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2,645,516

DOOR LOCK

Filed Dec. 16, 1949

2 Sheets-Sheet 1

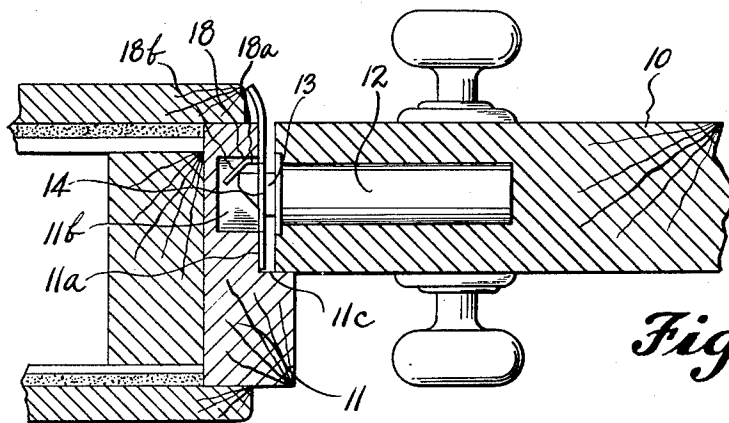


Fig. 1.

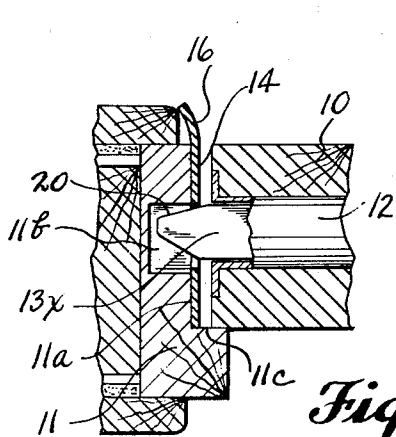


Fig. 4.

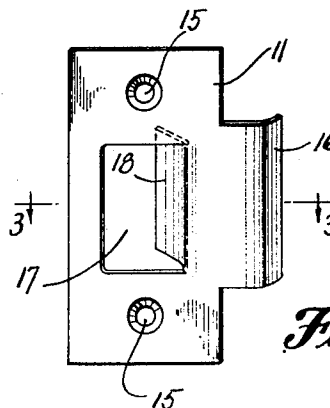


Fig. 2.

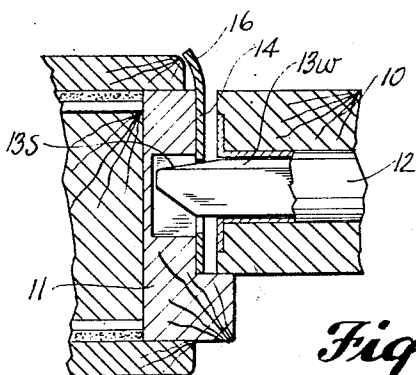


Fig. 5.

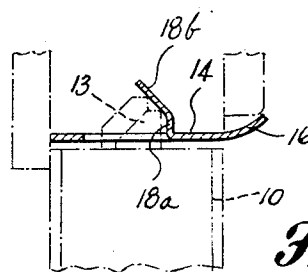


Fig. 3.

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2 Sheets-Sheet 2

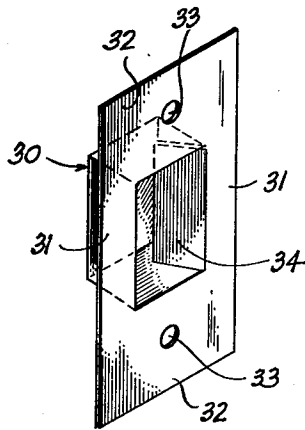


Fig. 6.

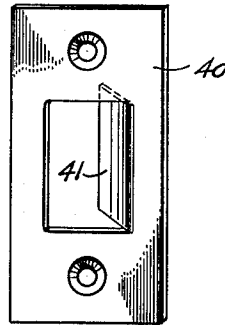


Fig. 7.

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DOOR LOCK

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1 Claim. (Cl. 292—341.12)

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This invention relates to an improvement in locks for doors as used in homes and other types of buildings, and more particularly has reference to the combination of a novel keeper or striker plate and a latch bolt whereby the annoying rattle of doors when in closed position is prevented or eliminated.

In the past, many types of devices have been developed for the purpose of preventing or eliminating the annoying rattle and vibration which is possible in practically all building doors, when in closed position, under the action of wind, vibration and various other influences. There are several devices now on the market which are applied to the door frame and function in a manner to hold the door tightly against the jamb stop. Such devices are not completely satisfactory and they sometimes have an objectionable appearance.

It is, therefore, the principal object of my invention to provide a novel means for preventing or eliminating the objectionable and annoying rattle and vibration of doors, which is simple in its construction and mode of use and is not visible in its place of use.

Another object of my invention is to provide a means for preventing or eliminating the rattle and vibration of doors that is relatively inexpensive, simple to install and may replace keepers now being used without requiring additional cutting out or alteration of the door jamb.

