J. H. STEWART.

ELEVATOR DOOR LATCH.

APPLICATION FILED NOV. 25, 1907.

917,182. Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.

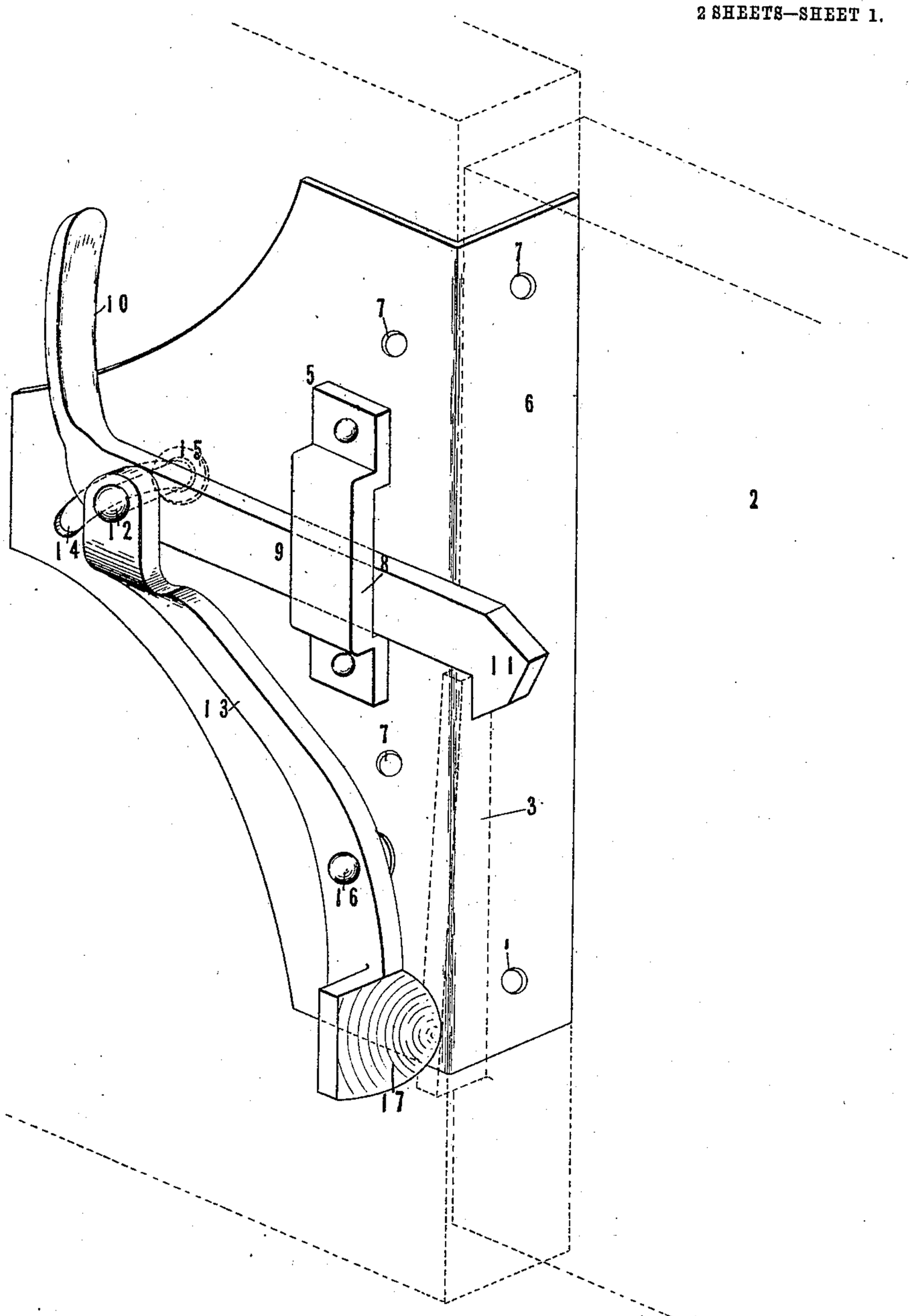

Fig. 1.

