N. B. HURD.

TOP LATCH MECHANISM FOR PANIC BOLTS.

APPLICATION FILED MAR. 23, 1916.

1,203,115.

Patented Oct. 31, 1916.

2 SHEETS—SHEET 1.

Fig 1

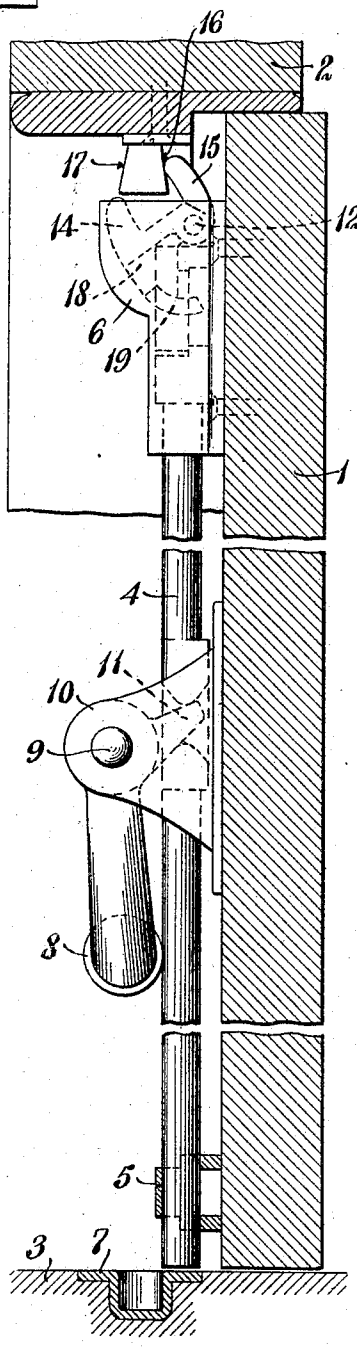

Fig 2

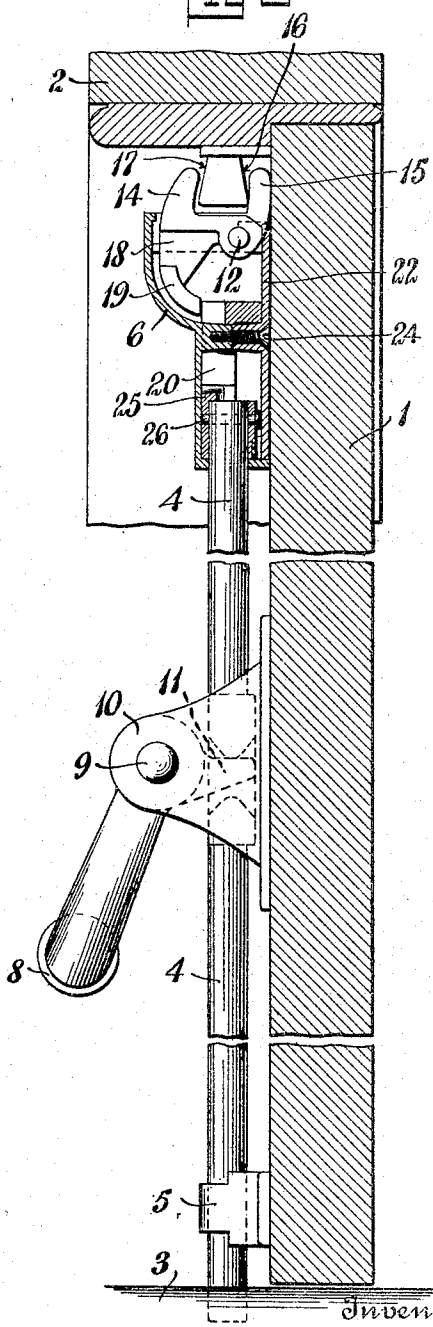

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Fig 3

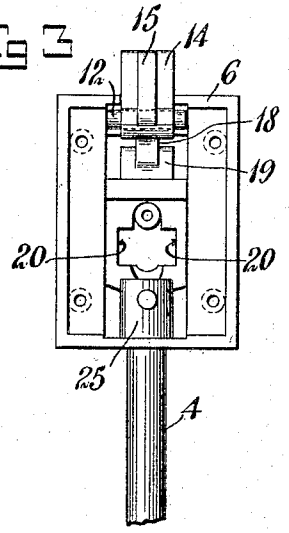


Fig 4

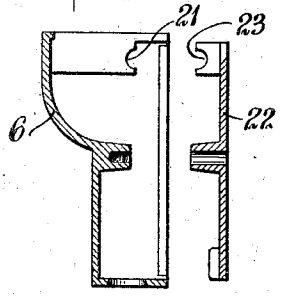


Fig 5

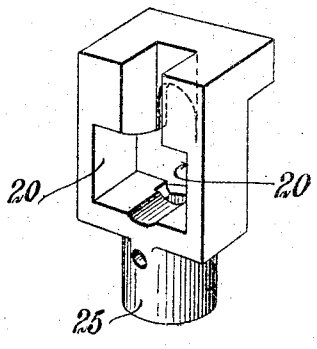
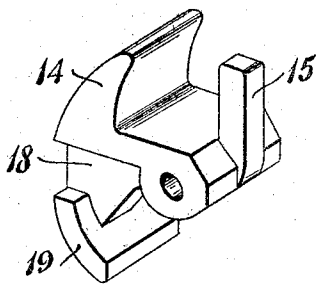


Fig 6



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UNITED STATES PATENT OFFICE.

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TOP-LATCH MECHANISM FOR PANIC-BOLTS.

1,203,115. Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed March 23, 1916. Serial No. 86,300.

To all whom it may concern:

Be it known that I, NORMAN B. HURD, a citizen of the United States of America, residing at New Britain, Connecticut, have invented a new and useful Top-Latch Mechanism for Panic-Bolts, of which the following is a specification.

My invention relates to door locking mechanism comprising locking means carried by the door and controlling means associated therewith, said controlling means including a cross bar or the like so positioned on the door as to be engaged with certainty in the event of a panic and it becomes necessary to quickly release the locking mechanism so that the door may be opened.

My main object is to provide certain features of improvement in a device of this general character whereby the locking means may act with rapidity and certainty, and whereby the same may be lightly but durably constructed.

