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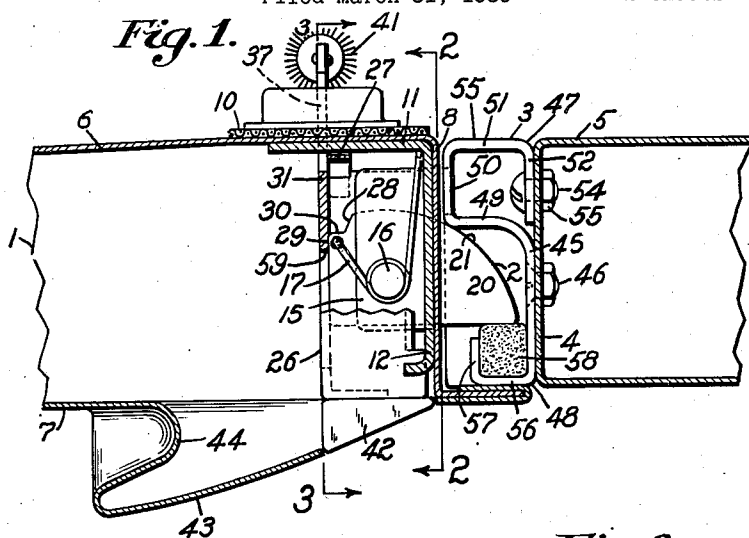
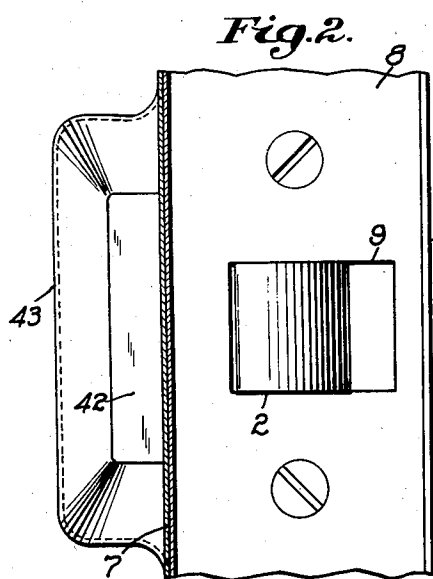
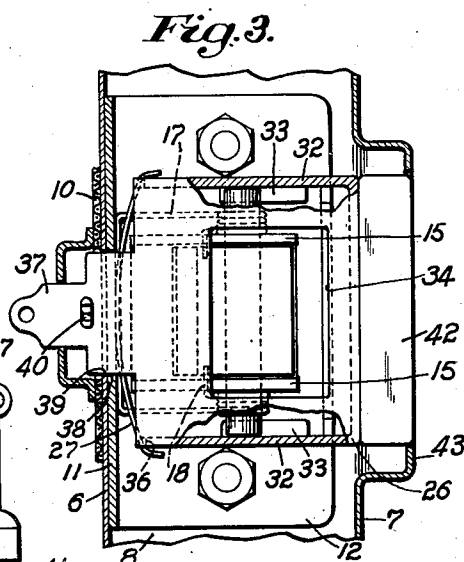
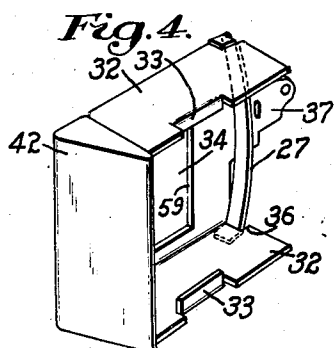
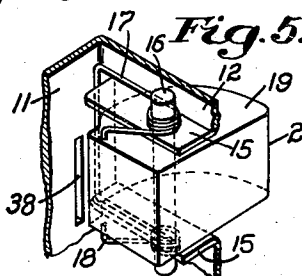
H. J. MURPHY

