March 25, 1930. H. R. STUART 1,751,768

VENTILATOR

Filed March 1, 1928

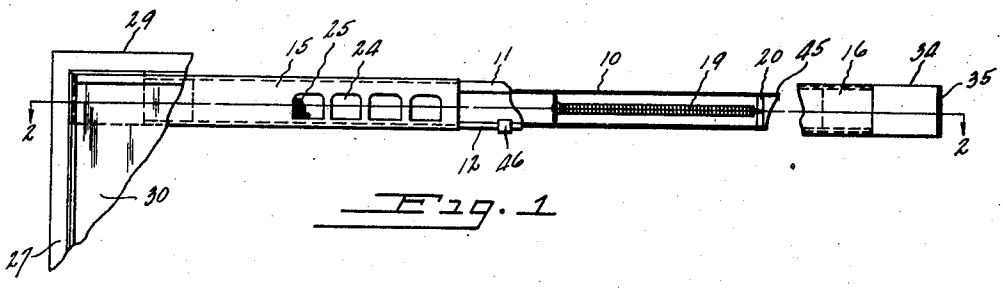


Fig. 1

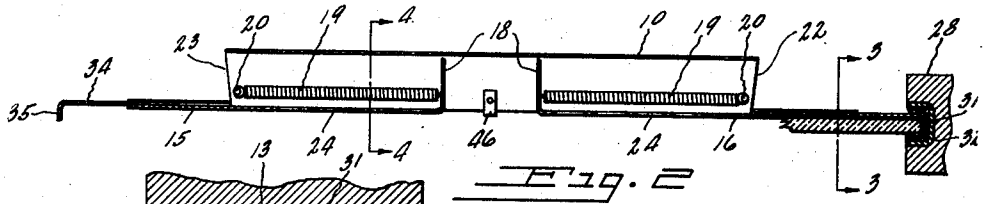


Fig. 2

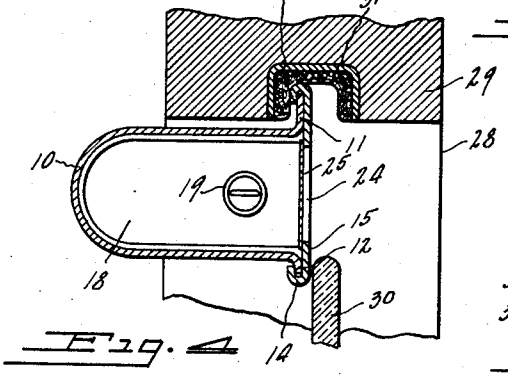


Fig. 4

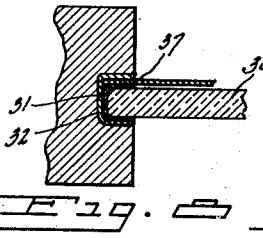


Fig. 8

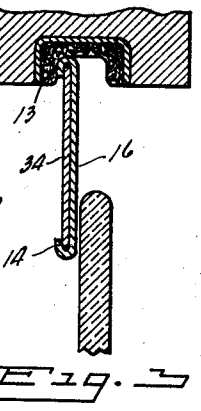


Fig. 3

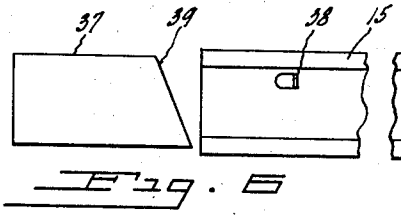


Fig. 6

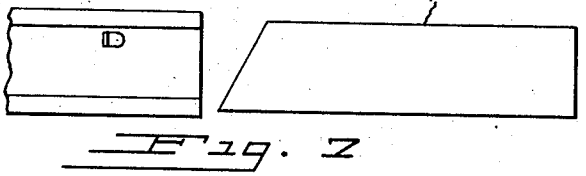


Fig. 7

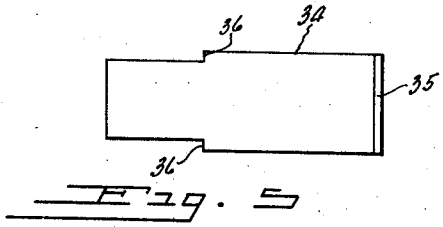


Fig. 5

INVENTOR.
Hervé R. Stuart
BY Marechal and Noé
ATTORNEYS.

