

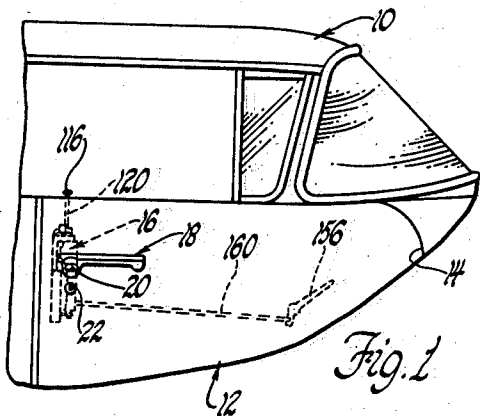
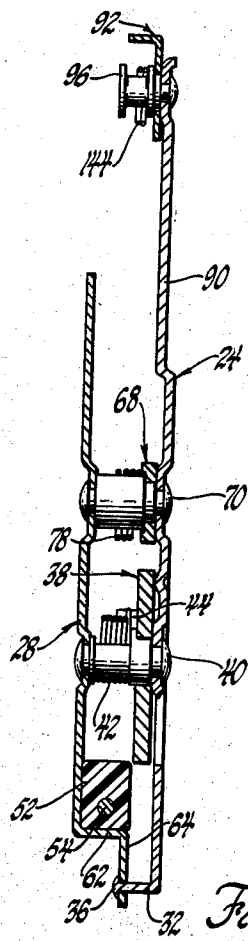
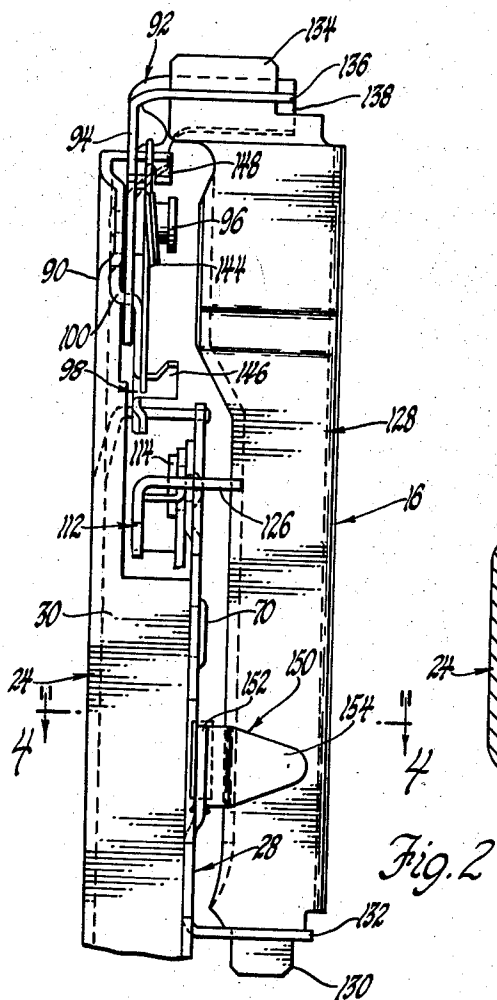
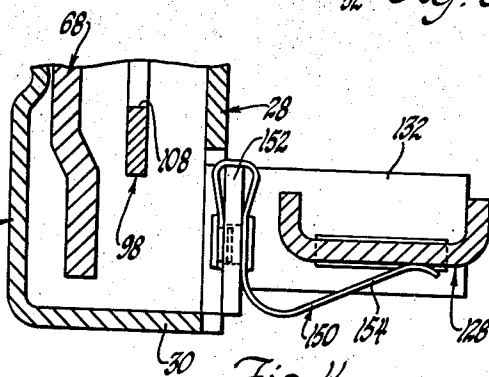
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R. M. FOX ET AL
CLOSURE LATCH

