No. 857,922. PATENTED JUNE 25, 1907.

R. CAMPBELL.

SLIDING DOOR FASTENER.

APPLICATION FILED SEPT. 12, 1906.

Fig. 1.

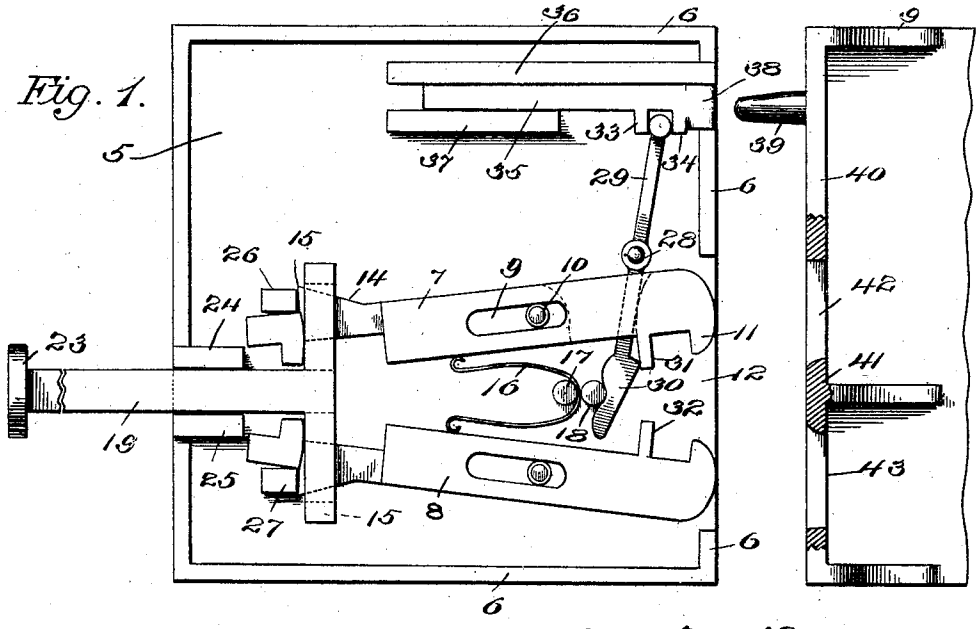


Fig. 2.

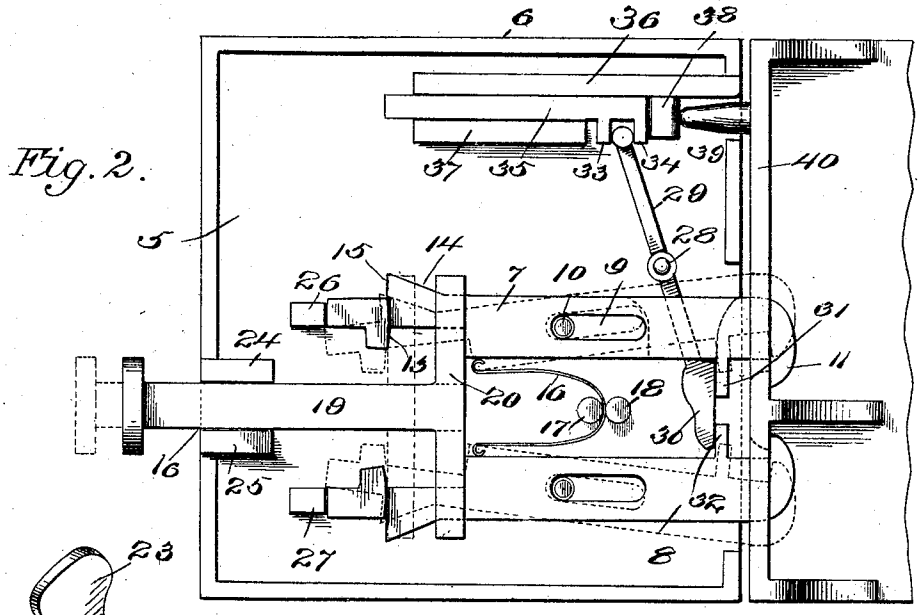


Fig. 3.

