Dec. 26, 1939. H. E. WOERNLE 2,184,879

LATCH

Filed March 24, 1939

Fig. 1.

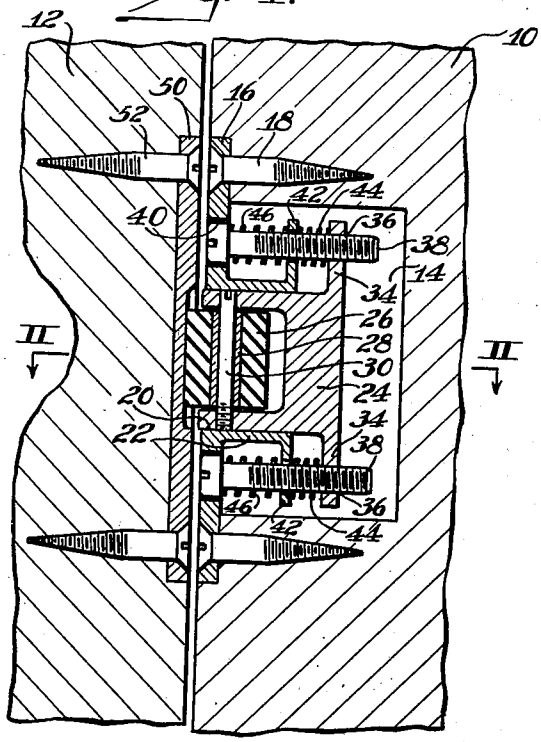


Fig. 2.

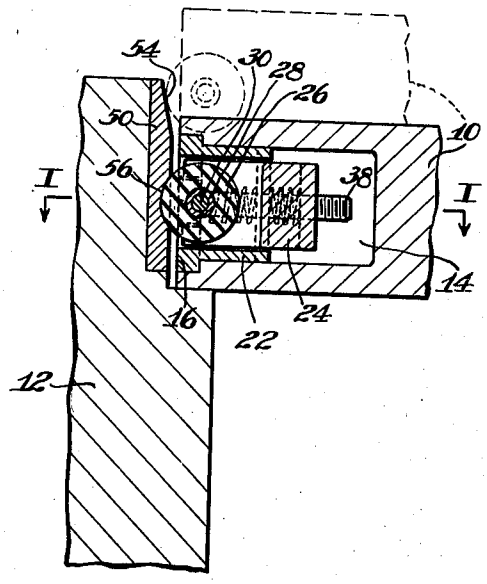
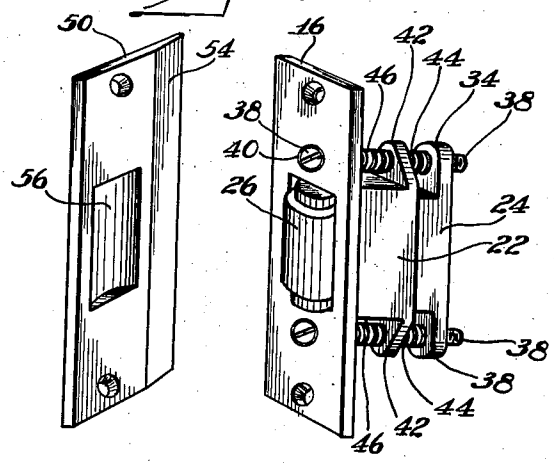


Fig. 3.



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UNITED STATES PATENT OFFICE

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LATCH

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5 Claims. (Cl. 292—75)

This invention relates to latching devices, and more particularly to door latches of the type including a resiliently positioned roller detent.

It is the general object of my invention to provide a roller-type door latch which is inexpensive to manufacture, easily installed and adjusted, and which is adapted to give years of satisfactory service with little or no attention.

Another object of my invention is the provision of a detent type door latch in which the detent includes a roller which is resiliently and adjustably carried in the door for cooperation with a jamb plate.

Another object of my invention is the provision of a simplified but sturdy and long-lived latching device that is noiseless in operation.

The foregoing and other objects of my invention are achieved by the provision of a latch comprising a face plate, a detent, means mounting the detent for movement normal to and through the face plate, means for adjusting the position of the detent relative to the face plate, means for resiliently holding the detent in the adjusted position against movement outwardly of the face plate, and means for resiliently holding the detent in the adjusted position against movement inwardly of the face plate.

