Aug. 1, 1967 K. E. PENNELL 3,333,764

DOUBLE LOCK COIN BOX FOR VENDING MACHINES

Filed Feb. 1, 1966

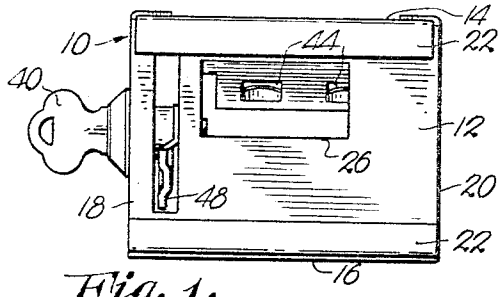

Fig. 1.

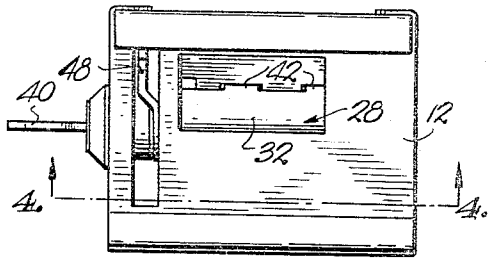

Fig. 2.

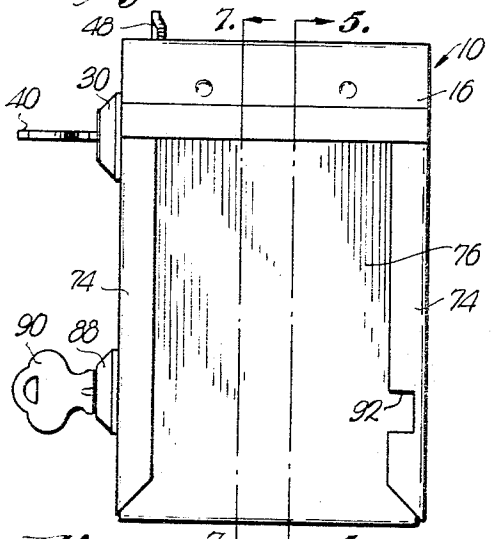

Fig. 3.

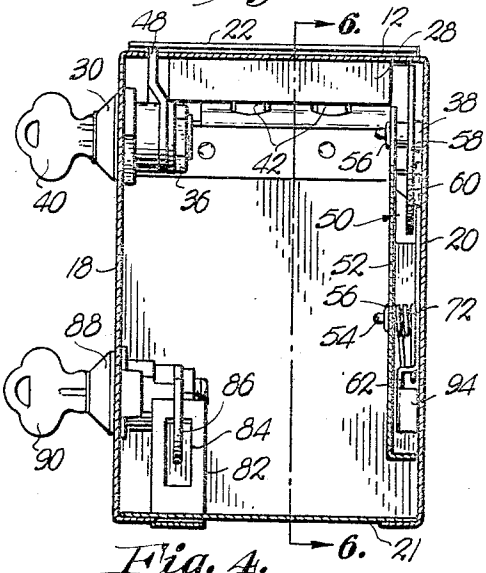

Fig. 4.

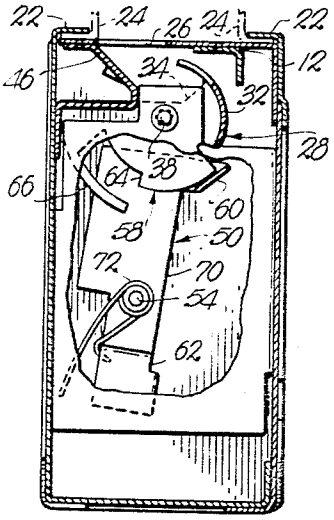

Fig. 5.

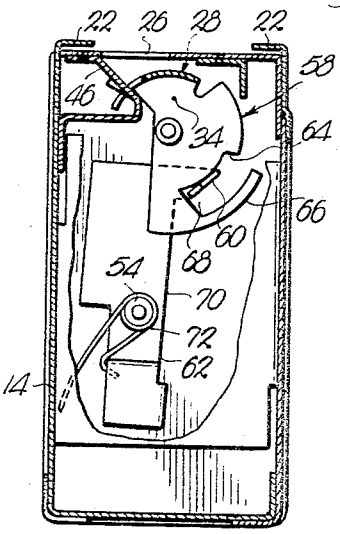

Fig. 6.

