

[54] **CHAIN DOOR LATCH**

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70/93

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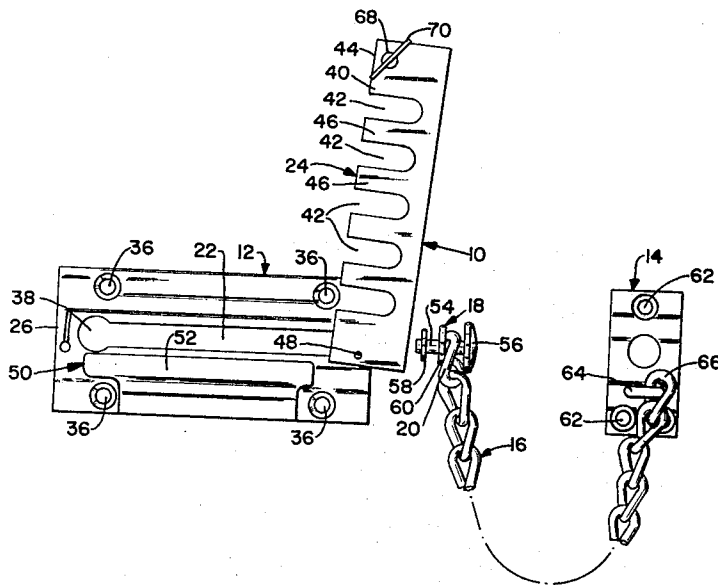
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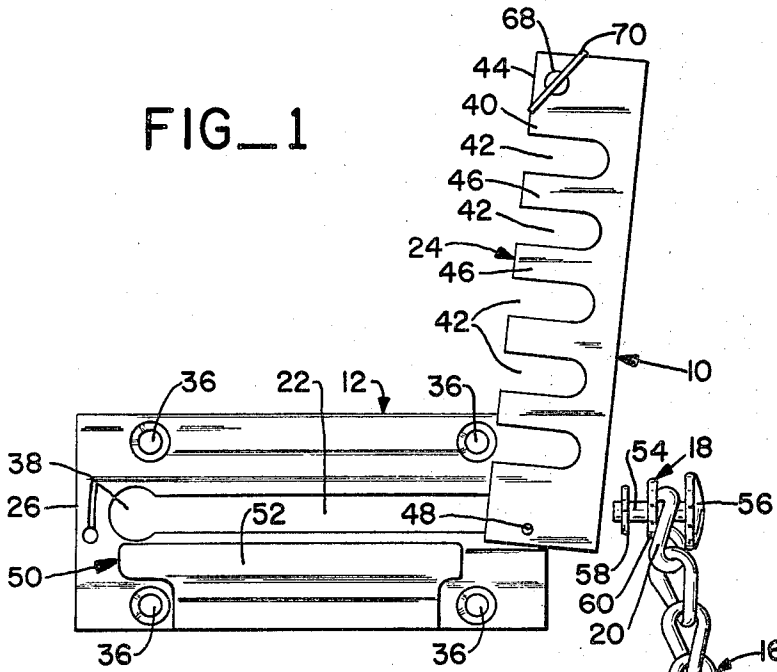
[57] **ABSTRACT**

A chain latch for a swingable door wherein a first member adapted to be secured to one side of a door has a slot for receiving a stud on one end of a flexible chain whose opposite end is secured to a second member adapted to be secured to the jamb of the door. A rigid strip having a plurality of spaced teeth is shiftably mounted on the first member and is movable into a position with the spaces between the teeth in alignment with the slot, whereby the stud, when disposed in the slot, will be releasably held in a fixed location therein. Means is provided to releasably secure the strip to the first member.

