Aug. 31, 1943. J. G. JOACHIM 2,328,216

LATCH CONSTRUCTION

Filed Oct. 7, 1940 2 Sheets-Sheet 1

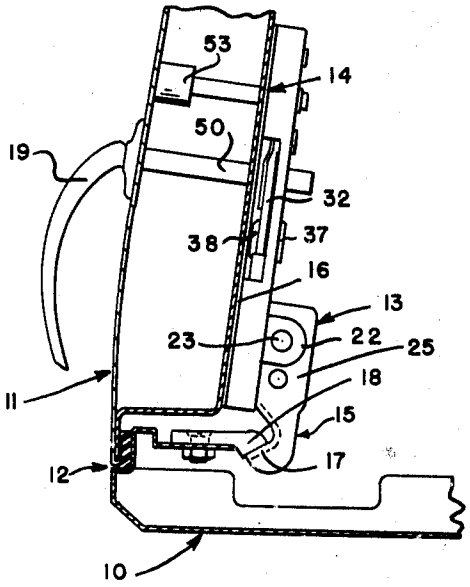


FIG. 1.

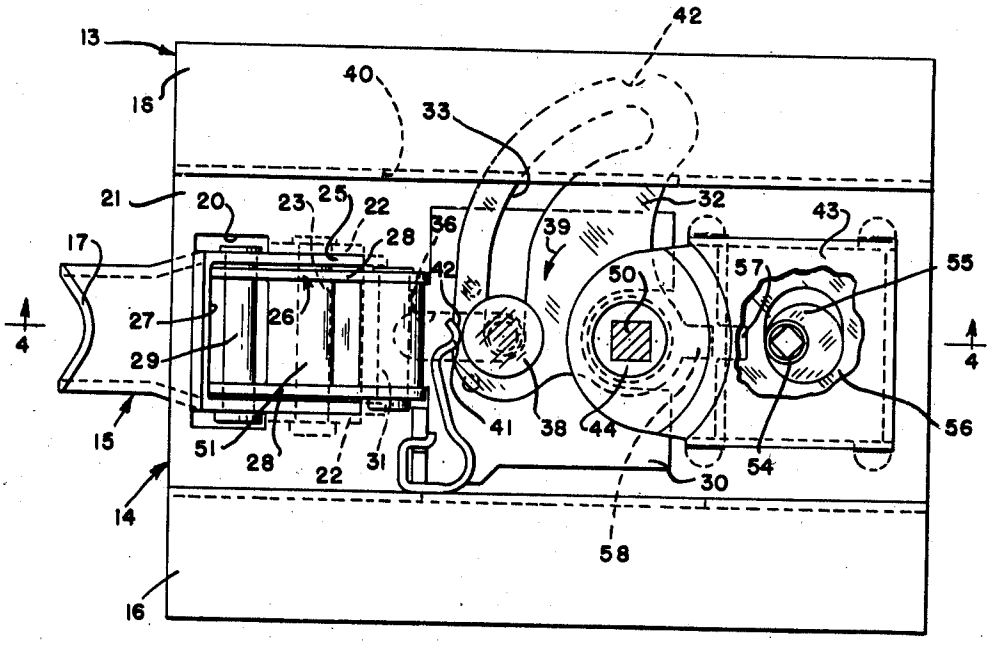


FIG. 2.

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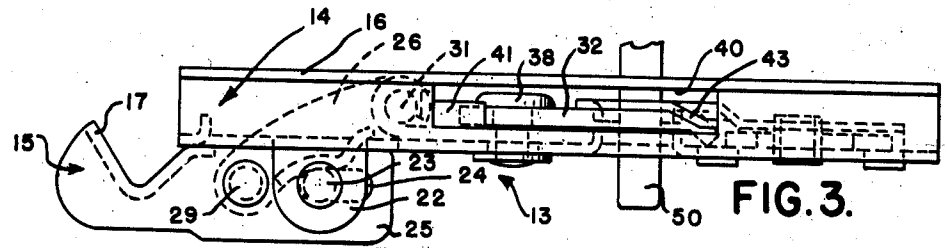


FIG.3.

