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R. R. HILER

2,518,141

LATCH AND LOCK FOR LOCKER DOORS

Filed July 27, 1949

3 Sheets-Sheet 1

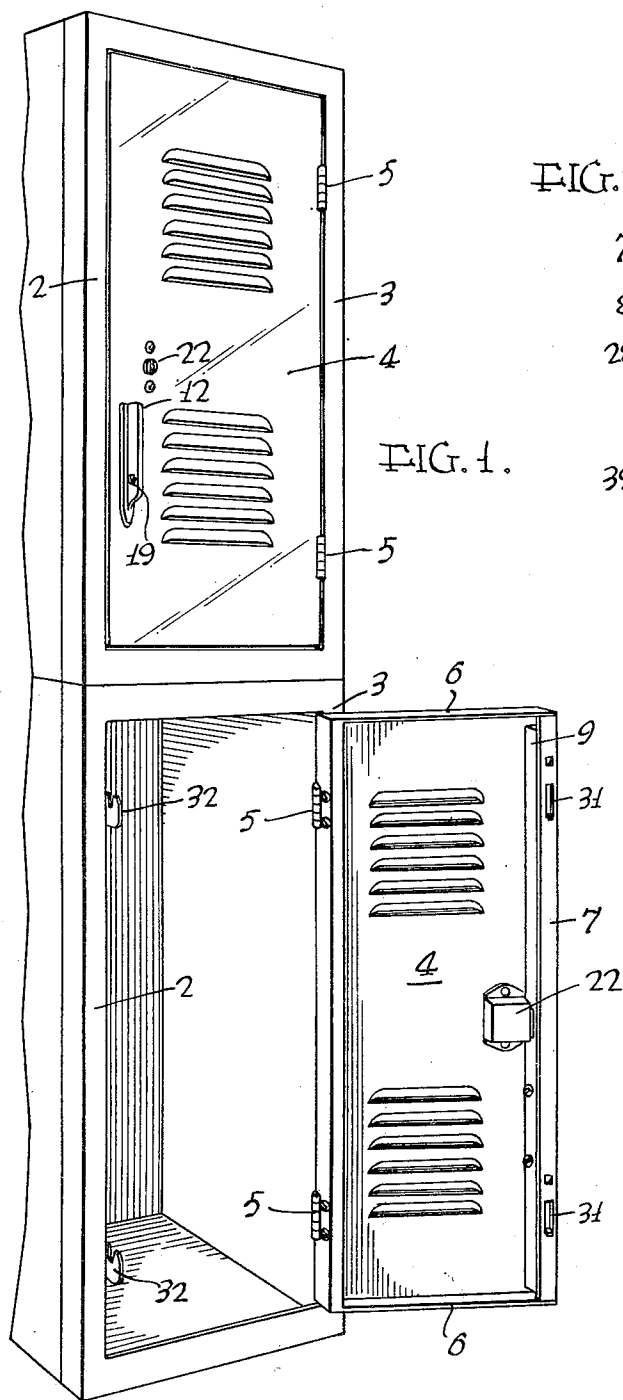


FIG. 2.

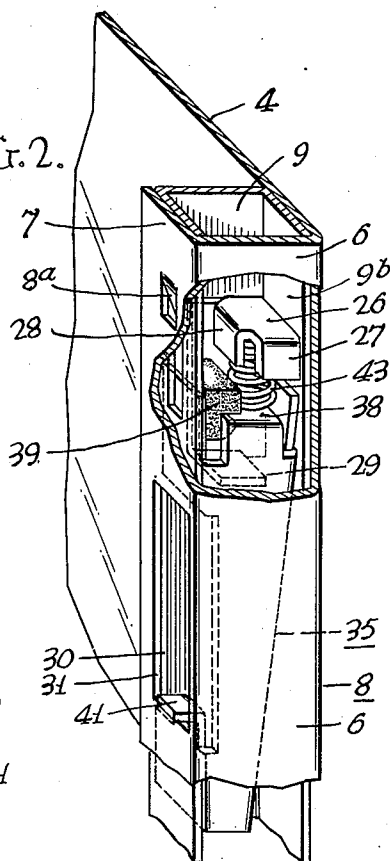
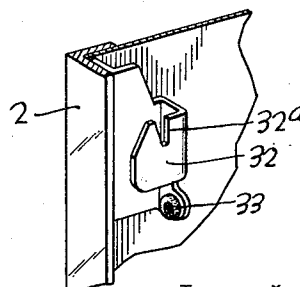


FIG. 3.



