub-assembly also constituting an operative component of the ventilator assembly.

With continued reference to the drawings, the numeral 10 generally indicates a vehicle top, such as the roof of a bus or trailer or the deck of a boat which top is provided with a ventilator opening 11 surrounded by a depending or inwardly-extending flange 12. While the opening 11 is illustrated as square or rectangular, it may be of any other desired shape, such as circular

2

or elliptical, without, in any way, affecting the scope of the present invention.

The ventilator assembly of the present invention comprises a frame 13 attached to the bottom edge of the flange 12 and surrounding the ventilating opening 11, a dished cover 14 overlying the opening 11 and manually-operated mechanism for moving the cover toward and away from the frame 13.

Two spaced-apart, substantially parallel bars 15 and 16 extend transversely across the frame at substantially equal distances from the mid-length location of the latter, and a bearing plate 17 is secured at its ends to the bars 15 and 16 respectively, substantially at the mid-length locations of the bars and extends between the two bars. The bars 15 and 16 are illustrated as being of inverted, channel-shaped cross-section, but may have other cross-sectional shapes, as may be found convenient or desirable.

The bearing plate 17 is provided, substantially at its center, with an aperture 18, and an inverted, U-shaped bracket 19 is secured at its opposite ends to the bars 15 and 16 respectively and overlies the bearing plate 17, this bracket being provided, at its mid-length location, with an aperture 20 which is in alignment with the aperture 18 in the bearing plate 17.

An externally screw-threaded, tubular shaft 21 is journaled near one end in the aperture 18 in the bearing plate 17 and extends from the bearing plate 17 to a position adjacent the intermediate portion or bight 22 of the bracket 19.

A bearing collar 23 is provided on the shaft 21 at the side of the bearing plate 17 adjacent the bracket 19 to bear on the bearing plate and support the weight of the cover 14, and a hand crank 24 is secured to the shaft 21 at the side of the bearing plate 17 remote from the bracket 19 for rotating the shaft. The crank may be conveniently secured to the shaft by means of a bolt or screw 25 extending through an aperture in the crank and threaded into the internally, screw-threaded bore end portion of the shaft 21.

The dished cover 14 has a generally convex outer side and a generally concave inner side and a cylindrical stem 26 is secured at one end to the cover 14 substantially at the center of the concave, inner side of the cover, and projects perpendicularly from the cover. This stem passes through the aperture 20 in the bracket 19 and is slidably received in the tubular shaft 21.

One pair of levers 27 is pivotally connected at corresponding ends to the cross-bar 15 at locations substantially equally spaced from the mid-length location of this cross-bar, and a similar pair of levers 28 is pivotally connected at corresponding ends to the cross-bar 16 at a location substantially equally spaced from the mid-length location of this cross-bar. Two elongated guides

or guide bars 29 and 30 are secured in spaced-apart, substantially parallel relationship to the cover 14 at the inner side of the latter, and are disposed substantially parallel to corresponding cross-bars 15 and 16 in the frame 13. The guide bar 29 has, adjacent each end thereof, an elongated slot 31 enlarged at one end to provide an opening 32 and the guide bar 30 has similar slots 31 positioned one adjacent each end of the bar. Rollers 33 are disposed in the guide bar slots and are movable longitudinally of these slots. The upper end of each of the levers 27 and 28 is connected to a roller 33, the two levers 27 being connected to rollers carried by the guide bar 29 and the two levers 28 being connected to rollers carried by the guide bar 30.

A strut 34 is connected at its opposite ends to one of the levers 27 and one of the levers 28 respectively, the two levers to which the strut is connected being disposed at the same side of the tubular shaft 21 and a similar strut 35 is connected at its opposite ends to the other two levers 27 and 28 respectively.

A nut 36 is threaded onto the external screw threads 37 of the tubular shaft 21, and a link 38 connects the strut 34 to the nut 36 while a similar link 39 connects the strut 35 to the nut.

In the arrangement illustrated the struts are pivotally connected to the corresponding levers, the respective links are rigidly secured to the struts substantially at the mid-length locations of the latter, and the levers are pivotally connected to the nut 36, the nut being provided with outwardly-extending apertured lugs at diametrically-opposite positions for attachment of the corresponding ends of the links thereto.

With this construction, when the crank 24 is turned in one direction, the levers 27 and 28 will be moved to move the cover 14 away from the base 13, and when the crank 24 is turned in the opposite direction, the cover will be moved toward the base until it rests upon the vehicle top 10.

A ledge 40 is provided on the upper surface of the top 10 surrounding the ventilating opening 11 within the dished cover 14 to obstruct the passage of rain or other air-borne liquid through the ventilator opening.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. A ventilator assembly for a vehicle top having a ventilating opening therein comprising a frame attachable to a vehicle top surrounding a ventilating opening, a pair of spaced-apart bars extending transversely across said frame, a bearing plate extending between said bars substantially at the mid-length locations of the latter and having a centrally-located aperture therethrough, an inverted, U-shaped bracket secured at its ends to said bars and overlying said bearing plate, said bracket having at its mid-length location an aperture in alignment with the aperture in said bearing plate, an externally screw-threaded, tubular shaft journaled near one end in the aperture in said bearing plate and extending from said bearing plate substantially to the mid-length portion of said U-shaped bracket, a bearing collar on said shaft at the side of said bearing plate adjacent said bracket, a crank secured to said shaft at the side of said bearing plate remote from said bracket, a dished cover having a concave inner side and a convex outer side and a size to marginally overhang the ventilating opening, a stem secured at one end to said cover substantially at the center of the concave side of the latter and projecting perpendicularly from said cover, said stem extending through the aperture in said bracket and being slidably received in said tubular shaft, a pair of spaced-apart, slotted guides secured to said cover at the concave side of the latter, rollers disposed in the guide slots and movable longitudinally thereof, respective pairs of spaced-apart levers pivotally connected at corresponding ends to said bars and at their opposite ends to respective rollers, respective struts inter-connecting corresponding levers of said two pair of levers intermediate the lengths of said levers, a nut threaded on said tubular shaft, and respective links pivotally connecting said struts to said nut whereby said cover will be moved away from said base when said crank is turned in one direction and will be moved toward said base when said crank is turned in the opposite direction.

2. A ventilator assembly for a vehicle top having a ventilating opening therein comprising a frame surrounding the opening at the inner side of the top and rigidly secured to the latter, a cover overlying the opening at the outer side of the top, and means including manually-movable mechanism inter-connected between said frame and said cover for supporting said cover substantially parallel to said frame and moving said cover toward and away from said frame, said means comprising a support structure secured to and extending across said frame, an externally screw-threaded, tubular shaft journaled near one end in said support structure and extending substantially perpendicularly to said frame toward said cover, a stem secured at one end to said cover and extending substantially perpendicularly from the latter toward said frame, said stem being slidably received in said tubular shaft, a traveling nut threaded onto said tubular shaft, means connected to said tubular shaft at the end thereof remote from said cover for manually rotating said shaft, and link and lever mechanism connected between said support structure, said cover and said nut for moving said cover toward or away from said frame upon rotation of said shaft in correspondingly opposite directions.

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