

Aug. 25, 1970

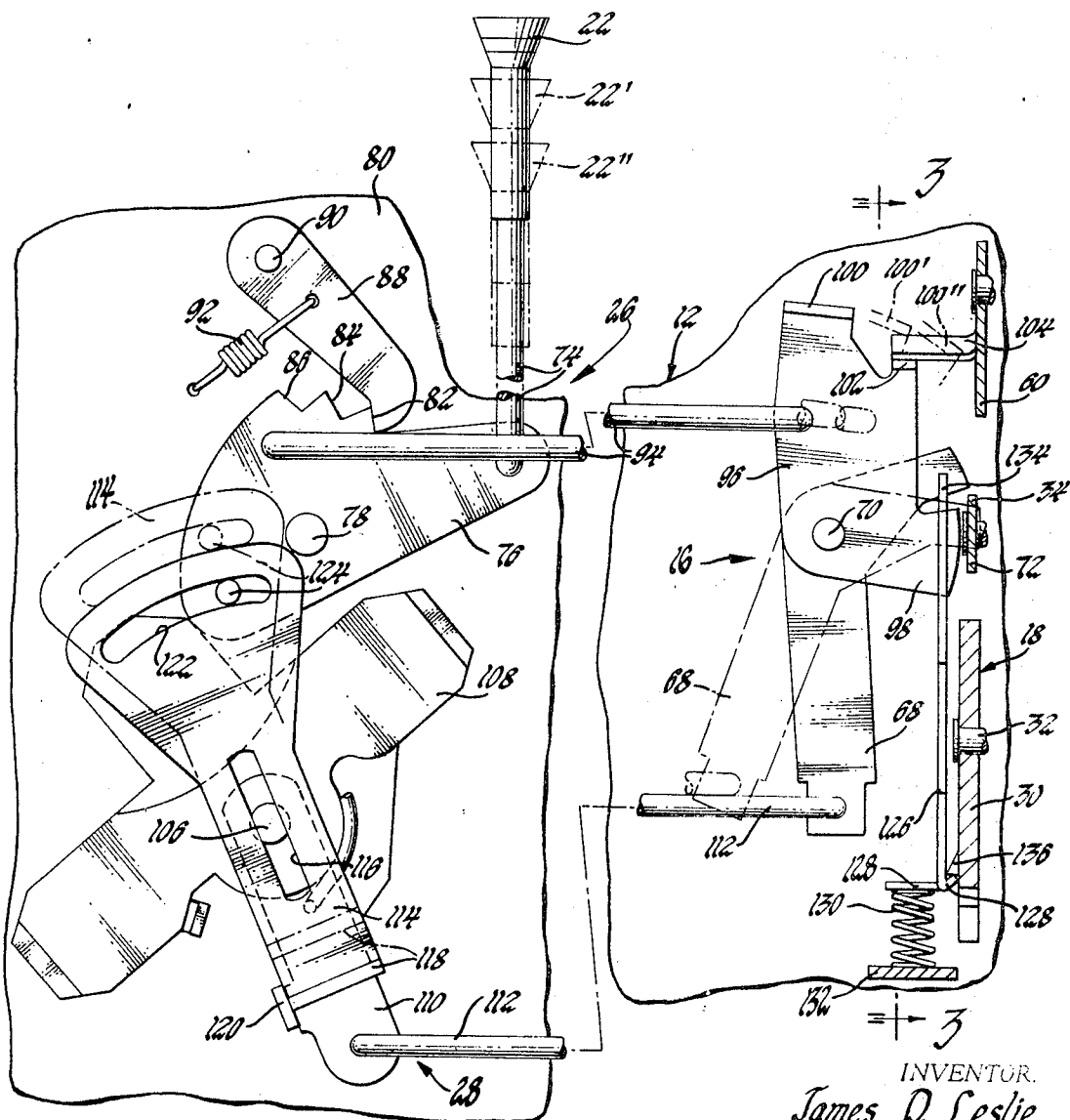
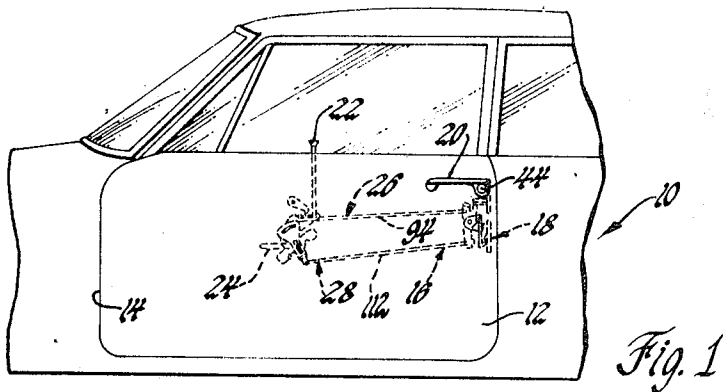
J. D. LESLIE

