July 16, 1957 P. O. PETERSEN 2,799,153

INTERIOR AND EXTERIOR FASTENING MEANS FOR SLIDING DOORS

Filed Feb. 16, 1956 3 Sheets-Sheet 1

Fig. 1

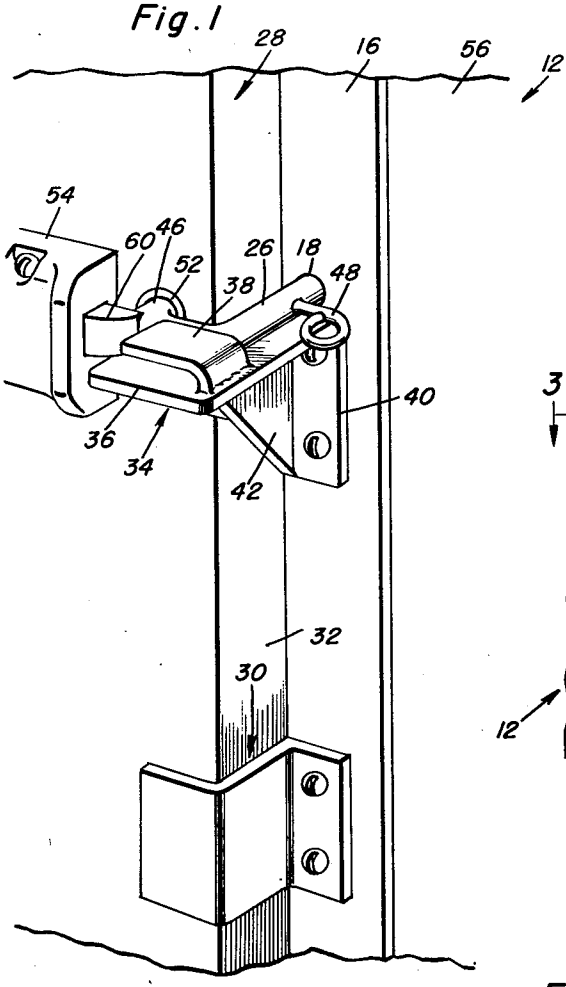
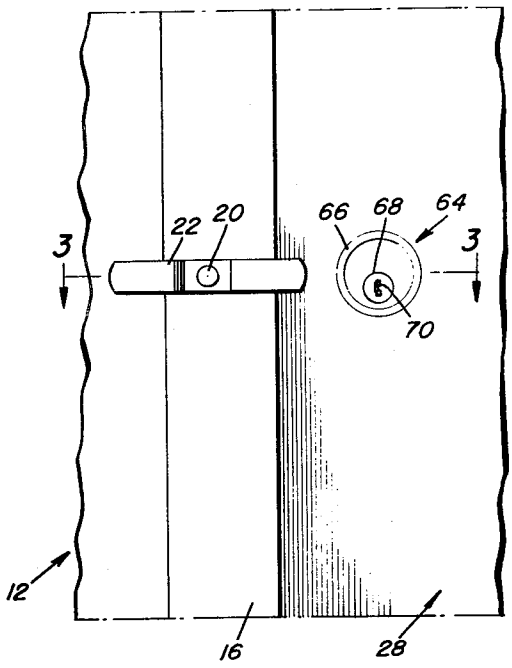


Fig. 2



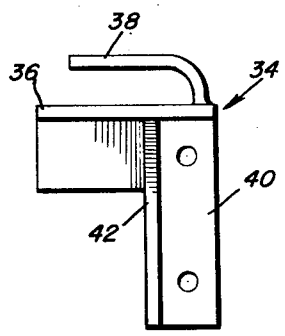
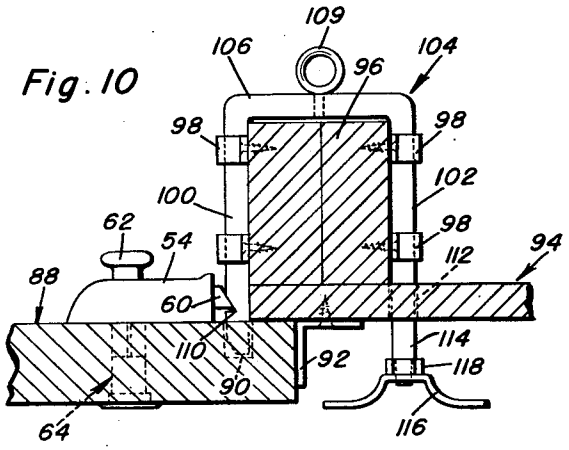


