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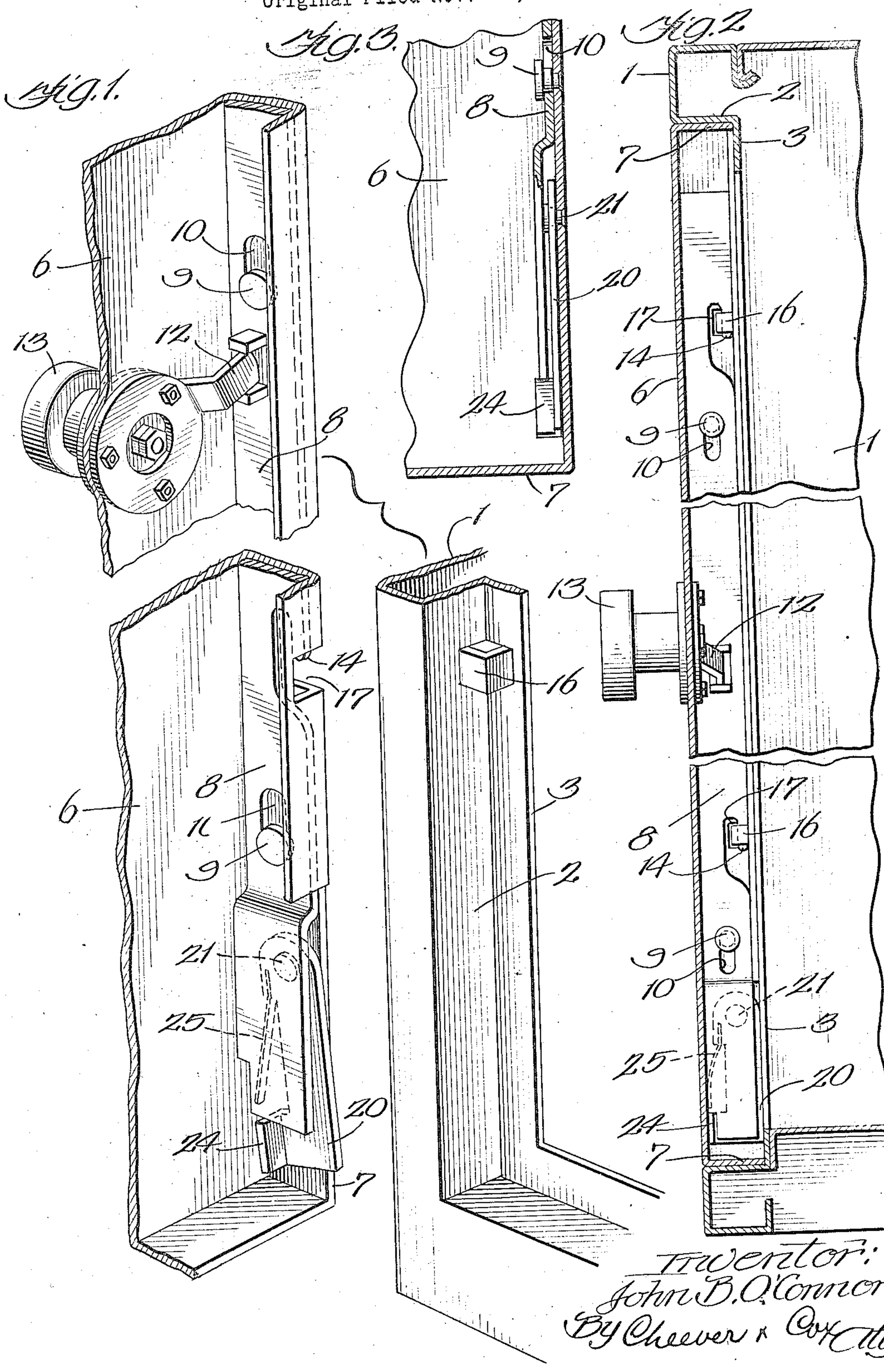
J. B. O'CONNOR

LOCKING DEVICE

Original Filed Nov. 21, 1921



Patented Nov. 18, 1924. 1,515,612

UNITED STATES PATENT OFFICE.