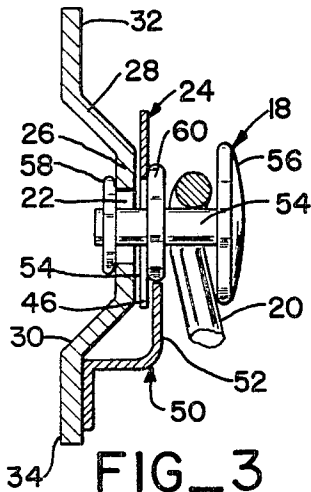
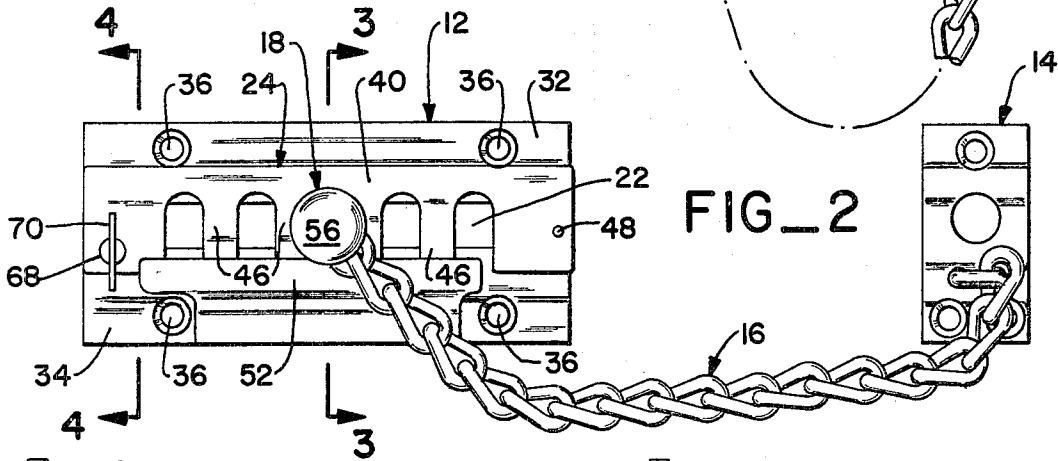
11 Claims, 4 Drawing Figures



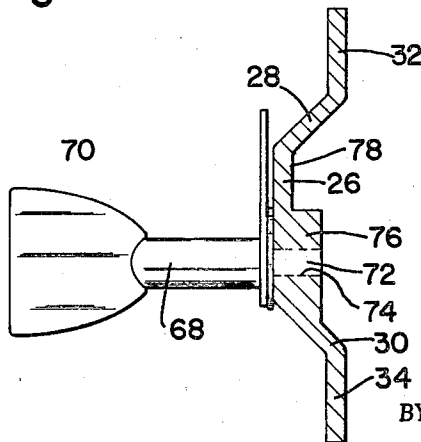
FIG_1



FIG_2



FIG_3



FIG_4

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CHAIN DOOR LATCH

This invention relates to improvements in door latches of the type utilizing a chain and, more particularly, to an improved chain latch having additional safety features to prevent tampering.

Conventional chain latches for swinging doors generally utilize a chain having a stud for insertion into a slot of a member secured to a door, the chain also being permanently connected in some manner to the door jamb. Thus, the door can be opened only slightly, the chain bridging the distance between the door and the jamb to prevent the door from being opened further. While such latches are usually satisfactory in most situations to prevent full opening of a door, it is oftentimes possible to move the stud in the slot with a probe, such as a coat hanger or the like until the stud reaches the entry end of the slot, whereupon the stud can then be moved out of the slot to disconnect the chain from the door. Thus, entry can be made through the door since the latter can then be opened.

The present invention is directed to improvements in conventional chain latches of the type described by providing means on the slotted door member for holding the stud at a fixed location in the slot. In this way, a probe manipulated from the opposite side of the door will be ineffective to move the stud to the end of the slot at which it can be removed therefrom. Thus, any attempt to tamper with the latch will be foiled.

The means for holding the stud against movement in the slot includes a flat strip of substantially rigid material which is pivotally mounted on the door member and has a number of open recesses, any one of which can receive the stud as the strip moves into an operative position wherein the recesses are aligned with the slot. In this way, the stud can be trapped and held against movement at any one of a number of locations along the slot. Also, locking means can be provided to releasably secure the strip to the slotted door member to prevent movement of the strip out of its operative position.

The primary object of this invention is, therefore, to provide an improved chain latch for a door wherein the slotted member which is to be coupled to the stud on the end of a chain of the latch has means for holding the stud against movement longitudinally of the slot to thereby prevent movement of the stud to the entry end of the slot.

Another object of this invention is to provide an improved door latch of the type described wherein the holding means is pivotally mounted on the slotted door member and is provided with a number of open recesses therein so that the strip can move into an operative position with the stud received within one of the recesses to thereby prevent movement of the stud along the slot.

A further object of this invention is to provide a chain latch of the aforesaid character wherein the holding means has a lock for releasably securing the same to the slotted door member to prevent movement of the strip out of its operative position.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawing for an illustration of the invention. In the Drawings:

FIG. 1 is a front elevational view of the chain latch of this invention showing the parts of the latch separated from each other;

FIG. 2 is a view similar to FIG. 1 but showing the parts of the latch interconnected by a chain in a door-locking mode;

FIG. 3 is an enlarged, cross-sectional view taken along line 3—3 of FIG. 2; and

FIG. 4 is an enlarged, cross-sectional view taken along 4—4 of FIG. 2.

