Nov. 8, 1932. R. J. JOHNSON 1,886,402

LOCK

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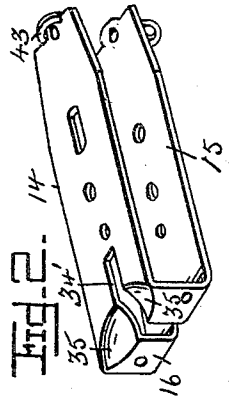


Fig. 2.

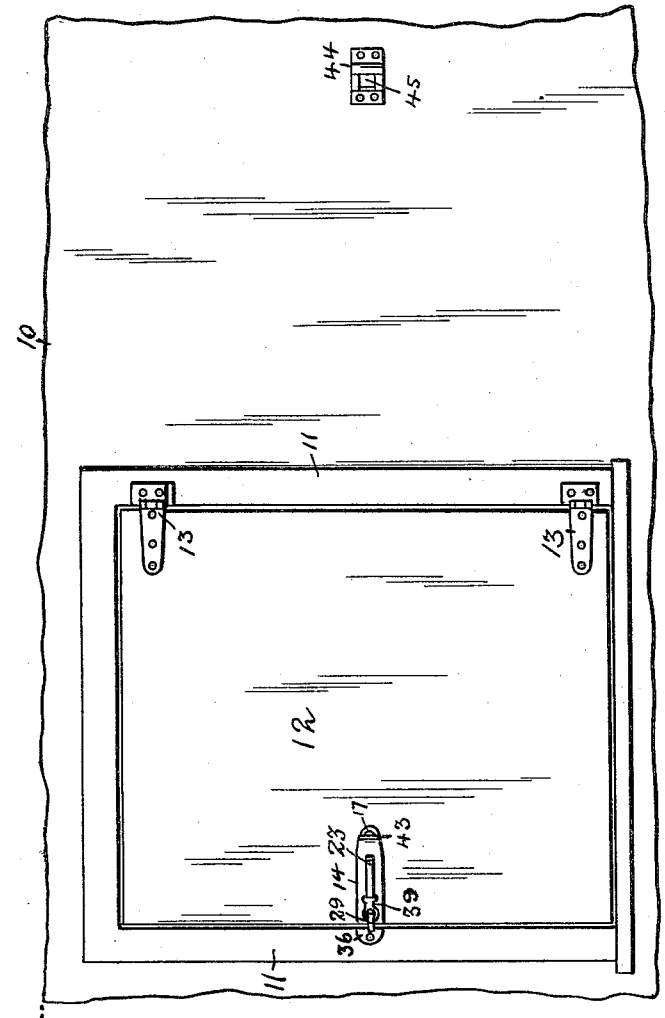


Fig. 1.

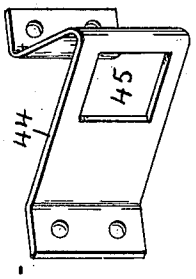


Fig. 3.

Inventor
Richard J. Johnson

Nov. 8, 1932. R. J. JOHNSON 1,886,402

LOCK

Filed May 3, 1930 4 Sheets-Sheet 2

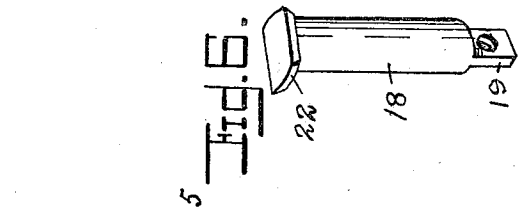


Fig. 6.

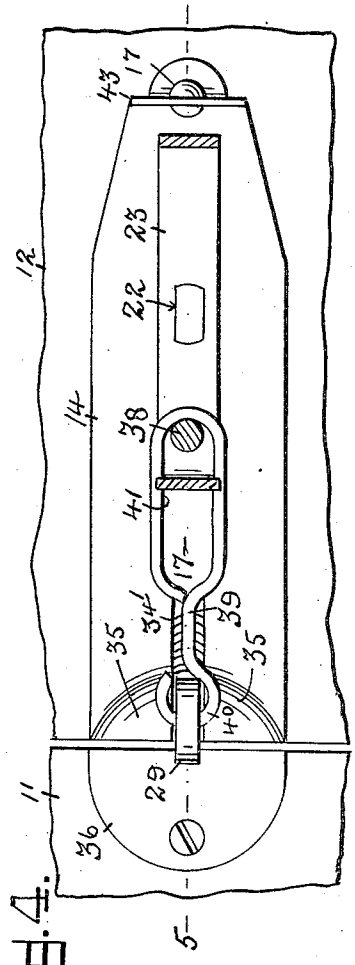


Fig. 4.