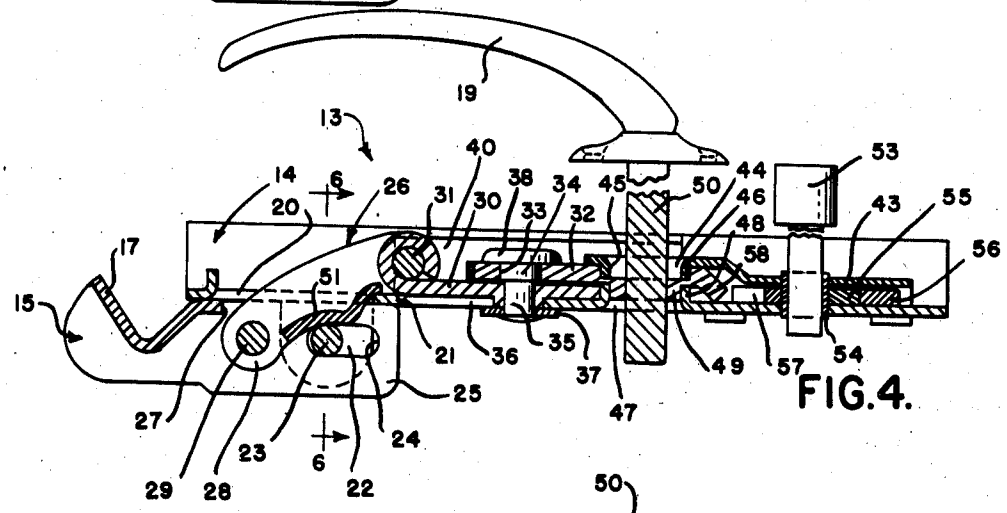


FIG.4.

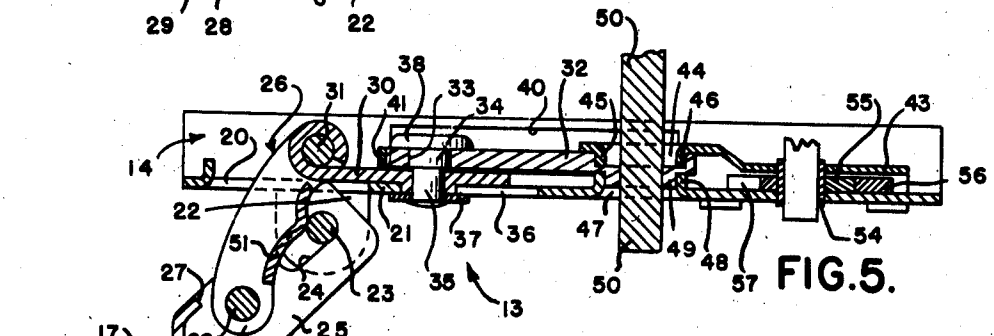


FIG.5.

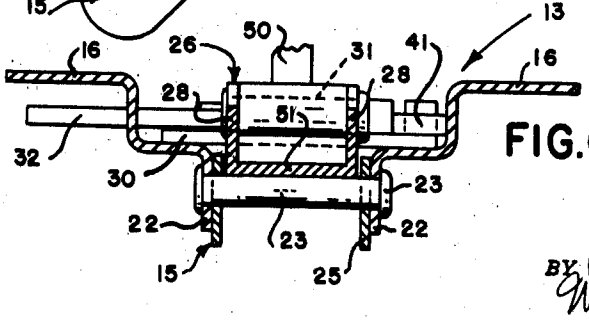


FIG.6.

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2,328,216

LATCH CONSTRUCTION

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Application October 7, 1940, Serial No. 360,178

6 Claims. (Cl. 292—110)

This invention relates generally to latches and refers more particularly to improvements in latches of the type employed on the rear deck closures of motor vehicle bodies.

It is one of the principle objects of this invention to provide a relatively simple, inexpensive latch construction capable of being readily applied to a vehicle body rear deck closure and having provision for securely fastening the closure against accidental or unauthorized opening thereof.

