Sept. 14, 1965 J. H. ROETHEL 3,206,240

DOOR LOCK

Filed July 15, 1963

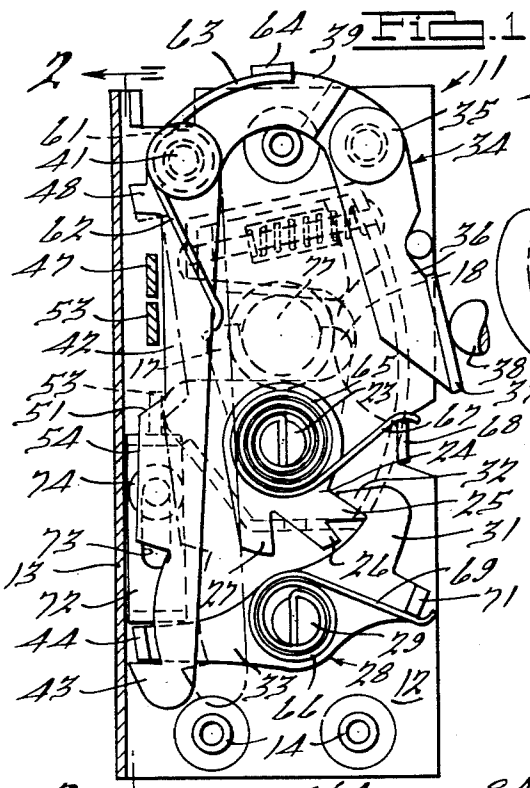


Fig. 1.

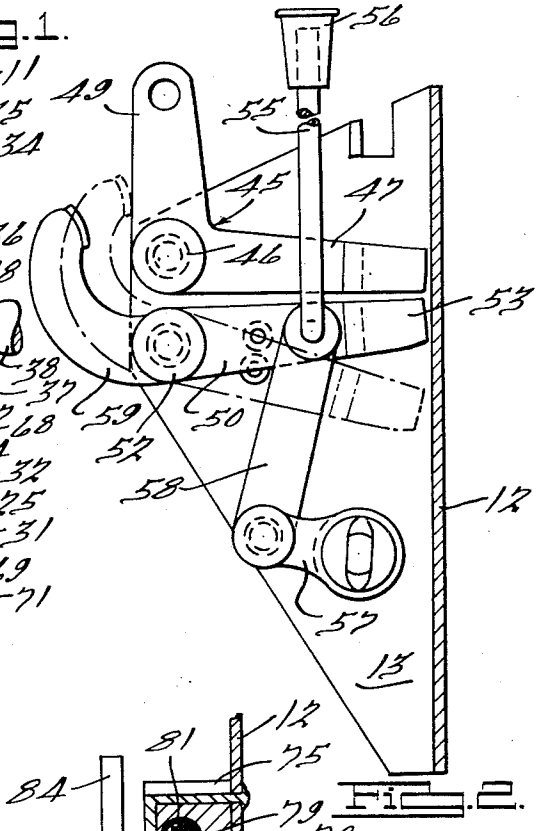


Fig. 2.

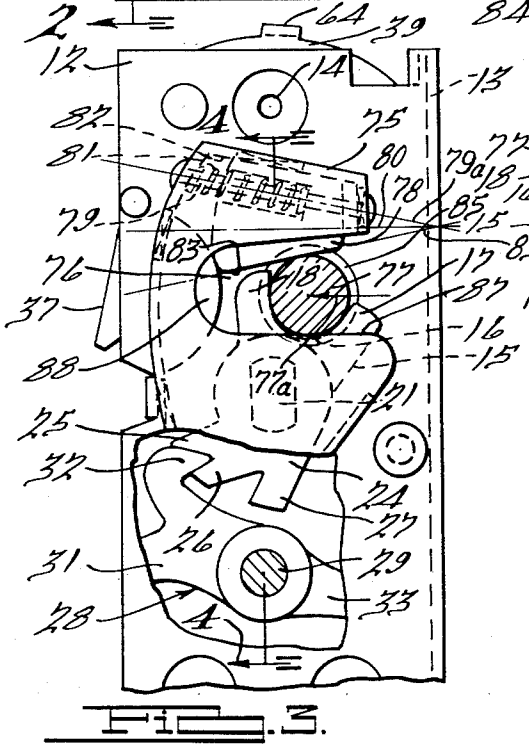


Fig. 3.

