

[54] SELF-LOCKING CASH BOX
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[22] Filed: July 2, 1971
[21] Appl. No.: 159,200

[52] U.S. Cl. 232/1 R, 232/15
[51] Int. Cl. G07f 9/06
[58] Field of Search 232/1, 15, 16, 31,
232/32

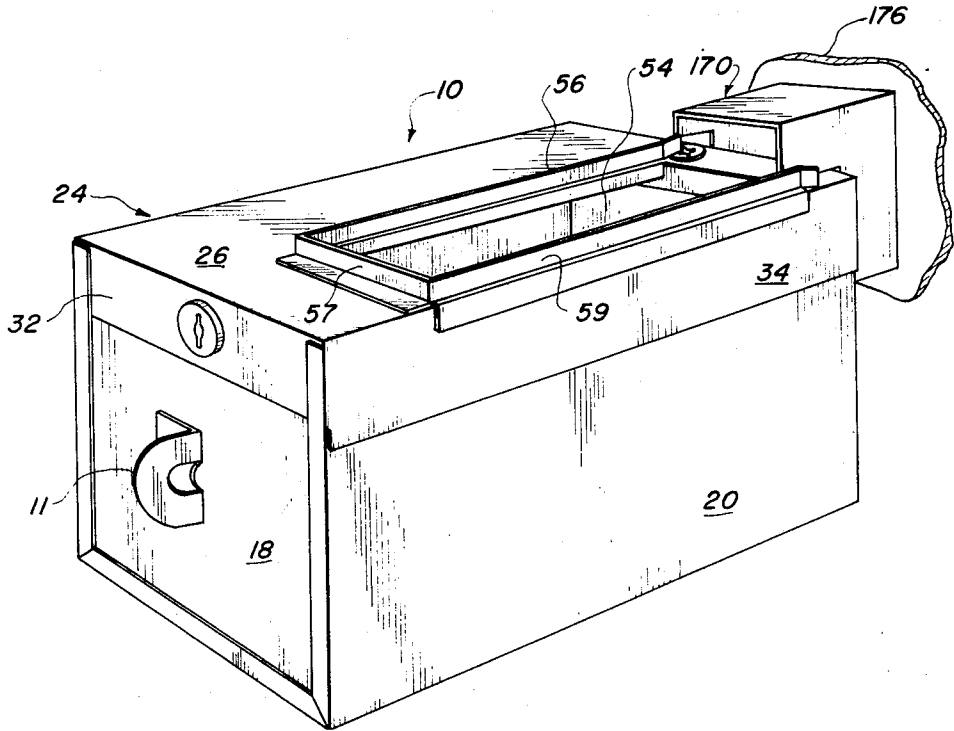
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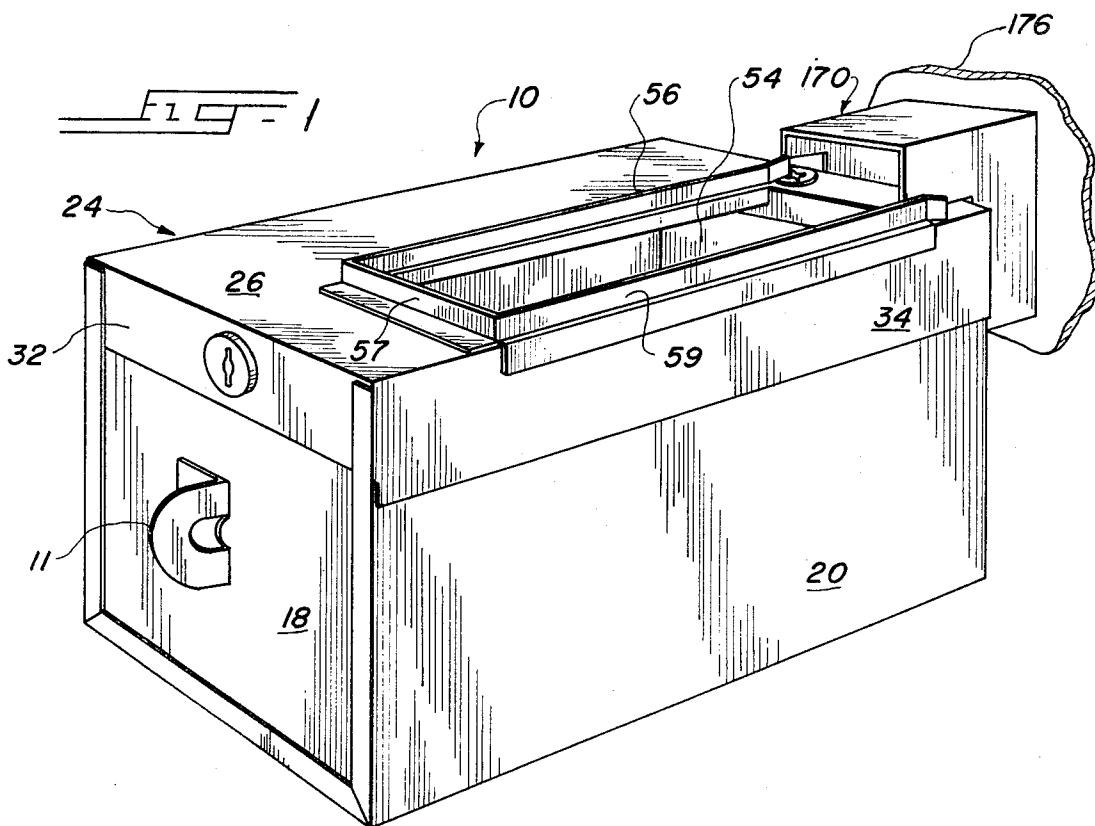
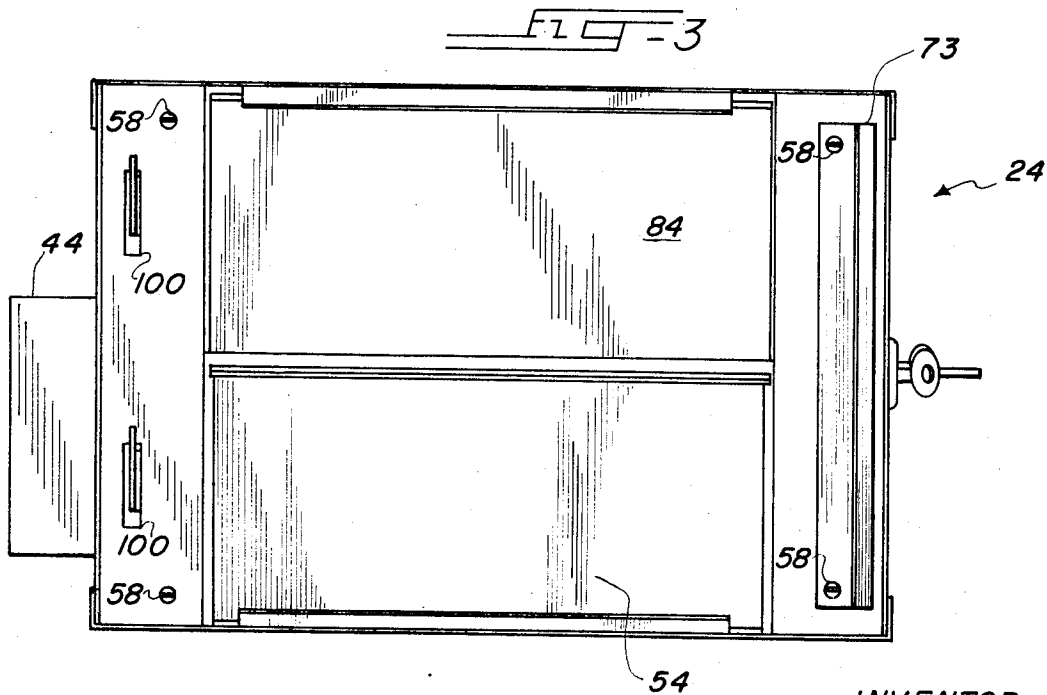
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[57] ABSTRACT
A lid member having a coin and currency receiving opening therein is removably locked to a cash box. The cash box may not be removed from the apparatus in which it is located until a door is actuated to cover the opening, and this door cannot be reactuated to uncover the opening until the lid member is removed from the cash box. An arrangement is provided to render the apparatus in which the cash box is located inoperative when the cash box is removed therefrom.

