April 5, 1932. F. D. GRUND 1,852,008

DOOR FASTENER

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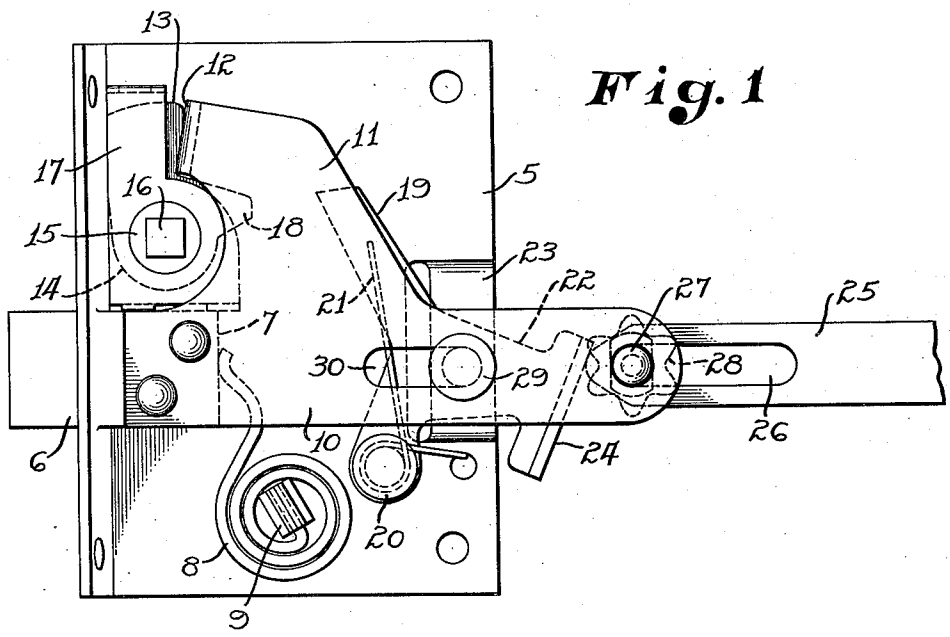