Another object of this invention resides in the provision of a latch especially adapted for efficient operation when installed on the rear deck closures of the so-called stream-lined vehicle bodies wherein the slope of the deck closure is so pronounced as to approach the horizontal.

A further object of the present invention resides in the provision of a latch having a pivoted bolt mounted for sliding movement in one direction as the bolt is swung to its latched position and for sliding movement in the opposite direction as the bolt is swung to its released position.

In addition to the foregoing, the present invention contemplates a latch of the type set forth in the preceding paragraph wherein a portion of the bolt slides into engagement with a portion of the bolt supporting plate as the bolt is swung to its latched position to prevent accidental or unauthorized movement of the bolt to its released position and wherein the portion aforesaid of the bolt is released from the supporting plate when the bolt is swung to its released position.

With the foregoing as well as other objects in view, the invention resides in the novel construction of the latch which will be more fully hereinafter set forth, especially when considered in connection with the accompanying drawings, wherein—

Figure 1 is a semi-diagrammatic fragmentary sectional view of the rear deck portion of the vehicle body showing a latch constructed in accordance with the present invention installed on the deck closure;

Figure 2 is a plan view of the latch shown in Figure 1;

Figure 3 is a side elevational view of the latch shown in Figure 2;

Figure 4 is a sectional view taken substantially on the plane indicated by the line 4—4 of Figure 2;

Figure 5 is a view similar to Figure 4 showing the latch bolt in its released position;

Figure 6 is a cross sectional view taken substantially on the plane indicated by the line 6—6 of Figure 4.

While the latch forming the subject matter of this invention is capable of many and diversified uses, nevertheless, it is particularly adapted for installation on rear deck closures of motor vehicle bodies to securely fasten the closures in their closed positions. In Figure 1 of the drawings, I have shown my improved latch mechanism as being installed on a rear deck closure having a substantial slope, and the following description will illustrate the effective manner in which the latch operates to securely fasten the closure in place regardless of the degree of slope of the deck on which the closure is mounted. It will, of course, be understood that the latch mechanism is not limited to this particular use and that I contemplate employing the latch mechanism in any instance where a relatively simple, inexpensive latch is desired.

Referring more particularly to Figure 1 of the drawings, it will be noted that the reference character 10 designates, generally, the rear deck of a motor vehicle body, and the numeral 11 designates a closure hingedly connected to the vehicle body for upward swinging movement from the position thereof shown in Figure 1. When the closure 11 is in its closed position, shown in Figure 1, the swinging edge thereof rests upon a platform 12 and is held in this position by means of a latch 13.

The latch 13 comprises a latch plate 14 and a pivoted bolt 15 supported on the latch plate 14 for swinging movement. The latch plate 14 is substantially channel-shaped in cross section and is provided with laterally extending attaching flanges 16 adapted to be secured in any suitable manner to the inner side of the closure 11 adjacent the swinging edge of the latter. The bolt 15 is provided with a hook-shaped portion 17 at the free end thereof adapted to swing into engagement with a suitable keeper 18 carried by the platform 12 of the vehicle body and cooperating with the keeper to secure the closure in its closed position. As will be more fully hereinafter set forth, the hook-shaped end of the bolt 15 is swung into and out of engagement with the keeper 18 by means of a suitable operating handle 19 accessible for convenient manipulation exteriorly of the closure 11.

Referring now more in detail to the latch mechanism, it will be noted that the channel of the plate 14 opens upwardly and that an opening 20 is formed through the base portion 21 of the plate 14 adjacent the lower end of the latter.

The bolt 15 is also channel-shaped in cross section and is positioned at the bottom side of the plate 14 in a manner to extend across the opening 20. Upon reference to Figure 6, it will be noted that the bolt extends between a pair of ears 22 extending downwardly from the opposite side edges of the opening 20 and having aligned opening therethrough for receiving a pivot pin 23. The pin 23 projects through slots 24 formed in the opposite side flanges 25 of the channel-shaped bolt 15, and the slots 24 are elongated in a direction to permit limited sliding movement of the bolt 15 relative to the supporting plate 14.

