L. F. McNALLY.

LATCH.

APPLICATION FILED JAN. 8, 1920.

1,385,632. **Patented July 26, 1921.**

Fig. 1.

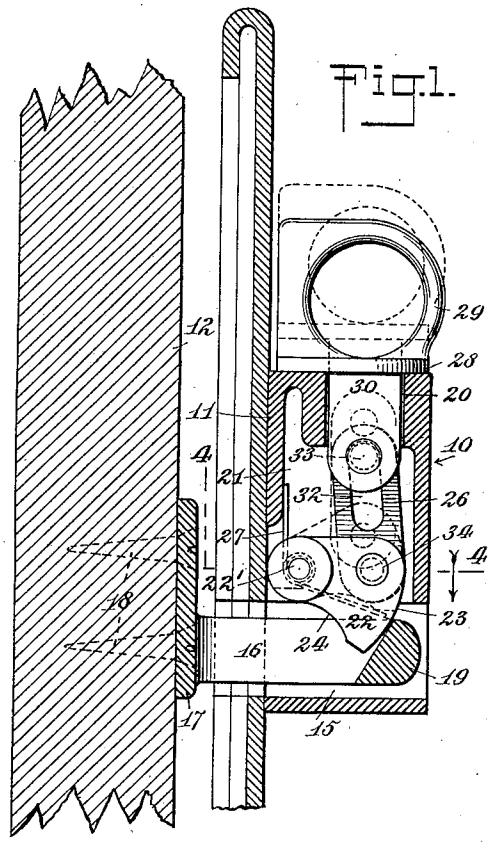


Fig. 2.

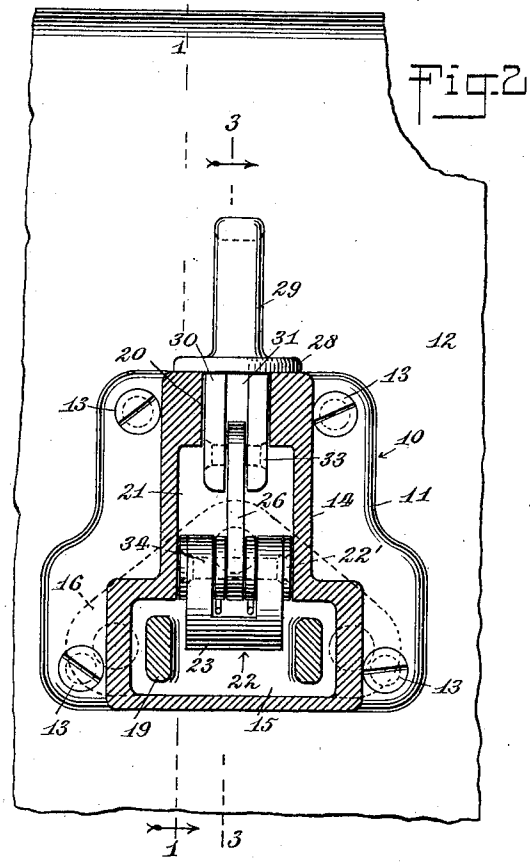


Fig. 3.

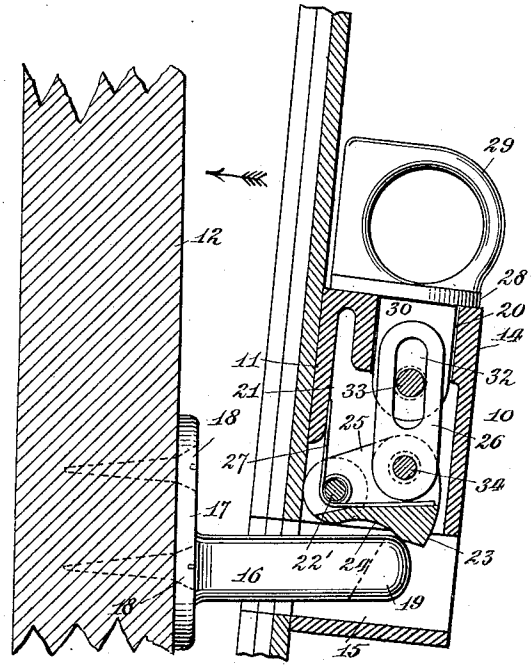
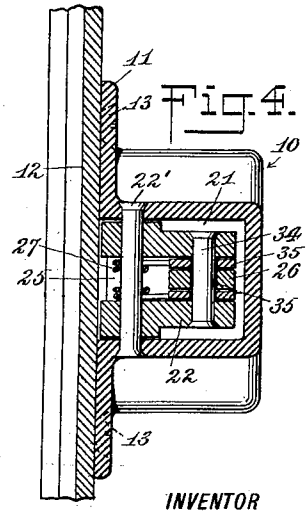