Fig. 5

Fig. 10



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INTERIOR AND EXTERIOR FASTENING MEANS FOR SLIDING DOORS

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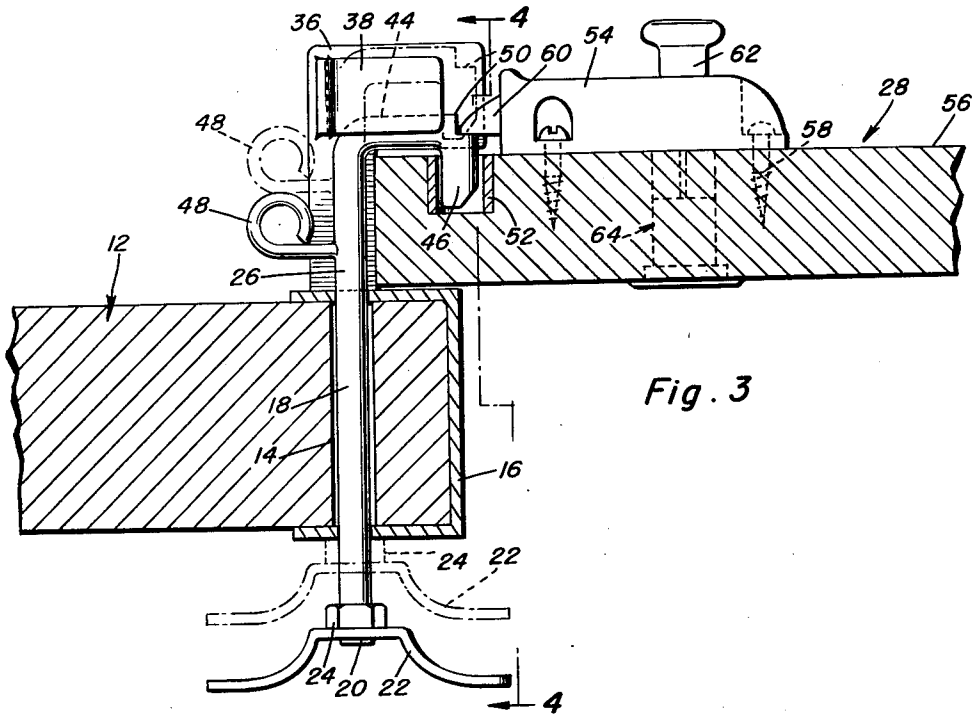


