Jan. 29, 1929. 1,700,487

O. P. CRAMER

DOOR LATCH

Filed May 7, 1927 2 Sheets-Sheet 1

Fig. 1

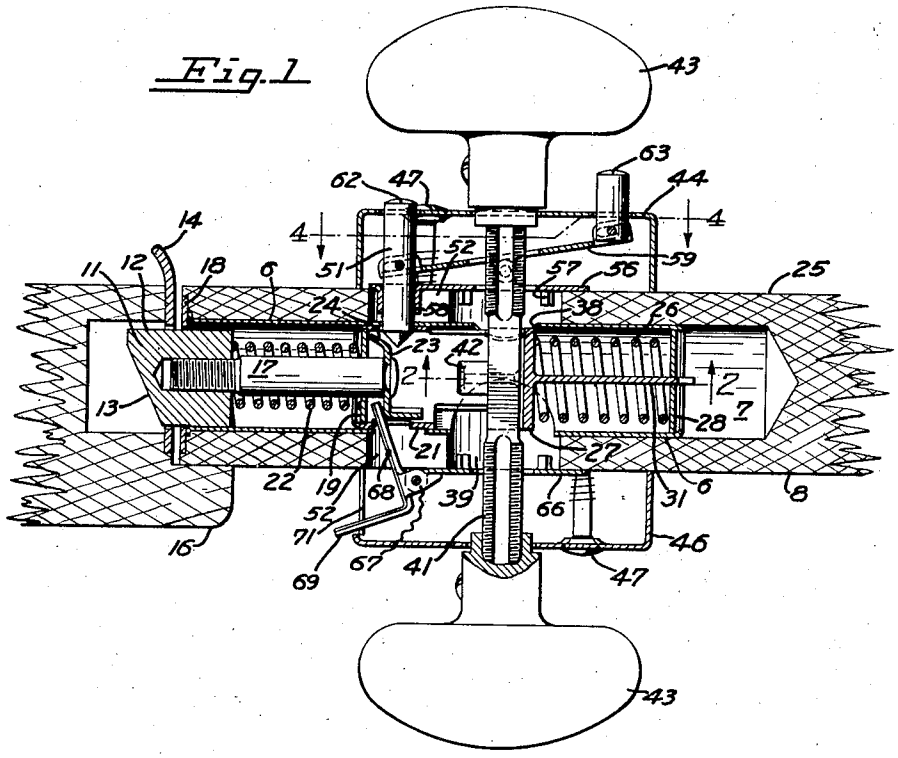


Fig. 3

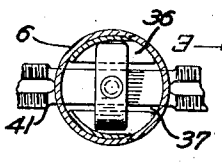


Fig. 2

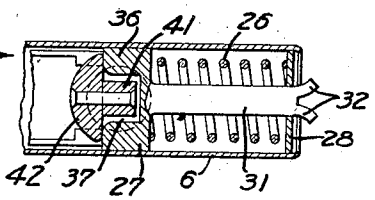
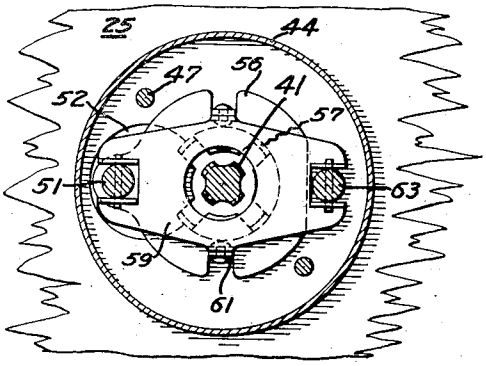