Fig. 4.



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LATCH.

1,385,632. Specification of Letters Patent. Patented July 26, 1921.

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To all whom it may concern:

Be it known that I, LEO F. McNALLY, a citizen of the United States, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have made and invented certain new and useful Improvements in Latches, of which the following is a specification.

My invention relates to a latch and particularly to one which is adapted for use upon the trap door of vestibule cars, to hold the same in a raised or open position.

It is an object of my invention to provide a latch, which while particularly adapted for use upon trap doors of vestibule cars, may also be used upon doors, windows, and in connection with any other parts that are designed to be held together and to accomplish the aforementioned ends in a simple and expeditious manner, the latch comprising but few parts, of simple design and construction and adapted to operate in a smooth and quiet manner and to be entirely free from rattling or vibrating or producing objectionable noises.

A further object is to design a latch mechanism wherein the latch proper is secured to the underside of the trap door and is accordingly entirely out of sight or invisible when the trap door is in its closed position, and which arrangement provides that the latch proper will be readily accessible when the trap door is in its raised and open position.

A further object is to provide a latch having a pivotally mounted bolt so arranged that when the same contacts with the keeper, the forces brought to bear upon the latch will tend to retract the latch in a smooth and quiet manner and with a minimum amount of stress on the latch bolt pivot, the retraction or raising of the latch bolt taking place independent of the finger engageable lift.

A further object is to provide a latch of the character described, which due to its simple design and few parts may be economically constructed and although embodying a minimum amount of machine work, at the same time is capable of operating in a simple and quiet manner providing for the long and useful life of the several parts of which the latch is composed.

With the foregoing and other objects in view, my invention resides in the improved latch described in the accompanying specification and illustrated in the drawings forming a part thereof, and in the novel combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the construction within the scope of the appended claims without departing from the spirit thereof.

In the accompanying drawings, the preferred embodiment of my invention is shown wherein:—

Figure 1 is a view in vertical section of a trap door and adjacent portion of a car having my improved latch secured thereto, the section being taken on the line 1—1 of Fig. 2.

Fig. 2 is a view in front elevation and partially in section of my improved latch.

Fig. 3 is a view similar to Fig. 1 illustrating the manner in which the latch operates as the door is raised to its open position, the latch bolt being in the act of passing above the keeper prior to its seating therebehind.

Fig. 4 is a view in horizontal section taken on the line 4—4 of Fig. 1.

Referring specifically to the several views, the latch is composed of the casing 10 formed with the base plate 11, which is adapted to be secured to the trap door 12, by the rivets or holding screws 13.

The base plate and housing 14 are formed with the opening or well 15 adapted to receive therein the keeper 16, the latter including the base 17, which is held to the door of the car by the holding screws 18, or other suitable means, and with the bolt retainer 19.

The casing is provided with an opening 20, which is removed from and extends transversely to the well 15, the intermediate portion of the housing being cored out as at 21. Located within the housing is the latch bolt 22, the same being mounted for pivotal movement upon the pin 22′, which is located adjacent the base plate 11 of the casing. The latch bolt 22 is formed with the keeper retaining face 23, curved about the pivotal mounting of the bolt as an approximate center and also is formed with the bolt raising face 24, so formed or curved that the forces brought to bear upon the bolt as it strikes against the keeper will tend to rotate the bolt about its pivotal mounting and thus prevent any undue stress or force being brought to bear upon the

bolt pivot, the curve of the bolt raising face being such that the forces brought into play as the bolt strikes against the keeper will extend approximately at right angles to a line joining the point of contact of the bolt and keeper, and the pivotal mounting of the bolt, so that the said force will have approximately no component extending through the bolt pivot.