For a better understanding of my invention reference should be had to the accompanying drawing wherein Fig. 1 is a vertical cross-sectional view through my improved door latch shown in association with a door jamb and jamb plate. This view is taken on line I—I of Fig. 2. Fig. 2 is a transverse cross-sectional view taken on line II—II of Fig. 1; and Fig. 3 is a perspective view of my improved latch shown in conjunction with a complementary jamb plate.

In the drawing the numeral 10 indicates generally a door adapted to be swung about a pivot with respect to a door jamb, indicated as a whole by the numeral 12. The door 10 is provided with a recess 14 which receives my improved latching device. Particularly, my improved latching device includes a face plate 16 adapted to be secured, as by screws 18, to the door. The face plate 16 is formed with a detent-receiving recess or opening 20, and a box 22, preferably formed integrally with the face plate 16, surrounds the detent-receiving opening 20 on the back side of the face plate.

The box 22 slidably receives a block 24 for movement to and from and through the face plate 16 in a direction normal to the face plate. The block 24 rotatably supports a rubber roller 26 for rotary movement about an axis parallel to and extending along the face plate 16. To this end the rubber roller 26 is formed with a metal bushing 28 which rotatably receives a pin 30 fixed in the block 24 in the manner particularly illustrated in Fig. 1. It will be understood that the block 24 is appropriately recessed to receive the roller 26.

The block 24 is formed with lugs 34 at its top and bottom sides at the rearward end of the block. Preferably these lugs 34 are made integral with the block 24 to thereby simplify the construction. The lugs 34 are formed with appropriately tapped holes 36 into which are threaded cap screws 38. The cap screws, as shown in Figs. 1 and 3, extend so that their axes are normal to the face plate 16. However, the cap screws 38 do not engage with the face plate 16 but have their heads substantially flush with the face plate and received in openings 40 in the face plate which are larger than the heads of the cap screws. This construction allows for the ready adjustment of the cap screws with a screwdriver when the door is open and yet the cap screws are not connected to the face plate except in that the face plate may provide some rotatable support for the screws which prevents them from being canted.

Ears 42 are either formed integral with or secured to the uuper and lower sides of the back end of the box 22 and these ears are appropriately apertured to slidably and rotatably surround the cap screws 38. A coiled compression spring 44 is carried on each cap screw 38 between the ears 42 and the lugs 34. Coiled compression springs 46 are carried on the cap screws 38 between the ears 42 and the heads of the cap screws.

A jamb plate 50 secured to the door jamb 12, as by suitable screws 52, is formed with a beveled edge 54 and an appropriate recess 56 adapted to receive the rubber roller 26 to achieve the latching action of the apparatus.

It is believed that the operation of my new and useful latch will be evident from the foregoing description. However, briefly reviewing this operation, it will be recognized that as the door 10 is swung to a closed position the rubber roller 26 first strikes the beveled edge 54 of the jamb plate 50 and the continued closing of the door is cushioned by the yielding of the rubber of the roller and by the whole block 24 carrying the roller being slid backwardly in the box 22 to compress springs 46. In this connection it will be noted that the block 24, and thus the rubber roller 26, is positioned with respect to the face plate 16 by the ears 42 and the compression

springs 44 and 46. In other words, the block 24 is resiliently mounted with respect to the face plate 16 so that the block can be moved backwardly of the face plate by compressing the springs 46 and forwardly of the face plate by compressing the springs 44.

The continued closing movement of the door brings the rubber roller 26 into the recess 56 formed in the jamb plate 50. In this position of the parts the resiliency of the rubber roller 26 and the springs 46 holds the door in a latched position. However, sufficient force tending to open the door causes the rubber roller 26 to be compressed and the block 24 to move backwardly of the face plate to compress springs 46 further and thereby allows the door to be opened, at which time the roller 26 rolls out of the recess 56 in the door jamb 50.

