

No. 840,297.

PATENTED JAN. 1, 1907.

R. CAMPBELL.  
SLIDING DOOR LATCH.  
APPLICATION FILED DEC. 6, 1904.

Fig. 1.

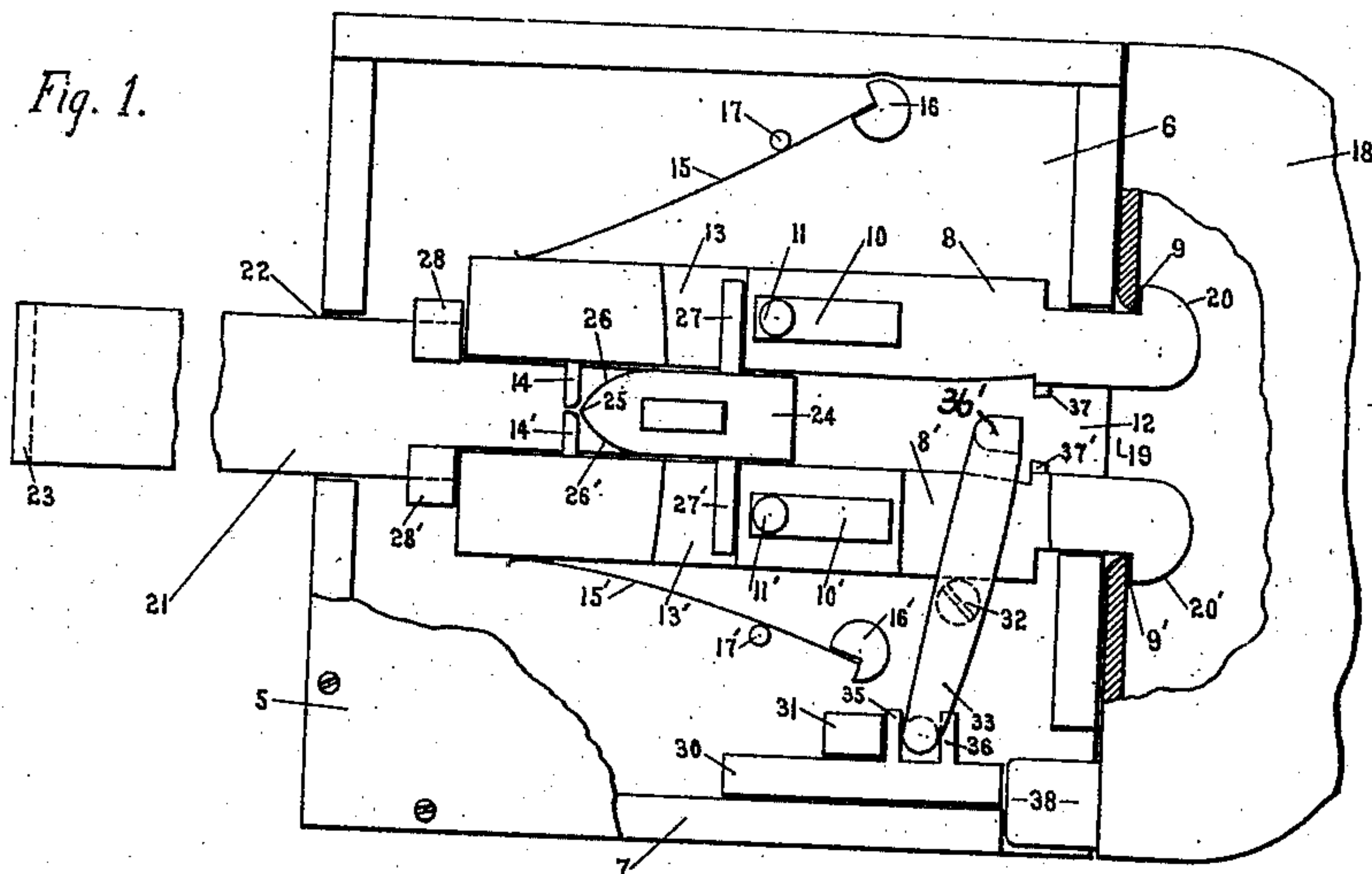
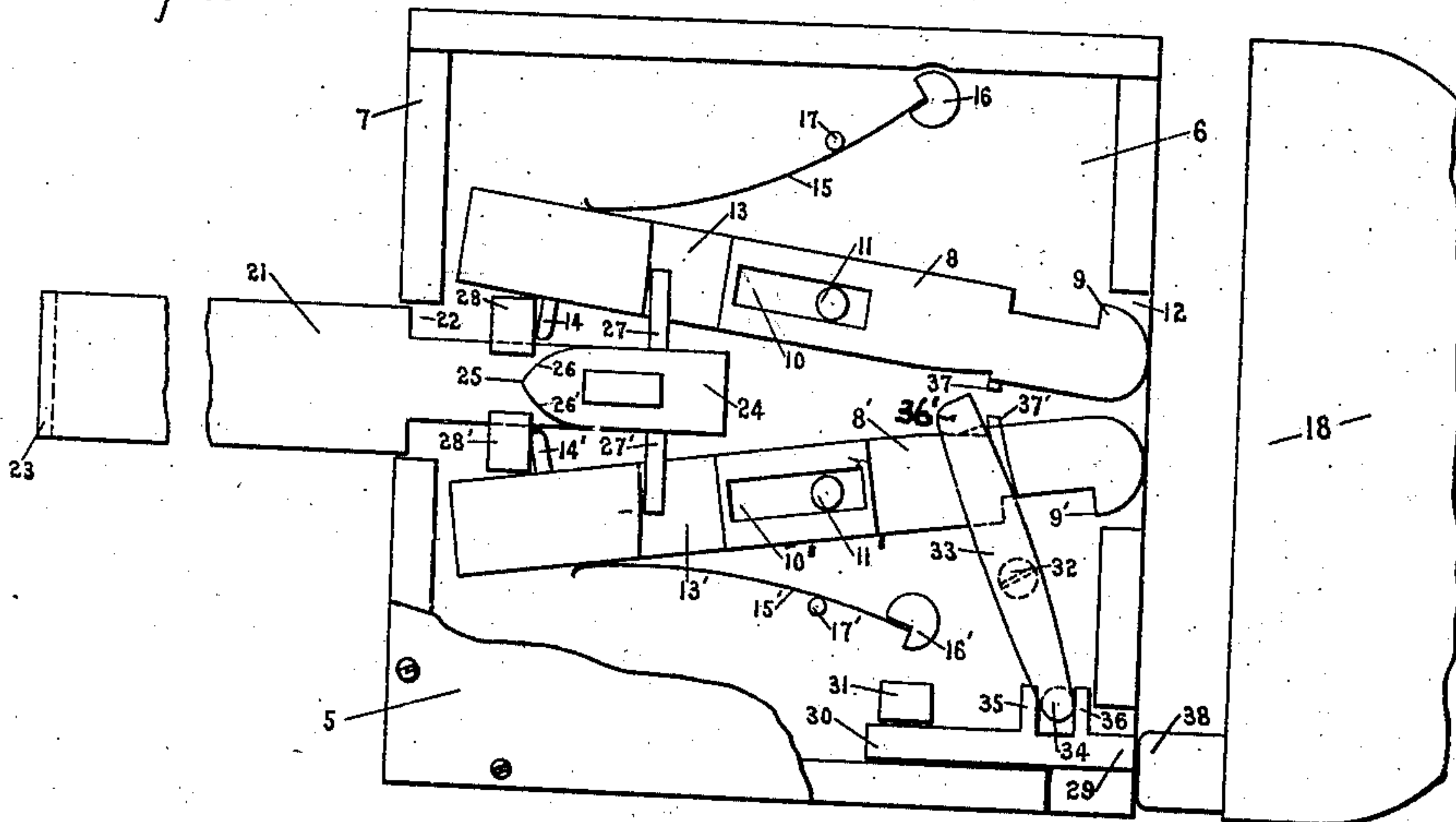


