Oct. 31, 1939. W. M. ROSSITER, JR., ET AL. 2,178,313

LATCH

Filed April 29, 1937

Fig. 1.

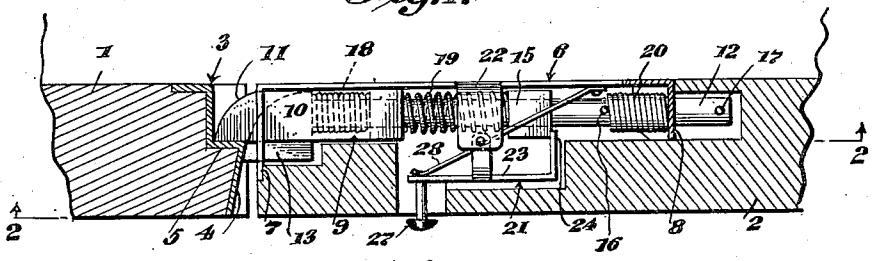


Fig. 2.

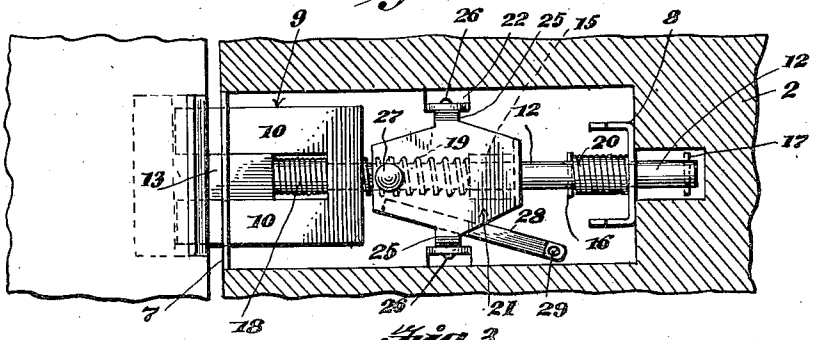


Fig. 3.

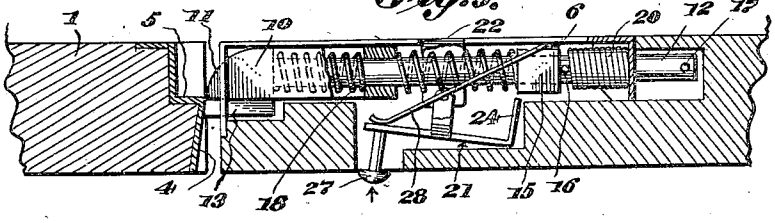


Fig. 4.

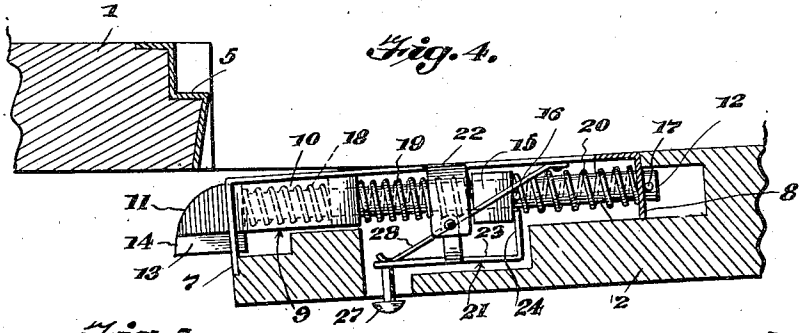
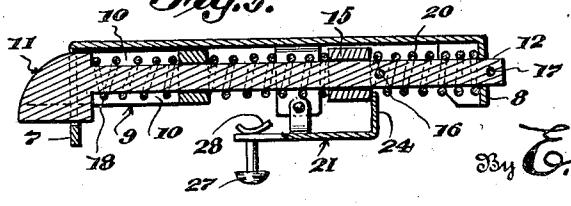


Fig. 5.



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2,178,313

LATCH

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Application April 29, 1937, Serial No. 139,786

13 Claims. (Cl. 292—181)

This invention relates to a latch device.

An object of the invention is the construction of a simple and efficient latch device that is easily operated, whereby the object carrying the latch device, such as a door, will open automatically.

Another object of the invention is the construction of a latch or lock device which comprises means that will slide over a keeper and will thereby open a door without any manual exertion, upon the operator's releasing the lock device from its locked or closed position.

A still further object of the invention is the construction of a latch device which in itself is of the nature of a safety device since there is no handle or knob projecting beyond the face of the object carrying the device; it is to be understood that when handles or knobs are provided they afford means on which a person may catch his garment, or contact a member of his body, causing at times a serious injury to the person so contacting; this is all eliminated by using my improved latch device.

With the foregoing and other objects in view, the invention comprises certain novel combinations, constructions and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawing and more particularly pointed out in the appended claims.

