July 27, 1965 F. J. RUSSELL ETAL 3,197,246

SLIDING DOOR LATCH SPACER

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Fig. 1

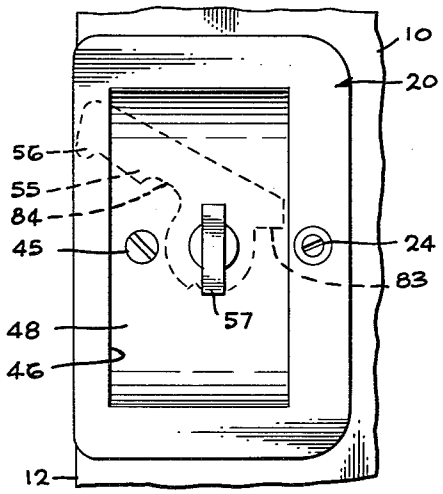
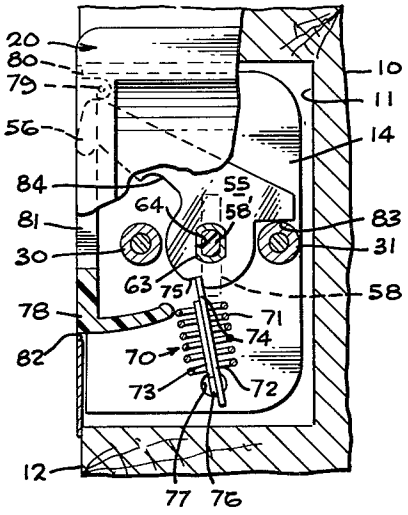


Fig. 2



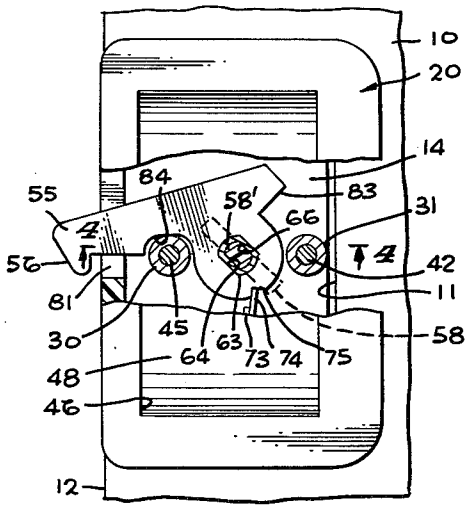


Fig. 3

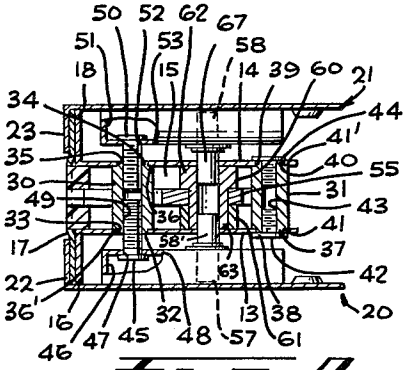


Fig. 4

FRED J. RUSSELL
GEORGE B. SOLOVIEFF
INVENTORS

BY

Beehler & Shanahan

ATTORNEYS

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1

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SLIDING DOOR LATCH SPACER

Fred J. Russell, 3800 Don Felipe Drive, Los Angeles, Calif., and George B. Solovieff, San Clemente, Calif.; said Solovieff assignor to said Russell

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The invention here under consideration relates to latches for sliding doors and has particular reference to a simplified construction, wherein parts which are normally employed to hold sundry portions of the casing together, are counted on for additional functions relating to latch operation.

Although sliding doors and latches for operating them are by no means new to the art, nevertheless, because of the current high cost of building space, and particularly residential building space, sliding doors have become increasingly popular. This increase in employment of sliding doors has correspondingly increased the use of sliding door hardware and particularly latches, which has prompted considerable redesign in the interest of improving the simpliicty and compactness of door latches and locks of this particular type. Although the current popularity and demand for compact sliding door latches has resulted in an assortment of innovations, certain limitations have yet to be overcome in order to construct a sliding door latch comparable to the more conventional door latch as a positive, secure, and durable piece of hardware.

It is therefore an object of the invention to provide a new and improved sliding door latch structure, wherein one of the connecting parts serving primarily as a spacer in the casing is made to serve also as a stop to limit movement of a catch member at one of its positions of rest.

Another object of the invention is to provide a new and improved sliding door latch structure, wherein at least one of the fastening parts used for assembly of the device is made to perform a triple purpose, namely, as a spacer, a stop to limit movement of the catch means to one of its positions of rest and also as a connection for sundry parts of the device.