Fig. 4



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

Jan. 29, 1929. 1,700,487

O. P. CRAMER

DOOR LATCH

Filed May 7, 1927 2 Sheets-Sheet 2

Fig. 5

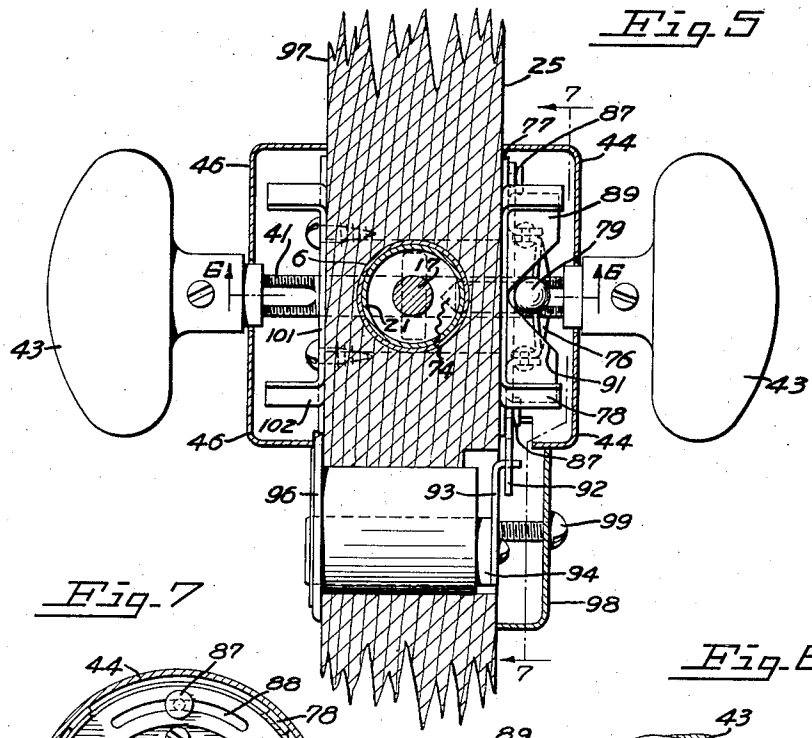


Fig. 7

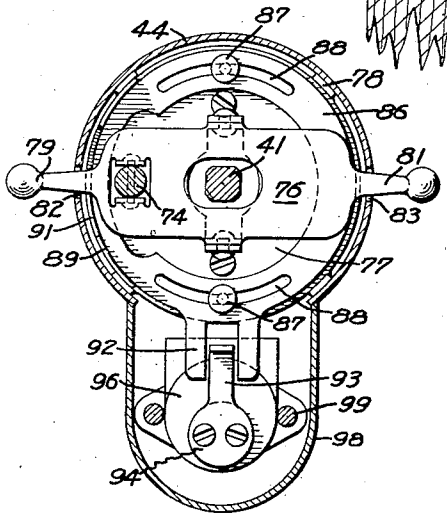
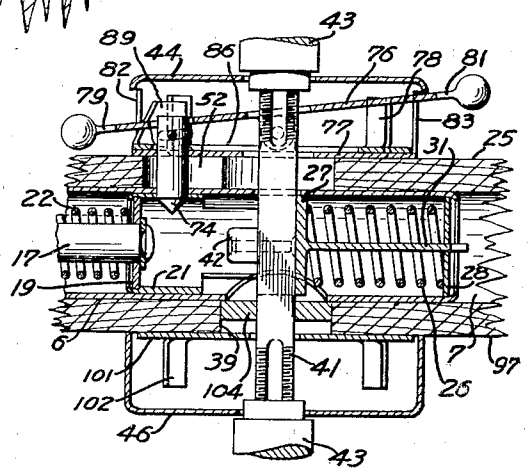


Fig. 6



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

Patented Jan. 29, 1929. 1,700,487

UNITED STATES PATENT OFFICE.

OTTO P. CRAMER, OF SAN FRANCISCO, CALIFORNIA.

DOOR LATCH.

Application filed May 7, 1927. Serial No. 189,468.

My invention relates to fastening means for doors, and has for an object the provision of a door latch of such construction that skilled mortising of the door is not required to mount the latch in position.

Another object is the provision of a door latch having a bolt adjustable so that the amount of projection of the bolt from the latch is variable.

Another object is the provision of an inexpensive door latch of sturdy construction and dependable operation, and composed of few and simple parts.

The invention possesses many other objects and valuable features, some of which will be set forth in the following description of the 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.

Figure 2 is a vertical sectional view of a portion of the bolt, the direction of view being indicated by the arrows 2—2 of Figure 1.

Figure 3 is a vertical sectional view of the bolt, the direction of view being indicated by the arrow 3 of Figure 2.

Figure 4 is an elevation of the dogging portion of the latch, partly in vertical section, the plane of section being indicated by the line 4—4 of Figure 1.