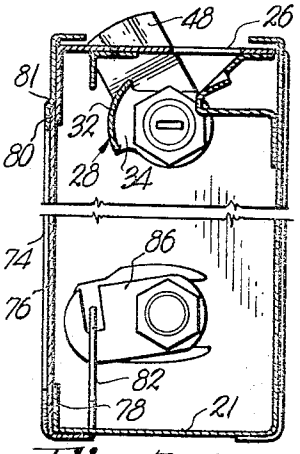

Fig. 7.

INVENTOR

Kit E. Pennell

BY Hovey, Schmidt, Johnson & Hovey

ATTORNEYS.

United States Patent Office 3,333,764 Patented Aug. 1, 1967

3,333,764

DOUBLE LOCK COIN BOX FOR VENDING MACHINES

Kit E. Pennell, Independence, Mo., assignor to The Vendo Company, Kansas City, Mo., a corporation of Missouri

Filed Feb. 1, 1966, Ser. No. 524,273
3 Claims. (Cl. 232—15)

This invention relates to improvements in theft-proof vending machine coin boxes which are utilized to retain a reserved percentage of the machine proceeds for the owner of the machine.

In vending machine installations where the proprietor of the installation site divides the proceeds with the owner of the machine, commonly a bottling company or other product producer, a coin diverter may be provided in the coin controlled operating mechanism of the machine to automatically divide the proceeds in accordance with the particular sales arrangement. The diversion channel directs the owner's percentage of the proceeds to a separate coin box provided with two key-operated locks. One of the locks is utilized to secure the box to the machine, while the other lock permits the owner to gain access to the coinage retained in the box after removal of the latter from the machine.

Vending machine owners frequently employ routemen who periodically substitute an empty box for a coin-containing box at each installation site. A routeman is given a key to the lock which permits the coin box to be released from the machine. However, the coinage is not removed until the loaded boxes are returned to the owner, who has the key to the second lock. In this manner, removal of the coinage from the boxes is under the complete control of the owner.

Although this procedure has proved to be satisfactory in practice, the coin boxes themselves present a number of problems. First, the coin entrance must be closed to prevent access thereto by the routeman once the box is removed from the machine. Secondly, some means must be provided through which the operator can render the box reusable after the coinage has been removed therefrom. Thirdly, to provide a practical unit, the box must be rugged, relatively inexpensive, and simple to operate.

It is, therefore, the primary object of this invention to provide a double lock coin box in which access to the coinage therein through the coin entrance is positively prevented upon removal of the box from the machine, and wherein the box is rendered suitable for reuse by the operation of mechanism therein which is accessible only after the box is opened by the owner or his agents.

As a corollary to the foregoing object, it is an important aim of the invention to provide a coin box as aforesaid having a gate which shifts into blocking relationship to the coin entrance as the first lock is operated to release the box from the machine, and to provide a resettable latch which automatically holds the gate in the closed position until the box is opened and resetting of the latch effected.

In the drawing:

FIGURE 1 is a plan view of the box showing the gate in its open position;

FIG. 2 is a plan view of the box showing the gate in its closed position;

FIG. 3 is a side elevational view of the box as illustrated in FIG. 1;

FIG. 4 is a vertical sectional view taken along line 4—4 of FIG. 2;

FIG. 5 is a vertical sectional view taken along line 5—5 of FIG. 3;

FIG. 6 is a vertical sectional view taken along line 6—6 of FIG. 4; and

FIG. 7 is a vertical sectional view taken along line 7—7 of FIG. 3.

The coin box of the instant invention is broadly denoted by the numeral **10** and is provided with a top **12**, opposed sides **14** and **16**, a front **18**, a back **20** and a bottom **21**. A pair of opposed, inwardly extending flanges **22** are formed at the uppermost margins of sides **14** and **16** and overlie top **12** to provide a means of attaching the box to the housing or cabinet of a vending machine (not shown). In FIG. 5, a portion of a mounting bracket which would project from the machine housing is illustrated, and comprises a pair of angle members **24** which present outwardly directed flanges slidably received between flanges **22** and top **12**. Box **10** is of sheet metal construction, and thus is rugged and inexpensive to fabricate.

