C. R. MARTIN.

DOOR LOCK.

APPLICATION FILED JULY 29, 1918.

1,348,028.

Patented July 27, 1920.

3 SHEETS—SHEET 1.

Fig. 1

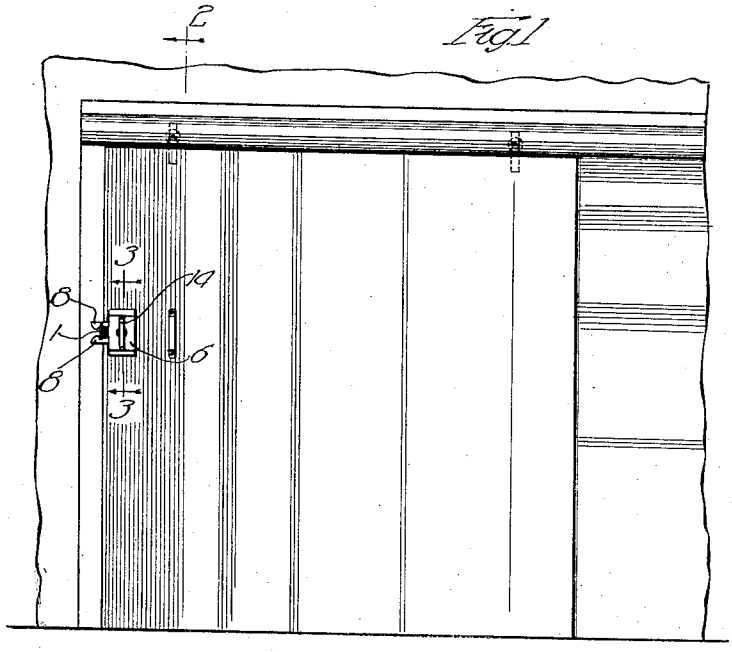


Fig. 2

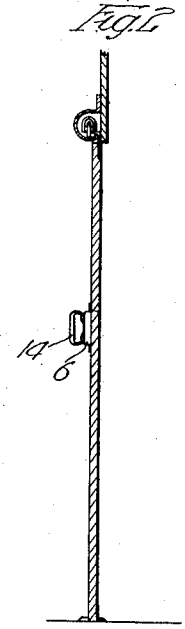
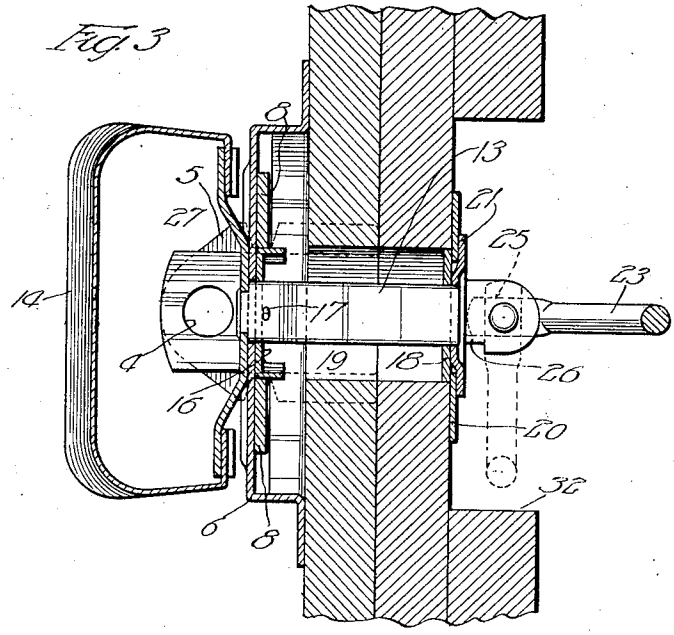


Fig. 3



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3 SHEETS—SHEET 2.

