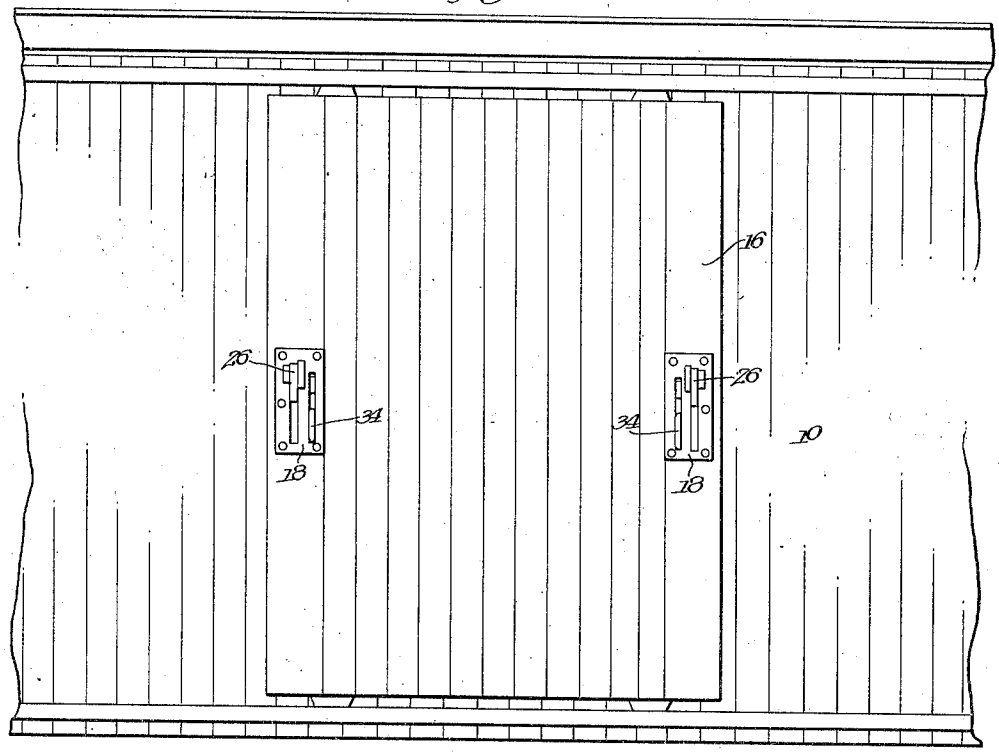
Nov. 1, 1927. 1,647,226

J. A. HICKS

DOOR FASTENER

Original Filed Jan. 23, 1924 3 Sheets-Sheet 1

Fig. 1.



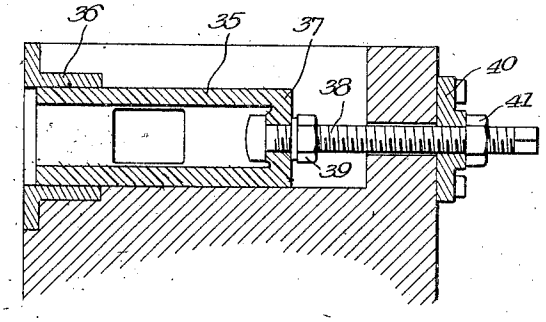
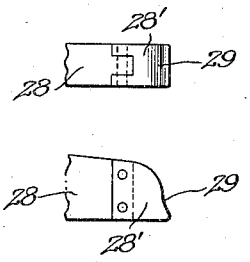


Fig. 7.

Fig. 6.



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1,647,226

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DOOR FASTENER

Original Filed Jan. 23, 1924 3 Sheets-Sheet 2

Fig. 2.

