

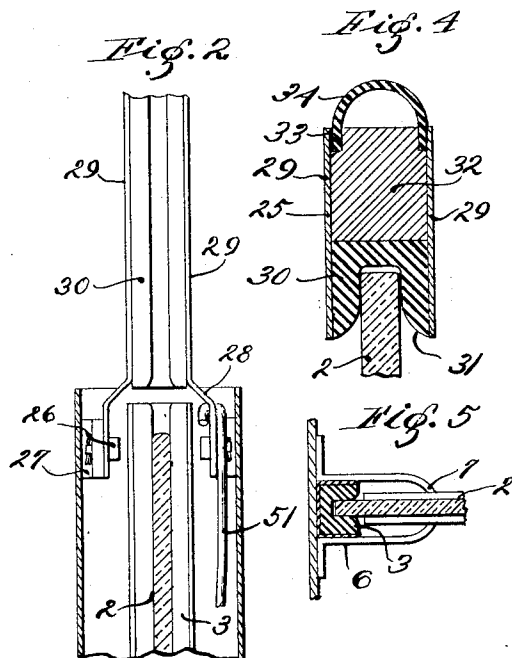
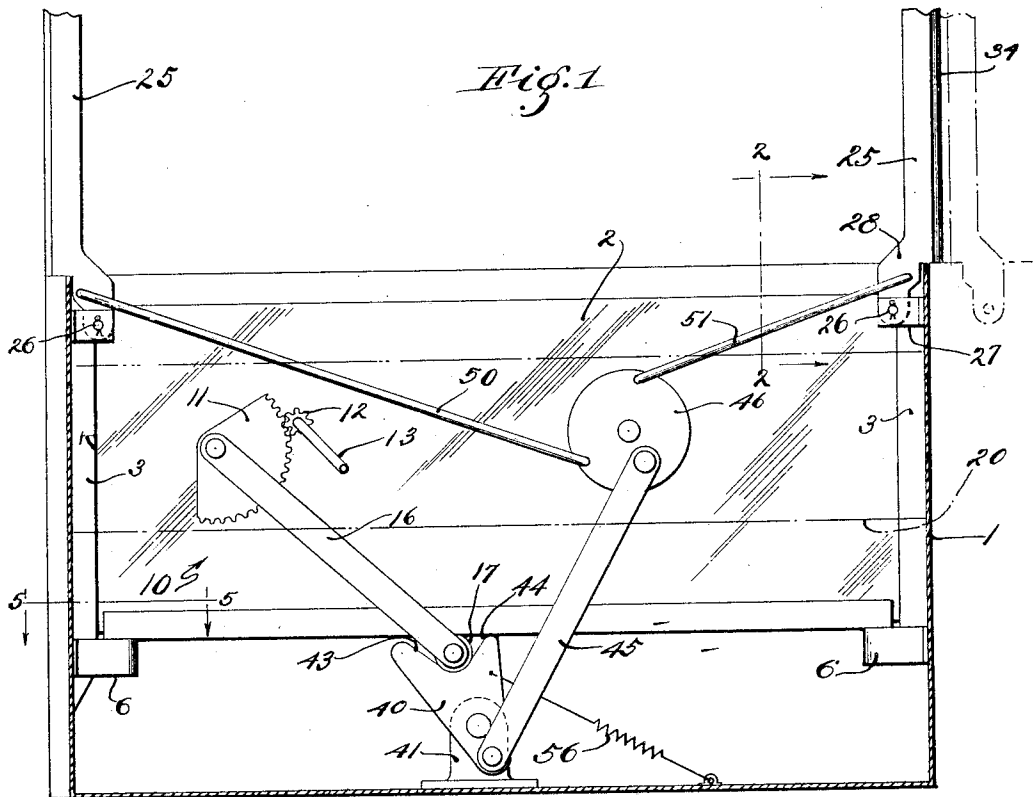
May 16, 1933.

R. L. CARR

1,909,168

CONVERTIBLE BODY

Filed Sept. 2, 1931



Inventor:  
R. L. Carr

## UNITED STATES PATENT OFFICE

RAYMOND L. CARR, OF BOSTON, MASSACHUSETTS

## CONVERTIBLE BODY

Application filed September 2, 1931. Serial No. 560,776.