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Filed April 16, 1963

2 Sheets-Sheet 1



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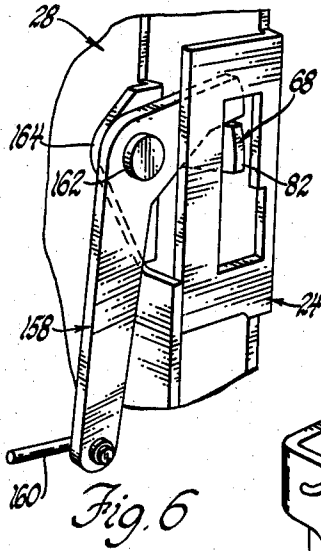
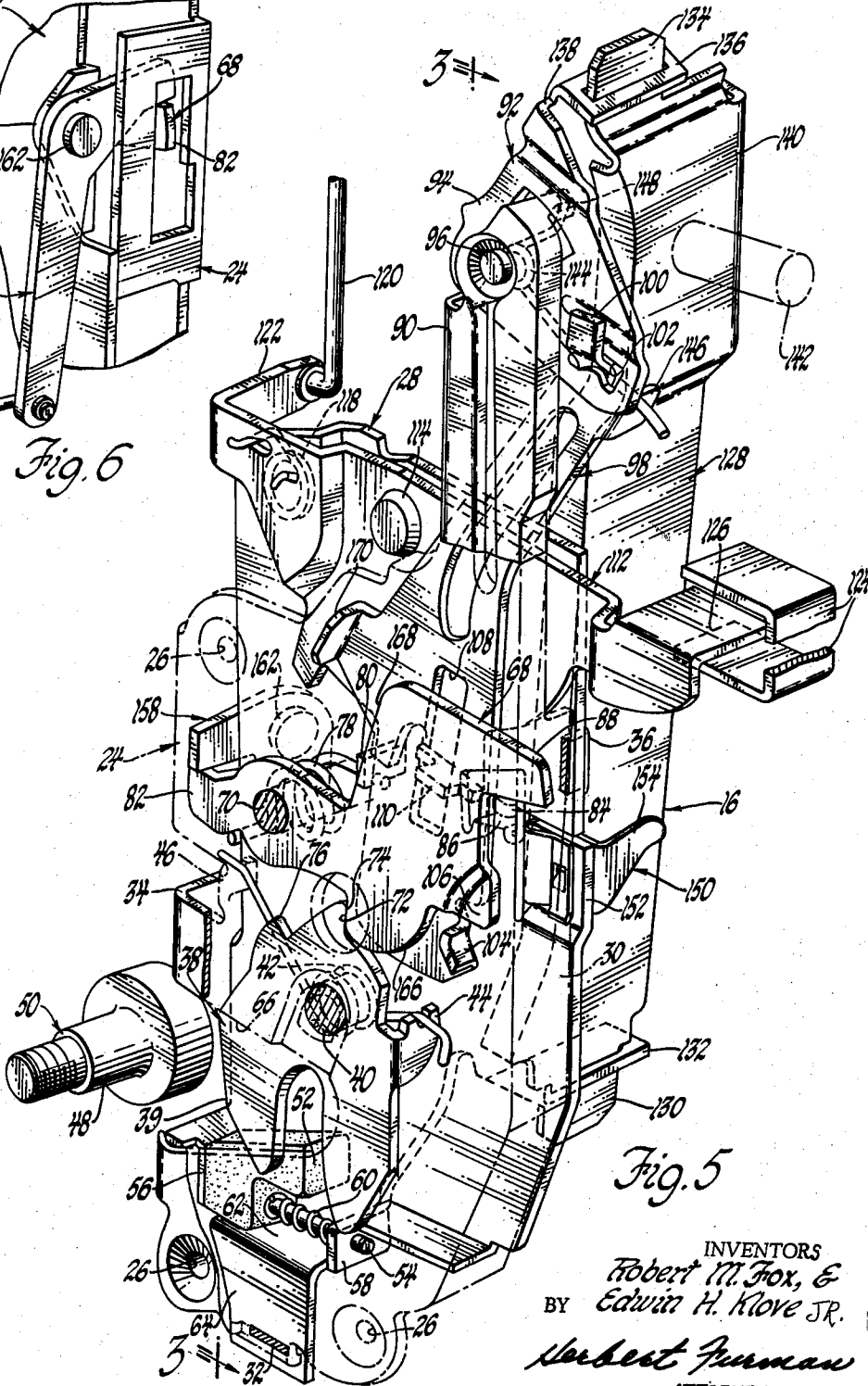
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3,190,682

CLOSURE LATCH

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This invention relates to closure latches and more particularly to vehicle body door locks.

