Feb. 23, 1943. C. OLSON 2,311,688

DOOR LATCH

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Fig. 1.

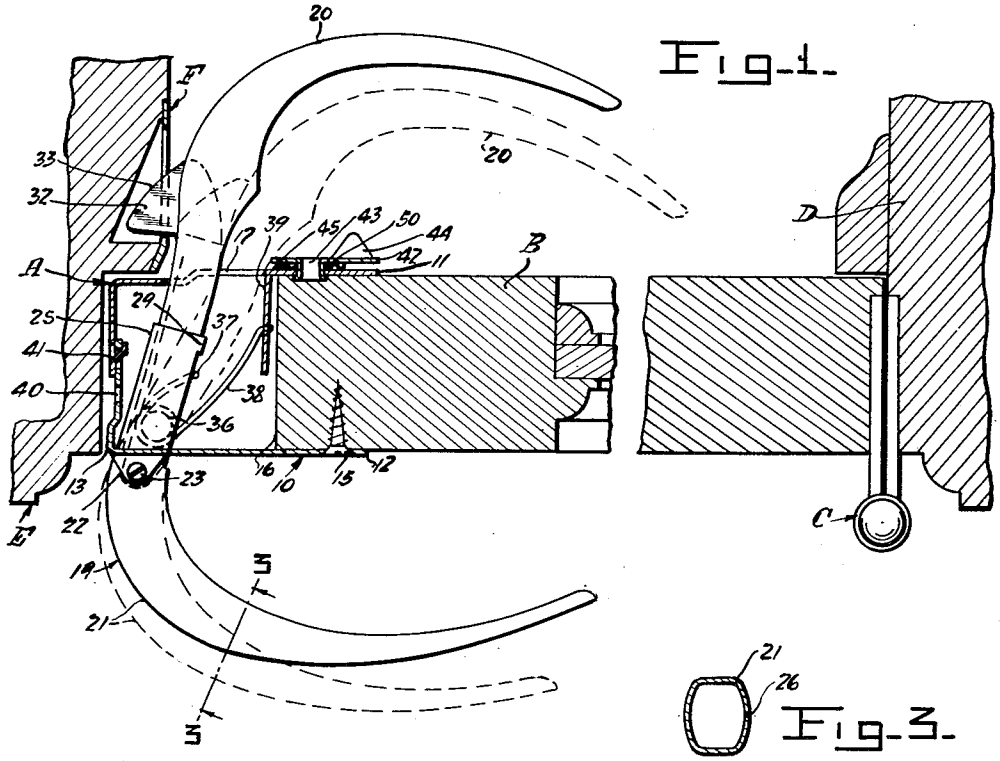


Fig. 3.

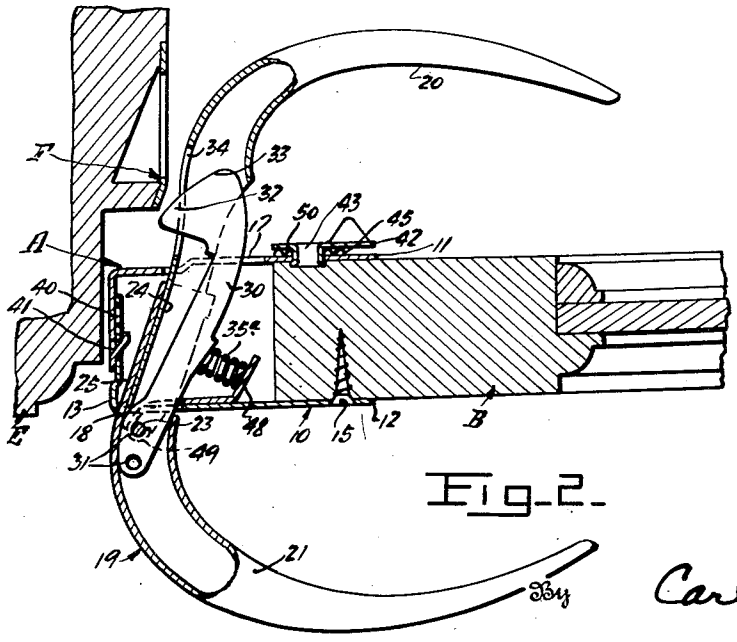


Fig. 2.

