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G. D. CLOUTIER ET AL

2,272,167

DOOR LOCK

Filed March 20, 1940

2 Sheets-Sheet 1

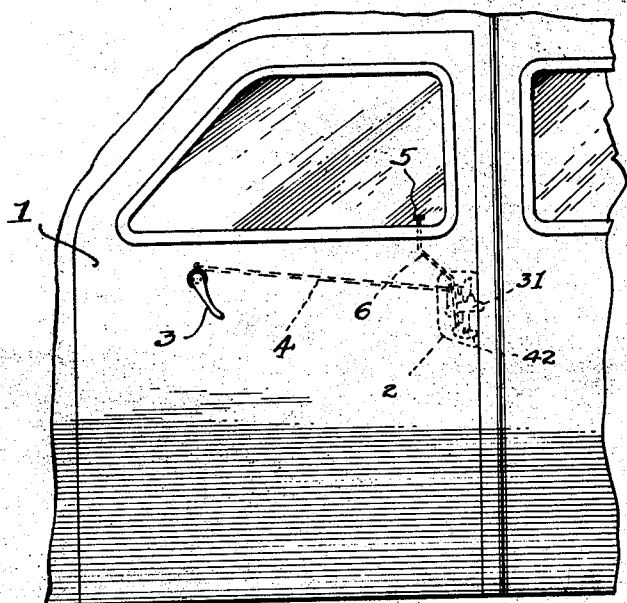


Fig. 1

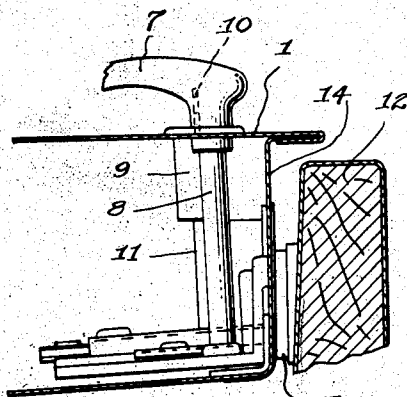


Fig. 2