Fig. 1

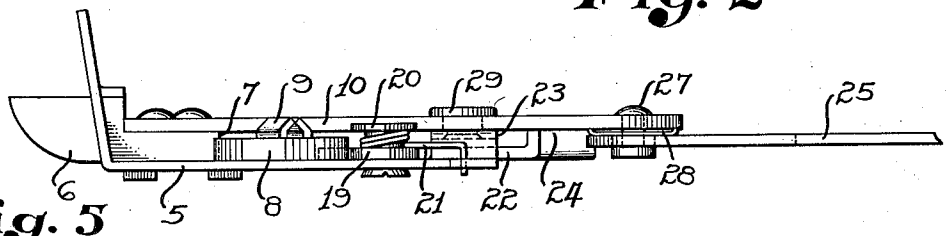

Fig. 2

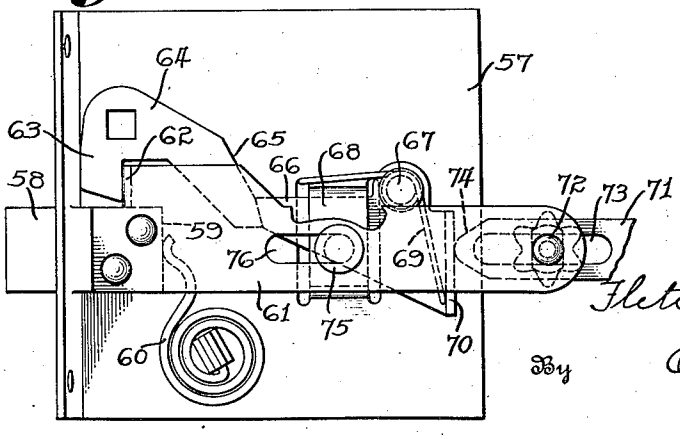

Fig. 5

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Fig. 3

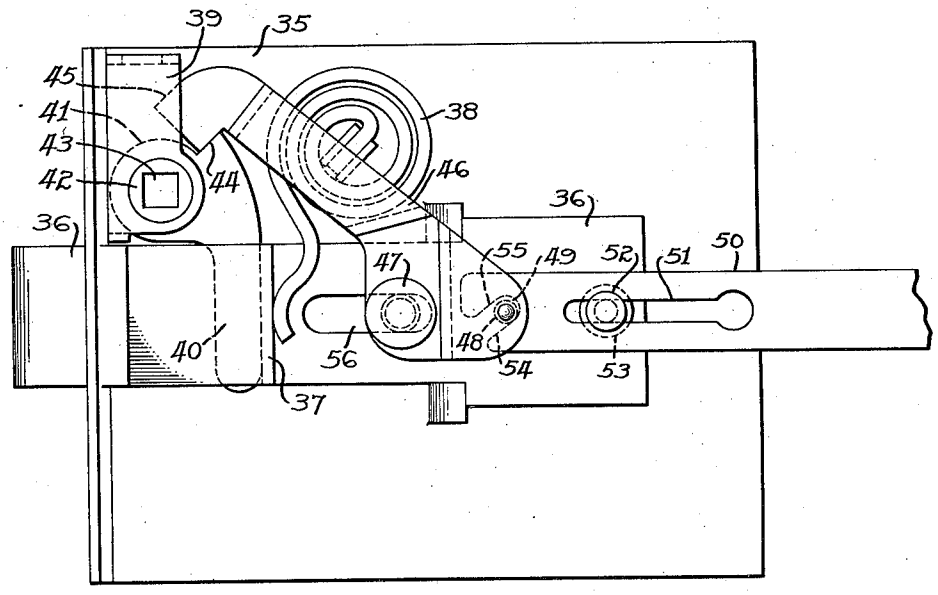
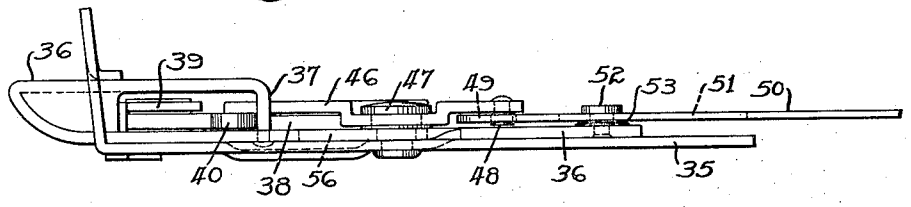


Fig. 4



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UNITED STATES PATENT OFFICE

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DOOR FASTENER

Application filed January 5, 1929. Serial No. 330,537.

This invention relates to a door fastener, with particular reference to its adaptation to the type of door generally used on sedans, coaches and other closed car bodies.

The general object of the invention is to provide a door fastener having a latch bar or bolt normally retractable by means of an outside handle and, in connection therewith, to provide improved means operable by a remote control inside the car to retract the latch bar or to latch the same so that the door cannot be opened from the outside.

The invention consists further in various novel details and combinations of elements, the nature and purpose of which will be hereinafter more specifically explained in connection with the accompanying drawings, illustrating the same.

In the drawings:

Figure 1 is an elevation of my improved door fastener as viewed from the side adjacent the door.

Figure 2 is an edge view of the same as viewed from the bottom of Figure 1.

Figure 3 is a view similar to Figure 1, but showing a modified construction.

Figure 4 is an edge view, as viewed from the bottom of Figure 3.

Figure 5 is a view similar to Figure 1, but showing another modification.

As shown in Figures 1 and 2, the invention is mounted on a case plate 5 which is adapted to be attached to the inner face of the door at the free edge thereof. A latch bar or bolt 6 is adapted to be projected from the case plate to engage the striker plate on the door jamb. This bolt is formed with a shoulder 7 which is engaged by a spring 8 mounted in lugs 9 to hold the bolt in projected position except when it is retracted by external force.

A slide 10 is secured to the bolt 6 and is provided with an extension 11 terminating in a shoulder 12 which is in position to be engaged by a projection 13 on a roll-back member 14. The roll-back member is secured to a bushing 15 in which is mounted a door handle shank 16. The bushing 15 is rotatably mounted in the case plate 5 and a bearing plate 17 secured to the case plate, so that the handle, which is secured to the shank 16 outside the door, may be rocked to retract the bolt 6 and open the door.

The roll-back member 14 is formed with a lug 18 adapted to be engaged by a pivoted dog or other stop 19 to dog the roll-back member so that the door cannot be opened from the outside. In this instance the dog 19 is pivotally mounted on a pin 20 secured to the case plate and is normally held in retracted or in advanced position by means of a spring 21, as shown in Figure 1.

The dog 19 is formed with an arm 22, which projects through a retainer 23 formed in the housing and terminates in a shoulder 24 disposed at an inclination with reference to the direction of the movement of the slide 10. The shoulder 24 is engaged by the rounded end of a remote control bar or link 25. The bar 25 is formed with a slot 26 through which projects a pin 27 mounted in the slide 10, thus providing a lost motion connection between the slide 10 and the remote control bar 25. A friction washer 28 is mounted on the pin 27. A guide pin 29 is secured to the retainer 23 and extends through a slot 30 in the slide 10.

