United States Patent

[11] 3,591,220

[72] Inventor **Bela Sandor**
Detroit, Mich.

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[73] Assignee **General Motors Corporation**
Detroit, Mich.

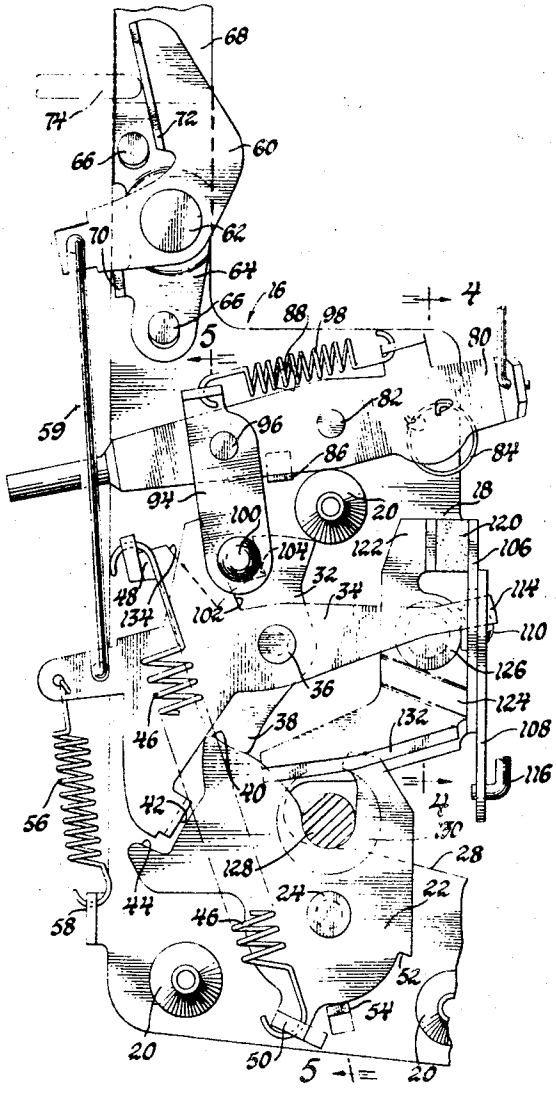
[54] **CLOSURE LATCH**
4 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **292/216**
[51] **Int. Cl.** **E05c 3/36**
[50] **Field of Search** 292/216, 280, 336.3, 193, 40, 210

[56] **References Cited**
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Primary Examiner—Marvin A. Champion
Assistant Examiner—Robert L. Wolfe
Attorneys—W. E. Finken and Herbert Furman

ABSTRACT: A detent and detent release lever of a door lock are coaxially pivoted and provided with spaced opposed edge portions. A pin of an intermittent member supported on a locking lever is movable between the opposed edge portions to couple the levers or is movable out of engagement with one edge portion to uncouple the levers when the locking lever is respectively moved between unlocked and locked positions. The detent release lever is coupled to inside and outside operating means to release the detent when the levers are coupled. If the levers are uncoupled when the bolt is in unlatched position, they will remain uncoupled when the bolt is in unlatched position, they will remain uncoupled when the bolt moves to latched position to thereby provide a set and slam feature.