Fig. 4

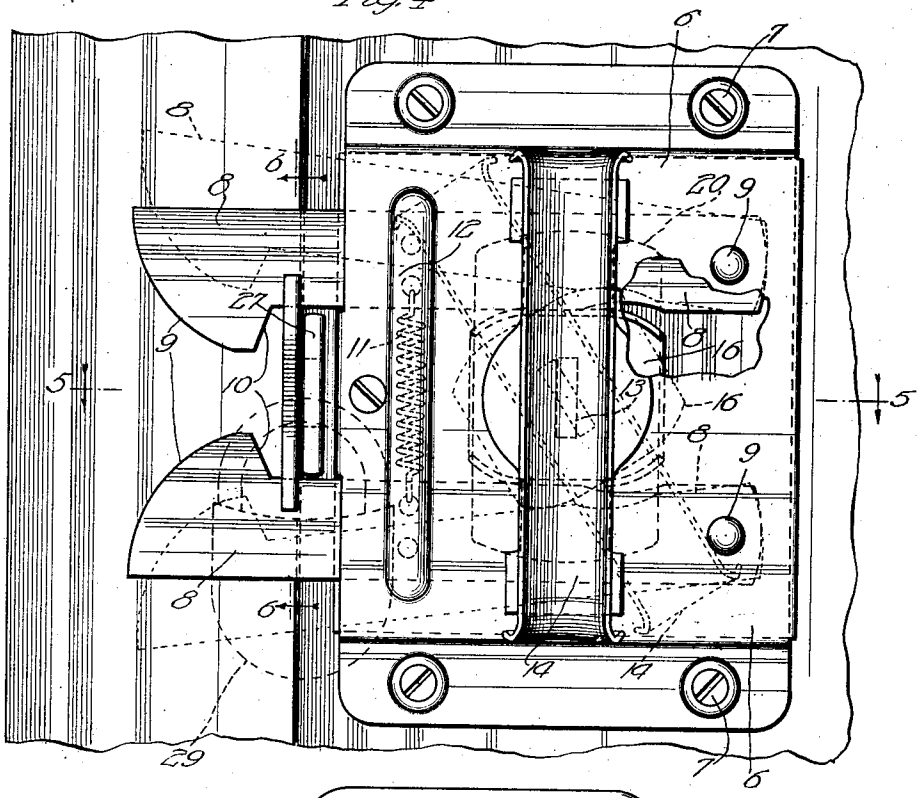
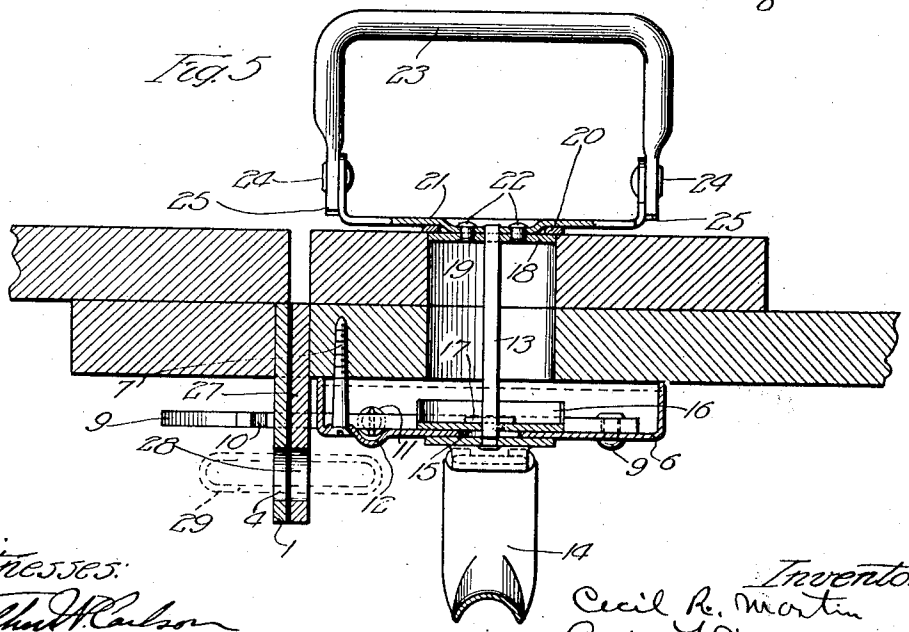


Fig. 5



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3 SHEETS—SHEET 3.