Still another object of the invention is to provide a new and improved door latch structure, particularly well adapted to sliding doors, wherein at least one of the parts serving the purpose of a spacer is threaded for cooperation with another threaded connecting part, thereby adding to the function of the spacer, while at the same time serving to minimize the number of necessary parts included in the device.

Also included among the objects of the invention is to provide a new and improved sliding door latch structure which is particularly simple in its nature, in that both moving and stationary parts have been reduced to a relative minimum and permitting them accordingly to be constructed with a substantial degree of ruggedness, thereby to provide a durable, but inexpensive structure.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the appended claims and illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a side elevational view of the sliding door latch mounted upon a door.

FIGURE 2 is a side elevational view siimlar to FIGURE 1, but substantially broken away to show the interior and showing the catch member in withdrawn position.

FIGURE 3 is a side elevational view, broken away in a slightly different fashion from FIGURE 2, and showing the catch member in extended position.

FIGURE 4 is a cross sectional view taken on the line 4—4 of FIGURE 3.

2

In an embodiment of the invention chosen primarily for illustrative purposes, there is shown a sliding door 10, provided with an appropriate cutout or recess 11 for reception of the latch, the recess extending inwardly from an end edge 12 of the door 10. The casing in the chosen embodiment comprises opposite side plates 13 and 14, providing between them a space or chamber 15. The side plate 13 has an outwardly bent flange 16, in engagement with a front plate 17. Similarly, the side plate 14 has an outwardly bent flange 18, also in engagement with the front plate 17. The front plate 17 is attached to the flanges by conventional means, not shown.

On the side of the casing occupied by the side plate 13, there is provided an escutcheon plate 20, and on the opposite side is a similar escutcheon plate 21. The escutcheon plate 20 has an inwardly turned edge 22 which overlies that portion of the front plate 17 to which the flange 16 is attached. Similarly, an inwardly turned edge 23 of the escutcheon plate 21, overlies the front plate 17 on the opposite side. Screws 24 are employed to secure the escutcheon plates 20 and 21 to the door 10.

In order to determine the breadth of the space or chamber 15, spacer sleeves 30 and 31 are provided. The spacer sleeve 30 is provided with a projection 32 extending into a hole 33 in the side plate 13. At the opposite end is a projection 34 extending into an axially aligned hole 35 in the side plate 14. Inasmuch as the projections 32 and 34 are of smaller diameter than the large diameter of the spacer sleeve 30, shoulders 36, 36' are formed, which axially engage inside surfaces of the respective side plates 13, 14.

The spacer sleeve 31 is similar in that it has a projection 37 at one end extending into a hole 38 of the side plate 13 and a projection 39 extending into a hole 40 of the side plate 14. Here again, the projections form shoulders 41, 41' which axially engage the inside face of the respective side plates 13, 14. In the last instance, a screw 42 extends from the outside of the side plate 13 into threaded engagement with a threaded hole 43 in the spacer sleeve 31. At the opposite side, a screw 44 extends through the opposite side plate 14 into threaded engagement with the same hole 43.

A somewhat similar arrangement prevails with respect to the spacer sleeve 30, except that a somewhat longer screw 45 extends initially from the bottom of a depression 46 through a hole 47 in the bottom 48 and then through the projection 32 into a threaded hole 49 in the spacer sleeve 30. On the opposite side, a corresponding longer screw 50 extends from the bottom of a depression 51 in the escutcheon plate 21, through a hole 52, in a bottom 53, thence through the projection 34 into threaded engagement with the same threaded hole 49 in the spacer sleeve 30.

For the door latch to serve its intended purpose, there is provided a catch member 55 having a hooked end 56. The catch member, as previously noted, is shown in withdrawn position in FIGURE 2 and in extended position in FIGURE 3. The catch member is mounted so that it can pivot from one position to the other in response to manipulation of either the handle 57 in the depression 46, or the handle 58 in the depression 51.

To pivotally mount the catch member 55 in the positions shown, and for the operation described, there is provided a hub mechanism including a central hub member 60 and a hub spacer sleeve 61. The hub member 60 has a spacer portion 62 serving as a spacer between the inside face of the side plate 14 and the adjacent face of the catch member 55. A reduced portion 63

extends through a hole 64 in the catch member 55 to the opposite side until it is in a position of engagement with the side plate 13. The spacer sleeve 61 fits over the reduced portion 63, and serves as a spacer between the inside face of the side plate 13 and a corresponding face of the catch member 55.

The hand hold 57 is provided with a shank 58, noncircular in cross sectional shape, which fits with a snug sliding, but removable fit into a noncircular opening 66 in the hub member 60. Similarly, on the opposite side, a shank 67 of the handle 58 is nonrotatable and fits slidably, but firmly into the same noncircular opening 66 of the hub member 60, already described. Although not previously mentioned, the hole 64 in the catch member 55, is also noncircular, as is the outside perimeter of the reduced portion 63; and with this arrangement, the hub member 60 is nonrotatable with respect to the catch member 55. Accordingly, the catch member can be shifted from one position to another by either of the handles 57 or 58.