A further object of my invention is to provide a novel form of keeper for door locks, which may be readily adapted for use with various types of locks to eliminate door rattle.

Other objects of my invention reside in the details of construction and in the simplicity of the present device, and in the ease of its application and use, as will hereinafter be fully described.

In accomplishing these and other objects of my invention I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a cross-section of a portion of a door and door jamb and illustrates the relationship of the present keeper and bolt of the lock when the door to which the lock is applied is in closed position.

Fig. 2 is a perspective view, showing the front or face of the novel keeper.

Fig. 3 is a cross-section of the keeper taken substantially on line 3—3 in Fig. 2 and illustrates parts of the door and jamb in broken lines.

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Fig. 4 is a cross-sectional view similar to that of Fig. 1 illustrating an alternative form of construction wherein the bolt portion of the door latch is formed with two converging, inclined surfaces.

Fig. 5 is a cross-sectional view illustrating another alternative form of construction showing a lock bolt to which a wedge plate is applied to coact with a keeper to eliminate rattle.

Fig. 6 is a perspective view of a metal, mortise box illustrating a wedging flange formed as a part thereof.

Fig. 7 is a perspective view of a plate to be used in combination with a keeper and illustrating a wedging flange formed as a part of the plate. Referring more in detail to the drawings:

In Fig. 1, I have illustrated parts of a typical door and jamb construction wherein the door is designated by reference numeral 10 and the jamb by numeral 11. Also, I have shown a conventional door lock assembly 12 mortised into the door in the usual manner. Among other parts, the lock assembly includes the usual bolt 13, which is adapted to coact with the keeper or striker plate 14 to retain the door in closed position; the latter being secured, in fixed position flatly against the jamb face 11a in the usual manner.

As is illustrated in Fig. 2, the keeper or striker plate 14 is similar in most respects to keepers which have been commonly used. It is made of metal; is rectangular in shape, and the size or particular shape may be varied as desired or required. As seen best in Fig. 2: it is formed at its upper and lower ends with holes 15—15 to receive attaching screws and with a standard angularly directed flange 16 which extends outwardly from the outer vertical edge thereof. The purpose of this flange being to cam the latch bolt inwardly against its spring when the door is being closed and latched. Approximately midway between the top and bottom edges of the keeper and between the two side edges, the keeper is formed with a rectangular hole or opening 17 to receive the end of the latch bolt. This registers with a recess 11b cut in the jamb face in the usual manner. Formed as an integral part of the keeper and bent inwardly therefrom along the vertical edge of the opening 17 that is adjacent the flange 16, is an inwardly extended flange 18. The flange is formed with an inwardly extending base portion 18a which is at right angles to and joins directly with the keeper plate, as is shown in Fig. 3 and an outer end portion 18b that is formed at approximately a

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45° angle to the flange portion 18a and directed away from the flange 16. The reason for this specific form of construction is to provide a flat surface, as formed by the portion 18a, which will permit the latch bolt 13 to be projected directly into the opening 17 and assure the catching of the bolt when the door is closed. The angular surface 18b is the portion of the keeper wherein lies the essence of my invention and provides the means whereby the rattle or vibration of the door is prevented or eliminated.

The keeper, as herein before described, may be easily and readily secured to the jamb face, wherein a mortise and recess have been provided, by means of screws (not shown) which are inserted through the holes 15—15 in the keeper. The securing of the keeper is in such manner that the opening 17 therein registers with the recess 11b and the flange 16 extends outwardly beyond the outer edge of the jamb. The latch bolt would be spring pressed in the usual manner, to urge it to its fully extended position with the latching of the door. Thus when the door is closed it will be held firmly against the jamb stop 11c. This result is accomplished in the following manner: It is usual in door latch construction to include a compression spring as a part of the latch mechanism, which spring functions to project the latch bolt outwardly to its limit of travel. The latch bolt, under this spring pressure, will snap into opening 17 when the door reaches its closed position. As the bolt is thus extended, the outer end edge thereof engages with the angular portion 18b of the flange and the outward pressure of the bolt against this angular flange results in an inward wedging effect which in turn forces the door inwardly and retains it tightly against the jamb stop. This construction does not effect or alter the normal latching operation in any manner but it does produce the result of preventing and eliminating the rattle of the door. It is to be understood, that the normal extent to which the lock bolt will be extended by the spring pressure is sufficient to cause the bolt to engage the flange 18b with the desired camming effect.

Though I have, in the above, described the preferred and simplest means whereby rattle and the vibration of the door may be eliminated, I have also devised two alternative forms of door lock construction which will provide an equally satisfactory result. I have illustrated these alternatives in Figs. 4 and 5 of the drawing. In both instances, a standard or common form of keeper is employed which does not have the flange 18. In the device of Fig. 4, I form the latch bolt 13x with a beveled or sloping outer surface 20, leading to the end of the bolt. The beveled surface 20 permits the door to be securely latched and the bolt to be projected through the plate opening into the recess 11b in the jamb face. By means of the usual compression spring (not shown) in the lock mechanism, an outward pressure is exerted upon the bolt. Thus, when the door is closed the angular surface 20 of the bolt engages the adjacent edge of the keeper plate opening and the outward force of the spring produces the result of forcing the door inwardly and tightly against the jamb stop. The function and result is quite obvious because as the effective thickness of the bolt is increased, the door is caused to move closer to and abut against the jamb stop.