A groove or slot 25, extends through a portion of the bolt and provides for the reception of the actuating link 26 and the bolt depressing spring 27, the latter winding about the bolt pivot and having its ends impinging against the bottom wall of the slot 25 and against the bottom wall of the cored-out portion 21 of the housing, thereby tending to maintain the bolt in its extended position as illustrated in full lines in Fig. 1.

A bolt lift 28 having a finger engageable portion 29 is mounted for sliding movement within the opening 20 of the casing. This lift includes the barrel 30 containing the slot 31 in which the upper extremity of the link 26 is received, the link, in turn, being provided with a slot 32, through which extends the lift pin 33, the latter being rigidly secured in suitable openings in the sides of the barrel 30 of the lift. The link is pivotally secured to the bolt by the pin 34 and two copper washers 35 prevent undue friction between the link and the side walls of the bolt slot 25. Thus, and as clearly illustrated in Fig. 3, as the latch bolt is raised by striking against the external surface of the keeper, the link is moved upwardly within the lift, the lift remaining in its seated position, whereby the bolt is smoothly and quietly raised or retracted by the keeper and immediately snaps into locked position as the keeper passes therebeyond and into the position as illustrated in Fig. 1. The bolt spring 27 tends to hold the latch bolt in an extended position, thus maintaining the lift in its seated position and secured against rattling and vibrating and also locking the door in its raised position. When it is desired to release the door, the lift is grasped and moved outwardly into the dotted position illustrated in Fig. 1 causing the retraction of the bolt 23 and its according releasement from the keeper.

From the foregoing it will be observed that the parts are adapted to operate in a quiet and smooth manner, that the latch bolt is normally maintained in its extended position, resiliently holding the lift seated and further that approximately no forces whatever will be brought to bear upon the bolt pivot as the bolt contacts with and is retracted by the keeper thus insuring the long and serviceable life of all parts.

Having thus described my invention, what I claim is:—

1. A latch comprising a casing, a keeper, a latch bolt pivotally secured within said casing adjacent the bottom wall thereof, which passes beyond the extremity of the keeper as the latch moves into locked position, resilient means engaging said latch bolt and adapted to hold the same in extended position for engagement with said keeper, a lift slidably carried by said casing and provided with a finger-engageable portion, and means associated with said lift and said latch bolt, providing for the manual raising of said bolt by said lift and the independent raising of the bolt by the keeper.

2. A latch comprising a casing having an opening adapted to receive a keeper therein, a keeper, a latch bolt pivotally secured within said casing adjacent the bottom wall thereof, which passes beyond the extremity of said keeper as the latch moves into locked position, resilient means engaging said latch bolt, adapted to hold the same in extended position for engagement with said keeper, a lift slidably carried by said casing and provided with a finger engageable portion, and a link pivotally and slidably engaging said bolt and said lift, and providing for the manual raising of said bolt by said lift and the independent raising of the bolt by the keeper.

3. A latch comprising a casing, a latch bolt pivotally secured therein, a keeper adapted to coöperate with said latch bolt, means for engaging said latch bolt, providing for the manual retraction of said latch bolt and allowing the retraction of the latch bolt by said keeper independent of said means, said latch bolt provided with an external face, the normal to which, extends through said pivot, and said latch bolt provided with a second face adapted to cooperate with the keeper for the retraction of the latch bolt, the normal of the said second face extending substantially at right angles to a line joining the base of the normal and the pivotal mounting of the bolt, the first mentioned face causing a direct thrust from the keeper upon the pivotal mounting of the bolt, the second mentioned face causing a thrust from the keeper to retract the bolt without effect upon the said pivot.

Signed at New York, borough of Manhattan, in the county of New York, and State of New York, this 6th day of January, A. D. 1920.

LEO. F. McNALLY.

Witnesses:
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