WITNESSES

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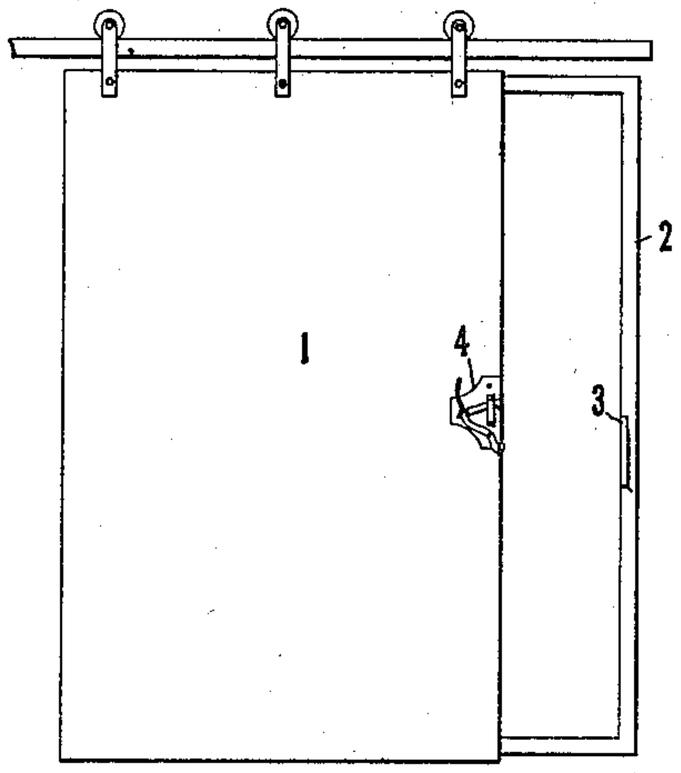


Fig. 2.

Fig. 3.