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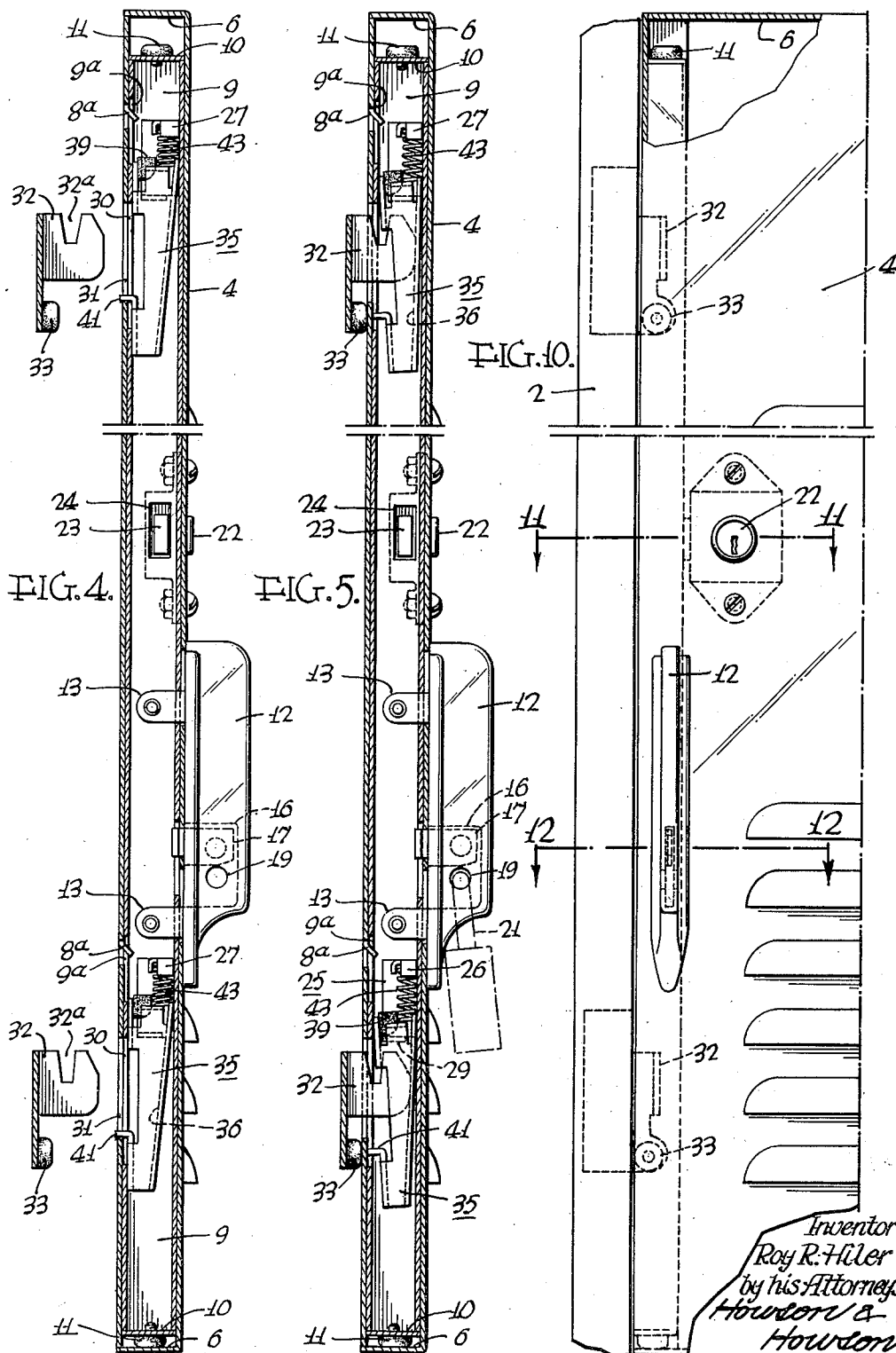
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