To retain the catch member in one position or another, there is provided a spring assembly indicated generally by the reference character 70. The spring assembly consists of a coiled spring 71, provided with spring guides 72 and 73. The spring guide 72 has an end portion 74 which is received in a cutout configuration 75 on the catch member 55. In both positions of the catch member, the endmost coil of the spring 71 at its inner end, by employment of shoulders (not shown), presses the end portion 74 into the engagement referred to. The other spring guide 73 has transverse projections 76 which extend into suitable holes 77 (not shown), 77' in the respective side plates 13, 14, whereby to pivotally support the spring assembly. Moreover, through means not shown, the endmost coil of the spring 71 bottoms upon a portion of the transverse projection 76 in order that the spring may be confined between the spring guides in a position tending to move the guides endwise under the expansive tendency of the spring in axial direction.

A finger hook 78 is pivotally mounted by means of a pivot pin 79 to the side plates 13 and 14. An overhanging end 80, of the finger hook, permits it to be tilted outwardly to a position where it can be grasped by the fingers. In the finger hook is a rectangular slot 81 into which the hooked end 56 of the catch member 55 extends and a rectangular aperture 82 in the front plate 17 accommodates the finger hook.

When the catch member is in the withdrawn position shown in FIGURE 2, a shoulder 83 on the rear portion of the catch member 55 engages the spacer sleeve 31 and stops the pivoting of the catch member 55 in that position, and the shoulder 83 continues to be urged into engagement with the spacer sleeve 31 by action of the spring assembly 70 with the cutout configuration 75.

When, by manipulation of one of the hand holds 57, 58, the catch member is rotated to the extended position of FIGURE 3, it is stopped in that position by engagement of the bottom of a recess 84 with the outside circumference of the spacer sleeve 30. In this position also, action of the spring assembly 70 against the catch member 55, tends to hold the bottom of the recess 84 into engagement with the spacer sleeve 30 in a releasable fashion until it is rotated out of that position and back to the position of FIGURE 2 by manipulation of one or another of the handles 57, 58 or by pressure against the outer end of the hooked end 56 of the catch member 55.

From the foregoing description, it will be clear that the spacer sleeves 30 and 31 in each instance serve a multiple purpose, namely that of spacing the side plates 13 and 14 from each other, that of providing a threaded

attachment for respective screws on opposite sides, whereby the plate portions generally of the device and its casing are held in position with respect to each other and the interior, and also, most especially, that of providing stops to limit rotation of the catch member to the respective extended and retracted positions shown and described. Although the spacer sleeves 30 and 31 in the relationship disclosed perform the multiple function described for them, they are nevertheless of very simple, rugged construction.

While the invention has herein been shown and described in which is conceived to be a practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention which are not to be limited to the details disclosed herein but are to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

Having described the invention, what is claimed as new in support of Letters Patent is:

1. In a sliding door latch, a casing comprising a pair of spaced side plates, a catch member, a hub member rotatably mounting said catch member in the casing, said catch member being movable between an extended position and a retracted position in response to rotation of the hub member, separator means on the hub means between opposite sides of the catch member and the side plates of the casing and a spacer at least equal in length to the aggregate of the length of said separator means and thickness of said catch member extending between said side plates transversely across the plane in which said catch member moves, said spacer being located to be in engagement with said catch member in one of the positions of said chatch member whereby to limit movement of said catch member at said one position.

2. In a sliding door latch, a casing comprising at least one side plate, a catch member rotatably mounted in the casing and movable between an extended position and a retracted position, a threaded spacer extending from said plate transversely inwardly across the plane in which said catch member moves, escutcheon means, a connector extending from said escutcheon means into engagement with said spacer whereby to interconnect with said side plate with said escutcheon means, said spacer being located to be in engagement with said each member in one of the positions of said catch member whereby to limit movement of said catch member at said one position.

3. In a sliding door latch, a casing comprising at least one side plate, a catch member rotatably mounted in the casing and movable between an extended position and a retracted position, a threaded spacer extending from said plate transversely inwardly across the plane in which said catch member moves, escutcheon plates on opposite sides of said casing, threaded connecting means between at least one of said escutcheon plates and said spacer whereby to interconnect said side plate with said one escutcheon plate, said spacer being located to be in engagement with said catch member at one of the positions of said catch member whereby to limit movement of said catch member at said one position.

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ALBERT H. KAMPE, *Primary Examiner.*

M. HENSON WOOD, JR., *Examiner.*