2,259,766

DOOR LATCH

Filed March 31, 1939

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

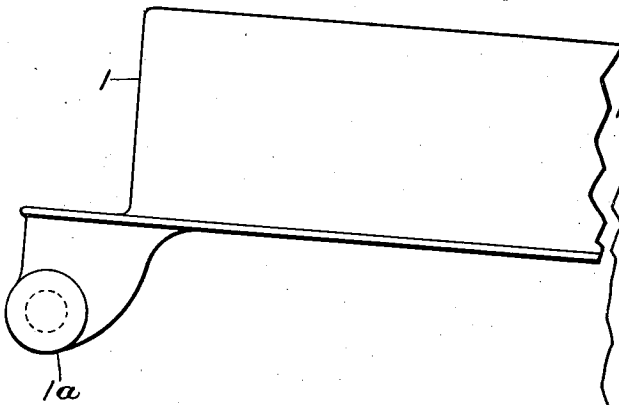
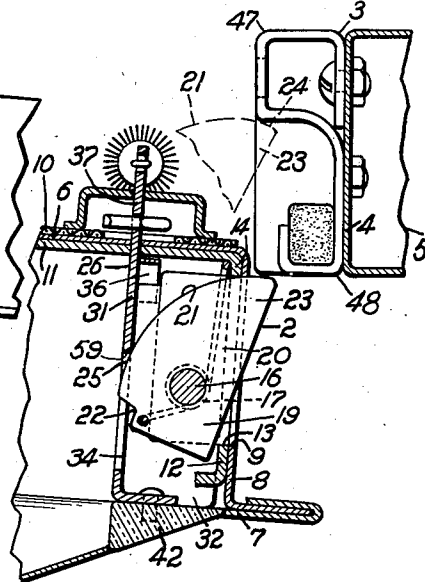


Fig. 7.

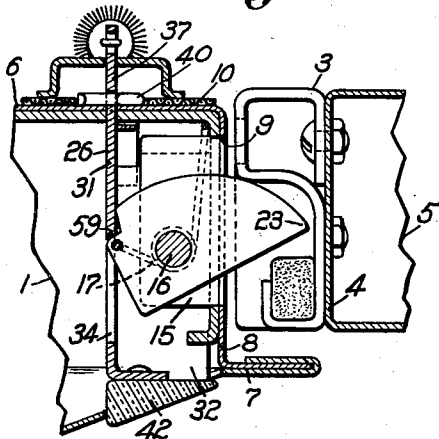


Fig. 9.

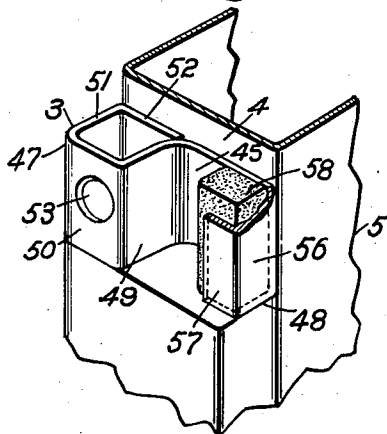


Fig. 8.

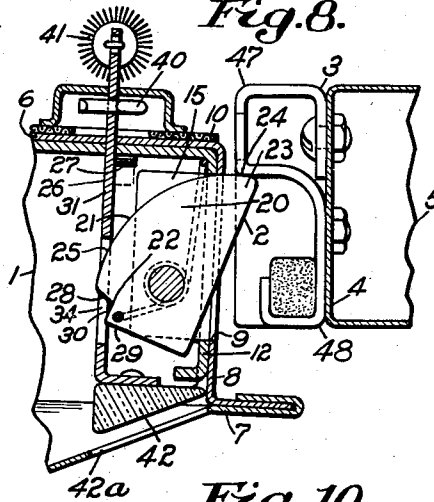
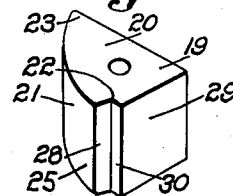


Fig. 10.



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UNITED STATES PATENT OFFICE

2,259,766

DOOR LATCH

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3 Claims. (Cl. 292—198)

This invention relates to a latching mechanism for closures and is particularly adaptable for use with doors of automobiles.

The main object of my invention is the provision of an improved door latch mechanism of simple yet sturdy construction, capable of easy operation and which eliminates the ordinary door handle now in common use.

Another feature of my invention is embodied in the particular construction of the latch mechanism enabling the latch to be applied to either a right-hand or left-hand door of an automobile.

Other objects and uses of my invention will be apparent from inspection of the drawings and specification hereinbelow set forth.

In the accompanying drawings I have shown by way of example an illustrative embodiment of my invention as applied to an automobile.

