July 11, 1950 C. F. KRAMER 2,514,772

COWL VENTILATOR MECHANISM

Filed Dec. 6, 1945 2 Sheets-Sheet 1

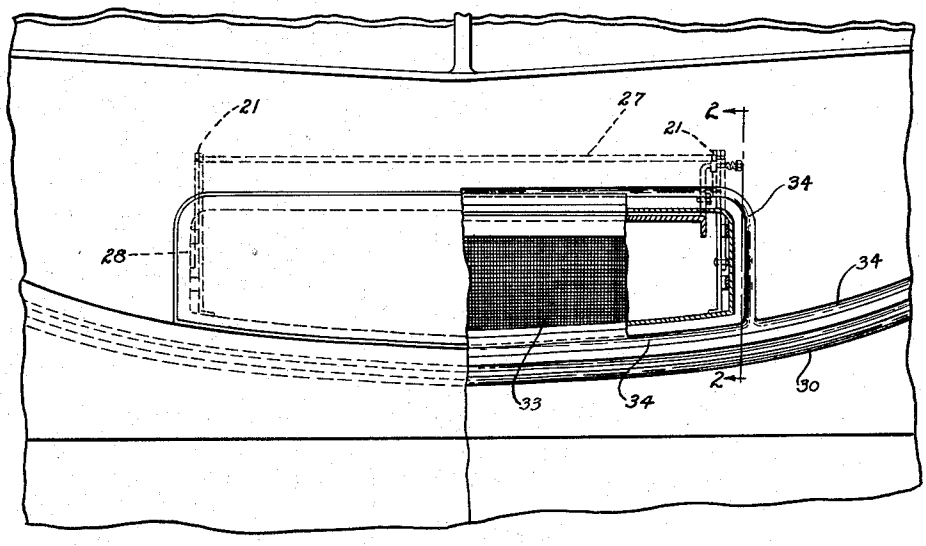


Fig. 1

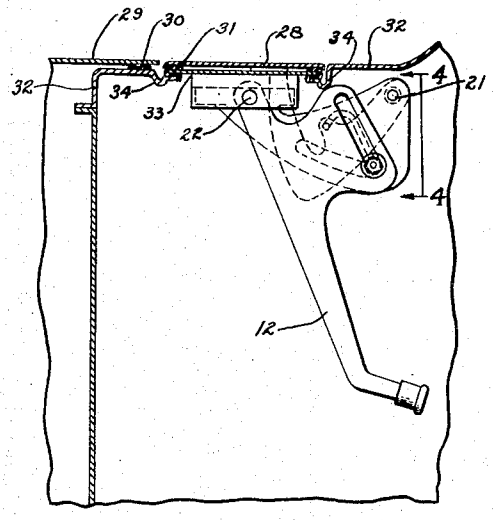


Fig. 2

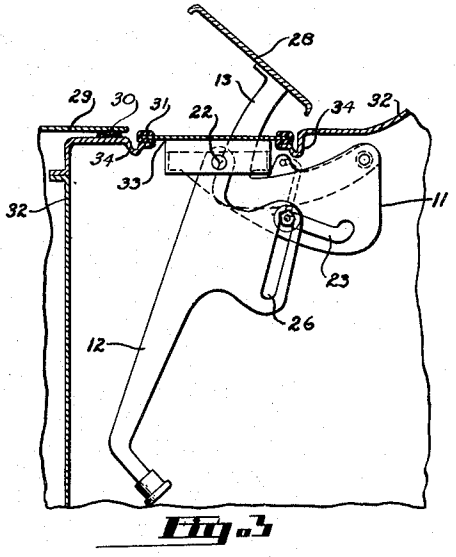


Fig. 3

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COWL VENTILATOR MECHANISM

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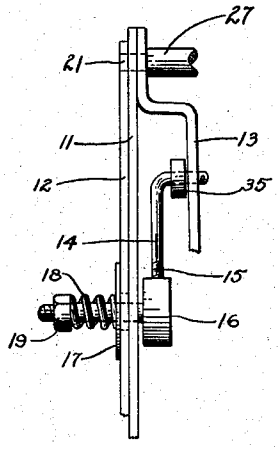