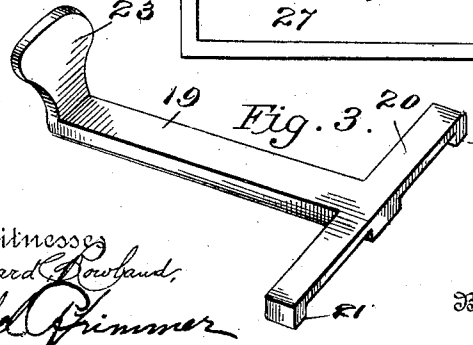
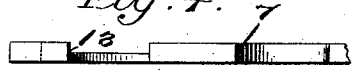


Fig. 4.



Witnesses,
Edward L. Rowland,
Mabel Grimmer

Robert Campbell
Inventor
By his Attorney Thos. H. Bowersock

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT CAMPBELL, OF BROOKLYN, NEW YORK, ASSIGNOR TO HUGO TOLLNER, OF BROOKLYN, NEW YORK.

SLIDING-DOOR FASTENER.

No. 857,922. Specification of Letters Patent. Patented June 25, 1907.

Application filed September 12, 1906. Serial No. 334,269.

To all whom it may concern:

Be it known that I, ROBERT CAMPBELL, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sliding-Door Fasteners, of which the following is a specification.

This invention relates to latching devices for sliding doors, and has for its object the provision of a device which will be automatic in action in latching and at the same time positive and dependable in operation, and which may be manipulated in unlatching with the greatest possible ease and speed.

A further object of the invention is to provide a hand-operated latch of the disappearing clutch type with the working parts incased in such a manner that there will be no projecting edges or angles to engage a garment of a person passing in or out through the door.

The present invention contemplates improvements in the latch shown and described by me in my application for Letters Patent filed December 6, 1904, Serial Number 235,704 and is similarly particularly applicable to the hatchway doors in elevator shafts. In improving upon my former device, I have endeavored, among other things, to reduce the number of parts, and therefore simplify the construction and decrease cost of manufacture without sacrificing efficiency and dependability.

The present invention, however, contemplates distinct improvements, although in a general way I rely upon the same principles of operation disclosed in the application aforesaid.

With the above and other ends in view, my invention consists, generally, in the employment with a suitable casing of a pair of latch-hooks having a co-operative clutch movement in and out of said casing, and novel means for operating said hooks; my invention further consists in novel means for effecting first the disengagement of said hooks and then their complete withdrawal into the casing at a single operation, and in means for effecting such double movement through the manipulation of a handle and movement thereof in the same direction as the opening door; and my invention further consists in various other novel details of construction and in combinations of parts all as hereinafter described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which

Figure 1 is a plan view of a latching device embodying my invention, the front plate of the casing having been removed. Fig. 2. is a similar view, with the working parts in a different position of adjustment. Figs. 3 and 4 are detail views, hereinafter described.

Referring now to the drawings in detail, I have shown the rear plate of the casing 5 between which and the front plate (not shown) the mechanism of my device is mounted. Suitable side-pieces 6 complete the casing. Slidably mounted between the plates of the casing is a pair of similar, co-operating latch-bars 7 and 8. These rods are opposite counterparts in construction and operation, and a description of one will suffice for both. Referring to the bar 7, therefore, I have shown the same provided with an elongated slot 9, within which is a stud or pin 10 fixed upon the plate 5 of the casing. This bar, and its counterpart 8, has, therefore, both a pivotal movement about the stud or pin 10 and a longitudinal, bodily movement limited by the length of the slot 9. The adjustment is such that when the pin 10 is at one end of the slot (as shown in Fig. 2) the hook 11 at the end thereof projects through the aperture 12 in the front side-piece 6 of the casing, the length of the slot being sufficient to permit of the complete withdrawal of the rod within the casing, as shown in Fig. 1. The interior end of this bar 7, and, similarly, its counterpart 8, is reduced in thickness to provide the shoulder 13, and the reduced portion is provided with a lateral bevel 14 terminating in a shoulder-stop 15. Compressed between the bars 7 and 8 and located interiorly of the pivots is the spring 16, which may obviously be of any desired pattern, but which I prefer to make of spring steel in the form of an elastic strip loosely retained between the studs or pins 17 and 18 upon the plate 5, and operating to exert a yielding pressure against each of said bars to separate or expand the inner ends of the same.