3,525,545

CLOSURE LATCH

Filed Nov. 6, 1967

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

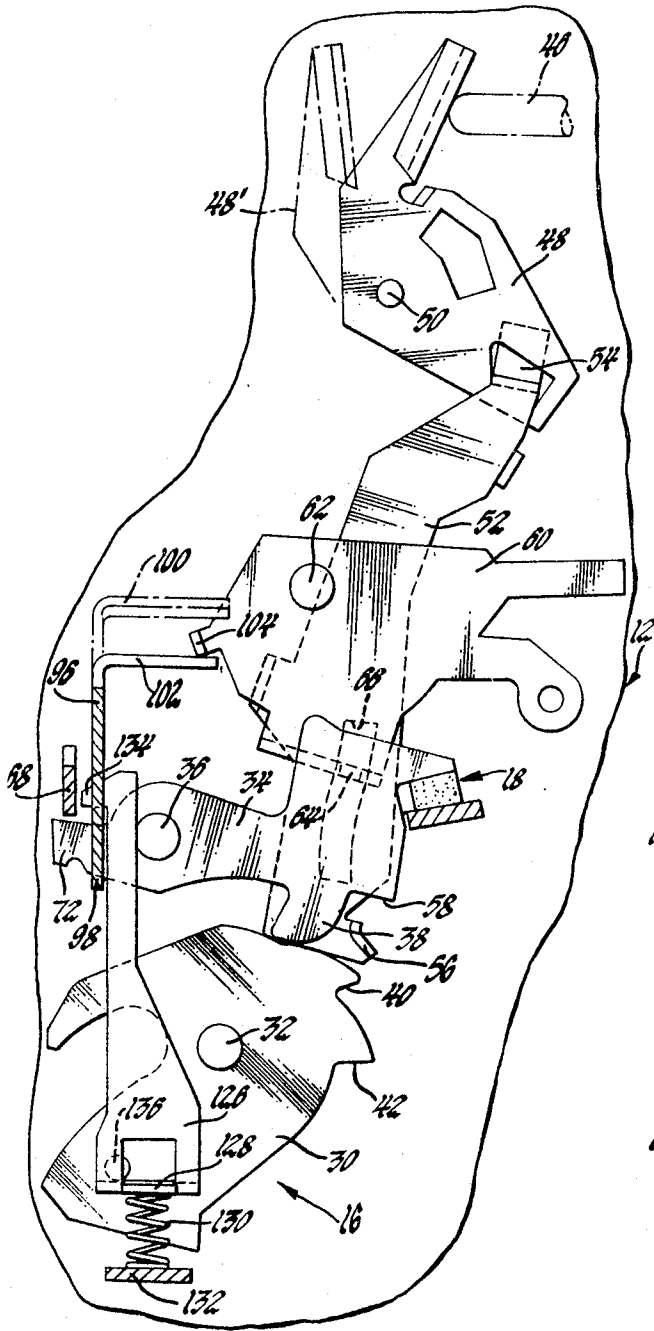


Fig. 3

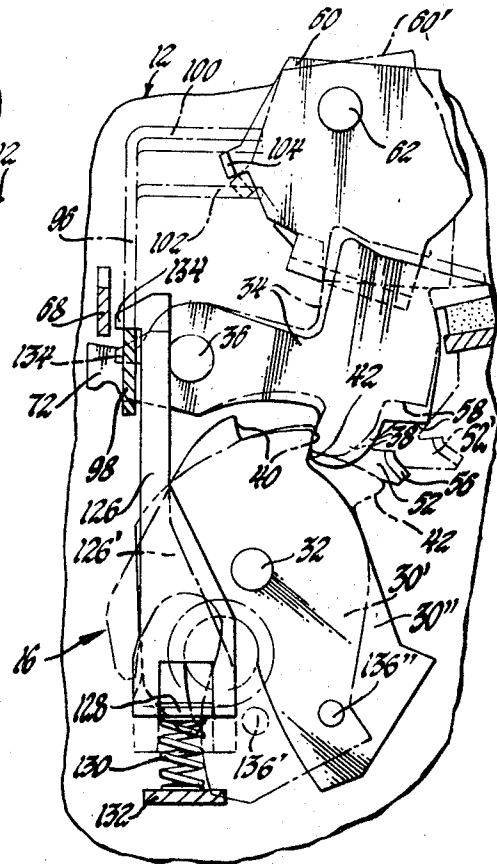


Fig. 4

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3,525,545

CLOSURE LATCH

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9 Claims

ABSTRACT OF THE DISCLOSURE

A closure latch includes a detented bolt and a shiftable intermittent member connected to an outside push button handle. The intermittent member is movable between connected and disconnected positions with respect to the detent by a locking lever. The locking lever is movable between locked and unlocked positions either by an outside key cylinder or by a transfer lever. The garnish button is pivoted to a ratchet lever which is movable to first, second and third positions and releasably held in each position by a pawl. The ratchet lever is connected to the transfer lever to move the transfer lever to three positions upon movement of the garnish button. The inside remote lever directly releases the detent and is connected to the inside remote handle by a member connected to the ratchet lever so as to be shiftable to three positions. When the garnish button is in the first position, the transfer lever is in its first position and the locking lever is in unlocked position so that the intermittent member is in connected position to connect the outside handle with the detent. The shiftable member is in its first position to connect the inside remote handle and the remote lever. When the garnish button is in the second position, the transfer lever is in its second position and the locking lever remains in unlocked position. The shiftable member is shifted to its second position wherein it disconnects the inside remote handle and the remote lever. When the garnish button is in the third position, the transfer lever is in its third position to move the locking lever to locked position and move the intermittent member to disconnected position to disconnect the outside handle and the detent. The shiftable member is moved to its third position to maintain the inside remote handle and the remote lever disconnected from each other. A shiftable lever is provided with an abutment which is engageable by an abutment on the bolt each time that the bolt is moved from unlatched to latched positions. When the transfer lever is in its first position, the bolt shiftable lever shifts the transfer lever to its second position to move the garnish button to its second position and move the shiftable member to its second position to disconnect the inside remote handle and the inside remote lever.