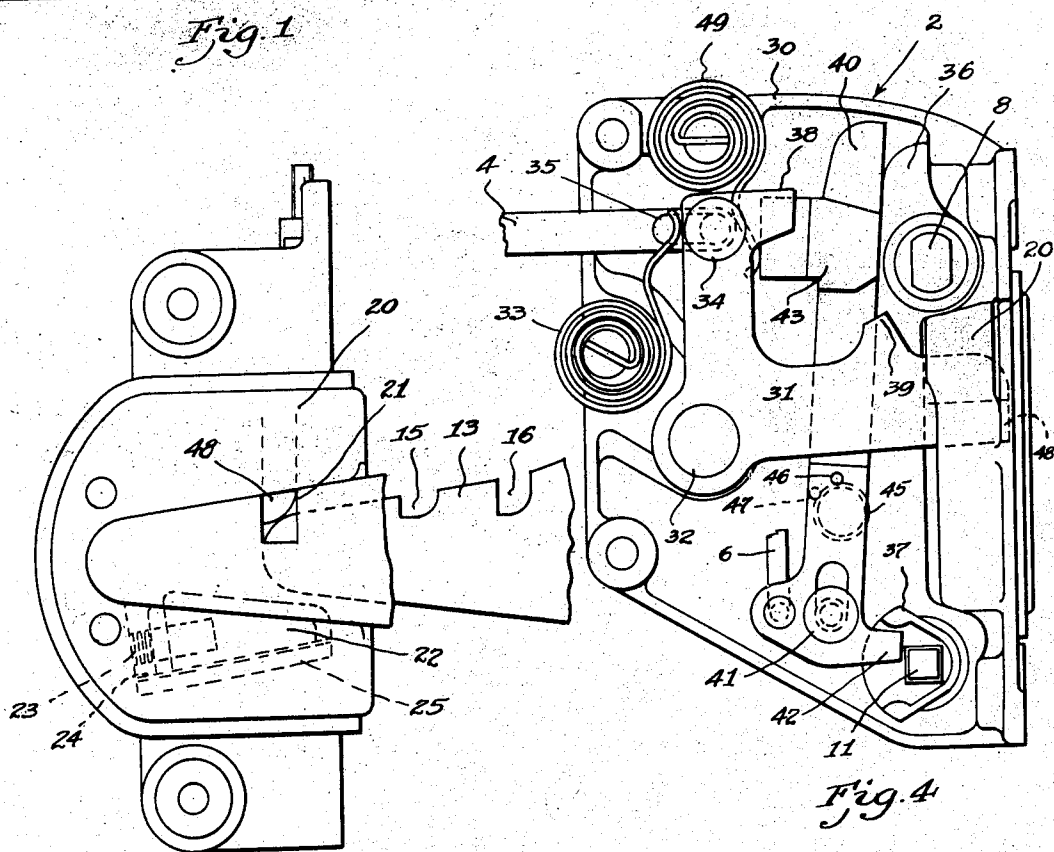


Fig. 3

Fig. 4

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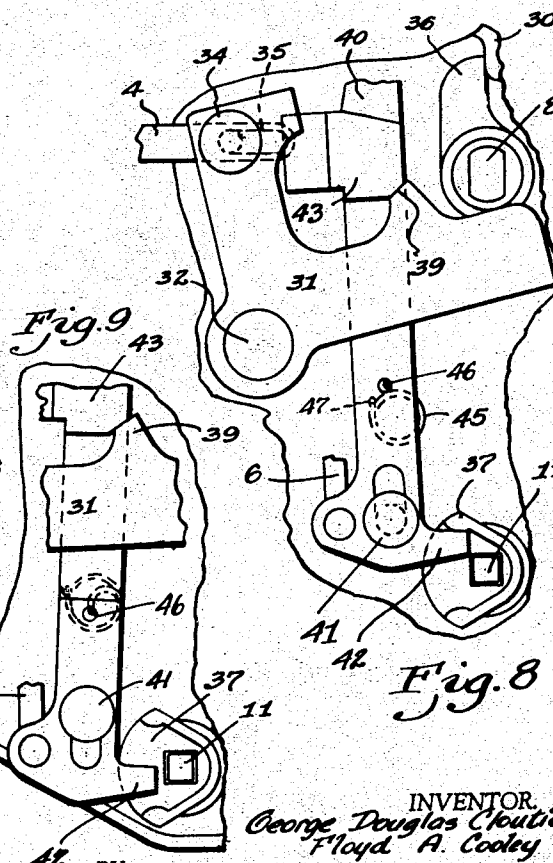
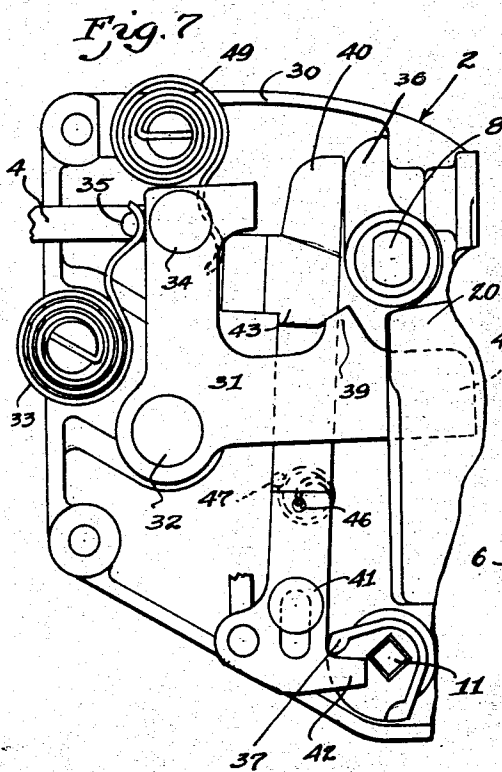
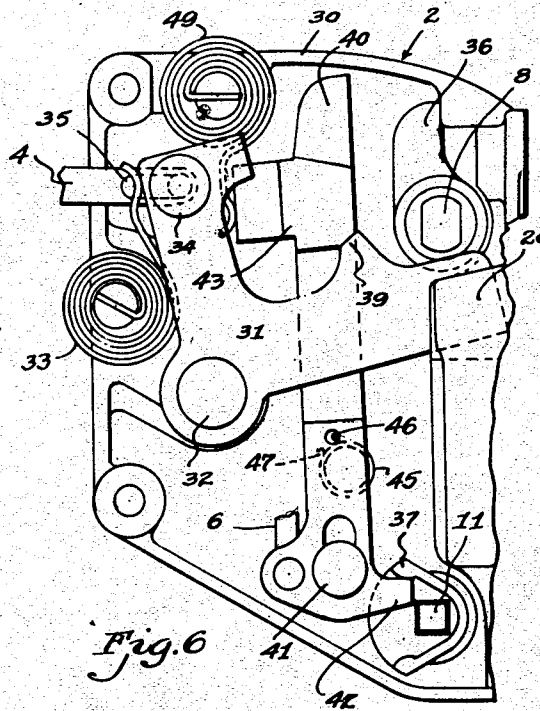
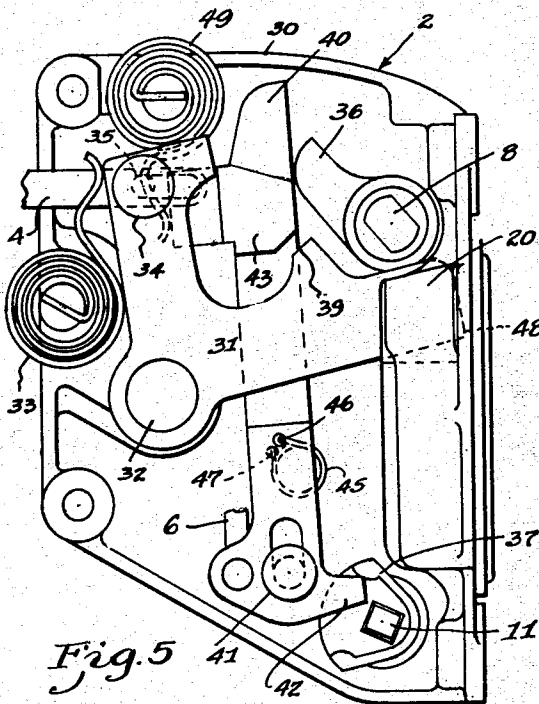