The chain latch of this invention is broadly denoted by the numeral 10 and includes several parts including a first, door member 12 adapted to be secured to a swinging door, a second, jamb member 14 adapted to be secured to one face of a stationary jamb adjacent to the door, and a flexible link chain 16 permanently connected to jamb member 14 and

adapted to be releasably connected to door member 12. Chain 16 has a stud 18 coupled to an end link 20 for insertion into a slot 22 of door member 12. A holding member 24 shiftably mounted on door member 12 moves from an inoperative position shown in FIG. 1 to an operative position shown in FIG. 2 to hold stud 18 against movement longitudinally of slot 22 in a manner to be described.

Door member 12 has a transverse cross-section as shown in FIG. 3 wherein a central, elongated segment 26 is provided with inclined sides 28 and 30 which diverge outwardly therefrom. Outer flat segments 32 and 34 are integral with sides 28 and 30, respectively, and are generally coplanar with each other. Segments 32 and 34 are provided with screw holes 36 therethrough, whereby mounting screws or similar fasteners can be used to secure door member 12 to a swinging door near one vertical margin thereof, the door being swingable about an axis adjacent to its opposite vertical margin. Segment 26 has slot 22 centrally disposed therein, the slot extending throughout the major portion of segment 26 and having a width less than the width of the segment. The slot has an enlarged opening 38 at one end thereof for receiving one end of stud 18.

Holding member 24 comprises a generally rigid, flat strip 40 having a number of generally parallel recesses 42 extending inwardly from one longitudinal edge 44 thereof to define a number of teeth 46, therebeing a tooth 46 between each pair of adjacent recesses 42, respectively. Member 24 is preferably formed from a suitable metallic material. Also, the depths of the various recesses 42 are substantially the same and are greater than the width of slot 22.

Member 24 is pivotally mounted by a pin 48 to segment 26 adjacent to the end thereof opposed to the end near opening 38. When member 12 is secured to a door, pin 48 will be near the adjacent vertical margin of the door; whereas, opening 38 will be remote from such vertical margin. When viewing FIG. 1, member 12 will be secured to the right margin of the door, the door being hinged along its left margin.

Member 24 can pivot from the inoperative position shown in FIG. 1 to the operative position shown in FIG. 2. As it does, the outer marginal ends of teeth 46 move into a space defined by segment 26 and a channel member 50 rigidly secured in any suitable manner to segment 34 (FIG. 3), the channel member having a transverse configuration as shown in FIG. 3. Channel member 50 includes a section 52 which is spaced outwardly from segment 26 to present the aforesaid space, denoted by the numeral 54. Thus, channel member 50 limits the arc of movement of member 24 about the axis of pin 48. It also prevents binding of member 24 on stud 18 when the latter is trapped in a recess 42 and extends through slot 22.

Stud 18 includes a stub shaft 54 having a head 56 at one end thereof and a pair of spaced, annular flanges 58 and 60 which are of unequal diameters, flange 60 having a greater diameter than flange 58, the diameter of flange 58 being less than that of circular opening 38, and the diameter of flange 60 being greater than that of opening 38. Thus, a portion of stub shaft 54 can enter opening 38 and be moved lengthwise of the slot, flange 58 being of a diameter greater than the width of slot 22. Link 20 rotatably receives the portion of stub shaft 54 between head 56 and flange 60.

Jamb member 14 has a pair of screw holes 62 at opposed ends thereof for use in securing the member to the door. A fixed loop 64 is secured to member 14 and is connected to the opposite end link 66 of chain 16.

Means is provided for releasably securing holding member 24 to segment 26 when member 24 is in the operative position of FIG. 2. Such means includes a shaft 68 having a head 70 at one end thereof and a threaded tip 72 at the opposite end thereof. Tip 72 is adapted to be threadably coupled to an internally threaded bore 74 in a boss 76 on the back side 78 of segment 26 as shown in FIG. 4. Thus, when tip 72 is threaded into bore 74, it is not possible to lift member 24 from the operative position thereof in any manner.

In use, latch 10 is mounted so that member 14 is rigidly secured to the jamb of a door frame and member 12 is rigidly secured to a door movable into the plane of the door frame. with members 12 and 14 in proximity to each other and with member 24 in the inoperative position of FIG. 1, stud 18 can be inserted into opening 38 until flange 60 engages the proximal face of segment 26. Then the stud can be shifted lengthwise in the slot, following which member 24 is pivoted in a counter-clockwise sense when viewing FIG. 1 into the FIG. 2 position thereof with stub shaft 54 in recess 42 between a pair of adjacent teeth 46. The ends of the teeth are received in space 54 as shown in FIG. 3 and shaft 68 can then be manually rotated so that tip 72 is threaded into bore 74, thereby releasably securing member 24 to segment 26. The door is then secured and it is not possible to shift stud 18 lengthwise of the slot until member 24 is again pivoted into a position permitting the stud to move in the slot. To disengage the stud, the above steps are reversed.