Fig. 4

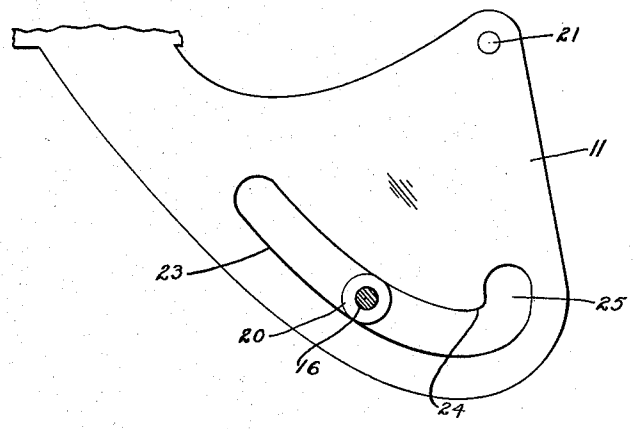


Fig. 5

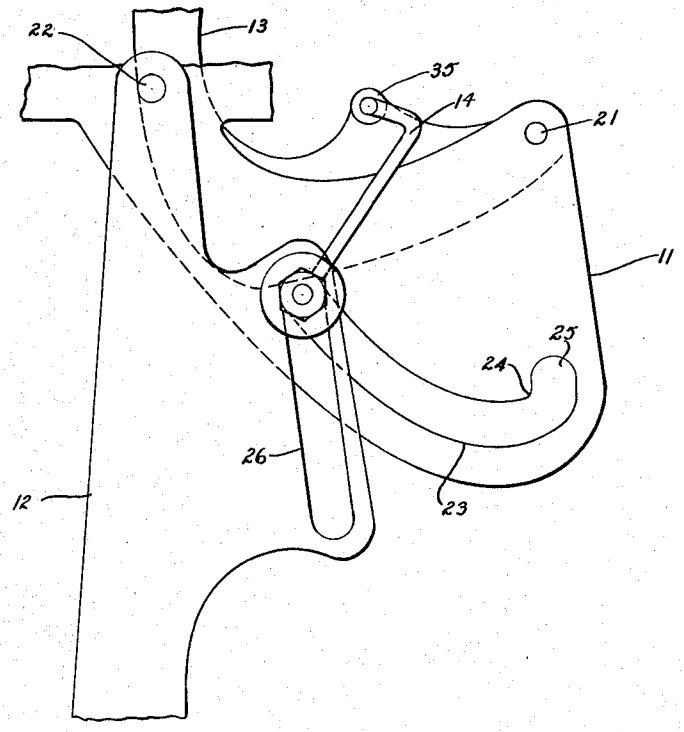


Fig. 6

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2,514,772

COWL VENTILATOR MECHANISM

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5 Claims. (Cl. 74—470)

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This invention is concerned with the ventilation of vehicle bodies, and more particularly with a mechanism for controlling a ventilating opening in a vehicle.

In previously employed mechanisms for controlling ventilator bodies, it has been necessary to insert an assembled portion of the mechanism into the ventilating aperture in the body, and then to complete the assembly within the body. This of course involved working in cramped quarters and made such installations time-consuming.

A ventilator control mechanism constructed in accordance with the present invention is quite compact and capable of complete assembly prior to insertion into the ventilating aperture in the body. The entire mechanism as a unit is inserted into the body and no assembly operations are required after it is in place. Thus assembly operations in the cramped interior of the body are avoided.

Other and further advantages will be apparent from the description set forth in the specification, claimed in the following claims and shown in the accompanying drawings, in which:

Figure 1 is a plan view, partly in section, of the exterior of the body showing the ventilator in a closed position.

Figure 2 is an elevation of the ventilator controlling mechanism in the closed position, taken along 2—2 in Figure 1.

Figure 3 is an elevation of the ventilator controlling mechanism in the fully open position, taken along 2—2 in Figure 1.

Figure 4 is an elevation of a portion of the control mechanism taken along 4—4 in Figure 2.

Figure 5 is a view of a portion of the base plate showing more clearly the configuration of the slot.

Figure 6 is a view of a portion of the operating mechanism designed to graphically illustrate the coaction of the diverse working members.

In each of the figures of drawing, like parts have been designated by like numbers.

The invention will be described particularly in connection with a cowl ventilator in a truck body, but is applicable wherever a like problem is encountered.

Turning first to Figure 1, there is shown a general plan view of the structure, looking directly into the opening provided in the body for the ventilator. The left half of this figure is an unsectioned view, showing the ventilator cover 28 in place and in the fully closed portion. The portion of ventilator cover 28 just to the right of center has been cut away to show screen 33.

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Still further to the right, screen 33 has been removed to show in general the position of the operating mechanism. This drawing also shows rain gutter 34. This gutter extends across the width of the body and completely surrounds the opening provided in the body to receive the ventilator control mechanism. A portion of this gutter is hidden by engine hood 29 and ventilator cover 28. The number 30 designates the usual gasket interposed between the body and engine hood.

Figures 2 and 3 show the controlling mechanism in the closed and fully open position, respectively. These drawings illustrate the opened and closed position of ventilator cover 28, its support on lever 13 and coaction with ventilator gasket 31 to form a weather tight seal. Rain gutter 34 is also shown on both sides of the ventilator opening. Both of these views are of course a section taken along 2—2 in Figure 1. The operation and significance of the other parts portrayed in Figures 2 and 3 will be described more particularly in connection with Figures 4, 5 and 6.