17 Claims, 21 Drawing Figures

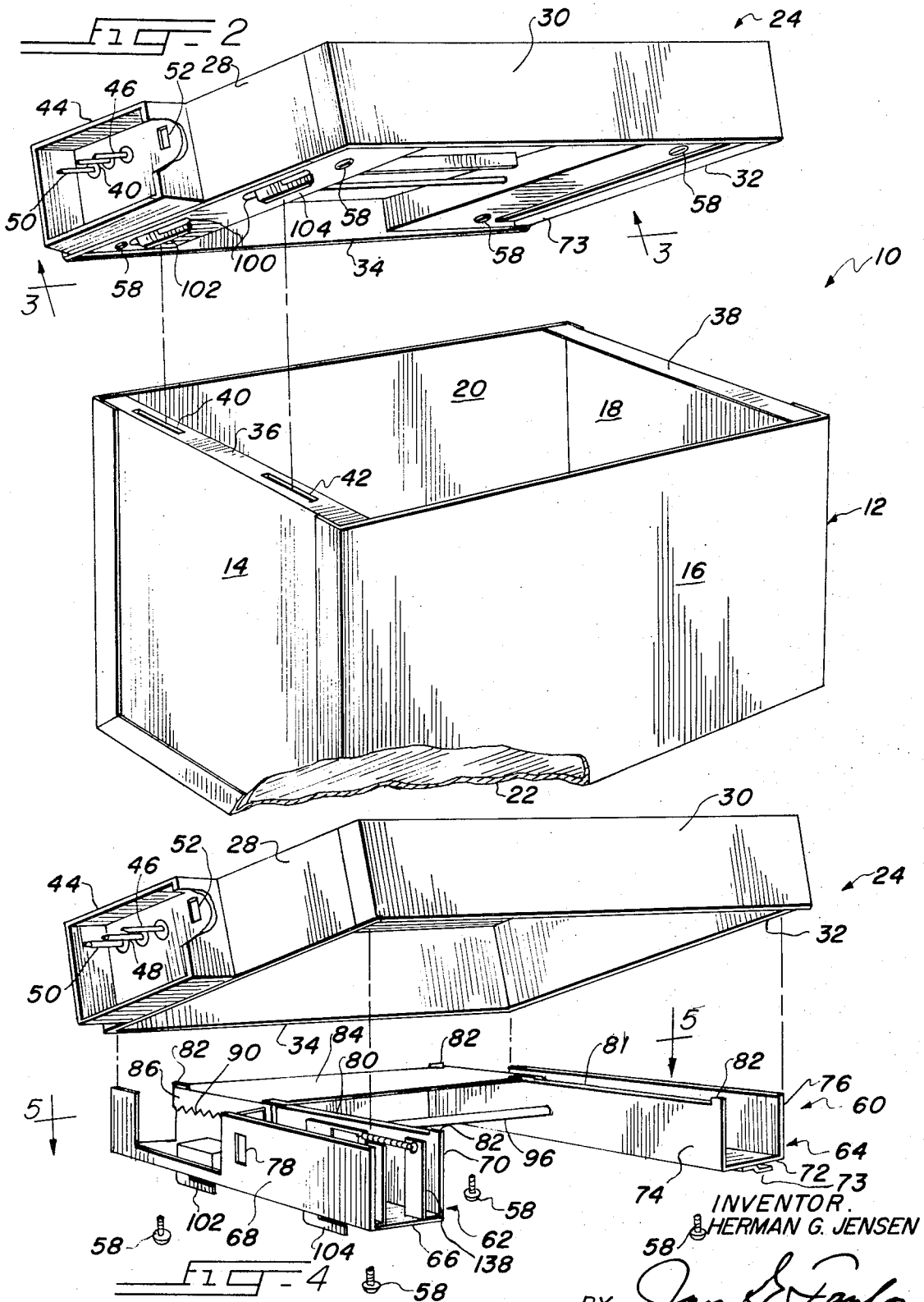




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