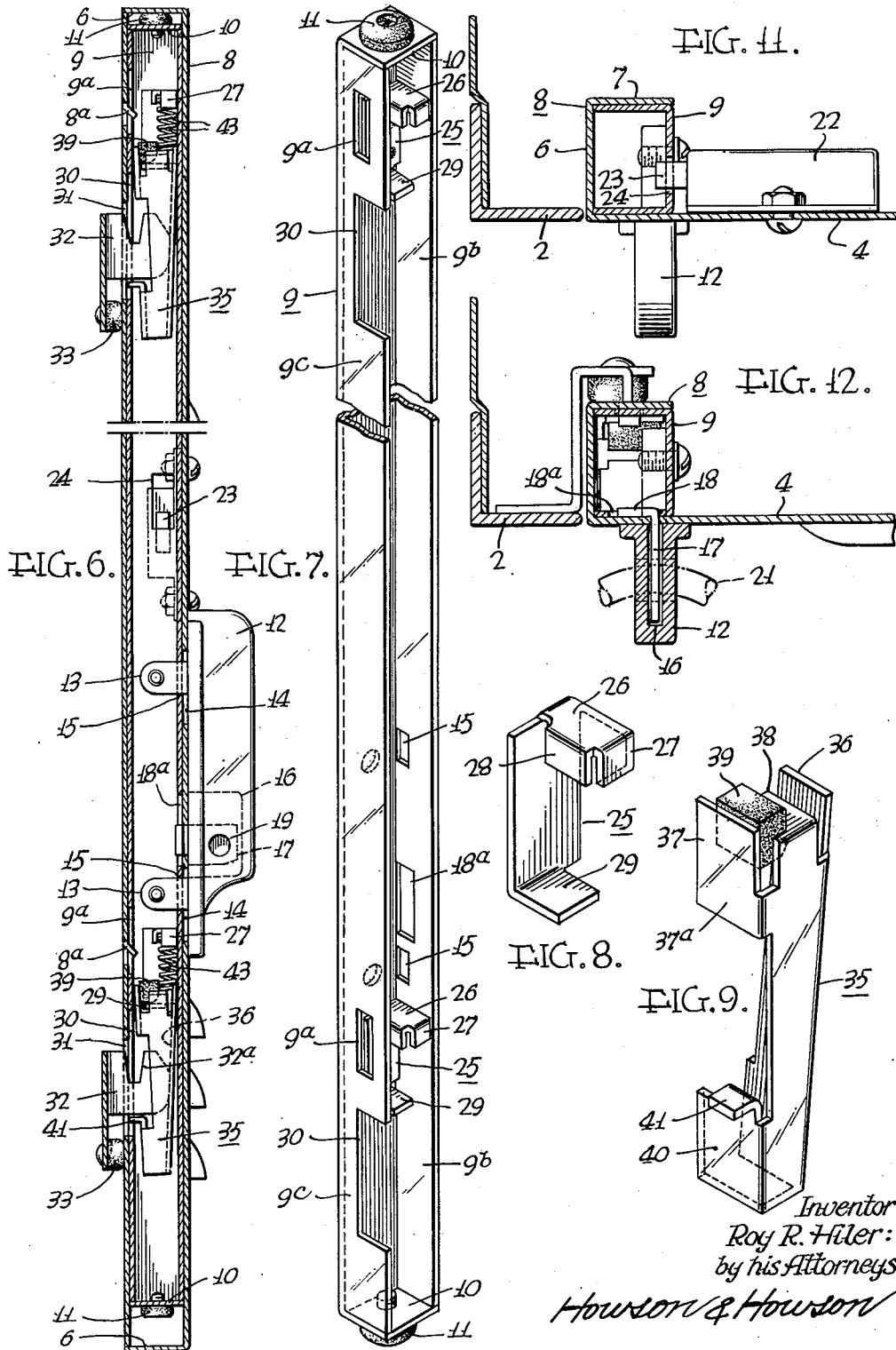
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LATCH AND LOCK FOR LOCKER DOORS