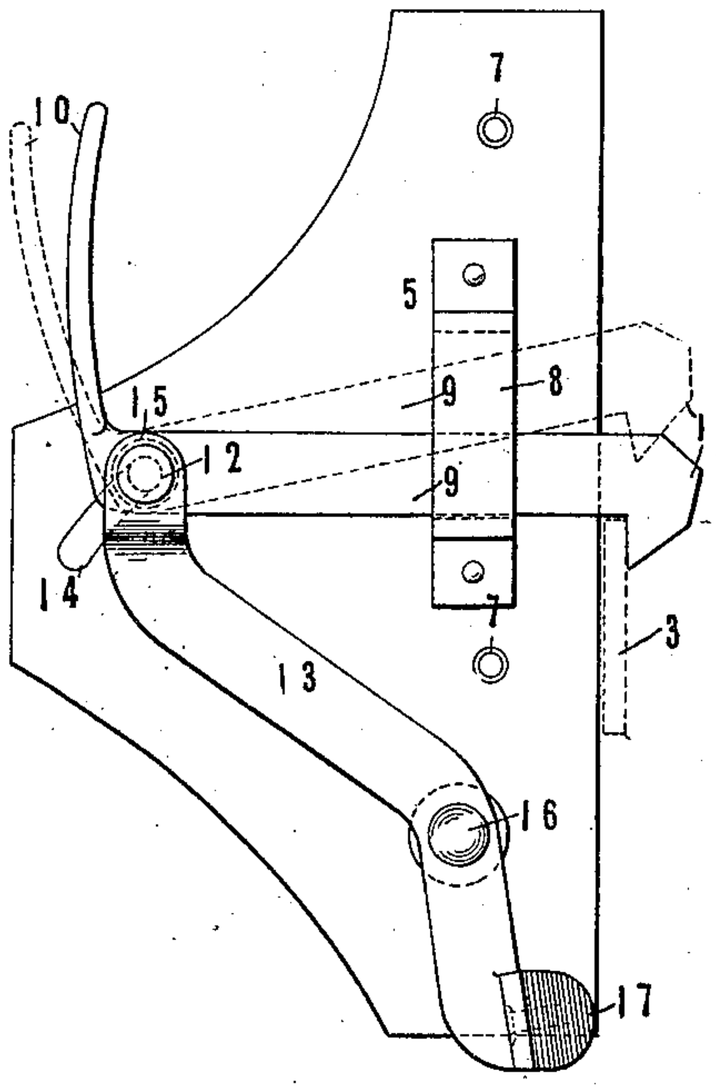
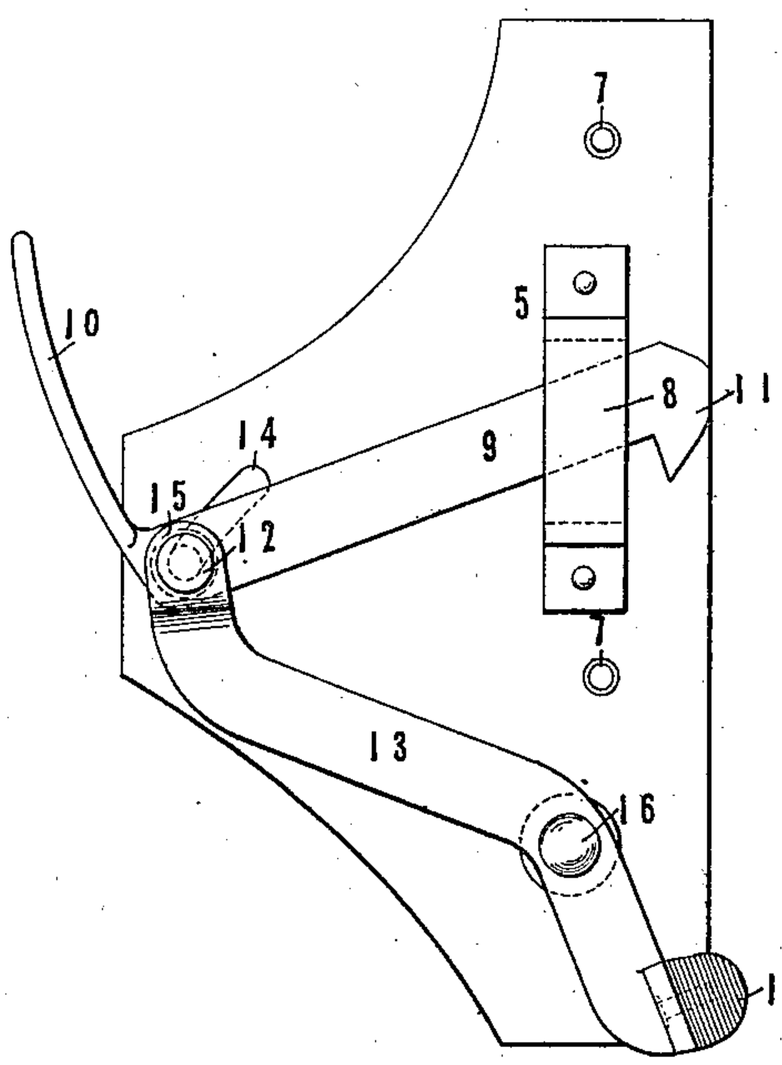


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN H. STEWART, OF NEW YORK, N. Y.

ELEVATOR-DOOR LATCH.

No. 917,182. Specification of Letters Patent. Patented April 6, 1909.

Application filed November 25, 1907. Serial No. 403,660.

To all whom it may concern:

Be it known that I, JOHN H. STEWART, a subject of the King of Great Britain, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Elevator-Door Latches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to latches, and with regard to the more specific features thereof, to latches for elevator doors and the like.

One of the objects thereof is to provide a simple and practical door latch.

Another object is to provide a device of the above type in which the door is automatically started open as the latch is released.

Another object is to provide a device of the above type in which the action of all the parts is substantially pivotal throughout.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is shown one of various possible embodiments of this invention, Figure 1 is a perspective view showing certain features thereof, Fig. 2 is a diagrammatic view showing the mounting of the latch upon a door. Fig. 3 is a front elevation, Fig. 4 is a similar view showing the parts in another position.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Certain features of this invention will be more readily and fully understood if the following facts be borne in mind:—Latches, more particularly those used upon elevator doors, are in practical use constantly subjected to the most severe shocks, jars and blows, and yet must act quickly, easily and efficiently. On account of the speed at which modern elevators are run, the slightest annoyance and delay in the action of the door latches is highly important and derangement of these mechanisms requires either that the elevator go out of service or that the door be left unlatched with a likelihood of accident. To meet these demands the parts must not only be strong and durable, but few in number and efficient in action. A sliding fit is a marked source of weakness in latches of this type on account of the tendency of the parts to bind or jam, and yet all parts must be nicely guided for silent and accurate action. Also, with the heavy doors now in use and high speed at which they must be worked, it is highly important that means be provided to aid in overcoming their inertia.