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

Conventional vehicle body latches include a door lock having a detented bolt, outside release means for releasing the detent, inside release means for releasing the detent, and a manually operable garnish button movable to either of two positions for alternately coupling and uncoupling the detent and the inside and the outside release means. Such latches additionally include the feature of automatic undocking and keyless locking.

The closure latch of this invention includes a garnish button which permits the operator to manually select any one of three positions. In the first position, both the inside and outside release means are coupled to the detent, in the second position, only the outside release means is coupled, and in the third position, both the inside and outside release means are uncoupled. Additionally, the closure latch includes bolt operated means which automatically

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move the garnish button from the first to the second position, wherein the inside release means is uncoupled, each time that the door is closed. Thus, if the operator does not uncouple the inside release means when the door is open, it is automatically uncoupled each time that the door is closed. The outside release means is not affected and the garnish button or an outside key cylinder must be manually operated to uncouple the outside release means. Thus, if the operator does not uncouple the inside release means after the door is opened, it is automatically uncoupled each time that the door is closed. However, the operator cannot lock himself out of the vehicle unless he consciously operates the garnish button, before leaving the vehicle, or consciously operates either the garnish button or the outside key cylinder after leaving the vehicle.

One feature of this invention is that it provides a closure latch having a manual selector for selectively coupling and uncoupling both inside and outside release means from a detented bolt or for selectively uncoupling only the inside release means. Another feature of this invention is that it provides a closure latch having a detented bolt and bolt operated means for automatically disconnecting an inside release means from the detent each time that the door is closed without requiring that the operator exert any conscious effort. Still another feature of this invention is that the bolt operated means are ineffective on the outside release means which can be coupled and uncoupled only through the manual selector means.