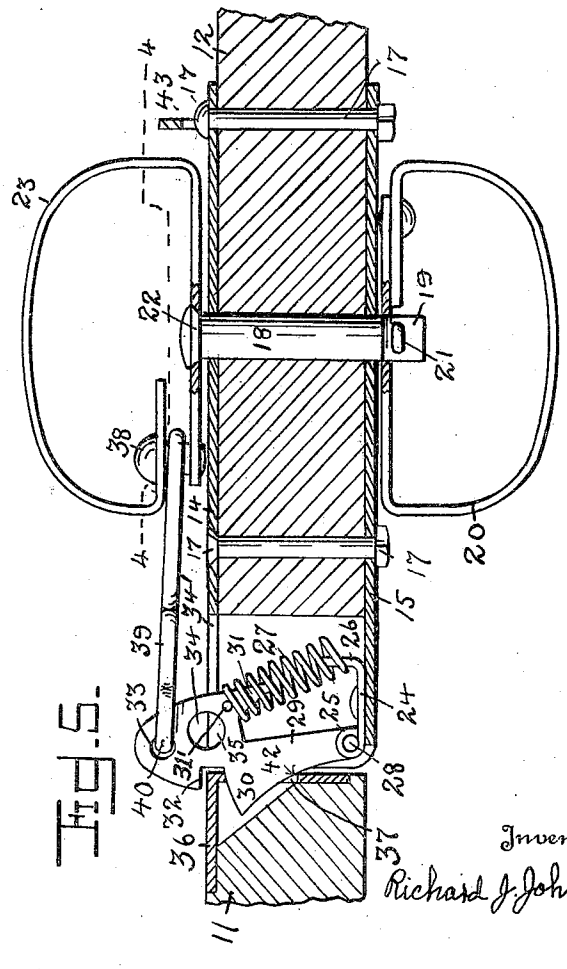


Fig. 5.

Inventor
Richard J. Johnson

Nov. 8, 1932. R. J. JOHNSON 1,886,402

LOCK

Filed May 3, 1930 4 Sheets-Sheet 3

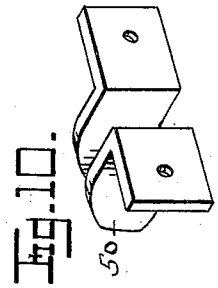


Fig. 10.

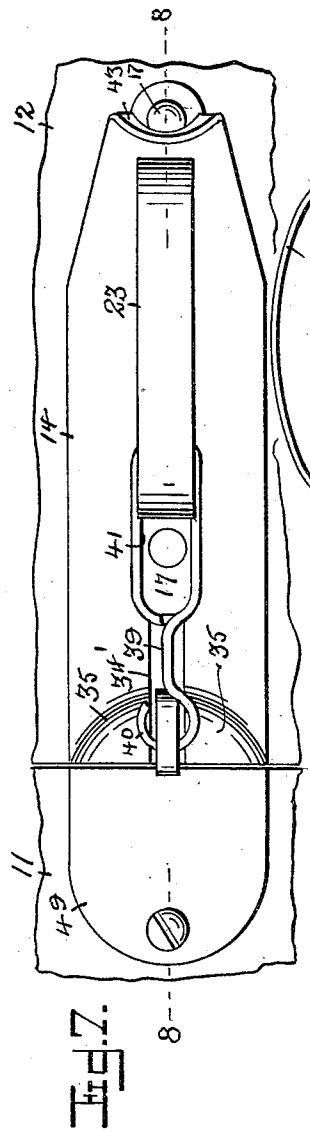


Fig. 7.

