Aug. 29, 1933. S. SEGAL 1,924,627

CHAIN LOCK

Filed Feb. 27, 1933 2 Sheets-Sheet 1

Fig. 1.

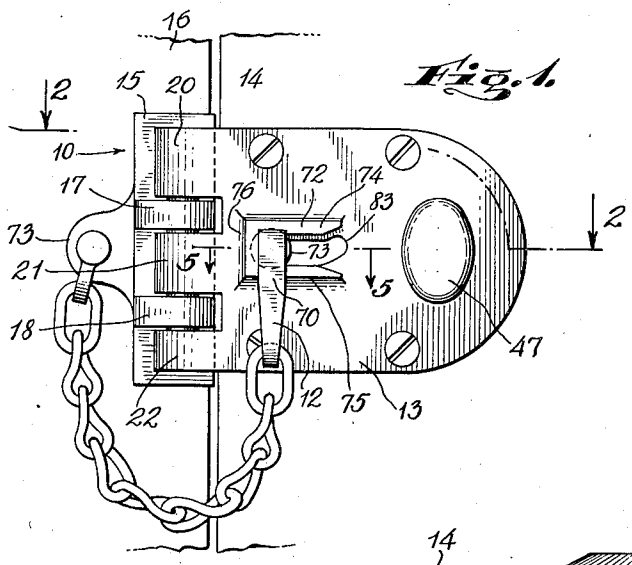

Fig. 7.

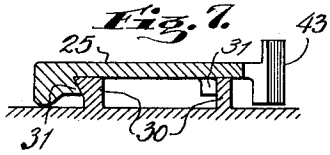

Fig. 2.

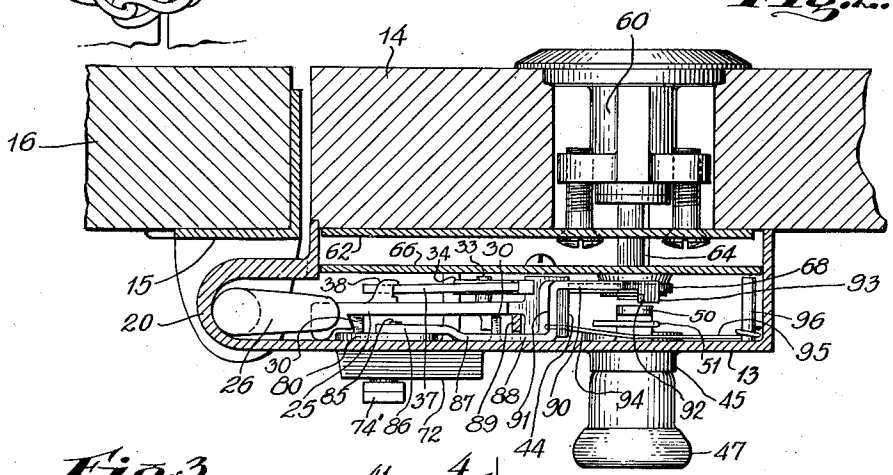

Fig. 3.

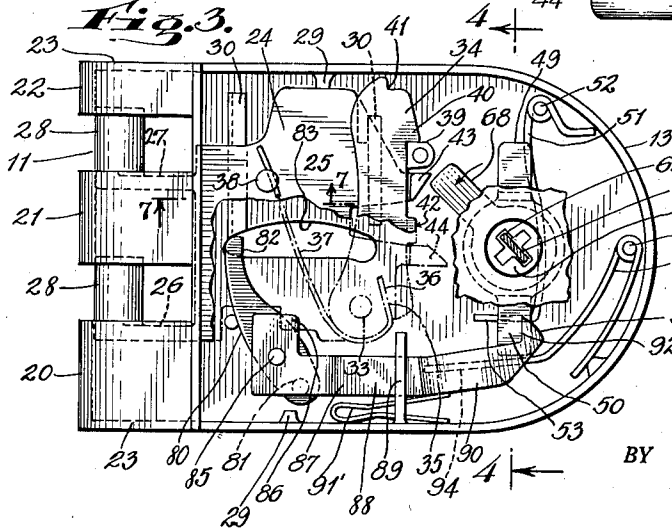

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Fig. 4.