The other alternative form of construction, as shown in Fig. 5, incorporates the same principles of construction and mode of operation as in the device of Fig. 4. The form of device illustrated in

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Fig. 5 differs from that of Fig. 4 in that a wedge 13w is applied to the outer face of the bolt, thereby forming an elongated, beveled or tapered surface, 13s, so that when the door is closed and the bolt so projected into the mortise 11b a wedging effect is produced causing the door to abut tightly against the jamb stop. This wedge may be adjustably secured to the bolt.

In Figs. 6 and 7 I have illustrated additional means or devices for accomplishing the wedging effect whereby the vibration and rattle of the door will be eliminated. Fig. 6 illustrates a mortise box such as is commonly used to provide a more finished appearance of the jamb recess. The box is designated in its entirety by reference numeral 30 and is formed from relatively light weight metal. The size of the box is substantially the same as the mortise provided in the jamb face 11a and side and end flanges 31—31 and 32—32 respectively are provided to seat flush against the jamb face under the keeper. Screw holes 33—33 are provided in the end flanges 32—32 which register with similar holes in the keeper. Formed as part of the mortise box and extending inwardly into the recess chamber is a wedging flange 34 which is similar in design and manner of functional use to the wedging flange formed as an integral part of the keeper. This flange may be formed from the same piece of metal as the box or may be of heavier material and joined to the box by soldering or in other convenient manner.

The device illustrated in Fig. 7 comprises a plate 40 of substantially the same size and shape as the body portion of the keeper and instead of the wedging flange being formed as a part of the keeper, the wedging flange 41 is formed as a part of the plate. This flange is identical in design and functional use to the flange formed as a part of the keeper.

The devices illustrated in Figs. 6 and 7 are to be used in combination with a standard or common keeper and function in the same manner and produce the same result as if the wedging flange were formed as part of the keeper. These alternative forms are illustrated and described for the purpose of indicating various means and ways of accomplishing the same result based upon the same wedging principle. These devices may be applied by merely removing the keeper now in use and applying the device to the door jamb and then replacing the keeper in its original position over the mortise box 30 or plate 40.

Though I have illustrated and described my invention as applied primarily to building doors, it is not my intention that my invention be so limited. The same wedging principle could also be incorporated in locking means for doors of automobiles and house or building windows and it would only be necessary to alter the size and design of the keeper to adapt it to such uses. It is further to be understood that the means which I employ to prevent and eliminate the rattle and vibration of the door also makes for a tighter seal of the door against the jamb stop. This is accomplished because as the door vibrates the latch bolt under spring pressure is projected outwardly into the mortised recess to the maximum extent so that a minimum tolerance will exist between the bolt and the flanged portion of the keeper and as a result the door is caused to be wedged tightly against the jamb stop.

Another feature of my device is that even though the door or window is held tightly against the jamb stop there is no hinderance or difficulty

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encountered in opening the door. Merely twisting or turning the door knob retracts the bolt so that the wedging effect is eliminated. There is no possible chance for the bolt to hang-up or become fouled so the door may be opened or unlatched with comparative ease. This feature is not necessarily true of other devices used to accomplish a similar result. With my device, it makes no difference how tightly the door is pressed or held against the door jamb, it still may be opened simply and easily.

It is believed that the usefulness and simplicity of the devices or means which comprises my invention are self-evident. It is also an advantage and feature of my invention that the novel form of keeper, as in Fig. 2, which I employ to obtain the desired result may be quickly and easily interchanged with any of the common types of keepers which have been used with door locks for many years.

I have illustrated the most commonly used shape or design of a keeper, however, it is to be understood that my invention could be modified and adapted to be used on keepers of various shape, size or design without departing from the spirit or teaching of my invention.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is:

In a latch structure of the character described 30

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comprising a keeper having a flat face surface and a latch bolt receiving opening formed therein with a forward vertical edge, and an integral flange extending from the said forward vertical edge and against which an entering latch bolt will engage; the portion of the flange immediately adjacent said vertical edge extending inwardly at substantially right angles to the face surface of the keeper and the remaining portion of the flange extending inwardly at approximately a 45° angle away from the forward vertical edge and across the opening.

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References Cited in the file of this patent UNITED STATES PATENTS

Number	Name	Date
913,410	Marbach	Feb. 23, 1909
1,186,315	Holland	June 6, 1916
1,194,636	Joy	Aug. 15, 1916
1,318,988	Good	Oct. 14, 1919
1,497,044	Terrell	June 10, 1924
2,446,206	Beckman	Aug. 3, 1948
2,535,444	Miller	Dec. 26, 1950

FOREIGN PATENTS

Number	Country	Date
165,139	Great Britain	June 13, 1921