Referring then to the drawings:

Fig. 1 is a partial section along a horizontal line through the framing of an automobile door and the door jamb against which it closes;

Fig. 2 is a section taken along the line 2—2 of Fig. 1;

Fig. 3 is a section taken along the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the latch mechanism with an actuating button secured at one end thereof;

Fig. 5 is a detailed sectional perspective view through the casing of the latch mechanism with the bolt member shown in elevation pivotally assembled with the casing;

Fig. 6 is a sectional plan view of the preferred form of my invention, this figure showing a door (broken away) in open position, a door jamb and a sectional plan view of a portion of the door carrying my latching mechanism with the bolt shown in unlocked position;

Fig. 7 is a sectional plan view of the part of the door carrying the latch mechanism and showing the bolt in partially locked, or safety, position;

Fig. 8 is a view similar to Fig. 7 showing the door in the act of swinging open with the bolt engaging the keeper of the door jamb so as to move the door ajar;

Fig. 9 is a perspective view of a keeper secured to a door jamb with a portion broken away showing a rubber cushioning means; and

Fig. 10 is a perspective view of the bolt member preferably used with my improved latch mechanism.

Referring to Fig. 1 of the drawings, I have

shown my improved latching mechanism in preferable installed position with an automobile door 1 of the type hinged as at 1^a (Fig. 6) to swing in the direction of the automobile body during closing movement. At the end of the closing movement of the door a pivotally mounted bolt member 2 of the latching mechanism enters into locking engagement with a keeper 3 secured to a door jamb 4 of a post 5. The door 1 includes an inner side 6, an outer side 7 and an edge 8 adjacent to which last-mentioned portion the latching mechanism is mounted with the bolt 2 projecting through an opening 9 of the edge, in my preferred latching installation, in both unlocked and locked positions, as hereinafter described. Upholstery material 10 is mounted upon the outer surface of the inner wall 6 as is the custom in automobile manufacture.

The latching mechanism herein shown is mounted upon a casing of generally angular form comprising a plate 11 adapted to be disposed flush with the inner surface of the inner side 6 and a flange 12 placed flush with the inner surface of the door edge 8. The flange 12 has an opening 13 (Fig. 6) of generally rectangular shape for receiving the bolt 2. A portion 14 of the flange 12 adjacent an end of the opening 13 limits pivotal movement of the bolt in unlocked position, as most clearly shown in Fig. 6. Wing portions 15—15 project inwardly from the flange in spaced relation one to another and the bolt member 2 is pivoted on a vertical axis formed by a pin 16 assembled with the wing portions 15—15 (Fig. 5). The bolt member 2 moves from unlocking position, shown in Fig. 8, to locking position, shown in Figs. 1 and 7, against the tension of a spring 17. The spring 17 is assembled with the wings 15—15 and pin 16 and has free end portions 18—18 in engagement with the bolt through its sides 19 thereof, as most clearly shown in Fig. 5.

The bolt member 2 comprises a forward portion 20 of segmental shape having an outer curved surface 21 extending from adjacent a notch 22 at the rear of the bolt (Figs. 6, 8 and 10) to the most forwardly projecting portion 23 of the bolt (Figs. 1, 6 and 7). A portion 24 of the curved surface 21 adjacent the forward portion 23 (Fig. 8) serves to engage the keeper 3 to cam the bolt into locking position in a manner to be hereinafter more fully described and a portion 25 of the curved surface 21 adjacent the notch 22 (Fig. 8) acts as a cam to operate a latch member 26 against the tension of a spring 27 (Figs. 1, 3 and 4) during pivotal movement of the bolt

from unlocking to locking position so as to effect latching engagement of the bolt with the latch member to maintain the bolt in locking position, as will be hereinafter described. A side of the notch 22 adjacent the curved surface 21 provides a locking face 28 for engagement with the latch member 26 to maintain the bolt in initial locking, or safety, position and a locking face 29 is provided adjacent the notch 22 on the other side of the notch from the curved surface 21 to engage the latch member 26 to maintain the bolt in full locked position (Figs. 1, 8, 9 and 10). A side of the notch 22 intermediate the locking faces 28 and 29 provides a cam surface 30 (Figs. 1, 8, 9 and 10) for engagement with the latch member 26 during movement of the bolt from initial locking position to full locking position. The latch member 26 is mounted upon the plate 11 and flange 12 for reciprocal movement relative to the bolt member 2 so as to lock and unlock the bolt member during the reciprocal motion.