When the bolt 15 is swung to its latching position, shown in Figure 4, the upper ends of the side flanges 25 abut the bottom surface of the base portion 21 on the supporting plate directly above the opening 20 so that the bolt is positively prevented from swinging movement about the pin 23 to its released position, shown in Figure 5. It may, also, be pointed out that when the bolt is in its latching position, the pin 23 occupies a position in the lower ends of the slots 24 and these slots are of sufficient length to permit sliding the bolt in a downward direction sufficiently to disengage the upper end portions of the side flanges 25 on the bolt from the underside of the supporting plate. In other words, when the bolt 15 is moved downwardly relative to the supporting plate 14 the distance permitted by the slots 24, the upper end of the bolt 15 assumes a position in registration with the opening 20 in the plate 14 and may be swung through the opening 20.

The bolt 15 is moved downwardly relative to the supporting plate 14 to release the upper end of the bolt from abutting engagement with the supporting plate by the same mechanism employed to swing the bolt about the pin 23 to its released position, shown in Figure 5. The bolt 15 is swung about the pin 23 by means of a link 26 having the lower end extending through the opening 20 in the supporting plate and extending through a slot 27 formed in the base portion of the channel-shaped bolt 15. The link 26 is also channel-shaped in cross section, and the lower ends of the side flanges 26 are respectively pivotally connected to the side flanges of the bolt 15 by means of a transverse pin 29. The pivotal connection between the lower end of the link 26 and the bolt 15 is spaced from the pin 23 in a downward direction so that initial movement of the upper end of the link 26 in a corresponding direction effects a sliding movement of the bolt 15 is a downward direction to disengage the upper end of the bolt from the underside of the supporting plate. Continued downward movement of the upper end of the link 26 relative to the plate 14 swings the bolt 15 to its released position, shown in Figure 5.

The link 26 is operated to in turn actuate the bolt 15 by means of a plate 30 slidably mounted on the top surface of the base portion 21 of the supporting plate 14 and hingedly connected to the upper end of the link 26 by means of a pin 31. The plate 30 in turn is moved relative to the supporting plate by means of a cam 32 mounted on the supporting plate for rotation in a plane parallel to the latter and having a cam slot 33 through the lower end thereof. The cam slot 33 is adapted to slidably receive a headed pin 34 having a reduced portion 35 extending through the plate 30 and through an elongated slot 36 formed in the base portion 21 of the supporting plate. The extremity of the reduced portion 35 is riveted over a suitable washer 37 which slidably engages the underside of the supporting plate and cooperates with the head 38 on the opposite end of the pin to secure the parts in assembled relationship.

Upon reference to Figure 2, it will be noted that the contour of the cam slot 33 is predetermined to slide the plate 30 in a downward direction upon rotation of the cam 32 in the direction of the arrow 39 in Figure 2 and to slide the plate 30 in an upward direction from the position thereof shown in Figure 5 upon rotation of the cam in the opposite direction. It will, also, be noted from Figure 2 that one flange of the channel-shaped supporting plate is slotted at 40 to permit movement of the cam therethrough when the cam is located in the extreme position thereof, shown in Figure 2. The cam 32 is yieldably held in both of its extreme positions of adjustment by means of a spring detent 41 alternately engageable in suitable recesses 42 formed in the bottom edge of the cam adjacent opposite ends of the slot. In this connection, it will be noted that the bottom edge of the cam is contoured to correspond to the contour of the cam slot so that the spring detent rides along this edge as the cam is operated.

Referring again to Figure 4, it will be noted that a plate 43 is secured to the base portion 21 of the supporting plate 14 in spaced relation to the top surface of the base portion and is provided with an opening 44 therethrough having a cylindrical flange 45 adapted to extend into a recess 46 formed in the top surface of the cam 32 adjacent the upper end of the latter. The recess 46 is provided with a cylindrical side wall which rotatably engages the adjacent wall of the cylindrical flange 45, with the result that the cam 32 rotates about the flange 45. It will, also, be observed that the base portion 21 of the supporting plate 14 is formed with an opening 47 in alignment with the opening 44 and is provided with a cylindrical flange 48. The flange 48 extends toward the flange 45 and is adapted to rotatably receive a hub portion 49 formed on the cam 32. It follows from the above that the cylindrical flanges 45 and 48 cooperate with each other and with portions of the cam 32 to rotatably support the latter on the plate 14.