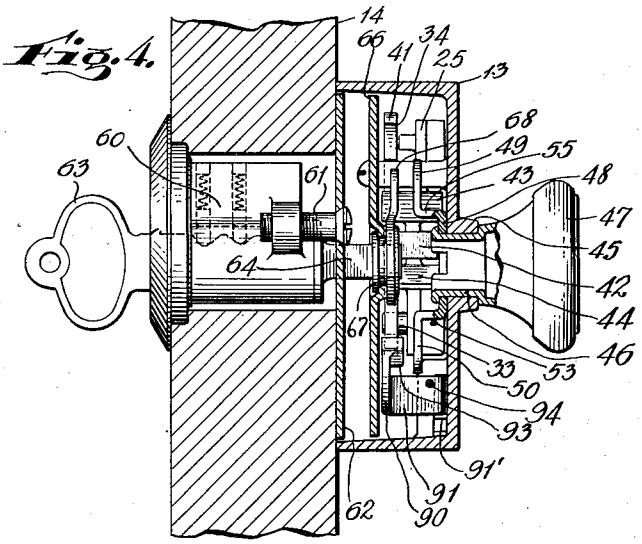


Fig. 5.

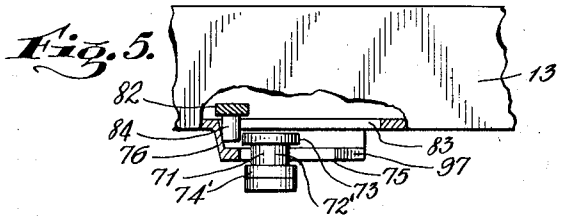
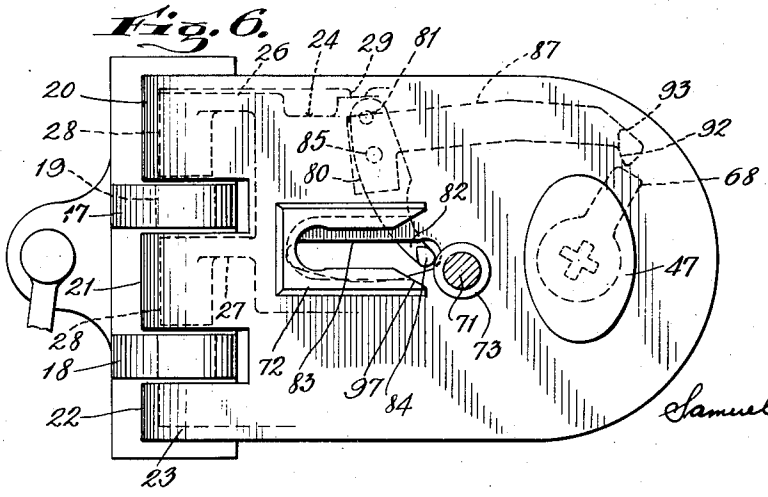


Fig. 6.



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1,924,627

CHAIN LOCK

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Application February 27, 1933
Serial No. 658,690

11 Claims. (Cl. 70—14)

The present invention is generally concerned with locks of general application and more particularly is directed to a combined jimmy proof and chain lock applied to movable doors and associated stationary frames to prevent unauthorized entry.

It is well known that a secondary locking device in the form of a chain and keeper is frequently mounted on doors and their associated stationary frames as an adjunct to increase the resistance against unauthorized entry by force or to permit the opening of the door within the narrow limits of the slack of the chain when attached to its keeper to observe a person or object on the outside. Hitherto the chain of the secondary lock was removed from its keeper by means independent of the control mechanism for actuating the primary lock. If the latter were open, the door could still be opened slightly notwithstanding that the free end of the chain was retained on its keeper. If therefore entry of a party or object on the outside was desired the free end of the chain was removed manually from the keeper thus eliminating the resistance offered by the chain lock against shifting of the door to a position for authorized entry.