The invention constitutes in the main an improvement over the structure set forth and broadly claimed in my former Letters Patent No. 1,145,590, dated July 6th, 1915.

In the drawings: Figure 1 is a vertical sectional view of a door and the casing thereof showing my invention in side elevation the parts being shown in the unlocked position. Fig. 2 is a similar view the parts being shown in the locked position, and with the latch housing in section. Fig. 3 is a rear view of the latch mechanism showing the cap of the housing removed. Fig. 4 is a sectional view of the housing. Fig. 5 is a perspective view of a detail of construction. Fig. 6 is a perspective view of the latch

1 represents a door, 2 is the overhead part of the casing and 3 is the lower part or floor which broadly considered, constitutes part of the casing.

4 is a vertically movable bar mounted in suitable guide brackets on the door.

5 is the lower guide bracket, while the upper guide bracket is preferably also a latch housing indicated at 6.

The door lock in this case includes an upper and a lower bolt which engage suitable keepers on the upper and lower parts of the door casing. The lower keeper, in the specific form shown, comprises a socket 7, and the lower bolt in this instance, is the lower end of the bar 4 which projects into said socket 7 when the bar moves downwardly.

8 is a cross bar designed to extend across the face of the door, the ends of the bar being pivotally mounted at 9 in suitable brackets, such as 10.

11 is an arm carried by the bar 8 and which constitutes one suitable means for connecting the same to the bar 4, so that as the cross bar 8 is moved to and fro, the bar 4 will be reciprocated.