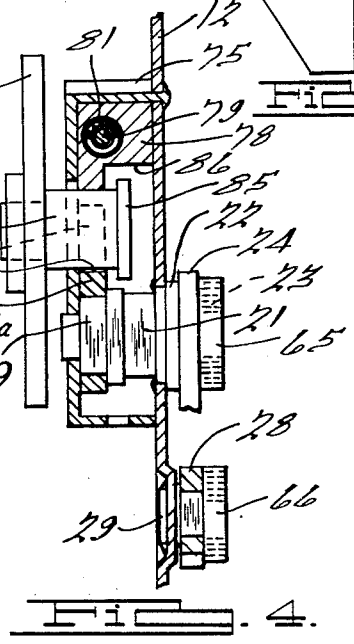


Fig. 4.

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DOOR LOCK

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15 Claims. (Cl. 292—216)

This application is a continuation-in-part of application Ser. No. 161,974, filed December 26, 1961, and now abandoned.

This invention relates to latch mechanism for swinging doors, particularly the doors of automobile or other vehicle bodies.

It is an object of the present invention to provide an improved latch mechanism of the so-called "free wheeling" category. In this category of latch mechanisms, the operating levers, links and connecting members coupling the manually operable devices, such as the door handles, push buttons or the like, to the latch device for releasing the latter for movement from latched to unlatched position, may be rendered inoperative. This is accomplished by uncoupling or disconnecting selected links or levers. The manually operable device, such as the handle or push buttons, remains responsive to actuation, but no actuating movement is transmitted to the latch device holding member. In its usual form the holding member is a detent means having holding engagement with a ratchet or control plate coupled to the latch element.

In its preferred form, the present latch mechanism incorporates a simple link, pivotally mounted and swingable between detent means engaging or bypassing positions. The detent means holds the latch device in latched position and must be disengaged therefrom to permit unlatching movement. The link is coupled to the manually operable device, such as a push button or handle, through a lever means. When the link is in detent means engaging position, actuating movement of the manually operable device is transmitted to the detent means to cause disengagement of the latter from the latch device; conversely, when the link is in detent means bypassing position, the manually operable device is inoperative to cause detent means movement.

Other objects, features and advantages of the present invention will appear in the following description and appended claims, reference being had to the accompanying drawing, in which:

FIG. 1 is an elevation, in part sectional, looking toward the inner face of the latch mechanism plate on which the latch element is carried;

FIG. 2 is an elevation, in part sectional, looking in the direction of the arrows 2—2 of FIG. 1;

FIG. 3 is an elevation looking at the front face of the latch mechanism plate of FIG. 1; and

FIG. 4 is a vertical section, in part fragmentary, taken through the line 4—4 of FIG. 3.

The latch mechainsm embodying the present invention is generally designated 11 and comprises a case plate 12 having a flange 13. The case plate 12 is adapted to be secured, as by means of screws inserted through the screw bosses 14, to the inner side of the free edge wall of a vehicle door with the flange 13 positioned along the inner panel of the door.

The latch element, generally designated 15, is pivotally mounted on the case plate 12. The latch element 15 comprises a bifurcated or hook-like member formed at its end spaced from its pivotal mounting with a deep notch or recess 16 disposed between a pair of side portions or arms 17 and 18 having rounded ends.

The latch element 15 is carried on one end 19 of a short shaft 21 rotatably journalled in a shoulder bushing 22 mounted in the case plate 12 (see FIG. 4). The latch element 15 and the shaft end 19 are coupled to each other so that turning movement of the one is always transmitted to the other.