Figure 5 is a vertical sectional view of a different embodiment of the latch.

Figure 6 is a horizontal sectional view of the latch of Figure 5, the plane of section being indicated by the line 6—6 of Figure 5.

Figure 7 is an elevation, partly in vertical section, of the dogging and releasing means, the plane of section being indicated by the line 7—7 of Figure 5.

In terms of broad inclusion, the loor latch of my invention includes a bolt comprising a strike plate engaging portion threaded to the main body portion of the bolt, so that the bolt may be adjusted to vary its effective length. The bolt is mounted in a preferably tubular casing adapted to be positioned in the edge of a door. The bolt is adapted to be retracted to permit the opening of the door, by turning a shaft extending through the door and provided with the customary knobs. To permit latching the door, a pin is provided by which the bolt in its extended position and the casing may be dogged together. The pin is operated by pressing one of two buttons to dog or release the bolt, as the case might be; and the entire means for operating the pin is mounted on the exterior of the door within a housing concentric with the shaft. As a result, the mounting of the latch in the door requires no skillful laying out or chiseling and the only operations necessary are the boring of a few holes on readily determined centers.

An embodiment of the invention is shown in Figures 1 to 4 inclusive and comprises a preferably tubular casing 6 mounted within a hole 7 preferably bored horizontally and parallel to the sides of the door 8. A bolt is slidably mounted within the casing and comprises a cylindrical portion 11 having one side 12 flattened and its outer end provided with an inclined face 13, so that when the door is closed, a latching engagement of the bolt with the strike plate 14 on the jamb 16 may be effected. The portion 11 of the bolt is rotatable within the casing, and is threaded to a rod 17, so that the effective length of the bolt, or the distance that the bolt projects beyond the edge of the door may be varied. When the proper adjustment has been made, further turning of the portion 11 upon the rod 17 is prevented by securing a guard plate 18 in position upon the edge of the door, so that the portion 11 extends through an aperture of corresponding shape in the guard plate. The rod 17 is slidable longitudinally in the end 19 of the body 21 of the bolt; and a spring 22, compressed between the portion 11 and the body 21 of the bolt, urges the latch plate engaging portion outwardly from the body portion. It is thus seen that the portion 11 of the bolt can be pressed back into the casing 6 without moving the body 21, when the door is closed.

A plate 23, suitably fastened to the end of the rod within the hollow interior of the body, has its edge 24 proximal to the inner side 25 of the door, inclined toward the end 19 of the body to bear thereagainst, so as to limit the outward motion of the rod 17 and portion 11 in respect to the body of the bolt. A spring 26, compressed between the inner end 27 of the body 21 and the inner end 28 of the casing 6, urges the entire bolt outwards; and a guide 31 on the end 27 of the bolt is slidable through an aperture in the end 28 of the casing to permit reciprocation of the bolt. The

end 32 of the guide is upset to limit the outward motion of the bolt.

Shoulders 36 are provided on the inside of the end 27 of the bolt, leaving a recess 37 between them. Extending through the recess and the holes 38 and 39 through the body of the bolt and the door respectively is a shaft 41 having a cam 42 secured thereto in register with the shoulders, so that when the shaft is rotated through about 45° in either direction, the bolt is retracted. The shaft and the hole in the door, in which it lies, are both perpendicular to the axis of the hole in which the casing is positioned. To turn the shaft, door knobs 43 are adjustably secured to each end of the shaft; and the assembly of knobs, shaft, and cam are mounted for rotary movement on the housings 44 and 46, suitably secured to the inner and outer sides of the door, as by screws 47.

Means are provided for dogging the bolt in its extended position to prevent opening the door. A pin 51 is adapted to be inserted through an aperture in one side of the casing 6 into an aperture in the body of the bolt alined therewith when the bolt is in its extended position, thus preventing the retraction of the bolt by turning the shaft 41. The end of the pin is tapered, and is in alinement with the inclined edge 24 of the plate 23. If the pin 51 has been set to dog the bolt, and then the door is closed, the portion 11 is pressed into the casing by engagement with the strike plate, and the pin 51 is forced out of engagement with the bolt by the edge 24. Thus shutting the door will release the pin, should it have been previously set.