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UNITED STATES PATENT OFFICE

2,518,141

LATCH AND LOCK FOR LOCKER DOORS

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8 Claims. (Cl. 70-79)

1

This invention relates to new and useful improvements in locking devices, and more particularly to locking devices especially adapted for clothes lockers and the like.

The principal object of the present invention is to provide a novel locking device for lockers which is constructed to permit the locker door to be locked while in an open position and then when closed to be automatically latched and locked thus preventing the door from being re-opened until the lock is unlocked to permit operation of the latch release mechanism.

Another object of the invention is to provide a novel locking device for lockers having the features and characteristics set forth which is of comparatively simplified and inexpensive construction and is entirely foolproof and effective in operation and use.

These and other objects of the invention and the various features and details of the construction and operation thereof are hereinafter fully set forth and described with reference to the accompanying drawings; in which:

Fig. 1 is a view in perspective of a sheet metal locker embodying the present invention;

Fig. 2 is a fragmentary perspective view of a portion of the locker or door, part thereof having been broken away to illustrate certain structural details of the invention;

Fig. 3 is a fragmentary view in perspective of a portion of the locker showing the construction and arrangement of the door keeper mounted thereon;

Fig. 4 is a vertical sectional view showing the locking device with the latch in cocked position ready to engage with the keeper when the locker door is shut;

Fig. 5 is a vertical sectional view similar to Fig. 4 showing the latch members in locking engagement with the door keeper;

Fig. 6 is a vertical sectional view similar to Figs. 4 and 5 showing the latching members in the raised position to which actuated prior to the latching members assuming the cocked position thereof shown in Fig. 4;

Fig. 7 is a view in perspective of the vertical reciprocable actuating member of the locking device showing the details of construction thereof;

Fig. 8 is an enlarged detached view in perspective of one of a pair of brackets fixedly associated with the locking device actuating member;

Fig. 9 is an enlarged detached view in perspective of one of a pair of latch members that

2

is operatively associated with the lock-actuating member;

Fig. 10 is an enlarged fragmentary front elevational view showing a portion of the locker with the door in closed position, a portion of the door being broken away to show certain structural details;

Fig. 11 is an enlarged fragmentary sectional view taken on line 11-11, Fig. 10; and

Fig. 12 is an enlarged fragmentary sectional view taken on line 12-12, Fig. 10.

Referring now more particularly to the drawing, there is illustrated in Fig. 1 a double tier of lockers each of which is provided with side jambs 2 and 3, respectively. A sheet metal door 4 is mounted on the jamb 3 by means of hinges 5. The peripheral edges of the door 4 are bent inward to provide inwardly extending flanges 6, and the flange 6 along the free vertical side edge of the door terminates at its inner edge in a laterally extending flange portion 7 which is disposed in spaced parallel relation to the plane of the door 4 and forms with the latter and the intermediate flange portion 6 a three-sided recess or channel 8 that extends the entire height of the door 4.

Mounted for vertical sliding movement within the door channel 8 is an actuating member 9 of channel cross-sectional shape and having a length just slightly less than the height of the said door channel. The member 9 is slidably retained and guided in the door channel 8 by means of pressed-out lugs 8a in the latter which extend inwardly and engage within suitable vertically elongated slots 9a provided in the actuator member 9. Sliding movement of the actuating channel member 9 within the door channel 8 is limited by the top and bottom flanges 6 of the door and the closed ends 10 of the actuator 9 are provided with rubber cushions 11 to cushion and render substantially noiseless the engagement of the ends of the actuator member 9 with the top and bottom flanges 6 of the locker door 4.