With the chain locking devices of the manual type, a party desiring authorized entry could not open the door from the outside in the event the free end of the chain was held on its keeper although having means for releasing the primary lock. It was therefore necessary that a party on the inside be summoned to manually disable the chain lock. Frequently the party on the inside failed to remove the free end of the chain from its keeper before retiring and should a party from the outside desire lawful entry, it is a matter of great annoyance to disturb the party on the inside for the sole purpose of removing the chain from its keeper. Accordingly it is an object of the invention to provide a combined primary and secondary lock both of which offer resistance to unauthorized entry by force and which may be conveniently released upon turning of key operative means to which access is had on the outside of the door.

The invention has for a further object to provide a combined primary and secondary lock having elements so arranged that the primary locking element may be controlled from the inside as to be interlocked or disconnected from its keeper without disabling the secondary locking element.

The invention has for a further object the provision of a combined jimmy proof lock and chain lock both controlled by the same key actuated means.

The invention has for a still further object the provision of a lock casing on which the free end of the chain of the secondary lock is sustained and in which control mechanism is mounted to open or close the primary lock and for automatically removing the free end of the chain from the casing upon the manipulation of a unitary key actuated means common to the combined primary and secondary lock.

The invention has for a further object to provide a readily operable but rugged combined locking device of the character alluded to which will stand up under considerable usage and which when disorganized or out of adjustment may be readily repaired or readjusted by the removal of and replacement of relatively few and inexpensive parts.

Other objects are in part obvious and in part pointed out hereinafter.

The invention accordingly comprises, features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application thereof will be pointed out in the appended claims.

For a clearer understanding of the invention attention is directed to the embodiment shown in the accompanying drawings in which:—

Fig. 1 is an enlarged view in front elevation of the combined lock according to my invention and applied to the inside face of a movable door and its associated stationary frame.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is an inverted rear view in elevation of the casing with its back plate removed to clearly show control mechanism, partly broken away and in section, for the combined primary and secondary lock.

Fig. 4 is a section across the line 4—4 of Fig. 3.

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 is an enlarged front view in elevation of the combined lock illustrating in dotted lines the essential features of the releasing mechanism for the secondary lock herein shown disconnected from its keeper and

Fig. 7 is a section taken on the line 7—7 of Fig. 3.

The combined lock according to the invention is generally designated 10 and comprises a primary lock generally denoted 11 and a secondary chain lock broadly indicated 12. A lock casing 13 contains the actuating and control mechanism for opening and closing the primary lock and the

actuating mechanism for releasing the secondary lock. The casing 13 is suitably mounted on the inside face of door 14 and the keeper 15 of the primary lock is appropriately fastened to the frame or jamb 16 of the swingable door 14. The keeper is provided with a pair of forwardly projecting spaced lugs 17 and 18 each of which includes an axially arranged bore or opening 19 and the openings 19 of the spaced lugs being in alinement.

The lock casing 13 mounted on the inner face of door 14 is provided with a plurality of spaced U shaped members or guards 20, 21 and 22, guards 20 and 21 straddling the lug 17 while the guards 21 and 22 straddle lug 18, there being a sufficient clearance between the guards and the lugs to compensate for any sagging of the door or any other irregularity without interfering with the free opening and closing movement of the door.

Guards 20 and 22 are provided with a closed end wall as 23 while the intermediate guard 21 is free throughout its inner length, the chambers formed within the end guards 20 and 22 and the opening through the intermediate guard 21 are arranged in alinement in the closed position of the door.

Disposed within the lock casing and movably guided substantially parallel to the forward wall thereof is an irregular shaped bolt, generally indicated 24. Integrally attached to the shank portion 25 of the bolt 24 are the laterally extending overhanging spaced lugs 26 and 27 disposed in parallel and from each of which projects a cylindrical shaped stud 28 disposed preferably perpendicular to its respective lug. In the nonlocking position of bolt 24 as shown in Fig. 6 the spaced cylindrical and alined studs 28 are disposed and concealed in their respective guards 20 and 21 and are free of any interlocking with cooperating lugs 19 and 18 of the primary keeper 15. However, in this position the stud 28 depending from stem or lug 26 is arranged within the upper guard 20 and the stud 28 depending from lug 27 is maintained within the intermediate guard 21, the upward movement of the bolt being limited by the projection 29 depending from top wall of the lock casing.

