Aug. 25, 1936. W. C. ANDREWS 2,052,438

LATCH MECHANISM

Filed Sept. 9, 1935 2 Sheets-Sheet 1

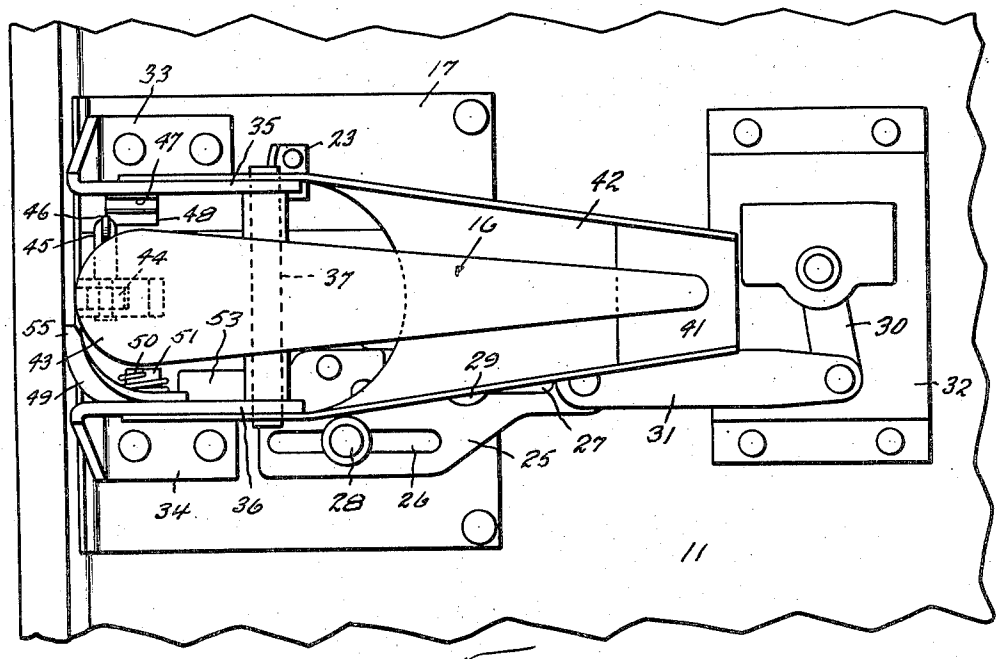

Fig. 1

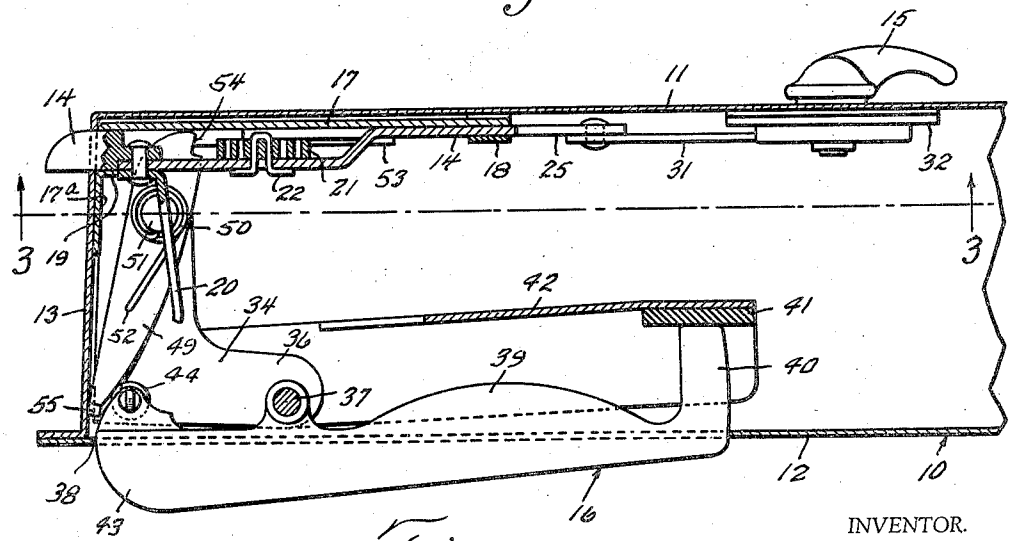

Fig. 2

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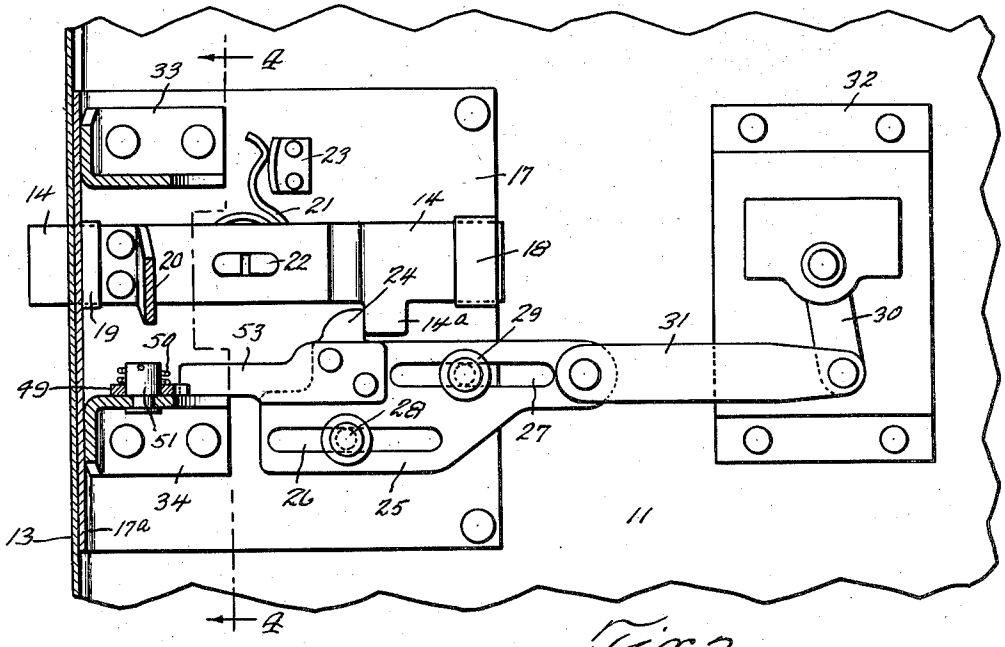

Fig. 3

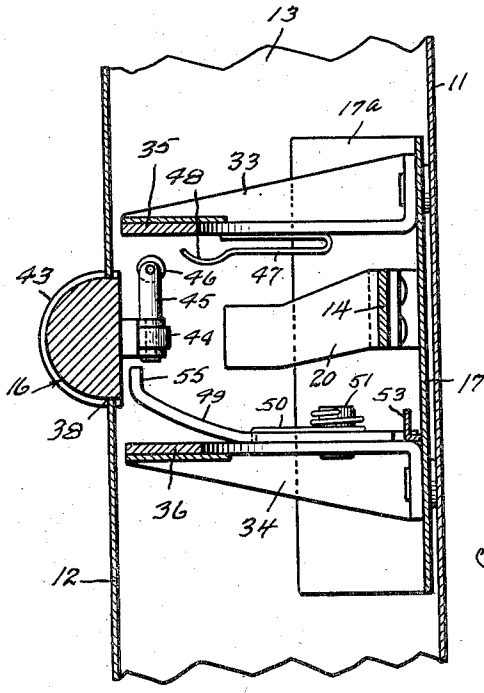

Fig. 4

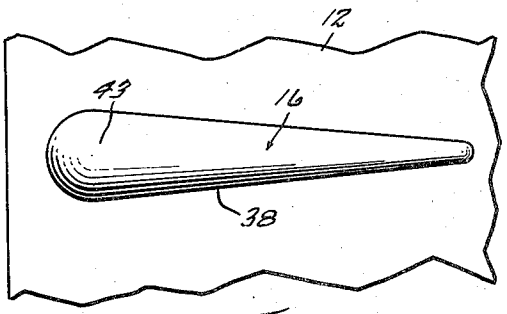

Fig. 5

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UNITED STATES PATENT OFFICE

2,052,438

LATCH MECHANISM

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Application September 9, 1935, Serial No. 39,757

12 Claims. (Cl. 292—173)

This invention relates to a latch mechanism and while the invention will be described with particular reference to its use on the doors of motor vehicles, it is to be understood that it is susceptible of use in connection with other doors.

