May 13, 1952 J. W. J. ACKERMANS 2,596,356

DOOR AND WINDOW STRUCTURE FOR CONVERTIBLE BODIES

Original Filed Dec. 22, 1947

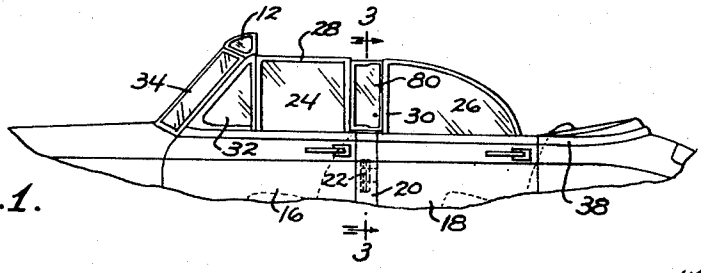


Fig. 1.

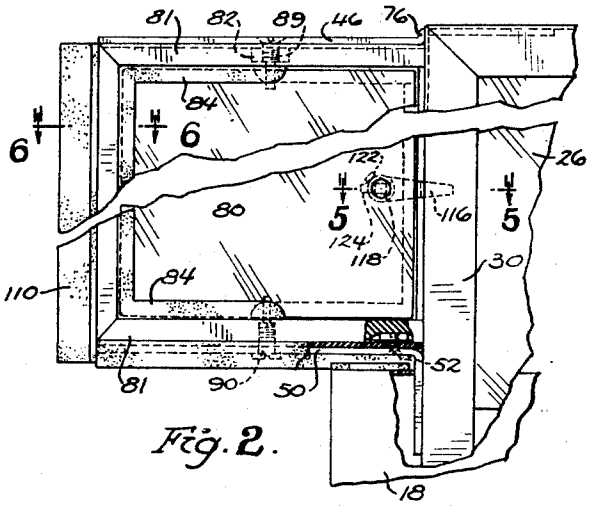


Fig. 2.

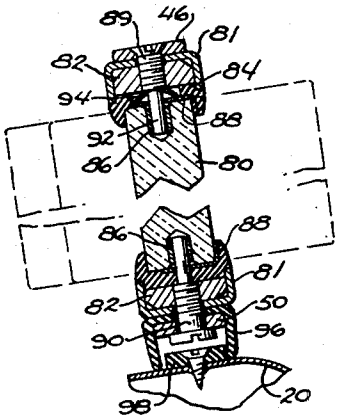


Fig. 3.

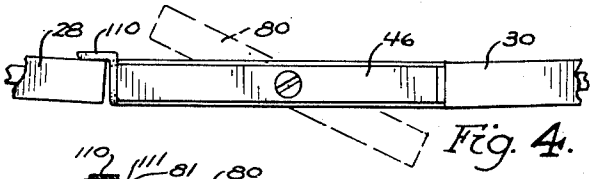


Fig. 4.

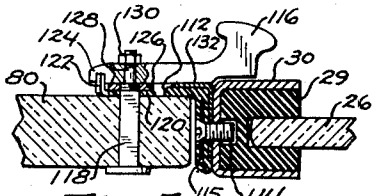


Fig. 5.

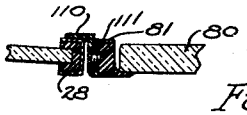


Fig. 6.

INVENTOR.
JOHN W. J. ACKERMANS
BY Gregory S. Dolgorukov
ATTORNEYS.

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DOOR AND WINDOW STRUCTURE FOR CONVERTIBLE BODIES

John W. J. Ackermans, Detroit, Mich.

Original application December 22, 1947, Serial No. 793,272. Divided and this application April 21, 1951, Serial No. 222,254

10 Claims. (Cl. 296—45)

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This invention relates to vehicle bodies, and more particularly to vehicle bodies of the four-door convertible sedan type such as are commonly used on automobiles.

This application is a division of my copending application Serial No. 793,272, filed December 22, 1947, now Patent 2,552,503.

In some present constructions of this type, a center pillar separates the front and rear doors on each side, and above this pillar, separating the front and rear window frames carried by the respective doors, is an upper pillar which, when the top is lowered, may be either left erect, folded inwardly or wholly removed and stored until the top is to be put up again.

In other convertible tops of this type, the upper pillar is adjustably and replaceably fixed to the lower center pillar only. In place of the lower center pillar a center panel is sometimes used. Said upper pillar may be substituted by a center window the frame of which is secured to the lower pillar or center panel at the belt line of the vehicle. This construction, however, is not entirely satisfactory from the standpoint of esthetic considerations, and also because of the difficulty of aligning the center window frame with the frames of the front and rear doors' slidable, foldable or stationary upper window frames; also because the center window frame projects forwardly so far as to restrict shoulder room and thus interferes with easy entrance to the vehicle.