In the drawing:

Figure 1 is a view in side elevation of a device constructed in accordance with the present invention, showing in section a door or like unit upon which the device is mounted, while

Figure 2 is a top plan view of the latch device and the unit upon which it is mounted.

Figure 3 is a view similar to Figure 1, showing the device in an unlocked position, ready to move to an open position, while

Figure 4 shows the device in an open position.

Figure 5 is a vertical, longitudinal, central, sectional view of the device.

Referring to the drawing, in which we have shown the preferred embodiment of our invention, 1 designates the body of the article upon which our latch device is mounted; this body 1 may be the frame of a house, automobile, or the like. The movable or hinged unit 2 may be a door or any other suitable closing member, that suitably supports our improved latch device. On the body 1 we place a suitable plate or keeper 3 that is provided with an inclined face 4 and with a shoulder 5.

The latch device comprises a metallic frame or casing 6 provided with a right angled outer end 7 and a right angled inner end 8. A substantially U-shaped latch element 9 is slidably mounted upon the outer end 7 of casing 6; the prong-like sides 10 of latch element 9 are beveled at 11, upon their outer ends, to facilitate their sliding over face 4, when the latch element is moving to its closed or locked position. A sliding pusher bolt 12 has its outer end slidably mounted in the inner end of latch element 9, with the inner end of bolt 12 slidably mounted in the inner end 8 of the casing 6. On the outer end of bolt 12 is head 13, which is provided with a beveled face 14, to enable it to easily slide over face 4 of the keeper 3. A sliding block 15 is mounted on bolt 12. Pins 16 and 17 are also on bolt 12. Coil springs 18, 19 and 20 are mounted on bolt 12. Spring 18 bears at its outer end against head 13 and at its inner end against the inner end of U-shaped latch element 9. Spring 19 bears at its outer end against U-shaped latch element 9 and at its inner end against sliding block 15. Spring 20 bears at one end against pin 16 and at its opposite end against the inner end of casing 6. Pin 17 is provided for striking or bearing against the outer face of casing end 8, for limiting the inward movement of the bolt 12.

A trip device 21 is provided, comprising two inwardly extending flanges 22, formed on casing 6. A trip plate 23 is provided with a right angle extension 24 that is adapted to be placed against the side of block 15 to hold it against sliding movement in one direction upon bolt 12. Trip 23 is provided at its sides with inwardly extending fingers 25, which fingers, by suitable means, such as rivets or pins 26, are pivotally mounted on the flanges 22. A suitable button 27 may be attached to the outer end of trip 23, so that the operator can easily press in on the trip, to release the sliding block 15. A pressure spring 28 is provided, with its inner end fastened at 29 to the casing 6. The outer end of spring 28 slidably engages trip 23 preferably under the button 27, whereby the tendency of trip 23 is always to be in a locking engagement with sliding block 15.

In operation, when the device is in latching position, as shown in Figures 1 and 2, the trip device will be holding the sliding block 15 as shown, causing spring 19 to be compressed against latch element 9, while at the same time springs 18 and 20 are compressed due to the repression of bolt 12 by the keeper in the closing of the door. When the operator wishes to open the door-like member 2, all he has to do is to press slightly upon button 27, causing trip device 21 to move away from sliding block 15, whereupon pressure on spring 19 will be released, permitting

said spring to expand, which releases the compression upon spring 18. This will cause the U-shaped latch element to move inwardly upon bolt 12, sufficiently to clear the keeper 3 as clearly shown in Figure 3. Then the pressure of spring 20 is sufficient, in its expanding action, to cause beveled face 14 to ride down and out, from contact with the keeper, as clearly seen in Fig. 4, whereupon the door is released and swung partly open and is ready to be swung to a full-open position. The expansion of spring 20 has moved bolt 12 to its full projected position and pin 16 on bolt 12 has moved latch element 9, block 15 and springs 18 and 19 to their fully forward position so that trip flange 24 can now swing in behind block 15. When it is desired to close the door all the operator has to do is to push in on the same, whereupon the device assumes the position as shown clearly in Figures 1 and 2.

While we have described the preferred embodiment of our invention and illustrated the same in the accompanying drawing, certain minor changes or alterations may appear to one skilled in the art to which this invention relates during the extensive manufacture of same, and we, therefore, reserve the right to make such changes or alterations as shall fairly fall within the scope of the appended claims.

What we claim is:

1. In a device of the class described, the combination with a casing, a sliding latch element in said casing, a sliding bolt in said casing and said latch element, said bolt provided with a pusher head between portions of said latch element, a spring on said bolt and engaging one end of said casing, a spring on said bolt between said head and a portion of said latch element, a sliding block on said bolt, a spring on said bolt between a portion of said latch element and said sliding block, and a trip device carried by said casing and normally engaging said block.