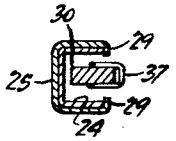


Fig. 4.

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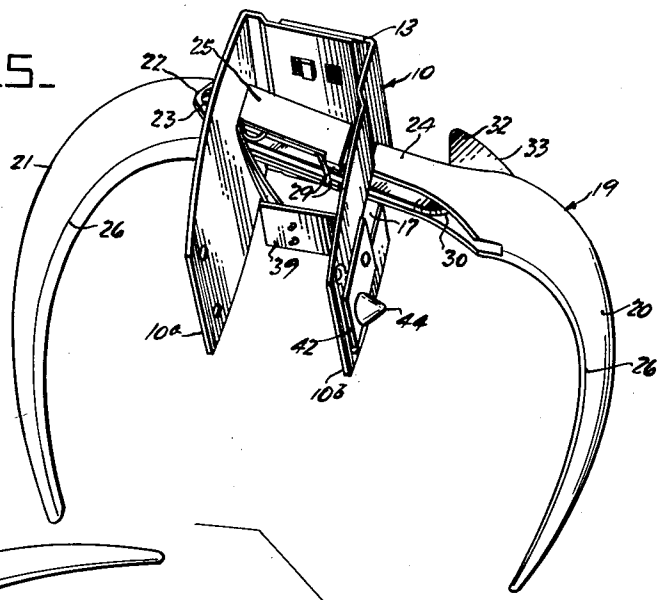
Attorneys