Fig. 3

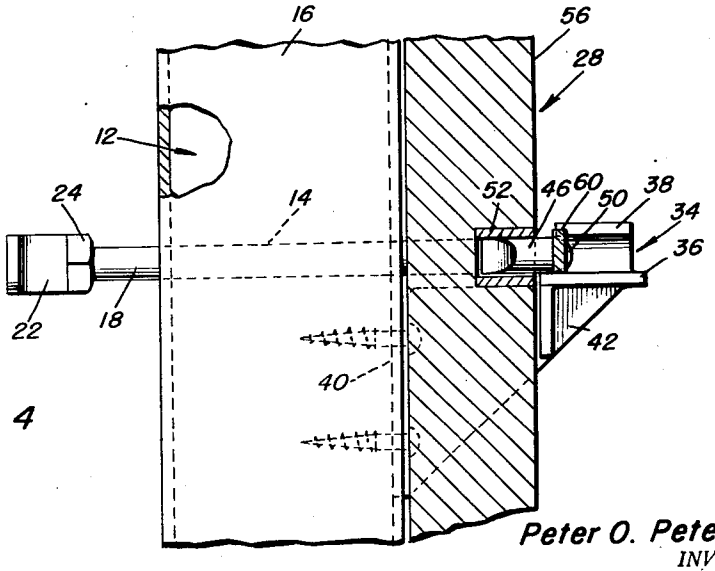


Fig. 4

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INTERIOR AND EXTERIOR FASTENING MEANS FOR SLIDING DOORS

Filed Feb. 16, 1956 3 Sheets-Sheet 3

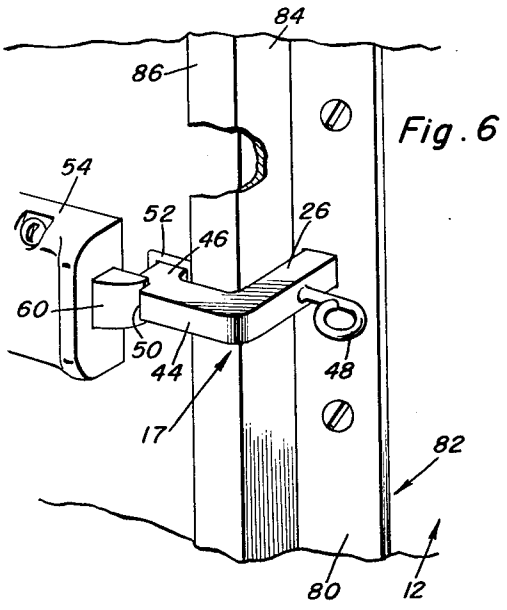


Fig. 6

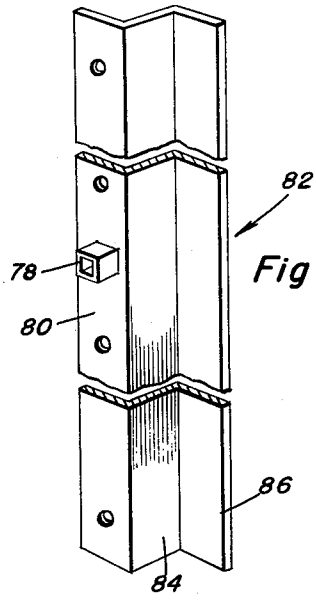


Fig. 8

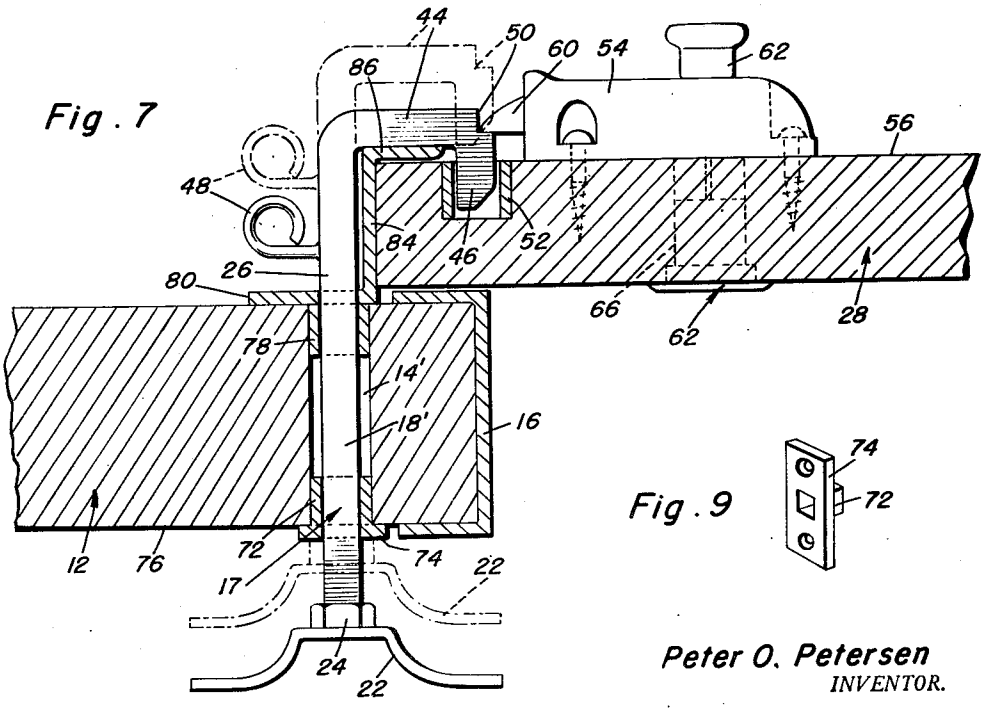


Fig. 7

Fig. 9

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United States Patent Office 2,799,153 Patented July 16, 1957