These and other features 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 embodying a closure latch according to this invention;

FIG. 2 is an enlarged view of a portion of FIG. 1;

FIG. 3 is a view taken generally along the plane indicated by line 3—3 of FIG. 2; and

FIG. 4 is a view of a portion of FIG. 3 showing the bolt in latched position.

Referring now particularly to FIG. 1 of the drawings, a vehicle body designated generally 10 includes a front door 12 hinged adjacent its forward edge 14 to the body 10 for movement between a closed position, as shown, and an open position, not shown.

The door 12 is latched to the body 10 in its closed position by a closure latch designated generally 16 according to this invention.

The closure latch generally includes a door lock 18, a conventional outside push button handle 20 which provides the outside release means, a garnish button 22 which provides a manual selector as will be described, an inside handle 24 which provides the inside release means, coupling means designated generally at 26 coupling the manual selector and the lock, and coupling means 28 for selectively coupling the inside release means to the lock.

Referring now to FIGS. 3 and 4, the lock 18 is generally the same as that shown and described in detail in Fox et al. 3,190,682 and, accordingly, only those details of the lock necessary to an understanding of this invention will be specifically described. Generally the lock 18 includes a bolt 30 which is pivoted at 32 between the main and auxiliary frames of the lock and spring biased to unlatched position, as shown in FIG. 3. A detent designated generally at 34 is pivoted at 36 between the main and auxiliary frames and spring biased clockwise toward the bolt. The detent includes a foot 38 which engages the edge of the bolt when the bolt is in unlatched position as shown in FIG. 3. Foot 38 is engageable with either a shoulder 40 or a shoulder 42 of the bolt 30 to hold the bolt respectively in either intermediate or fully latched positions, indicated at 30' and 30'' in FIG. 4. When the

bolt is in either latched position, the throat of the bolt engages an annular headed striker member as shown schematically in FIG. 4.

The outside handle 20 is conventional and includes a push button 44, FIG. 1, which actuates a push rod 46 shown schematically in FIG. 3. A lever 48 is pivoted at 50 to the lock frame and is engageable by the push rod 46 for movement between its full line position, as shown, and an operating position 48', shown in dot-dash lines. An intermittent link 52 has its upper end 54 pivotally connected to the lever 48. The lower end of the link 52 includes a lateral tab 56. When this tab underlies a shoulder 58 of the detent 34, as shown in FIG. 4, counterclockwise movement of the lever 48 by the push rod 46 will shift the link 52 upwardly to move the detent 34 counterclockwise about the pivot 36 and permit the bolt 30 to move to unlatched position. When the intermittent link 52 is shifted slightly counterclockwise about its upper end 54 to position 52', the tab 56 will be located to the right of the shoulder 58 so that the outside release means 20 is disconnected from the detent 34.

A locking lever 60 is pivoted at 62 to the auxiliary frame and is movable between a locked position, shown in full lines in FIGS. 3 and 4, and an unlocked position 60', shown in FIG. 4, being held in either position by a conventional overcenter spring. The locking lever includes a tab 64 which is received within a slot 66 of the link 52 so as to move the link between its operative position, as shown in FIG. 3, and its disconnected position, as shown in FIG. 4, upon swinging movement of the locking lever 60 about the pivot 62. A conventional outside key cylinder, not shown, is connected to the locking lever so as to move the locking lever between inoperative and disconnected positions from the outside of the vehicle.

An inside remote lever 68 is pivoted at 70 on the side flange of the lock and overlies a leg 72 of the detent. When the lever 68 is swung clockwise to its dot-dash position as shown in FIG. 2, it will likewise release the detent 34. The structure hereinbefore described is the same as that shown in the Fox patent.

