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O. P. CRAMER

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LATCH

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Fig. 1

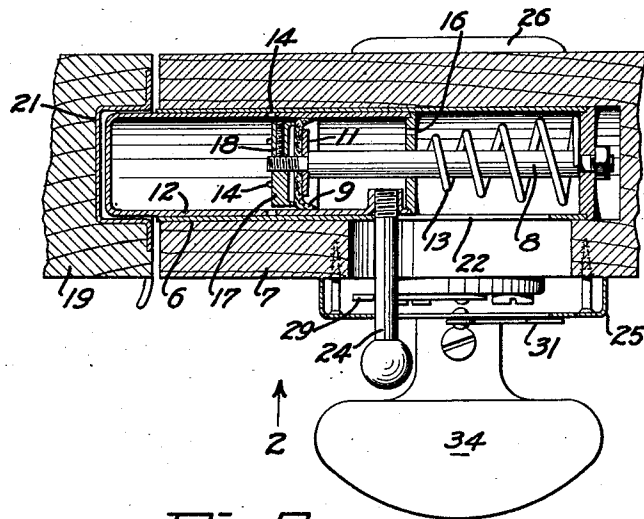


Fig. 3

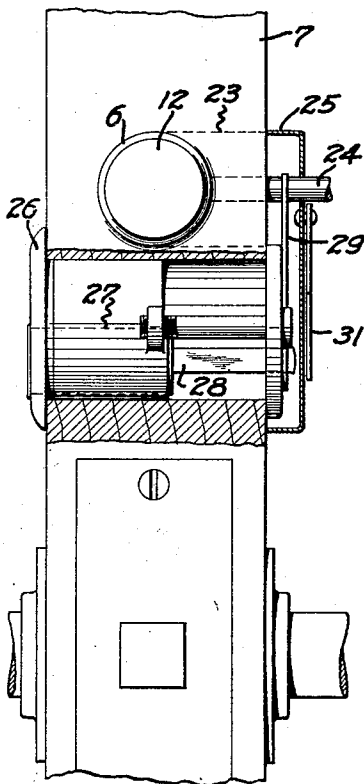
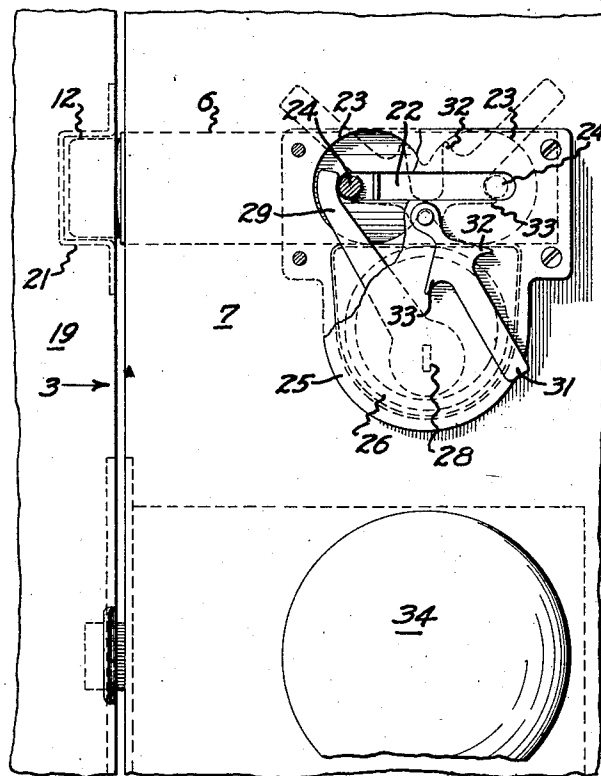


Fig. 2



INVENTOR
OTTO P. CRAMER
BY *Charles S. Evans*
ATTORNEY

UNITED STATES PATENT OFFICE

OTTO P. CRAMER, OF SAN FRANCISCO, CALIFORNIA

LATCH

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My invention relates to fastening means, and particularly to a door latch.

An object of my invention is the provision of a door latch which is automatic in operation.

Another object of my invention is the provision of a door latch, of the character described, which is of simple and inexpensive construction, and which may be quickly and easily installed in a door.

Another object of my invention is the provision of a burglar proof latch.

My invention possesses other objects and valuable features, some of which will be set forth in the following description of my invention which is illustrated in the drawings forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said description and drawings, as I may adopt varying forms of my invention within the scope of the claims.