Vertical movement of the bolt substantially in parallelism relative to the front wall of the lock casing is guarded by the inner spaced elongated ribs 30 of the casing which cooperate with the spaced elongated ribs 31 of the shank 25 to guide the latter when shifted from a locking to a nonlocking position and vice versa.

Suitably pivoted at 33 to one end of the shank is a latch 34. This latch is provided with a striation 35 in which one terminal 36 of spring 37 is secured while the other end of the spring is disposed within a slot of post 38 carried by the shank. Spring 37 acts to hold latch 34 against a squared corner of post 39 fixed to the casing, that is, in the interlocking position of the bolt as shown in Fig. 3, lip 40 extending from the free portion of the pivoted latch is against a squared corner of post 39 and it is held thereto by the tension in spring 37. If the bolt were in a nonlocking position as in Fig. 6, the sides of notch 41 would be against the other squared corner of the post 39, and the latch would also be held in this position by pressure imparted by the spring 37.

If therefore, the bolt is in a locking position, the lip 40 is against the post 39 and consequently the bolt is prevented from being accidentally released. However, if the bolt were in a non-locking position with the notch 41 against the post 39, the bolt would thus be prevented from shifting to a locking position as is well understood.

The pivoted latch 34 is provided with a depending tongue 42 which is movable between the overhanging spaced jaws 43 and 44 which extend laterally from the shank. Accordingly, if pressure be applied to tongue 42 the latch may be swung against the energy of spring 37 and consequently away from the retaining post 39 thus permitting the bolt to be shifted to a locking or nonlocking position and vice versa.

Rotatably mounted in hub 45 of the forward wall of the lock casing is a sleeve 46 of the knob or manipulator 47. Attached to the sleeve and bodily rotatable therewith is a ring 48 which carries the diametrically disposed offset arms 49 and 50. A spring 51 (Fig. 3) normally holds arms 49 and 50 in vertical position, one end of spring 51 being coiled and secured to post 52 extending from the lock casing while its other free bent end 53, in the closed position of the primary lock is disposed underneath the offset arm 50 it being noted that the intermediate part of spring 51 normally bears against corresponding sides of the opposed offset arms.

As shown in Fig. 3, arm 49 is above the arm 50 and the spaced studs 28 are interlocked with the guards 21 and 22, that is, the bolt is in a locking position. If therefore it is desired to shift the lock from the inside of the door to a nonlocking position, knob 47 is manipulated. Assuming the knob is turned as to swing the arms in a clockwise direction, if observed in Fig. 3. Accordingly arm 50 would rise and arm 49 would be lowered. In lowering the intermediate part 55 of offset arm 49 acts as a cam and moves the bent part 53 of the spring 51 to one side. On the other hand, arm 50 is raised and comes in engagement with and overhangs a relatively large flat horizontal face of jaw 44, which acts as a stop and prevents arm 50 from reaching tongue 42 of the latch. Since the latch 34 has not been released from the post 39 arm 50 will therefore have no effect in that it cannot reach tongue 42 to disable the latch.

It follows therefore that to release the lock, the knob must be turned in a counter clockwise direction. With the arm 49 above the arm 50 and a counter clockwise direction is imparted to the knob, arm 49 swings past the inclined face of jaw 43 and abuts tongue 42 to release latch 34 before it reaches its dead center. In passing through the zone of dead center the shank is shifted by the arm 49 vertically such that its cylindrical studs 28 are removed from interlocking with lugs 17 and 18 of the keeper 15 and guards 21 and 22. The bolt is now in its nonlocking position as illustrated in Fig. 6. In this position, notch 41 of the latch automatically comes against post 39 to prevent accidental locking of the bolt. With further rotation of knob 47 in a counter clockwise direction, arm 49 slips off the beveled face of jaw 44 and comes into contact with spring 51 which now holds the arms 50 and 49 in a vertical position.