With the remote control bar 25 in the position shown in Figure 1, the bolt 6 may be retracted by means of the roll-back member 14 through operation of the handle on the shank 16. In such operation the slot 26 permits the slide 10 to move backwardly without disturbing the position of the remote control bar 25 and during this movement the dog 19 is held against the edge of the retainer 23 by the spring 21. Also the bolt 6 may be retracted by means of the remote control bar 25 through the engagement of the pin 27 with the front end of the slot 26. The lost motion permitted by the slot 26

also permits the remote control bar 25 to move forwardly to hold the door handle so that it cannot be opened from the outside. This dogging operation is effected by the cam engagement of the front end of the bar 25 with the shoulder 24, thus rocking the dog 19 until it engages the lug 18 on the roll-back member. The friction washer 28 merely prevents rattling. The bar 25 is held in its forward position in any suitable manner as by spring catch means associated with the remote control handle.

In the modification shown in Figures 3 and 4, the invention is mounted on a case plate 35 through which a latch bar or bolt 36 projects. This bolt is formed with a shoulder 37 which is engaged by a spring 38 to normally hold the bolt in projected position. The other side of the shoulder 37 is engageable by a projection 40 formed on a roll-back member 41 to retract the bolt. The roll-back member 41 is secured to a bushing 42 which is rotatably mounted on the case plate 35 and in a bearing plate 39 secured to the case plate, and is provided with a door handle shank 43. A shoulder 44 formed in the roll-back member 41 is engageable by a projection 45 on a dog or stop 46 to dog the roll-back member so that it cannot be used as a medium for retracting the bolt. The dog 46 is pivotally mounted on a pin 47 secured to the case plate and carries a pin 48 which projects through an inclined slot 49 formed in the end of a remote control bar 50. This bar is also formed with a longitudinal slot 51 through which projects a guide pin 52 secured to the bolt 36. This provides a lost motion connection between the bolt 36 and the remote control bar 50, while the washer 53 prevents rattling. In this construction, as the bar 50 is moved forwardly, the inclined edge 54 of the slot 49 has a cam action on the pin 48 to move the dog 46 into dogging position. As the bar 50 is retracted, the inclined edge 55 engages the pin 48 to rock the dog 46 into position to release the roll-back member 41 and permit the door to be opened by means of a handle on the shank 43. The slot 46 through which the pin 47 projects permits the bolt 36 to be retracted, while the slot 51 permits the bar 50 to be moved forwardly to dogging position and at the same time permits the retraction of the bolt 36 by means of the bar 50, when desired.

In the modification shown in Figure 5, the invention is mounted on a case plate 57 from which a latch bar or bolt 58 projects. This bolt is formed with a shoulder 59 which is engageable by a spring 60 to hold the bolt normally in projected position. A slide 61 is secured to the bolt 58 and is formed with a shoulder 62 adapted to be engaged by a projection 63 on the roll-back member 64. This roll-back member has a rearwardly and downwardly projecting finger 65 which is engageable by the end of a dog 66 to dog the roll-back member with the bolt projected. The dog is pivoted on a pin 67 and projects through a keeper 68 to engage the end of the finger 65. A spring 69 mounted on the pin 67 is adapted to engage a flange 70 at the rear end of the dog to rock the latter out of dogging position. A remote control member 71 is connected to the slide 61 by a pin 72 which passes through a slot 73, thereby providing a lost motion connection. When the member 71 is advanced beyond bolt releasing position a nose 74 at its front end engages the finger 70 to rock the dog to dogging position. The slide 61 is guided on the outer face of the keeper 68 by a pin 75 which extends through a slot 76 in the slide. It will be noted that when the dog is in dogging position and pressure is exerted to rock the roll-back member to retract the bolt, the ends of the finger 65 and the dog 66 have a toggle engagement which prevents the actuation of the bolt, since the movement of the dog is limited by the upper edge of the keeper 68. When the member 71 is withdrawn the dog 66 is adapted to be swung by the spring 69 to the lower end of the keeper 68 and out of engagement with the finger 65. The abutting ends of the finger 65 and the dog 66 are inclined so that one has a cam action on the other. If desired, the inclination of these abutting ends may be such that, when the member 71 is withdrawn from dog actuating position, the retractive movement of the roll-back member 64 will throw the dog to non-dogging position without the necessity of employing the spring 69.

From the foregoing description it will be seen that I have provided means whereby the door may be optionally controlled from outside the door by means of the roll-back member or from inside the door by means of the remote control bar. The latter, however, may be used as the instrument for actuating the dog to positively dog the roll-back member so that it cannot be operated. I have shown and illustrated specifically two forms in which the invention may be embodied, but it is to be understood that the invention may be embodied in other forms without departing from the scope thereof, as defined in the appended claims.

What I claim is:

1. A door fastener comprising a case plate, a spring tensioned bolt on said case plate, inside means for retracting said bolt including a longitudinally movable bolt-retracting element, outside means for retracting said bolt, a dog for said outside means movable to and from dogging position, a lateral extension on said dog, and co-engaging cam means on said extension and the end portion of said bolt retracting element for actuating said dog to dogging position.