The hub portion 49 on the cam 32 is formed with a polygonally-shaped opening therethrough for receiving a correspondingly shaped shank 50 extending from the operating handle 19. The arrangement is such that the cam 32 is operated to in turn operate the bolt 15 by means of the handle 19, previously described as being located for convenient manipulation by the operator.

It has been stated above that when the parts of the latch mechanism are in the position shown in Figure 4, accidental or unauthorized movement of the bolt 15 toward its released position about the axis of the pin 29 is positively prevented by abutting engagement of the upper end of the bolt with the underside of the supporting plate 14. As shown in Figure 4, unauthorized movement of the bolt 15 toward its released position is further prevented by means of the base portion 51 of the channel-shaped link 26. In the latched position of the bolt 15, the underside of the base portion 51 engages the top of the pin 23 and the upper end of this base portion extends through the opening 20 in the supporting plate and hooks over the adjacent edge of the opening. As a result of the above construction the base portion 51 coacts

with the pin 23 to block swinging movement of the link in the direction required to release the bolt from the keeper. It will further be noted from Figure 4 that the configuration of the base portion is such that this base portion does not interfere with swinging movement of the bolt when the latter has been shifted downwardly sufficiently to disengage the upper end thereof from the adjacent portion of the supporting plate 14. As a result of the foregoing, a closure equipped with my improved latch cannot be forced to its open position without first operating the bolt by manipulating the handle 19.

In the event it is desired to lock the operating handle 19 against movement to release the bolt 15, a suitable key operated cylinder lock having a shank 53 may be provided. This shank has a polygonally-shaped lower end portion adapted to engage in a suitable bushing 54 rotatably supported on the plates 14 and 43. The arrangement is such that the shank 53 is operated by a suitable key (not shown) to rotate the bushing 54 in one direction or the other. Secured to the bushing 54 in a position between the plates 14 and 43 is a cam 55. This cam is seated within a recess formed in a slide 56 having a notch 57 in the lower edge thereof for receiving a projection 58 extending upwardly from the cam 32. When the latch bolt 15 is in its latched position, the projection 58 on the cam 32 is in alignment with the notch 57 so that the bolt may be locked in its latched position by merely moving the slide 56 in a downward direction to locate the projection 58 into the notch 57. As stated above, the slide 56 is moved by the cam 55 through the medium of the key operated shank 53.

Operation

Assuming that the parts of the latch mechanism are in the position thereof shown in Figure 4 and that it is desired to move the latch bolt 15 to its released position, the cam 32 is rocked in the direction of the arrow 39 in Figure 2 by proper manipulation of the operating handle 19. Owing to the configuration of the cam slot 33 in the cam 32 and due to the fact that the pin 34 in the cam slot is carried by the plate 30, it follows that the latter plate is moved in a downward direction. As the plate 30 moves downwardly, the link 26 imports a corresponding movement to the bolt 15 and the upper end of the bolt is released from contact with the adjacent portion of the supporting plate 14. Also, the base portion 51 of the link is moved out of interference with the pin 23 and thereafter the bolt is swung about the pin 23 to the position thereof shown in Figure 5.

It will, of course, be understood that rotation of the operating handle 19 in the opposite direction effects a movement of the plate 30 in an upward direction and the bolt is returned to its latched position shown in Figure 4 through the medium of the link 26. As pointed out above, when the bolt 15 has been moved to its latched position the projection 58 on the cam 32 is in alignment with the recess 57 in the lock slide 56. As a result, the parts may be locked in their respective latched positions by moving the slide 56 in a downward direction to engage the projection 58 in the recess 57.