To eliminate these objectionable features, the present invention provides a heavy center window pane, without outer frame, which is carried by the upper part of one of the doors, thereby eliminating the center window frame and its inner weatherstrip, if desired; also only one door gap joint has to be aligned with the center window and the means of securing the center member to the top of the lower center pillar are no longer necessary. This combination center window and upper door channel extension makes also a more rigid construction. Said center window may also be arranged to fold or slide out of the way on either upper door frame when desired, by mechanism known in the art. It can also be made to pivot about a vertical axis and thus act as a ventilating panel and deflector for rear seat occupants.

An object of the present invention is to provide a convertible four-door sedan type body of improved design and operability.

A further object of the invention is to provide a body of the type indicated having improved appearance and more convenient ventilating features, and wherein assembly of the parts in manufacture is facilitated.

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Further objects and advantages of the invention will be apparent from the following description, taken in connection with the appended drawings, in which:

Fig. 1 is a side elevation of a vehicle embodying the present invention.

Fig. 2 is an enlarged view of the window construction of the vehicle shown in Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a plan view of the construction shown in Fig. 2.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 2.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Figs. 1 to 6 illustrate a four-door sedan having a convertible top designed to fold into a booth at the rear of the car body, but shown in Fig. 1 in its extended or raised position and secured at its forward edge in a substantially vertical plane to a rearward extension 12 of the windshield frame 14. The body of the vehicle comprises front and rear doors 16 and 18 which open toward the front, the rear door being hung on a pillar 20 by means of concealed hinges 22.

The doors 16 and 18 are provided with fixed channel frames 28 and 30, each of which contains a rubber or felt runway which is channeled to receive the edge of the window glass in vertically sliding relation. The frames 28 and 30 are fixed to their respective doors 16 and 18, the panes 24 and 26 being vertically slidable therein to concealed positions in the doors, in the usual manner. The body is also provided with ventilating windows 32 and windshield panes 34, which may be of usual construction. There may also be provided a pair of overhead panes in the extension 12. The belt molding of the vehicle is indicated at 38.

Between the front and rear side windows is mounted a center window pane which is formed of heavy glass of approximately the thickness of the frames 28 and 30.

In the form of the invention shown in Figs. 1–5 the parts thereof corresponding to the parts of the construction illustrated in Patent No. 2,552,503 are designated by the same reference characters, except as hereinafter noted.

The center pane is in this instance designated 80, and is designed not only to be carried by the rear door, but also to rotate relative thereto, so as to constitute a ventilating window and deflector of the same general type as that indicated at 32. Indeed, the construction herein described in connection with the pane 80 may be substituted for the usual ventilating window 32. For this purpose, the arm 46 is fixed, as by welding, to a channel member 81 which extends along the forward and upper and lower edges of the pane 80, but spaced therefrom, and which contains tapping plates 82 welded thereto. The lower arm 50 is fixed to the channel member 81 by screws 52. A flexible weatherstrip 84 is seated in the three sides of channel 81 to form a weatherproof seal for the pane 80 while permitting pivoting movement therebetween. The four-sided weatherstrip 84 has outer and inner flanges, the outer flange extending only along the forward edge of the pane and along the forward portions of the upper and lower edges thereof, while the inner flange extends only along the rear edge of the pane and along the rear portions of the upper and lower edges thereof, the purpose being to form a seal while minimizing interference with the pivotal movement of the pane in known manner. The vertical rear part 112 of weatherstrip 84 is secured to frame 30 by screws 114 as shown in Fig. 5. The weatherstrip 84 may be provided with a metal reinforcing strip 115 to prevent the screws 114 from pulling through the weatherstrip.

The pane 80 is formed, along its vertical axis, with upper and lower bores in which are seated bushings 86, formed as part of upper and lower bushing brackets 88, of brass or similar material, which are cemented to the pane 80. Upper and lower screws 89, 90 are threaded into the tapping plates 82 of channel 81, and each is provided with a pivot pin 92 of reduced diameter, seated rotatably in its bushing 86, upon which the pane 80 may rotate from the full line position shown in Figs. 9 and 10 to the position shown in dotted lines in the same figures. A spring washer 94 may be interposed between the shoulder of screw 89, and the bracket 88 to provide sufficient friction that the pane 80 will remain in any open position to which it is moved by the operator.

Along the lower edge of channel 81 extends a flexible weatherstrip 96 designed to cooperate with a strip 98 secured to the pillar 20.

To the forward edge of the three-sided channel 81 (Fig. 6) which forms a spaced frame around the pane 80 is attached a flexible weatherstrip 110 designed to contact the frame 26 of pane 24 whenever the front and rear doors are in closed position. The weatherstrip 110 may be provided with a metal reinforcing strip 111 similar to the reinforcing strip 115 described in connection with Fig. 5.

The pane 80 is designed to rotate relative to its supporting channel member 81 only in the clockwise direction, for opening from the full line position to the broken line position shown in Figs. 3 and 4. To prevent such rotation, and to facilitate it when desired, a handle 116 is rotatably mounted on a bolt 118 mounted in a bore in the pane 80, both the bore and the bolt being non-circular so that the bolt will not rotate in the bore.