Fig. 6

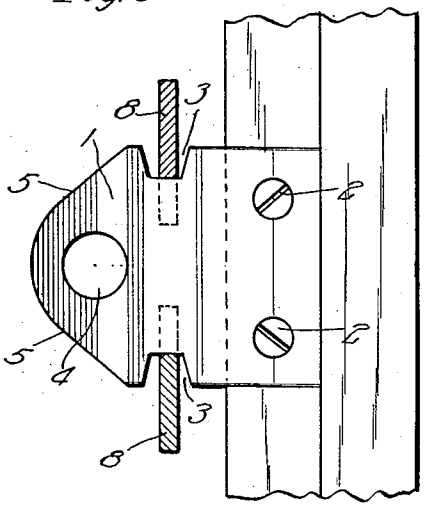


Fig. 7

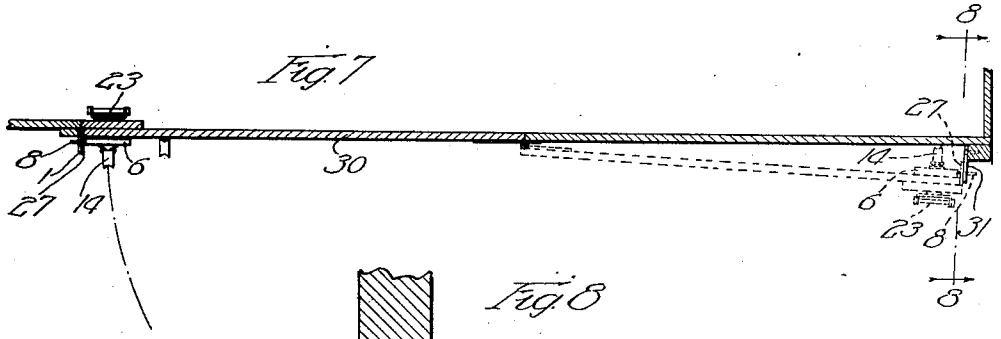
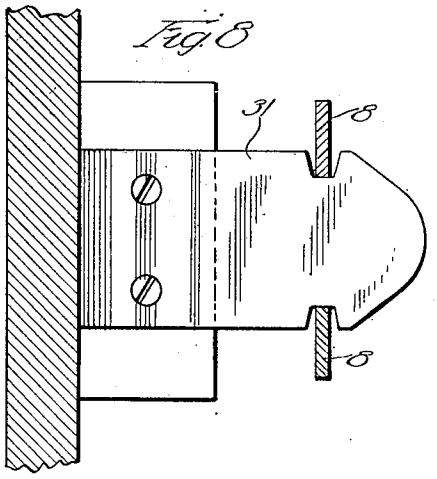


Fig. 8



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UNITED STATES PATENT OFFICE.

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DOOR-LOCK.

1,348,028. Specification of Letters Patent. Patented July 27, 1920.

Application filed July 29, 1918. Serial No. 247,335.

To all whom it may concern:

Be it known that I, CECIL R. MARTIN, a citizen of the United States of America, and resident of Sterling, Illinois, have invented a certain new and useful Improvement in Door-Locks, of which the following is a specification.

This invention relates to door-locks in general, but more particularly to those for use on garage or barn doors, and more especially to those which have cam-operated latching means.

One object of the invention is to provide a lock which is adapted for use on either a sliding or a swinging door.

Another object is to provide means in conjunction with the cam-operated latching means to permit locking of the door by means of an ordinary padlock applied to the stationary element engaged by the latching means.

Another object is to provide an improved construction and arrangement whereby the cam which operates the latching means is mounted on a rock-shaft provided with inner and outer handles, and whereby the inner handle is readily removable from the inner end of the rock-shaft, thereby to permit removal of the rock-shaft, which is preferably in the form of a flat strip, from the mechanism of the lock.

It is also an object to provide certain details and features of construction tending to increase the general efficiency and desirability of a door-lock of this particular construction.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed. In the accompanying drawings—

Figure 1 is a front elevation of a sliding door, such as that on a garage or barn, provided with a lock embodying the principles of the invention.

Fig. 2 is a vertical section on line 2—2 in Fig. 1.

Fig. 3 is an enlarged detail vertical section on line 3—3 in Fig. 1.

Fig. 4 is an enlarged front elevation of the door-lock shown in Fig. 1, showing a portion of the casing of the lock broken away to bring into view certain internal portions of the mechanism.

Fig. 5 is a horizontal section on line 5—5 in Fig. 4.

Fig. 6 is a detail section on line 6—6 in Fig. 4.

Fig. 7 is a horizontal section of a door and door-way, showing the lock applied to a swinging door.

Fig. 8 is an enlarged detail section on line 8—8 in Fig. 7.

As thus illustrated, and referring to Figs. 1 to 6 inclusive, the invention comprises a stationary element 1 which is secured by screws 2 to the door-frame, so that this element will extend outward. Said element is provided with upper and lower notches 3, and with an opening 4 for a padlock. In addition, the end portion of this element 1 is provided with upper and lower beveled edges 5 for a purpose which will hereinafter more fully appear.