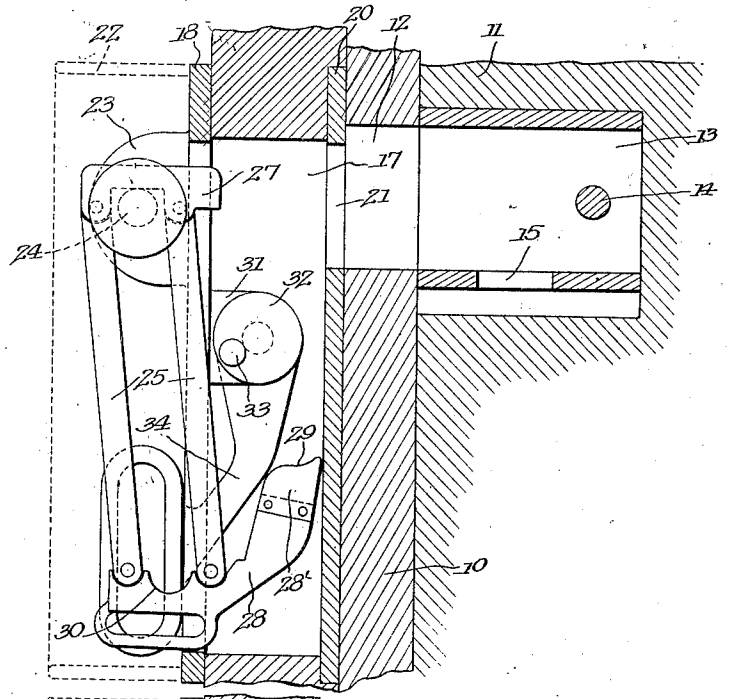
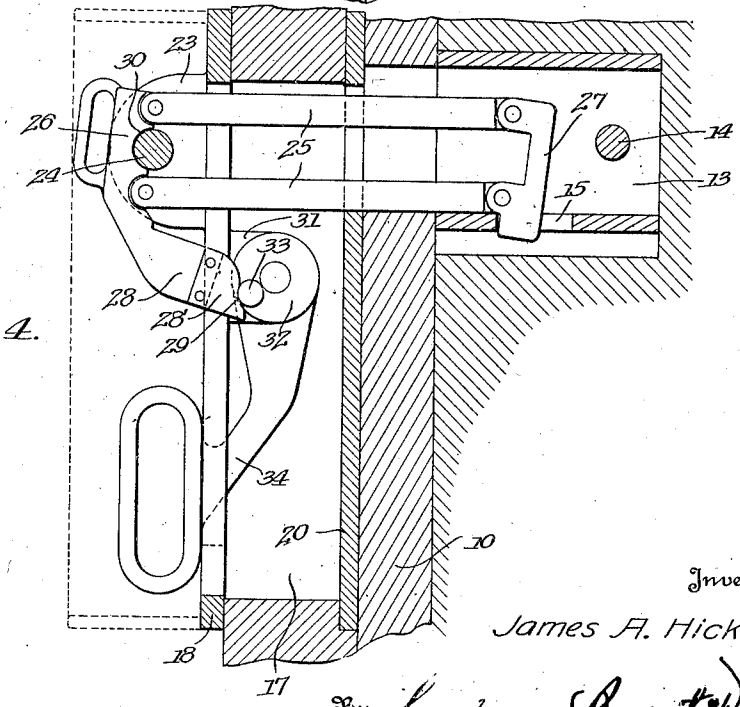


Fig. 4.



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Original Filed Jan. 23, 1924 3 Sheets-Sheet 3