To accommodate the pin, an additional hole 52 through the door is provided adjacent the hole 39 and parallel thereto.

Means entirely exterior of the door for operating the bolt dogging means are provided on the inner side of the door within the housing 44. A stationary plate 56 having lugs 57 struck therefrom to fit the bore of the hole 39 so as to properly position the plate, is suitably secured to the inner side 25 of the door, and extends over the hole 52, where a tubular guide 58 is provided for the dogging pin. A second plate 59 is mounted for rocking movement upon the ears 61 struck from opposite edges of the stationary plate. The pin 51 is secured to one end of the rocking plate by means of a pivotal joint capable of permitting a limited degree of lateral movement, so that the pin can be moved longitudinally by rocking the plate without moving the pin laterally. The pin is of such length that its end 62 projects through the housing, so that the pin may be engaged with the bolt simply by pushing the end 62 into the housing to the end of its stroke. This causes the plate 59 to be rocked, forcing the button 63, pivoted in a similar fashion to the other end of the plate, outwards through the housing 44, so that the pin may be disengaged from the bolt to unlatch the door by pushing the button 63.

It is thus understood that the door may be latched after it is closed simply by pressing the button, or end 62 of the pin 51; and that it may be unlatched by pressing the opposite button 63. It is also understood that should the door latch be dogged while the door is open, and then the door be shut, the bolt will be automatically released by the plate 23 impinging upon the tapered end of the dogging pin and forcing it out of engagement with the bolt. No mortising is necessary for the installation of the latch other than drilling holes 39 and 52 through the door and perpendicularly to the sides thereof, and hole 7 into the edge of the door parallel to the sides.

In some communities it is required that latches used on bath room doors be so constructed that they may be released from the outside. To comply with this requirement, I include in latches intended to be used on such doors a stationary plate 66, suitably secured to the outer side of the door under the housing 46. Pivoted to ears 67 struck from this plate is a lever 68 extending through the hole 52 into the bolt between the end 19 of the housing and the plate 23. An arm 69 on the lever extends through an aperture 71 in the housing 46, so that when the arm is depressed, the lever forces the plate 23 inwards, carrying with it the rod 17 and portion 11 of the bolt, and forcing the pin 51 out of engagement with the bolt.

In Figures 5, 6, and 7 is shown an embodiment of the latch of my invention adaptable for use on an outside door. In this form of the latch, the pin 74 corresponding to pin 51 in the embodiment first explained, is pivoted to a plate 76 mounted for rocking movement upon a stationary plate 77 suitably secured to the inner side 25 of the door 8, and having upturned ears 78 for retaining the housing 44 in position. The pin 74 does not extend through the housing, but the plate 76 is provided with arms 79 and 81 at its ends corresponding to the buttons 62 and 63 respectively. These arms project through apertures 82 and 83 respectively in the sides of the housing 44. This arrangement makes the latching means more accessible than when the buttons are employed.

Instead of the lever 68 of Figure 1, the means for unlatching the door from the outside comprise a plate 86, mounted for pivotal movement about its axis, upon the rivets 87 secured to the plate 77 and extending loosely through the arcuate slots 88 in the plate 86. An arcuate projection or flange 89 having a V-shaped notch 91 is so positioned upon the edge of the plate 86 that the arm 79 is disposed within the notch. Thus it is seen that when the pin 74 is in engagement with the bolt 21, disengagement may be effected by rotating

the plate 86 in either direction, thus rocking the plate 76 by the contact of an edge of the notch against the arm 79.

Means operable by key from the outer side of the door are provided for rotating the plate 86. Such means comprise a pair of extensions 92 on the plate, between which is positioned a lever 93 secured to the barrel 94 of a standard key operated lock 96 having its key-hole in the outer side 97 of the door. A cover 98 is retained over the lever 93 and rear end of the lock by screws 99 threaded into the body of the lock.

The housing 46 on the outer side of the door is retained in position similarly to the housing 44 by a plate 101 with ears 102 over which the housing is pressed.

To latch the door, the arm 79 is depressed, forcing the pin 74 into engagement with the bolt 21 as previously described. Of course this must be done from the inner side of the door, and for that reason, the plate 23 for automatically releasing the pin 74, when the door is closed, is omitted, and the relatively small washer 103 secured to the end of the rod 17 in its place to limit the outward movement of the portion 11 of the latch bolt.