I have shown a T-shaped operating mem-

ber comprising the handle-bar 19 and the cross-piece 20. The latter is provided with the lugs 21 and 22, one at each end which, when said operating member is in adjustment, are located outside of and embrace the reduced and beveled portions of the bars 7 and 8. The handle bar 19 extends through a suitable aperture in the rear side-piece of the casing and terminates in any form of suitable handle or finger-grip 23. This bar 19 slides freely between the guides 24 and 25. Stops 26 and 27 on the plate 5 are located just at the extremities of the latch-bars 7 and 8, when the latter are in their forward or foremost position of adjustment, as indicated in Fig. 2.

Pivoted at 28 is the latching lever 29, having a head 30 adapted to impinge against the projections 31 and 32 on the latch-bars 7 and 8. The upper end of the lever 29 is loosely held between the jaws 33 and 34 on the bar 35, slidably held between suitable guides 36 and 37. When the door is unlatched, and the latch-bars are retracted, as indicated in Fig. 1, the head 38 of the sliding bar 35 is just flush with the outer edge of the casing, and in position to be engaged by the spur or projection 39 on the keeper 40. When the bar 35 is forced inwardly, the lever 29 will be operated to project the latch-bars 7 and 8 until the inner ends thereof clear the stops or lugs 26 and 27, when the action of the spring 16 will throw the hook ends of the rods toward each other to engage the opposite sides of the catch 41 between hook-openings 42 and 43.

The door being closed and latched, with the mechanism in the position indicated in Fig. 2, the handle 23 may be grasped by the operator and pulled in the direction of the movement of the door in opening, whereupon the lugs 21 and 22 of the cross-piece 20 first engage the inclines or bevels 14 and may be said to "ride up" the same to draw the inner ends of the bars 7 and 8 toward each other. This operation effects the release of the hooks, and continued movement of the bar 19 brings said cross-piece 20 into engagement with the stops 13 on the latch-bars 7 and 8, the ends of said bars 7 and 8 during their movement toward each other having cleared the stops 26 and 27. It is to be observed that the stops 26 and 27 are positively interposed against the inner ends of the latch-bars 7 and 8 when same are in their locking positions, as shown in Fig. 2. No accidental influence, such as, for instance, jarring of the door or vibrations in the building, can move the latch-bars out of engagement with the keeper 40 or the catch 41 thereon, and the locking engagement is, therefore, for all practical purposes, as fixed as if the latch bars were riveted into their locked position. The reflex tendency of the mechanism, which forces the latch-bars out of engagement with the keeper, is to release itself from operative engagement with said latch-bars; or, in other words, the tendency of the lugs 21 and 22, when the door is jarred, is to move down rather than up the inclines 14. When the latch-bars are in their full open or retracted position, the same stops 26 and 27 operate with almost equal positiveness to hold said bars in this position, said stops being then positively interposed to prevent lateral instead of longitudinal movement of said bars.

Many modifications of the minor details of my improved latch will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific details of construction herein shown and described.

