

UNITED STATES PATENT OFFICE

2,629,453

AUTOMOTIVE VEHICLE DOOR CONTROL

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4 Claims. (Cl. 180—82)

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This invention relates to door latching and control mechanism and is particularly, although not exclusively, adapted for use with the doors of automotive vehicles, and a general object is to provide a construction which includes co-operating parts mounted on the door and/or frame, and/or door supporting means, and arranged so that a maximum of safety may be secured in door operation.

A more specific object of the invention is to provide a door construction for an automotive vehicle including a check member which permits the door to be opened readily after the latch bolt is released but which can be conditioned to offer resistance to door opening.

Another object of the invention is to provide a novel automotive vehicle door control means wherein a vehicle speed influenced member allows easy movement of the door bolt to door releasing position after the bolt is released but which, when the vehicle is operating above a predetermined speed, requires exertion of considerable force in order to move the bolt to door releasing position.

In a construction of the character described and claimed herein, the bolt release member may be of such character that a very light pressure, such as can be exerted by a finger tip, may be employed to release the bolt since after the release of the bolt while the vehicle is running above a certain speed the door may be opened only by the application of a heavy force upon the door. Should, however, the vehicle speed be below the certain rate the door can be readily opened.

As a result of the described construction, likelihood of children or thoughtless persons opening the door, while it is dangerous to do so, is avoided, while the objection of riders who refuse to ride in a vehicle with locked doors is overcome.

An additional object of the invention is to provide a novel speed controlled door bolt check member.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a fragmentary side elevation showing an automotive vehicle with the invention applied thereto;

Fig. 2 is a section taken on line 2—2, Fig. 1;

Fig. 3 is a section taken on line 3—3, Fig. 2;

Fig. 4 is an enlarged section taken on line 4—4, Fig. 2;

Fig. 5 is a view similar to Fig. 4, showing the parts in another position, and

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Fig. 6 is a wiring diagram.

Referring to the drawing by reference characters, the invention is shown as embodied in a construction which includes the vehicle 10, having doors 11 arranged thereon. The doors are adapted to be held in closed position by latch members 12 and companion strike members 13.

As shown, the latches 12 are similar to the latches disclosed in the applicant's copending patent application Serial No. 103,431, filed July 7, 1949. Each latch includes a bolt 14 which is pivoted at 15 to a suitable support and the bolt is held in engaged position by a catch member 16. The bolt includes an end member, shown as a roller 17, which moves in a slot 18 in the strike 13 as shown in Fig. 4. As described in the aforesaid application, two or more latches may be coincidentally locked by a locking member 19. The locking member 19 is also similar to the locking member disclosed in the applicant's prior Patent 2,204,208, granted June 11, 1940, and permits locking and unlocking with or without the use of a key.

The latch in the present disclosure includes a handle 20 with a push button 21 which operates to move a releasing arm 22. The push button is of the type disclosed in application Serial No. 103,431 and Patent 2,204,208, mentioned above.

As stated above, an object of this invention is to prevent accidental or thoughtless door opening when it is dangerous and to provide assurance to those who object to riding in a vehicle the latches of which are positively locked.

To accomplish the purposes mentioned, the applicant provides on the strike 13 a check member 23, which is shown as pivoted at 24 to the strike casing. The check member projects through a slot 25 in a wall defining the slot 18 in the strike and the check member includes an inclined cam face 26 and a more sharply inclined second cam face 27. A spring 28 normally urges the check member to the full line position shown in Fig. 4.

When the door is closed the roller 17 moves along the slot 18 and, striking the cam surface 26, depresses the member 23 until the bolt moves to its door holding position. During this movement the check member moves to the broken line position shown in Fig. 4 and then moves back to full line position after the roller has passed the cam surface 26.

The latch may be released by the outside push button 21 or by operating an inside remote control member, as shown in application Serial No. 103,431 aforesaid, to cause a rod 29 to release the latch. When the latch is so released and

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as the door opens, the bolt roller 17 will move down the slot 18 and will strike the cam surface 27 and will rock the check member 23 about its pivot 24 to the broken line position shown in Fig. 4.

Thus it will be seen that the act of releasing a latch and opening a door will cause the check 23 to be rocked.

To oppose free rocking of the check and consequently prevent easy opening of the door when door opening conditions are not safe, a safety control is provided. As shown this safety control includes a stiff spring 30 mounted at 31 upon the strike. The spring includes an end portion 32 which is disposed adjacent to, but spaced from, a tongue 33 upon the check 23. Between the spring portion 32 and the tongue 33 the head 34 on a solenoid armature or plunger 35 is disposed. The solenoid plunger is actuated by its solenoid 36 with a spring 37 normally urging the head 34 between the parts 32 and 33. As shown, the solenoid 36 is mounted on a base 37' which is pivoted at 38 to the strike. This permits the solenoid and its armature to move slightly as will be presently described.

The free end of the check 23 is provided with a cam surface which, when the check is rocked about its pivot 24, pushes the switch arm 40 of a micro-switch 41 to closed position.

The operation of the construction will be apparent by reference to Fig. 6 of the drawing. In the wiring diagram, as shown, one lead 42 from the solenoid is grounded as at 43. The other lead 44 from the solenoid extends through the switch 41 and from the switch 41 another lead 45 is connected to one side 46 of a speed controlled switch member 47 which may be of the character disclosed in Fig. 7 of the applicant's prior latch Patent 2,187,933, granted June 23, 1940. The other side of the speed controlled member 47 is connected by a lead 48 with a source of current 49 which latter is grounded as at 50.