The lock casing 6 is formed from sheet metal, and is secured on the outer side of the door by screws 7 in any suitable or desired manner. Inside of said casing the members 8 have their inner ends pivoted at 9, so that these members swing up and down about said pivots. The outer or projecting ends of these members 8, which are disposed in a vertical plane parallel with the plane of the outer surface of the door, have rounded edges 9 adapted to slide over the edges of the notches 3, if the door is a sliding door, and have edges 10 which drop behind the element 1 to latch the door in closed position. These members 8 are connected together by a coil spring 11, and the casing 6 is provided with a vertical groove 12 on the inner surface thereof, to accommodate said spring, this groove forming an elongated bulge on the outer surface of the sheet metal casing. A rock-shaft 13, consisting of a flat strip, extends through the casing and through the door and has a handle 14, of any suitable character, non-removably applied to the outer end thereof, this rock-shaft being adapted to rotate in an opening 15 formed in the casing. It will also be seen that this handle is so shaped that it is adapted to swing over the upper and lower ends of the external bulge formed by the groove 12 on the casing. A cam 16, also formed from sheet metal, is mounted on the shaft 13, and keyed thereon against rotation relatively thereto by the flat shape of the shaft itself. A pin 17 is removably inserted through the shaft to hold the cam 16 in position against the surface of the casing. At its other end, the

shaft 13 has a disk 18 applied thereto, and keyed thereon by the shape of the shaft itself, this disk being adapted to rotate in the opening 19 formed in the door, so that the shaft is held in alinement. The disk 18 is held in the opening 19 by a plate 20 removably secured to the inner side of the door in any suitable or desired manner. A cross-piece 21 is secured by rivets 22 to the disk 18, in position to bear against the outer surface of the plate 20, and in this way the latter holds the shaft against endwise displacement. A handle 23 is pivoted at 24 on the out-turned end portions of the cross-piece 21, and is adapted to swing downward when the handle is in its normal or horizontal position. This handle 23 has end portions 25 adapted to engage the lugs 26 on the cross-piece 21, when the handle is swung upward into its operative position, thereby to keep the handle from being swung upward. Preferably, the handles 14 and 23 are arranged at right angles to each other. With this construction, a rotation of either handle will turn the cam 16 and cause the members 8 to separate or move away from each other, thus disengaging them from the notches 3 previously described.

A portion 27 is suitably secured to the door between the projecting end portions of the members 8, and is provided with an opening 28 which coincides with the opening 4 on the stationary element 1 when the door is closed. In this way, a padlock 29, of any suitable character, can be inserted through the openings 4 and 28 to lock the door in closed position.

In Fig. 7 the lock is shown applied to a swinging door 30, and in this case the edges of the members 8 will strike the beveled edges 5, when the door is swung into closed position, so that said members will then drop into the notches 3 and latch the door in closed position. Also, when the lock is used on a swinging door, the front of the building may be provided with a stationary element 31, similar in shape to the element 1, and disposed in position to receive the latching members 8 when the door is swung outward and then back into position against the outer side of the building, whereby the door is latched in open position.

Practically the entire lock is made from sheet metal, it will be seen, so that the cost of manufacture is materially reduced. The lock is easily applied to a door, and the parts can be removed readily. By detaching the plate 20, the inner handle can be disengaged from the rock-shaft, and by removing the pin 17, the rock-shaft can then be pulled outward by the outer handle. Also, a portion of the latching means, in this case the stationary element 1, is employed as a part of the means for receiving a padlock to lock the door in closed position.

It will be seen that the notches 3 are wider than the members 8, these members being formed from strips of metal of less thickness than the width of said notches; and it will also be seen that these notches have inclined or beveled sides—that is to say, each notch is flared and provided with a straight horizontal bottom. In addition, it will be observed that the edges 10 of the members 1 are inclined or beveled, so that these edges are at an angle to the vertical surface or face of the element 1 when the door is closed and latched. With these beveled or inclined edges of the notches 3 and the beveled or inclined edges 10, it is possible, by varying the relative positions of the element 1 and the casing 6, in a manner that will be readily understood, to satisfactorily apply the lock to either a swinging or sliding door in such a manner that the door will be sure to close tightly. Also, this formation of the notches 3 and the edges 10 affords more room, as between the parts themselves, for the latching operation.

