July 20, 1954 D. E. McKAY 2,684,263

REMOTE CONTROL ASSEMBLY FOR DOOR LATCHES

Filed Nov. 6, 1950 2 Sheets-Sheet 1

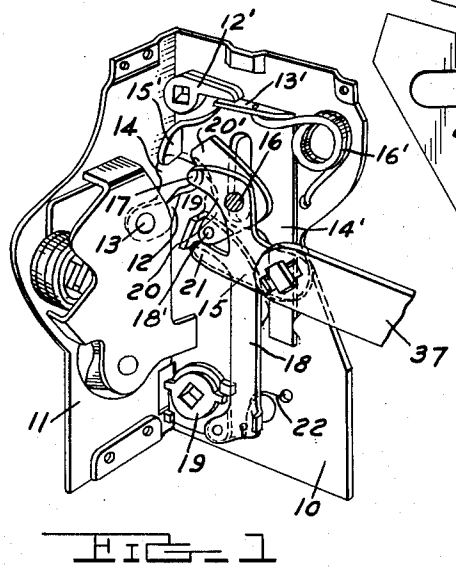


FIG. 1

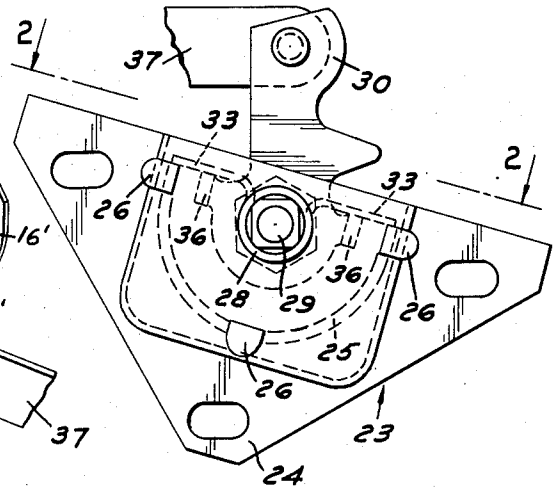


FIG. 2

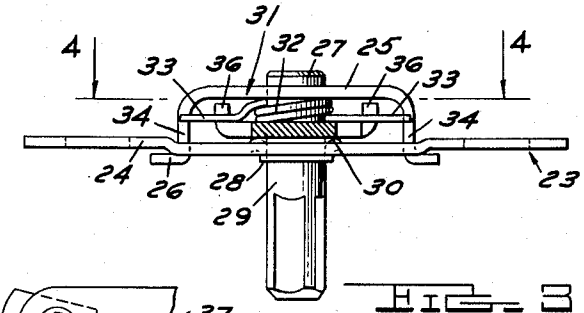


FIG. 3

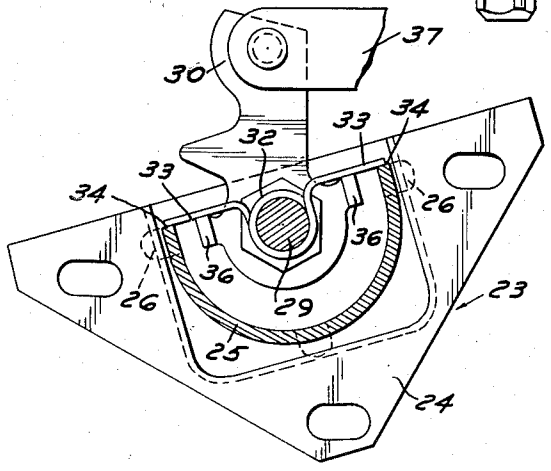


FIG. 4

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July 20, 1954 D. E. McKAY 2,684,263

REMOTE CONTROL ASSEMBLY FOR DOOR LATCHES

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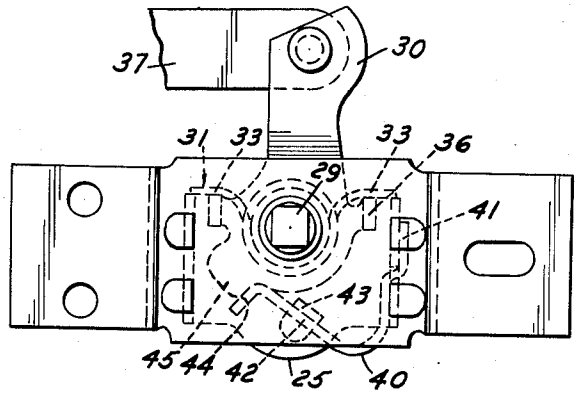