One feature of this invention is that it provides an improved closure latch. Another feature of this invention is that it provides a closure latch having a movable latch bolt, detent means holding the bolt in latched position, and operating means for releasing the detent means. A further feature of this invention is that it provides a closure latch having outside operating means including an auxiliary lever coupled between a main operating lever and the latch frame and adapted to be engaged at a plurality of positions by push button operating means. Yet another feature of this invention is that it provides an improved closure latch having detent release means including a main operating lever swingably mounted on a latch frame, a shiftable intermittent member coupled to the operating member and adapted to be engageable with the detent means to release the detent means, and an elongated auxiliary operating lever coupled between the main operating lever and the latch frame for engagement by outside operating means.

These and other features and advantages of the closure latch of this invention will be readily apparent from the following specification and drawings wherein:

FIGURE 1 is a partial side elevational view of a vehicle body embodying a closure latch according to this invention;

FIGURE 2 is an enlarged view of a portion of FIGURE 1;

FIGURE 3 is a sectional view taken generally along the plane indicated by line 3-3 of FIGURE 5;

FIGURE 4 is an enlarged sectional view taken generally along the plane indicated by line 4-4 of FIGURE 2;

FIGURE 5 is a perspective view of the closure latch; and

FIGURE 6 is a perspective view of a portion of FIGURE 5.

Referring now to FIGURE 1 of the drawings, a vehicle body 10 includes a front door 12 swingably mounted adjacent its forward edge 14 on the body 10 for movement between a closed position, as shown, and an open position, not shown. Door 12 is held in closed position by a closure latch 16 according to this invention. Mounted on the outside of door 12 is a fixed handle 18 including conventional push button operating means 20. Also mounted on door 12 is a conventional key lock cylinder 22 for placing the closure latch 16 in either locked or unlocked condition.

Referring now particularly to FIGURE 5 of the drawings, the latch 16 includes a main frame plate 24 which is adapted to abut the inside surface of the rear wall of door 12 and to be secured thereto by a number of screws, not shown, extending through the rear wall of the door into tapped openings 26 provided in the plate 24. A back

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plate 28 is located in spaced relationship to the plate 24 by means of lateral flanges 30, 32 and 34 at the front, lower, and rear sides of plate 24 engaging the plate 28 and being staked thereto, such as at 36. A fork type bolt 38 is swingably mounted on a pivot shaft 40, staked to the plates 24 and 28, for movement between a latched position, as shown, and an unlatched position, not shown, wherein bolt 38 is located slightly clockwise from its position shown. A coil torsion spring 42 mounted on the shaft 40 has one leg thereof engaging a notched lateral tab 44 of the bolt and the other leg thereof engaging a notched lateral tab 46 of the plate 24 in order to continually bias the bolt 38 toward its unlatched position wherein the edge 39 of the bolt engages tab 46. When the bolt 38 is in latched position, it straddles the shank 48 of a headed striker pin 50 which is threaded into the lock pillar of the body. The location of the head of the striker pin adjacent the inside surface of the bolt 38 provides an interlock between the striker pin and the bolt, and the shank of the striker pin is wedged into the bolt by engagement of the head of the striker pin with a shoe 52 which is slidably mounted on a pin 54 extending between flanges 56 and 58 of the plate 28. A compression spring 60 biases shoe 52 into engagement with flange 56. A lateral flange 62 of plate 28 underlies and slidably supports the shoe 52 and terminates in a flange 64 staked to flange 32 of plate 24.

The plate 24 is notched at 66 to receive the striker pin 50 and likewise, the inner panel and rear wall of the door 12 are also notched so that the striker pin can be received within the bolt when the door is closed.

Bolt 38 is held in its latched position against the action of spring 42 by a detent lever 68 swingably mounted on a pivot shaft 70 staked to plates 24 and 28. Lever 68 includes a shoulder 72 engaging either a shoulder 74 or a shoulder 76 of the bolt to hold the bolt in either a fully latched position, or a partially latched safety position, respectively. A coil torsion spring 78 mounted on the shaft 70 has one end thereof engaging under a lanced lateral tab 80 of plate 28 and the other end engaging a foot 82 of detent 68 to bias the detent in a clockwise direction and hold shoulder 72 in engagement with shoulder 74 of the bolt. A rubber bumper 84 mounted on a lanced lateral tab 86 of the plate 24 engages another foot 88 of the detent to locate the detent against the action of the spring 78.

