

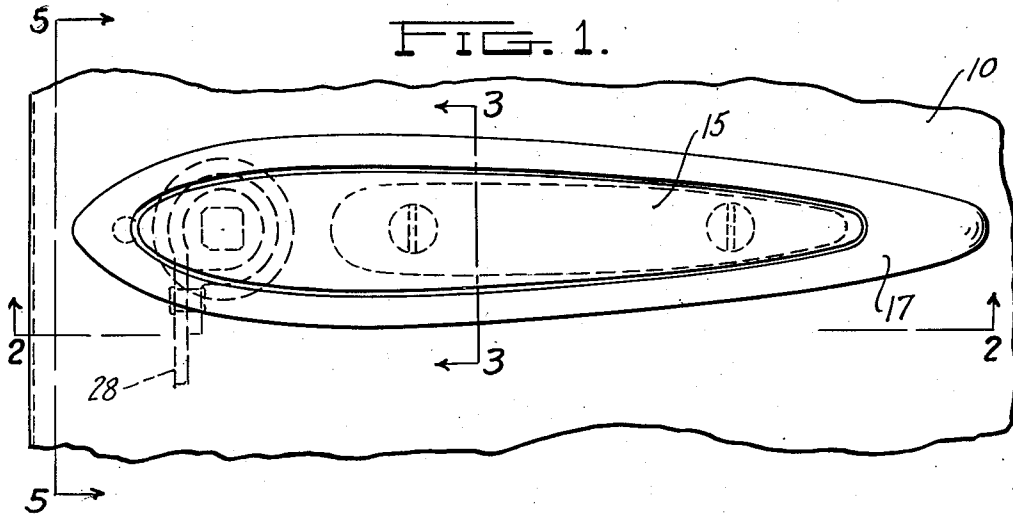
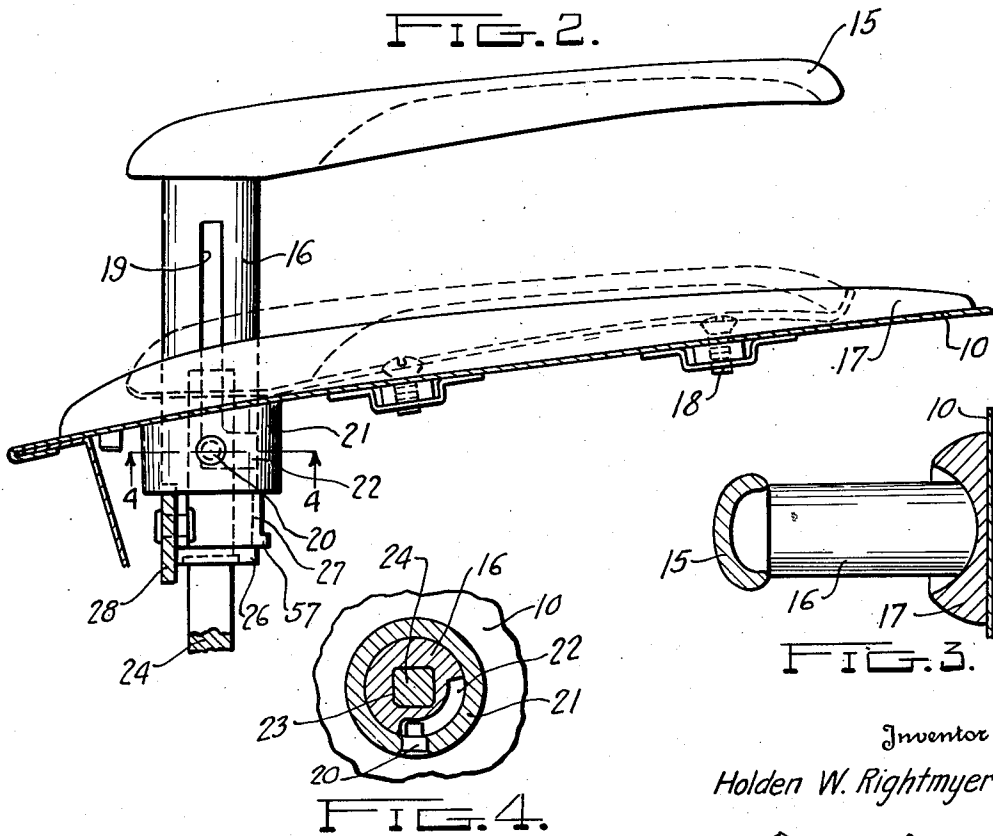
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H. W. RIGHTMYER
FLUSH DOOR LATCH STRUCTURE