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UNITED STATES PATENT OFFICE

HARVE R. STUART, OF SPRINGFIELD, OHIO

VENTILATOR

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This invention relates to ventilators and particularly to ventilators adapted to be used in window openings of moving vehicles.

One object of the invention is the provision of a ventilator of simple and cheap construction, adapted to be used in a window of a vehicle, such as an automobile, to effectively ventilate the interior of the vehicle.

Another object of the invention is the provision of a window ventilator adapted to be used in a window opening having a vertically adjustable window glass, which is so mounted that the ventilating flow of air can be regulated by the adjustment of the window glass.

A further object of the invention is the provision of a ventilator of the character mentioned, which is adapted to be quickly mounted in place in a removable manner and which is adjustable so that it may be adapted to be used in windows of different widths.

Other objects and advantages of the invention will be apparent from the following description and from the accompanying drawings in which—

Fig. 1 is a side elevation, showing some parts in vertical section, of a ventilator embodying the present invention;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1 through the ventilator;

Fig. 3 is a vertical section on the line 3—3 of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a detail of one form of extension plate;

Fig. 6 is a detail of a modified form of extension plate and the end of the ventilator with which it cooperates;

Fig. 7 is a view corresponding to Fig. 5 showing an end plate of greater length to adapt a ventilator to a wider window opening; and

Fig. 8 is a horizontal section showing a modified form of extension plate construction.

The ventilator to which the present invention relates is one particularly adapted to be used in the window opening of a vehicle or automobile of the closed body type. The movement of the vehicle creates an air flow exteriorly of the vehicle body, and the ventilator is adapted to supply ventilating air to the vehicle body, and cause the withdrawal of air therefrom. Referring more particularly to the drawings the ventilator comprises three main plates or sections, one plate 10 being of channel shape and preferably formed of a single sheet of metal bent into such form, as shown. This plate has short vertically extending top and bottom edges 11 and 12 which are slidingly received in the flanged edges 13 and 14 of the two flat vertical plates 15 and 16, which are mounted in alignment with one another along the open side of the channel plate 10. The vertical plates 15 and 16 are preferably somewhat greater in length than half the length of the channel plate 10, and the inner or adjacent ends of these flat plates are normally spaced apart so that their outer ends extend some distance beyond the ends of the channel plate 10. Each of the plates 15 and 16 is provided with an outwardly bent tongue or baffle 18 which is of a shape corresponding to the interior of the channel plate 10 so as to block the passage of air longitudinally through the channel plate at an inner or intermediate part thereof. The baffles 18 are preferably formed by bending the inner ends of the plates 15 and 16 at right angles, and fit neatly in the channel plate 10, but without binding. A coil spring 19 is fastened to baffle 18 and to a rod 20 which is fixed in the end of the channel plate 10, it being understood that each of the flat plates is thus yieldingly connected to the channel plate, the springs being effective to normally urge the flat plates outwardly and away from the central portion of the channel plate, to an extent limited by the compressed condition of the spring which is thus effective to also pre-

vent the complete separation of the flat plates from the channel plate 10.

The channel plate 10 and the two flat plates 15 and 16 thus form a horizontally extending elongated passage which is so mounted preferably at the top of a window opening of a moving vehicle as to extend out into the rush of air past the vehicle; so that air is caused to flow into the forwardly facing open end 22 of the ventilating passage, and is withdrawn from the rearwardly facing opening 23 thereof. The direct travel of air through the ventilating passage is prevented however by the provision of the baffles or tongues 18, and each of the flat plates 15 and 16 is provided with a series of ventilating openings 24 in communication with the interior of channel plate 10 so that air is caused to flow into the vehicle through the plate 16 for the supply of fresh air to the interior of the vehicle, and air is withdrawn from the vehicle through the openings in the plate 15, at the rear of the ventilator. Along the outer side of each of the plates 15 and 16, and within the outlines of the channel plate 10 are screens 25 of wire mesh, one screen being fastened directly to each of the flat plates to prevent the entrance of dirt or any small particles of matter which may be floating around in the air, into the vehicle.