The shaft 21 is coupled at its opposite end 23 to a ratchet member 24. Here again the coupling is such that turning movement of the ratchet member 24 and the shaft 21 occurs in unison. Thus, the latch element 15 and ratchet member 24 are coupled through the shaft 21 for movement in unison and for purpose of definition the three elements may hereinafter be referred to as the latch device or latch device means.

The ratchet member 24 has three depending tooth-like elements or projections 25, 26 and 27. The tooth-like projections are adapted to be engaged by a detent means, generally designated 28. The detent means 28 comprises a member pivotally mounted intermediate its ends on a pivot stud 29 mounted on the case plate 12. The detent means 28 is a first order lever having an upwardly inclined arm 31 terminating in a V-shaped end portion 32 and a substantially horizontally extending arm 33.

The end portion 32 of the detent means arm 31 is engageable with each of the projections 25, 26 and 27 on the ratchet member 24 for a specific function. As shown in FIG. 1, the portion 32 is engaged with the projection 25. In this position of engagement, the detent means 28 holds the ratchet member 24 and, therefore, the latch element 15 in fully latched position. If the end portion is in engagement with the projection 26, i.e., between the projections 25 and 26, the latch element would be held in a secondary latched position, as shown in FIG. 3. In this position the door would not be fully latched but would be held against inadvertent opening. It should be noted that the depth of the cut between the projections 25 and 26 is relatively shallow, for a reason to be explained.

The V-shaped end portion 32 is adapted to engage the third projection 27 in fully unlatched position of the latch element and when so engaged the detent means 28 is in exactly the same position it occupies when in the position shown in FIG. 1. The reason for this will be also be explained.

To disengage the detent means 28 from its holding position shown in FIG. 1, it must be swung in a clockwise direction. This swinging movement may be accomplished from either the outside or the inside of the vehicle door.

It will be noted that the latch mechanism 11 includes a bell crank lever 34 which is pivotally mounted on a pivot stud 35 carried by the plate 12, the pivot stud 35 being located at the upper right hand corner of the plate, as seen in FIG. 1. The lever 34 has a depending arm 36 having along its outer edge a short flange or paddle 37. The flange 37 is positioned for engagement by the stem of a push button or the like 38 of a conventional push-button type outside door handle.

The lever 34 has a curved arm 39 extending toward the latch plate flange 13. Secured to the extremity of this arm 39 is a pivot stud 41 from which hangs a link 42. This link 42 is of sufficient length to extend down the case plate 12 to a point below the detent means arm 33.

Referring now to FIG. 1, the latch mechanism is shown in latched position. It will be readily apparent that if the push button stem 38 is moved toward the flange 13, the bell crank lever will be swung in a clockwise direction and the link 42 will be raised. The hook 43 on the end of the link 42 will catch the lug 44 on the end of the detent arm 33 and cause the detent means to be swung in a direction to cause unblocking or disengagement of its portion 32 from the ratchet plate projection 25. The latch device means is then free to rotate in unlatching direction.

The bell crank lever 34 is also swingable from the inside of the door through a bell crank lever 45 mounted on a pivot stud 46 on the flange 13 (see FIG. 3). Lever 45 has a horizontal arm 47 which extends from the pivot stud 46 toward the case plate 12 and underlies a projection 48 on the link 42. The projection 48 is located on the link 42 just below the pivotal connection of the latter to the end

of the curved arm 39. The bell crank lever 45 has an upstanding arm 49 adapted to be coupled by a draft link (not shown) to a conventional remote control mechanism (not shown) mounted on an inner door panel.

As seen in FIG. 1, there is a gap between the upper edge of the bell crank arm 47 and the lower edge of the link projection 48. This provides a degree of lost motion for a purpose to be explained. But after this gap is closed upon swinging movement of the bell crank 45, engagement of the arm 47 with the link projection 48 will result in upward movement of the link 42 with the same results as caused by movement of the bell crank lever 34 through actuation by the push button stem 38.

