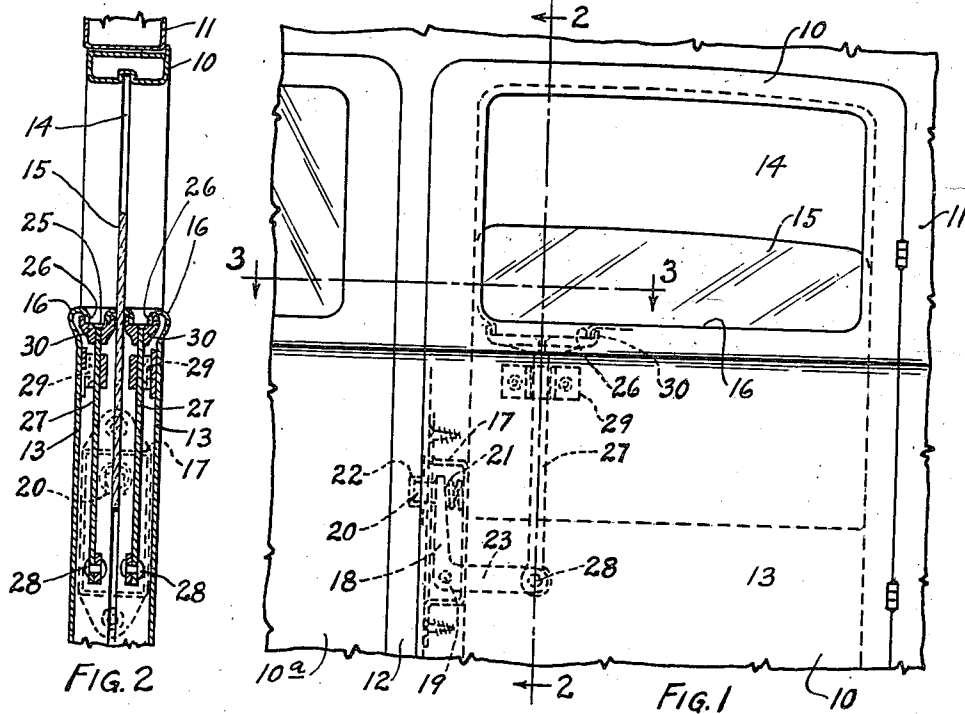


Oct. 14, 1941.

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DOOR LATCH AND LOCK

**2,258,831**

Filed Nov. 7, 1938



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## UNITED STATES PATENT OFFICE

2,258,831

## DOOR LATCH AND LOCK

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Application November 7, 1938, Serial No. 239,267

4 Claims. (Cl. 292—227)

This invention relates to latches and locks for doors and similar closures and to means for operating and controlling the same. While the present invention may be of general application and use, it is primarily designed and intended for use in conjunction with the doors of automotive vehicles, particularly passenger automobiles.

Among its other objects, the present invention contemplates a latch and lock construction and its operating and controlling means wherein all parts, such as handles, levers, etc., are eliminated as projections on or from any normally exposed surface of the door or of the vehicle body or of any part thereof.

With the above and other objects in view, as will be apparent, this invention consists in the construction, combination, and arrangement of parts all as hereinafter more fully described, claimed and illustrated in the accompanying drawing, wherein:

Fig. 1 is a fragmentary side elevation of the door of an automotive vehicle and the surrounding body illustrating the present invention in conjunction therewith;

Fig. 2 is a vertical section taken along line 2—2 of Fig. 1;

Fig. 3 is a horizontal section taken along line 3—3 of Fig. 1; and

Fig. 4 is a perspective view of the latch and its operating and controlling mechanism separated from the door to illustrate the details of construction thereof.