Referring to the drawings:

Figure 1 is a horizontal sectional view through the latch, and a portion of the door and jamb with which it is used. Portions of the view are shown in elevation to disclose the construction clearly.

Figure 2 is a side elevational view looking in the direction of arrow 2 of Figure 1. Portions of the structure are shown in section to disclose clearly the construction.

Figure 3 is an end elevational view, partly in section, looking at the end of the door, and in the direction of arrow 3 of Figure 2.

In broadly descriptive terms, the latch of my invention comprises a bolt adapted to be slidably mounted in a door, and provided with a spring for urging the bolt outwardly of the door into a recess in the door jamb. Preferably the recess is the same shape as the outer portion of the bolt, and the bolt fits snugly therein, to prevent retraction of the bolt except by means intended for this purpose. Means, preferably a dash pot, is provided for retarding the action of the spring which urges the bolt outwardly from its retracted position, so that the bolt is not immediately thrust outwardly but is moved slowly to allow sufficient time for opening

and closing the door, before the spring finally pushes the bolt into the jamb recess.

A pin, adapted to project beyond the inner side of the door, is carried by the bolt for providing a handle whereby the bolt may be retracted. The latch is preferably used in combination with a key operated lock of any well known construction and which is accessible from the outer side of the door. Means actuated by the lock is provided for retracting the bolt, to permit opening of the door from the outside. In some instances, it may be desirable to hold the latch in retracted position to permit free opening of the door; and for this purpose, I provide a hook adapted to be mounted on the inner side of the door, for holding the pin and consequently the bolt in retracted position.

Referring to the specific embodiment of my invention which I have chosen for illustration, the latch is mounted in a tubular or cylindrical casing 6 positioned within a recess, preferably bored horizontally in the door 7 and parallel with the sides thereof. Mounted on the inner end of the casing is a stem 8 which carries a flexible cup-shaped piston 9, preferably of leather, and positioned against washer 11. The piston is spaced from the wall of the casing 6; and slidably movable past the piston is a cylinder 12, the inner end of which is apertured to permit movement longitudinally of the stem 8.

A spring 13, interposed between the cylinder and casing, is provided for urging the cylinder outwardly of the door. The cylinder and piston provide a dash pot which retards the action of the spring which moves the cylinder outwardly from retracted position.

The side of the cylinder is formed with a plurality of apertures 14 positioned to move past the piston in either direction of its movement; and an aperture 16 is provided in the rear end of the cylinder for relieving pressure between this end and the piston when the cylinder is urged outwardly. Apertures 14 serve the function of permitting air to rush into the portion of the dash pot ahead of the piston when these apertures

move past the piston, as the cylinder is urged outwardly from retracted position. By this arrangement, the partial vacuum formed ahead of the piston is destroyed at this point by equalization of pressure. Consequently the cylinder will snap outwardly after apertures 14 move by piston 9.

For adjusting the effective diameter of the piston 9 to provide means for controlling the retarding action of the dash pot, a cup-shaped adjusting nut 17 bearing against the piston is threaded on stem 8; and a set screw 18 is provided for fixing the adjusting nut in selected position. The set screw 18 is set before assembly of the latch in the door. Preferably it is set so that the spring 13 will effect complete outward movement of the cylinder 12 from retracted position in 20 to 30 seconds.

The outer portion of cylinder 12 is preferably flat and without taper, and forms a latch bolt adapted to engage in a recess in the door jamb 19 formed by a cylindrical casing 21 seated therein, the latch bolt being shaped to conform to that of the recess. This construction makes it impossible to move the latch bolt out of engagement with the jamb recess, except by means intended for this purpose.

Means are provided whereby the bolt may be retracted from the inner side of the door. Casing 6 is formed with an elongated aperture 22 adjacent its inner end, and which registers with an aperture in the inner side of the door. This aperture may be quickly and conveniently formed by boring two communicating holes 23 in the side of the door. A pin 24 carried by the cylinder 12, adjacent its inner end, projects thru the apertures 22 and 23, and beyond the apertured housing 25 mounted on the inner side of the door. By grasping the pin and moving it inwardly, the latch bolt may be retracted and the door opened.