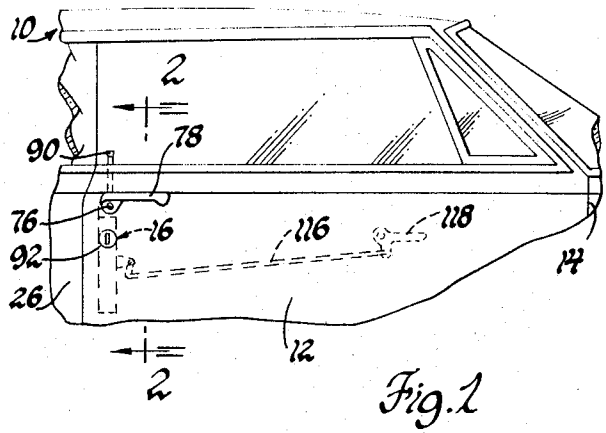


Fig. 1

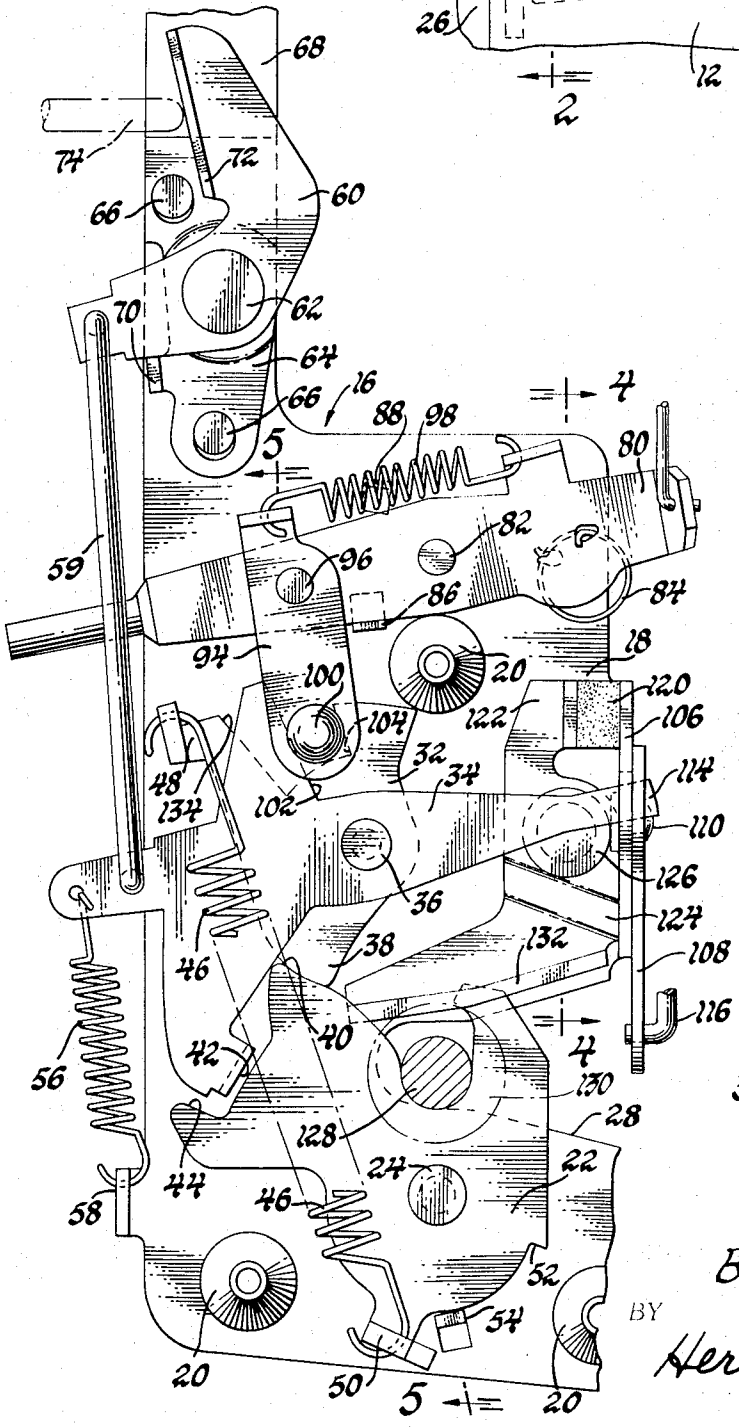


Fig. 2

INVENTOR
Bela Sandor
BY
Herbert Furman
ATTORNEY

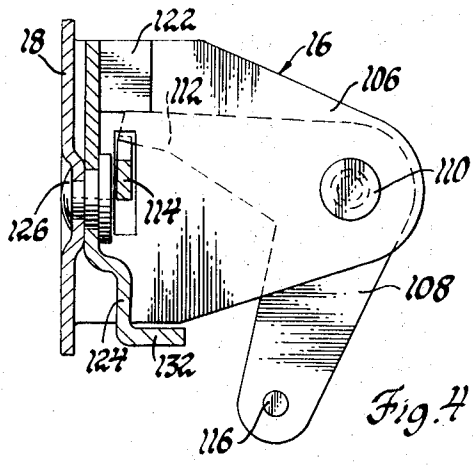


Fig. 4

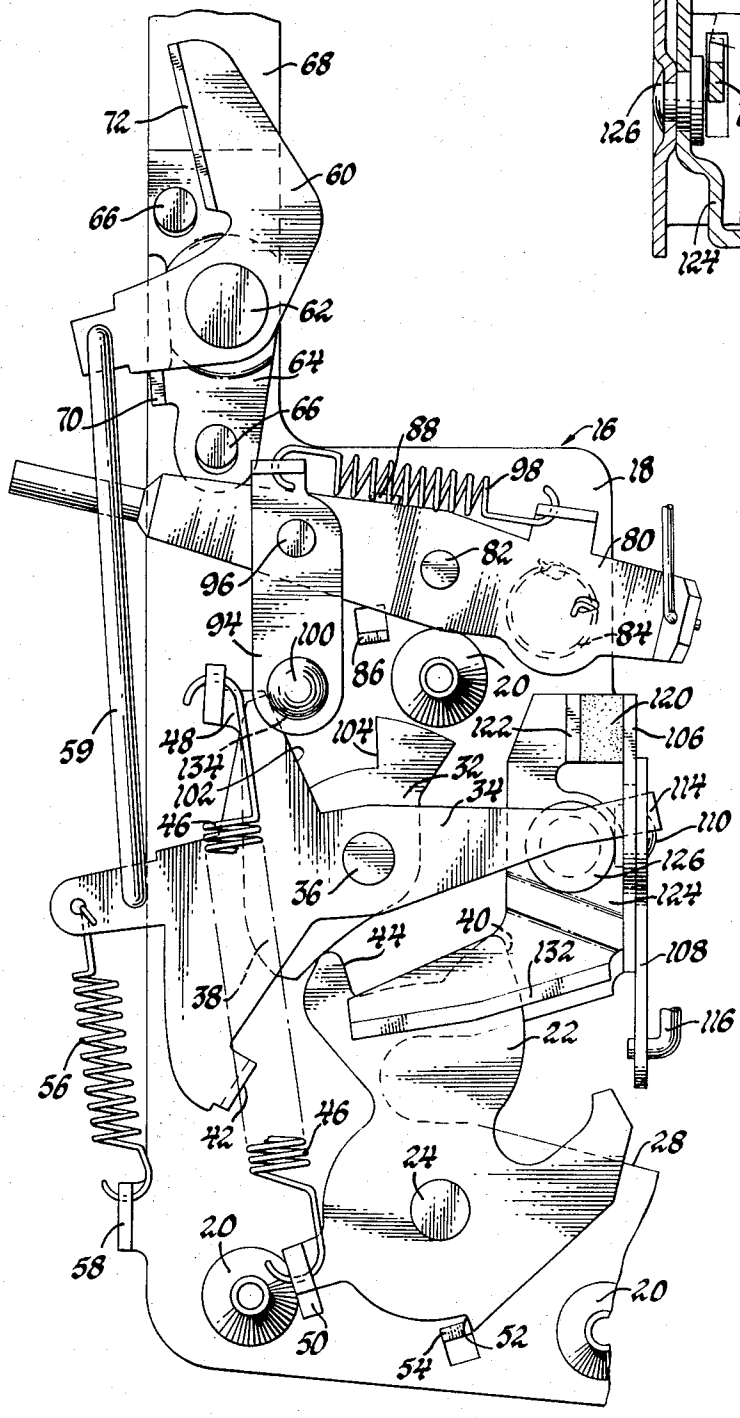


Fig. 3

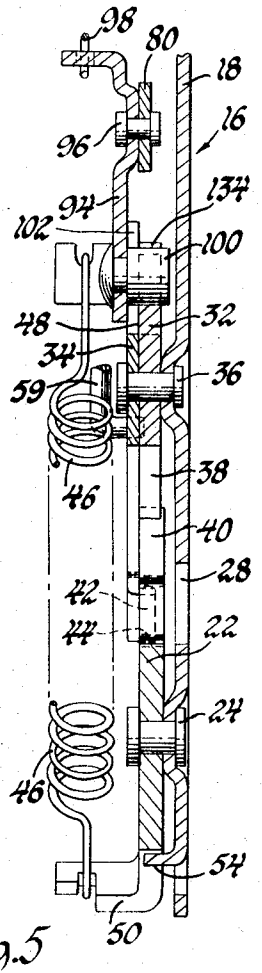


Fig. 5

INVENTOR.
Bela Sandor
BY
Herbert Furman
ATTORNEY

CLOSURE LATCH

This invention relates to closure latches and more particularly to vehicle body door locks of the set and slam type.

Set and slam type vehicle body door locks can be placed in a locked condition when the door is in open position and will remain in this condition when the door is thereafter closed.