In the present latch mechanism, the outer manually operable means may be rendered inoperative to disengage the detent means 28 from the ratchet member 24 by the simple expedient of displacing the link 42 from its solid outline position shown in FIG. 1 to the dot and dash position. It will be noted that when link 42 is in the dot and dash outline position, the hook 43 is not in position to exert a lifting action on the lug 44 on the end of the detent arm 33. When the link 42 is raised upon actuation of the bell crank lever 34, the link hook portion 43 merely bypasses the lug 44.

Movement of the link 42 to its free-wheeling or detent bypassing condition shown in FIG. 1 is accomplished by camming it away from the case plate 13. The camming means comprises a locking lever 50 and an inclined surface 51 on the link 42. The locking lever 50 is mounted on the case plate flange 13 by means of a pivot stud 52 located substantially vertically below the pivot stud 46 for the lever 45. When the locking lever 50 is swung from its solid outline position to the dot and dash outline position (see FIG. 2), the free end 53 engages the inclined surface 51 of the link 42 and moves the link from the solid outline position to the dot and dash outline position of FIG. 1. Any vertical movement imposed on the link 42 when in this position merely results in the link edge 54 sliding against the face of the end 53 of the arm 50.

The locking or camming lever 50 is shiftable by inner or outer means. The inner means may comprise a rod 55 adapted to extend through a garnish molding (not shown) on the inner side of the door. The rod 55 is capped by a knob 56 in the usual manner. When the rod 55 is pushed down, the displacement of the link 42 occurs.

The outer means for shifting the locking or camming lever comprises a lever 57 coupled by a link 58 to the lever 50, the point of connection being conveniently in common with the point of connection of the rod 55. The lever 57 is adapted to be coupled to a shaft (not shown) of a conventional key operated device operable from the outside of the vehicle door.

It should be noted that the locking lever 50 has an upwardly curved extension 59 which, when the locking lever 50 is moved into link 42 displacing position (dot and dash position in FIG. 2), abuts the arm 49 of the bell crank lever 45. Without the curved extension, displacement of the locking lever 50 into link 42 displacing position would render the inner manually operable lever 45 inoperative to release the detent means 28 from the ratchet plate 24. This, of course, may be desired and provides an optional construction for the latch mechanism if it is to be used on the rear doors of a vehicle. But for a front door latch mechanism, a release mechanism is required.

That is, when the link 42 is in detent means bypassing condition and it is desired to open the vehicle door from the inside, the bell crank lever 45 must be swung in a counterclockwise direction as viewed in FIG. 2. Because of the gap between the end of the arm 47 and the projection 48, the initial movement of the bell crank 45 finds no response or upward movement of the link 42. But the initial movement of the bell crank 45 does find response in and causes movement of the locking lever 50 out of camming relation to the link 42. The locking lever 50 through the relationship of its curved extension 59 with the crank arm 49 is adapted to be moved automatically out of camming position relative to the link 42. Without the curved extension 59, the locking lever could only be moved out of camming position by manipulation of the rod 55 or the key cylinder operable lever 57. Until the locking lever 50 end portion 53 is moved out of camming relation to the link 42, the latter can only move in a path in which it bypasses the detent arm lug 44.

Restoration of the link 42 to detent actuating or engaging position is accomplished through spring force. It will be noted that a spring 61 is carried on the pivot stud 41, the spring having a depending leg 62 hooked over the link 42 and an upwardly extending leg 63 bearing against a lug 64 on the arm 39 of the bell crank lever 34. The spring 61 is wound and preloaded so that it at all times urges the link 42 toward the flange 13.

Both the latch device, i.e., the latch element 15 and ratchet member 24, and the detent means 28 are spring loaded. The latch device is always spring urged toward unlatching direction and the detent means 28 toward ratchet member 24 engagement. This is accomplished by separate clock-type or spiral springs 65 and 66, respectively.

The inner end of the latch element spring 65 is anchored on the pivot shaft 21 and the free end 67 is hooked over a fixed lug 68 on the case plate 12. Movement of the latch element in latching direction, winds up the spring 65 so that upon disengagement of the detent means 28 from the ratchet member 24 the spring urges the latch element toward unlatching direction.