With further reference to the handle 23, it will be seen that the inner side of the door can be provided with a recess 32 into which this handle may swing downward, so that it will normally be flush with the inner side of the door. In this way, when the lock is used on a sliding door, the handle 23 will not strike the door jamb when the door is pushed open the full width thereof. However, when the lock is applied to a swinging door, the disk 18 and the cross-piece 21 are then reversed on the flat strip or rock-shaft 13, so that the lugs 26 will be above, and whereby the handle 23 can swing upward but will rest normally in a horizontal position. Thus, when the lock is applied to a swinging door, the handle 23 will stand normally in the position of use, so that it can be readily grasped by a person at the inner side of the door.

Again, it will be seen that the lock is applicable to either a right hand or a left hand door without the necessity of changing the positions of any of the parts of the lock—that is to say, without altering the mechanism or changing the relative positions of the latching devices, the only difference being that for doors that open in the opposite direction, the entire lock will be turned upside down, but it will be applied in the same way and will operate in exactly the same manner. Of course, in applying the lock to different doors, the inner handle 23 may, as a matter of convenience, be applied in different ways, either as shown in the drawings, or in the other position in which the lugs 26 are above the end portions 25 of the handle, so that the latter will retain itself by gravity in horizontal position. This, however, does not involve any adjustment or alteration of the parts, inasmuch as

the lock is assembled to some extent when applied to the door, and at such time the disk 18 can be readily applied in either way, so that the handle 23 will hang downward or so that it will retain itself in horizontal position, as may be desired; but the position of the handle 23, for doors of different kinds, either swinging or sliding, and either right hand or left hand doors, is not a matter of readjustment of any of the parts, inasmuch as this handle is not operatively connected to the latching mechanism until the plate 20 is secured to the door; and hence the position of this handle 23 is a matter to be determined when the various parts of the complete outfit are applied to the door.

In addition, it will be seen that the flat strip or rock-shaft 13 is of such length that it can be considerably reduced in length for doors of less thickness, and that considerable variation in this manner is possible without reducing the length of said strip or rock-shaft. For example, the end of this strip or rock-shaft 13 can project a slight distance outside of the cross-piece 21, which latter forms the yoke of the handle, for a door of less thickness, without being objectionable. In other words, the disk 18 and the cross-piece 21 of the handle are adjustable on the rock-shaft 13, toward and away from the handle 14, for doors of different thicknesses, and for a door of much less thickness the end of the flat strip or rock-shaft 13 can be cut off so that it will not project to an objectionable extent into the space between the cross-piece 21 and said handle.

What I claim as my invention is:—

1. A door lock comprising a stationary element, a rotary cam, pivoted members arranged above and below said cam and having end portions forming latching means to engage said element, a rock-shaft extending through said cam, a casing for said mechanism, means to secure said casing to the outer side of the door, a handle disposed on the casing to turn said shaft, a plate secured on the inner side of the door, a disk on the shaft inside of said plate, and a handle secured to said disk to turn the shaft.

2. A structure as specified in claim 1, said rock-shaft consisting of a flat strip to one end of which the outer handle is non-removably applied, and from the other end of which said inner handle is removable by simply detaching said plate from the door.

3. In a door lock, a rock-shaft, a cam on said shaft, a handle non-removably secured on the outer end of said shaft, latching means engaging said cam, a plate secured to the inner side of the door, a casing to inclose said cam and latching means, a disk on the shaft inside of said plate, a handle secured to said disk, so that removal of said plate permits separation of said inner handle from the shaft, and means to permit removal of the cam from the inner end of said shaft, whereby the shaft may then be pulled out by the outer handle.

4. A structure as specified in claim 3, said shaft consisting of a flat strip which serves to key everything thereon against rotation relatively thereto.

5. In a door lock, a pair of pivoted locking members, means to separate said members, a spring connecting said members together, a casing to inclose said members and means, said casing being of sheet metal and formed with a groove for said spring, and a handle arranged to operate said means and adapted to swing over the upper and lower ends of the elongated bulge formed on the outer surface of the casing by said groove.

6. A structure as specified in claim 1, said cam and handles being rotatable in either direction to release said latching means from said element.

7. A structure as specified in claim 3, said rock-shaft being rotatable in either direction by said handles to release said latching means.

8. A structure as specified in claim 3, said inner handle being pivoted and adapted to swing downward when in horizontal position, when used on a sliding door, and having portions adjacent said handle, and lugs to engage said portions to limit the upward swing of the handle from its depressed position, whereby the inner handle may swing into a recess in the door.