The ventilator is adapted to be used in the opening of a window or door, having a vertically adjustable window glass, and is preferably mounted at the top of the window opening where it is particularly effective and where it does not interfere with the vision of the occupants of the vehicle. As shown in Figs. 1 to 4, the window frame embodies uprights 27 and 28 and the top cross member 29, within which is mounted the window glass 30; the construction preferably being such that the window glass is guided vertically in compressible guide strips 31 of felt, rubber or the like, received or held in the customary U-shaped metal channels 32 in the frame members. The upper edge of the window is adapted to be received in a correspondingly shaped compressible guide strip 31, when the window is closed. The window is adapted to be lowered from its closed position by means of any suitable mechanism, such as is well-known in the art. The plates 10, 15, and 16 forming the ventilating passage are adapted to be mounted in the window opening by means of extension plates 34 one of which is provided in the end of each of the flat plates 15 and 16. These extension plates are formed of flat sheet metal with their outer ends preferably bent inwardly as indicated at 35, and these bent ends are adapted to be received in the glass receiving guide strips 31 so that the ventilating passage formed of the channel plate 10 and the flat plates 15 and 16 is positioned entirely outside of the path of movement of the window glass. The extended ends 35 are thin enough so that the glass is not prevented from being moved along between these ends, which are preferably bent and shaped to receive the vertical edge of the glass and form a guide for the latter. As previously mentioned the springs 19 yieldingly hold the flat plates 15 and 16 apart and the ventilator may be readily mounted in its proper position by merely pressing the plates 15 and 16 together to reduce the total length of the ventilator and then, after placing the bent ends 35 of the extension plates within the window opening, the springs are permitted to contract and expand the ventilator horizontally against the window frame. The springs 19 thus maintain at all times a considerable pressure on the bent ends 35 holding them seated in the window receiving guides, and holding the ventilator in place.

To permit the ventilator to be used in windows of various widths the extension plates 34 are mounted on the ends of the plates 15 and 16 in a quickly detachable manner, and extension plates of various lengths can thus be quickly inserted in the ends of the vertical plates so that the total length of the ventilator can be readily changed. As shown in Fig. 5 the extension plate 34 at one end is of the same width as the width of the open side of the channel plate 10 so that it is slidably received in the flanges 13 and 14 of the plate 15. In this form of construction the outer portion of the extension plate as indicated at 35 is of greater width than the inner end so that the shoulders 36 are adapted to abut against the outer ends of the flanges 13 and 14 of the flat plates to determine the positioning of this extension plate. As the extension plates are readily removable by merely pulling them out of the guide surfaces or flanges in which they are held, the substitution of longer or shorter plates to accommodate windows of various widths is very easily and quickly accomplished.

In Figs. 6, 7, and 8 a modified form of end plate is shown. The extension plate 37 is flat at its end so that it may be inserted between the compressible guide strip 31 and the metal channel 32 on the outer side of the glass, the top flange 13 being also received between the top guide strip and its metal channel. The plate 15 may have a projection or stop 38, which may be struck up out of the metal of the plate to form a stop limiting the inward movement of the extension plate and determining the position of the latter with respect to the flat plate 15. The extension plate 37 is preferably formed with an angular or inclined inner end or edge 39 adapted to abut against the stop 38. The plate 37 being slidable in the flanges 13 and 14 may easily be withdrawn and used in an inverted position to adapt the ventilator to a wider window. The plate 37 when inverted is of course prevented from moving in along the plate 15 to

as great a depth as when positioned as shown in Fig. 6, as the stop 38 is engaged by the longer side of the extension plate. Or the short extension plate may be replaced by a longer plate 40 as shown in Fig. 7 to adapt the ventilator for use in windows of a larger range of sizes. Thus by either reversing or inverting the extension plates or using longer plates different ranges of window sizes may be fitted.