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DOOR LATCH

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Fig-5-



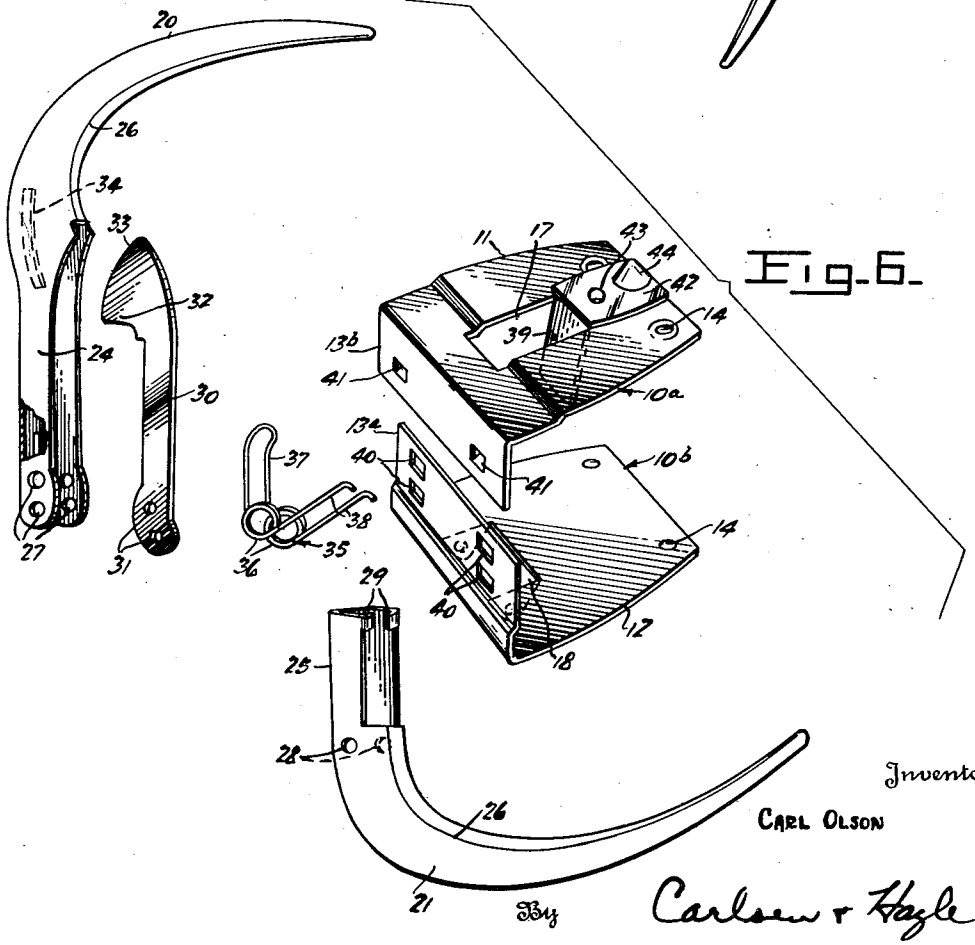


Fig-6-

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2,311,688

DOOR LATCH

Carl Olson, Minneapolis, Minn., assignor to Wright Products, Inc., Minneapolis, Minn., a corporation of Minnesota

Original application February 12, 1940, Serial No. 318,545. Divided and this application April 25, 1942, Serial No. 440,450

5 Claims. (Cl. 292—126)

This invention relates to improvements in door latches particularly useful on screen and storm doors, but suitable for use as well on other forms of closures.

The invention has particular reference to door latches of the type in which a curved handle is mounted through the door with portions disposed both inside and outside of the door. The latching mechanism is such that a push on the handle from the inside of the door will unlatch and swing the door outwardly, while a pull on the handle from the outside will both unlatch and open the door. The single action of either pushing or pulling upon the handle in the normal manner to open the door will thus serve also to unlatch the door without requiring other manipulation of the handle.

The primary object of the present invention is generally to improve the construction of such latches and to provide an improved frame or bracket structure therefor. Another object is to provide a bracket or frame structure having adjustable parts arranged to fit over and around the door edge and capable of adjustment to fit a door of any usual or conventional thickness.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

Fig. 1 is a cross section through a door and fragments of the adjacent door frame, showing my improved latch in place and indicating, in dotted lines, the handle movement to unlatch the door.

Fig. 2 is a similar view, with handle parts in section, showing the door in act of closing and indicating the independent action of the latch member, this view also showing a modified arrangement of the latch spring.

Fig. 3 is a cross section through the handle, along the line 3—3 in Fig. 1.

Fig. 4 is a cross section through meeting ends of the handle sections, showing also a cross section through the latch member and a portion of the spring associated therewith.

Fig. 5 is a perspective view of the latch removed from the door.

Fig. 6 is a composite perspective view of the various main parts of the latch in separated form.

This application is a division from my copending application for patent on a Door latch, Serial No. 318,545, filed February 12, 1940.

Referring more particularly and by reference characters to the drawings, A represents generally by improved latch mounted upon a door B hinged at C to one side D of the door frame to swing toward and away from the opposite side E of the frame. This door may of course be of any well known type or kind. A keeper F is mounted and recessed in the frame E to be engaged by the latch for holding the door closed.

The latch itself comprises a mounting member, bracket, or channel 10 of substantially U-shaped form having spaced sides 11 and 12 to fit over inner and outer faces of the door B adjacent its free edge, and a bight 13 to span said free edge, the sides having openings 14 to pass screws 15 for mounting the latch on the door. The door edge is cut out as indicated at 16, to afford working space within member 10 and the sides 11—12 are of course of such size as to wholly conceal this opening.

The sides of the member 10 have openings 17—18 to receive and clear the latch handle shown generally at 19. This handle is arcuate or substantially horseshoe-shaped form and, when mounted with its central portion through the mounting member 10, provides inner and outer handle sections or levers 20 and 21. Ears 22 are struck out from the outer side 12 at upper and lower margins of the opening 18 therein and are apertured to receive a pivot pin or screw 23 which extends pivotally through the handle to mount the same for oscillating movement with respect to the door and frame.