FIG. 5

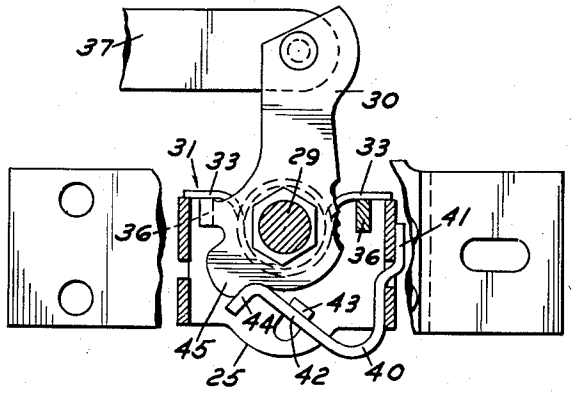


FIG. 6

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REMOTE CONTROL ASSEMBLY FOR DOOR LATCHES

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6 Claims. (Cl. 292—336.3)

1

This invention relates to improvements in the construction of remote control devices for door latches.

It is one of the objects of this invention to provide a remote control device composed of relatively few simple parts capable of being inexpensively manufactured, assembled and installed.

It is another object of this invention to provide an exceptionally simple remote control device for latches of the type commonly used in connection with vehicle body doors. Such latch assemblies usually comprise a part for controlling the operation of the latch bolt, and a member selectively operated by a remote control for actuating the bolt controlling part and for blocking movement of this part.

It is a further object of this invention to provide a remote control device of the type previously set forth having means for detenting the remote control in a position wherein movement of the bolt controlling part is blocked by the latch member connected to the remote control.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a semi-diagrammatic perspective view of one type of door latch in connection with which the remote control device forming the subject matter of this invention may be used;

Figure 2 is an elevational view of a remote control device embodying the features of this invention;

Figure 3 is a top plan view of the device shown in Figure 2;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a side elevational view of a modified form of remote control device; and

Figure 6 is a view similar to Figure 5 having certain parts broken away for the sake of clearness.

The remote control device shown in Figures 2 to 4 inclusive of the drawings may be successfully employed in connection with vehicle body door latches of the general type shown in Figure 1 of the drawings having key operated locking means, while the remote control device shown in Figures 5 and 6 is applicable to door latches of the type adapted to be locked from a remote point by means other than key actuated mechanism. It will be understood from the following description, however, that the remote control devices shown in Figures 2 to 6 inclusive may be advantageously

2

used in connection with various different types of door latch constructions.

With the above in view, reference is made more in detail to Figure 1 of the drawings, wherein the numeral 10 designates a latch supporting plate having a laterally extending flange 11 at one edge upon which the latch bolt (not shown) is suitably mounted. For controlling operation of the latch bolt, a part 12 is suitably pivotally supported on the flange 11 by a pin 13 and a portion 14 of the part 12 is extended to assume a position adjacent the inner side of the latch plate 10.

In accordance with conventional practice the part 12 is biased by spring means not shown herein to its uppermost position shown in Figure 1 of the drawings. The part 12 is swung downwardly about the axis of the pin 13 against the action of the spring means by a member 15 pivoted intermediate the ends on the plate 10 by a pin 16. The upper end of the member 15 has a dog 17 which projects over the portion 14 on the part 12 in a position to engage the latter. The construction is such that rotation of the member 15 in a counterclockwise direction about the pin 16 engages the dog with the portion 14 of the part 12 and swings the part 12 downwardly to release the bolt. Also in accordance with orthodox practice, the part 12 is swung downwardly to release the bolt by a dog 12' suitably pivoted on the plate 10 for actuation by an outside door handle (not shown) and engageable with a flange 13' turned laterally from the top of a slide 14'. The slide 14' also has a laterally extending projection 15' at one edge positioned above the portion 14 on the part 12 and engageable with the portion 14 upon downward movement of the slide 14', to release the latch bolt. A suitable spring 16' is supported on the plate 10 and engages the slide 14' to return the latter to its uppermost or inoperative position.

Provision is also made in the latch shown in Figure 1 to lock the part 12 against movement in a bolt releasing direction by the dog 12'. This is accomplished by a link 18 supported on the inner side of the plate 10 for up and down movement, and having the upper end pivoted as at 18' to one arm of a link 20. The link 20 is pivoted on the pin 16, and has an arm 20' positioned to move in blocking relationship to the underside of the flange 13' upon swinging the link 20 in a clockwise direction. The lower end of the link 18 is engaged by a dog 19 suitably rotatably supported on the plate 10 and adapted for operation by a key, not shown. As is usually the

case an over-center type spring 22 is provided for yieldably holding the link 18 in both its locked and released positions. Assuming that the link 18 is in its released or lowermost position and the dog 19 is rotated to raise the link beyond the line of action of the spring 22, the latter snaps the link 18 to its uppermost position, and rotates the link 20 clockwise to position the arm 20' in blocking relation to the flange 13' on the slide 14'. Thus the slide 14' is held against movement in a bolt releasing direction. If it is attempted to move slide 14' downwardly by an outside handle, the link 20 will not return to its Figure 1 position but will resist such movement since the direction of force thereon by slide 14' acts substantially through pin 16. On the other hand, rotation of the dog 19 in the reverse direction slides the link 18 downwardly and permits the spring 22 to return the link to its released position with respect to the part 12.