An object of the invention is to provide an operating handle for the latch mechanism which shall be positioned, when the latch is in normal closed position, partially within and partially outside of one wall of the door, such handle being pivoted intermediate its ends for rotation about an axis substantially parallel to such wall and the projecting portion of such handle having one end projecting away from such wall a distance great enough that when it is depressed to about the level of the wall, the portion of the handle at the other side of the pivot point will be moved to a position for convenient grasping.

A further object is to provide for securing the above object and at the same time streamlining the projecting portion of such handle.

A further object is to provide a remote control means for operating the latch independently of such handle by motion in one direction and adapted by motion in the other direction to lock said handle against motion to a grasping position.

A further object is to provide means for mounting the latch mechanism and the support for such handle on one of two spaced walls forming the door and having the same extend to a position to permit a portion of the handle to extend through the other wall of the door and without obstructing the space between the doors except at a point adjacent one edge of such door.

A further object is to provide a stop for the grasping portion of such handle and to mount the same in a manner not to obstruct the space between the walls of the door.

With the foregoing and other and more limited objects in view, the invention consists in all the novel features of construction and arrangements of parts hereinafter described and illustrated in the accompanying drawings in which Fig. 1 is a fragmentary view of a latch mechanism embodying my invention as seen when the outer door or wall is removed; Fig. 2 is a central sectional view taken at right angles to Fig. 1; Fig. 3 is a sectional view corresponding substantially to the line 3—3 of Fig. 2; Fig. 4 is a fragmentary section corresponding to the line 4—4 of Fig. 3 and Fig. 5 is a fragmentary elevation showing the appearance of the device from the outside when the outer wall is in place.

Referring now to the drawings, the numeral 10 indicates generally what may be an automobile door construction. It is to be understood that this may represent other doors than an automobile door and that any constructions wherein the latch is mounted on a fixed wall and engages a door which is movable with respect thereto is within the contemplation of my invention. The door 10 may include an inner wall 11 and an outer wall 12 and an edge wall 13. The main latch bolt 14 preferably will project through the wall 13 and be controlled from the inside by the handle 15, and from the outside by the handle 16 which projects through the outer wall 12.

The latch mechanism may be mounted on a plate 17 secured to the inner wall 11 and to the end wall 13. The bolt 14 may pass through and be guided by a struck-out loop 18 integral with the plate 17 and a suitable opening in the portion 17a of the plate 17 which extends along the wall 13. A portion 19 of the metal struck out from such opening may engage against the element 20 to form a stop for the bolt 14. The bolt 14 may be biased toward the position indicated in the drawings by a spring 21 anchored to the bolt by the element 22 and engaging against an abutment 23 secured to the plate 17. The bolt 14 is provided with an ear 14a which is adapted to be engaged by an ear 24 carried by a sliding element 25 guided by suitable slots 26 and 27 receiving suitable pins 28 and 29 secured to the plate 17. The slidable plate 25 may be reciprocated by the handle 15 through an arm 30 and link 31. The handle 15 and arm 30 may be mounted on a suitable plate 32.

Secured to the plate 17 are suitable rigid posts 33 and 34 formed of angle irons, extending closely adjacent to the wall 13 and terminating in arms 35 and 36 forming a mounting for a shaft 37 upon which the handle 16 is pivotally mounted with a portion extending through a suitable opening 38 in the wall 12. The handle 16 is provided with a bulged gripping portion and a terminal projection 40 adapted at the same time to prevent the hand of the operator from slipping off and to engage against a buffer 41 carried by a stop element 42 rigidly secured to the portions 35 and 36. It will be noted that the extreme edge of the element 40 is slightly curved, having a curvature corresponding to an arc through the center of the pin 37.

The handle 16, as will be clear from the drawings, has a grasping portion at the right of the pivot 37 (as seen in Fig. 2) and an enlarged portion 43 at the left of the pin 37. It will be noted

that the portion 43 is rounded and relatively blunt and that it tapers toward a narrow tip at the other end of the handle, such narrow tip being substantially flush with the surface of the wall 12. Within the wall 12, the handle portion at the left of the pivot 37 carries an anti-friction wheel 44 adapted to engage the element 20 for the purpose of retracting the bolt 14.