The detent means spring 66 has its inner end anchored to the pivot stud 29 and its free end 69 engaged with a lug 71 on the arm 31 of the detent means. Upon pivotal movement of the detent means in ratchet member disengaging (clockwise) direction, the spring 66 is wound up and reacts by driving or urging the detent means in ratchet member engaging direction.

It has been mentioned that in latch device unlatched position the end 32 of the detent means arm 31 engages the ratchet member projection 27. The depth of the cut between the projection 27 and the adjacent projection 26 is such that the detent means assumes the same at rest position it occupies in fully latched position of the latch device. This provides another optional feature for the latch mechanism embodying the present invention. By the simple addition or deletion of another part, a slide 72, the latch mechanism may be set up for key locking or keyless locking.

If keyless locking, i.e., locking only through the control rod 55 is desired, the latch member is complete as described. Movement of the link 42 into detent means bypassing condition with the vehicle door open and the latch device in unlatched position results in no resetting of any parts of the latch mechanism when the door is closed.

To set up the latch mechanism for key locking, the additional part, the slide 72, is provided. This slide 72 has an elongated slot 73. The slot receives a stud 74 which slidably holds the slide 72 on the case plate 12, the slide lying adjacent the flange 13 and being guided thereby for lineal movement. The slide overlies the end 44 of the detent means arm 33 and underlies the end 53 of the locking lever 50 when the latter is in link 42 camming position, i.e., the dot and dash outline position shown in FIG. 1. If the camming or locking lever is placed in position to move the link 42 into detent means bypassing position when the latch device is in unlatched position and the door is open, movement of the door to closed position will cause, upon engagement of the latch device with its striker, the detent means to be swung in a clockwise direction. The detent means arm 44 will kick the slide 72 up and cause the latter to drive the locking lever 50 to noncamming position. To lock the door from

the outside it is then necessary to use the key to swing the lever **57** in a direction to move the locking lever from its solid outline position to the dot and dash outline camming position shown in FIG. 2.

In this connection the depth of the notch between the projections **25** and **26** on the ratchet member **24** is of importance. As illustrated, it is somewhat shallower than the depth of the notch between the projections **26** and **27**. Accordingly, when the detent arm end **32** engages the projection **26** in the secondary latched position of the latch device, the detent means **28** is held in a position sufficiently displaced from its normal position so that the slide **72** will interfere with movement of the locking lever **50** to link **42** camming position. The latch mechanism cannot be placed in "free wheeling" condition when the latch device is in secondary latched position.

The latch element **15**, referring now particularly to FIGS. 3 and 4, is encased in a housing **75** provided with an opening **76** adapted to receive a keeper pin, generally designated **77**.

Contained within the housing **75** is a slideable wedge **78**, preferably made of nylon or other hard plastic material. The wedge **78** travels on a guide rod **79** and is spring urged in an outward direction by a spring **81**.

It will be noted that the upper inner surface **82** of the housing is downwardly inclined in the direction of approach of the keeper pin **77** as represented by the arrow **77***a*. The upper surface of the wedge is at an equal slope and the guide rod **79** is parallel to this surface. The lower surface **83** of the wedge is upwardly inclined at an acute angle. If there is assumed a horizontal reference plane, represented by the line **80**, parallel to the upper horizontal edge of the case plate **12** which passes through the intersection of the longitudinal axis, represented by the line **79***a*, of the guide rod and a planar extension, represented by the line **83***a*, of the wedge surface **83**, it will be found that the acute angle between the wedge surface **83** and the reference plane will be substantially equal to the acute angle between the longitudinal axis of the guide rod **79** and the reference plane. Because of this relationship, the wedge **78** always engages the keeper pin at a non-locking and substantially constant pressure angle as it moves in and out and correspondingly up and down, the in and out and the up and down movement thereby resulting in bodily shiftable movement of said wedge means in an angular direction, or movement along an angle which is that of the guide rod **83**. This angular direction is away from the pivot axis of the latch member **15** as measured from the direction of relative movement of the keeper device along the line **77***a* as the latch member and the keeper device move relatively to one another into latching engagement. Since the angle of the guide rod **79** is opposite to that of the angle of the wedge surface with reference to the reference line **80**, the relationship of the angular direction movement of the wedge means with reference to the wedge surface may be stated as follows: The slope of the angular direction movement of the wedge means is opposite to the slope of the wedging surface. In simple dictionary terms and as used herein, the term "slope" means a slanting position or direction or the amount of said slant.