Fig. 8

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UNITED STATES PATENT OFFICE

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DOOR LOCK

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Application March 20, 1940, Serial No. 324,932

6 Claims. (Cl. 70-149)

This invention relates to a door latch, particularly for use in bodies of automotive vehicles.

Among the objects of the invention is the provision of a simple latch construction which embodies a relatively small number of parts, but which performs the desired functions and operations in regards to the manipulation of a door, both from the inside and the outside, and in regards to locking the door. To these ends, the construction advantageously employs a bolt mounted so that its exposed part moves lengthwise of the free edge or post of the door, or at least having a component of motion in this direction, and thus this structure is useful in a combination where the bolt engages with a dovetail or buffer member. The bolt is preferably of the pivoted type, and the arrangement embodies operating means for direct shift of the bolt from the inside of the vehicle body. An outside handle, that is outside of the body, is arranged to function on the bolt through an intermediate retractor.

The structure also embodies means for locking the arrangement so that the bolt cannot be retracted by the outside handle, and this is done by rendering the intermediate retractor ineffective. As a result, although the bolt may be actuated from the interior of the vehicle at any time, the outside handle, acting through the retractor may be made ineffective upon the bolt. However, an arrangement is provided where the retractor is automatically placed in an operative position, or in other words, made effective by the natural movement of the bolt which takes place upon the closing of a door. As a result, any time the door is closed, unless the operator definitely makes a movement to prevent the same, the lock structure is rendered operative and the door can be opened through the means of the outside handle.

However, the association between the outside handle and the retractor is at no time disturbed, with the result that the outside handle may be actuated to shift the retractor in such a manner that it is not acted upon by the bolt in the closing of the door, and in this event the door is effectively locked upon its closing; that is, it is locked against operation through the means of the outside handle. The accomplishment of these results through the means of a simplified construction will be appreciated as the detailed description progresses, and other objects and results will likewise be more fully understood upon a consideration of such detailed description. An arrangement for carrying out the invention is shown in the accompanying drawings.

Fig. 1 is a somewhat diagrammatic view illustrating the interior of a door of an automobile body with the lock and inside operating handle indicated.

Fig. 2 is a horizontal sectional view taken through the door and adjacent post illustrating the relative positions of the parts.

Fig. 3 is a face view of a dovetail socket mounted on the pillar of the door.

Fig. 4 is a view showing the lock structure in a normal latched position.