The particular form of the lower bolt and of the manually operable means for the bar 4 as well as the particular form of the bar 4 and its direction of movement are from a broad standpoint immaterial and may be modified at will so long as these parts or some of them may suitably coöperate with the other locking device which in this instance is the one located adjacent to the upper part of the door. My present invention aims particularly at improving the construction and operation of this last mentioned locking member, which will be seen to be constructed in its preferred embodiment substantially as follows: The locking member shown is mounted upon a suitable pivot 12 carried by the door, and in this instance engaged between the side walls of the housing 6. The locking device itself comprises a U-shaped part which furnishes a latch nose 14 and what I may term a trigger 15. The coöperating keeper may if desired project downwardly from the upper part 2 of the casing so as to form an abutment wall 16 to be struck by the trigger 15, and a second abutment wall 17 to be engaged by the latch nose 14 when the door is locked. Obviously now, when the door is moving toward its closed position the trigger 15 will strike against the abutment 16 just before the door is fully closed, the final closing movement causing the latch bolt to tilt to the locking position shown in Fig. 2. The pivot point 12 is so positioned relatively to the latch that the latter may by gravity swing down to the position shown in Fig. 1, the unlocking position, when the door is opened. Obviously a spring might be provided to cause this movement to take place either independent of or in conjunction with gravity. Depending from that part of the

latch bolt which provides the latch nose 14 is a web 18 which carries a segment 19 concentric to the pivot 12. Mounted on the upper end of the rod 4 is a block which comprises the two side pieces 20—20 having a passage between them for the segment 19 when the door is to be unlocked so as to permit the latch to swing down to the position shown in Fig. 1, wherein said segment will secure a hook engagement with said block and hold the rod 4 and the lower bolt in the unlocking position. Since the upper latch itself is still free to swing, it follows that when the door is closed and the trigger 15 strikes the abutment 16, the latch will be swung so that the segment 19 will release the bar 4 which may then descend. When it descends it will assume the position shown in Fig. 2, wherein a solid part of the block will engage the end of the segment 19 as shown so as to rigidly hold the latch in the door locking position until the bar 4 is again raised. It requires in all instances that the bar 4 shall be raised to a certain predetermined extent before the latch is released so that the door may be opened. This predetermined movement is sufficient to permit the segment 19 to secure the aforesaid hook engagement with the head of the bar 4 so as to hold it in the door open position. Thus, even if the door has settled or the casing has shrunk away from the latch, the door itself cannot be released and opened until the bar 4 and its head have been raised to a sufficient extent to guarantee the certain engagement thereof by the latch segment 19 which acts as a hold-back or a hold-up device for the bar, and such other locking devices as may be associated therewith. This is important because if the various locking devices such as are positively operated by the bar 4 into the projected position are not held-up or held-back while the door is open, they will strike against the floor or the casing and not only interfere with the free operation of the door but also produce injury. In this particular instance the weight of the bar 4 is preferably sufficient to hold the same in the locked position shown in Fig. 2, and indeed is sufficient to cause the bar to move by gravity into that position when the trigger 15 has freed the latch segment 19 therefrom.

As illustrated most clearly in Figs. 3, 4, 5 and 6, the device is of very simple and substantial construction. A convenient method of mounting the pivot pin 12 for the latch is to provide open bearings 21 for it on the opposite inner walls of the latch casing 6 and to provide the cover plate 22 of the latch casing with projections 23 forming cap pieces closing such open bearings and thereby holding the pivot pin in position. The cover plate 22 may be secured in position closing the open rear side of the latch casing by a single securing screw, as indicated at 24. The abutment block which coöperates with the tail piece of the latch may be secured to the upper end of the bar 4 by simply forming it with a tubular extension 25 which fits over the upper end of the bar 4 and through which a securing pin 26 is passed.