2,218,960

Filed April 29, 1937

3 Sheets-Sheet 1



Inventor
Holden W. Rightmyer

Oliver & Oliver

By

Attorneys

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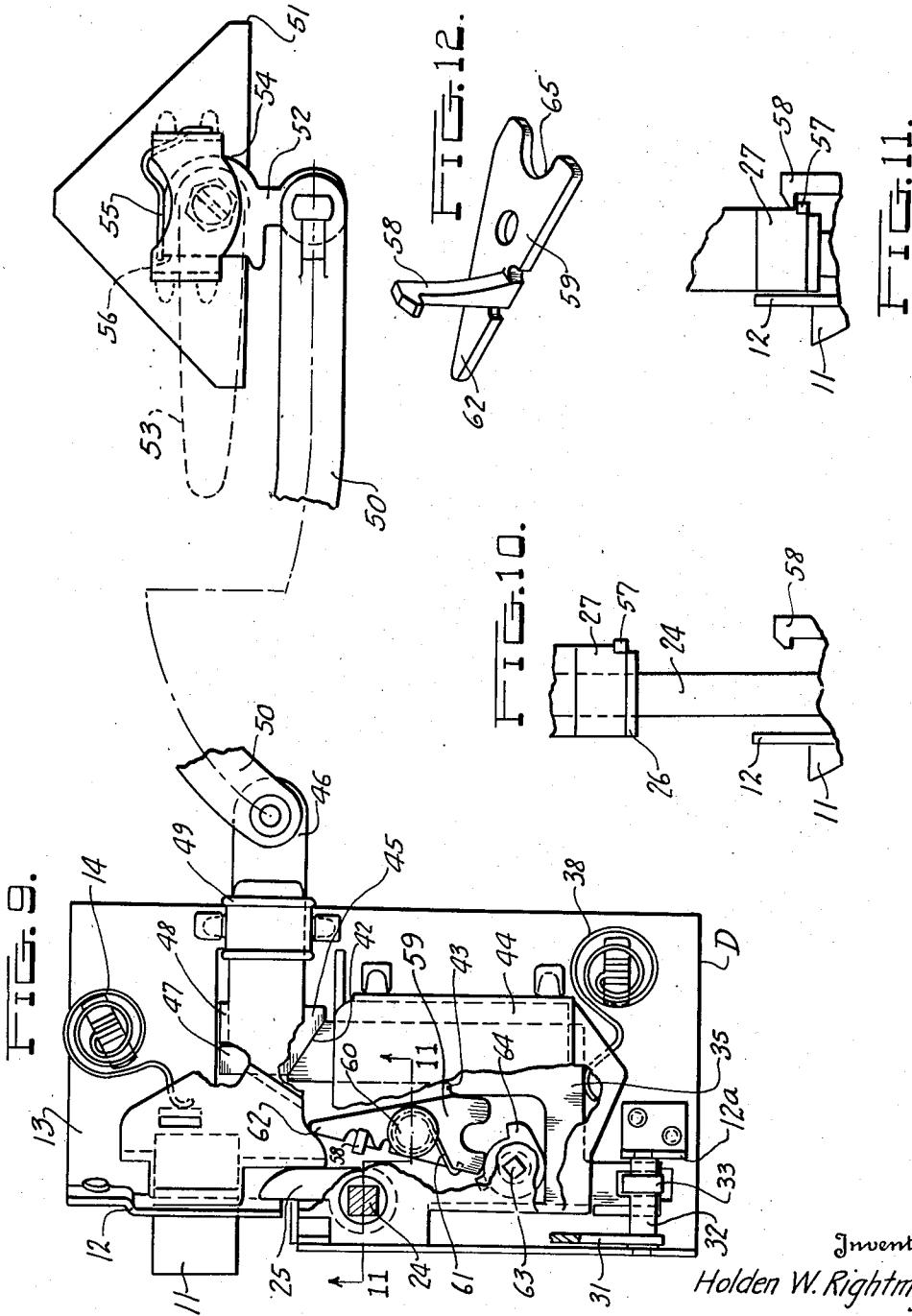
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Inventor
Holden W. Rightmyer