Fig. 5 is a view similar to Fig. 4 showing the parts actuated to release the bolt through the means of the outside handle.

Fig. 6 is a view illustrating the released position of the bolt through the means of the inside handle.

Fig. 7 is a view illustrating the locked or ineffective position of the retractor.

Fig. 8 is a view indicating the automatic shift of the retractor to effective position which occurs upon closing the door.

Fig. 9 is a view showing the locked position of the retractor as it may be operated either from the inside or outside.

The door of an automobile body is generally illustrated at 1, and the door lock or latch is generally indicated at 2. An inside handle 3 is suitably connected to the lock by means of a rod or strap 4, while a suitable means for controlling the lock is illustrated in the form of a button 5 projecting through the molding of the window opening and connected through the means of a rod 6. The handle 3 and the operating piece 5 may be otherwise positioned on the door, these items being shown as indicated for exemplary purposes only.

As shown in Fig. 2, the door 1 has an outside handle 7 with its rocker shaft 8, and a key cylinder 9 operable by a key 10 to rock a rocker member or shaft 11. A post is shown at 12 against which the door closes, and a dovetail or wedge-shaped member 13 may be mounted upon the post.

In the edge or post portion 14 of the door may be mounted a dovetail socket 20 provided with a notch 21. The male dovetail member 13 enters the dovetail socket upon closing of the door. The socket may include a shoe 22 acted upon by a coil spring 23, and slidable on a plate 24 backed by a yielding cushion 25 which may be a block of rubber. Fig. 3 shows the male member 13 entering the socket and it strikes the shoe 22, which is pushed rearwardly against the spring 23, the same sliding on the plate 24 in turn yieldingly

backed by the block 25. The male dovetail member has one or more notches 15 and 16 for the reception of the bolt which functions in the slot 21.

The lock structure generally indicated at 2 and as shown in Figs. 1 and 4, has a frame 30 designed to be secured to the door structure, and a bolt 31 is pivotally mounted on the frame as at 32. A coil spring 33 normally serves to hold the bolt urged in a clockwise direction. The connection 4 is connected to the bolt on a rivet or projection 34 through the means of an elongated opening 35. A rollback 36 is mounted on the rocker member 8 of the outside handle. The key operated rock shaft 11 is connected to an operating piece 37 somewhat in the shape of a reversed C as Fig. 4 is viewed. The bolt has an extending piece 38 and a finger or cam element 39.

A slidable retractor member 40 is mounted on a headed projection or rivet 41 through the means of an elongated opening, as shown, and it has a projection 42 lying within the opening of the member 37. The retractor member likewise has an embossment 43, and it is arranged to be held in either of its two positions by an over-center spring. This spring is a coil spring 45, having one end located in an aperture 46 in the retractor and the other end as at 47 positioned in an aperture in the frame plate. A spring 49 acts upon the retractor and holds it against the rollback 36. The bolt 31 has an end part 48 which extends into the socket of the female dovetail member as shown in Fig. 3 and is arranged to cooperate with the member 13; that is, it is arranged to catch in one of the notches 15 and 16.

When the door is closed, the part 48 of the bolt may catch in the notch 16. The notch 15 may merely be a safety catch in case the door is not completely closed. In normal position the parts may be substantially as shown in Fig. 1. To release the latch by means of the outside handle, that handle is turned counter-clockwise from the position shown in Fig. 4 to that shown in Fig. 5. The rollback 36 engages and rocks the retractor 40; the embossment 43 engages the part 38 of the bolt and swings it counter-clockwise and thus raises the part 48 out of either the notch 15 or the notch 16. The lost play connection at 34-35 permits this action without movement of the inside handle. The bolt may be released at any time by means of the inside handle without moving the retractor or the rollback.

To condition the arrangement so that the bolt cannot be operated by the outside handle, the retractor 40 is shifted. Figs. 7 and 9 show the retractor so positioned. By means of the key 10 the actuator 37 may be turned counter-clockwise as the views appear, and the actuator engages the finger 42 and shifts the retractor to its lower position as shown in Fig. 7. It will be understood that the actuator 37 is always returned to its normal position as shown in Fig. 4. Now upon rotation counter-clockwise of the rollback 36 the retractor is similarly shifted, but the embossment 43 is disaligned from the part 38 and therefore does not rock the bolt. Thus the outside handle is rendered ineffective. By turning the actuator 37 in the reverse direction through the means of the key 10, the retractor may be elevated back to the position shown in Figs. 4, 5 and 6. The retractor may also be lowered or elevated by the actuator piece 5 and the connection 6. It will be seen that the spring 45 holds the actuator in either position, because the end of the spring in the aperture 46 is above

the end 47 in one position and below in the other position, with the greatest amount of tension on the spring when the aperture 46 is approximately in horizontal alignment with the end 47 of the spring.