The coupling means 26 for the garnish button 22 includes a shiftable rod 74 secured to button 22 and pivoted to a lever 76. The lever 76 is pivoted at 78 to the inner panel 80 of the door 12 and includes three shoulders 82, 84 and 86 which are selectively engageable by a pawl 88 which is pivoted at 90 to the inner panel and spring biased in a clockwise direction by a tension spring 92. When the pawl engages the shoulder 82 the garnish button 22 is in its full line UP position wherein both the inside and outside release means are coupled to the detent 34 as will be described. When the pawl engages the shoulder 84, the garnish button 22 is in its MID position 22' wherein only the outside release means is coupled as will be described. When the pawl is in engagement with the shoulder 86, the garnish button is in its DOWN position 22'' wherein both the inside and outside release means are uncoupled.

A rod 94 pivotally interconnects the lever 76 and a lever 96 which is coaxially pivoted with the inside remote lever 68. The lever 96 includes a foot 98 and a pair of spaced laterally offset tabs 100 and 102. When the garnish button is in its UP position, the tab 102 underlies a lateral tab 104 of the locking lever 60 to locate the locking lever in its unlocked position as shown in FIG. 3 so that the intermittent link 52 is coupled to the detent. When the garnish button 22' is in its MID position, the tab 100 is in position 100', FIG. 4, wherein it engages the tab 104 but does not shift the locking lever 60 so that the intermittent link 52 is still coupled or connected to the detent. When the garnish button is in its DOWN position, tab 100 has moved to its position 100'' to shift the locking lever 60 to its locked position 60' and uncouple the intermittent link 52 from the detent.

From the foregoing description, it can be seen that the

garnish button 22 provides a manually operable selector means for selectively coupling or uncoupling the outside release means and the detent. As long as the garnish button 22 is in UP or MID positions, the outside release means in the form of the push button 44 of the handle 20 is operative to release the detent from engagement with the bolt 30 to permit the bolt to move to unlatched position. The outside release means is uncoupled only when the garnish button is in its DOWN position.

The coupling means 28 includes a pin 106 secured to the inside remote handle 24 and pivotally supported by a bracket 108 secured to the inner panel 80 of the door 12. A lever 110 is rotatably mounted on the pin 106 and a rod 112 connects the lever 110 to the inside remote lever 68. A shiftable member or lever 114 includes a closed slot 116 which is received on the flattened sides of the pin 106 so that the lever 114 can shift longitudinally relative to the pin 106 and rotate with the pin and the inside remote handle whenever this handle is turned by the operator.

The lever 114 includes a lateral tab 118 which can be located in or out of juxtaposition to a lateral tab 120 of the lever 110. Whenever the tabs are in juxtaposition as shown in full lines in FIG. 2 and the remote handle 24 rotated in a clockwise direction, it can be seen that the lever 114 will pick up the lever 110 to shift the rod 112 forwardly of the vehicle and in turn swing the inside remote lever 68 clockwise to its dotted line position so that this lever will pick up the foot 72 of the detent 34 and thereby rotate the detent counterclockwise as viewed in FIG. 4 to release the bolt.

The upper end of the lever 114 includes an arcuate closed end slot 122 having its center at the pin 106. A pin 124 which is fixed to the lever 76 is received within the slot 122.

When the garnish button 22 is in its UP position as shown in full lines, the tabs 118 and 120 are in juxtaposition. When the garnish button is shifted to its MID position 22', the lever 114 is shifted upwardly to its dash line position, and the tab 118 moves out of juxtaposition to the tab 120 so that rotation of the inside remote handle has no effect to release the detent. When the garnish button is in its DOWN position 22'' the lever 114 is shifted even further upwardly. Thus the levers 110 and 114 are only operatively connected when the garnish button is in its UP position.

As hereinbefore stated, the inside release means is automatically disconnected each time that the door is moved from the open to closed position. As shown in FIGS. 2, 3 and 4, a member 126 includes a lower angular tab 128 which is fixed to the upper end of a spring 130, the lower end of which is fixed to a lateral tab 132 of the auxiliary frame. The upper end of the member 126 includes a foot 134 which overlies the foot 98 of the lever 96. An angular lateral abutment 136 is fixed to the bolt 30.

When the door is in an open position as shown in FIG. 3, the abutment 136 engages the tab 128 of the member 126. As the door is closed and the bolt engages the striker so as to be rotated in a counterclockwise direction to the intermediate latched position 30' or the fully latched position 30'', indicated in FIG. 4, the abutment 136 moves to a position 136' to shift the member 126 downwardly to a position 126'.