2. A door fastener comprising a case plate, a spring-tensioned bolt on said case plate, inside means for retracting said bolt, outside means for retracting said bolt, said inside means including a horizontally disposed remote control member, a dog for said outside means, the extreme end of said horizontally disposed member being engageable with said dog for moving the latter to dogging position when said inside means is moved in non-bolt-retracting direction.

3. In a door fastener, the combination of a case plate, a bolt slidably mounted on the case plate, a roll-back member normally operable to retract the bolt, a second member movable rearwardly to retract the bolt independently of the roll-back member, a movable stop, and co-engageable cam surfaces on the movable stop and on the outer end of said second member respectively, operable by a forward movement of the latter to prevent the actuation of the roll-back member to retract the bolt.

4. In a door fastener, the combination of a case plate, a bolt slidably mounted on the case plate, a roll-back member normally operable to retract the bolt, a second member substantially in alinement with the bolt and slidable rearwardly to retract the bolt independently of the roll-back member, a movable stop, and a spring normally holding said stop out of the path of the roll-back member, said movable stop having an extension directly in the path of the end of said second member, when the latter is advanced, being engageable with said extension to move the stop, in opposition to the spring, into the path of the roll-back member to prevent the latter from operating to retract the bolt.

5. In a door fastener, the combination of a case plate, a latch bolt slidably mounted thereon, a roll-back member for retracting said bolt, a dog movable into position to dog said roll-back member, a retainer for guiding said dog and constituting a back stop therefor, and means on the face of said keeper remote from the dog for guiding said bolt.

6. In a door fastener, the combination of a case plate, a latch bolt slidably mounted thereon, a roll-back member for retracting said bolt, a dog movable into position to dog said roll-back member, a retainer on said case plate, said dog having a lateral projection projecting through and guided by said retainer, a guide pin on the outer face of the retainer, said bolt having a slot receiving said pin, and a remote control member operable in one direction to engage said lateral projection and move the dog to locking position, and movable in the opposite direction to retract the bolt independently of the roll-back member.

7. A door latch comprising a case plate, a spring tensioned latch bolt on said case plate, outside means for retracting said latch bolt; inside means for retracting said bolt including a longitudinally movable bolt-retracting element, a dog pivoted intermediate its ends and having one end movable to block movement of said outside retracting means, a lateral extension on the opposite end portion of said dog, and co-engaging cam surfaces on said extension and the end portion of said bolt retracting element for actuating said dog to dogging position.

8. A door latch comprising a case plate, a spring tensioned latch bolt movable on said case plate, inside means for retracting said latch bolt including a longitudinally movable bolt retracting element, a roll back operable from the outside for retracting said latch bolt, a dog movable to block movement of said roll back, a raised portion on said case plate, said dog being disposed at one side of said raised portion and said latch bolt being guided on the opposite side of said raised portion, an extension on said dog, and co-engaging cam means on said extension and the end portion of said bolt retracting element for actuating said dog to dogging position.

9. A door latch comprising a case plate, a spring tensioned latch bolt movable on said case plate, inside means for retracting said latch bolt including a longitudinally movable bolt retracting element, a roll back operable from the outside for retracting said latch bolt, a dog movable to block movement of said roll back, a raised portion on said case plate, means to pivot said dog on one side of each raised portion, means on the opposite side of the raised portion to guide movement of said latch bolt, and co-engaging cam means on said extension and the end portion of said bolt retracting element for actuating said dog to dogging position.

10. A door latch comprising a case plate, a spring tensioned latch bolt on said case plate, outside means for retracting said latch bolt, inside means for retracting said latch bolt including a longitudinally movable bolt-retracting element, means providing lost motion between said element and bolt when said latch bolt is projected, a pivoted dog having a portion movable to block movement of said outside retracting means, an extension on said dog disposed in the path of movement of said element, and co-engageable cam surfaces on the forward end of said element and said extension for actuating said dog to dogging position upon said lost motion of said element.

11. A door latch comprising a case plate, a spring tensioned latch bolt on said case plate outside means for retracting said latch bolt inside means for retracting said latch bolt including a longitudinally movable bolt-retracting element, means providing lost motion between said element and bolt when said latch bolt is projected, a dog movable over said case plate for blocking movement of said

outside retracting means, spring means normally holding said dog away from dogging position, an extension on said dog, stop means against which said dog normally rests adapted to dispose said extension in the path of said lost motion of the retracting element, and co-engageable surfaces on the forward end of said element and said extension for actuating said dog to dogging position upon said lost motion of said element.

In testimony whereof I have hereunto signed my name to this specification.

FLETCHER D. GRUND.