Sliding movement of the actuator member 9 vertically within the door channel 8 is accomplished manually by means of a handle 12 which is mounted at the outer or front side of the door 4 and is fixedly secured to the actuator member 9 by means of arms 13 which form a part of the said handle 12 and extend through suitable openings 14 and 15 provided therefor in the door channel 8 and actuator 9, respectively. The handle arm openings 14 in the door channel 8 are vertically elongated to provide sufficient clearance for travel of the arms 13 when the ac-

3

tuator member 9 is raised and lowered. As shown in Fig. 12 of the drawings, the handle 12 is slotted or recessed as indicated at 16 to receive therein the outwardly projecting leg 17 of an angle member which has its other leg portion 18 fixedly secured to the inner surface of the door 4, for example, in the manner and relationship shown in said Fig. 12, suitable openings 18a being provided in the actuator member 9 to provide sufficient clearance for said leg 18 upon sliding movement of the latter within the door channel 8.

The recess 16 in the handle 12 has sufficient height to permit vertical sliding movement of the handle 12 relative to the angle leg 17 and the position of the latter vertically on the door 4 with respect to the said handle 12 is such that, when the latter is in its lower limit position, suitable openings 19 provided in the handle 12 will be disposed below the angle leg 17 thus permitting the passage therethrough of a padlock or like device, for example, in the manner indicated at 21 in Fig. 12.

In lieu of or in addition to such a padlock or like device, the door may be provided with a key-operated lock 22 secured interiorly of the door 4 and having a bolt 23 adapted to engage inwardly of the actuator member 9 through a suitable slot or opening 24 therein, the said opening 24 being positioned in the member 9 so that it is disposed to receive the lock bolt 23 only in the lower limit position of vertical movement of the member 9.

Fixedly secured, for example, by welding, within the actuator member 9 adjacent the opposite ends thereof are brackets 25, the details of construction of which are clearly shown in Fig. 3 of the drawings. As shown in Fig. 7 the brackets 25 are secured to the base portion of the channel shaped member 9 and at their upper end these brackets are provided with a horizontally extending head portion 26 having depending edge flanges 27 and 28. With reference to Fig. 7 the brackets 25 are mounted in the channel shaped member 9 with the head portion 26 disposed adjacent the outer side wall portion 9b thereof so that said head portion 26 together with its depending edge flanges 27 and 28 cooperate with the inner surface of said wall portion 9b to provide a downwardly opening recess or socket the purpose for which will be set forth hereinafter. In addition to the head portion 26 the brackets 25 are provided at their lower end with an inwardly extending flange portion 29.

Formed in the other wall 9c of the actuator member 9 are relatively large openings or cut-outs 30 which are disposed at a level just below the brackets 25. These openings 30 in the actuator member 9 are adapted to register with generally similar openings 31 provided in the door channel 8 and these respective openings 30 and 31 are arranged, when the door 4 is closed, to receive therethrough door keepers 32 which are fixedly mounted in association with the side jamb 2 of the locker. The keepers 32 are provided with resilient cushions 33 to cushion the closing impact of the locker door 4.

Mounted within the actuator member 9 for cooperative engagement with the door keepers 32 are latch members which are generally designated by reference numerals 35 and constructed as shown in Fig. 9 of the drawings. As shown, the latch members 35 are of generally wedge shape construction having a downward taper arranged so that the lower end portion of the latch members is afforded limited pivotal or rocking move-

4

ment in a plane perpendicular to the plane of the locker door 4. The latch members 35 are of generally hollow construction having at the upper end thereof relatively spaced outer and inner wall portions 36 and 37 between which is disposed a generally horizontally extending flange portion 38 that carries a resilient cushion element 39. The outer wall portion 36 of the latch member 35 extends the entire height of the latter whereas the inner wall portion 37 is of limited vertical extent having its lower edge portion 37a constructed and arranged to engage a vertical slot 32a in the door keeper 32 when the door 4 is closed. The wall portion 37 is spaced substantially from a lower inner wall portion 40 so as to provide therebetween an opening for the passage of the door keeper 32. The upper edge of the lower inner wall portion 40 of the latch is provided with an outwardly projecting lug portion 41.