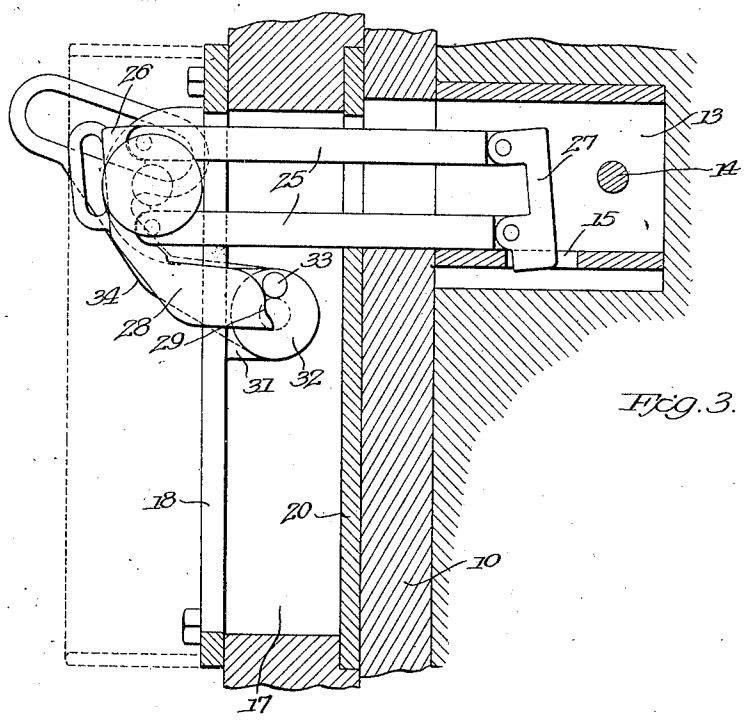


Fig. 3.

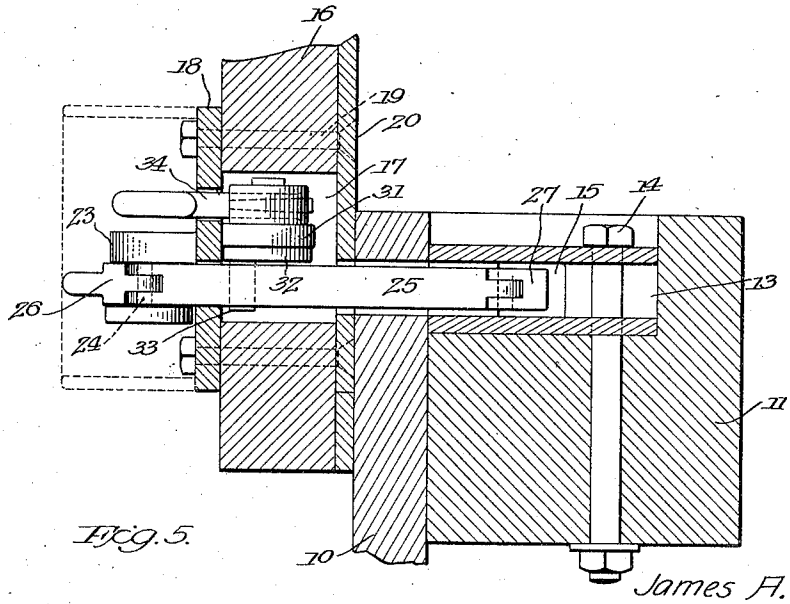


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES AMOS HICKS, OF ATLANTA, GEORGIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO AUTOMATIC CAR LOCK COMPANY, OF ATLANTA, GEORGIA, A CORPORATION OF GEORGIA.

DOOR FASTENER.

Application filed January 23, 1924, Serial No. 687,987. Renewed September 10, 1927.

This invention relates to door fasteners, and has for its object to provide a device by means of which not only may a door be fastened, but also, in event of the door not fitting the jamb snugly, it will, when the fastener is operated, be drawn snugly and closely against the jamb or abutting post or wall, so as to give a tight joint.

The device will be shown in connection with doors for freight cars for which it is particularly designed, but it will be understood that it is not limited in its use to the particular adaptation here shown, as it is capable of being used wherever it is desirable to fasten and clamp a door with a tight joint to the jamb or abutting partition or wall.

In the drawings herewith, I have illustrated one embodiment of my invention, and in said drawings:—

Fig. 1 is a view of so much of a freight car and a door as will serve to illustrate the application of my invention.

Fig. 2 is a view in vertical section of so much of the side of a car and a door as will serve to show the application and operation of the device, it being here shown as unfastened and withdrawn.

Fig. 3 is a view showing the device in position for setting up and clamping.

Fig. 4 is a view in vertical section showing the device set up and clamped.

Fig. 5 is a view in horizontal section showing the fastening in a position similar to that shown in Fig. 3.

Fig. 6 is a detail consisting of two views in plan and side elevation of the nose of the operating handle.

Fig. 7 is a detail view showing a slight modification in the keeper to provide for adjustment.

