April 8, 1941. A. PALMER 2,237,949

HANDLE

Filed June 11, 1937

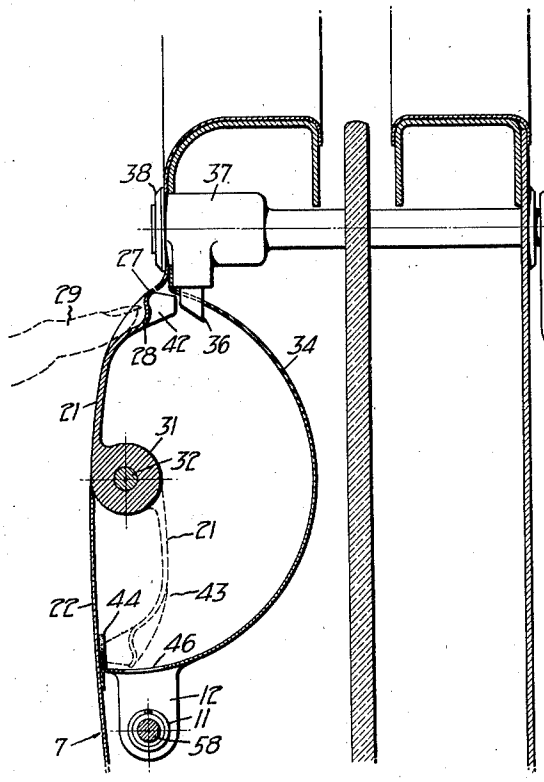


FIG. 1

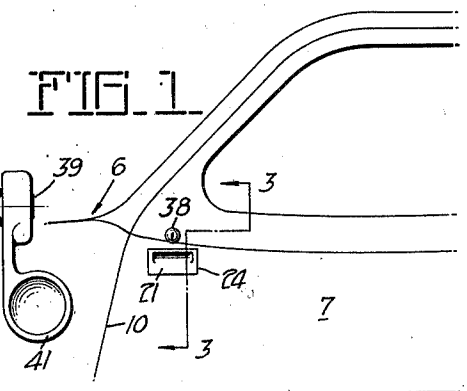


FIG. 2

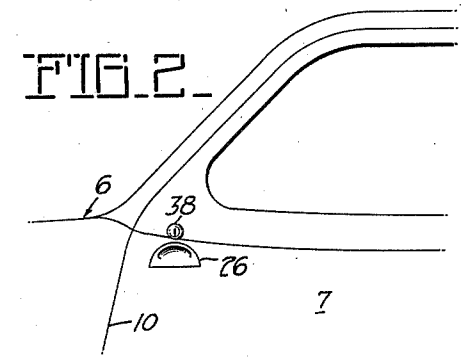


FIG. 3

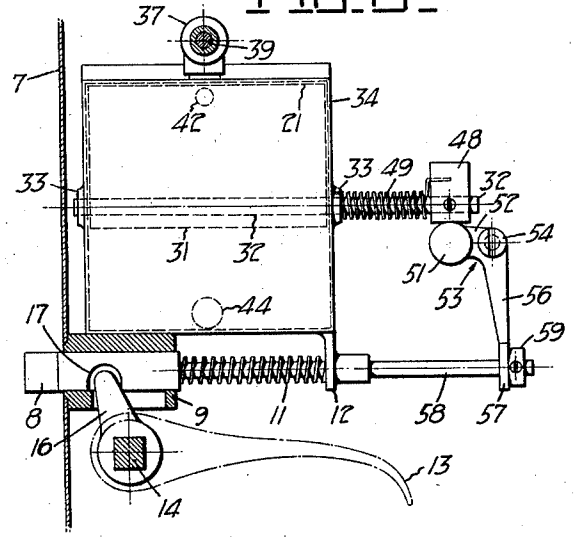


FIG. 4

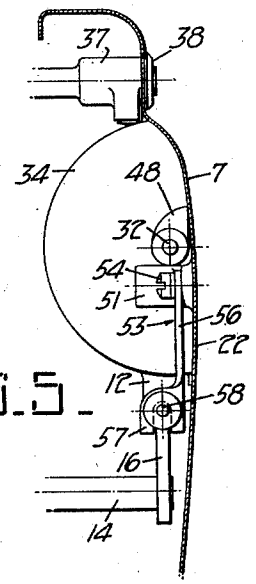


FIG. 5

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HANDLE

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8 Claims. (Cl. 292—165)

My invention relates to a handle for use in grasping a movable element, such as a door, and is particularly concerned with a handle which, when not in use, is smoothly incorporated with the body of the door yet which is instantly usable.