Any time the door is closed without a predetermined manipulation of the outside handle, the bolt 31 is caused to swing by reason of its engagement with the dovetail 13. If the retractor is in its lower or locked position, the embossment 43 is substantially in contact with the projection 39 (Fig. 9), and the rocking of the bolt elevates the retractor after the manner shown in Fig. 8. If it should be desired to place the parts in a locked position by the actuator 5, and then desired to close the door, maintaining the parts in this locked position, the outside handle 7 may be turned to cause the rollback to swing to a position where it will not be engaged by the finger 39. Then upon closing of the door, the rocking of the bolt does not elevate the retractor, with the result that the door is locked against outside operation. When the retractor is in locked position, it may be shifted to its operative position by actuation of the bolt by the inside handle.

We claim:

1. In a lock for a door, a pivotally mounted bolt for cooperation with a keeper, an outside handle having a rollback, an inside handle having a lost motion connection with the bolt, and a retractor member for engaging the bolt and rollback, said retractor member being slidably mounted on a pivot pin about which it can at all times be pivoted by the rollback of the outer handle, and means independent of the handles to slide the retractor member alternatively to a position in which it is capable of transmitting movement of the outside handle to the bolt and to a position in which it is ineffective so to do.

2. In a coach lock, the combination of a casing, a bolt movable therein, a rollback for an outside handle for retracting the bolt, a retracting lever which is both pivotally and slidably supported upon the casing and having the free swinging end located between the rollback and a portion of the bolt and a spring for keeping the retracting lever yieldably bearing against the rollback, the said retracting lever in one position of its longitudinal shift being freely swingable by the movement of the rollback without contacting with the bolt and, in the other position of shift, the said lever adapted to contact with the bolt when the rollback turns to retract the bolt.

3. In a coach lock, the combination of a casing, a bolt movable therein, a rollback for an outside handle for retracting the bolt and a retracting lever which is both pivotally and slidably supported upon the casing and having the free swinging end located between and arranged to directly contact the rollback and a portion of the bolt, the said retracting lever in one position of its longitudinal shift being freely swingable by the movement of the rollback without contacting with the bolt and, in the other position of shift, the said lever adapted to contact with the bolt when the rollback turns to retract the bolt.

4. In a coach lock, the combination of a casing, a bolt movable therein, a rollback for an outside handle for retracting the bolt, a retracting lever which is both pivotally and slidably supported upon the casing and having the free swinging end located between and arranged to contact the rollback and a portion of the bolt, the said retracting lever in one position of its longitudinal

shift being freely swingable by the movement of the rollback without contacting with the bolt and, in the other position of shift, the said lever adapted to contact with the bolt when the rollback turns to retract the bolt and a key-operated actuator for shifting the lever longitudinally.

5. In a coach lock, the combination of a casing, a bolt movable therein, a rollback for an outside handle for retracting the bolt, a retracting lever which is both pivotally and slidably supported upon the casing and having the free swinging end located between the rollback and a portion of the bolt, the said retracting lever in one position of its longitudinal shift being freely swingable by the movement of the rollback without contacting with the bolt and, in the other position of shift, the said lever adapted to contact with the bolt when the rollback turns to retract the bolt and an actuator manually operable for shifting the lever longitudinally to its two positions.

6. In a coach lock, the combination of a casing, a bolt movable therein, a rollback for an outside handle for retracting the bolt, a retracting lever which is both pivotally and slidably supported upon the casing and having the free swinging end located between the rollback and a portion of the bolt, the said retracting lever in one position of its longitudinal shift being freely swingable by the movement of the rollback without contacting with the bolt and, in the other position of shift, the said lever adapted to contact with the bolt when the rollback turns to retract the bolt, an actuator manually operable for shifting the lever longitudinally to its two positions and a cam on the bolt for each time the bolt is retracted shifting the lever to its position to be able to actuate the bolt.

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