I have found that a bushing 104 upon the shaft 41 to center the shaft in the hole 39 in the door is an aid in assembling and helps the shaft to turn more smoothly by maintaining the shaft in alinement with the hole.

I claim:

1. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, a plate adapted to be mounted for rocking movement on one side of the door and a pin carried by said plate for dogging the latch bolt.

2. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, a plate adapted to be mounted for rocking movement on one side of the door, a pin carried by said plate for dogging the latch bolt, a housing surrounding the plate, and means extending from the housing for operating the plate.

3. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, a plate adapted to be mounted for rocking movement on one side of the door, a pin carried by said plate for dogging the latch bolt, a housing surrounding the plate, and arms extending from the housing for operating the plate.

4. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, means adapted to be arranged on one side of the door for dogging the bolt, means adapted to be arranged on the same side of the door for releasing the bolt, and means adapted to be arranged on the opposite side of the door for releasing the bolt.

5. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, a pin movable transversely of the latch bolt to dog it, and means adapted to be mounted on each side of the door operable to move the pin to release the bolt.

6. A door latch comprising a cylindrical casing, a spring pressed bolt slidably disposed in said casing, knob actuated means for operating said bolt, dogging means for fixing the position of the bolt, means adapted to be mounted on one side of the door for setting and releasing said dogging means, and means adapted to be mounted on the opposite side of the door for releasing said dogging means.

7. A door latch comprising a cylindrical casing, a spring pressed bolt slidably disposed in said casing, knob actuated means for operating said bolt, dogging means for fixing the position of the bolt, means adapted to be mounted on one side of the door for setting and releasing said dogging means, and pivotally mounted means for releasing said dogging means and operable from the opposite side of the door.

8. A door latch comprising a cylindrical casing, a bolt slidably disposed in said casing, a knob actuated shaft for operating said bolt and extending transversely thru said casing, a dogging pin for fixing the position of the bolt and disposed adjacent the shaft and parallel thereto, means adapted to be mounted on one exterior face of the door for setting and releasing said dogging means, and means adapted to be mounted on the opposite side of the door for releasing said dogging means.

9. A door latch comprising a cylindrical casing, a bolt slidably disposed in said casing, a knob actuated shaft for operating said bolt and extending transversely thru said casing, a dogging pin for fixing the position of the bolt and disposed adjacent the shaft and parallel thereto, a housing surrounding the shaft and adapted to be mounted on one exterior face of the door, means within the housing and having portions extending therefrom, for setting and releasing said dogging means, and means adapted to be mounted on the opposite side of the door for releasing said dogging means.

10. A door latch comprising a casing, a spring pressed bolt slidably disposed in said casing, a knob actuated shaft for operating said bolt, a dogging pin for fixing the position of the bolt, a plate mounted for piv-

otal movement and operatively connected to said dogging pin, means for rocking said plate to set or release the dogging pin and adapted for mounting on one side of the door, and means adapted to be mounted on the opposite side of the door for releasing said dogging means.

11. A door latch comprising a casing adapted for mounting within a door, a spring pressed latch bolt slidably mounted within the casing and comprising a body portion and a strike plate engaging portion slidable relative to the body portion, knob actuated means for retracting the bolt, a pin movable transversely of the bolt to dog it, means adapted to be mounted exterior to the door for moving the pin, and means actuated by the strike plate engaging portion of the bolt for releasing the pin.

12. A door latch comprising a casing adapted to be mounted within a door, a spring pressed latch bolt comprising a body portion slidable within the casing and a strike plate engaging portion slidable relative to the body portion, means for retracting the bolt, means for dogging the bolt, and means actuated by the strike plate engaging portion for releasing said dogging means.

13. A door latch comprising a casing adapted to be mounted within the door, a spring pressed latch bolt slidably mounted within said casing, means for retracting said bolt, a plate adapted to be mounted for movement on one side of the door, a pin carried by said plate for dogging the latch bolt, a housing surrounding the plate, and means extending from the housing for operating the plate.

In testimony whereof, I have hereunto set my hand.

OTTO P. CRAMER.