Referring to the drawings by numbers, like numbers indicating like parts in the several views, 10 indicates the side of a car, and 11 a car post, or any suitable abutment. An aperture 12 is provided in the side of the car leading to a keeper 13 mounted in a suitable recess in the post or abutment 11, and fastened therein in any suitable manner, as by the bolt 14.

The keeper 13 is provided with an opening 15 in its wall, and, in the present disclosure, in its bottom wall, which opening 15 is to be engaged by the fastening device which will be hereinafter described.

The construction thus far described forms the socket or keeper on the car abutment or jamb which cooperates with the fastening device.

The car door 16, which may be of any usual or desired construction, is here shown as the ordinary sliding car door, but it will be understood that my invention is equally applicable to swinging doors, such as are not infrequently used on cars.

The car door is provided with an aperture 17 in which the fastening device operates, and has bolted by through bolts, upon its outer face, the hanger plate 18 which supports the fastening, the through bolts 19 preferably engaging a plate 20 countersunk in the rear face of the door, so that a smooth level back is provided, permitting a snug fitting joint between the back of the door and the side of the car. The back plate 20 will be provided with an aperture 21 registering with the aperture 12 and the receiving keeper 13, so as to permit the fastening device to be thrust into place.

The hanger plate 18 may be provided with an enclosing flange 22, shown in dotted lines, to form a protecting housing for the parts to prevent their being broken off by side swiping.

The hanger plate 18 is provided with a supporting lug 23 projecting outwardly therefrom, in which lug is mounted a flanged pin 24, this lug and pin forming the immediate supporting means for the fastener.

The fastener consists of a toggle frame formed of two bars 25 pivotally connected at their ends to an operating handle 26, and pivotally connected at their other ends with a grab or latch member 27, the arrangement being such that the toggle frame thus formed is flexible, and capable of expansion and contraction to throw the parts into different relations with one another.

The handle member 26 has projecting downwardly therefrom a cam engaging member 28 provided with a suitable cam riding surface on its inner edge, and having, at its end, a notch or seat 29. Pref-

erably the handle member 26 will have formed therein a half-rounded seat 30 to engage and rock upon the pin 24.

Extending inwardly from the hanger plate 18 is a lug 31 on which is pivotally mounted a cam 32, this cam being here shown as formed by the pin 33 which co-operates with the cam riding surface on the member 28. The cam disk 32 has projecting from it any suitable handle member 34 by which it may be rocked.

In the position of the parts shown in Fig. 2, the fastener is shown withdrawn, and it will be seen that it hangs naturally from the supporting pin 24 lying close to the side of the car, and if the hanger plate 18 is provided with the flange 22 housed within that flange.

When the door has been brought to position for fastening, with the opening 21 in register with the aperture 12 and the keeper 13, the handle member 26 will be grasped, the device swung upward to horizontal position, and then the toggle frame thrust through the apertures 21 and 12 into the keeper 13, with the recess 30 of the handle member 26 engaging the pin 24, and the parts will then be in the position shown in Fig. 3, with the grab or fastening member 27 engaged with the opening 15 ready to be tightened up. It will be seen, of course, that as the engaging hook on the grab or fastening member 27 rides into the keeper, it will, when it reaches the opening 15, drop into that opening because of the pivotally connected toggle frame by which it is carried.

The device is then in position for tightening, and this tightening and fastening action will be accomplished by swinging the handle 34 downwardly from the position shown in Fig. 3 to the position shown in Fig. 4. This will ride the pin 33 of the cam disk 32 along the cam riding edge of the depending handle section 28, rocking that handle about the pin 24 as a center, and tending to collapse the toggle frame. This action will result in tilting the grab or fastening member 27, as shown in Fig. 4, and the hook or engaging end in the aperture 15 will strike the edge of that aperture and, through the connecting bars 25, the handle 26, and the pin 24, pull the door snugly to the side of the car. The pin 33 will ride down the cam edge of the member 28 until it drops into the seat or notch 29, where it will lock until it is released by throwing out of the handle 34. The handle 34 may, of course, be sealed, or otherwise fastened in position in any approved manner.