In the nonlocking position of the bolt, arm 50 is above the arm 49, and any accidental or further rotation of the knob in a counter clockwise direction will cause arm 50 to come into engagement with horizontal face of jaw 43 which lies adjacent stop post 39 and thus will be prevented from reaching tongue 42 to release the latch.

Referring again to Fig. 3, assuming however that the bolt is in a nonlocking position, that is, with the notch 41 against the stop post 39 and it

is desired to shift the bolt to a locking position. It is therefore necessary that offset arms 49 and 50 be swung in a clockwise direction.

With the arm 50 above the arm 49, clockwise movement of the knob therefore will raise arm 49 and lower arm 50. Consequently arm 49 first slips over inclined face of jaw 44 and spring 51 is moved to one side by arm 50. Accordingly arm 49 strikes against tongue 42 of the latch 34, shifting the latter inwardly and releasing its notch 41 from post 39. Arm 49 comes in contact with the jaw 43 in passing through the zone of dead center causing the bolt to be moved or shifted to a locking position, in which case the lip 40 automatically snaps into position over stop post 39. Subsequently upon the release of spring 51 arm 49 is moved automatically by the inclined face of jaw 43 and to its normally vertical position.

In order to operate the primary lock and throw the bolt in either direction, that is, to a locking or nonlocking position by an authorized person outside of the door, a lock cylinder 60 of conventional construction is disposed in a bore of the door and fastened by means of screws 61 or the like to a back plate 62 and the latter is so designed as to fit within the rim of the lock casing. A key 63 is utilized to actuate the cylinder which includes a stem 64 which passes through the back plate 62 with its free end entering into a rectangular slot 65 of a freely rotatable collar or member 67 which is journalled in the intervening closure plate 66. Bodily movable with collar 67 and fixedly attached thereto is a finger or arm 68. Thus, if the cylinder 60 is turned in either direction by its key, finger 68 will be correspondingly turned.

If the key be turned, finger 68 will rotate therewith. The free end of finger 68 is so disposed that in reaching the zone of dead center it will strike tongue 42 and disable the latch 34, thus permitting the bolt to be moved into an open or closed position depending upon the direction of rotation of the key. Assuming the bolt to be in its locking position as in Fig. 3 with the lip 40 of the latch against the stop post 39 and the finger 68 is turned counter clockwise as indicated by the arrow to free the bolt, it being apparent that just before the free terminal of the finger 68 reached the zone of dead center it will first strike tongue 42 to free the latch and abut the tongue until it has passed its dead center in shifting the bolt to a nonlocking position, after which it passes by the inclined face of jaw 44 permitting the notch 41 to engage the post 39.

The finger 68 may also be utilized to return the bolt from its nonlocking position just described to the locking position as in Fig. 3. This is accomplished if the key be operated to turn finger 68 in a direction counter to the arrow shown in Fig. 3 and after passing by jaw 44 to abut tongue 42 it will then strike jaw 43 and shift the bolt to a locking position after which the spring 37 automatically shifts the lip 40 of the latch to interconnect with post 39.

Advantage is taken of the rotary movement of finger 68 when turned by the key 63, in a direction to open the bolt 24 of the primary lock to also actuate the mechanism for removing the catch or terminal 70 of the secondary or chain lock, that is to say, to automatically throw the grooved head 71 of catch 70 from the secondary keeper, generally denoted 72.

The secondary locking device for resisting unauthorized entry or permit the door to be partially opened, comprises essentially a chain, one end of which is fixedly connected to lug 73 extending from the primary keeper, a catch 70 attached to an end link of the chain and keeper 72 for removably holding head 71 of the catch.

The secondary keeper projects forwardly of the front wall of the lock casing and preferably cast integral therewith and comprises upper and lower vertically spaced guide rails 74 and 75 which are horizontally spaced from the forward wall of the lock casing, the rails being interconnected by a vertically disposed end retaining wall 76 cast integral therewith.