Top **12** has a rectangular coin entrance **26** therein which, when the box is attached to the machine, would be registered with a diversion channel which directs a reserved percentage of the machine proceeds to coin box **10**. A gate **28** adjacent entrance **26** within box **10** is connected to a key-operated lock **30** and is shifted thereby between a closed position blocking entrance **26**, illustrated in FIGS. 2, 4 and 6, and an open position shown in FIGS. 1, 5 and 7. Gate **28** comprises an elongated, transversely arcuate plate having an outwardly convex surface **32**, the ends of the plate being provided with mounting ears **34**, one ear being attached to lock **30** by nut **36** while the other ear rotatably receives an inwardly projecting pin **38** rigid with back **20**. The axis of rotation of the rotatable part of lock **30** is aligned with the axis of pin **32** so that, when key **40** is inserted into lock **30** and rotated, gate **28** swings through an arc in the direction of curvature of surface **32**.

A pair of lugs **42** project from one longitudinal edge of gate **28** and are received by a pair of slots **44** in an angularly disposed plate **46** underlying one side of entrance **26**. Plate **46** aids in the directing of coinage into the interior of box **10** and cooperates with gate **28** to close coin entrance **26** when the gate is shifted into blocking relationship to the entrance. Note also that a locking member or bolt **48** projects upwardly from lock **30** and, when the gate is open, projects above flanges **22** as is clear in FIGS. 3 and 7. The vending machine would be provided with a slot in its housing between angle mounting members **24** through which the tip of locking member **48** would extend when the box is positioned on members **24** and key **40** is operated to open gate **28**. Therefore, the box would be securely locked to the machine simultaneously with removal of the gate from blocking relationship to coin entrance **26**.

A latch mechanism **50** is disposed adjacent the inner wall of back **20** and is isolated from the coinage in the box by a protective plate or partition **52** secured to pin **38** and a second, inwardly projecting pin **54** by retainers **56**. Mechanism **50** includes a latch member **58** integral with the mounting ear **34** of gate **28** adjacent back **20**, a swingable latch dog **60**, and a reset element **62**. Latch member **58** is in the form of an arcuate plate having a radial projection defining a catch **64**, and a radially outwardly spaced, arcuate component **66** defining an arcuate slot **68** between components **66** and the main portion of member **58**.

Latch dog **60** is in the form of a tab projecting from an upright plate **70** of generally rectangular configuration. Plate **70** is pivotally mounted on pin **54** approximately midway between the upper and lower ends of the plate, the lower end portion thereof presenting a reset element **62**. A spring **72** is coiled around pin **54** and has a pair of legs bearing against side **14** and element **62** respectively, as clearly shown in FIG. 6.

Side **16** (FIG. 3) has a pair of opposed, vertically extending, inwardly projecting flanges **74** which define the longitudinal margins of an access opening, the latter being normally closed by a sliding cover plate **76** received between flanges **74** and an upright flange **78** integral with base **21** (FIG. 7), and the adjacent longitudinal edge of protective plate **52**. When cover **76** is fully seated to deny access to the contents of box **10**, the uppermost margin **80** of cover **76** is received by a slot **81** formed in the upper portion of side **16**, as shown in FIG. 7.

Cover **76** is provided with an integral tab **82** having an eye **84** therein which receives a locking finger or bolt **86** extending from the movable part of a lock **88** operated by a key **90**. Finger **86** is moved into and out of interlocking relationship with tab **82** upon insertion of key **90** in the lock **88** and rotation thereof.

In the discussion of the operation and manner of utilization of the instant invention, it will first be assumed that box **10** has been removed from the vending machine with coinage contained therein. In such case, the positions of the various movable parts of the structure will be as illustrated in FIGS. 2, 4 and 6. Note that gate **28** is closed and access to the contents of the box through coin entrance **26** is thereby denied. Reopening of the gate through the use of key **40** cannot be effected because latch dog **60** would engage catch **64** after the gate is shifted through a small displacement. Additionally, attention is directed to the fact that locking member **48** of lock **30** is withdrawn; this enables the box to be removed from the machine by sliding flanges **22** relative to bracket members **24** (FIG. 5).

It will be appreciated that the coin box in the possession of the routeman is theft-proof, since the routeman is provided with key **40** only. Key **90** is in the hands of the owner or his agents and is utilized after the coin-containing box is returned to the owner. Insertion of key **90** into lock **88** and rotation thereof shifts locking finger **86** out of eye **84** to permit removal of cover **76** by sliding movement thereof vertically downwardly with respect to the orientation of the box as illustrated.