An important part of my improved latch is the provision of adjusting means for changing the outward position of the rubber roller 26. This is achieved by the mechanism already described. Particularly, tightening the cap screws 38 into the tapped openings 36 in the lugs 34 formed on the block 24 compresses both the springs 44 and the springs 46. Inasmuch as the ears 42 are fixed relative to the face plate, the tightening or screwing in of the cap screws 38 thus moves the block 24 and the rubber roller 26 outwardly of the door 10 in a direction normal to the face plate 16. Loosening of the cap screws 38 loosens the compression on the springs 44 and 46 which, however, move the block 24 and roller 26 away from the face plate 16. In this manner any desired adjusted position of the rubber roller 26 with respect to the face plate 16 can be obtained and simultaneously the force of the resilient means positioning the rubber roller is changed. It will be seen that the compression on springs 44 and 46 is much higher when the rubber roller 26 is adjusted to an outermost position than when the rubber roller 26 is in an inner or backward position.

From the foregoing it will be recognized that the objects of my invention have been achieved by the provision of an improved latch structure, and particularly a roller latch in which the roller is resiliently positioned for either movement inwardly or outwardly of the face plate, and that the initial position of the roller, as well as the force of the resilient positioning means, can be readily altered. My improved latching device is relatively simple to manufacture but is capable of successful operation over long periods in substantially any detent latching relation. My improved latch is noiseless in operation and provides many of the features of a door-cushioning means.

While in accordance with the patent statutes I have particularly illustrated and described one embodiment of my invention, it will be understood that my invention is not limited thereto or thereby but is defined in the appended claims.

I claim:

1. A spring latch comprising a face plate, a block slidably carried by the face plate for movement normal to and through the face plate, a latch carried by the block, screws threaded into the block and operable through the face plate, means rigidly fixed relative to the face plate and positioned in spaced but substantially parallel relation therewith and rotatably and slidably receiving the screws, and resilient means positioned between the last-named means and the block and between the last-named means and the heads of the screws.

2. A spring latch comprising a face plate, a block slidably carried by the face plate for movement normal to and through the face plate, a roller latch carried by the block, screws threaded into the block and operable through the face plate, means rigidly fixed relative to the face plate and positioned in spaced but substantially parallel relation therewith and rotatably and slidably receiving the screws, and resilient means positioned between the last-named means and the block and between the last-named means and the heads of the screws.

3. A roller latch comprising a face plate having a latch opening therethrough, a box formed integrally with the face plate and surrounding the latch opening on the back side of the face plate, a block slidably received in the box, a rubber roller latch rotatably carried by the block, laterally extending lugs formed on the top and bottom of the back side of the block, a cap screw threaded into a suitably tapped opening in each lug and having its head rotatably supported in an opening in the face plate, the opening in the face plate allowing axial movement of the screw in either direction through the opening in the face plate, ears formed integrally with the top and bottom of the back of the box, each ear having an opening rotatably and slidably receiving the adjacent screw, and coiled compression springs surrounding each screw and carried between each ear and the head of the screw and between each ear and each lug.

4. A roller latch comprising a face plate having a latch opening therethrough, a box associated with the face plate and surrounding the latch opening on the back side of the face plate, a block slidably received in the box, a rubber roller latch rotatably carried by the block, laterally extending lugs associated with the top and bottom of the back side of the block, a cap screw threaded into a suitably tapped opening in each lug and having its head positioned adjacent an opening in the face plate, the opening in the face plate allowing axial movement of the screw in either direction through the opening in the face plate, ears associated with the top and bottom of the back of the box, each ear having an opening rotatably and slidably receiving the adjacent screw, and resilient means carried between each ear and the head of each screw and between each ear and each lug.

5. A roller latch comprising a face plate having a latch opening therethrough, a box associated with the face plate and surrounding the latch opening on the back side of the face plate, a block slidably received in the box, a detent carried by the block, laterally extending lugs associated with the top and bottom of the back side of the block, a cap screw threaded into a suitably tapped opening in each lug and having its head positioned adjacent an opening in the face plate, the opening in the face plate allowing axial movement of the screw in either direction through the opening in the face plate, ears associated with the top and bottom of the back of the box, each ear having an opening rotatably and slidably receiving the adjacent screw, and resilient means carried between each ear and the head of each screw and between each ear and each lug.

HARRY E. WOERNLE.