To accomplish the above desirable results without the defects, some of which have been enumerated, is among the dominant aims of this invention.

Referring now to Fig. 2 of the accompanying drawings, there is shown a rolling or sliding door 1 adapted to coact with a door casing or frame 2. In order to avoid the chance of ambiguity in the interpretation of certain terms of the claims, it may here be noted that they are used throughout with the following significance. By "door" is meant any member adapted upon being placed in position to close an opening, and by "door frame" is meant the stationary parts with which the door coacts and to which the door is secured in closed position. By "sliding door" is meant any door which moves from closed to open position in its own plane irrespective of whether or not the same is provided with rollers or other means to facilitate its movement. Door frame 2 is provided with a catch 3 of any desired type adapted to coact with latch mechanism 4 positioned upon the door 1. Turning now to Fig. 1 of the drawings in which this latch mechanism is shown somewhat in detail, there is provided a plate 5 flanged as at 6 and adapted to be mounted upon the door in any desired manner, as by means of the rivet holes 7. Upon plate 5 is mounted a guide 8 within which is a lever 9 provided with a handle 10 and an interlocking or latch portion 11. This lever is pivoted at a point 12 intermediate the handle 10 and latch portion 11 to a lever 13, hereinafter described in detail, and the pivot pin 12 passes through a curved slot 14 in the plate 5 and is provided upon the rear side of the plate with a washer 15 to hold the parts against swinging outwardly away from the plate. Lever 13 is pivoted to the plate 5 as at 16 with respect to which the curved slot 14 is formed as a center. The lower end of lever 13 is adapted

to abut a portion of the door frame 2 and is preferably provided with a rubber buffer 17 to cushion its action at this point.

The operation of the above described embodiment of this invention is substantially as follows. Assuming that the door 1 is in closed and latched position and it is desired to open the same, the handle 10 is drawn in a direction away from the door frame. This action tends to swing the lever 9 about its pivot and release the hook or latch portion 11 from the catch 3, as indicated in Fig. 3 of the drawings. The pressure upon the handle 10, moreover, tends to swing the lever 13 about its pivot 16 and force the buffer against the door frame and re-actively to aid in starting the door toward opened position. It is to be noted in this connection that the handle portion 10 is so formed and disposed as to provide in effect an extension of the lever 13 and thus materially increase the leverage without rendering the parts larger or less compact. The pivot pin 12 in this movement traverses the slot 14 and the door is drawn open with the parts in the position indicated in Fig. 4. As the door is thrown into closed position the buffer 17 engages the casing or frame and swings the lever 13 about its pivot, thus throwing the lever 9 toward the door frame and permitting the hook 11 to fall into interlocking position. This movement of the parts, moreover, acts in conjunction with the buffer 17 in cushioning the shock occasioned by the closing of the door.

It will thus be seen that there is provided a construction in which the several objects of this invention are achieved and the above enumerated advantages are, among others, present.

The device is compact and self contained in structure, and is of such few parts as to attain a maximum of simplicity and reliability in action as well as cheapness in manufacture. The action of the parts is pivotal, thus reducing friction to a minimum and doing away with the chance of binding or jamming, and the entire device is well adapted to meet the most severe conditions of hard practical use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

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

1. In a device of the class described, in combination, a door, a door frame, a lever pivotally mounted upon said door and having upon one side of its pivot a latch portion adapted to interlock with a portion of said frame and upon the other side thereof a handle adapted to permit the same to be rocked, said handle being so formed and disposed as to swing in a direction away from said portion of said frame when said latch portion is released, and means connected with said lever and adapted to tend to open said door upon said handle being swung in said direction.

2. In a device of the class described, in combination, a door, a door frame, a member pivotally mounted upon said door, and a lever pivotally mounted upon said member and provided with a portion adapted to releasably interlock with said frame.