In operation, when the vehicle is running, the speed controlled switch 47 will be open so that no current will pass therethrough. The spring 37 will then retain the head 34 between the spring portion 32 and the tongue 33. Should the latch be released under this condition the bolt roller 17 will contact the steep cam 27, thus rocking the check 23 sufficiently to push the head 34 against the spring portion 32. The spring 30 is made sufficiently heavy so that it offers strong resistance to being flexed and thus much force must be used to cause the member 17 to rock the check 23 sufficiently to allow the bolt to pass from the slot 18 and thereby allow the door to be opened. Thus accidental door opening is prevented while emergency door opening is provided for by the described construction.

Now, considering that the vehicle is at rest or that its speed is at below a predetermined rate, depending upon the setting of the speed controlled switch 47, and that the latch release is operated. In this condition the switch 47 will be closed and current will pass to the normally open switch 41. When now the latch is released and the roller 17 moves the check 23 towards the dotted line position, the first slight movement will cause the cam surface 39 on the check to move the switch arm 40 to closed position. This will complete the circuit through the switch 41 to the solenoid 36, thus energizing the solenoid and causing the latter to retract the head 34 of the solenoid from the normal location from between the spring portion 32 and the check tongue 33

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to thereby allow the check 23 to move freely and to offer no resistance of the bolt from the slot 18.

Should the door be closed while the vehicle is still the roller 17 will strike the low pitched face 26 of the check 23, thus closing the circuit and retracting the head 34 so that no opposition is offered by the check. Should the vehicle be moving at a speed above a predetermined rate while the door is being closed, as occasionally happens, the switch 41 would be open and thus the head 34 would not be retracted and in this case the door would have to be slammed although without much force because the cam 26, being of a very low pitch, offers gradual opposition as the roller 17 moves therealong. Contrarily, the cam 27 has a steep pitch and offers much opposition to the movement of the roller.

The applicant's Patent 2,210,230, granted August 6, 1940, discloses a vehicle door control construction wherein the wiring arrangement is similar to that disclosed in the present application and the applicant's prior Patent 2,450,372, granted September 28, 1948, includes a vehicle speed controlled bolt which is carried by the door and wherein vehicle speed controlled means mounted on the pillar governs release of the bolt. In these patents, however, the structure disclosed differs from that of the present application.

Having thus described the invention, what is claimed is:

1. In an automotive vehicle construction, a door movable to open and closed positions, a bolt on the door, a strike, means to pivotally mount the bolt on the door for movement across the strike to and from engaged position, a check pivotally mounted on the strike, said check having cam faces thereon, one of said cam faces being engageable by the bolt as the latter moves to engaged position, the other cam face being engageable by the bolt as the latter moves to disengaged position, spring means carried by said strike and spaced from said check, movably mounted bumper means interposed between said check and spring, and means normally holding the bumper means between the check and spring while the vehicle speed is greater than a certain predetermined rate.

2. In an automotive vehicle construction, a door movable to open and closed positions, a bolt on the door, a strike, means to pivotally mount the bolt on the door for movement across the strike to and from engaged position, a check pivotally mounted on the strike, said check having cam faces thereon, one of said cam faces being engageable by the bolt as the latter moves to engaged position, the other cam face being engageable by the bolt as the latter moves to disengaged position, spring means carried by said strike and spaced from said check, movably mounted bumper means interposed between said check and spring, means normally holding the bumper means between the check and spring, and means to cause the bumper means to be withdrawn from between said check and said spring when the latch bolt is released while the vehicle speed is less than a certain predetermined rate.

3. In an automotive vehicle construction, a door movable to open and closed positions, a bolt on the door, a strike, means to movably mount the bolt on a horizontally disposed shaft on the door for movement across the strike to and from engaged position, a check movably mounted on the strike, said check having cam faces thereon, one of said cam faces being engageable by the bolt as the latter moves to engaged posi-

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tion, another cam face being engageable by the bolt as the latter moves to disengaged position, means normally restraining movement of the check by the bolt as the bolt moves towards disengaged position, and vehicle speed controlled means operable when the vehicle speed is less than a certain rate to reduce the force required to cause the bolt to overcome the restraining means and to move the check to bolt releasing position.

4. In an automotive vehicle construction, a door movable to open and closed positions, a bolt on the door, a strike, means to pivotally mount the bolt on the door for movement across the strike to and from engaged position, a check pivotally mounted on the strike for movement to and from bolt engaging position, said check having cam faces thereon, one of said cam faces being engageable by the bolt as the latter moves to engaged position, the other cam face being engageable by the bolt as the latter moves to disengaged position, spring means normally restrain-

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ing movement of the check to bolt releasing position when the vehicle speed is above a certain rate, and vehicle speed controlled means to reduce the effect of the movement restraining means while the vehicle speed is less than a certain predetermined rate.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|-----------|--------------|----------------|
| 2,187,933 | Craig ----- | Jan. 23, 1940 |
| 2,187,934 | Craig ----- | Jan. 23, 1940 |
| 2,187,935 | Craig ----- | Jan. 23, 1940 |
| 2,187,936 | Craig ----- | Jan. 23, 1940 |
| 2,210,230 | Craig ----- | Aug. 6, 1940 |
| 2,314,815 | Brandt ----- | Mar. 23, 1943 |
| 2,450,052 | Marple ----- | Sept. 28, 1948 |