9. In a door lock, a latching mechanism adapted to be attached to the door and provided with pivoted latching members, a stationary element adapted to be secured in place at one side of the doorway to engage said pivoted latching members, said element having notches to receive said members, said stationary element and said members being so relatively formed that they are adapted for use on either a sliding or a swinging door, or on either a right hand or a left hand door by simply turning the entire mechanism upside down, said notches being wider than the thickness of said members, and the sides of the notches being flared, said pivoted members having beveled edge portions which drop behind said stationary element when the door is closed.

10. The structure covered by claim 8, said disk being adapted to be reversed on said shaft when the door lock is used on a swinging door, so that said lugs will then retain said inner handle in horizontal position.

11. In a door lock, latching mechanism comprising an inner handle pivoted to swing downward when the lock is used on a sliding door, so that the handle may swing into a recess on the inner side of the door, having devices to limit the upward swinging move-

ment of the handle into a horizontal position for use, and means whereby said handle is reversible on said mechanism, when the door lock is used on a swinging door, so that said devices will then retain the handle in the horizontal position.

12. A structure as specified in claim 1, said disk being adjustable on said shaft to vary the distance between the two handles for doors of either greater or less thickness.

13. In a door lock, latching mechanism having a rock-shaft extending through an opening in the door, an outer handle secured to said rock-shaft, an inner handle secured to said rock-shaft, means whereby one handle is adjustably connected with said shaft to vary the distance between the two handles for doors of either greater or less thickness, and a plate rigidly secured to the door to prevent displacement of said one handle from the shaft.

14. A structure as specified in claim 13, said rock-shaft being in the form of a flat strip, said means being slidable on said shaft and keyed thereon by the flat shape thereof, and the one handle being supported by said adjustable means on the inner end portion of the shaft, with a portion of said means inside of said plate.

15. In a door lock for use on either right hand or left hand doors, and on either swinging or sliding doors, a stationary element adapted to be secured in place at one side of the doorway, and latching mechanism for attachment to the door and adapted, without any adjustments or changes therein by simply turning the entire mechanism upside down, to coöperate with said stationary element on either a right hand or a left hand door, said mechanism comprising pivoted latching means, an oscillatory device for operating said pivoted latching means, and a handle for operating said device, in combination with a casing for inclosing said device and latching means.

16. In a door lock, a rock shaft extending through an opening in the door, an outside handle secured to the outer side of the door and formed with an opening which provides a bearing for said rock shaft, latching mechanism operated by the oscillation of said rock shaft, a disk engaging the inner end portion of said shaft, an inside handle secured to said disk, a plate interposed between said disk and inside handle and secured to the door, and a stationary strike piece forming a catch to engage said latching mechanism.

17. A structure as specified in claim 16, said rock shaft consisting of a flat strip which can be shortened for a door of less thickness, said disk being slidable on said rock shaft, so that the disk and inside handle are held by said plate against displacement from the inner end of the rock shaft.

18. A structure as specified in claim 16, said mechanism including a cam removably secured on said rock shaft, and said bearing being disposed between said cam and the outside handle.

19. In a door lock, a rock shaft extending through the door, an outside handle non-removably secured to the outer end of said shaft, a member secured to the outer side of the door and providing a bearing for said shaft, a cam removably secured on said shaft, said bearing being disposed between said cam and the outside handle, so that the cam prevents said shaft from being pulled outward by said handle, an inside handle for the inner end of said shaft, latching means operated by said cam, and a stationary strike piece for engagement with said latching means.

20. In a door lock, a rock shaft extending through the door, a cam on said shaft, means whereby said cam serves to prevent endwise displacement of said shaft, a casing inclosing said cam, a latching member pivoted inside the casing and arranged to engage said cam, a stationary strike piece to engage said latching member, and a handle for oscillating said shaft.

21. A structure as specified in claim 20, in combination with another pivoted latching member, both members being operative about horizontal axes, said cam being disposed between the two members, and a spring connecting the two members together to yieldingly resist movement of the members away from each other by said cam, said strike piece being adapted to engage both members, and the strike piece and both members being adapted for use on either a swinging door or a sliding door, or on either a right hand door or a left hand door.

22. A structure as specified in claim 20, and a spring to control said latching member, said cam being rotatable to normal position by the action of said spring when the handle is released.

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