As previously stated the latch members 35 are mounted within the channel shaped actuator member 9 for limited sliding and rocking movement relative thereto. In this connection the latch members 35 are mounted within the channel shaped member 9 with the upper flange portion 38 thereof and its resilient cushion 39 disposed intermediate the flange 29 and head portion 26 of the adjacent bracket 25, for example, in the relation shown in Fig. 2 of the drawing. By this arrangement it will be observed that the latch members 35 are afforded vertical sliding movement in the member 9 within the limits provided by the head and flange portions 26 and 29 of the brackets 25.

It is to be noted, however, that the latch elements 35 normally are biased downwardly within the member 9 with respect to the brackets 25 by means of coil springs 43 which are interposed between the latter and the latch members 35. In this connection it is pointed out that the coil springs 43 have their upper ends disposed within the sockets formed by the bracket head portion 26 and its depending flanges 27 and 28 in cooperation with the channel member side wall 9b and that the lower end of the said coil springs 43 seat upon the upper surface of the latch member flanges 38.

In operation of a locking device and assuming that the locker door 4 is in closed position and locked with the several parts of the locking device in the relative positions shown in Fig. 5 of the drawings, in order to open the door 4 the lock 22 is first unlocked to remove the bolt 23 from engagement within the opening 24 in member 9, and if the handle 12 is locked by means of a padlock or the like passed through the openings 19 therein this likewise is unlocked and removed.

The handle 12 may now be manually actuated in an upward direction carrying with it the channel shaped actuator member 9 until the upper end of the latter engages the underside of the top door flange 6. This upward movement of the actuator member 9, of course, carries with it the brackets 25 and the bottom flange portions 29 of these brackets in turn engage the bottom of the resilient blocks 39 on the latch members 35 thereby carrying the latter upwardly and disposing the several parts of the device in the relative position shown in Fig. 6 of the drawing. In this position the latch members 35 have been disengaged from the door keepers 32 and hence the locker door 4 may be swung outwardly to open position.

At this time the door handle 12 may be re-

5

leased from the grip of the operator with the result that the latter and the channel shaped actuator member 9 are caused to drop downwardly under the influence of gravity to their lower limit position. During initial downward movement of the actuator member 9 and the parts carried thereby the springs 43 urge the latch members downwardly and at the same time cause them to rock or pivot in the clockwise direction with respect to the drawing and engage the flange portion 41 thereof over the bottom edge of the keeper openings 31 in the door channel 8 in the manner and relation shown in Fig. 4 of the drawing.

After engagement of the latching member flange 41 on the lower edge of the keeper openings 31 as described, downward movement of the actuator member 9 and handle 12 to their lower limit position continues independently of the latch members 35 until said parts assume the relative positions shown in Fig. 4 of the drawing. Since the channel shaped actuator member 9 continues to move downwardly for a short period after engagement of the latch members on the lower edge of the openings 31, it will be observed that the springs 43 are compressed so that a substantial force is stored in the springs 43 tending to urge the latch members 35 downwardly.

When the latching members 35 have been set in the cocked position shown in Fig. 4 and the actuator member 9 has dropped to its lower limit position, the lock 22 may be operated to project the bolt 23 through the opening 24 of the member 9 and thereby lock the latter in its lowermost position. Likewise a padlock or the like may be inserted through the handle openings 19 to thereby lock the handle against upward actuation.

With the several parts of the locking device in the relative position described and shown in Fig. 4, as the door approaches fully closed position the keepers 32 pass inwardly through the openings 30 and 31 in the door channel 8 and actuator member 9. This inward passage of the door keepers 32 continues until the forward edges thereof engage the inner surfaces of the walls 36 of the latch members 35 thereby actuating the latter in the counterclockwise direction to disengage the latch member flange 41 from the bottom edge of the door channel openings 31. As the flange 41 is disengaged from the channel openings the energy stored in the springs 43 forces the latch members 35 in the downward direction to engage the lower edge 37a of the latch wall portion 37 within the slot 32a of the associated keeper 32 in the manner and relation shown in Fig. 5 of the drawings. Thus the door 4 is locked in closed position and cannot be opened until the lock 22 and any other lock have been unlocked.