Heretofore it has been generally customary to operate and control the latches and locks for the doors of automotive vehicles by and with handles or levers which project from and beyond the surface of the door. Thus there has usually been provided a handle or equivalent member projecting from each face of the door and frequently on the rear doors of the vehicle, there also has been provided a relatively small handle or lever projecting from the inner surface of the door, the manipulation of which has locked the latch from operation from the exterior of the vehicle. These handles or levers projecting from the opposed sides or surfaces of doors, particularly the doors of automotive vehicles, have been open to many objections, among which are the liability of injury to the car occupants in the event of accident or of their otherwise coming in contact therewith, the possibility of the handles becoming loosened or broken, the expense involved in making such handles decorative, etc.

The present invention contemplates the complete removal and elimination of any and all

parts, handles, and like elements projecting from the sides or faces of the door whereby said sides or faces are free and clear of any projecting members or parts incidental to the operation and control of the door latch or lock.

Reference being had more particularly to the drawing, 10 designates the door of an automobile hinged or mounted in the door opening of the body 11 of an automobile in any suitable or customary manner. As is usual in the closed or sedan types of automobile bodies, the body openings for the front and rear doors 10 and 10a on the same side of the body 11 are separated by a body post or upright 12.

The door 10 comprises a lower solid panel section 13 and an upper window opening 14. A glass window 15 is slidably mounted in the panel 13 between the spaced opposite walls thereof to be projected into and out of the window opening 14 in any desired manner and by any suitable means, which form no part of the present invention. When the window 15 is completely removed from the window opening 14 it is centrally located between the spaced walls of the panel section 13 of the door 10.

The spaced walls of the panel section 13 at the edges thereof adjoining or constituting the bottom or lower side of the window opening 14 are bent inwardly to form the ledges 16 on each side of the operating plane of the window 15 and terminate adjacent the planes of the opposed faces of said window.

In the frame of the door 10 and between the spaced walls of the solid panel section 13 thereof is positioned a box or latch housing 17, the outer face or side of which is flush with the vertical edge of the door. A latch plate 18 is pivotally mounted within the housing 17 on the pin 19 fixed adjoining the lower end of said housing and carries a latch 20 which normally projects through an opening in the outer face or side of said housing. To cause the latch 20 to occupy its normal position i. e. projecting beyond the limits of the door, an expansion coil spring 21 is disposed between the rear face of the latch plate 18 and the rear or inner side of the housing 17. Thus when the spring 21 is free to act the latch 20 is projected from the housing 17 and beyond the face of the vertical side of the door 10 so that it may be engaged in the aperture of the plates 22 fixed in the exposed face of the body post 12 or some other appropriate fixed part of the vehicle body 11. When the latch plate 18 is moved inwardly about its pivot 19, against the pressure of the spring 21, the latch 20 is with-

drawn from engagement with the aperture of the plate 22 and the door 10 is free to swing on its hinges.

For the purpose of operating, swinging or moving the latch plate 18 about its pivot 19 and against the pressure of the spring 21 an arm 23 is formed integrally with or fixed to each vertical edge of the lower end of said plate and these arms 23 project substantially at right angles from the opposite face of said plate to that carrying the latch 20. These arms 23 pass through slots 24 adjoining the lower end of the rear wall or side of the housing 17 to project into the space between the walls of the panel section 13 of the door 10, one being located on each side of the window 15 and its vertical plane of operation.

Each of the ledges 16 of the door 10, in alignment with the end of the corresponding arm 23 remote from the plate 18, is provided with an opening 25, the lip 26 of which is bent inwardly to create an inwardly extending flange 26. A rod 27 extends from adjacent each opening 25 to the extremity of the corresponding arm 23 where it is pivoted by a pin or other suitable means 28. If desired, a keeper 29 may be affixed to the inner face of each wall of the panel section 13 of the door 10 through which one of the rods 27 may reciprocate.

At its upper end each rod 27 is provided with a finger cup 30 which receives and operates or reciprocates over the inwardly extending flange 26 surrounding the aligned opening 25 in one of the ledges 16.