Fig. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## SLIDING-DOOR LATCH.

No. 840,297.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed December 6, 1904. Serial No. 235,704.

*To all whom it may concern:*

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

This invention relates to latches, having particularly in view an automatic latching device for the heavy metallic sliding hatchway-doors of elevator-shafts. As is well known, these doors are designed to be opened and closed from the inside of the shaft only by the operator of the elevator-car. In modern buildings great effort is made to economize time in conveying passengers to and from the various floors, and the hatchway-doors, particularly for passenger-elevators, while generally of heavy metal construction, should be capable of quick movement with the least manual effort in opening and closing. Such doors should be and invariably are self-latching, and obviously the action of the latching device should be absolutely positive and dependable. Furthermore, the latch-rod or other releasing device should be within easy reach of the operator of the car and capable of easy and speedy manipulation. I am aware of the existence of many forms of latching devices for doors of this class, the majority of which on account of the desirability of simplicity and cheapness are what are known as "gravity-latches," in which a pivot-latch bolt is raised by the beveled catch on the door-frame and drops by its own weight back of said catch, said latch-bolt being provided with a handle whereby the same may be raised by the operator to release the door for opening when desired. While possibly the acme of simplicity of construction, gravity-latches have been found to be objectionable on account of the facts that they are not absolutely positive in operation; in that the momentum of the moving door is oftentimes insufficient to effect positive engagement and the latch-bolt is likely to be and often is dislodged after engagement by the force of the impact between door and frame in closing; that both of the cooperating elements constituting the latch cannot be completely inclosed, and thus insure against one or the other accidentally catching the garment of a passen-

ger; are noisy in operation; ordinarily necessitate a change in direction of the application of force to first unlatch and then open the door, and must be more or less heavy and cumbersome in order that there may be sufficient weight to make the force of gravity sufficient to insure the completion of the latching operation.

The primary object of the present invention is positiveness or dependability of operation; secondly, ease of manipulation by the operator of the car, and, incidentally, simplicity and durability in construction with consequent economy in cost of manufacture and subsequent maintenance.

With the above and other ends in view my invention consists, generally, of a shell or casing adapted to be attached to a door, a keeper adapted to be attached to the door-frame, latching-bars supported in said casing to have pivotal and longitudinal movement therein and having hooks on their outer ends adapted to engage the keeper when said hooked ends are projected beyond the casing, manually-operated means for imparting pivotal and longitudinal movement to said latch-bars to cause their hooked ends to disengage the keeper and move into said casing, and automatically-operating means for causing said hooked ends to move out of the casing and engage the keeper.

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 view of 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.

Referring now to the drawings in detail, my invention contemplates the usual cooperating members, one stationary and suitably affixed or secured to the door-frame and the other suitably mounted upon the movable door. I prefer to inclose the operative parts of my latch within a shell or casing comprising the rear plate 6 and the front plate 5, with the usual side pieces 7 7 interposed therebetween. Within this shell or casing are loosely mounted a pair of similar members 8 and 8', each comprising an integral bar, having the substantially rectangular hook 9 and 9', respectively, at one end there-



of. Each of these bars is provided with an elongated slot 10 and 10', at or near the middle thereof, cooperating with the studs 11 and 11', respectively, mounted upon the plate 6 to permit of both pivotal and limited longitudinal movement of said members. When in operative position, these latch rods or bars 8 and 8' project through a suitable aperture 12 in said casing, as shown in Fig. 1, in which position the relative location of the slots and pins is such as to permit of movement of said rods or bars to withdraw the same into said shell or casing. Upon one side of each of said bars is a transverse channel or depression, (indicated, respectively, by 13 and 13',) and pins 14 and 14' project from the respective bars.

I prefer that each of the bars 8 and 8' should be spring-pressed to its operative position, and to this end, therefore, I provide springs 15 and 15', cooperating with abutments 16 and 16', and pins 17 and 17', mounted upon the plate 6 to respectively act against one end of each of said bars and provide yielding pressure against a spreading action hereinafter described.

It is obviously immaterial, so far as the present invention is concerned, what manner of seats are provided for the latch-hooks. I prefer, however, to provide a keeper for the hooks 9 and 9' in a hollow shell 18 of any suitable configuration and adapted to be secured in any suitable manner to the door-frame. This shell is provided with an aperture 19 of a size to cooperate with the beveled or curved sides 20 and 20' of the hooks 9 and 9', respectively, to effect automatic latching against the yielding pressures in a common and well-known manner.

The operating member comprises a substantially flat bar 21, slidable through a suitable aperture 22 in the casing and which may obviously be of any desired length. The exterior extremity of said bar is preferably bent to provide or otherwise suitably provided with a handle 23, adapted to be easily grasped by the operator for the purpose of sliding said bar longitudinally for a limited distance through said aperture. The interior extremity of this member 21 is provided with a thickened portion 24, tapering to a point 25, and thus providing a pair of oppositely-inclined tracks or ways 26 26'. This member 21 is further provided with a pair of pins 27 27', projecting, respectively, into the channels or depressions 13 and 13' in the bars 8 8'. These pins through engagement with the shoulders formed by said channels or depressions transmit longitudinal movement to the bars 8 and 8' from the member 21. The relative location of said pins 27 27' with reference to said channels or depressions is such that there is a slight initial movement of said member 21 prior to the engagement adapted to effect longitudinal

movement of the bars 8 and 8'. During this initial movement the pins 14 and 14' are engaged by the inclined planes 26 26' of the wedge member and are forced outwardly, thus spreading apart the interior ends of the bars 8 and 8'. The dimensions of the wedge 24 are so proportioned that the ends of said bars 8 and 8' are spread apart sufficiently to clear the lugs 28 and 28' prior to any longitudinal movement of said bars. This spreading apart of the inner ends of the members 8 and 8' effects, through the pins 11 and 11', a pivotal movement of said bars, which serves to withdraw the hooks 9 and 9' at the ends thereof from their respective seats. At this point engagement is effected between the pins 27 27' and one of the sides of the respective channels or depressions 13 and 13' in the bars 8 and 8', resulting in a longitudinal movement of said bars with said member 21, thereby causing the withdrawal of the hooks 9 and 9' within said casing. There will therefore remain no sharp projections to catch or engage the garments of passengers who may pass in and out of the open or partially-opened door. The lugs 28 and 28' will serve to keep the inner ends of the bars 8 and 8' spread apart.

In order to effect automatic latching upon the closing of the door, I provide the stationary member 18 with a projection 38, adapted to impinge against the end 29 of a bar 30, which is mounted between the plates 5 and 6 to have a limited longitudinal sliding movement guided by a lug 31 on the plate 6. Suitably pivoted upon the plate 6 at 32 is a rock-lever 33, having a pin 34 at one end thereof interposed between teeth 35 and 36, projecting from one side of the bar 30, whereby upon longitudinal movement of said bar the end of said lever will move therewith. The other end of the lever 33 is adapted, preferably through an enlarged head 36', to engage one or both of the pins 37 and 37', suitably mounted upon the bars 8 and 8', respectively.

It will be apparent that as the door is closed and just prior to complete closure engagement will be effected between the projection 38 and the end of the sliding bar 30, operating, through the lever 33, to carry the bars 8 and 8' bodily out into their latching position, the springs 15 and 15' operating to complete the latching action as the inner ends of said bars move off the lugs 28 and 28'.

Many modifications of the minor details of my improved latching device 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 construction herein shown and described.

Having described my invention, I claim—

1. In latches for sliding doors, the combination of a casing adapted to be connected to a door, two latch-bars supported in said cas-



ing to have pivotal and longitudinal movement, said latch-bars having hooks at their outer ends adapted to engage a keeper when said outer ends are projected beyond the casing, manually-operated means for imparting a pivotal motion to said latch-bars to disengage them from the keeper and subsequently to move them longitudinally within the casing, and means automatically operated upon closing the door for returning said latch-bars to latching position.

2. In latches for sliding doors, the combination of a casing adapted to be connected to a door, two latch-bars supported in said casing to have pivotal and longitudinal movement, said latch-bars having hooks at their outer ends adapted to engage a keeper when the said outer ends are projected beyond the casing, springs engaging the inner ends of said latch-bars and normally holding their outer ends apart, manually-operated means for first spreading the inner ends of said bars apart and then moving said bars longitudinally to bring the hooked ends within the casing, and means automatically operated upon closing the door for returning said latch-bars to latching position.

3. In latches for sliding doors, the combination of a casing adapted to be connected to a door, two latch-bars having hooks at their outer ends for engaging a keeper, means for supporting said latch-bars in the casing and permit them to have pivotal and longitudinal movement, springs engaging the inner ends of said bars and normally holding their outer ends apart in latching position, a slidable bar for manual operation, means carried by said slidable bar for spreading the inner ends of the latch-bars apart and thereby disengaging the hooked ends from said keeper, and means carried by said slidable bar for moving said latch-bars longitudinally to bring said hooked ends within the casing, and said cas-

ing having openings for the passage of said bars.

4. In latches for sliding doors, the combination of a casing adapted to be connected to a door, two latch-bars having hooks at their outer ends for engaging a keeper, and slots intermediate their ends, fixed pins within the casing extending through said slots, springs engaging the inner ends of said bars and normally holding their outer ends apart, a slidable bar for manual operation, means carried by said slidable bar for spreading the inner ends of the latch-bars apart and causing the outer ends to approach each other, and means carried by said sliding bar for moving said latch-bars longitudinally to bring said hooked ends within the casing, and said casing having openings for the passage of said bars.

5. In latches for sliding doors, the combination of a casing adapted to be connected to a door, two latch-bars having hooks at their outer ends for engaging a keeper, and slots intermediate their ends, fixed pins within the casing extending through said slots, springs engaging the inner ends of said bars and normally holding their outer ends apart, a slidable bar supported in said casing and having oppositely-inclined surfaces thereon, pins projecting from said bars in position to be engaged by said inclined surfaces when the slidable bar is moved longitudinally, and means carried by said slidable bar for engaging said latch-bars and moving them longitudinally after said inclined surfaces have acted upon said pins.

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

ROBERT CAMPBELL.

Witnesses:

HUGO TOLLNER, Jr.,  
SAMUEL McMILLAN.