From the foregoing it will be observed that the present invention provides a novel locking device for lockers which is constructed to permit the locker door to be locked while in an open position and then, when closed, to be automatically latched and locked thus preventing the door from being reopened until the lock is unlocked to permit operation of the latch release mechanism. The invention further provides a novel locking device for lockers having the foregoing features and characteristics which is of comparatively simplified and inexpensive construction and is entirely foolproof and effective in operation and use.

While a particular embodiment of the present invention has been illustrated and described

6

herein, it is not intended to limit the invention to such disclosure, and changes and modifications may be made therein and thereto within the scope of the following claims.

I claim:

1. In a locking device for doors, an actuator member adapted to be slidably associated with a door and having an opening adapted to register with an opening in the door for a door keeper, a latch member for engaging said keeper when said keeper extends through said openings mounted for limited sliding movement relative to said actuator and for limited rocking movement transversely thereof, means associated with the actuator operable upon sliding movement thereof in one direction to actuate said latch member in the same direction to unlocked position, means acting on said latch member biasing the same slidably in the opposite direction toward locked position and rockably toward said keeper opening, and means on the latch member adapted to extend through said openings and being engageable with a wall of said openings in the door under the bias of said spring to hold the latter in said unlocked position adjacent said keeper opening upon movement of the actuator in the opposite direction.

2. In a locking device for doors, an actuator member adapted to be slidably associated with a door and having an opening adapted to register with an opening in the door for a door keeper, a latch member for engaging said keeper when said keeper extends through said openings mounted for limited sliding movement relative to said actuator and for limited rocking movement transversely thereof, means associated with the actuator operable upon sliding movement thereof in one direction to actuate said latch member in the same direction to unlocked position, means acting on said latch member biasing the same slidably in the opposite direction toward locked position and rockably toward said keeper opening, and means on the latch member adapted to extend through said openings and being engageable with a wall of said openings in the door under the bias of said spring to hold the latter in said unlocked position adjacent said keeper opening upon movement of the actuator in the opposite direction, the latch member in said unlocked position being disposed for engagement by a keeper entering the opening in said actuator upon closing the door to disengage the latch from the door and cause it to be actuated in the opposite direction to locked position by said spring.

3. In a locking device for doors, a vertically shiftable actuator member adapted to be slidably associated with a door and arranged to drop by gravity to locked position whenever released from upper unlocked position, means to raise said actuator member, said actuator having an opening therein adapted to register with an opening in the door so as to receive a door keeper, a latch member slidable relative to said actuator and having limited rocking movement transversely thereof, means providing a connection between said actuator and latch member operable to actuate the latter upwardly when the actuator is raised, spring means normally biasing said latch member slidably in the downward direction and rockably toward said keeper opening, and means on the latch member adapted to extend through said openings and being engageable with a wall of said openings in the door under the bias of said spring when the latch member is raised to

hold the latter in an elevated position adjacent said keeper opening when the actuator drops to locked position by gravity upon release of the handle.

4. In a locking device for doors, a vertically shiftable actuator member adapted to be slidably associated with a door and arranged to drop by gravity to locked position whenever released from upper unlocked position, means to raise said actuator member, said actuator having an opening therein adapted to register with an opening in the door so as to receive a door keeper, a latch member slidably relative to said actuator and having limited rocking movement transversely thereof, means providing a connection between said actuator and latch member operable to actuate the latter upwardly when the actuator is raised, spring means normally biasing said latch member slidably in the downward direction and rockably toward said keeper opening, means on the latch member adapted to extend through said openings and being engageable with a wall of said openings in the door under the bias of said spring when the latch member is raised to hold the latter in an elevated position adjacent said keeper opening when the actuator drops to locked position by gravity upon release of the handle, the latch member in said elevated position being engageable by the keeper upon closing the door and rocked thereby against the bias of said spring to release the latch member and cause it to be actuated downwardly by said spring into locking engagement with the keeper.