The handle 19 is made in two sections having the curved portions constituting the aforesaid inner and outer handle levers 20 and 21 and relatively straight meeting end portions or shanks 24 and 25. These parts are formed up from sheet material and the portions 20 and 21 are rolled to a hollow shape with the seams 26 turned toward the door, while the shank portions 24 and 25 are channeled or U-shaped in cross section. In assembly the shanks 24 and 25 are telescopically related and are retained in relative engagement by openings 27 and 28 in their respective ends which, when brought into registry, receive the pivot pin 23. The shank 24, which is longer, has spaced pairs of the openings 27 so that the effective length of the medial portion of the handle may be varied by selective registry of these openings with the pin, for a purpose which will hereinafter appear. The outer shank 25 carries lugs 29 which are turned inwardly over the inner shank 24 to prevent the two sections of the handle from jackknifing about the pin 23.

A latch member 30 is mounted within the han-

dle section or lever 20 with one end pivoted, as by either of spaced openings 31, upon the pin 23. The inner, free end of this latch member has a hook 32 adapted to engage the keeper F and has a nose or cam face 33 to slide over the outer edge of the keeper as the door closes. In this action the latch member oscillates about its pivot connection to the pin 23. The handle has an elongated slot 34 to clear this hooked end of the latch member, and the movement of the latch toward the keeper F is limited by engagement with an outer margin of this slot.

A wire spring 35 is provided and has spaced torsional coils 36 which may be fitted into the telescoped shanks 24—25 of the handle at opposite sides of the latch member 30. The bight end 37 of the spring then straddles the latch member, while the free legs 38 hook into and bear upon a suitably apertured ear 39 which is punched inwardly from the bracket side 11 as the opening 17 is formed. The spring is thus so mounted that it yieldably resists the movement of the latch member 30 away from the keeper F and also resists swinging movement of the handle such as would move the latch member in this same direction.

In lieu of this torsional spring 35 I may employ an expansion coil spring 35a which, as shown in Fig. 2, is braced between the latch 30 and a small bracket 48. Both the latch and bracket have small bosses to retain the spring in position to resist unlocking movement of both the latch and the handle, and the bracket may be retained in place by hooking its end 49 around the pivot pin 23 as shown.

In operation it will be readily evident that a push on the inner handle lever 20, or a pull on the outer handle lever 21, will oscillate the handle on the pivot 23 swinging the hook 32 of the latch member out of engagement with the keeper F so that a continuation of either the pushing or puling force may open the door. The spring 35 or 35a of course returns the handle to normal position when released, said return movement being limited by engagement of the handle with the margin of opening 17. As the door closes the nose 33 of the latch member will cam over the keeper F until the hook 32 springs back to latching position. This movement of the latch member causes no corresponding swinging movement of the handle since the latch is freely mounted with respect to the handle and as a result there is no need, as when closing the door from the outside, to pull upon the handle while pushing to close the door. Also as will be noted, the inner handle lever 20 may stand further clear of the frame E than is the case when the handle itself engages the keeper.

Attention is directed to the fact that the pivot pin 23, about which both the handle 19 and latch member 30 oscillate, is located as far as possible toward the outer or free edge of the door spanned by the portion 13 of the latch. As a result of this condition the latch member stands normally in a "cocked-back" or oblique angle relative to the arcuate path through which the door moves so that the pull upon the latch, should it be attempted to open the door without unlatching it, will be directed against the locking face of the latch hook 32 in such manner as to cause the hook to work inward on the keeper. It is thus manifestly impossible for the latch to be worked clear of the keeper by a push or pull on the door itself, and the spring tension need not be depended upon to maintain the latching condition, as would be the case were the pivot 23 located further to the right (in Figs. 1 and 2) away from the free edge of the door. This is an important feature of my invention.