What I claim is:

1. In a door lock of the character described, the combination with a door and a door casing, of a latch bolt pivoted on the door, a keeper on said door casing arranged to be engaged by said latch bolt when the same is in projected position, and an upwardly projecting trigger on the latch bolt arranged to engage said keeper on the closing movement of the door to swing the retracted latch bolt into projected position and into engagement with the keeper and manually operable means to hold said latch bolt projected, and means on said bolt to hold said manually operable means when the latter is moved to release said bolt.

2. In a door lock of the character described, the combination with a door and a door casing, of a latch bolt pivoted on the door, a keeper on said door casing arranged to be engaged by said latch bolt when the same is in projected position, a projecting trigger on the latch bolt arranged to engage the keeper in the closing movement of the door to swing the retracted latch bolt into projected position in engagement with the keeper, a dependent tail piece carried by the latch bolt and a manually controlled blocking member engaging the tail piece of the latch bolt to hold the latch bolt in projected position, said tail piece being arranged to engage said blocking member and to hold the same while said latch bolt stands in the unlocking position.

3. In a door bolt of the character described, the combination with a door and door casing, of a keeper on the door casing having abutment faces on opposite sides thereof, a latch bolt pivoted on the door and arranged to engage one abutment face of said keeper, and a projecting trigger on said latch bolt standing substantially parallel to the latching portion of said bolt, and arranged to engage the opposite side abutment face of the keeper in the door closing movement to thereby swing the latch bolt up into locking engagement with the keeper.

4. In a door lock of the character described, the combination with a pivoted latch bolt and a keeper therefor, of a manually operable bar, a head on the upper end of said bar having a recess in one side thereof and an abutment face above said recess, and a tail piece on the latch bolt arranged in the projected position of the latch bolt to engage the abutment face on the head aforesaid, and in a released position of the latch

bolt to engage in the recess in said head to hold the latter projected.

5. In a door lock of the character described, the combination with a door and door casing, of a latch bolt pivoted at the upper end of the door, a keeper on the door casing arranged to be engaged thereby, a vertically movable bolt mounted on the door, a head on the upper end of said bolt having a recess in one side thereof and an abutment face above said recess, and a dependent tail piece on the latch bolt arranged to engage the abutment face on the head aforesaid when said vertically movable bolt is in its projected position and to engage in the recess in the side of said head when the vertically movable bolt is in its retracted position.

6. In a door lock of the character described, the combination with a door and door casing, of a vertically movable bolt mounted on said door, an abutment head on said bolt having a recess in one side thereof and an abutment face adjacent said recess, a latch bolt pivoted on the door having a dependent tail piece arranged for engagement with said abutment face and adapted to be received in the recess in the side of the abutment head, a keeper on the door casing and a trigger on the latch bolt arranged for engagement with said keeper to restore the latch bolt to projected position.

7. In a door lock of the character described, the combination of a casing open at the top and at the rear side thereof, a latch bolt pivoted transversely in the upper portion of said casing and arranged to project up through the open top thereof, an abutment head slidingly confined in the lower portion of said casing, a cover closing the rear side of the casing and holding the pivoted latch bolt and the sliding abutment head in position therein and coöperating abutment faces on said latch bolt and abutment head respectively.

8. In a door lock of the character described, the combination with a door and door casing, of a gravity bolt slidingly mounted on the door, a top latch bolt pivoted near the upper end of the door, a keeper on the door casing arranged to be engaged by said top latch bolt, an abutment head on the upper end of the gravity bolt, having an abutment face and a recess below said abutment face, a dependent tail piece on the top latch bolt arranged to engage the abutment face when the gravity bolt and top latch bolt are both projected and to engage in the recess in the abutment head to hold the gravity bolt elevated when both bolts have been released and a trigger on the top latch bolt adapted to engage a stationary abutment on the door casing as the door is closed to swing the top latch bolt into engagement with the keeper and release the tail piece of the top latch bolt from supporting engagement with the head of the top latch bolt.

NORMAN B. HURD.