While means for securing member 24 to segment 26 is shown as being formed of a threaded connection, it is clear that other securing means can be used, such as a key-actuated lock.

Latch 10 provides additional safety features for a conventional chain door latch. Specifically, latch 10, when attached to one side of a door, prevents a person from manipulating a probe, such as a rod, a coat-hanger or the like, from the opposite side of the door in a manner to move stud 18 to opening 38 and then moving the stud out of the opening. Heretofore, this has been possible with conventional devices; however, with strip 40, this is not possible since the strip traps the stud at a fixed location along the slot. As an added feature, the lock provided by the threaded connection of tip 72 in bore 74 prevents tampering with strip 40 so that it cannot be pivoted upwardly so as to permit movement of the stud along the slot toward opening 38. Thus, any attempt to break into a dwelling or other building utilizing latch 10 will be completely foiled.

I claim:

1. A chain latch for a swingable door having a jamb comprising: a first member having a slot therein and adapted to be secured to a swingable door; a second member adapted to be secured to the jamb of said door; a flexible chain secured at one end thereof to the second member and having a stud at its opposite end, the stud adapted to be inserted into and to move along the slot; and means pivotally mounted to said first member for movement into and out of an operative position adjacent said slot to releasably hold the stud in a fixed position in said slot.

2. A chain latch as set forth in claim 1, wherein said pivotally mounted holding means includes means thereon for retaining said stud in any one of a number of locations along the length of said slot.

3. A chain latch as set forth in claim 2, wherein said retaining means includes a plurality of spaced teeth on said third member, each pair of adjacent teeth defining a respective stud-receiving recess, each recess having an open end to permit the third member to move onto said stud when the latter is in said slot and the third member is shifted relative to the first member.

4. A chain lock assembly as set forth in claim 1, wherein said holding means comprises a third member having a number of parallel teeth, and means pivotally mounting the third member on the first member adjacent to one end of the slot, said third member being movable into an operative position

with the spaces between said teeth in alignment with the slot.

5. A chain latch as set forth in claim 4, wherein is included means adjacent to the slot for defining a space for receiving the outer ends of said teeth when the third member is in said operative position.

6. A chain latch as set forth in claim 4, wherein is included means carried by at least one of said first and third members for releasably retaining said third member in said operative position.

7. A chain latch as set forth in claim 6, wherein said retaining means includes a shaft rotatably mounted on said third member and having means thereon for making a threaded connection with said first member.

8. In a door latch assembly of the type having a flexible chain provided with a connecting stud at one end thereof and being permanently connected at the opposite end thereof to a door jamb, the improvement comprising: a member adapted to be secured to the door associated with said door jamb and having a stud-receiving slot therein; means on said member for releasably holding the stud in any one of a number of locations along the length of said slot, said holding means including a rigid strip having a number of spaced teeth extending transversely thereof; and means mounting said strip on said member for pivotal movement into and out of an operative position with the spaces between said teeth in alignment with said slot.

9. In a door latch as set forth in claim 8, wherein means is included on said strip for releasably securing the same to said member when the strip is in said operative position.

10. A chain latch for a swingable door having a jamb comprising: a first member having a slot provided with an enlarged opening at one end thereof, said first member adapted to be secured to said door; a second member adapted to be secured to said jamb; a flexible chain secured at one end thereof to said second member and having a stud at its opposite end, the stud adapted to be inserted into said opening and to move along the length of said slot, said stud being coupled with the first member when the stud is in said slot; a rigid strip pivotally mounted on said first member and having a number of spaced recesses extending thereinto from one longitudinal edge thereof, said strip being movable into and out of an operative position with said recesses in alignment with said slot, whereby the stud may be received within one of said recesses when the stud is in said slot and when said strip is in said operative position; means on said first member for limiting the amount of pivotal movement of said strip relative to said first member; and means carried by said strip and engageable with said first member for releasably locking the strip to said first member.

11. A chain latch for a swingable door having a jamb comprising: a first member having a slot therein and adapted to be secured to a swingable door; a second member adapted to be secured to the jamb of said door; a flexible chain secured at one end thereof to the second member and having a stud at its opposite end, the stud adapted to be inserted into and to move along the slot; and means pivotally mounted to said first member for movement into and out of an operative position adjacent said slot to releasably hold the stud in a fixed position in said slot, said pivotally mounted holding means including a plurality of spaced teeth thereon, each pair of adjacent teeth defining a respective stud-receiving recess, each recess having an open end to permit the pivotally mounted holding means to move onto said stud when the latter is in said slot and the holding means is pivoted relative to the first member.

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