A washer 120 is mounted non-rotatively on bolt 118 and is provided with a lug 122 which cooperates with an extension 124 on handle 116 to limit the movement of the handle in either direction, the range of movement being approximately 90°. A nut 126 is threaded on bolt 118 to retain the washer 120 and bolt 118 in fixed relation to the pane 80. The handle is rotatable on a reduced extension 128 of bolt 118, and is held in place by a nut 130. When the handle is in vertical position it may be seized to move the pane to open position, whereas when it is in horizontal position it contacts a friction plate 132 and thereby acts as a stop to prevent opening of the window.

Although the invention has been described with reference to certain specific embodiments thereof, it may be embodied in other forms within the skill of artisans in this art, and is not limited except by the terms of the following claims.

I claim:

1. In a vehicle body having two side doors with slidable windows in fore-and-aft relation to each other and a pillar between the lower portions of said doors, a ventilating panel carried by one of said doors to swing therewith and positioned when said doors and panel are closed between the upper portions of said doors and above said pillar, and means for oscillating said panel on a substantially vertical axis relative to said door.

2. The invention defined in claim 1, comprising in addition weatherstripping cooperating with the edges of the panel to exclude the elements while permitting such oscillating of the panel and weatherstripping on said door coacting with the adjacent edge of the other door.

3. The invention defined in claim 1, comprising in addition a rotatable handle secured to the panel and operative to prevent rotation thereof in one direction from closed position, and stop means limiting rotation of the handle in either direction.

4. A vehicle body having at each side a lower center pillar and two doors provided with windows, a permanently erected ventilator wing disposed longitudinally between said windows, supporting means having mechanism for vertically pivoting said wing near its center, pivoting mechanism on opposed thickness edges of said wing coacting with said first mechanism, said second mechanism comprising pivot bushings that are embedded in said wing's edges, friction means adjacent one of said bushings to maintain said wing in opened position, a latching device on said wing coacting with a portion of said supporting means, said device being retained by a single non-rotatable fastener through said wing, and weatherstripping for separable junctures of said wing and said supporting means, said supporting means being fixedly secured to one of said doors and comprising a guide channel for sliding one of said windows from a closed position to an open position.

5. A vehicle body having at each side a center pillar and two doors provided with slidable windows, a permanently erected ventilator wing disposed longitudinally between said windows, supporting means having mechanism for vertically pivoting said wing near its center, said supporting means being fixedly secured to one of said doors and including a runway channel to receive an edge of one of said slidable windows, pivoting mechanism on opposed edges of said wing coact-

ing with said first mechanism, said second mechanism comprising pivot bushings embedded in said wing's edges, friction means adjacent one of said bushings to maintain said wing in opened position, a latching device on said wing coacting with a portion of said supporting means, said device being retained by a single non-rotatable fastener through said wing, and weatherstripping for separable junctures of said wing and said doors secured to said supporting means.

6. A vehicle body having at each side a lower center pillar and two doors provided with windows spaced from each other longitudinally of the body, a ventilating panel disposed between said windows, supporting means on one of said doors for carrying said panel, said supporting means comprising a guide channel for sliding one of said windows from a closed position to an open position, mechanism coacting with said supporting means and with said panel for pivoting said panel in relation to said door, and weatherstripping for separable junctures of said panel secured to said supporting means.

7. A vehicle body having at one side a lower center pillar and two doors provided with slidable windows, a transparent panel longitudinally disposed between said windows, means for pivotally supporting said panel on one of said doors including a runway channel to receive an edge of the slidable window associated with said one door.

8. In a vehicle body comprising a roof, front and rear doors, and a pillar separating said doors, a vertically slidable window carried by one of said doors and movable to a point above the top of said pillar, supporting means comprising a runway channel for at least one edge of said window secured to said door, arms connected to said supporting means, and a transparent panel carried by said arms for pivotal movement about a vertical axis and constituting an extension of said pillar at least when said panel and said doors are closed.

9. A vehicle body having at one side a lower center pillar and two doors provided with spaced windows, a permanently erected transparent panel disposed between said windows, supporting means on one of said doors for carrying said panel, and mechanism coacting with said supporting means and said panel for pivotal movement of said panel relative to said door, said supporting means comprising a guide channel for sliding one of said windows from a closed to an open position.

10. A vehicle body having at each side a lower center pillar and two doors provided with windows spaced from each other longitudinally of the body, a permanently erected ventilator wing disposed between said windows, supporting means having mechanism for vertically pivoting said wing near its center, and pivoting mechanism on said wing coacting with said first mechanism, said supporting means comprising a guide channel for sliding one of said windows from a closed position to an open position.

JOHN W. J. ACKERMANS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,753,795	Linn et al.	Apr. 8, 1930
1,973,219	Mooney	Sept. 11, 1934
2,356,403	Heidman et al.	Aug. 22, 1944
2,552,503	Ackermans	May 8, 1951