It will now be apparent that when the ventilator is positioned at the top of a vehicle window opening, with the flanged tops of the plates 15 and 16 and the top edges of the extension plates received in the top horizontal glass guide, the closing movements of the window are not interfered with, and the window may be lowered to the bottom of the ventilator or to any position along the ventilating openings 24 to govern the amount of air entering and leaving the vehicle. The forward motion of the vehicle thus creates a free circulation of air through the openings in the forward plate 16 and the air leaves the vehicle through the openings in the rear plate 15, being withdrawn from the rear opening in the ventilating passage by reason of the rush of air past this opening and the pressure created by the air supplied to the vehicle through the front of the ventilator. Being located at the top of the window opening and being of a quite small depth in a vertical direction, it does not interfere with the vision of the occupants of the vehicle and is out of the way and introduces the fresh air above the heads of the occupants of the car, thus avoiding objectionable drafts. Being symmetrically formed it is adapted to be used on the right or left side of the vehicle without rearrangement of the parts. The channel plate 10 is preferably provided with a stop member 46, of leather or other suitable material; riveted in place at the center of the bottom portion thereof to prevent rattles between the window glass and the ventilator and to limit inward movements of the plates 15 and 16 with respect to the plate 10. The entrance of moisture or rain into the ventilator is to some extent prevented by extending the ends of the channel plate 10 at the top portion thereof as shown at 45 in Fig. 1, so that the top edge of this channel plate which extends straight outwardly above the bottom cut-away portion acts as a shield and rain and moisture are thus prevented from dripping into the ventilating passage.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A ventilator adapted for use in a vehicle window opening having opposite glass receiving side channels and a vertically adjustable window glass therein, comprising ventilating means formed of telescoping sections, and an associated elongated part, which provides an open ended tubular passage in communication with the interior of the vehicle, spring means urging said sections to extended positions, and means adapted to be inserted in said side channels for mounting said ventilating means outside the window glass to provide for vertical adjustment of the window glass along the inner side of the ventilating means.

2. A ventilator adapted for use in a window opening having a vertically adjustable window glass therein, comprising ventilating means forming a hollow passage in communication with the interior of the vehicle and means for mounting said ventilating means so that it lies outside the window glass to provide for the vertical adjustment of the window glass along the inner side of the ventilating means, said mounting means comprising an extension plate having its end adapted to fit in the side of the window opening and formed to receive an edge of the window glass.

3. A ventilator adapted for use in a vehicle window opening having a vertically adjustable window glass therein, comprising a plurality of plates adjustably secured together to provide a horizontal hollow passage in communication with the interior of the vehicle, spring means for moving certain of said plates to an extended position, and mounting means at each end of said ventilating means, said mounting means having inwardly bent ends engaging the window opening and adapted to receive the edge of the window glass to provide for adjustment of the window glass along the inner side of the ventilating means.

4. A ventilator adapted for use in a window opening of the class described having opposite glass receiving side channels and a vertically adjustable window glass therein, comprising a channel-shaped plate, a horizontally extending plate having a ventilating opening and arranged along the open side of the channel-shaped plate, one plate being flanged at the top and bottom to slidingly engage the edges of the other plate and form therewith a longitudinal air-passage open at opposite ends in communication with said ventilating opening, a baffle across said passage located adjacent an end of said horizontally extending plate, and means insertable in the said side channel for mounting said ventilator so that the plates lie entirely outside of the window glass.

5. In a ventilator of the class described, a channel-shaped plate, and a pair of horizontally extending plates having ventilating

openings therein and arranged in alignment along the open side of the channel-shaped plate, said horizontally extending plates being flanged at their tops and bottoms to slidingly engage the edges of the channel-shaped plate and form therewith a longitudinal air-passage open at opposite ends in communication with said ventilating openings, and spring means operably interconnecting said horizontally extending plates and acting to move said plates to extended position, a baffle extending across an intermediate portion of said channel-shaped plate, and means for mounting said plates in position.