My preferred form of latch member 26 is in the form of a casing having a base plate 31 and spaced side portions 32—32 (Figs. 3 and 4) projecting angularly from the base plate and providing inwardly-turned lugs 33—33 at its outermost edges (Figs. 3 and 4) for engagement behind the pin 16 to aid in maintaining the latch member in proper relative position to the bolt member during relative movement of the parts. Also, when the latch member is assembled with the latch mechanism, the side portions 32—32 serve to hold the pivot pin 16 in assembly with the bolt member, thus enabling the pin to be entirely hand-assembled with the bolt member through reason of the fact that it is unnecessary to head over its ends. The base plate 31 of the latch member is preferably of a flat formation and provides an opening 34 disposed in predetermined position to the bolt member for receiving portions adjacent the rear end of the bolt member in relative positions of the same during rotation, as shown in Figs. 6 and 7. The latch member is maintained under tension to hold the bolt member in locking position through means of the spring member 27 received within slots 36 (Figs. 3 and 4) at the ends of the side portions 32 nearest the plate 11 and disposed in the assembled mechanism between the plate 11 and the latch member so that movement of the latch member toward the plate 11 is against the tension of the spring member 27 with the result that when force exerted upon the latch member for moving it toward the plate 11 is relaxed, the latch member will return toward normal position, as shown in Figs. 1 and 6, under the tension of the spring.

The base plate 31 has an actuating means in the form of an integral narrow extension 37, in my preferred form, extending through an opening 38 in the plate 11 and an opening 39 in the wall 6 of the door to a position beyond the outer surface of the side 6, as shown in Fig. 3. A cotter pin 40 projects through the extension 37 on the outer side of the side 6 for limiting movement of the latch member in a direction away from the plate 11. Any suitable means, such as a tassel 41, may be attached to the extension 37 effecting operation of the door latch from inside the door by a direct pull so as to cause movement of the latch member to unlatch the door in the manner hereinbelow described. A means such as a push button 42 is applied to the opposite end of the latch member from the extension 37 normally associated with the outer side wall 7

of the door through an opening 42^a thereof (Fig. 8) and being so located that its manual operation can be conveniently effected by a person outside the automobile of which the door is a part. The push button 42 has direct engagement with the latch member so that manual depression of the push button moves the latch member in the direction of the plate 11 to release the bolt from locking position. A finger-receiving pocket means 43 (Fig. 1) is preferably associated with the outer side 7 of the door in adjacent position to the button 42 so that the fingers of an operator may be received within the finger-receiving opening 44 of the pocket member, at the same time permitting the thumb to depress the button 42 with the result that after the bolt has been released, the door may be pulled to open position.

The keeper 3, for receiving the bolt 2, comprises an attaching plate 45 secured adjacent the outer face of the jamb 4 by attaching means such as the nut and screw 46. The bolt-receiving opening of the keeper is defined by a hollow rectangular portion 47 at the end of the keeper adjacent the inside of the automobile and a hook-like portion 48 disposed at the end of the keeper adjacent the outside of the automobile and having its open side facing the rectangular portion 47. The hollow rectangular portion 47 comprises a bolt-engaging portion 49 integral with the attaching plate 45 and extending outwardly from the door jamb, a side portion 50 extending parallel to the door jamb, an inwardly-extending portion 51, and a downwardly-extending portion 52 adjacent the door jamb and extending in the direction of the attaching plate 45. An opening 53 is provided in the portion 50 for receiving a screw driver (not shown) to effect engagement of a screw 54 with a nut member 55 through the portion 52 and the door jamb 4. The hook portion 48 comprises a portion 56 integral with the end of the attaching plate 45 adjacent the outside of the door and extending outwardly from the door jamb a shorter distance than the bolt-engaging portion 49 and an angular portion 57 at the outermost end of the portion 56 extending a predetermined distance in the direction of the bolt-engaging portion 49. Thus the keeper receives the bolt member in locking position between the rectangular portion 47 and the hook-like portion 48 and a rubber cushioning means 58 may be carried within the hook-like portion 48 extending beyond the confines of the hook-like portion in the direction of the rectangular portion 47 so as to prevent rattle between the bolt and the keeper, as will be understood by those skilled in the art.