Another object of my invention is to provide a handle which when utilized is simultaneously effective to operate a bolt or latch.

Another object of my invention is to provide a handle which can be held in a locked position.

A further object of my invention is in general to improve handles.

The foregoing and other objects are attained in the embodiments of the invention illustrated in the drawing, in which—

Fig. 1 is a fragmentary side elevation of a vehicle showing the handle of my invention installed therein.

Fig. 2 is similar to Fig. 1 but shows a modified form of handle.

Fig. 3 is a cross-section on the line 3—3 of Fig. 1.

Fig. 4 is an elevation from within the door of the handle, portions being in cross-section.

Fig. 5 is an end elevation of the structure of Fig. 4.

In its preferred form, the handle of my invention is for use with a member to be moved, such as a door, incorporating a plate having an aperture through which access is had to a pocket, the pocket being normally closed by a panel movable by the hand of the operator from a position flush with the plate into another position wherein it acts as a grasping member for moving the door.

While the handle of my invention is usable in connection with various different instrumentalities, such as drawers, panels and the like, it is particularly useful in connection with a door of a vehicle such as an automobile, wherein a smooth exterior surface and streamlining are important from many aspects. It is therefore described herein in connection with an automobile door. In this environment there is provided an automobile body 6 on which a door 7 is mounted for hinged movement. In its closed position, the leading edge 10 of the door is in abutment with the body 6. The door is normally held in closed position in the body by a latch bolt 8 which is movable within a block 9 included in the construction of the door 7 and is ordinarily urged into extended position by a coil spring 11 interposed between the bolt 8 and a bracket 12. The bolt 8 can be manually actuated from within the body 6 by means of a conventional handle 13 which is mounted upon a squared shaft 14 journaled in the door 7 and likewise carrying a lever 16 the terminus of which enters into a notch 17 in the bolt 8. The described mechanism is effective to latch the door in closed position and to be manually released from within the vehicle, for example, in the customary fashion.

In accordance with my invention I provide means which are effective from the exterior of the vehicle body 6 and which are manually operable to operate the bolt 8. Utilizing the door 7 as a support and forming a smooth and normally flush continuation of the door is a finger panel 21, conforming generally to the superficial contour of the door and closely fitting within a corresponding aperture cut through the exterior door panel 22. The contour of the aperture 24 may be rectangular, as shown in Fig. 1, or may be semi-circular as is the contour of the aperture 26 in Fig. 2.

The finger panel 21 is, adjacent its upper edge 27, preferably provided with an indentation 28, comfortably to accommodate the forefinger or forefingers 29 of the operator when they are placed thereupon for swinging the panel 21. To provide for the desired pivotal movement of the panel 21, it is preferably provided with a relatively heavy hub 31 encompassing and fastened upon a pivot shaft 32 which extends across the panel 21 and is suitably journaled, as at 33, in opposite sides of a generally semi-circular cylindrical (or hemispherical, with the modification of Fig. 2) housing 34 which closely conforms to the contour of the path of movement of the panel 21.

The panel 21 may be retained in closed position, so that the door 7 cannot be operated, by means of a lock bolt 36 projected or retracted by operation of a lock 37 installed in the door 7 and operable by a key inserted into a suitable aperture in the escutcheon plate 38 or operated through a shaft 39 controlled by a manual lever 41 within the vehicle body 6. When the bolt 36 is projected through an aperture in the housing 34, a stop lug 42 on the finger panel 21 contacts the bolt 36 and precludes any rotary movement of the panel 21 so that the door 7 cannot be opened. When, however, the bolt 36 is retracted, the path of the panel 21 is free and, by pressure upon the finger plate 21, the plate is freely rotatable around the axis of the shaft 32 from its upright position through substantially 180° of rotation into a depending position shown

by the dotted lines 43 in Fig. 3. In its lowermost position the lug 42 abuts against a rubber cushion 44 to provide a firm hand grip to open the door 7. Since, preferably, the panel 21 fits very closely within the housing 34 in order to preclude the entry of foreign material and to prevent catching or pinching of the operator's fingers, there is an outlet aperture 46 provided in the lower part of the casing to permit the escape of air or water therefrom. When the panel 21 is in its lowermost position, a smooth hand grip is provided which is very firm and affords a good means of controlling the movement of the door 7 with respect to the body 6.