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INTERIOR AND EXTERIOR FASTENING MEANS FOR SLIDING DOORS

Peter O. Petersen, Clear Lake, Iowa

Application February 16, 1956, Serial No. 565,919

7 Claims. (Cl. 70—100)

This invention relates, generally classified, to fastening means for sliding closures. More particularly, it pertains to a vertically disposed heavy-duty and so-called industrial-type sliding door, for example, a door such as would be used in a warehouse construction or any similar large garage, tool shed, barn or the like in combination with novelly designed and practical hardware through the medium of which the door, either an inside or outside sliding type, may be reliably fastened.

As a matter of common knowledge, doors in the category mentioned are usually provided with a conventional hinged hasp for cooperation with a common fixedly mounted staple, the latter being mounted on the wall or door frame member, as the case may be. A simple padlock provides the customary means for fastening the hasp to the staple. Although this arrangement is recognized by many to be outmoded and lacking in safety requirements it is nevertheless currently in use and is advocated in the interest of economy. Prior art constructions and improvements have been offered but for one reason or another have not met with widespread acceptance and endorsement. One such adaptation is disclosed, for example, in my copending application Serial No. 538,382, filled October 4, 1955.

The subject matter of the stated pending application has to do with the combination of a stationary door frame member, wall or the like, a horizontally sliding suitably mounted door having an edge portion shiftable toward and from one of the vertical elements of the door frame member which latter is provided with a keeper hole. A latch is slidably mounted on the door frame member and has one end portion projectable through and beyond the keeper hole to the exterior side and the projecting portion is provided with an opening which is adapted to accommodate the shackle of a readily attachable and detachable padlock. Handle means, also exteriorly located, is connected with an end portion of the latch bolt. The invention is satisfactory insofar as it goes but it has been noted time and again that in large industrial warehouses it is not at all unusual to encounter an elongated building having a dozen more or less sliding doors with the employees' entrance or exit door, the usual key controlled type, located somewhere near the end of the building, say adjacent to the office or similar place. What with the fact that under certain emergency conditions it is often necessary to get to the outside if and when trapped, it is often necessary to travel the full distance of the building to make one's exit.

There has long existed a need for sliding door fastener means which may be securely locked, from the outside without depending upon a mere padlock and with means on the inside making it possible for one to leave the building by way of any selected sliding door. Therefore, and as will be substantially self-evident by glancing at the views of the drawings, the invention has for its principal objective a combination of the required expedients which include, briefly summarized, a stationary masonry wall or an equivalent door frame member, a

slidably mounted door having an edge portion shiftable toward and from said door frame member and provided with a keeper, a latch bolt slidably mounted on the door frame member and having an end portion projectable into said keeper wherein said projectable portion is provided with a shoulder, handle means carried by both exterior and interior portions of the latch bolt and therefore accessible either inside or outside, and a key controlled lock carried by the door and situated adjacent to the shouldered portion of the latch bolt and having a spring projected latch bolt releasably engaging said shoulder when the door is closed.

More importantly the key controlled lock has a cylinder and barrel, more or less as usual, which is mounted in the door and which provides the key operated means on the exterior of the door, the lock casing on the interior having a knob whereby the customary spring projected but retractible latch bolt may be withdrawn to release the shouldered latch bolt for operation either from the interior or exterior of the building.

Other objects, features and advantages will become more readily apparent from the following description and the accompanying sheets of illustrative drawings.