In describing the mechanical operation of my latch mechanism, it will be seen that when the door is in open position, as shown in Fig. 6, the forward portion 23 of the latch bolt 2 projects outwardly beyond the door edge 8. Thus as the door swings inwardly during closing of the same, the outer surface 24 of the forward portion 23 of the bolt engages the bolt-engaging portion 49 of the keeper, as shown in dotted lines in Fig. 6, turning the bolt in opposition to the spring 17 toward locked position. Contemporaneously with this action the curved camming surface 25 of the bolt engages the wall 59 of the base plate 31 of the latch member adjacent the edge of the opening 34 nearest the plate 11 forcing the latch member in the direction of the plate 11 against the tension of the spring member 27. After the camming surface 25 has passed the wall 59, the base plate 31 springs back to engage behind the

locking face 28 so as to hold the bolt in initial locking position. As inward pressure upon the door is continued, the camming surface 30 engages the wall 59 of the latch member moving the latch member against the tension of the spring 27 until the camming surface 30 of the bolt member has passed by the wall 59, at which point the latch member returns toward normal position under the action of the spring 27 to engage the base plate 31 behind the locking face 29 of the bolt, as shown in Fig. 1. The bolt is now in full locked engagement with the keeper 3. When the door is to be opened from the inside of the automobile, pull force is exerted upon the extension 37 through means such as the tassel 41 to move the wall 59 of the base plate past the locking faces 29 and 28 of the bolt, at which time the bolt is projected to unlocking position by the spring 17. Similarly, the latch member may be actuated to release the bolt from locking position from outside the automobile through depressing the button 42. As the bolt approaches unlocking position, the curved surface 24 of the forward portion 23 of the bolt strikes the bolt-engaging portion 49 of the keeper causing the door to open slightly, as shown in Fig. 8.

Thus by my invention I have provided a sturdy latch mechanism comprising parts of simple construction capable of being easily assembled together. An important result effected by the device lies in the easy operation of the mechanism enabling an automobile door to be moved from open position to closed latched position by a relatively light push.

Although I have illustrated and described a preferred embodiment of my invention, I do not wish to be limited thereby because the scope of my invention is best defined in the following claims.

I claim:

1. A door latch mechanism including a pivotally mounted bolt, a spring member cooperating with the bolt to move the bolt from locked position into unlocked position, said bolt having a forward portion adapted to engage with a cooperating keeper when the bolt is in locked position and a rear locking face for engagement to maintain the bolt in locked position, a latch member mounted for reciprocal movement relative to said bolt, said latch member having a plate part providing a bolt-engaging portion engageable behind said locking face of said bolt to maintain said bolt in locked position, said plate part having an opening adjacent said bolt-engaging portion for receiving said bolt during turning of said bolt into locking position, said latch member be-

ing operable to release said bolt by manual operation directly on said latch member at either of opposed ends thereof, and a spring member in cooperation with said latch member to force said latch member into holding engagement with said bolt.

2. A door latch mechanism including a pivotally mounted bolt, a spring member cooperating with the bolt to move the bolt from locked position into unlocked position, said bolt having a forward portion adapted to engage with a cooperating keeper when the bolt is in locked position and a rear locking face, a latch member mounted for reciprocal movement relative to said bolt, a spring member exerting force on said latch member to maintain the same in position for locking said bolt, said latch member having a plate part providing an aperture and an imperforate bolt-engaging portion adjacent said aperture, said rear face of said bolt being received by said aperture of said plate during turning of said bolt into locking position, said bolt operating during said turning movement to move said plate against the tension of said spring, and said plate returning to normal bolt-locking position after rotation of said bolt through a predetermined number of degrees to maintain said rear face of said bolt in locked position behind said imperforate portion of said plate.

3. A door latch mechanism including a pivotally mounted bolt, a spring member cooperating with the bolt to move the bolt from locked position into unlocked position, said bolt having a forward portion adapted to engage with a cooperating keeper when the bolt is in locked position, a rear locking face and a cam face adjacent said rear face, a latch member mounted for reciprocal movement relative to said bolt, a spring member exerting force on said latch member to maintain the same in position for locking said bolt, said latch member having an aperture and an imperforate bolt-engaging portion adjacent said aperture, said rear face of said bolt being received by said aperture of said plate during turning of said bolt into locking position, said cam surface engaging a wall of said plate adjacent said aperture during said turning movement to move said plate against the tension of said spring, and said plate returning to normal bolt-locking position after rotation of said bolt through a predetermined number of degrees to maintain said rear face of said bolt in locked position behind said imperforate portion of said plate.

HOWARD J. MURPHY.