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

1. In a sliding door fastener, the combination, with a casing adapted to be connected to the door, of two latch bars mounted within said casing to have both pivotal and longitudinal movement, said bars being provided with inwardly-directed hooks at their outer ends adapted to engage a keeper when said outer ends are projected beyond the casing, yielding means acting against said bars and normally holding their outer ends in engagement with said keeper, manually operated means for first forcing the inner ends of said bars toward each other and thereby separate the outer ends and release said hooks and then moving said bars longitudinally to bring the hooked ends within the casing, and means automatically operated upon closing the door to return said bars to latching position.

2. In a sliding door fastener, the combination, with a casing adapted to be connected to the door, of two latch bars mounted within said casing to have both pivotal and longitudinal movement, said bars being provided with inwardly-directed hooks at their outer ends adapted to engage a keeper when said outer ends are projected beyond the casing, a spring acting against the inner ends of said bars to force said ends apart and thereby normally hold said hooks in engagement with said keeper, a reciprocating member provided with a handle for manual operation, and connecting means between said member and said bars to first force the inner ends of said bars toward each other and thereby release said hooks and then move said bars longitudinally to bring the hooked ends within the casing.

3. In a sliding door fastener, the combination, with a casing adapted to be connected to the door, of two latch bars mounted within said casing to have both pivotal and longitudinal movement, said bars being pro-

vided with inwardly-directed hooks at their outer ends adapted to engage a keeper when said ends are projected beyond the casing, yielding means acting against said bars to force their outer ends toward each other and hold said hooks in engagement with said keeper, a reciprocating member provided with a handle for manual operation, connecting means between said member and said bars to effect at one stroke of the former first a pivotal movement of the latter to release said hooks and, second, longitudinal movement thereof to bring the hooked ends within the casing, and means automatically operated upon closing the door to return said bars and hooks to latching position and said member to position for subsequent unlatching operation.

4. In a sliding door fastener, the combination, with a casing adapted to be secured to the door, of two latch bars having inwardly-directed hooks at their outer ends for engaging a keeper and slots intermediate their ends, fixed pins within the casing extending into said slots, a spring acting against the inner ends of said bars to force the outer ends thereof toward each other and normally hold said hooks in engagement with said keeper, and a slidably reciprocating member for manual operation, said member being provided with means operating during a portion of its stroke to force the inner ends of said bars toward each other thereby spreading apart the outer ends thereof and releasing said hooks, and during the remainder of its stroke to move said bars longitudinally to bring said hooked ends within the casing.

5. In a sliding door fastener, the combination, with a casing adapted to be secured to the door, of two latch bars having inwardly-directed hooks at their outer ends for engaging a keeper and slots intermediate their ends, fixed pins within the casing extending into said slots whereby each of said bars has both a pivotal and a longitudinal movement, yielding means acting against the inner ends of said bars to force the outer ends thereof toward each other and normally hold said hooks in engagement with said keeper, a slidably reciprocating member provided with a handle for manual operation, connecting means between said member and said bars to effect during a portion of the stroke of the former the release of said hooks and during the remainder of said stroke their complete withdrawal into said casing, and means automatically operated upon closing the door to return said bars and hooks to latching position and said member to position for subsequent unlatching operation.

6. In a sliding door fastener, the combination, with a casing adapted to be secured to the door, of two latch bars having inwardly-directed, keeper-engaging hooks at their outer ends and oppositely-inclined surfaces and stops at their inner ends, said bars being mounted for both pivotal and longitudinal movement, yielding means normally holding said hooks in engagement with the keeper, a reciprocating bar within said casing provided with means co-operating with said inclined surfaces to impart pivotal movement to said latch bars and thereby spread apart the outer ends thereof and release said hooks and with said stops to move said latch bars longitudinally and bring said hooks within the casing, means for manually operating said reciprocating bar, and means automatically operated by the closing door to return said latch bars and hooks to latching position and said reciprocating bar to position for subsequent unlatching operation.

In testimony of the foregoing, I have hereunto set my hand in the presence of two witnesses.

ROBERT CAMPBELL.

Witnesses:
WM. W. ROBERTS,
H. R. BAUER.