Another important feature of my invention is the adjustment of the latch to doors of various thicknesses. To accomplish this I make the mounting member 10 in two complementary sections or pieces referred to in Fig. 6 as 10a and 10b, with bight or base portions overlapping to form the bight 13 across the vertical free edge of the door. The outer portion designated at 13a has spaced pairs of slots 40 while the inner portion has a pair of lugs or teeth 41 punched inward. These lugs may be engaged in either pair of the slots 40 to retain the sides of the mounting member in either of two differently spaced positions. As these adjustments are made the pin 23 is inserted through the proper openings 27 and 31 in the handle and latch member in order to accommodate the bight portion of the handle to the thickness or spacing between the sides of the mounting member and maintain the proper relative position of the parts. The latch is shown as mounted on a thick door in Fig. 1 and as reduced or adjusted to a thinner door in Fig. 2 to clearly bring out this feature. The bight portion 13a is inset as shown to bring the lapped portions into line in their assembled relation.

A safety lock member 42 is pivotally mounted on the inner side 11 of the latch and normally stands clear of the opening 17 to permit free operation of the handle. However, when this member is rotated through one hundred eighty degrees (180°) its longer end will contact the handle and the latch member 30 thus preventing either from swinging to clear the latch from the keeper F as will be understood. The latch member is pivotally mounted by a hollow rivet 43 through the bracket side 11 and has a boss 44 formed outward on its longer end as an aid in manipulating it to locking and unlocking positions. A spring washer 50 and points or detents 45 punched out from the side 11 engage the member to aid in holding it in adjusted positions and prevent it from contacting and scratching the adjacent face of the side 11.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. A door latch comprising a mounting member having spaced sides adapted to be secured upon opposite sides of a door adjacent one edge thereof, the said sides including portions turned over the edge of the door in overlapping engagement, quickly engageable tongue and slot connections on the said overlapping portions for adjusting and securing said portions in selected relative positions to thereby space the sides according to various door thicknesses, and latch means carried by the mounting member.

2. A door latch comprising a mounting member having spaced sides adapted to fit over the opposite sides of a door adjacent one edge thereof, the said sides including portions turned over the edge of the door in overlapping engagement, one of said portions having spaced openings, hooks on the other portion adapted to selectively engage the said openings to thereby vary the distance between the sides to accommodate doors

of different thicknesses, and latch means associated with the mounting member.

3. A door latch comprising a mounting bracket of U-shaped form adapted to fit over the edge and adjacent sides of a door, the said bracket including separate side sections having overlapping portions adapted to span the edge of the door, means for securing the said overlapping portions together in adjusted relation to thereby vary the spacing between the sides to accommodate doors of at least two different thicknesses, a latch handle comprising inner and outer sections adjustably connected and passing through the sides of the bracket, and pivot means for the handle on one side of the bracket.

4. A door latch comprising a mounting bracket of U-shaped form adapted to fit over the edge and adjacent sides of a door, the said bracket including separate side sections having overlapping portions adapted to span the edge of the door, means for varying the spacing between the sides to accommodate doors of at least two different thicknesses, the said sides having openings, a latch handle comprising inner and outer sections having meeting ends overlapped and projecting through the said openings, pivot means for the handle on one side of the bracket, and one of the said handle sections being adjustable with respect to said pivot means to thereby vary the effective length of the overlapped ends of the handle sections in accordance with spacing adjustments of the bracket sides.

5. A door latch comprising a substantially U-shaped mounting member adapted to fit over the sides of a door adjacent one edge, the said mounting member having openings, a latch handle comprising inner and outer sections having telescopically related ends passed through the said openings, a pivot pin on the mounting member engaging one section of the handle, and the other handle section having spaced openings for selective engagement with the pivot pin to vary the length of that portion of the handle which passes through the mounting member.

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