The plate 24 includes an upper channel shaped extension 90 and a generally L-shaped main outside operating lever 92 having one leg 94 thereof pivoted at 96 to the extension 90. An intermittent member or link 98 includes an upper offset tab 100 received within a slot 102 of the leg 94 to couple the intermittent member to the outside operating lever. The lower end of the intermittent member 98 includes a lateral arcuate tab 104 which normally underlies an offset foot or shoulder 106 of the detent 68. The intermittent member 98 is guided for shifting movement and also located with respect to the detent 68 by means of a closed elongated slot 108 therein receiving a lateral bent tab 110 of a locking lever 112 which is pivotally mounted at 114 on the plate 28. The locking lever 112 is movable between an unlocked position, as shown, and a locked position slightly counterclockwise from the position shown by either the outside

key lock cylinder 22 or the inside garnish button 116, FIGURE 1, and is held in either its locked or unlocked positions by a coil type overcenter spring 118 hooked between the locking lever and the plate 28. The garnish button 116 is coupled by a conventional vertically shiftable rod 120 to a lateral tab 122 of the locking lever, and the lock cylinder 22 is coupled to the locking lever by a conventional fork member 124 straddling a lateral tab 126.

An auxiliary generally channel shaped operating lever or member 128 extends substantially the full length of the plate 24 and includes a lower shouldered tongue 130 pivotally and slidably received within a slotted lateral tab 132 of the plate 28. The upper end of lever 128 includes a similar offset tongue 134 pivotally and slidably received within a slotted apertured tab 136 of the other leg 138 of the outside operating lever 92. The lever 128 is of stepped construction so as to include a push button pad or operating portion 140. This portion is adapted to be engaged by the push rod 142 of the push button means 20 when the push button means is depressed.

It will be noted that the portion 140 is elongated longitudinally of the member 128 so that it can be engaged by the push rod 142 at various locations of the handle 18 on the body. Thus, even though the handle 18 may be mounted at various places on various bodies, due to styling contours or otherwise, the location of the latch 16 need not be changed.

A coil torsion spring 144 mounted on the stud 96 has one leg thereof engaging a notched lateral tab 146 of the intermittent member 98 and the other leg thereof engaging a tab 148 of extension 90 to bias the member 98 downwardly and bias the lever 92 clockwise, as viewed in FIGURE 5, to in turn bias the lever 128 downwardly, with the levers 92 and 128 being located against the action of spring 144 by engagement of the tongue 130 with the tab 132 of the plate 28. Additionally, as best shown in FIGURES 2 and 4, a spring clip 150 encircling a lanced offset tab 152 of plate 28 includes a free leg 154 slidably engaging the lever 128 to shift the lever to the left, as viewed in FIGURE 5, or inwardly of the body and hold the lever in rattle-free condition.

Assuming that the locking lever 112 is in unlocked position, as shown, depression of the push button means 20 to shift the rod 142 inwardly of the body and into engagement with the portion 140 of lever 128, will act to swing the lever 128 counterclockwise, as viewed in FIGURE 5, and in turn swing the lever 92 in the same direction so as to shift the intermittent member 98 upwardly and release the shoulder 72 of the detent 68 from engagement with the shoulder 74 of the bolt 38 by engagement of the tab 104 of the intermittent member with the foot 106 of the detent.

The inside operating means includes an inside operating handle 156, FIGURE 1, which is coupled to the inside operating lever 158 by means of a link or rod 160. Lever 158 is pivoted at 162 to a lateral flange 164 of plate 28 and one leg thereof normally overlies the foot 82 of the detent 68 so as to swing the detent counterclockwise and out of engagement with the bolt 38 upon operation of the inside handle, regardless of whether the locking lever 112 is in locked or unlocked position.

The closure latch also includes the features of automatic undogging and keyless locking.