In order to utilize the movement of the panel 21 to operate the latch 8, I preferably extend the shaft 32 to carry a scroll cam 48, and interpose a spiral spring 49 between the cam and the hub 33, so that normally the panel 21 is lightly urged into uppermost or closed position yet is freely movable by the operator toward a downward and open position against the urgency of the spring 49. During the first 90° of movement of the panel 21, or approximately through that range of movement, the cam 48 is ineffective and thereby provides a lost-motion connection, but in the neighborhood of 90° of movement the cam begins to be effective upon a follower 51 included with one arm 52 of a bell crank 53 mounted to pivot about a pin 54. The other arm 56 of the bell crank 53 terminates in a pierced pad 57 straddling a rod 58 extending from the latch bolt 8 and carrying a collar 59 thereupon.

During the latter part of the operation of the panel 21, therefore, the cam 48 is effective to depress the follower 51, rotating the bell crank 53 anticlockwise, as seen in Fig. 4, and retracting the latch bolt 8 against the urgency of the spring 11. I expressly make the panel 21 ineffective during the first part of its movement, since such initial movement is effected by pressure of the operator's fingers directly extended in which position the fingers cannot comfortably exert a great deal of force, but during the latter part of the movement of the panel 21 there is a contracting or grasping movement of the operator's fingers against the palm of the hand, in effect squeezing the panel 21 against or toward the panel 22. This operation of the operator's hand is very effective and is easily quite powerful; hence the operation of the latch bolt 8 is preferably entirely effected during this part of the movement of the panel 21. When the operator releases his grip upon the approached panels 21 and 22, the panel 21 follows the retraction of his fingers from the housing 34 under the urgency of the spring 49 as well as partially through the urgency of the spring 11. The return movement of the panel continues until the panel is in closed position, wherein it is stopped by the cam 48 abutting the panel 22. Since there are no stop ledges or overhanging projections in the path of the panel 21, there is no likelihood of pinching the operator's fingers or catching on inserted material. Since the interior of the casing or housing 34 is entirely smooth and devoid of projections, and since the panel 21 itself is entirely smooth and is a close fit with the casing 34, there is no possibility of any pinching or catching of the operator's fingers or apparel.

I claim:

1. A handle and latch structure comprising a support, a panel mounted on said support for movement into a position facilitating concurrent grasping of said panel and support, a latching mechanism on said support, and a lost-motion connection between said panel and said latching mechanism.

2. A handle and latch structure comprising a support, a housing on said support capable of receiving a user's fingers, a panel movably mounted within said housing and in substantial contact with the walls thereof throughout its range of movement, a latching mechanism on said support outside said housing, and a lost-motion connection between said panel and said latching mechanism.

3. A handle and latch structure comprising a support, a semi-circular cylindrical housing on said support, a panel coaxially mounted on said housing for rotary movement therethrough, means for locking said panel in one position, a latching mechanism, and means for connecting said panel to operate said latching mechanism.

4. A handle and latch structure comprising a support including a door panel having an aperture therein, a panel fitting said aperture, means on said support mounting said panel for movement out of said aperture and into juxtaposition with said door panel adjacent said aperture, a latching mechanism on said support, and means for connecting said panel to operate said latching mechanism.

5. A handle and latch structure comprising a support including a plate having an aperture therein capable of receiving a user's fingers, a panel movable by the user's fingers from a position closing said aperture into a position overlying said plate adjacent said aperture, a latching mechanism on said support, and means for actuating said latching mechanism in response to movement of said panel.

6. A handle and latch structure comprising a support including a plate having an aperture therein capable of receiving a user's fingers, a panel mounted on said support for movement toward said plate by a user's fingers extending through said aperture, said plate and said panel when adjacent being adapted to be gripped in the user's hand, and means for actuating said latching mechanism in response to movement of said panel.

7. A handle and latch structure comprising a support including a plate, a panel adapted to form substantially a flush continuation of said plate, means for mounting said plate and said panel for relative approaching movement when grasped between the fingers and palm of a user's hand, a latching mechanism on said support, and means for actuating said latching mechanism in response to a part only of the movement of said panel.

8. A handle and latch structure comprising a support having an exposed surface, a panel pivotally mounted on said support for movement from a position substantially flush with said surface into a position for coincidental grasping of said panel and support between the fingers and palm of a user's hand, a latching mechanism on said support, and means for making the final part only of the pivotal movement of said panel effective upon said latching mechanism.

ALLAN PALMER.