The head 71 is grooved at 72 forming a neck and includes a flange 73, the side 74' of the catch together with flange 73 straddle the opposing guide rails while the grooved portion or neck 72 is loosely and slidably supported between the rails, side 74' of the catch and flange 73 preventing the head of the catch from being removed transversely of its keeper.

The actuating mechanism for releasing the the catch from the secondary keeper comprises a lever or displaceable member 80 having one end appropriately pivoted at 81 to the inside face of the forward wall of the lock casing, its other end or nose 82 being disposed at an elevation to sweep across the horizontally disposed opening 83 in the front wall of the casing, opening 83 communicating with the elongated slot formed between the rails 74 and 75. Nose 82 carries a projection or striker 84 which overhangs the forward wall of the casing and extends into the secondary keeper and in its normal position is disposed behind the flange 73 of the catch and against the retaining wall 76.

Pivoted to lower portion of the lever 80 at 85 is a vertical extension 86 of the elongated and irregularly shaped longitudinally disposed shiftable bar or element 87 which comprises an intermediate portion 88 slidably passing through a slot formed between the guide bridge 89 and the forward wall of the casing. The other end 90 of bar 87 is offset relative to the intermediate part 88 by a transversely disposed connecting piece 91, the offset end 90 terminating in a vertical restricted extension or nose having a relatively vertical straight face 92 and an inclined or cam face 93.

A hair pin spring 91' yieldingly supports the intermediate part of bar 87 to maintain the latter against a transverse wall of bridge 89 and leg 94 of a spring, which is generally designated 95 and which is secured or coiled to the fixed post 96, cooperates with the transversely disposed piece 91 of bar 87 to normally and automatically position striker 84 against the retaining wall of the secondary keeper.

As illustrated in Fig. 3, finger 68 is rotating to disable the latch of the primary lock and throw its bolt from the locking to the nonlocking position. In leaving the jaw 44, finger 68 comes in contact and abuts the rectilinear face 92 of the offset end 90 of bar 87 shifting the latter to the right, consequently causing lever 80, in turn also, to travel to the right and therefore the striker 84 which is directly in back of the catch is swung across the slot between the rails of its keeper, which action slides the head of catch to the right after which it falls from the expanded throat 97 of the keeper by gravity.

In Fig. 6, the primary bolt is shown open, and the rotary finger 68 is just about ready to pass by the free end of the bar 87. In this instance, the catch has been totally moved out of its keep-

er and is about ready to fall by gravity to cause the disabling of the secondary lock.

After having operated to throw the catch from its keeper, lever 80 automatically swings to its normal position against the retaining wall 76 by reason of the energy applied on part 91 of the bar 87 by leg 94 of the spring 95.

If the primary lock be opened and it is desired to close it, finger 68 is rotated by the action of the key cylinder 60 in a direction counter to that indicated by the arrow. Finger 68 may therefore strike the inclined or cam face 93 of the free terminal 90 before reaching the tongue 42 to disable the latch. In striking the inclined face 93, the latter is slightly depressed since it is supported on the hair pin spring 91' thus although the finger 68 in rotating is in the path of the terminal 90 of bar 87 still it may slip by it without causing the striker or extension 84 to operate, that is, preventing operation of the chain releasing or actuating means which comprises the displaceable member 80 having striker 84 and the displaceable bar 87 and thus preventing the striker 84 from traveling across its keeper.

Although the invention herein disclosed has been particularly described in connection with a jimmy proof lock of the type disclosed in United States Patent 1,212,823 to Samuel Segal, it is to be understood is not limited to this type of construction and is applicable to other forms of primary locks generally utilized in removably fastening doors or the like and while I have described my invention in detail and have referred to specific application thereof, I do not intend that the invention herein disclosed shall be limited to such specific applications but intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a lock for a door and jamb, the combination of, a casing secured to the inside face of said door, a bolt slidably carried by said casing adapted to removably interconnect with a keeper on said jamb, means for shifting said bolt for removably interconnecting the same with said keeper to provide a primary connection, chain means having one end slidably and removably mounted on said casing providing a supplementary connection for said door and jamb, and key controlled means rendered operative from the outside face of said door for operating said bolt and for removing said end from said casing.