It will also be noted that the link 18 may be operated independently of the key operated dog 19 by the member 15. As shown in Figure 1 of the drawings, the member 15 has a finger 21 projecting laterally therefrom at a point below the pivot pin 16 in a position to engage the underside of a lug 19' on the link 18. The arrangement is such that rotation of the member 15 in a clockwise direction about the pin 16 engages the finger 21 with the lug 19' and moves the link 18 upwardly to a position wherein the arm 20' on the link 20 engages the flange 13' and blocks movement of the slide 14' in a downward or bolt releasing direction. It will also be noted that rotation of the member 15 in a counter-clockwise direction engages the dog 17 with the projection 14 on the part 12 to not only release the latch bolt, but in addition, to rotate the link 20 in a corresponding direction and release the arm 20' on the link 20 from the flange 13' on the slide 14'.

The member 15 is selectively swung in opposite directions about the pin 16 to accomplish the above functions by a remote control device indicated in Figures 2 to 4 inclusive by the numeral 23. This device comprises a mounting plate 24 and a housing 25. The housing 25 is in the form of a cup-shaped stamping having circumferentially spaced lugs 26 which project through openings formed in the plate 24 and which are bent laterally over the inner side of the plate to secure the housing in place on the plate. As shown particularly in Figure 3 of the drawings, the outer wall of the housing has an apertured hub portion 27 and the plate is formed with an apertured hub portion 28 aligned with the hub portion 27. An operating shaft 29 projects through the aligned apertures and is journalled in the hub portions 27 and 28. The inner end of the shaft is polygonally shaped in cross section and provides a mounting for a suitable control handle not shown herein.

The top of the housing is open, and a lever 30 extends into the housing through the open top of the latter. The lower end of the lever is secured to the shaft 29 between the mounting plate 24 and the outer wall of the housing.

The lever 30 is yieldably held in a neutral intermediate position by a single spring 31 having a coiled portion 32 sleeved on the shaft 29 between the lower end of the lever 30 and the outer wall of the housing 25. As shown particularly in Figure 4 of the drawings, the opposite ends 33 of the spring project laterally outwardly from opposite sides of the coiled portion 32 and rest on abutments or seats 34 formed by the edges of the side walls of the housing 25. In addition the ends 33 of the spring 31 are respectively engaged by lugs 36 which project laterally outwardly from the lower end of the lever 30 at opposite sides of the axis of swinging movement of the lever.

The lugs 36 as well as the seats 34 engage the undersides of the end portions 33 of the spring 31, and the spring 31 is held under tension. As a result the lever 30 is normally located by the spring 31 in a neutral intermediate position shown in Figure 2 of the drawings.

The upper end of the lever 30 is pivoted to one end of a link 37 having the opposite end pivoted to the lower end of the member 15 in a manner such that rotation of the shaft 29 in a clockwise direction (Fig. 2) swings the member 15 in the opposite direction about the pin 16 to in turn move the part 12 downwardly toward its bolt releasing position. On the other hand rotation of the shaft 29 in a counterclockwise direction (Fig. 2) swings the member 15 in a clockwise direction to in turn move the link 20' upwardly into blocking engagement with the flange 13' on the bolt releasing slide 14'. Rotation of the shaft 29 in either direction causes one of the lugs 36 to move the adjacent end 33 of the spring upwardly off of its seat 34, and thereby further tensions the spring 31. Thus when the operating force on the shaft 29 is released, the lever 30 is returned to its neutral position shown in Figure 2 of the drawings, and the member 15 is moved to its normal position shown in Figure 1 of the drawings. It is important to note that the above operation of the remote control is accomplished with a single simply designed spring; and as a consequence, the cost of the remote control device is materially reduced.

Referring now to Figures 5 and 6 of the drawings, provision is made in the remote control device for detenting or frictionally holding the member 15 in a position wherein the link 20' is held in blocking engagement with the flange 13' on the bolt releasing slide 14'. It will be noted from Figures 5 and 6 that the remote control device is similar in construction to the device 23, and accordingly the same reference characters are used to indicate corresponding parts.