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LOCKING DEVICE.

Original application filed November 21, 1921, Serial No. 516,568. Divided and this application filed January 6, 1922. Serial No. 527,355.

To all whom it may concern:

Be it known that I, JOHN B. O'CONNOR, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Locking Devices, of which the following is a specification.

My invention relates to locking devices for lockers and similar structures, and the general object is to provide means for automatically holding the locking element in non-acting position when it is brought there by the controlling mechanism and automatically releasing it as the door moves shut, thus enabling the locking element to automatically assume acting or locking position. In two copending applications, one for lockers, filed September 26, 1921. Serial No. 503,185, (subsequently issued as Patent No. 1,438,547) and another for locking devices, filed November 21, 1921, Serial No. 516,568, of which this present application is a division, I have shown lockers having vertically movable locking bars. When the bar is raised it unlocks the door. Unless provision be made to the contrary, gravity will, of course, cause such a bar to descend as soon as it is released, and in the absence of cams or bevels it is necessary to again raise the bar manually before it can be finally lowered into locking position. The general purpose of my present invention is to provide means to avoid this conscious manipulation of the locking bar and to avoid the use of cams and bevels, and to provide means for holding the locking bar raised so long as the door is open and automatically release it as the door closes. More specifically it is my purpose to provide a detent which projects from the inner surface of the door and thus is subjected to a straight-in push by the door frame as the door closes. This renders the action more positive and less liable to be affected by door warpage than if a cam action were depended upon.

I accomplish my object by the mechanism illustrated in the accompanying drawings, in which

Figure 1 is a fragmentary perspective, showing the locking bar mounted upon the door and equipped with my automatic detent. Associated with this figure is a portion of a door frame showing the manner in which the locking bar engages into certain eyes or loops formed in the door frame. The formation of these eyes or loops and the formation of the cooperating hooks on the locking bar are not herein claimed, as they are claimed in said application, Serial No. 503,185. Figure 1 also shows at the upper portion means for lifting the bar, but these means are not herein claimed as they are claimed in said application, Serial No. 516,568.

Figure 2 is an assembly view showing the locker and door in cross section and showing a side elevation of the locking bar and its associated parts.

Figure 3 is a sectional elevation showing the automatic detent and its cooperating elements.

Like numerals denote like parts throughout the several views.

In the design illustrated, the body 1 of the locker has a door frame 2 provided with an inturned flange 3 which forms a stop for limiting the inward movement of the door 6. The door has a marginal flange 7 and is hinged to the locker in the ordinary manner. It is provided with a vertically movable locking bar 8 which is guided and held in position by headed pins 9 which work in slots 10 in the bar. The bar is raised and lowered by means of a lever 12 controlled by a handle 13. The bar has down turned hooks 14 which are adapted to be lowered into loops or eyes 16 formed in the door frame, the door having apertures 17 for accommodating said loops when the door is closed. The parts thus far described are shown in the aforesaid applications and may be greatly varied so far as the present invention is concerned without departing from the spirit thereof. The important characteristic is that the locking bar moves vertically and tends to descend by gravity, or otherwise, to locking position.