Means are also provided for retracting the bolt from the outside of the door. For this purpose, it is preferred to employ any conventional or well known key operated lock 26 mounted in and accessible from the outer side of the door. Locks of this character include a rotatable element such as barrel 27, which is rotated upon opening of the lock. Fixed for movement with the barrel 27 is a pin 28 projecting thru an aperture in the door and into housing 25. Mounted upon pin 28 and in housing 24 is a lever 29, which upon turning of barrel 27 engages the pin 24 to move the latch bolt inwardly.

From the preceding description, it is seen that the latch bolt may be retracted from the inside of the door without a key, and from the outside of the door with a key. In either case, after the door is closed, the latch bolt will be automatically moved outwardly to latch the door.

It is sometimes desirable to hold the latch bolt in retracted position, so that the door may be opened without operating the bolt, and to hold it in extended or latched position to prevent inward movement of the bolt. For these purposes, I provide means mounted on the inner side of the door for holding pin 24 in the desired position. An arm 31 having hooks 32 and 33, one on each side thereof, is pivotally mounted on the outer side of the housing 25 for movement in either direction. When the bolt pin 24 is retracted, the arm 31 may be swung in one direction, to cause hook 33 to engage the pin and hold the bolt in retracted position. If desired to hold the latch bolt against inward movement when the door is latched, the arm 31 may be swung in the opposite direction to effect engagement of hook 32 with the pin 24. In the latter position, the door cannot be opened from the outside, even by operating the lock 26; and hence in this position, the hook may serve as a night latch. Both of the above described positions of arm 31 are illustrated by the dotted lines in Figure 2.

In new installations, the use of a door knob is not necessary. However, the latch may be applied to doors having a latch operated by a knob 34, without departing from the teachings of the invention.

I claim:

1. A door latch comprising a casing adapted to be mounted within the door, a piston mounted in said casing and spaced from the wall thereof, a cylinder slidably mounted in said casing and surrounding the piston, a spring interposed between the cylinder and casing for urging the cylinder outwardly of the casing, and a pin carried by said cylinder whereby it may be moved against the spring.

2. A door latch comprising a casing adapted to be mounted within the door, a piston mounted in said casing and spaced from the wall thereof, a cylinder slidably mounted in said casing and surrounding the piston, said cylinder being provided with an aperture in its side positioned to travel past the piston during movement of the cylinder, a spring interposed between the cylinder and casing for urging the cylinder outwardly thereof, and a pin carried by said cylinder whereby it may be moved against the spring.

3. The combination with a lock having a rotatably mounted element and adapted to be mounted in a door, and a lever mounted for movement with said element, of a latch bolt adapted to be slidably mounted within the door, a spring for urging the bolt outwardly of the door, means for retarding the action of the spring, and a pin carried by said bolt, said lever being positioned to engage the pin upon rotation of the element to retract the bolt.

4. The combination with a lock having a rotatably mounted element and adapted to be mounted in a door, and a lever mounted for movement with said element, of a latch bolt adapted to be slidably mounted within the door, a spring for urging the bolt outwardly of the door, means for retarding the action of the spring, and a pin carried by said bolt and adapted to project beyond the side of the door so that it may be manually grasped to retract the bolt, said lever being positioned to engage the pin upon rotation of the element to retract the bolt.

5. The combination with a lock having a rotatably mounted element and adapted to be mounted in a door, and a lever mounted for movement with said element, of a latch bolt adapted to be slidably mounted within the door, a spring for urging the bolt outwardly of the door, and a pin carried by said bolt and adapted to project beyond the side of the door so that it may be manually grasped to retract the bolt, said lever being positioned to engage the pin upon rotation of the element to retract the bolt.

6. The combination with a door latch comprising a latch bolt adapted to be movably mounted within the door, a spring for urging the bolt outwardly of the door, and a pin carried by the bolt whereby it may be retracted against the spring, of an arm adapted to be movably mounted on the side of the door and having a hook on each side thereof, one of said hooks being adapted to engage the pin when the bolt is in retracted position and the other of said hooks being adapted to engage the pin when the bolt is in extended position.

7. The combination with an element adapted to be movably mounted within an object, a spring for urging the element outwardly of the object, and a pin carried by the element whereby it may be retracted against the spring, of an arm adapted to be movably mounted on the object and having a hook on each side thereof, each of said hooks being adapted to engage the pin.

In testimony whereof, I have hereunto set my hand.

OTTO P. CRAMER.