Owen & Owen

Attorneys

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FLUSH DOOR LATCH STRUCTURE

Holden W. Rightmyer, Toledo, Ohio, assignor to
The American Swiss Company, Toledo, Ohio, a
corporation of Ohio

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3 Claims. (Cl. 292—1)

This invention relates to vehicle door latches but more particularly to a latch mechanism for an outside door handle which can be moved to a position substantially flush with the outer surface of the door. Flush door handles of this character are desirable not only because when in their flush position they remove a dangerous projection which has caused serious injuries but also because they are exceedingly effective in militating successfully against unwarranted entrance to the interior of the vehicle.

An object of this invention is to produce a new and improved vehicle door latch structure of the above character in which the outside handle can be moved to flush position by actuation of the remote control handle on the inside of the door by movement in a non-bolt retracting direction.

Another object is to produce a vehicle door latch mechanism having the new and improved features of construction, arrangement and operation hereinafter described.

For purposes of illustration, the invention is shown on the accompanying drawings in which Figure 1 is a fragmentary elevation of a portion of a vehicle door showing the outside door handle;

Fig. 2 is a sectional view substantially on the line 2—2 of Fig. 1;

Fig. 3 is a sectional elevation on the line 3—3 of Fig. 1;

Fig. 4 is a transverse section on the line 4—4 of Fig. 2;

Fig. 5 is a vertical sectional elevation on the line 5—5 of Fig. 1, showing the outside door handle in operative position;

Fig. 6 is a view similar to Fig. 5 showing the handle in its flush position;

Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 5;

Fig. 8 is an enlarged perspective view of the cam plate which is actuated for moving the outside handle to its flush position;

Fig. 9 is a vertical elevation with some of the parts broken away of the latch mechanism and the remote control structure;

Fig. 10 is a fragmentary elevation of the outside door handle shaft and associated parts in the position occupied when the handle is in its operative position;

Fig. 11 is a view somewhat similar to Fig. 10 showing the position of the parts when the handle is in its flush position; and

Fig. 12 is a perspective view of the detent or arm which operates to retain the cam plate in

position to hold the outside handle in flush position.

The illustrated embodiment of the invention comprises a vehicle door 10 on the inside of which is mounted the door latch structure D (Fig. 9) which has a latch bolt 11 projecting through a flange 12 of the case plate 13. A coil spring 14 mounted on the case plate urges the latch bolt to latching position. The latch bolt is retracted from the outside of the door by a handle 15 which is mounted on a sleeve 16. The handle 15 is adapted to be pushed in against the outer side of the door 10 on which a socket member 17 is secured by screws 18. When the handle 15 is pushed into the recess formed in the socket member 17, it is substantially flush with the door 10 as will be seen from the dotted line position shown on Fig. 2.

The sleeve 16 is guided in its axial movements by a longitudinal slot 19 into which a pin 20 projects. The pin 20 is secured to an escutcheon 21 disposed on the inside of the door panel 10 and it will be observed that the slot 19 merges in a lateral extension 22 so that when the handle is in its outer or operative position, turning movements are permitted to enable the latch bolt to be retracted. The sleeve 16 is formed with a bore 23 which is of rectangular shape to receive a spindle 24 which engages at its inner end the roll back 25 (Fig. 9) which, upon turning of the handle 15, retracts the latch bolt against the force of the spring 14.

Formed on the inner end of the sleeve 16 is a flange 26 adjacent which the sleeve 16 is reduced and mounted upon the reduced portion is a collar 27 from which extends laterally of the sleeve a fork 28.

The fork 28 provides an elongate slot 29 in which a roller 30 mounted on the outer end of an arm 31 is adapted to ride. The arm 31 is mounted on a shaft 32 which is pivoted on the flange 12 of the case plate 13 and a bracket 12a. In fixed relation to the arm 31, for movement therewith, is an arm or knob 33 which extends into an opening 34 formed in the lower end of the cam plate 35. It will be understood that the arms 33 and 31 act together as a bell crank lever and upon swinging movement thereof in a counter-clockwise direction (Fig. 5), the outside handle 15 is forced inwardly into engagement with the socket member 17. An inclined slot 37 formed in the flange 12 is to provide clearance for the small end of the roller 30 when the arm 31 is swung inwardly.

The cam plate 35 is slidable vertically upon

the case plate 13 and is urged upwardly by a coiled spring 38. As shown in Fig. 8, the cam plate 35 has a vertically disposed portion 39, a horizontal portion 40 and a vertical portion 41 provided with a cam surface 42 at its upper end and an abutment or shoulder 43 on a side edge of the vertical portion 41. A cover plate 44 suitably secured to the case plate 13 retains the cam plate 35 in the desired position.

Cooperating with the cam surface 42 of the cam plate 35 is an extension 45 forming a part of a slide 46. The slide 46 has a shoulder 47 engageable with a flange 48 on the bolt plate so that by pulling rearwardly on the slide 46, the bolt 11 is retracted against the force of the spring 14, a suitable guide 49 guiding the movement of the bolt plate.

The slide 46 is connected by a link 50 to a remote control unit 51 having an arm 52 which is suitably actuated by a handle 53 disposed on the inside of the door. It will be noted that the arm 52 has a rounded surface 54 against which a spring 55 bears. The curved surface 54 terminates in an abrupt shoulder 56. Consequently, when the handle 53 is turned in a non-bolt retracting direction so that the cams 45 and 42 cooperate to effect a downward movement of the cam plate 35 to move the outside handle 15 to flush position, the spring 55 urges the handle 53 to normal or intermediate position. It will be obvious that by turning movement of the handle 53 in the opposite direction, the latch bolt 11 is withdrawn from latching position.

When the outside handle 15 is moved inwardly to its flush position, a projection 57 on the collar 27 is engaged by a hook member 58 which forms a part of and extends at right angles to an arm or detent 59. The arm 59 is mounted on a pin 60 and a spring 61 normally urges the arm to operative position so that the hook 58 can engage the lug or projection 57. It will be apparent that when the cam plate 35 is moved downwardly, the relieved upper end thereof above the shoulder 43 permits the arm 59 to swing to the right (Fig. 9), thereby enabling the hook 58 to engage the lug 57 and hold the handle 15 in its flush position.

An extension 62 on the arm 59 is disposed in the path of movement of the bolt 11 so that when the latter is retracted, it engages the extension 62 and rocks the arm 59 so as to move the hook 58 away from the lug 57. This allows the spring 38 to force the cam plate 35 upwardly and through the parts above described, returning the outside handle 15 to its operative position. It will be understood that the arm 59 abutting against the shoulder 43 holds the cam plate 35 in its lowered

position until the arm is rocked out of the way.

To enable the outside handle 15 to be released from its flush position, a shaft 63, which may be operated by key mechanism from the outside of the door, is operatively connected to an arm 64. The arm 64 is engageable in a slot 65 formed in the arm 59 and by swinging the latter to the left of Fig. 9, the outside handle 15 will be released as will be readily understood.

It is to be understood that changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In a vehicle door latch, a spring tensioned latch bolt, an outside operated retractor for said bolt including an axially movable handle, an inside operated retractor including a control handle spaced laterally relative to said outside retractor, said handle being movable from an intermediate position in one direction to retract the latch bolt and in the opposite direction to impart axial movement to said outside handle, means operable by movement of said inside handle to impart such axial movement to said outside handle, and additional means normally urging said handle to its intermediate position when moved in a non-bolt retracting direction.

2. A vehicle door latch in accordance with claim 1, wherein the means operable by movement of the inside handle to impart axial movement to the outside handle, includes a vertically sliding plate, a pivoted bell crank lever mechanism having movable connection with the plate, and means connecting the bell crank lever to the handle, whereby rocking of the bell crank lever causes axial movement of the outside handle to inoperative position.

3. A vehicle door latch in accordance with claim 1, wherein the means operable by movement of the inside handle to impart axial movement to the outside handle, includes a vertically slidable plate having a cam, wherein the inside operated retractor includes a cam for engagement with the cam of the plate, a pivoted bell crank lever mechanism having an end movable in a slot provided therefor in the plate, and means comprising a fork member having connection with the axially movable handle and wherein the other end of the bell crank has a projection engaging said fork member whereby rocking of the bell crank causes axial movement of the outside handle to inoperative position.

HOLDEN W. RIGHTMYER.