The lock of this invention, in its preferred embodiment, includes coaxial detent and detent release levers which are selectively coupled and uncoupled by an abutment member which is either positioned between and in engagement with opposed edge portions of the levers or positioned out of engagement with one of the edge portions depending on the position of a locking means controllable from both inside and outside the body. If the levers are uncoupled when the door is in an open position and the door is thereafter closed, the levers remain uncoupled to thereby provide the set and slam feature.

Therefore, a primary feature of this invention is that it provides a vehicle body door lock wherein the detent means and the release means for the detent are selectively coupled and uncoupled by coupling means which are movable with respect to opposed abutment portions of the release means and detent means.

The detent release lever, in the preferred embodiment, additionally includes an extension which is located juxtaposed to an extension of the bolt when the bolt is in latched position so that any movement of the detent with respect to the bolt will not release the bolt due to the engagement of the release lever extension and bolt extension.

Therefore, another feature of this invention is that it provides a vehicle body door lock wherein selectively coupled detent and detent release levers also additionally function as primary and secondary detents.

These and other features of the door lock of this invention will be readily apparent from the following specification and drawings wherein:

FIG. 1 is a partial side elevational view of a vehicle body having a door mounted thereon for movement between open and closed positions and held in closed position by a door lock according to this invention;

FIG. 2 is an enlarged view taken generally along the plane indicated by line 2–2 of FIG. 1 and showing the bolt in latched position and the detent lever and detent release lever in coupled position;

FIG. 3 is a view similar to FIG. 2 showing the bolt in unlatched position and the detent lever and detent release lever in uncoupled position;

FIG. 4 is an enlarged view taken generally along the plane indicated by line 4–4 of FIG. 2; and

FIG. 5 is a sectional view taken generally along the plane indicated by line 5–5 of FIG. 2.

Referring now to FIG. 1 of the drawings, a vehicle body designated generally **10** includes a front door **12** swingably mounted on the body adjacent its forward edge **14** for movement between a closed position as shown and an open position, not shown. Door **12** is held in closed position by a door lock **16** according to this invention.

As best shown in FIGS. **2**, **3** and **5**, the lock **16** includes a main frame or support plate **18** which abuts against the rear or lock pillar wall, not shown, of door **12** and is bolted thereto by a number of bolts extending through this wall into a series of tapped embossments **20** of the frame **18**. A fork-type bolt **22** is pivoted at **24** to the frame **18** for movement between a locked position shown in FIG. **2** and an unlocked position shown in FIG. **3**. As will be described, the throat of the bolt receives the shank of a headed striker pin when the door **12** is in closed position, with this striker pin being mounted on the forward or lock pillar wall of the rear quarter portion **26** of the body **10**. The frame **18** is cut away at **28** and the rear wall of door **12** is similarly cut away to provide for entrance of the striker pin into the lock **16**.

A detent lever **32** and a detent release lever **34** are coaxially pivoted at **36** to the frame **18**. The detent lever **32** includes a foot **38** which engages a shoulder **40** of the bolt **22** when the bolt is in latched position to maintain the bolt in this position. The detent release lever **34** includes an arm or extension having a lateral tab or foot **42** which is laterally juxtaposed to another shoulder **44** of bolt **22** for engagement thereby to provide a secondary detent should the detent lever **32** move out of engagement with the shoulder **40** for any reason when the bolt is in latched position. A tension spring **46** interconnects a notched lateral tab of an arm **48** of the detent lever **32** and a notched lateral tab of bolt **22** to continually bias the bolt in a clockwise direction to unlatched position and bias the lever **32** in a counterclockwise direction toward detented position. When the bolt moves to unlatched position, shown in FIG. **3**, under the action of spring **46**, a shoulder **52** of the bolt engages a lanced lateral tab **54** of the frame **18** to locate the bolt against the action of spring **46**.

A tension spring **56** interconnects an apertured arm or extension of the release lever **34** and a notched lateral tab **58** of frame **18** to continually bias the lever **34** counterclockwise of the pivot **36**. A rod **59** pivotally interconnects the release lever **34** and the outside operating lever **60**. Lever **60** is pivoted at **62** to an embossment of a bracket **64** which is riveted at **66** to an extension **68** of the frame **18**. A lateral tab **70** of the bracket **64** is engaged by the lever **60** to locate this lever and in turn locate the lever **34** against the biasing action of the spring **56**.

The extension **68** may be of any length and may be provided with a number of successive series of openings to receive the rivets **66** so that one basic lock may satisfy a number of body styles by merely changing the position of the bracket **64** along the extension **68** of the frame **18** and in turn, of course, using different lengths of rods **59**.