As appears from Fig. 2, a considerable rotation of the handle, about the pivot 37 is required to bring the roller 44 into engagement with the element 20. This permits of the handle being depressed at the portion 43 by a push thereon tending to move the grasping portion 39 into position to be grasped by the operator. On account of the enlarged blunt portion 43 extending a considerable distance outside the wall 12, it is possible for an operator to move the handle to grasping position by pushing against the portion 43 with the side of the hand, the open palm or any part of the body or other object of considerable surface and not requiring the use of the thumb or finger, as was the case in my prior Patent No. 1,995,338, issued March 26, 1935. This construction offers a further advantage in case the outer surface of the vehicle should become covered with a layer of ice, it is possible to exert a considerable force on the portion 43 by a blow from the hand and thereby readily break any such layer of ice as is likely to be formed in temperate climates.

While I prefer to streamline the exposed portions of the handle 16, it is to be understood that most of the advantages of the invention may be obtained without such a shape. It is highly desirable that there be an enlarged portion at the left of the pivot 37 extending beyond the wall 12 and that depression thereof to the level of such wall will move the handle to grasping position. When the handle 16 is moved to grasping position, it is desirable that it be held in that position so that the operator may move the handle to grasping position and grasp the same by independent and discontinuous operations. Accordingly, I prefer to mount on the handle, conveniently by the same pin on which the wheel 44 is journaled, a projection 45 carrying an anti-friction wheel 46 which is adapted to engage a resilient element 47 secured to the element 33. The spring 47 may have a bowed portion 48 over which the wheel 46 may ride so as to hold the handle 16 yieldably in grasping position.

Pivotally mounted on the post 34 is a detent 49. This detent may be biased by a spring 50 carried by its pivot 51, one end of the spring being engaged in an opening in the pivot 51 and the other end being engaged in an opening 52 in the detent itself. The detent 49 is operated by an extension 53 on the sliding element 25 which is adapted to engage against the notched end 54 of the detent 49. When the handle 15 is operated in a direction to move the element 25 to the left, such element 25 engages the detent and moves the curved outer end 55 thereof to a point behind the enlarged portion of the handle 16 so as to prevent rotation thereof to grasping position.

It will be understood that the construction shown in the drawings is for use on automobile doors, which are locked from the inside only and that in the case of the door which is to be locked from the outside a simple key operated lock may be mounted adjacent either end of the handle 16 on the elements 33, 34, or any other suitable part of the vehicle and include means adapted to prevent the handle from being moved from the position shown in Fig. 2. This may be provided in addition to the structure shown on the door to be operated from the outside and all other doors may be of the precise construction shown. In case the latch is applied to the doors or closing compartments not intended to be operated from the inside, the mechanism designed for that purpose, namely, the handle 15, its mounting means, the arm 30 and link 31 may be omitted and a key operated lock as indicated above may be applied if desired.

While I have shown and described the preferred embodiment of my invention, I wish it understood that the same may be realized in various forms and that I am limited only in accordance with the appended claims and the prior art.

Having thus described my invention, what I claim is:

1. In a door latch mechanism of the type having most of the operating parts within the walls forming the door, an operating handle forming a part of said mechanism, said handle being pivoted adjacent an exterior wall of said door for rotation about an axis substantially parallel to said wall, said wall having an opening therethrough of a size and configuration corresponding substantially to the projection of the outline of said handle on said wall, the portion of said handle at one side of said pivot point being enlarged and projecting beyond the outer surface of said wall sufficiently to form a convenient operating means for pivoting the handle as by thrust from the side of the hand or similar object.

2. In combination with a door having spaced walls, latch mechanism between said walls and an operating handle for said latch mechanism, said operating handle being pivoted for rotation about an axis substantially parallel to one of said walls and, in one position, being partly inside and partly outside said wall, that portion of said handle outside of said wall projecting beyond said wall at one side of said axis a sufficient distance that depression of its highest part to the level of said wall will move the part of said handle at the other side of said axis to grasping position.

3. In combination with a door having spaced walls, latch mechanism between said walls and an operating handle for said latch mechanism, said operating handle being pivoted for rotation about an axis substantially parallel to one of said walls and, in one position, being partly within and partly without said wall, that portion without said wall projecting therebeyond at one side of its pivot a sufficient distance that depression of its highest part to the level of said wall will move the part of said handle at the other side of said pivot to grasping position, said latch mechanism including a bolt and means operated by motion of said handle beyond said grasping position for retracting said bolt.