Assuming that the door is in an open position and that either the lock cylinder 22 or the garnish button 116 is operated to shift the locking lever 112 to its locked position or slightly counterclockwise of its position, as shown in FIGURE 5, and that the door is then closed. As the door is closed, the cam edge 166 of the detent will ride up and over the shoulders 76 and 74 of the bolt as the bolt swings to its latched position to intermittently swing the detent 68 counterclockwise. As the detent swings counterclockwise, a shoulder 168 of the detent will engage a lateral tab 170 of the intermittent member to swing

the intermittent member clockwise or to the left and thereby swing the locking lever 112 clockwise from its locked position to its unlocked position by engagement of slot 108 with tab 110.

Keyless locking is accomplished in the same manner as automatic undogging except that the push button 20 is depressed and held during closing of the door to shift the intermittent member 112 to a position upwardly and to the right of the position shown and hold member 112 in the former position as the door is closed so that the shoulder 168 of the detent cannot engage the tab 170 to return the locking lever to its unlocked position.

Thus, this invention provides a new and improved closure latch.

We claim:

1. A closure latch comprising, in combination, a latch frame, a bolt mounted on said frame for movement between latched and unlatched positions, detent means for holding said bolt in latched position, a main operating lever movably mounted on said frame, an intermittent member coupled to said operating lever for releasing said detent means, and an auxiliary lever coupled adjacent one end thereof to said main operating lever and fulcrumed adjacent the other end thereof on said latch frame for movement in a plane generally parallel to the plane of movement of said main lever, said auxiliary lever being adapted to be engageable by operating means to operate said main operating lever.

2. A closure latch comprising, in combination, a latch frame, a bolt mounted on said frame for movement between latched and unlatched positions, detent means for holding said bolt in latched position, an operating lever movably mounted on said frame, an intermittent member coupled to said operating lever, said intermittent member releasing said detent means upon movement of said operating lever, an auxiliary lever pivotally connected adjacent one end thereof to said main operating lever and fulcrumed adjacent the other end thereof on said latch frame for movement in a plane generally parallel to the plane of movement of said main lever, said auxiliary lever adapted to be engageable by outside operating means to operate said main operating lever, and resilient means biasing said main lever and said auxiliary lever in the same direction about their respective pivot and fulcrum.

3. A closure latch comprising, in combination, a latch frame, a bolt mounted on said frame for movement between latched and unlatched positions, detent means for holding said bolt in latched position, an operating lever including a pair of angularly disposed legs, means pivotally interconnecting one of said legs and said frame to mount said lever on said frame, an intermittent member coupled to said operating lever for releasing said detent means upon movement of said lever, and an auxiliary lever pivotally connected adjacent one end thereof to the other leg of said operating lever and fulcrumed adjacent the other end thereof on said latch frame, said auxiliary lever being adapted to be engageable by outside operating means to operate said main lever, said main lever and said auxiliary lever being movable in generally parallel planes upon operation of said auxiliary lever.

4. A closure latch comprising, in combination, a latch frame, a bolt mounted on said frame for movement between latched and unlatched positions, detent means for holding said bolt in latched position, an operating lever including a pair of angularly disposed legs, means pivotally interconnecting one of said legs and said frame to mount said lever on said frame, an intermittent member coupled to said one leg of said operating lever for releasing said detent means upon movement of said lever, an auxiliary lever pivotally connected adjacent one end thereof to the other leg of said operating lever and adjacent the other end thereof to said latch frame and adapted to be engageable by outside operating means to operate said main lever, said main lever and said auxiliary lever being movable in generally parallel planes upon operation of said auxiliary lever, and resilient means biasing said main

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lever and said auxiliary lever in the same direction about their respective pivot and fulcrum.

5. A closure latch as recited in claim 4 wherein said resilient means is engageable with said intermittent member to bias said intermittent member toward said detent means.

6. A closure latch as recited in claim 4 wherein said auxiliary lever includes a shoulder tab receivable in an apertured opening in said frame to fulcrum said auxiliary lever thereon, engagement of said tab with said frame locating said auxiliary lever and said main lever against the action of said biasing means.

7. A closure latch as recited in claim 4 wherein said

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intermittent member includes an offset tab engageable within an opening in said main lever to couple said intermittent member thereto and said resilient means is engageable with said offset tab.

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