The outside operating lever **60** includes a lateral flange **72** which is engageable by the push rod **74**, FIG. **2**, of a conventional outside pushbutton assembly **76** incorporated in a conventional handle **78** mounted on the outer panel of door **12**.

A locking lever **80** is pivoted at **82** to the frame **18** and an overcenter-type coil spring **84** interconnects the frame and the locking lever for selectively and alternately biasing the locking lever to an unlocked position, as shown in FIG. **2**, or a locked position, shown in FIG. **3**. Lanced lateral tabs **86** and **88** of frame **18** are engageable with the lower and upper sides of the locking lever in the unlocked and locked positions thereof, respectively, to locate the lever in each position under the action of the spring **84**. The locking lever **80** is conventionally moved between its locked and unlocked positions by either an inside garnish button **90** or an outside key cylinder assembly **92**, respectively, connected to the right-hand and left-hand ends of the lever in a conventional manner.

An intermittent member or lever **94** is pivoted at **96** to the locking lever and a coil tension spring **98** interconnects notched lateral tabs of the intermittent member and of the locking lever to continually bias the member **94** clockwise of the pivot **96**. The lower end of the member **94** includes a laterally extending stud or abutment **100** which is engaged on diametrically opposite sides thereof by edges or abutment portions **102** and **104** of the detent release lever **34** and detent lever **32**, respectively, when the locking lever **80** is in unlocked position, as shown in FIG. **2**, to couple these levers for unitary or simultaneous clockwise movement. When the locking lever moves from unlocked position to locked position, shown in FIG. **3**, the clockwise movement of the locking lever shifts the member **94** upwardly and in turn shifts abutment **100** upwardly so that it moves out of engagement with edge **104** but remains in engagement with edge **102** under the action of the spring **98**. This uncouples the levers **32** and **34**.

The frame **18** includes a lateral extension **106** and a bellcrank inside release lever **108** is pivoted at **110** to this extension. As best shown in FIG. **4**, one leg **112** of the lever overlies an extension **114** of the release lever **34** so that upon counterclockwise movement of the leg **112** the lever **34** will be swung

clockwise of the pivot 36, FIG. 2, and in turn move the detent 32 in this same direction to release the bolt 22 if the levers 32 and 34 are coupled. A conventional rod 116, FIG. 1, connects the other leg of lever 108 and an inside release or remote handle 118 to provide for manual operation of the lock 16 from inside the body.

A rubber bumper 120 is mounted on the frame 18 and extension 106 at their juncture as shown in FIGS. 2 and 3. This bumper is adapted to be engaged by a flanged foot 122 of a shoe 124 which is pivoted at 126 to the frame 18 to limit the clockwise swinging movement of the shoe. The shank 128 of a headed striker pin is received within the throat of bolt 22 when the bolt is in latched position, as shown in FIG. 2, to hold door 12 in closed position. The striker pin is conventional and is conventionally mounted on the lock pillar wall of the rear quarter portion 26 of the body. The head 130 of the pin engages a flange 132 of the shoe 124 when the shank of the striker pin is received within the throat of the bolt 22, as shown in FIG. 2, to thereby limit relative vertical movement between the door 12 and the portion 26 of the body. Additionally the engagement of the head 130 with the flange 132 of the shoe, of course, forces the shank 128 tightly into engagement with the base of the bolt throat.

It is believed clear from the foregoing description that when the intermittent member 94 is in its position shown in FIG. 2, movement of the pushbutton assembly 76 or of the remote handle 118 will swing the lever 34 clockwise of the pivot 36 and the engagement of the abutment 100 with edges 102 and 104 will simultaneously swing the detent lever 32 in this same direction to move the foot 38 out of engagement with the shoulder 40 and release the bolt for movement to unlatched position. In this position of the bolt, the detent lever 32 engages the shoulder 44 of the bolt so as to be located against the action of spring 46 and the lever 34 is, of course, located by the engagement of lever 60 with tab 70 when the pushbutton assembly 76 is released.