4. A latch mechanism for doors comprising a handle pivotally mounted on the door intermediate its ends, a sliding bolt adapted to be engaged by said handle, means at one end of said handle for moving the opposite end thereof to a position to be grasped by the hand, means for yieldably holding said handle in such grasping position, means actuated by movement of said handle beyond such grasping position for retracting said bolt to unlatch the door, control means for retracting said bolt by motion in one direction and means operated by motion of said control means in another direction for locking the first mentioned end of said handle against pivotal motion.

5. A latch mechanism for doors comprising a handle pivotally mounted on the door intermediate its ends, a sliding bolt adapted to be engaged by said handle, means at one end of said handle for moving the opposite end thereof to a position to be grasped by the hand, means actuated by movement of said handle beyond such grasping position for retracting said bolt to unlatch the door, control means for retracting said bolt by motion in one direction and means operated by motion of said control means in another direction for locking the first mentioned end of said handle against pivotal motion.

6. In combination with a door having spaced walls, latch mechanism between said walls and an operating handle for said latch mechanism, said operating handle being pivoted for rotation about an axis substantially parallel to one of said walls and, in one position, being partly inside and partly outside said wall, that portion of said handle outside of said wall projecting beyond said wall at one side of said axis a sufficient distance that depression of its highest part to the level of said wall will move the part of said handle at the other side of said axis to grasping position, control means for retracting said bolt by motion in one direction and means operated by motion of said control means in another direction for locking the first mentioned end of said handle against pivotal motion.

7. In combination with a door having spaced walls, latch mechanism between said walls and an operating handle for said latch mechanism, said operating handle being pivoted for rotation about an axis substantialy parallel to one of said walls and, in one position, being partly within and partly without said wall, that portion without said wall projecting therebeyond at one side of its pivot a sufficient distance that depression of its highest part to the level of said wall will move the part of said handle at the other side of said pivot to grasping position, means for yieldably holding said handle in such grasping position, said latch mechanism including a bolt and means operated by motion of said handle beyond said grasping position for retracting said bolt.

8. In combination with a door having spaced walls, latch mechanism between said walls and an operating handle for said latch mechanism, said operating handle being pivoted for rotation about an axis substantially parallel to one of said walls and, in one position, being partly inside and partly outside said wall, that portion of said handle outside of said wall projecting beyond said wall at one side of said axis a sufficient distance that depression of its highest part to the level of said wall will move the part of said handle at the other side of said axis to grasping position, and means for yieldably holding said handle in such grasping position.

9. In combination with a door comprising inner and outer spaced walls, latch mechanism mounted between said walls on the inner wall, an operating handle for said latch mechanism having a portion extending and working through said outer wall, mounting means for said handle secured to said inner wall adjacent an edge thereof and extending to a point adjacent said outer wall and means pivotally mounting said handle on said mounting means adjacent said outer wall for rotation about an axis substantially parallel to said outer wall.

10. In combination with a door comprising inner and outer spaced walls, latch mechanism mounted between said walls on the inner wall, an operating handle for said latch mechanism having a portion extending and working through said outer wall, mounting means for said handle secured to said inner wall and extending to a point adjacent said outer wall and means pivotally mounting said handle on said mounting means adjacent said outer wall for rotation about an axis substantially parallel to said outer wall.

11. In combination with a door comprising inner and outer spaced walls, latch mechanism mounted between said walls on the inner wall, an operating handle for said latch mechanism having a portion extending and working through said outer wall, mounting means for said handle secured to said inner wall and extending to a point adjacent said outer wall and means pivotally mounting said handle on said mounting means adjacent said outer wall for rotation about an axis substantially parallel to said outer wall, and stop means for said handle carried by said mounting means.

12. In combination with a door comprising inner and outer spaced walls, latch mechanism mounted between said walls on the inner wall, an operating handle for said latch mechanism having a portion extending and working through said outer wall, mounting means for said handle secured to said inner wall and extending to a point adjacent said outer wall and means pivotally mounting said handle on said mounting means adjacent said outer wall for rotation about an axis substantially parallel to said outer wall, and stop means for said handle carried by said mounting means, said mounting means being secured to said inner wall at a point adjacent an edge thereof and extending to a point adjacent the outer door in the form of a relatively narrow portion and said stop extending along said handle relatively close thereto whereby not to obstruct the space between said doors so that a moving element such as a glass panel may move in the space between said walls.

WILLIAM C. ANDREWS.