5. In a locking device for doors, an actuator member adapted to be slidably associated with a door and having an opening adapted to register with an opening in the door for a door keeper, a bracket fixedly carried by said actuator member and having spaced projecting stop portions, a latch member for engaging said keeper when extended through said openings slidable relative to said actuator for limited rocking movement transversely thereof and having a flange portion disposed for engagement by one stop portion of the bracket so that movement of the actuator in one direction operates to move the latch member in the same direction to unlocked position, spring means interposed between the bracket other stop and latch member flange normally biasing said latch member slidably in the opposite direction toward locked position and rockably toward said keeper opening, and a projection on the latch member adapted to extend through said openings and being engageable with a wall of said opening in the door under the bias of said spring when the latch member is actuated in said one direction to hold the latter in said unlocked position adjacent said keeper opening when the actuator is moved in the opposite direction.

6. In a locking device for doors, an actuator member adapted to be slidably associated with a door and having an opening adapted to register with an opening in the door for a door keeper, a bracket fixedly carried by said actuator member and having spaced projecting stop portions, a downwardly tapered latch member for engaging said keeper when extended through said openings slidable relative to said actuator for limited rocking movement transversely thereof and having a flange portion disposed for engagement by one stop portion of the bracket so that movement of the actuator in one direction operates to move the latch member in the same direction to unlocked position, spring means interposed between the bracket other stop and latch member flange

normally biasing said latch member slidably in the opposite direction toward locked position and rockably toward said keeper opening, and a projection on the latch member adapted to extend through said openings and being engageable with a wall of said opening in the door under the bias of said spring when the latch member is actuated in said one direction to hold the latter in said unlocked position adjacent said keeper opening when the actuator is moved in the opposite direction, the latch member in said unlocked position being engageable by the keeper upon closing the door and rocked thereby against the bias of said spring to release the latch member and cause it to be actuated in the opposite direction to locked position by said spring.

7. In a locking device for doors, a vertically shiftable actuator member adapted to be slidably associated with a door and arranged to drop by gravity to lower locked position whenever released from upper unlocked position, means to raise said actuator member, said actuator having an opening therein adapted to register with an opening in the door so as to receive a door keeper, a bracket fixedly carried by said actuator member and having projecting stop portions spaced longitudinally of the actuator, a downwardly tapered latch member slidably disposed in said actuator for limited rocking movement transversely thereof and having an upper flange portion disposed for engagement by the lower stop portion of the bracket so that raising of the actuator operates to raise the latch member, spring means interposed between the bracket upper stop and latch member flange normally biasing said latch member slidably in the downward direction and rockably toward said keeper openings, a projection on the latch member adapted to extend through said openings and being engageable with a wall of said opening in the door channel under the bias of said spring when the latch member is raised to hold the latter in an elevated position adjacent said keeper openings when the actuator drops to locked position by gravity upon release of the handle, the latch member in said elevated position being engaged by the keeper upon closing the door and rocked against the bias of said spring to release the latch member and cause it to be actuated downwardly by said spring into locking engagement with the keeper, and means to lock the actuator in the lower locked position thereof irrespective of the position of said latch member.

8. In a locking device for doors, a vertically shiftable actuator member adapted to be slidably associated with a door and arranged to drop by gravity to lowered locked position whenever released from upper unlocked position, means to raise said actuator member, said actuator having an opening therein adapted to register with an opening in the door so as to receive a door keeper, a downwardly tapered latch member slidably disposed in said actuator for limited rocking movement transversely thereof, connections between the actuator and latch member operable upon raising of the actuator to raise the latch member, spring means normally biasing said latch member slidably in the downward direction and rockably toward said keeper openings, a projection on the latch member adapted to extend through said openings and being engageable with a wall of said openings in the door under the bias of said spring when the latch member is raised to hold the latter in an elevated position adjacent said keeper opening when the actuator drops to

locked position by gravity upon release of the handle, the latch member in said elevated position being engaged by the keeper upon closing the door and rocked thereby against the bias of said spring to release the latch member and cause it to be actuated downwardly by said spring into locking engagement with the keeper, and means to lock the actuator in the lower locked position thereof irrespective of the position of said latch member.

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10

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