It will be noted in FIG. 4 that the keeper pin **77** is mounted on a plate **84** adapted to be secured to a door pillar, or other vehicle body frame structure in a conventional manner. At its outboard end the pin **77** is provided with an enlarged head **85**. The wedge **78** is undercut at **86** to provide clearance for the head **85** and the latter is interposed between the outer face of the case plate **12** and the inner face of the latch element **15** when the latter is in secondary or fully latched position. This provides protection against any forceable lateral disengagement of the latch element **15** from the keeper pin **77** such as might occur when the vehicle body and door are twisted or sprung as a result of collision impact forces.

The latching action may be summarized as follows: With the latch element **15** in unlatched position, swinging movement of the vehicle door in a closing direction causes the arm **18** of the latch element to engage the keeper pin **77** as the pin engages the ramp surface **87** of the housing **75**. The detent end portion moves across the projection **26** and if the door closing action is weak enough, it drops into the notch between the projections **25** and **26**. The parts then appear as shown in FIG. 3. The wedge **78** will be in a relatively outboard position and its surface **83** will be low enough to rest on top of the keeper pin **77**. The pin will then be blocked against jumping out of the notch between the latch element arms **17** and **18**.

Upon movement of the door to fully latched position, the dotted outline position seen in FIG. 1, the wedge **78** will have been moved inwardly and upwardly; the pin **77** will be blocked against outward movement by the latch element arm **17** and against up and down movement by the wedge surface **83**; and the ratchet member **24** and thereby the latch element against movement in unlatching engagement by the holding relationship of the detent end portion **32** with the ratchet projection **25**.

It should be mentioned that any overtravel of the latch element **15** as might occur if the vehicle door is closed heavily, is cushioned by a rubber bumper **88** mounted on the inner surface of the end wall of the housing **75**.

It will be understood that the invention is not to be limited to the exact construction shown and described, but that various changes and modifications may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion,

detent means pivotally mounted on said main plate portion for holding said latch device in door latched position,

manually operable means for disengaging said detent means form said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally suspended from said lever at a point spaced from the pivot axis of the latter,

said link means being bodily movable longitudinally of said main plate portion in response to pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of holding position relative to said latch device upon movement of the link means in one direction,

control means pivotally mounted on said flange portion movable into abutting relation to a part of said link means to swing the link means about its pivotal suspension to a position in which the detent means engaging part thereof will bypass the detent means upon movement of said link means in said one direction,

and additional lever means on said support operative when said control means has swung the link means in bypassing position to first engage and restore said control means to a nonabutting relation to said link means and then to engage and swing said manually operable means in a direction to move said link means in said one direction to cause disengagement of the detent means from said latch device.

2. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate

portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

detent means pivotally mounted on said main plate portion for holding said latch device in door latched position,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally suspended from said lever at a point spaced from the pivot axis of the latter,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of holding position relative to said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion movable into abutting relation to a part of said link means to swing the link means about its pivotal suspension transversely of its normal up and down direction of movement to a position in which the detent means engaging part thereof will bypass the detent means upon upward movement of the link means,

and additional lever means on said flange portion operative when said control means has swung the link means in bypassing position to first engage and restore said control means to a nonabutting relation to said link means and then to engage and swing said manually operable lever in a direction to move said link means in an up direction to cause disengagement of the detent means from said latch device.

3. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

detent means pivotally mounted on said main plate portion for holding said latch device in door latched position,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally suspended from said lever at a point spaced from the pivot axis of the latter,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of holding position relative to said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion movable into abutting relation to a part of said link means to swing the link means about its pivotal suspension to a position in which the detent means engaging part thereof will bypass the detent means upon upward movement of the link means,

and restoring means on said main plate portion interposed between said detent means and control means and operative when said control means is in link means abutting relation to restore said control means to a nonabutting relation to said link means in response to movement of said detent means caused by engagement of said latch device with a keeper device as said door is moved from an opened to a closed position.

4. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

detent means pivotally mounted on said main plate portion for holding said latch device in door latched position,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally suspended from said lever at a point spaced from the pivot axis of the latter,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of holding position relative to said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion movable into abutting relation to a part of said link means to swing the link means about its pivotal suspension transversely of its normal up and down direction of movement to a position in which the detent means engaging part thereof will bypass the detent means upon upward movement of the link means,

additional lever means on said flange portion operative when said control means has swung the link means in bypassing position to first engage and restore said control means to a nonabutting relation to said link means and then to engage and swing said manually operable means lever in a direction to move said link means in an up direction to cause disengagement of the detent means from said latch device,

and a slide means on said support interposed between said detent means and control means and operative when said control means is in link means abutting relation to restore said control means to a nonabutting relation to said link means in response to movement of said detent means independently of said additional lever means.

5. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

detent means pivotally mounted on said main plate portion for holding said latch device in door latched position,

said latch device having a plurality of projections thereon defining fully latched, partially latched and unlatched positions,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally connected to said lever and suspended therefrom,

spring means at said pivotal connection urging said link means toward said flange portion,

said link means being bodily movable longitudinally of said main plate portion and contiguous to said flange portion in response to pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of holding position relative to said latch device upon movement of the link means in one direction,

control means pivotally mounted on said flange portion for movement into abutting relation to said link means to swing the latter against the urging of said spring means away from said flange portion into a position in which said detent means engaging part

will bypass the detent means upon movement of said link means in said one direction,

and additional lever means on said support operative when said control means has swung the link means in bypassing position to engage and restore said control means to a nonabutting position relative to said link means whereby said spring means will restore the latter into detent means engaging position.

6. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith.

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

said latch device having a plurality of projections thereon defining fully latched, partially latched and unlatched positions,

detent means pivotally mounted on said main plate portion for cooperative engagement with said latch device in any one of said positions,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally connected to said lever and suspended therefrom,

spring means at said pivotal connection urging said link means toward said flange portion,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of engagement with said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion for movement into abutting relation to said link means to swing the latter against the urging of said spring means away from said flange portion into a position in which said detent means engaging part will bypass the detent means upon movement of said link means in an up direction,

and additional lever means on said flange portion operative when said control means has swung the link means in bypassing position to engage and restore said control means to a nonabutting position relative to said link means whereby said spring means will restore the latter into detent means engaging position.

7. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

said latch device having a plurality of projections thereon defining fully latched, partially latched and unlatched positions,

detent means pivotally mounted on said main plate portion for engagement with said latch device projections in any one of said positions,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally connected to said lever and suspended therefrom,

spring means at said pivotal connection urging said link means toward said flange portion,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of engagement with said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion for movement into abutting relation to said link means to swing the latter against the urging of said spring means away from said flange portion into a position in which said detent means engaging part will bypass the detent means upon movement of said link means in an up direction,

and restoring means on said main plate portion interposed between said detent means and control means and operative when said control means is in link means abutting relation to restore said control means to a nonabutting position relative to said link means in response to movement of said detent means caused by engagement of said latch device with a keeper device as said door is moved from an opened to a closed position whereby said spring means will restore the latter into detent means engaging position.

8. In a latch mechanism according to claim 7 in which:

the relationship between said latch device, detent means, restoring means and control means is such that said control means is operative to shift said link means into detent means bypassing position only in fully latched or unlatched positions of said latch device,

said latch device when in partially latched position holding said detent means in a displaced position and said detent means blocking placement of said restoring means in a position of noninterference with said control means thereby to interfere with the movement of the latter in a direction to place said link means in detent means bypassing position.