This invention relates to convertible bodies, and more particularly to an arrangement of closure members which are movable from a lowered position within or adjoining the body wall to a raised position thereabove to form a closure wall.

More particularly the present invention provides a plurality of closure members which may be carried by a single section of a body wall such as a door and which may be moved out of the same by a lifting mechanism to a raised position wherein they not only occupy a position directly above the body wall section but project beyond the same to bridge the space over a structural part of the wall. Thus in accordance with the present invention, pivotally mounted guideways preferably are movable from a lowered position in which they extend along the top of the body wall to a raised position wherein they are engaged by the edges of a vertically movable closure panel or panels, and a lifting mechanism ensures the location of the guideway or guideways in raised position before the panel starts its upward movement into engagement with the same. Accordingly undue strain upon the pivotal mountings of the guideways is avoided such as otherwise might occur, either if the window lifter were thoughtlessly to be operated to start the panel upward upon its upward path with the guideways in their lowered positions, or if the guideways were to be swung toward their lowered positions when the panel is still in engagement with their lower ends, while the accidental slamming of the guideways downwardly from their raised to their lowered positions is also avoided.

In accordance with this invention, the swinging guideways preferably are provided with yieldable portions adapted to engage adjoining portions of the vehicle structure such, for example, as a similar guideway carried by another door. Thus the guideways are adapted to bridge the space over a door post or the like and permit a closure wall to be provided by members which may be readily lowered into the side of the body.

Preferably the conventional window or

panel lifting mechanism is arranged to have a portion thereof follow a longer path than that required to lift the window so that at the lower end of its path it may be effective during its upward movement in lifting the guideways to a raised position and during its downward movement in lowering the same. This avoids the necessity of fumbling with separate posts, stanchions, guideways, etc., and enhances the convenience of manipulation of the closure members, being particularly advantageous, for example, when the driver desires to lift or lower the adjoining window with the car in motion.

Further objects and advantageous features of the invention will be apparent to those skilled in the art upon a reading of the subjoined description and claims in conjunction with the accompanying drawing, in which:—

Fig. 1 is an elevational view of a body section or door with the inner wall thereof removed to show the panel in its lowered position and the guideways in raised position and with the board for supporting the lifter indicated by dot and dash lines;

Fig. 2 is a section indicated by line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1 but showing the guideways in their lowered positions;

Fig. 4 is an enlarged section on line 4—4 of Fig. 3; and

Fig. 5 is a section on line 5—5 of Fig. 1.

In the accompanying drawing, the numeral 1 designates a section of the body wall of a vehicle which provides a pocket in which a panel 2 may be received in its lowered position, the pocket being provided with the conventional channeled guideways 3 at each end to engage marginal portions of the panel. Preferably brackets 6 are secured to the end walls of the pocket, having U-shaped portions 7 (Fig. 5) projecting inwardly at the lower ends of the guideways 3 to support the panel in its lowered position.

While my invention may be employed with a wide variety of window lifting mechanisms, I have shown herein a lifter 10 which comprises a sector 11 having a toothed portion meshed with the pinion 12 that is rotated by the usual hand crank 13 within the ve-

hicle. The lifting arm 16 is secured to the sector and carries a roller 17 that is engageable with the frame of the lower portion of the panel. A suitable board 20, indicated by dot and dash lines, is arranged to support the pivotal mountings for the crank 13 and the sector 11. In accordance with the present invention the arm 16 and the sector 11 are arranged so that the former may swing downwardly to a position wherein the roller 17 is considerably spaced from the bottom of panel 1, as shown in Fig. 3.

A swinging guideway 25 having a channeled portion may be disposed at one or both ends of the pocket 1. Each guideway preferably is pivotally mounted upon pins 26 that are carried by brackets 27 at the end of the door or body section. Preferably the pintles 26 are spaced downwardly and inwardly from the upper corners of the pocket and the body portion of each guideway 25 is offset in relation to the same, being connected thereto by extension portions 28, thus permitting the guideway in its raised position, as shown in Fig. 1, to overhang the end of the pocket and, for example, to cooperate with a similar guideway carried by an adjoining body wall section or door to bridge the space over an intervening structural part of the body wall, such as a door post.