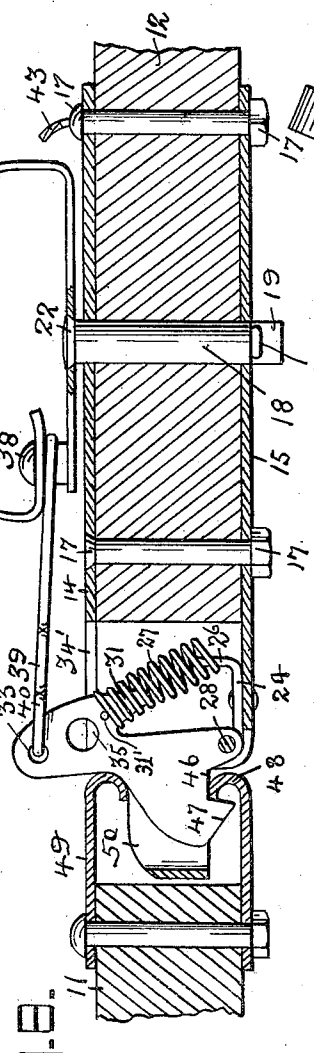


Fig. 8.

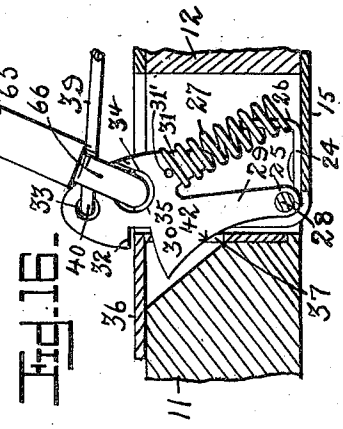


Fig. 16.

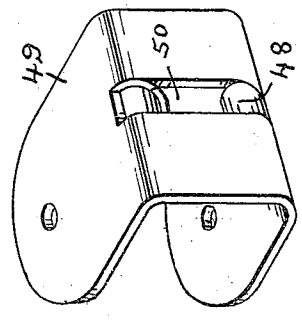


Fig. 9.

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Nov. 8, 1932. R. J. JOHNSON 1,886,402

LOCK

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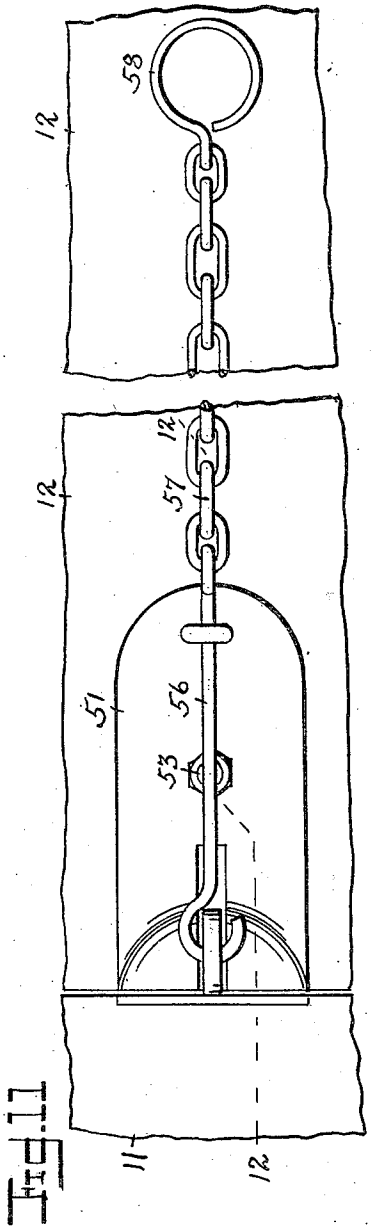


Fig. 11.

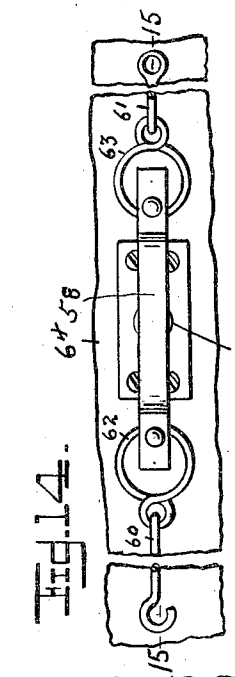


Fig. 14.

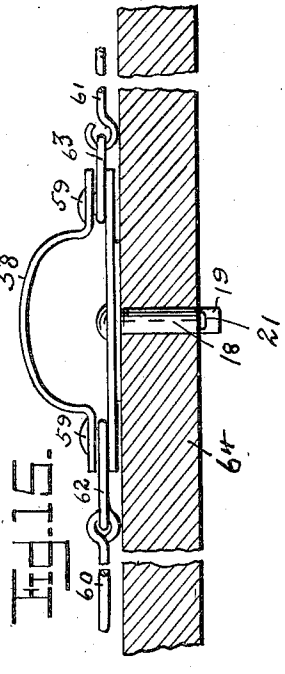


Fig. 15.

