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SELF-LOCKING CASHBOX

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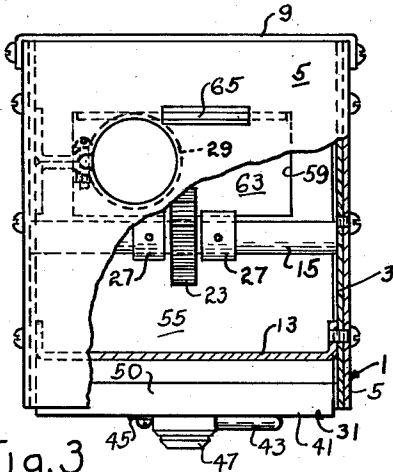


Fig. 3

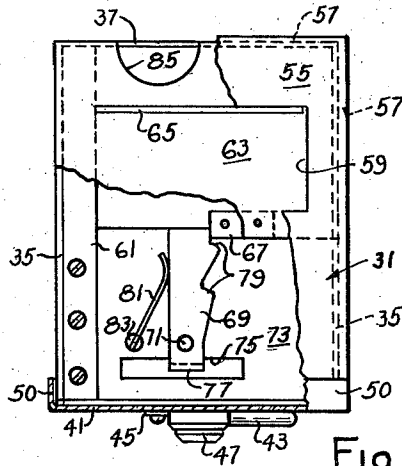


Fig. 4

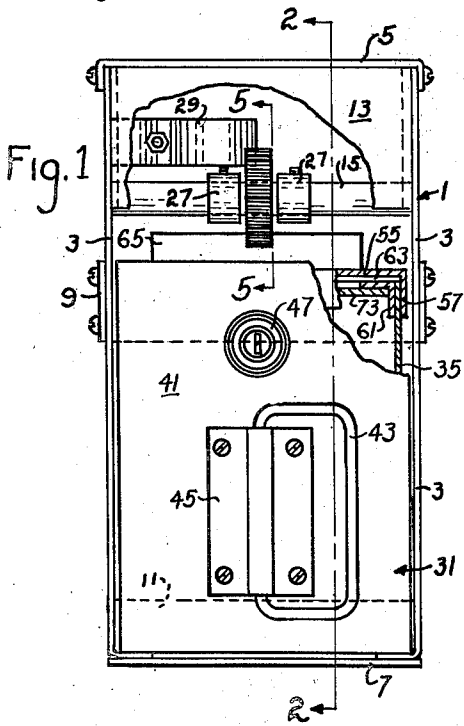


Fig. 1

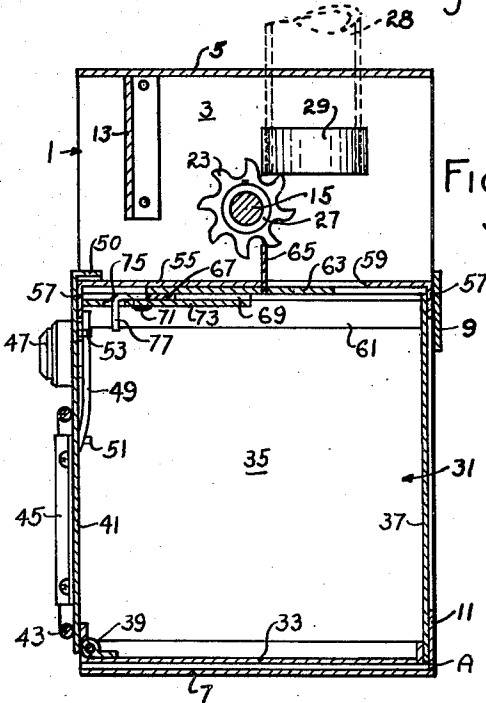


Fig. 2

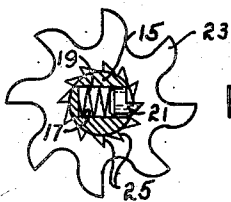


Fig. 5

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SELF-LOCKING CASHBOX

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4 Claims. (Cl. 232-15)

This invention relates to a cash-box for use in check collecting machines such as fare-boxes, vending machines, etc. More especially it relates to a cash box which is locked automatically to prevent pilfering as it is withdrawn from the associated machine.

One of the objects of the invention is to provide a cash-box which is self locking.

Another object of the invention is to provide a cash-box which is simple yet rugged in construction.

Yet another object of the invention is to provide a cash-box which cannot be withdrawn from its holder in the unlocked condition.

Still another object of the invention is to provide a cash-box and holder which is automatically conditioned for closing the cash-box upon withdrawal from the holder.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto and are made a part hereof and in which:

Figure 1 is a front elevation of the box in the holder.

Figure 2 is a view taken substantially on the line 2-2 of Figure 1 showing the locking mechanisms.

Figure 3 is a plan view of the device of Figure 1 with parts broken away to show the control ratchet and its associated means.

Figure 4 is a plan view of the cash-box alone, with parts broken away to show the slide latching means.

Figure 5 is an end view partially in section of the star-wheel, ratchet and pawl mechanism.

Referring now to Figures 1, 2 and 3 numeral 1 represents a case of sheet metal having side plates 3, top plate 5 and bottom plate 7. Rear stop members 9 and 11 and a front or abutment plate 13 are fixed to the side plates in any suitable manner.

A shaft 15 is fixed to the side plates 3 and so held that it is not rotatable about its axis. The shaft is provided with a transverse opening 17 (Fig. 5) which receives a compression spring 19 and a plug type pawl 21.

A stop means in the form of a star-wheel 23 is rotatably mounted on the shaft and is formed with an internal ratchet 25 which cooperates with the pawl 21 to prevent rotation of the star-wheel in the clockwise direction, Figure 2, while permitting counterclockwise rotation thereof. The star-wheel is held centered in the shaft 15 by a pair of collars 27 which are suitably fixed to the shaft. These collars and the shaft are preferably fastened together so that they cannot be

disassembled without practically destroying the case. This prevents tampering with them in an effort to avoid the safeguards provided by the invention.

A bracket 29 is fixed to one side plate 3 to support the end of a check tube 28 which conducts the checks to the cash-box.

The cash-box proper is indicated by numeral 31 and includes a bottom 33, two side walls 35 and a rear wall 37 all fixed together.

A hinge 39 is fixed to the front edge of bottom 33 and a door 41 is connected thereto. A handle 43 is connected to the door by means of a bracket 45 and a key operated lock 47 is fixed in the door and carries the locking dog 49. Pins 51, 53 set in the door limit the rotation of the dog. The door has a flange 50 on the sides and top which fits over the sides and top of the box.

The top 55 of the box is formed of a flat piece having downturned flanges 57 all around which fit down over the side and rear walls. The top has a rectangular opening 59 formed therein which lies under the coin chute held by bracket 29. The top is suitably attached to the walls of the box.

Two angles 61 are fixed, one to each side wall 35, by one leg. The other legs extend toward each other adjacent and parallel to the top 55 to form a guide for the slide or closure 63. The angles are, of course, spaced from the top a distance sufficient to slidably receive the closure. As shown in Figures 1 and 4 the slide extends out flush with the sides 35 and the rear wall 37. It is, however, only about half as long as the top plate (Fig. 2).

The slide is provided with an upstanding actuator 65 which is adapted to engage the star-wheel 23 as will be explained.

The slide has an abutment 67, fixed to its lower side, which is adapted to be engaged by a latch pawl 69 which is pivoted at 71 to a plate 73 which is supported from the lower side of the horizontal legs of the angles 61.

The plate 73 is provided with a slot 75 and the latch pawl 69 has an operating arm 77 bent downwardly to pass through the slot. The pawl has teeth 79 which contact the abutment 67.

A spring 81 is fixed in a stud 83 in plate 73 and bears against the pawl to urge it into engagement against the abutment 67.

The forward edge of the closure may be notched as at 85 to clear the end of the check tube. This notch is covered by the top of the box when the closure is in the closed position where it is held by the latch pawl.

Operation

In operation of a system utilizing the cash-box mechanisms herein disclosed, the case 1 is permanently mounted in the machine and the check tube of the machine is fixed in the bracket 29. Several cash-boxes are required for each machine so that the collector or man who services the machine can remove the full box and replace it with an empty one. The primary object of the invention is to insure that the box which is removed is locked closed before it is completely removed so that there will be no opportunity for removal of the checks contained therein.

The cash-box, when it is inserted in the case, is normally in the position shown in Figure 2. The slide actuator 65 lies just to the right of the star-wheel 23. Since the star-wheel cannot rotate in a clockwise direction, it will be seen that any attempt to pull the box to the left in Figure 2 will cause the actuator to engage and be stopped by the star-wheel. Further withdrawal of the box will cause the opening 59 to be moved relative to the slide to be closed thereby. As the abutment 67 and latch pawl 69 move relative to each other in this operation, the teeth 79 successively engage the abutment and hold it against return. The second tooth is so positioned that it locks the abutment when the slide reaches the fully closed position.

It will be seen from Figure 5 that the star-wheel and ratchet teeth are so positioned with respect to pawl 21 that the star-wheel is stopped with its lower tooth in a vertical position. Since the actuator 65 reaches approximately to the radius of the tooth, it is obvious that the cash-box cannot be removed from the case by simply drawing it to the left (Fig. 2). The only way in which the box can be removed is by tilting it in a clockwise direction about the lower right corner edge A (Fig. 2).

When the actuator 65 occupies the slide open position, the distance from the top of the actuator or point of contact between the actuator and the star wheel to the forward corner edge A is greater than the vertical distance from the root of the tooth or said point of contact to the bottom 7 of the case. Therefore, the box cannot be pivoted far enough about the line of contact of the star-wheel with the actuator to allow corner A to pass under the pivoted axis.

As the slide is moved toward its closed position the distance from the top of the actuator to the corner edge A is decreased. After the slide is fully closed and latched, this distance has been reduced to a distance equal to or slightly less than the vertical distance from the root of the tooth to the base 7 so that the box can be pivoted about the actuator and the corner edge A will pass under the pivotal axis. Further pivotal motion thereafter unhooks the actuator from the interposed tooth of the star-wheel and the locked cash-box will be free.

A second box which has the slide disposed in the open position (Fig. 2) is then inserted in the case by simply sliding it to the right thereon. The actuator engages a tooth of the star-wheel; the star-wheel rotates in a counterclockwise direction and passes the actuator to the Figure 2 position in the same way that a gear passes a rack tooth.

The same process as described above must be followed to remove the cash-box once the actuator passes the star-wheel.

The locked box is returned to the auditor or other official who opens the door 41 by a key

fitting lock 47 and removes the checks. He then engages the bent end 77 of latch pawl 69 and rotates it counterclockwise (Fig. 4) against the action of spring 81 to release abutment 67. The slide is now pushed back to the open position where it is frictionally held by the engagement of the side of abutment 67 by pawl 69. The door 41 is closed and relocked and the box is ready for reinsertion in a machine.

It is to be noted that the flange 50 on the door overlies the top and sides of the box to prevent the loss of any coins and also to reduce the opportunity for the effective insertion of a prying tool to force the dog 49.

The word "check" is used throughout this specification as a generic term to cover, for example, tokens, coins, tickets, or any other collectable device which may be used to indicate that the depositor is entitled to some product or service in exchange therefor.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, applicant does not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, he desires protection falling fairly within the scope of the appended claims.

What I claim to be new and desire to protect by Letters Patent of the United States is:

1. In a check collecting apparatus, a case open at one side and having a floor, a box having a bottom, a front wall joining the bottom in a front corner edge and a top substantially parallel to the bottom, said box resting on said floor and being inserted, front wall foremost, in and withdrawn from the case through the side opening, a coin opening in said top, a door mounted for movement toward and from the front wall to close and uncover the coin opening, means on the box and door for latching the door closed, an actuator on the door projecting above said top and movable in a predetermined path as said box is inserted in and withdrawn from the case, stop means mounted in the case in the path of said actuator, means mounting said stop means for movement out of the path of the actuator when the box is inserted, means for preventing movement of the stop means out of the path of the actuator when the box is moved to withdraw it, said actuator being positioned near the front wall when the door is closed, the distance from the point of contact of the stop means and actuator and the front corner edge being greater than the shortest distance from said point of contact to said floor when the door is open but being substantially equal to or less than said shortest distance when the door is closed so that the actuator may be unhooked from the stop means by tilting the box about said point of contact only when the door is closed.

2. In a check collecting apparatus, a case open at one side and having a floor, a box having a bottom, a front wall joining the bottom in a front corner edge and a top substantially parallel to the bottom, said box resting on said floor and being inserted, front wall foremost, in and withdrawn from the case through the side opening, a coin opening in said top, a door mounted for movement toward and from the front wall to close and uncover the coin opening, means on the box and door for latching the door closed, an actuator on the door projecting above said top and movable in a predetermined path as said box is inserted in and withdrawn from the case,

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stop means mounted in the case comprising a star wheel having a tooth disposed in the path of said actuator, means mounting said star wheel for movement to withdraw said tooth out of the path of the actuator and to position a second tooth in said path when the box is inserted, means including a pawl and ratchet for preventing movement of said second tooth out of the path of the actuator when the box is moved to withdraw it, said actuator being positioned near the front wall when the door is closed, the distance from the point of contact of the second tooth and actuator and the front corner edge being greater than the shortest distance from said point of contact to said floor when the door is open but being substantially equal to or less than said shortest distance when the door is closed so that the actuator may be unhooked from the stop means by tilting the box about said point of contact only when the door is closed.

3. In a check collecting apparatus, a case open at one side and having a floor, a box having a bottom, a front wall joining the bottom in a front corner edge and a top substantially parallel to the bottom, an access opening in the box, a cover therefor, said box resting on said floor and being inserted, front wall foremost, in and withdrawn from the case through the side opening, a coin opening in said top, a door mounted for movement toward and from the front wall to close and uncover the coin opening, means on the box and door for latching the door closed, means accessible from the interior of the box, through said access opening, for unlatching the latching means, an actuator on the door projecting above said top and movable in a predetermined path as said box is inserted in and withdrawn from the case, stop means mounted in the case in the path of said actuator, means mounting said stop means for movement out of the path of the actuator when the box is inserted, means for preventing movement of the stop means out of the path of the actuator when the box is moved to withdraw it, said actuator being positioned near the front wall when the door is closed, the distance from the point of contact of the stop means and actuator and the front corner edge being greater than the shortest distance from said point of contact to said floor when the door is open but being substantially equal to or less than said shortest distance when the door is closed so that the actuator may be unhooked from the stop means by tilting the box about said point of contact only when the door is closed.

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4. In a check collecting apparatus, a case open at one side and having a floor, a box having a bottom, a front wall joining the bottom in a front corner edge and a top substantially parallel to the bottom, an access opening in the box, a cover therefor, said box resting on said floor and being inserted, front wall foremost, in and withdrawn from the case through the side opening, a coin opening in said top, a door mounted for movement toward and from the front wall to close and uncover the coin opening, means on the box and door for latching the door closed, means accessible from the interior of the box, through said access opening, for unlatching the latching means, an actuator on the door projecting above said top and movable in a predetermined path as said box is inserted in and withdrawn from the case, stop means mounted in the case comprising a star wheel having a tooth disposed in the path of said actuator, means mounting said star wheel for movement to withdraw said tooth out of the path of the actuator and to position a second tooth in said path when the box is inserted, means including a pawl and ratchet for preventing movement of said second tooth out of the path of the actuator when the box is moved to withdraw it, said actuator being positioned near the front wall when the door is closed, the distance from the point of contact of the second tooth and actuator and the front corner edge being greater than the shortest distance from said point of contact to said floor when the door is open but being substantially equal to or less than said shortest distance when the door is closed so that the actuator may be unhooked from the stop means by tilting the box about said point of contact only when the door is closed.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
322,373	Harrison	July 14, 1885
430,079	Mayrhofer	June 10, 1890
741,724	Schulze	Oct. 20, 1903
915,999	Neal	Mar. 23, 1909
948,815	Ehrlich	Feb. 8, 1910
1,065,146	Kohler	June 17, 1913
1,628,508	McElligott	May 10, 1927
2,119,592	Macdonald	June 7, 1938
2,371,114	Von Stoeser	Mar. 6, 1945