Once the contents of box **10** are removed therefrom, the owner must then return the movable parts of the structure to positions such that the box will now be rendered suitable for reuse and subsequent reattachment to a vending machine at the installation site. This is effected while cover **76** is removed by a resetting operation to be described hereinafter.

Note that the right-hand flange **74**, as viewed in FIG. 3, is provided with a notch **92** adjacent the lower end of the flange which, when cover **76** is removed, is aligned with a tab **94** integral with the lower end of reset element **62** (FIG. 4). This enables a screwdriver tip to be inserted into mechanism **50** between back **20** and protective plate **52**, for the purpose of depressing tab **94** when box **10** is laid over in a horizontal position with side **14** facing downwardly. The depressing of tab **94** swings element **62** about pin **54** in a clockwise direction as viewed in FIG. 6, thereby shifting latch dog **60** toward component **66** through the interconnecting medium of the integral plate **70**. While pressure is maintained against the bias of spring **72**, key **40** is rotated in a direction to shift gate **28** toward its open position, this now being possible since dog **60** is no longer in the path of travel of the catch **64**. Movement of gate **28** toward the open position effectively removes latch dog **60** from the confines of slot **68** whereupon, as the dog clears the free extremity or tip of component **66**, the operator will experience additional movement of element **62** if pressure is maintained on tab **94**. Thus, dog **60** is ultimately shifted to a position completely clear of member **58**, and held in such position by rotating key **40** in the opposite direction to swing gate **28** back to its closed position.

Therefore, after the resetting operation is completed, the various movable parts of the structure will be in the

positions illustrated in FIG. 6, except for plate **70** which is now displaced in a clockwise direction from the position shown in FIG. 6 with dog **60** resting against the outer periphery of component **66**.

With component **66** maintaining latch dog **60** out of slot **68** against the bias of spring **72**, the box may be reinstalled on a vending machine after cover **76** is replaced and locked in place. As the routeman rotates key **40** to swing locking member **48** to its upper, locking position illustrated in FIGS. 1, 3 and 7, gate **28** is reopened to permit coins to pass into the box through entrance **26**. The open position of the gate and the positions of the internal components when the box is installed on the machine are shown in FIG. 5, where it may be seen that latch dog **60** now engages latch member **58** in angularly spaced relationship to catch **64**. Dog **60** did not interlock with catch **64** upon movement of the gate to the open position as the box was locked to the machine, because the tip of component **66** and catch **64** are in substantially radial alignment with respect to pin **38** so that, as component **66** moved out of engagement with dog **60**, the dog was shifted by spring **72** onto the portion of latch member **58** outside of slot **68**.

The next time the vender is visited by the routeman to remove the box and replace it with an empty box, key **40** must be inserted into lock **30** and rotated in a direction to withdraw locking member **48**, whereupon gate **28** is simultaneously closed. This returns dog **60** to the position illustrated in FIG. 6, thereby precluding reopening of the gate until the coin-containing box is once again returned to the owner of the machine who possesses key **90**. Thus, gate **28** cannot be reopened by key **40** or the box reused until the owner has gained access to the coinage therein by removing cover **76**, and has reset mechanism **50** in the manner just described.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A coin receiver for a vending machine comprising:

a coin box provided with means for attaching the box to said machine,

said box having a coin entrance therein and an access opening for permitting coin removal, and including a cover normally disposed in closing relationship to said opening;

a gate mounted in said box adjacent said entrance;

key-operated means coupled with said gate for shifting the latter between an open position clearing said entrance and a closed position blocking the entrance,

said means including a shiftable lock member movable with the gate to a disposition for locking the box to the machine as the gate is shifted to said open position, and movable away from said disposition to permit removal of the box from the machine as said gate is shifted to said closed position;

a key-operated lock structure engageable with said cover for releasably maintaining the latter in said normal disposition; and

a resettable latch mechanism in said box operably coupled with said gate for preventing reopening thereof by said means after the gate is shifted to said closed position,

said mechanism including a shiftable reset element accessible through said opening and operable to release said gate upon actuation of the element whereby, when the box is removed from the machine, access to coinage therein is denied until said lock structure is operated to release said cover, whereupon the mechanism may be reset to permit subsequent operation of said means to reopen the gate and relock the box to the machine,