The end of the handle member 28′ which forms the cam riding surface will preferably be made of case hardened steel, and made removable, as shown in Figure 6, so that it may, if it becomes worn, be renewed. The cam pin 33 will also be formed of case hardened steel and removably mounted in the cam disk 32 for the purposes of reversal.

From the foregoing, it will be seen that the fastening device, which will be made of a length that will correspond to the standard dimensions as to thickness of door and thickness of wall, will effectually fasten a car door in normal condition, and will, if that door be warped, or in such other condition that it is not snug, pull the door closely into place and ensure a tight joint.

Another advantage, and an important one, is that with the fastening which I have described, difficulties now encountered in opening doors which have been loaded against, or where the cargo has shifted and jams the door, may be readily overcome and the door unfastened. It will be seen that even though there be pressure against the inside of the door to a very considerable extent, and such as would bind and prevent the throwing out of an ordinary fastener, there would be no difficulty in releasing the fastener herein shown. The grab or fastening member 27 has its independent rocking movement, and the moment the cam handle is thrown out and the handle member 28 released, the toggle frame may be rocked and the grab 27 tilted clear of the edge of the aperture 15, as shown in Fig. 3, the toggle frame lifted, and the fastening readily withdrawn without regard to pressure against the door tending to bind the parts.

As shown in Fig. 1, a door may, of course, be provided with one or more of these fasteners. Preferably, as shown in Fig. 1, there will be a fastener for both the front and the rear edges of the door, so that both ends of the door may be tightly clamped and a snug joint ensured. The top and bottom tracks and the door runners, with which car doors are provided, tend always to hold the top and bottom of the door, and warping and gaping of the door ordinarily takes place at the front and back edges.

In handling certain commodities, such, for example, as flour, where it is highly desirable that moisture, due to driving rains, shall not penetrate, the fastening device here shown is of particular value, for the joints between the front and back edges of the door and the car may be sealed with paper, or other fabric, as is customary, and then, by clamping the door in the manner described, a weatherproof joint can be provided. By the use of this device, car doors may be so effectually fastened and such tight joints provided that the practice of cleating the doors, or nailing them, which is now resorted to where warping has separated the door and the body of the car, and which is a destructive practice, is done away with.

Under certain conditions, it may become desirable to adjust the fastener mechanism so as to ensure the proper relation of the

grab or fastening member 27 and the aperture 15 in the keeper. This may be done in various ways, and one convenient method of accomplishing this is shown in Fig. 7.

In the construction there shown, the keeper 35 is mounted in a recess 36 which permits it to move longitudinally so that the aperture in its wall, which is to be engaged by the grab, may be shifted in one direction or the other. Preferably, I provide a socket 36 in which the forward end of the keeper 35 telescopes, which socket is set flush with the outside wall of the car and will hold the forward end of the keeper 35 always in proper position. The rear end of the keeper 35 is provided with a wall 37 through which passes a bolt 38 secured in any suitable manner, as by the nut 39, the rear end of the bolt being threaded into a plate 40 secured to the wall of the recess, and there held in any adjusted position by a jam nut 41. The rear end of the bolt will be formed to receive any suitable turning tool. It may be squared to receive a wrench or nicked to receive a screw driver, as shown. By this means the bolt 38 may be adjusted in the plate 40 after the jam nut 41 has been loosened up, and the keeper 35 moved in either direction so as to bring the aperture 15 into proper relation to the grab or fastening member 27.

I have shown the device as applied to the vertical edges of a door, and as operating in a vertical position, but it will be clear that it is equally operable when applied in a horizontal position, or, in fact, at any angle.

Changes in structure or design from what is here shown may be made and other mechanical expedients, which are the equivalents of those illustrated, may be adopted without departing from the range of my invention.

I claim:—

1. In a door fastener, the combination of a keeper, a latch, means for engaging said latch with said keeper, and a supplemental means for shifting said latch in said keeper after being engaged therewith to tighten or release it.

2. In a door fastener, the combination of a keeper, a latch, means for engaging said latch with said keeper, and independent means for shifting said latch in said keeper after it is engaged therewith to tighten or release it.