What I claim as my invention is:

1. A latch having a supporting member, a bolt member pivotally mounted on the supporting member at one side of the latter for swinging movement into and out of engagement with a keeper, a plate mounted on the supporting member at the opposite side of the latter for sliding movement relative thereto in a direction toward and away from the bolt, a link having one end connected to said plate and having the other end extending through the supporting member, and means connecting said other end of the link to the bolt at a point spaced from the pivotal connection of the bolt with said supporting member for swinging the bolt in opposite directions as said plate is moved in opposite directions.

2. A latch having a supporting member provided with an opening therethrough, a bolt member pivotally mounted on the supporting member at one side of the latter and having a portion abutting a portion of the supporting member adjacent one marginal edge of the opening preventing swinging movement of the bolt member to its released position, means pivotally mounting the bolt member on said supporting member including a pin carried by one of the members and extending through an elongated slot in the other member, a plate mounted on the supporting member at the opposite side of the latter for sliding movement toward and away from the bolt member, a link having one end operatively connected to said plate and having the other end extending through the opening in the supporting member, means connecting said other end of the link to the bolt at a point spaced from the pin aforesaid and responsive to sliding movement of the plate in one direction to successively shift the bolt relative to the supporting member the distance required to locate the abutting portion aforesaid of the bolt in registration with the opening in the supporting member and to swing the bolt about said pin to its released position.

3. A latch having a supporting member provided with an opening therethrough, a bolt member located at one side of the supporting member in a position to bridge the opening through the latter and having spaced portions engaging the adjacent side of the supporting member at opposite edges of the opening, means carried by said supporting member and pivotally engaging the bolt member between the portions aforesaid of the bolt, said means including a pin extending through an elongated slot in one of said members to provide for shifting movement of the bolt member relative to the supporting member, a plate mounted on the opposite side of the supporting member for sliding movement toward and away from the bolt, a link having one end pivotally connected to the plate and having the other end extending through the opening in the supporting member, and means pivotally connecting said other end of the link to the bolt at a point spaced from said pin and responsive to sliding movement of the plate in one direction to successively shift the bolt relative to the supporting member a sufficient distance to register one end of the bolt with the opening in the supporting member and to swing the bolt about the axis of said pin.

4. A latch having a supporting plate, a bolt member pivotally mounted on said supporting plate at one side of the latter for swinging movement into and out of engagement with a keeper, a member mounted on the opposite side of the plate for sliding movement toward and away from the bolt, a link having one end pivotally

connected to said slidable member and having the other end extending through the supporting member, means pivotally connecting said other end of the link to the bolt at a point spaced from the axis of swinging movement of said bolt, a cam mounted on the supporting member for rocking movement, and a connection between said cam and slidable member for actuating the latter.

5. A latch having a supporting member, a bolt pivotally mounted on said supporting member for swinging movement into and out of engagement with a keeper, a plate mounted on the supporting member for sliding movement toward and away from the bolt, a link connecting the plate to said bolt for swinging the latter about the pivotal connection thereof with said supporting member, a cam mounted on the supporting member in superposed relation to the plate for rocking movement relative to the plate and having a cam slot therethrough, a pin carried by said plate and extending into said cam slot, and means for rocking said cam

6. A latch having a supporting member, a bolt member pivotally mounted on the supporting member for swinging movement into and out of engagement with a keeper, means pivotally mounting the bolt member on said supporting member including a pin carried by one of the members and extending through an elongated slot in the other member permitting limited sliding movement of the bolt member relative to the supporting member, a plate mounted on the supporting member for sliding movement relative to the supporting member toward and away from the bolt member, a link having one end connected to the plate and having the other end pivotally connected to the bolt member at a point spaced from the pivotal connection of the bolt member with the supporting member whereby movement of the plate in one direction relative to the supporting member shifts the bolt on the supporting member and effects a swinging movement of the bolt relative to the supporting member, and means on said link adapted to abut said pivot pin in the latched position of the bolt to prevent swinging movement of said bolt and releasable from the pivot pin upon movement of the plate in said last named direction to permit swinging movement of the bolt relative to the supporting member.

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