From the foregoing it is manifest that each substantially horizontal ledge 16 of the door 10 is provided with an opening 25 with which cooperates a cup 30 and a rod 27. The insertion of the fingers in the opening 25 causes them to so contact with the coacting cup 30 that a downward pressure is exerted thereon. This pressure moves the cup 30 and its rod 27 downwardly forcing the cooperating arm 23 in a like direction, thereby swinging the latch plate 18 inwardly against the pressure of the spring 21 and releasing the latch 20 from engagement with the aperture of the plate 22. When the pressure of the fingers is removed from the cup 30 the parts return to their normal positions under the influence of the spring 21.

Thus the latch plate 18 may be operated against the action of the spring 21 from either side of the door 10 without employing any projecting or exposed parts, such as handles, etc. The provision of the flange 26 coacting with the cup 30 not only guides the cup in its movement relatively to the ledge 16 but also constitutes a guard to prevent injury to the fingers. Furthermore this cooperation between the cup 30 and the flange 16 tends to render the opening 25 weather proof by largely if not entirely preventing leakage into the space between the walls of the panel section 13 through the opening 25. It is to be observed that none of the parts or elements of the present invention in any manner interferes with the window 15 or its movement in the panel section 13, the housing 17 being located in a vertical side piece of the frame of the door 10 and hence removed from the adjacent vertical edge of said window and the arms 23, rods 27, and the cups 30 being positioned between the window 15 and its vertical operating plane of operation and the walls of the panel section 13 of the door.

What is claimed is:

1. In a vehicle door having a window opening and a solid panel section with spaced walls the edges of which adjoining the window opening being bent inwardly toward each other to create ledges flanking the plane of the window and each such ledge having an opening therein; an inwardly extending flange at the edge of each of said openings, a housing fixed in one vertical side of the door, latch plate pivoted within said housing, a latch carried by said plate and adapted to be projected from said housing and beyond the edge of the door, a coil spring interposed between a wall of the housing and said latch plate to normally project said latch from the housing and beyond the edge of the door, an arm fixed to each side of the latch plate and projecting from the housing into the space between the walls of the panel section of the door, one arm being positioned adjoining the inner surface of each of said walls, a lateral rod pivoted to the extremity of each arm and terminating adjacent one of the openings aforesaid, and a cup affixed to the terminal of each rod receiving and operating over the inwardly extending flange at the edge of said adjacent opening.

2. In a vehicle door, having spaced walls and an opening in each wall; an inwardly extending flange at the edge of each opening, a housing set in one edge of said door, a latch plate pivotally mounted in said housing, a latch carried by said plate and adapted to be projected from said housing and beyond the edge of the door, a spring interposed between said plate and said housing for normally projecting said latch as aforesaid, an arm fixed to each side of said plate and projecting into the space between the walls of the door, a rod pivoted to the extremity of each arm and terminating adjacent one of the said wall openings, and a transverse cup at the end of each rod receiving and operating over the inwardly extending flange at the edge of said adjacent wall opening.

3. The combination with a door including spaced walls each having a ledge along one edge and provided with an opening in each ledge, a housing set in one edge of said door, a latch plate pivotally mounted within said housing, a latch carried by said plate to be projected from said housing and beyond the edge of the door, means for normally projecting said latch from the housing, an arm fixed to each side of the latch plate and extending into the space between the walls of the door, a rod pivoted to the extremity of each arm and terminating adjacent one of the ledge openings aforesaid, and means whereby an operating pressure may be exerted on said rod from the adjacent ledge opening.

4. The combination with a vehicle door having spaced walls and having a hand opening in each wall, of a vertical latch plate pivotally mounted between said walls adjoining the swinging vertical edge of the door, a latch carried by said plate and projecting from the swinging edge of the door, an arm fixed at substantially right angles to said plate adjacent each wall of the door, and individual means coacting with each hand opening and one of said arms for moving said plate about its pivot and out of its normal position.

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