In the drawings:

Figure 1 is a fragmentary perspective view of the wall and sliding door seen from the inside of the building and depicting certain essential features of the over-all invention;

Figure 2 is a fragmentary outside elevational view illustrating the parts seen from this point of observation;

Figure 3 is an enlarged fragmentary section and elevation taken on the horizontal line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 is a view at right angles to Figure 3 with the section taken on the irregular section line 4—4 of Figure 3 looking from right to left;

Figures 5 is a view in elevation of a bracket which constitutes one of the components of the over-all "hardware";

Figure 6 is a fragmentary perspective view similar to Figure 1 and showing a modification of the over-all concept;

Figure 7 is an enlarged fragmentary sectional and elevational view, a horizontal section, similar to Figure 3, but taken through the construction depicted in Figure 6;

Figure 8 is a fragmentary perspective view of what may be called a Z-iron;

Figure 9 is a perspective view of one of the expedients used and seen best in Figure 7; and

Figure 10 is a horizontal sectional and elevational view similar to Figures 3 and 7 but showing a further modification and being on a smaller scale.

By way of introduction to the drawings it is to be noted that the invention is applicable to what are commonly referred to in the trade as either inside or outside horizontal sliding warehouse and garage doors, the heavy-duty type. The inside type shown is shown in Figures 1, 2, 3, 4, 6 and 7 and the outside type in Figure 10.

Reference is had first to the form of the invention seen in Figures 1 to 5 inclusive.

As perhaps seen best in Figure 3 the numeral 12 denotes what may be designated as a masonry wall of a building, or any equivalent means having a latch bolt hole 14 therethrough and having a marginal or equivalent metal channel or shield forming one of the door frame members as at 16. This is also suitably apertured to permit passage of the long arm 18 of the projectable and retractible J-shaped latch bolt. The outer end is screw threaded as at 20 and suitable handle means 22 is mounted thereon and partly locked or held in place by a jam nut 24. This serves as an abutment as shown in dotted lines in Figure 3. The inner end portion 26 of

this long arm projects through and beyond the interior surface of the wall for cooperation with the horizontal sliding door 28. As shown in Figure 1 a suitable stop bracket 30 is provided to check the movement of the cooperating edge 32 of the door. There is another fixture or bracket at 34 and this is characterized by a plate or shelf portion 36 with a guide 38 at one end. The numeral 40 designates an attaching flange and 42 a reinforcing web. This bracket is fastened or mounted on the door frame member 16 and projects inwardly and serves as a guide and shelf for the cooperating short arm 44 and terminal detent 46. That is to say, the bracket keeps the latch bolt from turning axially and consequently limits it to an in and out sliding movement. While the handle means 22 serves to operate the latch bolt from the outside a suitable finger grip or handle 48 is provided on the long arm to operate the latch bolt from the inside. Also at the juncture of 44 and 46 a suitably formed notch provides a shoulder 50. The shouldered detent projects into the suitably lined keeper socket 52. Used in combination with this inside-outside manually projectable and retractible latch bolt is a key controlled lock. This is more or less of a conventional type and is characterized, generally speaking, by a casing 54 which is screwed on the interior surface 56 of the door as at 58. This has a spring projected manually retracted latch bolt 60 which is releasably engageable with the shoulder 50. The bolt may be retracted by way of an operating knob 62 available from the inside of the building. The bolt may also be retracted by way of the so-called key turned cylinder means 64 which is mounted in the door. This means as shown in Figure 2 comprises a cylinder 66, a barrel 68 and key hole means 70. Thus the "key-controlled lock" is also operable from the inside and outside and is carried by the door. Consequently there is latch bolt means carried by the frame or wall and key control lock means carried by the door and all of the parts combine in contributing their proportionate function and share in the over-all novel combination seen particularly well in Figure 3.

With reference now to the slight modification seen in Figures 6, 7, 8 and 9 it will be evident by comparison with the already described figures that the principle of construction is the same as that covered. In fact the embodiments are so closely allied that it seems unnecessary to resort to a separate system of designating numerals. In other words the wall and door are denoted at 12 and 28 and the parts of the key controlled lock are designated by the numerals already given. It will be noted that in this arrangement the bracket 34 is dispensed with. In this adaptation the J-shaped projectable and retractible latch bolt 17 is non-circular in cross-section. Specifically, it is square and the long arm 18' operates through a passage 14' and the outer end portion is keyed against rotation in a non-circular neck 72 forming a part of a face plate 74 fastened to the exterior 76 of the wall. The intermediate portion operates through a similar non-circular keying and guiding neck 78 which is carried by the flange 80 of the full length Z-iron 82. This is substituted for the aforementioned short bracket 30 and extends from the floor to the ceiling. It is arranged as seen perhaps best in Figures 6 and 7 where it will be seen that the flanges 84 and 86 thereof constitute reliable abutment means for the cooperating edge of the sliding door 28. Therefore by providing the sleeves 72 and 78 of non-circular cross-section and using a correspondingly constructed long arm for the latch bolt the latter is permitted to slide in and out but is prevented from rotating about its axis. This is a comparatively simple mode of mounting the latch bolt. Otherwise Figures 1 to 5 represent an aspect of the concept which is generic with that depicted in Figures 6 to 9 inclusive.