Fig. 4 illustrates a typical cross section of a guideway which is provided with side plates 29 and with a window engaging channel 30 which may be provided with flared edge portions 31. A suitable filler 32 may be disposed between the plates 29 and a yieldable cushioning member 34 may be engaged between the plates 29 and rabbeted portions 33 of the filler. This cushioning member preferably comprises a semi-circular rubber element, as viewed in cross section and is somewhat deformable when the guideway engages an adjoining part of the vehicle, such as a portion of the windshield standard or another guideway or when the opening of the door necessitates relative movement between these parts, although the yieldability of this cushioning member is such that it ordinarily is effective in maintaining a substantially weather-tight seal between the guideway and adjoining structure.

In order to permit the lifter 10 to be effective in raising and lowering the guideways 25 and to avoid the attempted raising of the panel when the latter are lowered as well as attempted lowering of the guideways when the panel is not entirely lowered, I preferably operatively connect the guideways to the lifting mechanism. For this purpose a double cam 40 is pivotally mounted upon a bracket 41 or the like in the lower portion of the body wall pocket. The cam 40 is provided with angularly disposed cam surfaces 43 and 44 which are adapted to be engaged by the roller 17 at the end of the lifting arm 16. A link

45 is pivotally connected to a portion of the double cam and to a rotatable element 46 such as a disk which conveniently may be pivotally mounted upon the board 20 by means similar to that employed for the sector 11. The rotation of the double cam about its pivotal support results in the movement of the link 45 and consequently the pivotal movement of member 35. The latter is connected by suitable links 50 and 51 to the lower portions, i. e. extensions 28, of the guideways 25.

As the lifting arm 16 of roller 17 moves up from its lowermost position, shown in Fig. 3, it engages the upper cam surface 44 of the member 40, swinging the latter to the position indicated in Fig. 1 wherein the roller is free to leave the cam member and to engage panel 2. During this portion of its path the roller 17 is effective through the cam 40, link 45, member 46, and links 50—51 in swinging the guideways from their lowered positions, shown in Fig. 3, to their raised positions, shown in Fig. 1, wherein the channel portions 30 thereof are positioned above the channels 3 in the body wall and are ready to receive the edges of the closure panel 2. Preferably a tension spring 56 connects the swinging cam with a portion of the door or the like, tending to swing the double cam to the position shown in Fig. 1 and thus aiding the lifting of the guideways.

It is obvious that as the lifter arm 16 continues upon its upward movement panel 2 will be lifted into engagement with the guideways 25. Similarly during the upper portion of its downward path the arm 16 first permits the panel 2 to be lowered until it engages the bracket 6, whereupon the double cam 40 is swung downwardly toward the position illustrated in Fig. 3, thus being effective through the link 45 in rotating the member 46 and causing the links 50 and 51 to swing the guideways to their lowered position wherein the channeled portions thereof may engage the upper edge of the lowered panel, which may act as a stop for the same.

The links 50 and 51 may be comparatively light, somewhat resilient rods, the yieldability which permits slight inaccuracies in workmanship so that the exact positioning of the various centers and cam surfaces need not be accurately determined, the top of the body wall acting as a stop to position the guideways when they are raised, and the top of the panel 2 performing a similar function when they are lowered. Thus the member 46 ordinarily may have an angular movement slightly greater than is necessary to move the guideways, the links 50 and 51 being slightly bowed at the end of this movement corresponding to the raised position of the guideways.

It is evident that the present invention affords means permitting the ready positioning

of auxiliary closure members which preferably may be guideways for the main panel but which, if desired, may be separate auxiliary panels or the like so that the closure wall over a door and an adjoining structural portion of the body may be readily formed by the manipulation of a single lifter and so that the tendency to throw undue strain upon the guideways by attempting to lift the panel before the guideways are raised by attempting to lower the guideways before the panel is fully lowered is avoided.

I claim:

1. In a vehicle, a body wall having a pocket therein, a main closure panel movable from a concealed position within the pocket to a raised position thereabove, a closure member movable from a concealed position in the pocket to a raised position at one end of the main closure panel in the latter's raised position, and manually operable lifting mechanism having a connection with the closure member independent of the panel operative to move it from its lowered to its raised position without necessitating movement of the panel.

2. In a vehicle, a body wall having a pocket therein, two closure members movable from a concealed position in the pocket to a raised position above the body wall, and mechanism for moving said members from one to the other of said positions, said mechanism being connected to said closure members so that it lifts one of said members to substantially its raised position before the upward movement of the other member is initiated.