When the door 12 is in an open position and either the garnish button 90 or key cylinder 92 is operated to move the locking lever 80 from its unlocked position of FIG. 2 to its locked position of FIG. 3, the intermittent member 94 will be shifted upwardly as the abutment 100 rides along the edge 102 of the lever 34. It will be noted that the abutment 100 is now located above and out of the path of movement of the edge 104 of the detent 32. If the door is thereafter closed, the counterclockwise movement of the bolt 22 will intermittently ratchet the detent lever 32 clockwise of the pivot 36. While the edge 134 of arm 48 might swing the intermittent member 94 slightly counterclockwise by engagement with the abutment 100 during ratcheting of the detent lever 32, the spring 88 will immediately return the intermittent member to its position shown in FIG. 3 in engagement with edge 102. When the detent foot 38 finally engages the shoulder 40, any movement thereafter of the lever 34 will, of course, have no effect on the detent lever so that the lock will remain in locked condition.

It will be noted that the spring 88 at all times maintains the abutment 100 in engagement with the edge 102 so that this edge provides a guide for vertical shifting movement of the intermittent member 94 when the locking lever 80 is moved between its locked and unlocked positions.

Thus, this invention provides an improved vehicle body door lock of the set and slam type.

I claim:

1. A closure latch comprising, in combination, latch means movable between latched and unlatched positions, detent means movable between detented and undetented positions with respect to the latch means, detent release means, the detent means and the detent release means each including an elongated abutment portion, the abutment portions being spaced from and opposed to each other, one being of greater extent than the other, locking means movable between locked and unlocked positions and including coupling means movable along the one abutment portion into and out of opposition to the other abutment portion to selectively couple and uncouple the detent means and the detent release means, the locking means in unlocked position positioning the coupling means on the one abutment portion in opposition to the other abutment portion to couple the opposed abutment portions for unitary movement of the detent means with the detent release means, the locking means in locked position positioning the coupling means on the one abutment portion out of opposition to the other abutment portion to uncouple the detent means and the detent release means.

2. A closure latch comprising, in combination, latch means movable between latched and unlatched positions, detent means movable between detented and undetented positions with respect to the latch means, detent release means, the detent means and the detent release means each including an elongated abutment portion, the abutment portions being spaced from and opposed to each other, one being of greater extent than the other, locking means movable between locked and unlocked positions, coupling means for selectively coupling and uncoupling the detent means and the detent release means, means mounting the coupling means on the locking means for movement thereby along the one abutment portion, means biasing the coupling means into engagement with the one abutment portion, the locking means in unlocked position positioning the coupling means between the opposed abutment portions to couple the opposed abutment portions for unitary movement of the detent means with the detent release means, the locking means in unlocked position positioning the coupling means on the one abutment portion out of opposition to the other abutment portion to uncouple the detent means and the detent release means.

3. A closure latch comprising, in combination, latch means movable between latched and unlatched positions, a detent lever swingable between detented and undetented positions with respect to the latch means, a swingable detent release lever, means operatively connecting the detent release lever to a release means, locking means movable between locked and unlocked positions, a coupling member swingably supported on the locking means for selectively coupling and uncoupling the detent lever and the detent release lever, the detent lever and the detent release lever each including an elongated edge portion, each edge portion being opposed to the other and the release lever edge portion being of greater extent, means biasing the coupling member into engagement with the release lever edge portion, the locking means in unlocked position locating the coupling member on the release lever edge portion in opposition to the detent lever edge portion to couple the detent lever to the detent release lever for unitary movement, the locking means in unlocked position positioning the coupling member on the release lever edge portion out of opposition to the detent lever edge portion to uncouple the detent lever and the detent release lever.

4. A closure latch comprising, in combination, latch means movable between latched and unlatched positions, a detent lever swingable between detented and undetented positions with respect to the latch means, a detent release lever coaxial with the detent lever, means operatively connecting the detent release lever to a release means, a locking lever movable between locked and unlocked positions, a coupling lever swingable on the locking lever and including an abutment for selectively coupling and uncoupling the detent lever and the detent release lever, the detent lever and the detent release lever each including an elongated edge portion, each edge portion being opposed to the other and the release lever edge portion being of greater extent, resilient means holding the coupling lever abutment in engagement with the release lever edge portion, the locking lever in unlocked position locating the coupling lever abutment on the release lever edge portion in opposition to the detent lever edge portion to couple the levers for unitary movement, the locking lever in unlocked position locating the coupling lever abutment on the release lever edge portion out of opposition to the detent lever edge portion to uncouple the detent lever and the detent release lever.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,591,220 Dated July 6, 1971

Inventor(s) Bela Sandor

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Abstract, lines 11 and 12, the clause "they will remain uncoupled when the bolt is in unlatched position," should be deleted.

Column 2, line 12, the numeral "50" should be inserted after "tab".

Signed and sealed this 21st day of December 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents