Jan. 27, 1953 E. S. HEWITT 2,626,824

DOOR LATCH

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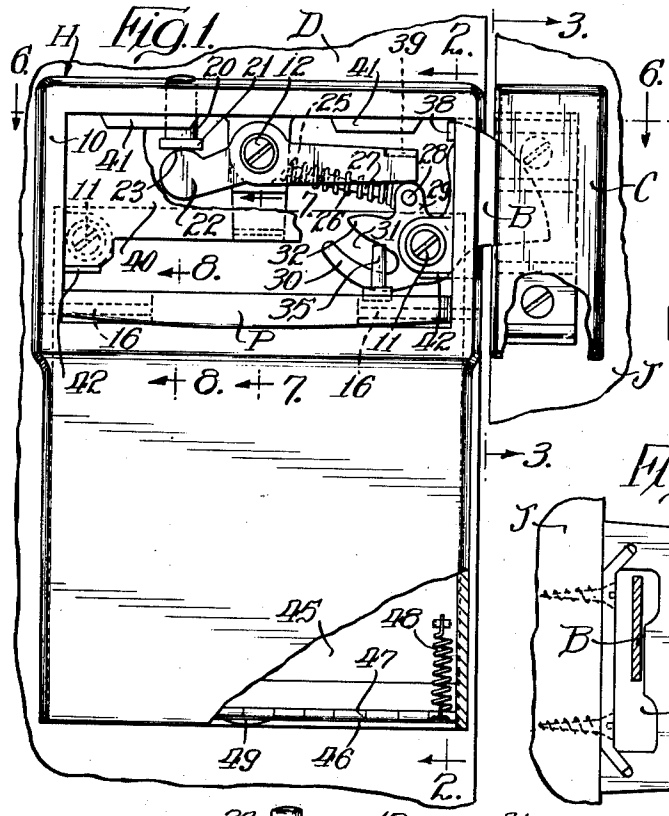

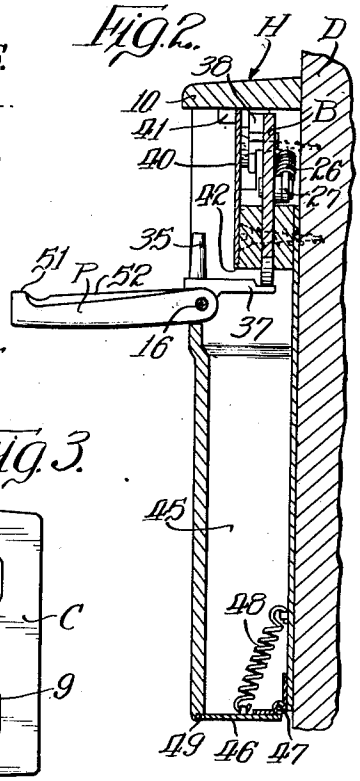

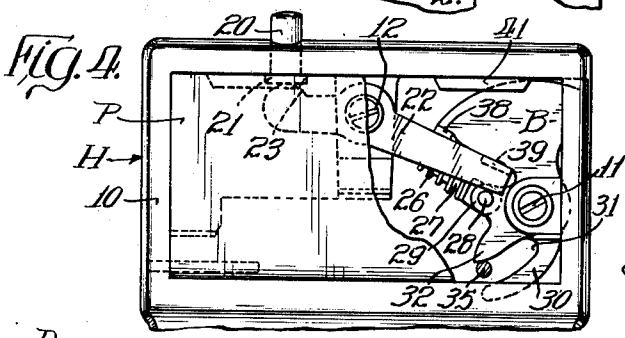

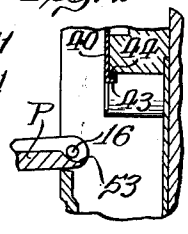

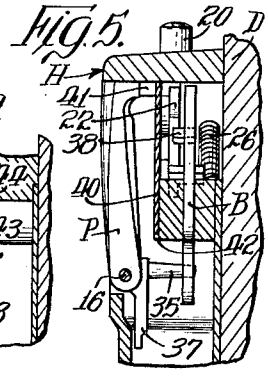

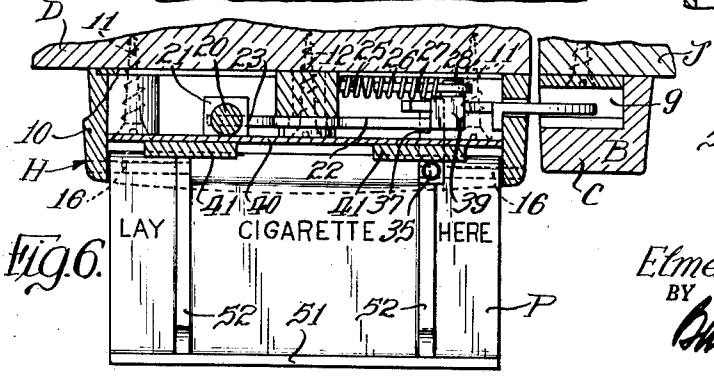

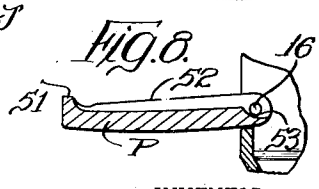

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DOOR LATCH

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9 Claims. (Cl. 292—200)

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This invention relates to a latch device which is designed particularly for use with doors of toilet stalls in public rooms. It is a primary object of the invention to incorporate with such a latch a front closure plate which may be swung down to horizontal position to serve as (1) a tray for holding cigarettes and the like, and (2) a handle by which the latch may be operated to its release position.

A device of this character, as here disclosed, is sturdy, compact, dependable in operation, and serviceable for the special purposes mentioned. It may be produced at small expense, be made up in an attractive design and finish, and otherwise be well suited for its intended purposes. It is meritorious also in numerous other respects as will hereinafter be pointed out.

A suggestive embodiment of this invention is set forth in the accompanying drawings wherein:

Figure 1 is an elevational view of the latch device in operative relation to the door whereon it is mounted, the closure plate being swung down to serve as a tray and the door latch being advanced to its locking position;

Figs. 2 and 3 are vertical sections, taken on lines 2—2 and 3—3 of Fig. 1, respectively;

Fig. 4 which is a view similar to Fig. 1, shows the closure plate swung up to its closed position, the plate being broken away to show therebehind the latch device which is retracted to unlocking position;

Fig. 5 is a detailed vertical section, similar to Fig. 2 but showing the closure plate in its up position;

Fig. 6 is a horizontal section, taken on line 6—6 of Fig. 1; and

Figs. 7 and 8 are details in section, taken on lines 7—7 and 8—8 of Fig. 1, respectively.

There is illustrated in the drawing portions of a hinged door D mounted to swing to closed position against the adjacent jamb J in a manner usual to individual stalls in public toilet rooms. A keeper in the form of a casing C having a slot 9 extending in its vertical wall proximate to the door D is affixed to the jamb in operative position relative to a latch comprising a locking bolt B that is mounted for movement into or out of the keeper slot so as to secure the door in closed position or free it to be opened.

The device of this invention comprises a housing H whose upper portion is framed at 10 so as to be open on opposite faces one of which confronts the door when the housing is affixed thereto, as by end screws 11 and a top center screw 12, each traversing openings in ears which

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are carried by the housing frame. The screws, when advanced into operative position, serve to anchor the housing fixedly to the door.

A closure plate P is fitted into the exposed open face of the housing to be disposed flush therewith when in fully closed position and while still remaining spaced from the rear face of the housing H, thereby to provide a chamber to the rear of the closure plate. I provide a pivotal mounting for the closure plate P comprising a pair of aligned pins 16 which are anchored to the side walls of the frame to extend inwardly thereof to lie within elongated sockets which are formed at opposite ends of the closure plate. The location of these pins which form a pivotal mounting for the closure plate is adjacent the bottom of the latter whereby opening movement thereof, starting at the top, may continue through 90° at which point the plate is in substantially horizontal position where it is adapted to serve as a tray. The fully open position is reached when the closure plate front face engages the bottom side of the framed head, as shown in Figs. 2, 7 and 8.

To initiate opening movement of the closure plate P, there is provided an actuator comprising a depressible button 20 which upstands from the top wall of the housing frame, the inner end of this button being formed with a head 21; and a rocker arm 22 provided near one end with a convex face 23 to be engaged by the button head and pivotally supported at a medial point by the top center screw 12. Extending radially from the rocker arm is a boss 25 which is entered into one end of a coiled compression spring 26 whose opposite end portion surrounds a pin 27 that is pivoted at 28 to an ear 29. This ear is extended outwardly, more or less radially, from the locking bolt B, here shown as a plate that is pivotally mounted on the proximate end screw 11. The bolt comprises in its structure an arcuate finger 30 defining one side of an elongated arcuate slot 31 whose opposite side is provided by a cam projection 32 extending radially of the pivoted bolt. This arcuate slot is open upon its end which faces toward the center of the housing. It will be obvious that when the button 20 is depressed to the position of Fig. 1 the spring 26 will be shifted to one side of a line between the pivot points 12 and 28, whereas when allowed to move outwardly, in response to rocking of the arm 22 to an opposite position, the spring 26 will be shifted to the opposite side of this same line. As a result the button is either in the down posi-

tion of Fig. 1 where the closure plate P is opened out to a horizontal position to serve as a tray, or is maintained in the up position of Fig. 4 where the closure plate is in a closed position and incapable of being swung back to an open position except when the button has first been manually depressed.

To control operation of the closure plate and, conjointly therewith, operation of the bolt B, I provide a post 35 which upstands radially from the closure plate when in its open position (see Fig. 2). This post is desirably round and slightly tapered so as to have capacity for freely engaging the finger 30 and swinging it downwardly as upward swinging movement of the closure plate proceeds. In so doing, the post 35 enters into the arcuate slot 31 where it remains to prevent opening swinging movement of the bolt B beyond a predetermined point (see Fig. 4).

At the base of the post I provide a rearward extending arm 37 which is disposed in general alignment with the closure plate P but offset upwardly therefrom a slight distance (see Fig. 2) to enter within the housing and underlie the bolt finger 30 when the closure plate is in its open position. The bolt B is accordingly prevented from executing a swinging movement to unlocking position while the post 35 remains disengaged therefrom. This is important because if any attempt be made to tamper with the bolt, effective provision is thereby made to prevent movement of the operating parts to abnormal positions.

From the preceding description it will be manifest that advance of the bolt to its locking position is initiated by manual depression of the button 20 which thereupon rocks the arm 22 to shift the spring 26 to over-center position where its tension becomes effective to swing the bolt B on its pivotal mounting to the locking position of Fig. 1. Here a lug 38 that extends laterally from the bolt engages with the proximate framed side of the housing to limit its outward movement; the same lug on the reverse movement of the bolt is advanced into engagement with the rocker arm 22 (see Fig. 4) to arrest further movement of the bolt at this point where it is fully retracted.

In this latter operation the closure plate P is swung down to serve as a tray. To unlock the bolt, the tray is swung up, thereby causing the post 35 to engage the finger 30 and initiate a return swinging movement of the bolt. In so doing, the bolt engages a lug 39 that is extended laterally of the arm 22 at a point relatively close to its free end; a rocking movement is thereupon imparted to the arm, causing the spring 26 to shift back to its opposite over-center position where its tension again becomes effective to swing the bolt upon its pivotal mounting, but in the reverse direction, i. e., toward the unlocking position of Fig. 4. When done, the closure plate P is in its fully closed position where it is held indefinitely by the tension of the spring 26. Summing up, operation of the actuator initiates movement of the bolt toward locking position, and raising of the closure plate initiates movement of the bolt toward its unlocking position, but in each of these operations the compression spring 26 is quickly made effective to complete the bolt movements; at the end of each movement the spring tension continues in effect so as to hold the bolt in its unlocking position with the closure plate concurrently maintained in its closed position, or to hold the bolt in its locking position, while the closure remains down in horizontal position with the aid of gravity.

The operating parts of the present door latch mechanism are carried within the framed upper portion of the housing H toward the side thereof which faces upon the door so as to leave space for flush accommodation of the closure plate P when swung to its vertical position. To protect the latch mechanism and prevent tampering with the anchoring screws 11 and 12, I provide a cover plate 40 which is held in place at or against the heads of these screws and behind a pair of top lugs 41. The end portions of this plate at its bottom are rested upon shelves 42, and medially of its ends the plate is formed with a rearward-extending upward-facing channel hook 43 (see Fig. 7) which is engaged by a snap-fit with a coacting lip 44 that is depended from the ear traversed by the center screw 12.

The housing H includes a lower compartment 45 with an open bottom normally closed by a door 46 having a hinge connection 47 with the rear wall of the housing. A spring 48 whose opposite ends are connected with this door and rear wall of the housing acts to maintain the door normally in an up position to close the open bottom of the compartment. At one point 49 the housing front wall is narrowly slitted to receive the blade of a tool by which to engage the free inset front edge of the door to manipulate it to open position for dumping of accumulated contents within the compartment 45.

The inner face of the closure plate P which in its horizontal position becomes the top face of the tray is suitably contoured to retain ashes or butts which may be disposed thereupon. For this purpose it is formed with a low wall 51 extended along its front edge and with a dished bottom across which are extended a pair of low ribs 52 for support of cigarettes and/or the like. Adjacent its rear edge the top face of the tray is inclined downwardly as at 53 to expose the inner ends of the two pivot pins 20. In case it becomes necessary to disassemble the closure plate, the pins may be hammered out from either end to free the closure plate for removal from the housing.

The door latch device of this invention is advantageous in numerous respects. It provides a sturdy lock for the purpose described, and one which may be conveniently operated. It assures presentation of a cigarette tray at a convenient location each time that the door lock is operated. Ashes and butts which are disposed on the tray are automatically slid off therefrom into the compartment below the housing with each upward movement of the tray which is a prerequisite to release of the locking bolt for opening of the door.

I claim:

1. In a device of the kind described wherein an open-face housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a horizontal open position and a vertical closed position wherein the closure plate is disposed flush with the front face of the housing, the improvement which comprises a locking bolt mounted within the housing in spaced relation to its front face, screw means traversing the housing for anchorage in a support, a protecting plate secured within the housing in covering relation to the screw means and the locking bolt, a spring for holding the locking bolt in either its locked

or unlocked position, and a motion transmitting connection between the closure plate and the locking bolt such that the former, when swung toward its closed position, will initiate an unlocking movement of the bolt, such movement, through the associated spring, being thereafter continued through to completion thereby also to maintain the closure plate in closed position.

2. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a vertical closed position and a horizontal open position, the improvement which comprises a locking bolt and a rocker arm both pivoted in the housing rearwardly of its front face for rocking about separate horizontal axes intersecting a plane transversely of the pivotal axis of the closure plate, an actuator in engagement with the rocker arm for operation thereof in one direction, interengaging means on the rocker arm and locking bolt for transmitting motion from one to the other, interengaging means on the locking bolt and closure plate for transmitting motion from one to the other, and an over-center spring in connection with the locking bolt for completing an initiated movement thereof in either direction, thereby to transmit therefrom a reverse movement both to the closure plate and to the rocker arm actuator.

3. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a vertical closed position and a horizontal open position, the improvement which comprises a locking bolt, a rocker arm and an actuator therefor all mounted for movement in the housing rearwardly of its front face, the locking bolt to rock about a horizontal axis intersecting a plane transversely of a plane in intersection with the pivotal axis of the closure plate, interengaging means on the rocker arm and actuator for transmitting motion from one to the other, interengaging means on the locking bolt and closure plate for transmitting motion from one to the other, and an over-center spring in connection with the locking bolt for completing an initiated movement thereof in either direction, thereby to transmit therefrom a reverse movement both to the closure plate and to the rocker arm actuator.

4. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing at a point above its bottom and near its front for swinging movement between a vertical closed position and a horizontal open position where it serves as a dumping tray, the improvement which comprises a locking bolt mounted for movement in the housing rearwardly of its front face and upwardly of the closure plate when in open horizontal position, interengaging means on the locking bolt and closure plate arranged to transmit motion from one to the other, and an over-center spring in connection with the locking bolt arranged to complete an initiated movement thereof in either direction in one of which it transmits an upward swinging movement to the closure plate.

5. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing at a point above its bottom and near its front for swinging movement between a vertical closed position and a horizontal open position where it serves as a dumping tray, a locking bolt mounted within the housing and movable to engage and disengage the closure plate, interengaging means on the locking bolt and closure plate arranged to transmit motion from one to the other, and spring means for holding the locking bolt in either of its extreme positions and with it the closure plate in either of its extreme positions.

6. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing at a point above its bottom and near its front for swinging movement between a vertical closed position and a horizontal open position where it serves as a dumping tray, the improvement which comprises a locking bolt and operating means therefor both mounted for movement within the housing adjacent its upper end and in spaced relation to the open-front face thereof, and a protecting plate secured within the housing in covering relation to the operating means and locking bolt.

7. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a vertical closed position and a horizontal open position, the improvement which comprises a locking bolt and an arm both pivoted to rock about separate horizontal axes, an over-center spring interconnecting the arm and bolt for transmitting motion from the former to the latter and shiftable past center in opposite directions in response to movement initiated by the arm and bolt, respectively, manual operating means in connection with the arm for transmitting rocking motion thereto in one direction thereby to advance the bolt to the point of shifting the spring past center on one side whereby its tension force becomes effective to complete movement of the bolt to locking position, and a motion transmitting connection between the closure plate and the bolt for operating the latter to a point where the spring is shifted past center on the opposite side whereby its tension force becomes effective to complete movement of the bolt to unlocking position, the connection between the bolt and (*a*) the rocking arm and (*b*) the closure plate acting reversely to transmit reverse movement to either one when the other is operated.

8. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a vertical closed position and a horizontal open position, the improvement which comprises a movable locking bolt and a pivoted rocker arm both mounted in the housing, an over-center spring interconnecting the bolt and rocker arm and shiftable in response to rocking of the arm past a center position to one side thereof where the tension of the spring becomes effective to operate the bolt to locking position, the bolt when moved in the reverse direction acting to shift the spring past center on the opposite side whereby its tension force becomes effective to continue the bolt movement to an unlocking position, manual operating means in connection with the arm for transmitting rocking motion thereto in one direction thereby to advance the bolt to the point of shifting the spring past center on one side whereby its tension force becomes effective to complete movement of the bolt to locking posi-

tion, and a motion transmitting connection between the closure plate and the bolt for operating the latter to the point where the spring is shifted past center on the opposite side whereby its tension force becomes effective to complete movement of the bolt to unlocking position, the connections between the bolt and (*a*) rocking arm and (*b*) closure plate acting reversely to transmit reverse movement to either one when the other is operated.

9. In a device of the kind described wherein an open-front housing is provided with a closure therefor in the form of a plate hinged near its bottom to the housing for swinging movement between a vertical closed position and a horizontal open position, the improvement which comprises an actuator-locking bolt assembly mounted within the housing, an operative connection between the closure plate and locking bolt for transmitting to the latter a limited motion in one direction, and for transmitting back to the closure plate a reverse movement in the opposite direction, means for transmitting from the actuator to the locking bolt a limited motion in one direction and for transmitting back to the actuator a reverse movement in the opposite direction, and an over-center spring connection between the actuator and the locking bolt, shiftable past center either way in response to motion initiated by the actuator or by the plate thereby to become effective to complete the movement of the locking bolt to its locking or unlocking position.

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