3. In a vehicle, a body wall having a pocket therein, a main closure panel movable from a lowered position in the pocket to a raised position thereabove, a pair of auxiliary closure members movable from lowered positions in said pocket to raised positions at the ends of the main panel, and mechanism for moving said members from one to the other of said positions, said auxiliary members being lifted before the main panel starts upon its upward movement.

4. In a vehicle, a body wall having a pocket therein, a main panel movable from the pocket to a position thereabove, an auxiliary closure member, said member being pivotally mounted to swing from a lowered position adjoining the top of the pocket to a raised position at one end of the panel, and lifting mechanism operatively connected to said panel and member to raise the same, said mechanism having a part movable in a generally upward direction, said part being operatively connected to the auxiliary member in the lower part of its path and engaging the panel during the upper part of its path, whereby the auxiliary member is first lifted and then the panel.

5. In a vehicle, a body wall having a pocket therein, a main panel movable from the pocket

to a position thereabove, an auxiliary closure member, said member being pivotally mounted to swing from a lowered position adjoining the top of the pocket to a raised position at one end of the panel, and lifting mechanism operatively connected to said panel and member to raise the same, said mechanism having a part movable in a generally upward direction, said part being engageable with a part operatively connected to the auxiliary member in the lower part of its path and engaging the panel during the upper part of its path, whereby the auxiliary member is first lifted and then the panel.

6. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a guideway movable out of the body wall to a raised position above the same where it engages an edge of the panel, a lifter for raising said panel, and means associated with the guideway and lifter preventing the latter from being operative in raising the panel until the guideway has been raised.

7. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a guideway movable out of the body wall to a raised position above the same where it engages an edge of the panel, a lifter for raising and lowering said panel, and means associated with the guideway and lifter holding the former against movement out of its raised position when the panel is near its lowered position.

8. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a swinging guideway movable from a lowered position along the top of the body wall to a raised position above the end of the pocket where it may receive the edge of the upwardly moving panel, a manually controllable lifter mechanism operable to swing said guideway to raised position and thereupon to raise the window into engagement therewith.

9. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a swinging guideway movable from a lowered position along the top of the body wall to a raised position above the end of the pocket where it may receive the edge of the upwardly moving panel, a manually controllable lifter mechanism operable to swing said guideway to raised position and thereupon to raise the window into engagement therewith, said lifter also being operable to lower said window and subsequently to lower said guideway.

10. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a pair of swinging guideways movable from a lowered position along the top of the body wall to a raised position above the ends of the

pocket where they may receive the edges of the upwardly moving panel, a manually controllable lifter mechanism operable concomitantly to swing said guideways to raised position and thereupon to raise the window into engagement therein.

11. In a vehicle, a body wall having a pocket therein, a closure panel movable out of the pocket to a raised position thereabove, a swinging guideway movable from a lowered position along the top of the body wall to a raised position above the end of the pocket where it may receive the edge of the upwardly moving panel, a manually controllable lifter mechanism operable to swing said guideway to raised position and thereupon to raise the window into engagement therewith, said lifter having a part movable in a generally upward direction and engageable with the panel at the upper part of its path to lift the latter, a cam pivotally mounted to have a cam surface engageable with said part below its panel engaging position and linkage connecting said cam to the guideway to swing the latter when the same is engaged by said part.

12. In a vehicle, a body wall having a pocket therein, a main closure panel movable out of said pocket to a raised position thereabove, lifting mechanism to move said panel to its raised position, an auxiliary closure member movable from a lowered position to a raised position above the body wall, and a connector between said mechanism and said closure member to effect the raising of the member.

13. In a vehicle, a body wall having a pocket therein, a main closure panel movable out of a lowered position in the pocket to a raised position thereabove, an auxiliary closure member movable from a lowered position adjoining the upper margin of the lowered panel to a raised position where it adjoins one end of the raised panel, and lifting mechanism operable to lift the panel and having a connection extending upwardly beside the lowered panel to the auxiliary closure member, said connection being arranged to lift said member, whereby the mechanism may be operated to lift both the panel and said member.

Signed by me at Boston, Massachusetts,  
this 1st day of September, 1931.

RAYMOND L. CARR.