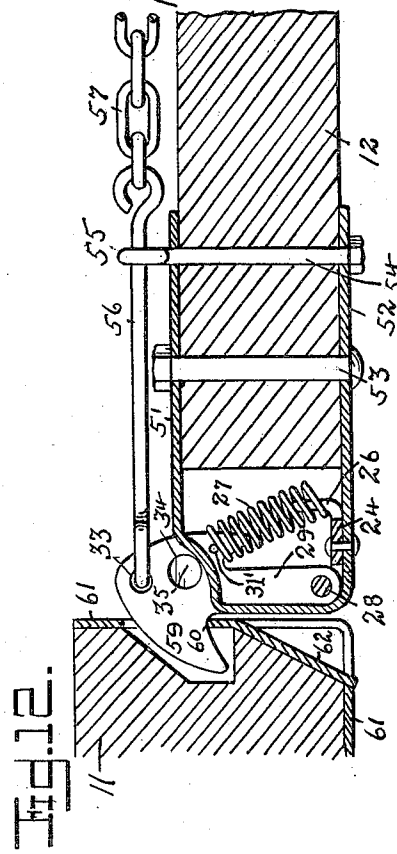


Fig. 12.

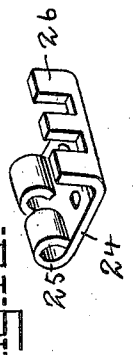


Fig. 17.

Inventor
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Patented Nov. 8, 1932 1,886,402

UNITED STATES PATENT OFFICE

RICHARD J. JOHNSON, OF LANGDON, MINNESOTA, ASSIGNOR OF ONE-HALF TO WALTER JOHNSON, OF LANGDON, MINNESOTA

LOCK

Application filed May 3, 1930. Serial No. 449,495.

This invention relates to door and gate fasteners and has for one of its objects to simplify and improve the construction and increase the efficiency and utility of devices of this character.

Another object of the invention is to provide a device of this character which may be applied to a door or gate and is operative from either side.

With these and other objects in view as may hereinafter more fully appear, I have invented the device shown in the accompanying drawings in which:

Figure 1 is a side elevational view of a portion of a barn and barn door, and door casing for the locking mechanism with the improved fastener applied;

Figure 2 is an enlarged perspective view of the casing or holder for the locking mechanism, and which is fastened to the door;

Figure 3 is an enlarged perspective view of the keeper which is attached to the door frame or casing;

Figure 4 is an enlarged side elevation of the improved fastener applied, with the handle in section on the line 4—4 of Figure 5;

Figure 5 is a section on the line 5—5 of Figure 4;

Figure 6 is a detached perspective view of the turning pin or bolt;

Figure 7 is a view, similar to Figure 4, illustrating a modification in the construction employed upon a sliding door or gate;

Figure 8 is a section on the line 8—8 of Figure 7;

Figure 9 is a perspective view of the form of keeper employed in the modified structure shown in Figures 7 and 8;

Figure 10 is a perspective detail of a combined guide and bolt employed in the modified structure shown in Figures 7 and 8;

Figure 11 is a view, similar to Figures 4, 5, 7 and 8, illustrating another modification;

Figure 12 is a section on the line 12—12 of Figure 11;

Figure 13 is a perspective view of the holding clip employed in the modified structure shown in Figure 12;

Figure 14 is a view, on a reduced scale, illustrating another modification; and

Figure 15 is a section on line 15—15 of Figure 14.

The improved device is designed for use more particularly upon heavy barn and warehouse doors, or upon gates, either swinging or sliding, and for the purpose of illustration is shown, in Figures 1, 4 and 5, as applied to a conventional barn door, in which the side wall of the barn is indicated at 10, the door frame or door casing at 11, and the door at 12, the latter hinged at one side at 13, to the casing 11. The fastener mechanism is supported in a U-shaped casing formed with spaced sides 14—15 and one closed end 16, as shown more fully in Figure 2, the sides 14 and 15 bearing upon the opposite faces of the door 12, and the end 16 bearing over the free edge of the door and the lock casing being secured to the door by bolts 17, as shown in Figure 5.