6. A ventilator adapted for use in a window opening of a vehicle comprising a horizontal elongated plate of channel shape open along one side and open at its ends, a pair of vertical flat plates extending along said open side inwardly thereof and provided with air-ventilating openings, and a baffle on one of said flat plates extending across the inside of said channel-shaped plate to cause air entering one end of the ventilator to pass into the vehicle through one of said ventilating openings.

7. A ventilator adapted for use in a window opening of a vehicle comprising a horizontal elongated plate of channel shape open along one side and open at one end, a pair of vertical flat plates extending along said open side inwardly thereof and provided with air-ventilating openings, a screen mounted on the outer side of each flat plate across the ventilating openings, spring means normally urging said flat plates to extended positions, and a baffle extending across the inside of said channel-shaped plate to cause air entering one end of the ventilator to pass into the vehicle through one of said ventilating openings.

8. A ventilator adapted for use in a window opening of a vehicle comprising a horizontal elongated plate of channel shape open along one side and open at an end thereof, a pair of vertical flat plates extending along said open side inwardly thereof and provided with air-ventilating openings, yielding means urging said flat plates to extended positions, means extending across the inside of said channel-shaped plate to cause air entering one end of the ventilator to pass into the vehicle through one of said ventilating openings, and attachment means detachably fastened to said flat plates to provide for adjustment of the length of the ventilator.

9. A ventilator adapted for use in a vehicle window opening having a vertically adjustable window glass, comprising a horizontal elongated plate of channel shape open along one side and open at an end thereof, a pair of vertical flat plates extending along said open side inwardly thereof and provided with air-ventilating openings, means extending across the inside of said channel-shaped plate to cause air entering one end of the ventilator to pass into the vehicle through one of the ventilating openings, and attachment means detachably fastened to said flat plates to provide for adjustment of the length of the ventilator, said last means comprising flat vertical plates having inwardly bent ends adapted to fit in the glass receiving openings of the window so that the ventilator is positioned entirely outside the path of movement of the window glass.

10. A ventilator adapted for use in a window opening of a vehicle comprising a channel-shaped plate, a pair of flat plates extending along the open side of the channel-shaped plate and slidingly engaging the top and bottom edges thereof, spring means interconnecting the channel-shaped plate and said flat plates to urge said flat plates to extended positions, means on the ends of said flat plates for engaging the window opening, one end of a flat plate having an outwardly bent section providing a baffle extending across the interior of the channel-shaped plate to provide for both inflow and outflow of air through said ventilator.

11. In combination, a vehicle window having a glass-receiving groove along opposite sides thereof, a glass vertically adjustable along said groove, a ventilator adapted to be mounted at the top of the window opening, and including a horizontally extending tubular air passage and means adapted to be inserted within said grooves for mounting said ventilator adjacent the outer side of said glass without obstructing vertical movements of the glass, and spring means for yieldingly holding said first means within the said grooves.

12. A ventilator adapted for use in conjunction with a vehicle window opening having a vertically adjustable window glass therein comprising a channel-shaped plate having vertically extending top and bottom edges, a pair of flat plates lying along the inner open side of said channel-shaped plate and having flanged top and bottom edges adapted to slidingly receive the top and bottom edges of the channel-shaped plate, said flat plates having ventilating openings in communication with the interior of the channel-shaped plate, screen means across said openings, a spring interconnecting each flat plate and said channel-shaped plate and normally urging said flat plates to extended positions, and mounting extensions at the outer ends of said flat plates, said extensions having inwardly bent ends adapted to be received in the window opening to mount the ventilator externally of the path of movement of the window glass without obstructing vertical movements of the latter.

13. A ventilator adapted for use in a window opening of a vehicle comprising a horizontal elongated plate of channel shape open along one side and open at its ends, a pair

of vertical flat plates extending along said open side inwardly thereof and provided with air-ventilating openings, and a baffle extending across the inside of said channel-shaped plate to cause air entering one end of the ventilator to pass into the vehicle through one of said ventilating openings, and spring means connected to each of said flat plates for urging each of said plates into holding contact with the window frame.

In testimony whereof I hereto affix my signature.

HARVE R. STUART.