said mechanism further including a rotary plate member rotatable with said gate and having a radial projection defining a catch, a latch dog rigid with said element and shiftable therewith between a reset dis-

position radially spaced from the axis of said plate member and a disposition in closer spaced relationship to said axis where the dog is engageable with said catch to lock the gate in said closed position, and yieldable means coupled with said element and biasing the latter in a direction to shift the dog toward said catch-engaging disposition,

said plate member having a component extending along the path of rotation thereof and radially spaced from said axis a greater distance than said catch, said component being engageable with said dog, upon movement of the latter to said reset disposition and movement of the gate to said closed position, for maintaining the dog in said reset disposition against the action of said yieldable means,

said component terminating in substantial radial alignment with said catch to release the dog for movement under the action of the yieldable means as the gate is shifted toward said open position, whereby the dog is precluded from engaging the catch but moves to an intermediate radial position so that, when the gate is returned to the closed position, the dog advances further under the action of the yieldable means to engage the catch and lock the gate.

2. Security means for coins received in a vending machine comprising:

a box having a coin entrance therein for receiving coins from said machine and an access opening for removing coins from said box, and including a cover normally disposed in closing relationship to said opening;

a gate pivotally mounted in said box adjacent said entrance, and rotatable between an open position clearing said entrance and a closed position blocking the entrance;

a lock bolt rotatable with the gate for locking the box to the machine as the gate is rotated in one direction to said open position, and for releasing the box from the machine only as the gate is rotated in the opposite direction to said closed position;

a first lock operable by a first key and coupled with said gate and said bolt for rotating both of the same;

a second lock operable by a second and different key and also provided with a lock bolt for affixing said cover in closing disposition to said access opening; and

a resettable latch mechanism in said box operably coupled with said first lock for latching the latter when the gate is rotated in said opposite direction to said closed position, whereby said gate is maintained in said closed position after said box is released from the machine,

said mechanism including a latch member on said gate and movable therewith, a latch dog movable radially with respect to the axis of rotation of the latch member, and means biasing the latch dog toward the latch member, the latter being provided with a stop shoulder positioned to engage the latch dog and preclude rotation of the latch member when the latch dog is in the latching position thereof under the pressure of said biasing means, and there further being

a component on said latch member located to receive said latch dog thereon and hold the same out of a position to engage said shoulder and interfere with rotation of said latch member,

said component and the shoulder being located in relative dispositions and in radially spaced relationship requiring that the latch dog be held away from the latch member against the pressure of the biasing means as the latch member is rotated first in said one direction and then said opposite direction to reset said mechanism.

3. A coin receiver for a vending machine comprising: a coin box provided with means for attaching the box to said machine,

said box having a partition therein dividing the box into a pair of compartments, a coin entrance communicating with one of said compartments, an access opening communicating with both of said compartments, and a removable cover normally closing said opening and providing a common closure for said compartments;

a gate mounted in said box adjacent said entrance;

key-operated means coupled with said gate for shifting the latter between an open position clearing said entrance and a closed position blocking the entrance,

said means including a shiftable lock member movable with the gate to a disposition for locking the box to the machine as the gate is shifted to said open position, and movable away from said disposition to permit removal of the box from the machine as said gate is shifted to said closed position;

a key-operated lock structure engageable with said cover for releasably maintaining the latter in said normal disposition; and

a resettable latch mechanism disposed exclusively within the other of said compartments and operably coupled with said gate for preventing reopening thereof by said means after the gate is shifted to said closed position,

said mechanism including a shiftable reset element accessible through said opening and operable to release said gate upon actuation of the element whereby, when the box is removed from the machine, access to coinage therein is denied until said lock structure is operated to release said cover, whereupon the mechanism may be reset to permit subsequent operation of said means to reopen the gate and relock the box to the machine.

References Cited

UNITED STATES PATENTS

205,646	7/1878	Hornum	232—15
322,373	7/1885	Harrison	232—15
901,778	10/1908	Bucknam	232—15
912,776	2/1909	Baker	232—15
2,604,259	7/1952	Anderson	232—15
3,016,185	1/1962	Osborne	232—15

DAVID J. WILLIAMOWSKY, *Primary Examiner.*

FRANCIS K. ZUGEL, *Examiner.*