The principal difference in construction between the embodiment shown in Figures 5 and 6 and the one illustrated in Figures 1 to 4 inclusive is that a second spring 40 is provided which is somewhat stronger than the spring 31. This spring is generally U-shaped in configuration, and one end 41 is anchored on one side of the housing 25. The other end 42 of the spring 40 rests against an abutment 43 in the form of a lug struck laterally outwardly from the outer wall of the housing. The extremity of the end 42 of the spring is turned laterally outwardly with respect to the shaft 29 to form a finger 44 which is engaged by a cam part 45 on the lower end of the lever 30 when the lever 30 is in its neutral position shown in Figure 5 of the drawings.

The above construction is such that the cam 45 moves away from the finger 44 on the spring 40 when the lever 30 is swung in a clockwise direction by the shaft 29 to in turn rotate the member 15 in its bolt releasing direction. On the other hand when the lever 30 is swung by the shaft 29 in a counterclockwise direction from its neutral position to move the member 15 in a direction to bring the arm 20' or the link 20 in blocking engagement with the bolt releasing slide 14', the cam 45 abuts the finger 44 and displaces the end portion 42 of the spring 40 outwardly.

As a result the end portion 42 of the spring 40 rides up over the outer surface of the cam 45 and exerts sufficient force on the cam to prevent return movement of the lever 30 to its neutral position by the spring 31. Thus the member 15 is held in a position wherein the slide 14' is blocked against movement in its bolt releasing direction until the shaft 29 is manually turned in a clockwise direction sufficiently to release the cam from the spring 40. The spring 31 then operates to return the lever 30 to its neutral position shown in Figure 5 of the drawings. This construction is particularly applicable to latch assemblies of the type wherein the key actuated mechanism is omitted.

What I claim as my invention is:

1. A remote control for door latches having a plate, a part for controlling operation of a bolt supported by said plate for movement relative to the latter, and a member supported by said plate for movement in opposite directions from a neutral position alternatively to operate said part and to block operation of said part, said remote control having a supporting unit and a shaft journalled on said supporting unit, a lever secured at one end to said shaft and movable in opposite directions from a neutral intermediate position, a link for connecting the free end of said lever to said member, a spring opposing swinging movement of said lever in either direction from its neutral intermediate position with substantially equal forces applied in opposed relationship to said lever, said spring having a coiled intermediate portion encircling said shaft adjacent said lever and having end portions extending laterally from opposite sides of said intermediate portion, bearing means on said lever at opposite sides of the axis of swinging movement thereof respectively engageable with the end portions of said spring, abutments on said supporting unit respectively engageable with said end portions beyond said bearing means and permitting unobstructed movement of said end portions by said bearing means upon swinging of said lever in opposite directions, and detent means engageable with said lever upon swinging of the latter in one direction from its neutral intermediate position to hold said lever in a position wherein said member is in position to block operation of said bolt controlling part.

2. The remote control set forth in claim 1 wherein the detent means comprises a spring secured at one end to the supporting unit having a part adjacent its opposite end, and a cam on said lever positioned to frictionally engage said last-named part when said lever is swung in said one direction.

3. The remote control set forth in claim 2, wherein said first-named spring is held under

tension with the end portions firmly seated against the abutments on the supporting unit, and wherein said bearing means are in the form of lugs projecting laterally from said lever in positions to engage the same sides of said end portions engaged by said abutments.

4. A remote control of the character described comprising a supporting unit and a shaft journalled on said supporting unit, a lever secured at one end to said shaft and movable in opposite directions from a neutral intermediate position, a spring opposing swinging movement of said lever in either direction from its neutral intermediate position with substantially equal forces applied in opposed relationship to said lever, said spring having an intermediate portion carried by said shaft adjacent said lever and having end portions extending laterally from opposite sides of said intermediate portion, bearing means on said lever at opposite sides of the axis of swinging movement thereof respectively engageable with the end portions of said spring, abutments on said supporting unit respectively engageable with said end portions and permitting unobstructed movement of said end portions by said bearing means upon swinging of said lever in opposite directions, and detent means engageable with said lever upon swinging of the latter in one direction from its neutral intermediate position to hold said lever against return movement by the action of said spring.

5. The remote control set forth in claim 4 wherein the detent means comprises a spring secured to the supporting unit and having a cam-engaging portion, and a cam on said lever positioned to frictionally engage said cam-engaging portion when said lever is swung in said one direction.

6. The remote control set forth in claim 4, wherein said spring is held under tension with the end portions firmly seated against the abutments on the supporting unit, and wherein said bearing means are in the form of lugs projecting laterally from said lever in positions to engage the same sides of said end portions engaged by said abutments, the intermediate portion of said spring being in the form of a coil encircling said shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,493,794	Robertson	May 13, 1924
1,760,491	Grund et al.	May 27, 1930
2,246,785	Dall	June 24, 1941
2,393,147	Cousino	Jan. 15, 1946
2,536,295	Leonard	Jan. 2, 1951
2,554,438	Bacon et al.	May 22, 1951