3. In a door fastener, the combination of a keeper, a latch, means for engaging said latch with said keeper, and means for rocking said latch independently in said keeper after they are engaged to tighten or release it.

4. In a door fastener, the combination of a keeper, a latch, a handle, a pivotal connection between said handle and said latch for engaging said latch with said keeper, and means for rocking said handle and latch to tighten or release said latch in said keeper.

5. In a door fastener, the combination of a keeper, a latch, a handle, a toggle frame connecting said handle and said latch, and means for expanding or collapsing said toggle frame to release or tighten said latch in said keeper.

6. In a door fastener, the combination of a keeper, a latch, a handle, a toggle frame connecting said handle on said latch and manipulable to engage said latch with said keeper, and means engaging said handle to expand or collapse said toggle frame and release or tighten said latch in said keeper.

7. In a door fastener, the combination of a keeper, a latch, a handle, a toggle frame connecting said handle and latch, a lever, and means engaging said lever to expand or collapse said toggle frame and release or tighten said latch in said keeper.

8. In a door fastener, the combination of a keeper, a latch, a handle, bars pivotally connecting said handle and latch to form a toggle frame, and means to expand or collapse said toggle frame and release or tighten said latch in said keeper.

9. In a door fastener, the combination of a keeper, a latch, a handle, bars pivotally connecting said handle and latch to form a toggle frame, a lever on said handle, and means engaging said lever to expand or collapse said toggle frame and release or tighten said latch in said keeper.

10. In a door fastener, the combination of a keeper having a latch opening in its wall, a latch, a handle, bars pivotally connecting said handle and forming a latch manipulating toggle frame to engage said latch with the latch opening, a lever depending from said handle, and means engaging said lever to expand or collapse said toggle frame and release or tighten said latch in the latch opening.

11. In a door fastener, the combination of a keeper having a latch opening in its bottom wall, a latch, a handle, bars pivotally connecting said handle and forming a latch manipulating toggle frame to position said latch to engage by gravity the latch opening, a lever depending from said handle, and means engaging said lever to expand or collapse said toggle frame and release or tighten said latch in the latch opening.

12. In a door fastener, the combination of a keeper, a latch, a pivotally mounted handle, bars connecting said handle and latch and forming a toggle frame by which said latch may be manually manipulated, a lever extending from said handle, and means engaging said lever to rock said handle on its pivot, expand or collapse said frame, and release or tighten said latch in said keeper.

13. The combination of a door having an aperture therethrough, a door jamb, a keeper

mounted in said jamb, a latch, a handle, bars pivotally connecting said latch and handle to form a toggle frame, means on said door to support said frame in operative or inoperative position, and means to expand or collapse said toggle frame when in operative position to release or tighten said latch in said keeper.

14. The combination of a door having an aperture therethrough, a door jamb, a keeper mounted thereon, a latch, a handle, bars pivotally connecting said latch and handled and forming a latch manipulating toggle frame, a pivot member on said door to support said frame in operative and inoperative positions, a lever on said handle, and means engaging said lever to expand or collapse said toggle frame and release or tighten said latch in said keeper.

15. The combination of a door having an aperture, a door jamb, a keeper mounted in said jamb in line with the aperture in said door, a latch, a handle, bars connecting said latch and handle and forming a toggle frame by which said latch may be shifted to operative or inperative positions, a pivot member on said door to support said frame in operative or inoperative positions, a lever on said handle, means engaging said lever to rock said frame and tighten said latch in said keeper, and means on said lever to lock the lever actuating means in one position.

16. In a door fastener, the combination of a keeper, a pivoted latch, means for engaging said latch with said keeper, means for shifting said latch independently to release or tighten it in said keeper, after it is engaged therewith, and supplemental means to lock said latch shifting means in latch tightening position.

17. In a door fastener, the combination of a keeper, a pivoted latch, means for engaging said latch with said keeper, means for rocking said latch on its pivot to release or tighten it in said keeper, and means to lock said latch rocking means in latch tightening position.