As the member 126 shifts downwardly, the foot 134 picks up the foot 98 of the member 96 and shifts this member clockwise as viewed in FIG. 2 from its full line position slightly to the right so that the tab 100 moves to its position 100'. This in turn shifts the lever 76 clockwise about the pivot 78 and cams the pawl 88 out of engagement with the shoulder 82 and moves the pawl into engagement with the shoulder 84. Thus the garnish button 22 shifts to its MID position wherein it will be remembered that the outside release means is still coupled but, of course, the inside release means in the form of the handle 24 is disconnected since the member 114 is

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shifted upwardly to move the tabs 118 and 120 out of juxtaposition.

If the bolt moves to fully latched position 30", the abutment to a position 136" out of engagement with tab 128. When the door is opened, the abutment 136 cams past the tab 128 so as to be located in its position as shown in FIG. 3.

Thus, this invention provides an improved closure latch.

I claim:

1. A closure latch comprising, in combination, a latch bolt movable between latched and unlatched positions, detent means for holding the bolt against movement to unlatched position, inside release means, outside release means, manually operable means movable to any one of three positions, and means connecting the manually operable means to the inside and outside release means for selectively coupling both the inside and outside release means to the detent means in one position of the manually operable means, uncoupling both the inside and outside release means from the detent means in the second position of the manually operable means, and uncoupling only the inside release means from the detent means in the third position of the manually operable means.

2. A closure latch as recited in claim 1, including means for shifting the manually operable means from the first position to the third position upon movement of the bolt from unlatched to latched position to thereby automatically uncouple the inside release means from the detent means.

3. The combination recited in claim 1 wherein the connecting means include shiftable members for respectively connecting the inside and outside release means to and from the detent means, each shiftable member being operable by the manually operable means, one of the shiftable members being operably connected to the bolt to be shifted by the bolt and in turn shift the manually operable means.

4. A closure latch comprising, in combination, a latch bolt movable between latched and unlatched positions, detent means holding the bolt against movement to unlatched position, inside release means, outside release means, coupling means operable to simultaneously connect and separately disconnect the inside release means and the outside release means and the detent means, manually operable means for operating the coupling means, and bolt operated means operable upon movement of the bolt from unlatched to latched position for operating the coupling means to automatically disconnect the inside release means and the detent means and being ineffective to disconnect the outside release means.

5. The combination recited in claim 4 wherein the

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manually operable means is movable to a pair of terminal positions wherein the inside and outside release means are selectively and alternately connected and disconnected by the respective coupling means and an intermediate position wherein the first release means is disconnected from the inside release means.

6. The combination recited in claim 5 wherein the bolt operated means is effective to move the manually operable means to the intermediate position from the one terminal position upon movement of the bolt from unlatched to latched position.

7. The combination recited in claim 4 wherein the coupling means includes a locking lever movable between locked and unlocked positions to respectively disconnect and connect the outside release means and the detent means and connectable and disconnectable levers for respectively connecting and disconnecting the inside release means and the detent means, the bolt operated means being operable to disconnect the levers and being ineffective on the locking lever.

8. The combination recited in claim 7 wherein the manually operable means is movable to a first position uncoupling both the inside and outside release means from the detent means, a second position uncoupling only the inside release means from the detent means, and a third position uncoupling the inside and outside release means.

9. A closure latch comprising, in combination, a latch bolt movable between latched and unlatched positions, detent means for holding the bolt against movement to unlatched position, inside release means, outside release means, manually operable means for selectively coupling both the inside and outside release means to the detent means and uncoupling the inside and outside release means from the detent means, and means automatically uncoupling the inside release means from the detent means independently of the outside release means upon movement of the bolt from unlatched to latched position.

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RICHARD E. MOORE, Primary Examiner

U.S. Cl. X.R.

292—336.3

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(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,525,545 Dated August 25, 1970

Inventor(s) James D. Leslie

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

Column 3, line 18, "shifed" should read -- shifted --;
line 34, "inoperative" should read -- operative --.

Column 5, line 4, after "abutment" insert -- moves --.

Column 6, line 4, delete -- respective --.

SIGNED AND
SEALED
DEC 22 1970

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents