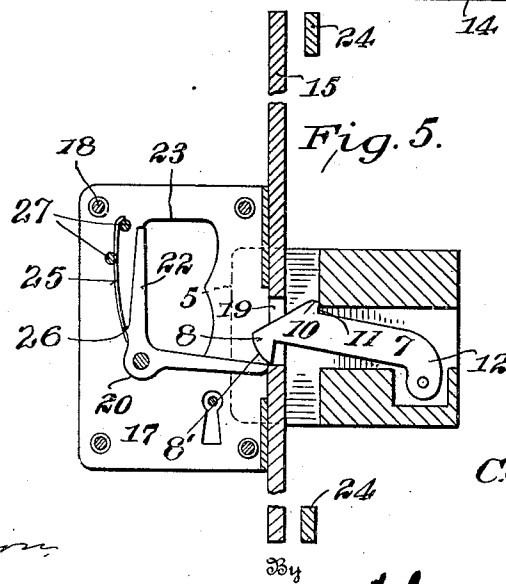
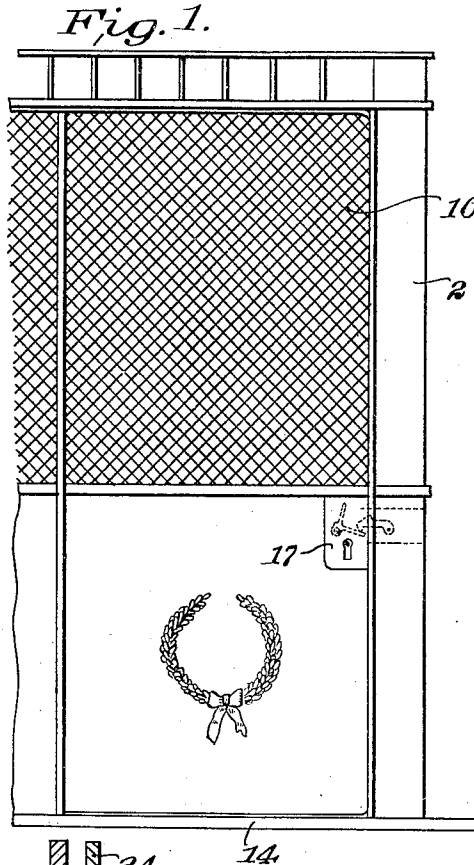
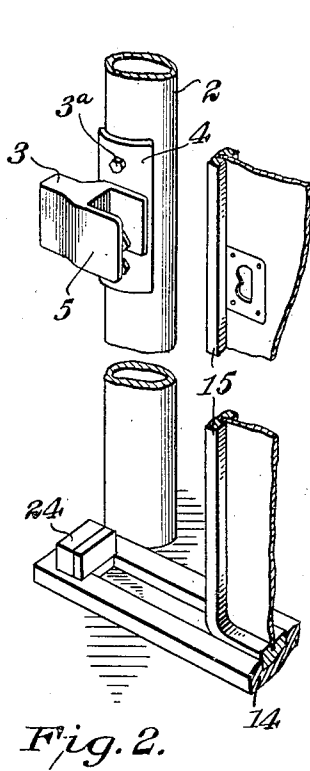


C. J. PFIESTER.
SAFETY LATCH FOR SLIDING DOORS.
APPLICATION FILED APR. 29, 1909.

932,317.

Patented Aug. 24, 1909.

2 SHEETS—SHEET 1.



Witnesses

W. W. Woodson
J. M. Fallon

Inventor

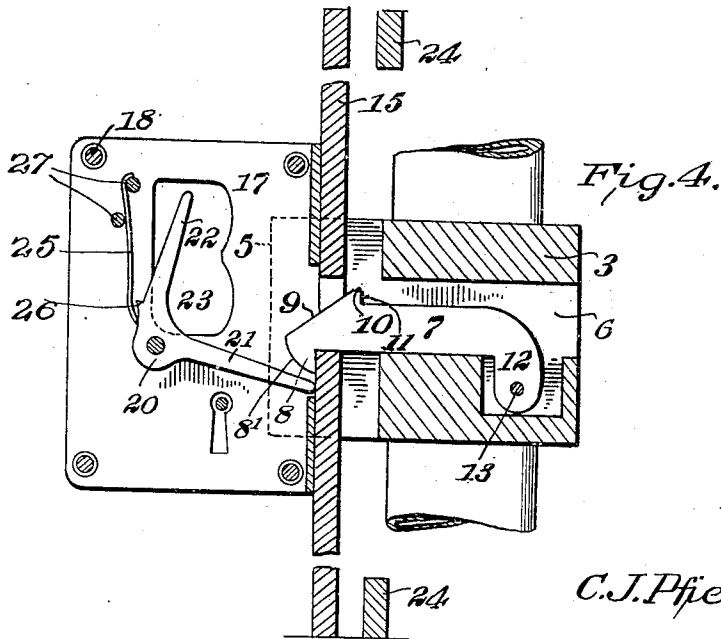
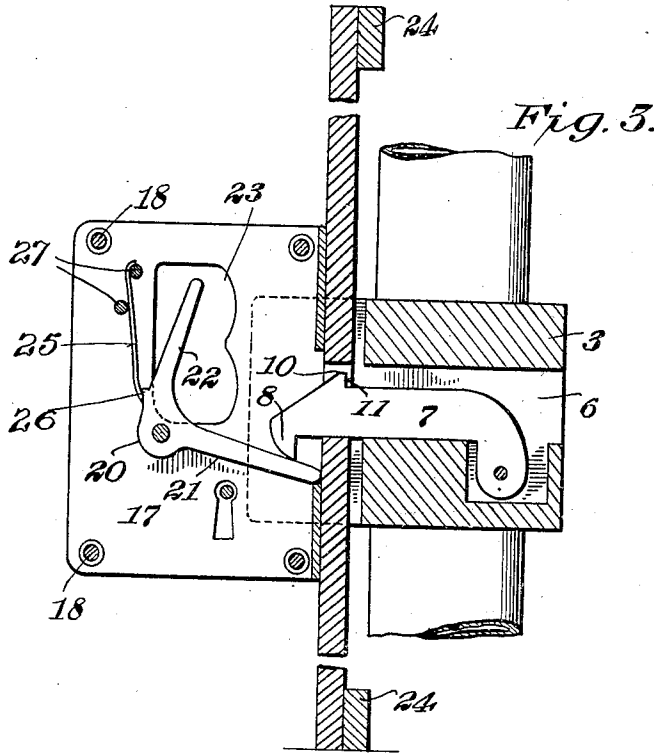
C. J. Pfister

W. A. Macy, Attorneys

C. J. PFIESTER.
SAFETY LATCH FOR SLIDING DOORS.
APPLICATION FILED APR. 29, 1909.

932,317.

Patented Aug. 24, 1909.
2 SHEETS—SHEET 2.



Witnesses
W. K. Woodson,
J. M. Fallin.

Inventor
C. J. Pfister;

By

W. K. Woodson, Attorneys

UNITED STATES PATENT OFFICE.

CHARLES J. PFISTER, OF BIRMINGHAM, ALABAMA, ASSIGNOR OF ONE-THIRD TO JAMES B. DRYER
AND ONE-THIRD TO JAMES R. VAIL, OF BIRMINGHAM, ALABAMA.

SAFETY-LATCH FOR SLIDING DOORS.

932,317.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed April 29, 1909. Serial No. 492,939.

To all whom it may concern:

Be it known that I, CHARLES J. PFISTER, citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Safety-Latches for Sliding Doors, of which the following is a specification.

My invention relates to improvements in latches for sliding doors, and particularly to latches for sliding elevator gates.

Elevator doors of ordinary construction are usually provided with projecting latches which extend beyond the edge of the door and when the door is opened are very liable to catch upon the clothes of those who are passing out of the door opening. Many accidents have happened from this cause, and these accidents have often times been serious. Another source of accidents with elevator doors is the possibility of their being left open accidentally. With doors of the ordinary construction the latch is very liable to rebound if the door is forced closed with any rapidity, and the elevator operator is very likely to go on to succeeding floors leaving the door unlocked and depending upon closing it when he again passes. Elevator doors which are left unlocked in this fashion are a common source of accidents.

The object of my invention is to overcome both of these disadvantages and to provide an elevator door which will latch immediately upon the engagement of the door with the door frame; in which the latch will be positively forced into engagement with the door and positively held there; and in which the latch is guarded on each side, so that there is no possibility of a passenger coming in contact with a protruding latch.

With these and other objects in view that will more fully appear as the description proceeds, the invention consists in certain constructions and arrangements of the parts described in the accompanying specification and set forth definitely in the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a face view of an elevator door

and door frame showing my improvement applied thereto; Fig. 2 is a perspective view enlarged of the stanchion of the door frame and the latch casing thereon and of the edge of the door; Fig. 3 is a vertical section of my latching device and a portion of the door frame, showing the latch in its lowered or locked position; Fig. 4 is a like view showing the door partly withdrawn from the door frame, the latch being in position ready to be unlocked; and, Fig. 5 is a like view showing the latch being operated to unlock the door.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the figures, 2 designates a stanchion or upright forming part of the frame surrounding the door opening and 3 designates a casting, formed with a saddle 4 on the side, which is adapted to fit against the door post or upright 2. This upright 2 is preferably tubular and the saddle is therefore concaved on its inner face to fit thereagainst. Bolts 3^a hold the saddle to the post 2.

The casting 3 is formed at its front edge with the spaced outwardly projecting flanges 5 which are adapted to receive the door between them. Rearward of the flanges 5 the casting is slotted, as at 6, to form a chamber in which the latch is pivoted. A latch bar 7 has at its forward end a downwardly projecting detent 8 whose front edge extends upwardly and outwardly on an incline. Above this inclined part 8', the front edge of the latch is rearwardly and upwardly inclined, as at 9, to form an upward projection 10, and from the apex thereof is then downwardly extended, as at 11. The distance between a plane cutting the inside face of the detent 8 and the face of the projection 10 is greater than the thickness of the frame bar of the door for a reason that will be hereinafter stated. The rear end of the latch bar is formed with a downwardly extending ear 12, and this ear is provided with a pivot pin 13 which extends through the casting 3. The axis of the latch is on a plane slightly below or level with the lower edge of the detent 8, for a reason to be hereinafter stated.

The bottom of the door frame preferably has the usual spaced angle or channel irons 14 between which the door travels. The door frame, as shown in these drawings, consists

of a metallic bar 15 which extends downwardly along the front edge of the door and is bent rearwardly at its top and bottom, supporting any suitable grill work or any filling 16. Attached to the inside face of the frame bar 15 is a casing 17 which, as shown, is composed of two opposed plates held together by spacing sleeves 18. The frame bar 15 is slotted, as at 19, and, of course, the front of the casing is also slotted correspondingly. This slot 19 is for the entrance of the forward end of the latch 7 and is but slightly longer than the distance between the uppermost point 10 of the latch bar and the underside of the bar. It is not as long as the distance between the point 10 and the lowest point of the detent 8. Thus when the latch has passed through the slot 19 and the detent is caught behind the frame bar, as shown in Fig. 3, there is only a slight space between the uppermost point 10 of the latch and the upper edge of the slot 19, thus the latch in this position cannot be raised sufficiently to permit the detent to pass the frame bar and the door therefore becoming unlocked. It is only by drawing the door slightly away from the door frame and at the same time lifting the latch by the operating means, now to be described, that the door may be opened. The relative proportions of the latch and the slotted opening to receive the same in the frame bar is extremely important and must be borne in mind when the operation of the door is to be considered.

Pivoted within the casing 17 is an angular latch lifter 20. This latch lifter has two arms 21 and 22, the arm 21 being preferably longer than the arm 22 and extending to a point immediately beneath the slot 19, so that when the latch lifter is operated the arm 21 will engage with the detent end of the latch and lift the same, as shown in Fig. 5. The other arm 22 of the lifter extends upwardly and slightly toward the edge of the door, so that it intersects a finger opening 23 formed on the inside face of the casing 17. The arm 22 projects inwardly slightly beyond the inner edge of the opening, so that when it is desired to open the door it is necessary to insert the fingers within the opening 23 and drawing back upon the door press against the arm 22, thus turning the latch lifter upon its pivot and raising the arm 21 into engagement with the free end of the latch. When this is done and the door is at the same time pulled rearward, or away from the door post, the projection 10 upon the upper edge of the latch will be forced upward behind the frame bar 15, and the widening space between the frame bar and the face of the casting 3 will permit the latch to rise until the detent escapes the edge of the slot 19, whereupon the door may be entirely withdrawn, the latch falling by gravity into its normal position, the

lower edge of the latch contacting with the upper edge of the slot in the latch casting, as shown in Fig. 1. The reverse operation takes place upon the closing of the door. As the door advances toward the door frame the angular end of the latch will contact with the lower edge of the slot in the frame bar and the inclination thereof will cause the latch to rise, the pointed upper edge of the latch being accommodated in the space behind the frame bar. As soon as the detent end of the latch has passed the frame bar the latch will drop, and when in this position, as before stated, the uppermost portion of the latch is nearly in contact with the upper edge of the slot 19, so that the latch cannot rise. 24 designates buffers of any suitable description to limit the inward motion of the door and relieve the door and door frame from undue jar. To throw the latch lifter back to its normal position, I provide a spring 25, the lower end of this spring engaging with the tooth 26 projecting from the arm 22. The front face of the casing 12 is provided with a key hole and a key arbor into which the key may be inserted and turned to lift the latch lifter.

The construction above described permits the locking of the latch whenever the edge of the door strikes the rubber buffers 24. The rebound of the door is eliminated entirely for the reason above stated that the latch cannot rise after once it has become engaged with the frame bar 15 until the latch is positively actuated by the latch lifter. The center of the axis of the pivot of the latch is placed not higher than the extreme lower edge of the free end of the latch. This position of the axis of the latch makes the latch hold more securely than if the axis were placed above this point. It will be seen from the drawings that until the door has moved to a position where the face plate or frame bar thereof engages with the downwardly extending detent on the latch bar, the latch is held from any upward movement by reason of the apex of the upper edge of the door contacting with the under side of the upper wall of the slot in the frame bar or face plate of the door, and that only when the door is moved to a position engaging the detent can the latch rise. In this position, however, the door will frictionally engage the detent to prevent any upward movement of the latch, so that the latch will be held in its lowered or locked position without regard to the rebound of the door, unless means be provided for positively lifting the latch.

I have referred in the specification to a door having a frame bar formed with a slot for the reception of the pivoted latch, but it is to be understood that my invention is equally applicable and operates in precisely the same manner did the casing inclosing the

latch operating lever have a face plate formed with a slot through which the latch would pass and with the walls of which it would engage, and therefore I do not wish to limit myself to the use of a frame bar of a door having a slot therethrough. It is sufficient if any plate is provided having a slot through which the latch can pass.

Having thus described the invention what is claimed as new is:

1. In a construction of the class described, the combination with a sliding door and a door casing, of a face plate having a latch slot, a pivoted latch bar adapted to enter said slot and having a downwardly extending detent tooth engageable through the slot in the face plate and over the lower edge thereof, and means on the latch bar engaging with the upper edge of said slot, preventing the raising of the latch from engagement when the latch bar is thrust fully through said slot, but permitting the raising of said latch upon an opening movement of the door sufficient to engage the downwardly extending detent on the latch bar with the inside of the face plate.

2. In a construction of the class described, the combination with a sliding door and a face plate therein having a latch slot, of a door casing and a latch bar pivoted therein, adapted to enter said slot, having a downwardly extending detent tooth engageable through the slot in said face plate and over the lower edge thereof, means for preventing the raising of said latch from engagement except upon an opening movement of the door to an extent sufficient to engage the detent on the latch bar with the inside face of the face plate, and a lifter on the door having the form of a bell crank lever, one arm of the bell crank extending under the slot in the face plate and thereby adapted to raise the latch bar and operate it, the other arm of the lever extending upward, whereby a rearward pull on the upwardly extending arm of the lever will raise the horizontal arm and lift the latch.

3. In a construction of the class described, the combination with a sliding door and a face plate thereon having a latch slot, of a door casing and a latch bar pivoted thereon having a detent tooth downwardly projecting from its extremity and adapted to engage over the face plate upon the insertion of the latch bar into the slot of the face plate, said latch bar rearward of the detent being vertically enlarged and of a thickness at this point equal to the length of said slot.

4. In a construction of the class described, the combination with a sliding door and a face plate therefor having a latch slot therein, of a sliding door and a latch bar pivoted to the door, said latch bar having its free end formed with a downwardly extending detent tooth whose outer edge is upwardly

and outwardly inclined, the forward edge of the bar then extending upwardly and rearwardly at an incline and forming a projection rearward of the detent tooth whose apex is above the upper edge of the bar, the distance between the lower edge of the latch bar rearward of the detent tooth and the apex of said projection being approximately the same as the length of the slot in said face plate, the longitudinal distance between the apex of the said upper projection and the inside face of said detent being greater than the thickness of said face plate.

5. In a construction of the class described, the combination with a door casing having a pivoted latch thereon, the extremity of which projects beyond the edge of said casing, said latch at its extremity being provided with a downwardly projecting detent tooth and rearward of said detent tooth with an upward projection, of a sliding door having a face plate thereon formed with a slot, said slot being approximately equal in length to the depth of said latch bar from the apex of one of said projecting teeth to the opposite edge of the bar, and an angular lifting lever pivoted to the door, one arm of which extends beneath the extremity of the latch when the door is closed and the other arm of which extends upward and is adapted to be actuated to raise the latch and to open the door.

6. The combination with a door frame having a latch bar pivoted thereon and protruding beyond the edge of the door, said latch bar having a downwardly extending detent projection and an upwardly extending projection rearward of said detent, of a sliding door having a face plate formed with a slot through which said latch bar is adapted to pass, the length of said slot being equal to the depth of the latch bar from the apex of one of said projections to the opposite edge of the bar and the distance between the rear end of one of said projections and the rear edge of the other said projection being greater than the thickness of said face plate, a casing attached to the face plate having a finger opening on its exterior, and an angular lever pivoted in said casing, one arm of said lever extending outwardly and projecting beneath the extremity of the latch when the door is closed and the other arm extending upward at an inclination toward the front edge of the door and partially across said finger opening.

7. The combination with a door frame having a latch bar pivoted thereon and protruding beyond the edge of the door, said latch bar having a downwardly extending detent projection and an upwardly extending projection rearward of said detent, of a sliding door having a face plate formed with a slot through which said latch bar is adapted to pass, the length of said slot being equal

to the depth of the latch bar from the apex
of one of said projections to the opposite
edge of the bar and the distance between
the rear end of one of said projections and
5 the rear edge of the other said projection
being greater than the thickness of said face
plate, a casing attached to said face plate
and having a finger opening on one side and
a keyhole opening on the opposite side, and
10 an angular lever pivoted in the casing, one
arm of said lever extending to the front edge
of the door in proximity to the latch slot
therein and the other arm of said lever ex-
tending upward and slightly toward the
15 front edge of the door and crossing said
finger opening, said lever being so located
that one of these arms is adjacent to the
keyhole opening, whereby the lever may be
operated by said key.
20 8. In combination with a door frame, a
casing attached to said door frame, said
casing being longitudinally slotted, and a
latch pivoted in said casing, said latch at its
rearward extremity being formed with a

downwardly extending ear through which 25
the pivot of the latch passes, the lower edge
of the latch being adapted to rest upon the
bottom of said casing when the latch is in
its normal position, said latch protruding 30
beyond the front edge of the casing and
being there provided at its extremity with a
downwardly extending detent tooth having
an upwardly inclined face and with an up-
ward projection having a downwardly in- 35
clined front face connecting with the in-
clined face of the detent tooth, the distance
between the rear face of the detent and the
rear face of the projection being greater
than the thickness of the face plate on the
door and the pivotal point of the latch be- 40
ing as low as the lowest point of said down-
wardly projecting detent tooth.

In testimony whereof I affix my signature
in presence of two witnesses.

CHARLES J. PFIESTER. [L. S.]

Witnesses:

W. T. HOWLETT,

THOS. J. WINGFIELD.