9. In a latch mechanism for a vehicle door,

a support having a main plate portion for disposition at the free edge wall of the door and a flange portion integral therewith,

a latch device pivotally mounted on said main plate portion and including a latch element having a keeper device engaging portion spaced from the pivot axis thereof,

said latch device having a plurality of projections thereon defining fully latched, partially latched and unlatched positions,

detent means pivotally mounted on said main plate portion for engagement with said latch device projections in any one of said positions,

manually operable means for disengaging said detent means from said latch device comprising a lever pivotally mounted on said main plate portion and a link means pivotally connected to said lever and suspended therefrom,

spring means at said pivotal connection urging said link means toward said flange portion,

said link means being bodily movable in an up and down direction upon pivotal movement of said lever,

said link means normally having a part thereof engageable with said detent means to pivot the latter out of engagement with said latch device upon movement of the link means in an up direction,

control means pivotally mounted on said flange portion for movement into abutting relation to said link means to swing the latter against the urging of said spring means away from said flange portion into a position in which said detent means engaging part will bypass the detent upon movement of said link means in an up direction,

additional lever means on said flange portion operative when said control means has swung the link means in bypassing position to engage and restore said control means to a nonabutting position relative to said link means whereby said spring means will restore the latter into detent means engaging position,

and a slide means on said support interposed between said detent means and control means and operative when said control means is in link means abutting relation to restore said control means to a nonabutting relation to said link means in response to move-

ment of said detent means independently of said additional lever means.

10. In a latch mechanism according to claim **9** in which:

the relationship between said latch device, detent means, slide means and control means is such that said control means is operative to shift said link means into detent means bypassing position only in fully latched or unlatched position of said latch device,

said latch device when in partially latched position holding said detent means in a displaced position and said detent means blocking placement of said slide means into a position of noninterference with said control means thereby to interfere with the movement of the latter in a direction to place said link means in detent means bypassing direction.

11. In a latch mechanism for a door member swingable into door closed position in a frame member,

a support plate mounted on one of said members,

a latch member pivotally mounted on said support plate,

a wedge means,

a keeper device mounted on the other of said members and having a curved engaging surface a first portion of which is engageable by a keeper device engaging portion of said latch member and a second portion of which is engageable by said wedge means,

said latch member keeper device engaging portion being spaced from the axis of pivotal movement of said latch member and having a curved recess therein receiving and encompassing said curved surface first portion in door member closed position,

said wedge means having an angularly inclined wedging surface for engagement with said keeper device curved engaging surface second portion,

and guide means slidably mounting said wedge means on said support plate,

said guide means being constructed and arranged to restrict said wedge means, when the wedging surface of the latter is engaged by said keeper device, to bodily shiftable movement in an angular direction away from the pivot axis of said latch member as measured from the direction of relative movement of said keeper device as said latch member and said keeper device move relatively to one another into latching engagement,

the slope of the angular direction of movement of the wedge means along said guide means being opposite to the slope of said wedging surface,

the angular movement of said wedge means causing the latter to maintain substantially uniform wedging pressure on the keeper device when engaged therewith.

12. In a latch mechanism according to claim **11** in which the slope of the angular movement of the wedge means is substantially equal to the slope of the wedging surface although opposite thereto as measured from the direction of relative movement of said keeper device and said latch member.

13. In a latch mechanism according to claim **12** in which the support plate on which the latch member is pivotally mounted and on which the wedge means is slidably mounted is mounted on the door member,

and the keeper device is fixed to the frame member.

14. In a latch mechanism according to claim **11** in which the support plate on which the latch member is pivotally mounted and on which the wedge means is slidably mounted is mounted on the door member,

and the keeper device is fixed to the frame member.

15. In a latch mechanism according to claim **11** in which the latch member has a secondary latched position which is attained before the door member is fully closed and a primary latched position which is attained when the door member is fully closed,

said wedge means being operative in said secondary position of the latch member to maintain the latching engagement of the latch member with the keeper device substantially as maintained when the latch member is in primary latched position thereby minimizing vertical vibratory movement between the latch member and the keeper device in both partially and fully closed positions of the door member.

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