2. In a lock for a door and jam, the combination of, a casing secured to the inside face of said door, a shiftable bolt carried by said casing adapted to removably interconnect with a keeper on said jamb, a plate having a rotatable member, an arm carried by said member, rotary means accessible on the outer face of said door for controlling said member and rotate said arm to removably interconnect the bolt and keeper, a chain providing a supplementary connection for said door and jamb and having a catch slidably mounted on said casing, and means operative upon the rotation of said arm to remove said catch from the casing.

3. In a lock for a door and jamb, the combination of, a casing secured to the inside face of said door, a shiftable bolt carried by said casing adapted to removably inter-connect with a keeper on said jamb, a plate having a rotatable member for shifting said bolt into and out of locking engagement with said keeper, control means accessible on the outside of said door for actuating said member, a supplementary connection for the casing and keeper comprising a chain having a catch slidably mounted on the casing, displaceable actuating means comprising a lever pivoted to the casing and a yieldingly supported slidable bar pivoted to said lever; a striker carried by said lever and normally disposed in a position at one side of said catch, said member upon rotation thereof in one direction being operable to displace said bar longitudinally of said casing and swing said striker to remove said catch from the casing, and spring means for retracting said striker.

4. In combination, a casing having a keeper for supporting one terminal of a chain, chain releasing means within said casing comprising striker means disposed within said keeper and key controlled means for operating said chain releasing means to shift said striker means across said keeper and remove said terminal therefrom.

5. In combination, a casing having a keeper for supporting one terminal of a chain, chain releasing means within said casing comprising striker means disposed within said keeper and arranged at one side of said terminal and key controlled means for operating said chain releasing means to move said striker means longitudinally across said keeper and remove said terminal therefrom.

6. In combination, a casing having a keeper for supporting one terminal of a chain, actuating means movably supported within said casing, striker means normally disposed at one end of said keeper and operatively associated with said actuating means, key controlled means for operating said actuating means to displace said striker means across said keeper and remove said terminal therefrom and means automatically retracting said striker to the aforementioned end.

7. In combination, a casing having a keeper for removably supporting one terminal of a chain, a movable element mounted within said casing, a shiftable member within said casing and operatively connected to said element, a striker having a part normally disposed at one side of said terminal and another part movable with said member and key controlled means for actuating said element to displace said striker across said keeper and remove said terminal therefrom.

8. In combination, a casing having a keeper for removably supporting one terminal of a chain, a displaceable element disposed within said casing, a shiftable member operatively connected to said element, a striker having a part normally disposed at one side of said terminal and another part operatively connected to said member, a plate removably carried by said casing having a rotatable arm, and key controlled means for operating said arm to actuate said element for shifting said striker portion across said keeper and remove said terminal therefrom.

9. In combination, a casing having a longitudinally disposed keeper for removably supporting one terminal of a chain, a displaceable element within said casing, a member shiftable in response to the displacement of said element, a striker normally disposed at one side of said terminal and operatively associated with said member, a plate removably carried by said casing having a rotatable arm, key controlled means for operating said arm to actuate said element to shift said striker longitudinally across said keeper and remove said terminal therefrom and spring

means acting against said element to retract said striker upon the removal of said terminal.

10. In combination, a casing having a keeper for supporting one terminal of a chain, chain releasing means within said casing comprising striker means disposed within said keeper and arranged at one side of said terminal, key controlled means for operating said chain releasing means to move said striker means longitudinally across said keeper and remove said terminal therefrom and automatic means to retract said striker.

11. In a lock for a door and jamb, the combination of, a casing secured to the inside face of said door and having spaced guide rails, a bolt slidably carried by said casing adapted to removably interconnect with a keeper on said jamb, means for shifting said bolt for removably interconnecting the same with said keeper to provide a primary connection, chain means providing a supplementary connection for said door and jamb and having a catch movably guided between said rails, chain releasing means operatively mounted within said casing and including striker means and means controlled from the outside face of said door for operating the bolt and for actuating said chain releasing means to displace said striker means and remove said catch from said guide rails.

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