Reference is had now to the modification shown in Figure 10 wherein the sliding door 88 is an outside type and has an interior keeper socket 90. The casing 54 of the key control lock is mounted on the door and the knob 62 and latch bolt 60 are as already described. So is the exteriorly accessible key controlled cylinder means 64. The numeral 92 designates an appropriate stop carried by the outside surface of the building wall or door frame means 94. Here the door frame means includes uprights or studs 96 provided on opposite sides with guide and mounting staples 98 to accommodate the parallel limbs 100 and 102 of the U-shaped projectable and retractible latch bolt 104. The bight portion 106 is provided with a screw eye or the like 109 constituting the operating handle which is used to release the latch bolt from the inside of the building. The outer end of the limb 100 has a notch 110 therein and provides a detent extending to the keeper socket 90 utilizing the same principle already described. The hole in the wall for the limb 102 is denoted at 112 and the outer accessible end at 114, the handle at 116 and the assembling nut at 118.

It will be evident that the form of the invention just described and seen in Figure 10 is fundamentally the same as that already described and involves the use merely of a U-shaped latch bolt instead of a J-shaped bolt. The combination of parts is basically that already described.

While it is true that the art shows safety-type sliding doors wherein so-called emergency-type panic bars are utilized it will be seen that the invention herein disclosed accomplishes similar safe guarding results. It is felt, however, that it is perhaps unnecessary to dwell at any length on special installations or unexpanded description of the operation since this is no doubt self-evident from the drawings and description.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination, a stationary masonry or equivalent building wall, a slidably mounted door having an edge portion shiftable toward and from and cooperable with an edge portion of said wall and having a keeper, a latch bolt slidably mounted on said wall and having an end portion removably projectable into said keeper, said end portion being provided with a shoulder, handle means carried by said latch bolt and accessible and operable from the exterior side of said wall, and a key controlled lock carried by said door and having a spring projected latch bolt releasably engaging said shoulder when the door is closed.

2. The structure defined in claim 1 and wherein said key controlled lock embodies a casing mounted on the interior of said door and which is provided with the spring projected latch bolt and a knob accessible and serving to retract said spring projected latch bolt from the inside of the building.

3. The structure defined in claim 2 and wherein said lock also includes a key controlled cylinder which is mounted in said door in a manner to receive the usual key from the exterior side of said door, whereby the door may be closed and locked from the outside, opened without a key from the inside and wherein the operation of said spring projected latch bolt is under the control of said lock.

4. The structure defined in claim 3 and wherein the first named manually actuatable latch bolt is provided with handle means actuatable and accessible from the interior of the building.

5. In combination, a relatively stationary wall provided with a door stop, a slidably mounted door having an edge portion slidably overlapping an edge portion of said wall and an edge engageable with said stop, said wall having an opening therethrough, said door having a keeper

socket therein, a manually actuable latch bolt slidably mounted on said wall with a portion extending through said opening with an outer end portion projecting beyond the exterior of the wall and provided with a handle, an interior portion projecting beyond the inside end of the opening and provided with a second handle, the projecting end of said latch bolt on the interior providing a detent and said detent extending into said keeper socket, said detent portion having a shoulder, and a key controlled lock having a knob and casing portion mounted on the interior of the door and a key controlled barrel and cylinder accessible from the exterior of the door and including a spring pressed lock bolt engageable with said shoulder.

6. The structure defined in claim 5 and wherein said latch bolt is J-shaped in plan and non-circular in cross section.

7. The structure defined in claim 5 and wherein said latch bolt is U-shaped in plan and circular in cross section.

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