Rotative through the door and the sides 14 and 15 of the lock casing is a relatively large turning bolt 18 having a flattened or oblong terminal 19 at one end to support a turning handle 20 which is held in place detachably as by a cotter pin 21. At its other end the turning bolt is formed with an oblong shoulder 22 to support another turning handle 23. The turning bolt 18 may thus be oscillated from either side of the door by manipulating either of the handles 20 or 23.

Attached to the side 15 of the lock casing, next to the end 16, is a clip 24, having spaced pivot ears 25 at one edge and upturned at the other edge at 26 and divided to receive the lower convolution of a spring 27. The ears 25 are designed to receive a pin 28 to swingingly support a lock bolt by its shank 29, the opposite end of the lock bolt being formed with a keeper engaging projection 30 at one side and a spur 31 at the other side to receive the outer end of the spring 27, as shown in Figure 5. At its upper end the shank 29 of the lock bolt is extended and formed with a recess 32 and an aperture 33. The lock bolt is provided with a tapered hole through the spur 31 to receive a tapered pin or stud 31′ shown more clearly in Figure 16, and this pin forms a stop to engage the casing and thus limit outward movement of the latch bolt.

The lock bolt is also formed with a relatively large aperture 34, while the plate 14 is formed with a depression or pocket 35 adjacent the lock bolt. The aperture 34 is designed to receive the bolt of a locking means, preferably of the padlock form, as indicated at 65 in Figure 16. The bolt 66 of the lock 65 seats in the pocket 35 when applied, which thus serves as a block to prevent the withdrawal of the lock bolt from the keeper so long as the lock is in position. This is an important feature of the device, and adds materially to its efficiency. This depression also acts as a guide for the outer tip or projection of the bolt when the chain is withdrawn. By providing this depression, the latch bolt can be retracted well into the casing without danger of its being caught as the tip of the bolt simply passes into the depression.

Located upon the door casing 11 is a keeper 36, having a slot 37 to receive the projection 30 of the lock bolt. The handle 23 is provided with a pin 38, to swingingly support a link 39 the latter having an eye 40 at one end to engage in the aperture 33 of the lock bolt and with a slot 41 to slidably engage the pin 38. By this arrangement when either of the handles 20 or 23 is oscillated in either direction the lock bolt will be moved on its pivot against the resistance of the spring 27, to withdraw the portion 30 of the lock bolt from the keeper 36, to release the door and enable it to swing on its hinges 13 into open position. When the handle 20 or 23 is released the lock bolt will be returned to keeper engaging position. Then, when the door swings into closed position, the inclined face 42 of the lock bolt will cause the bolt to automatically re-engage the keeper. The inner ends of the sides 14 and 15 of the casing are out-turned as at 43 to form a guard to the handles 20 and 23, when the latter are in normal position.

Attached to the face of the wall 10 of the barn or other building, is a catch device 44, illustrated more fully in Figure 3, and including a slot 45, to receive the projection 30 of the lock bolt when the door is in open position, to lock the door in open position, and prevent it from being closed until the handle 23 is actuated to release the bolt, as will be obvious.

In Figures 7 and 8 the slight changes necessary to adapt the device to a sliding door, are shown, and the corresponding parts are provided with the same reference characters. In this modified structure the handle 23 only is shown to illustrate the fact that one handle may be omitted without detriment to the operation of the device.

In the modified structure the lock bolt is formed with a detent 46, and an inclined nose 47, the detent adapted to engage over one of a pair of lips 48, forming a part of the modified keeper 49.

The end 16 of the U-shaped casing, has a hole on each side of lock bolt slot 34, and a U-shaped guide 50, shown in Figure 10, is riveted to the end 16, the rivets passing through said holes. This guide, when riveted to the lock casing forms a guide for the inclined nose 47 of the lock bolt.

When the guide 50 and nose 47 enter the keeper 49 the guide bears against one lip of the keeper 49 which causes the nose 47 of lock bolt to slip automatically back into the guide as it slips over the lip on the opposite side of the keeper 49, and at the same time holds the sliding door rigid both lengthwise and sideways, and prevents the lock bolt from becoming disengaged from the lip in the keeper 49, except by turning the handles.

In Figures 11 and 12, the slight necessary change to operate the locking mechanism from a distance, or from means other than the handles 20 and 23 is shown.