3. In a device of the class described, in combination, a door, a door frame, a member mounted to move with respect to said door, a lever pivotally mounted upon said means and adapted to releasably interlock with said frame, and a member connected with said lever and adapted upon the same being thrown into released position to tend to open said door.

4. In a device of the class described, in combination, a sliding door, a door frame, a lever pivotally mounted to swing substantially in the plane of said door and having upon one side of its pivot a latch portion adapted to interlock with said frame and upon the other side thereof a handle adapted to permit the same to be rocked, means adapted to permit movement of the pivotal point of said lever with respect to said door, and means connected with said lever and adapted upon the same being thrown into released position to be operated thereby and tend to open said door.

5. In a device of the class described, in combination, a sliding door, a door frame, a lever pivotally mounted upon said door to swing substantially in the plane thereof and adapted upon swinging in a predetermined direction to abut against said frame and tend to force said door away from the same, and a latch pivotally connected with said lever and adapted to be released as said lever is swung in said direction.

6. In a device of the class described, in combination, a door, a door frame, a lever pivotally mounted upon said door and adapted upon swinging in a predetermined direction to abut against said frame and tend to force said door away from the same, a latch pivotally connected with said lever and adapted to be swung into released position as said lever is swung in said direction, and means comprising a slot within which the

pivotal connection of said lever and said latch is held and within which it is permitted to move.

7. In a device of the class described, in combination, a door, a door frame, a lever pivotally mounted upon said door and adapted upon swinging in a predetermined direction to abut against said frame and tend to force said door away from the same, a latch pivotally connected with said lever and adapted to be swung into released position as said lever is swung in said direction, and means comprising a slot within which the pivotal connection of said lever and said latch is held and within which it is permitted to move, said latch being provided with a handle extending substantially in the direction of said lever whereby the leverage thereof is increased.

8. In a device of the class described, in combination, a door, a door frame, a lever pivotally mounted upon said door and having upon one side of its pivot a portion adapted to interlock with said frame and upon the other side thereof a handle adapted to permit the same to be rocked, and a second lever pivotally mounted upon said door and pivotally connected with said first lever and adapted upon being swung to abut against said frame and tend to force said door away from the same.

9. In a device of the class described, in combination, a sliding door, a door frame, a lever pivotally mounted upon said door and having upon one side of its pivot a portion adapted to interlock with said frame and upon the other side thereof a handle adapted to permit the same to be rocked, and a second lever pivotally mounted upon said door and pivotally connected with said first lever and adapted upon being swung to abut against said frame and tend to force said door away from the same, said handle being disposed to extend in substantially the same direction as that in which said second lever extends whereby the leverage of said second lever is increased.

10. In a device of the class described, in combination, a door, a door frame, a lever pivotally mounted upon said door and having upon one side of its pivot a portion adapted to interlock with said frame and upon the other side thereof a handle adapted to permit the same to be rocked, and a second lever pivotally mounted upon said door and pivotally connected with said first lever and adapted upon being swung to abut against said frame and tend to force said door away from the same, said handle being so mounted as upon being actuated to release said interlocking portion to tend to swing said second lever against said frame.

11. In a device of the class described, in combination, a sliding door, a frame, a lever pivotally mounted upon said door and adapted to swing substantially in the plane thereof and having upon one side of its pivot a portion adapted to interlock with said frame and upon the other side thereof a handle, means comprising a slot within which the pivotal connection of said lever is held and permitted to move, and a second lever pivotally mounted upon said door and pivotally connected with said first lever at said first pivotal point and adapted upon swinging in a predetermined direction to abut against said frame and tend to force said door away from the same, said handle being disposed substantially in the direction of said second lever whereby the leverage thereof is increased.

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

J. H. STEWART.

Witnesses:
R. S. BLAIR,
SAMUEL L. ALPERT.

Corrections in Letters Patent No. 917,182.

It is hereby certified that in Letters Patent No. 917,182, granted April 6, 1909, upon the application of John H. Stewart, of New York, N. Y., for an improvement in "Elevator-Door Latches," an error appears in the printed specification requiring correction, as follows: In line 92, page 2, the word "means" should read *member*, and in line 94, same page, the article "a" should be stricken out, and the word "member" should read *means;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of May, A. D., 1909.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.