2. In a device of the class described, the combination of a casing provided with an inner and an outer end, a U-shaped latch element having its outer ends beveled, a sliding bolt mounted near one of its ends upon the inner end of said casing, said bolt slidably extending through the inner end of said U-shaped latch element, a head on said bolt and positioned between the sides of said U-shaped latch element, said head having its outer end beveled, a pin on the inner end of said bolt outside said casing and a pin on said bolt near the inner end of said casing, a coil spring on said bolt between the inner end of said casing and the last-mentioned pin, a sliding block on said bolt, a coil spring on said bolt between said sliding block and said latch element, a coil spring on said bolt between said head and the inner end of said latch element, said casing provided with parallel flanges, a trip device pivotally mounted on said flanges and normally in engagement with said sliding block, and a spring on said casing and normally exerting pressure on said trip device to hold it in engagement with said block.

3. A combined latch and door opener including a casing, a movable latch bolt in said casing, means adapted to normally urge the latch bolt to its retracted position, a door opening member in said casing coacting with said latch bolt, means for urging the door opening member and thereby the latch bolt to its projected position against the action of the first named means and means to release the first named means to retract said bolt and to permit further projecting movement of the door opening member.

4. A combined latch and door opener for use with a keeper having an inclined face, including a casing, a movable latch bolt in said casing, compressible means adapted to normally urge the latch bolt to its retracted position, a door opening member in said casing coacting with said latch bolt, compressible means for normally urging the door opening member and thereby the latch bolt to its projected position against the action of the first named means, said second compressible means being arranged to automatically compress the first compressible means when the door opening member engages the inclined face of the keeper during closing movement of a door, and means to release the compression of the first named means whereby to retract said bolt and to permit additional projecting movement of the door opening member to open the door when the latch bolt has been retracted.

5. A latching construction for use with a keeper having an inclined face including a projectible latch bolt, means engaging the inclined face of the keeper, means normally urging the last named means and thereby the latch bolt to latching engagement with the keeper, and means responsive to the closing of the closure upon which the construction is mounted adapted to be automatically set by the means which engages the inclined face of the keeper and adapted to cause retraction of the latch bolt, and means to release the set means to cause retraction of the bolt and projection of the means engaging the inclined face of the keeper.

6. In a device of the class described, the combination of a casing, a latch element slidably mounted in said casing, a pusher element slidably mounted in said casing and cooperating with the latch element, springs on said pusher element engaging the latch element for moving the latter to a latched and unlatched position, and a spring cooperating with the pusher element to move the same to door opening position when the latch element is moved to unlatching position.

7. In a device of the class described, the combination of a casing, a latch element slidably mounted in said casing, a bolt provided with a head and slidable in said latch element, a pair of springs carried by said bolt, one of said springs engaging said head and latch for moving the latter to unlatching position, and the other of said springs engaging the casing and bolt to move the head to door opening position, and means for holding the latch element in latching position and the head in its inoperative position.

8. In a device of the class described, the combination of a casing, a U-shaped latch element slidably mounted in said casing, a bolt slidably engaging said U-shaped latch element, said bolt provided with a pusher head partly within said U-shaped latch element, springs on said bolt and acting upon said head and latch element, a sliding block on said bolt engaging one of said springs, and a trip device carried by said casing and normally engaging said block.

9. In a device of the class described, the combination of a casing, a spring biased latching and door opening means in said casing including a sliding block, said casing provided with inwardly extending flanges, a trip device provided with a right-angled extension engaging one side of said block for holding the spring biased latching

means in set position, said trip device provided with inwardly extending fingers mounted on said flanges, and a spring secured between said trip device and casing and operating on said trip device.

10. A construction of the character described, including a projectible latch member and a projectible pusher member, means carried by one of the members for normally urging the latch member to latching position, and means carried by the said one of the members and responsive to the closing of the closure upon which the construction is mounted adapted to be automatically set to cause retraction of the latch member and projection of the pusher member upon release of said last named means.

11. In a device of the class described, the combination of a casing, a pusher element in said casing, a latch element slidably mounted in said casing and cooperating with the pusher element, means on said pusher element engaging the latch element for moving the latter to a latched and unlatched position, and means cooperating with the pusher element to move the same to door opening position when the latch element is moved to unlatching position.

12. A construction of the character described, including a projectible latch member and a projectible pusher member, spring means carried by one of the members for normally urging the latch member to latching position, and a second spring means carried by the said one of the members and responsive to the closing of the closure upon which the construction is mounted adapted to be automatically set to cause retraction of the latch member and projection of the pusher member upon release of said last named spring means.

13. A combined latch and door opener including a casing, a movable latch bolt in said casing, spring means adapted to normally urge the bolt to its retracted position, a door opening member in said casing coacting with said latch bolt, spring means for urging the door opening member and thereby the latch bolt to its projected position against the action of the first named spring means, and means to release the first named spring means to retract said bolt and to permit further projecting movement of the door opening member.

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