In this modification a shorter casing is substituted for the longer casing shown in Figure 2, and formed with spaced sides 51 and 52 and connected to the door 12 by bolts 53 and 54 the bolt 54 being extended into an eye 55, to form a guide for a pull rod 56, the latter having a chain 57 of suitable length connected therewith and provided at its free end with a pull ring 58.

In this modified structure the lock bolt is formed with terminal hook 59 adapted to engage over a lip 60 in the keeper 61, attached to the door jamb 11. The keeper 61 is formed with an inclined face 62, which the hook portion 59 bears against when the door swings into closed position to automatically lock the door, release of the lock bolt being subsequently effected by pulling on the chain 57.

In Figures 14 and 15 is shown the changes necessary to adapt the device to simultaneously operate two of the lock bolts on opposite edges of a door or gate. In this modification the bolt 18 is located midway of the door and the handle 58 which corresponds to the handle 23, and is provided with two pins 59 to which coacting pull rods 60 and 61 are attached by rings 62 and 63, and lead to the lock bolts at opposite edges of the door, a portion of which is represented at 64.

By this arrangement two lock bolts may be actuated by the action of one handle.

To enable the padlock to be applied to the door at the most convenient place, whether it swings inward or outward, I have provided two types of lock bolts and keepers that operate exactly the same in the long casing or the short casing, so if a door swings outward and is to be padlocked on the outside, the lock bolt and keeper shown in Figure 5 is used, or if the door swings inward it can also be padlocked on the outside by using the lock bolt and keeper shown in Figures 11 and 12.

What is claimed as new is:

1. In combination a door having a notch in

its free edge, a U-shaped member fitting over the notched part of the door and having its limbs fastened to the inner and outer faces of the door with a part of said member covering the notch, the bight part of said member passing over a portion of the free edge of the door, a latch member having one end pivoted in an outer corner of the U-shaped member with its other end passing through a slot in the U-shaped member, a keeper engaging part on the latch member, a shoulder on an intermediate part of the inner edge of the latch member, a diagonally arranged projection extending from the shoulder, a spring having one end encircling the projection and bearing against the shoulder, means for supporting the opposite end of the spring from that limb of the U-shape which is opposite the limb through which the end of the latch member passes, said spring being diagonally arranged and tending to hold the latch member in latching position, a link connected with the projecting end of the latch member and an operating member connected to the link for moving the latch member to releasing position.

2. In combination a door having a notch in its free edge, a U-shaped member fitting over the notched part of the door and having its limbs fastened to the inner and outer faces of the door with a part of said member covering the notch, the bight part of said member passing over a portion of the free edge of the door, a latch member having one end pivoted in an outer corner of the U-shaped member with its other end passing through a slot in the U-shaped member, a keeper engaging part on the latch member, a spring for holding the latch member in latching position, a link connected with the projecting end of the latch member, an operating member connected to the link moving the latch member to releasing position, the projecting part of the latch member having an opening therein to receive a lock, said part of the U-shaped member through which the said projecting part of the latch member extends having a depression therein for exposing said opening when the latch is in latching position.

3. In combination, a door having a notch in its free edge, a U-shaped member fitting over the notched part of the door and having its limbs fastened to the inner and outer faces of the door with a part of said member covering the notch, a latch member having one end pivoted in an outer corner of the U-shaped member with its other end passing through a slot in the U-shaped member, a keeper engaging part on the latch member, a spring located in that part of the U-shaped member which covers the notch and engaging the part of the latch member to hold the same in latching position, a handle carrying shaft passing through the door and through the limbs of the U-shaped member, a handle connected with said shaft, a pin carried by the handle and located to one side of the shaft, and a link having an opening therein for receiving the pin, said link being connected to the outer end of the latch member.

4. In combination, a door having a notch in its free edge, a U-shaped member fitting over the notched part of the door and having its limbs fastened to the inner and outer faces of the door with a part of said member covering the notch, a plate connected to the inner face of one of the limbs of the U-shaped member adjacent the bight part of said member, an elongated latch member pivoted to the outer end of said plate, a projection on the inner end of said plate, said latch member having a shoulder forming portion intermediate its ends, a spring having one end engaging said shoulder and its other end engaging the projection on the plate, said spring holding the latch member in latching position, said U-shaped member having a slot therein through which the free end of the latch member passes.

In testimony whereof I affix my signature.

RICHARD J. JOHNSON.