18. In a door fastener, the combination of a keeper, a latch, a handle for engaging said latch with said keeper, a pivotal connection between said handle and latch, permitting relative movement between said connected handle and latch to release or tighten said latch in said keeper, and means adapted to engage the handle to lock it in latch tightening position.

19. In a door fastener, the combination of a keeper, a latch, a handle for engaging said latch with said keeper, bars pivotally connecting said handle and latch to form a toggle frame, a lever on said handle, means engaging said lever to rock said toggle frame and release or tighten said latch in said keeper, and means to lock said lever and its actuating means in latch tightening position.

20. In a door fastener, the combination of a keeper, a latch, a handle for engaging said latch with said keeper, bars pivotally connecting said handle and latch to form a toggle frame, a lever projecting from said handle, means engaging said lever to rock said toggle frame and release or tighten said latch in said keeper, and means on said lever to engage and hold said latch actuating means in latch tightening position.

21. In a door fastener, the combination of a keeper, a latch, a handle for engaging said latch with said keeper, bars pivotally connecting said handle and latch to form a toggle frame, a lever projecting from said handle, means engaging said lever to rock said toggle frame and release or tighten said latch in said keeper, and a notch on said lever to engage and hold said latch actuating means in latch tightening position.

22. In a door fastener, the combination of a keeper, a latch, a handle to engage said latch with said keeper, bars pivotally connecting said handle and latch to form a toggle frame, a lever on said handle, a manually operated rocker arm engaging said lever to shift said toggle frame and release or tighten said latch in said keeper, and a notch on said lever to engage and hold said rocker arm in latch tightening position.

23. In a door fastener, the combination of a latch, a latch keeper, a keeper engaging socket, and means for adjusting said keeper in said socket relative to said latch.

24. In a door fastener, the combination of a latch, a recessed keeper to receive said latch having a latch opening in its wall, a socket in which said recessed keeper slides, and means for adjusting said keeper in said socket relative to said latch.

25. The combination of a door, a latch carried thereby and shiftable to and from locking and unlocking positions, a door jamb, a recessed keeper having a latch receiving aperture in its wall mounted on said jamb, a socket mounted on said jamb in which said keeper slides, and means to adjust said keeper in said socket to and from said latch.

26. The combination of a door having an aperture therethrough, a latch on said door shiftable through said aperture to and from locking and unlocking positions, a door jamb, a socket on said jamb with which the aperture in said door may be aligned, a keeper having a latch engaging opening in its wall slidably mounted in said socket, and means for adjusting said keeper to and from said latch.

27. The combination with a wall and a door adapted to close an opening therein, of a fastening comprising a keeper secured to the wall, a latch mounted on the door and adapted to be positioned to extend trans-

versely of the thickness of the door into engagement with the keeper, or to depend from its support on the door, and means for engaging the latch when in its extended position adapted to force the door into close contact with the wall and lock the latch in engagement with the keeper.

28. The combination with a wall and a door adapted to close an opening therein, of a fastening comprising a keeper secured to the wall, a latch, a handle connected with the latch and adapted to move it to and from engaging relation with the keeper, and a lock supported independently of the latch and handle and adapted to cooperate with the handle, when the latch is in engagement with the keeper, to force the door close against the wall and prevent disengagement of the latch and keeper.

29. The combination with a wall and a door adapted to close an opening therein, of a fastening comprising a keeper secured to the wall, a latch, a handle pivotally connected with the latch and adapted to move it bodily to and from engagement with the keeper, and a cam lock adapted to be adjusted to cooperate with the handle to force the door close against the wall and to prevent disengagement of the latch and keeper.

30. The combination with a wall and a door adapted to close an opening therein, of a fastening comprising a keeper secured to the wall, a latch mounted on the door and adapted to be positioned to extend transversely of the thickness of the door into engagement with the keeper or to depend from its support on the door, a handle connected with the latch for moving it to and from a position to engage the keeper, and a cam pivotally mounted on the door and adapted to be adjusted to cooperate with the handle to force the door close against the wall and lock the latch in engagement with the keeper.

In testimony whereof I have hereunto set my hand.

JAMES AMOS HICKS.