Figure 4 is a detail view taken along 4—4 in Figure 2 and shows the linkage used to connect the operating element 12 (Figures 2, 3 and 6) and lever 13. (Figures 2 and 3.) It is desirable to provide sufficient friction in this linkage to hold the ventilator fixed in any desired position between fully opened and closed. This friction is obtained by means of spring 18 which acts through friction washer 17 to compress together the operating element and fixed base plate 11 (Figures 2, 3 and 6). This spring is held in place and adjusted as to tension by adjustment nut 19. The connection between lever 13 and operating element 12 is through resilient connector 14. This connector is at one end rotatably secured to lever 13 by pivot 35 and at the other end rigidly but adjustably secured to bolt member 16. The end of resilient connector 14 intended to be fastened to bolt member 16 is threaded as shown at 15. Adjustment of this connection serves to increase or decrease the locking action of slot 23 in the fully closed position. Bolt member 16 can be likened to an ordinary bolt with an enlarged head, which head is radially drilled and tapped to receive resilient member 14. The stem of bolt member 16 is carried rotatably in follower 20, as more clearly shown in Figure 5. Fixed base plate 11 and lever 13 are pivotally joined at 24. Rod 27, (Figure 1), extends the width of the cowl opening and operates a member corresponding to and serving the same purpose as lever 13 on the left side of the drawing.

Figure 5 is a detail of base plate 11, showing

the configuration of base plate slot 23, bolt 16 and follower 20 journaled therein, and pivot 21 connecting base plate 11 and rod 27.

Figure 6 is a detail showing the working portion of the control mechanism. Here 22 indicates a pivot connecting base plate 11 and operating element 12. This drawing also shows the operating element slot 26. This slot can take any convenient form and preferably has as a center line a straight line. The curved shape of resilient connector 14 is shown. The resiliency inherent in this curved element aids in the locking mechanism. The follower 20 containing bolt member 16 is journaled in the area defined by the intersection of base plate slot 23 and operating element slot 26. It is thought that the operation of the controlling mechanism will be apparent from a consideration together of Figures 2, 3 and 6. The path of follower 20 and hence bolt member 16 is of course fixed by the shape and location of slots 23 and 26. The motion of the bolt member 16 is transmitted through resilient connector 14 to lever 13 which is thus caused to pivot about joint 21.

A locking action in the closed position is provided by the configuration given base plate slot 23 at the right. This locking action is accomplished by the combined action of curve 24 and locking opening 25. A consideration of Figure 2 will show that when the follower 20 has proceeded to the upper limit of locking opening 25, any force attempting to open ventilator cover 28 will simply tend to move the follower 20 in a direction normal to the centerline of locking opening 25. This movement is of course effectually prevented by the side walls of locking opening 25.

The locking action of locking opening 25 is enhanced by the configuration of radius 24. The slot 23 and its coacting elements are so proportioned that the ventilator cover 28 is fully closed just as the follower 20 approaches the beginning of curve 24. When the ventilator cover 28 is fully closed further movement of lever 13 and pivot 35 mounted thereon is impossible. Pivot 35 hence becomes stationary and follower 20 rotates around pivot 35. The radius of the curve 24 is made a very small distance longer than the distance between the center of pivot 35 and the center of follower 20. To force the follower 20 over the curve 24 will necessitate a flexing of resilient member 14. This flexing assists in the locking action.

By the above outlined construction an exceptionally compact operating mechanism is obtained which may be placed in a body as a complete unit from the outside. This mechanism will remain fixed at any intermediate position and is automatically locking in the closed position. The locking mechanism is provided with an adjustment to compensate for manufacturing irregularities and wear and to give the desired locking "feel" or tension.

It is apparent that certain changes may be made in the details of the construction shown herein, but it is the intention to cover by the following claims such of these changes as are reasonably within the scope thereof.

I claim as my invention:

1. In a ventilator controlling mechanism, a base plate to which is pivotally secured an operating element and a lever capable of actuating a ventilator cover, said operating element and said base plate being provided with coacting slots, the operating element and base plate being further connected through a follower journaled in an area defined by the intersection of the slots in the operating element and in the base plate, the lever being joined to the follower through a curved resilient link.

2. In a ventilator controlling mechanism, a base plate to which is pivotally secured an operating element and a lever capable of actuating a ventilator cover, said operating element and said base plate being provided with coacting slots, the operating element and base plate being further connected through a follower journaled in an area defined by the intersection of the slots in the operating element and the base plate, the lever being joined to the follower through a curved resilient link which is adjustably secured to a bolt member passing through the follower.

3. In a ventilator controlling mechanism, a base plate to which is pivotally secured an operating element and a lever capable of actuating a ventilator cover, said operating element and said base plate being provided with coacting slots, the operating element and base plate being further connected through a follower journaled in an area defined by the intersection of the slots in the operating element and the base plate, in which the center line of the slot in the base plate assumes any convenient shape from the position occupied by the center of the follower at the full open to the full closed position and at the full closed position becomes a curve the center of which is substantially coincident with the center of the pivot joint between the lever and a link which connects the lever to the follower.

4. The structure recited in claim 3 in which the radius of the curve is varied to induce a stress in the link and increase the locking action.

5. In a cowl ventilator actuating mechanism, a base plate, a manually operable handle and a lever capable of actuating a cowl and ventilator cover, the manually operable handle and lever being pivotally secured to the base plate, the manually operable handle and base plate having intersecting coacting slots and a follower journaled in the space formed by the intersection of the slots, the manually operable handle and the lever being further connected through a system comprising said follower mounted in a spring loaded friction joint and a resilient curved link adjustably secured at one end to the follower and at the other end to a pivot on the lever and located approximately between the points of attachment of the lever and manually operable lever to the base plate.

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