Now referring to the part more intimately concerned with my present invention:

The mechanism is shown in the lower portion of Figures 1, 2 and 3 and consists, according to the present design, of a detent 20 in the form of a short strip loosely pivoted at its upper end to a stationary pin 21 in the flange of the door. It has a lug 24 in the lower end adapted to swing to a point beneath the locking bar to hold it raised. A spring 25 is carried by the detent and engages the door front in such manner as to constantly urge lug 24 toward the bar with the result that as soon as the bar is raised to unlocking position the lug will swing under the lower end of it and hold it raised as shown in Figure 1. When the detent is thus in acting position one corner of it (lower right of Figure 1) projects beyond the door flange, the result being that as the door closes the detent strikes the portion 3 of the door frame and is pushed back by it to non-acting position shown in Figure 2. This permits the locking bar to drop to locking position. When the locking bar is down, the lower end of it passes behind the lug 24 and thus holds it in non-acting position. The result is that the operator does not need to manipulate the handle 13 to lock the door, nor does he need to slam the door nor push it forcibly against the door frame, as is frequently the case where cams or beveled elements are relied upon for repulsing the locking element. Beveled latches are, of course, well known; but in those cases where they resume locking position as soon as the door is open, considerable force is frequently necessary in closing the door to first cause the door frame or strike plate to move the latch to non-acting position before it can again assume locking position. In my device, as soon as the latch is unlocked, it stays in that position until the door is again closed, whereupon it automatically reassumes locking position. It will be noted, however, that the mechanism may be readily put in such condition that it will not lock automatically in case, for any reason, it may be desired to avoid such principle of operation. If the operator wishes to make it necessary to manipulate the handle before the lock will again take effect all he has to do is to repulse the detent when the door is open, whereupon the locking bar will descend and hold the detent in non-acting position. The next time the lock is operated, however, the detent will reassume its normal position.

Another advantage of my construction lies in the fact that the detent projects from the inner surface of the door and is swingable in a vertical plane perpendicular to the plane of the door. The result is that as the door closes the detent is subjected to a straight-in push (so to speak) by the door frame in distinction to a cam-like push. The advantage is that the effect of warping of the door or door frame is nullified or practically so. If the detent were bevelled and engaged the edge of the door frame to be cammed by it to non-acting position it would be necessary for the door and frame to fit much more accurately than in any case where the detent engages a stationary surface perpendicular to the path of the acting portion of the cam as the door approaches closed position.

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

1. A door lock having a vertically slidable, gravity actuated, locking bar mounted on the door, and a detent pivotally connected to the door and said detent being biased toward the locking bar and adapted to underlie a portion of it for holding it raised, said detent being movable in a plane at right angles to the plane of the door and when in acting position projecting from the door to engage and be repulsed by the door frame as the door closes.

2. A door lock having a vertically slidable, gravity actuated, locking bar mounted on the door, and a detent pivotally connected to the door and being biased toward the locking bar and adapted to underlie a portion of it for holding it raised, said detent when in acting position projecting from the door to engage and be repulsed by the door frame as the door closes, the plane of movement of the detent on the door being vertical and at right angles to the plane of the door.

3. A door lock having a vertically slidable, gravity actuated, locking bar mounted on the door, and a detent pivoted to the door and arranged uprightly and swingable in a plane perpendicular to the plane of the door for engaging and disengaging the bar, said detent projecting inward from the inner face of the door to be engaged by the door frame as the door closes and thus be subjected to a straight-in push.

4. A door lock having a vertically slidable, gravity actuated locking bar mounted on the door, manually operated means for lifting the bar to release it, and a detent pivotally connected to the door and suspended from its upper end, said detent being biased toward the locking bar and adapted to underlie a portion of it for holding it raised, said detent being swingable in a plane at right angles to the plane of the door, and when in acting position projecting inward from the door in position to be engaged by the door frame as the door closes and thus be subjected to a straight-in push.

5. The combination with a door having a marginal flange at the free edge extending inward at right angles to the plane of the door, a gravity actuated locking bar slid-

ably mounted upon the inner surface of said flange and movable in a vertical direction, and a detent supported upon said flange and movable in the direction of the flange, said detent being biased toward the locking bar, and adapted to underlie a portion of it for holding it raised, said detent when in acting position projecting inward from the inner edge of the flange of the door whereby when the door closes in may engage the door frame and be repulsed by it to release the locking bar.

In witness whereof, I have hereunto subscribed my name.

JOHN B. O'CONNOR.