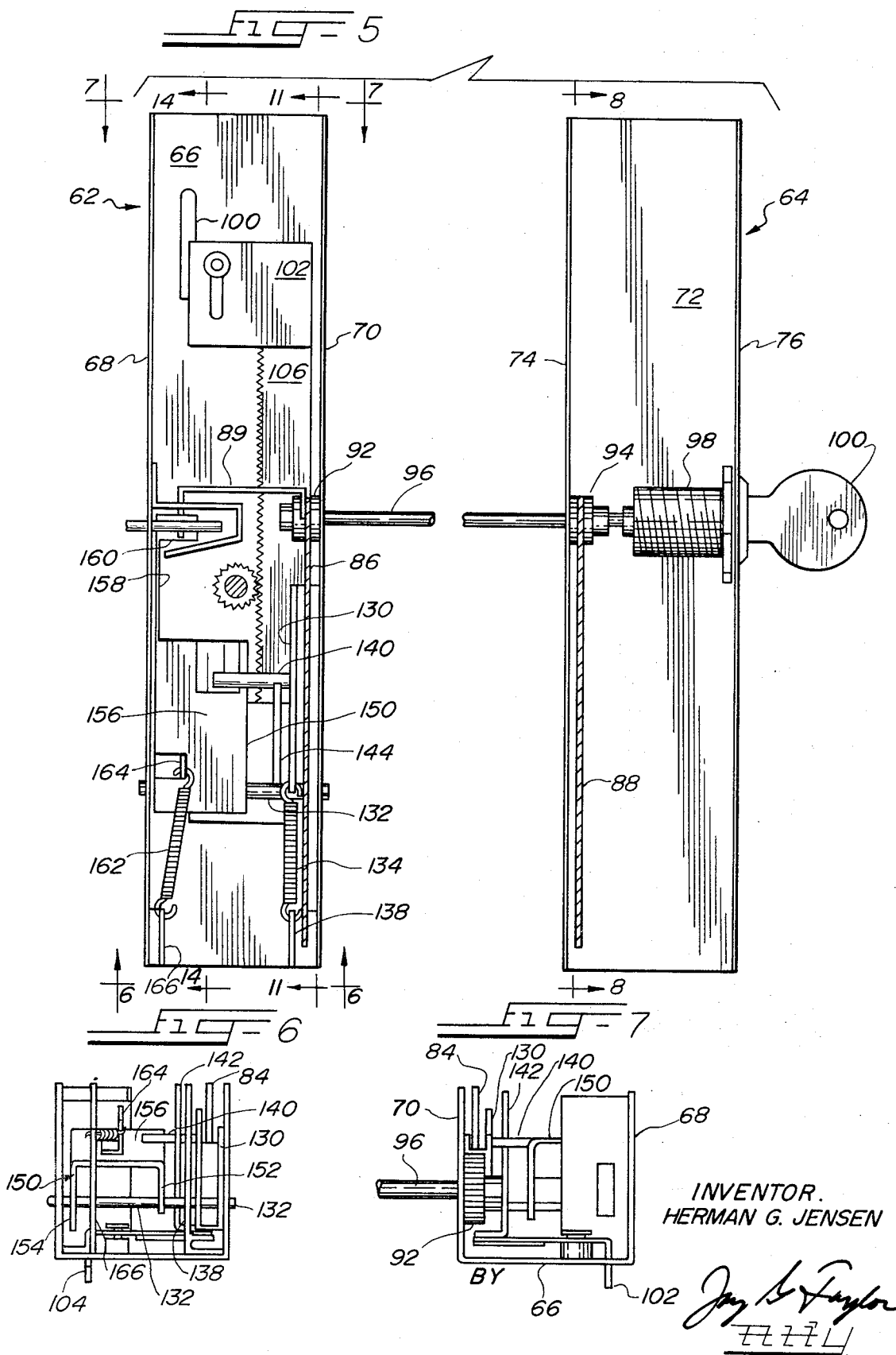
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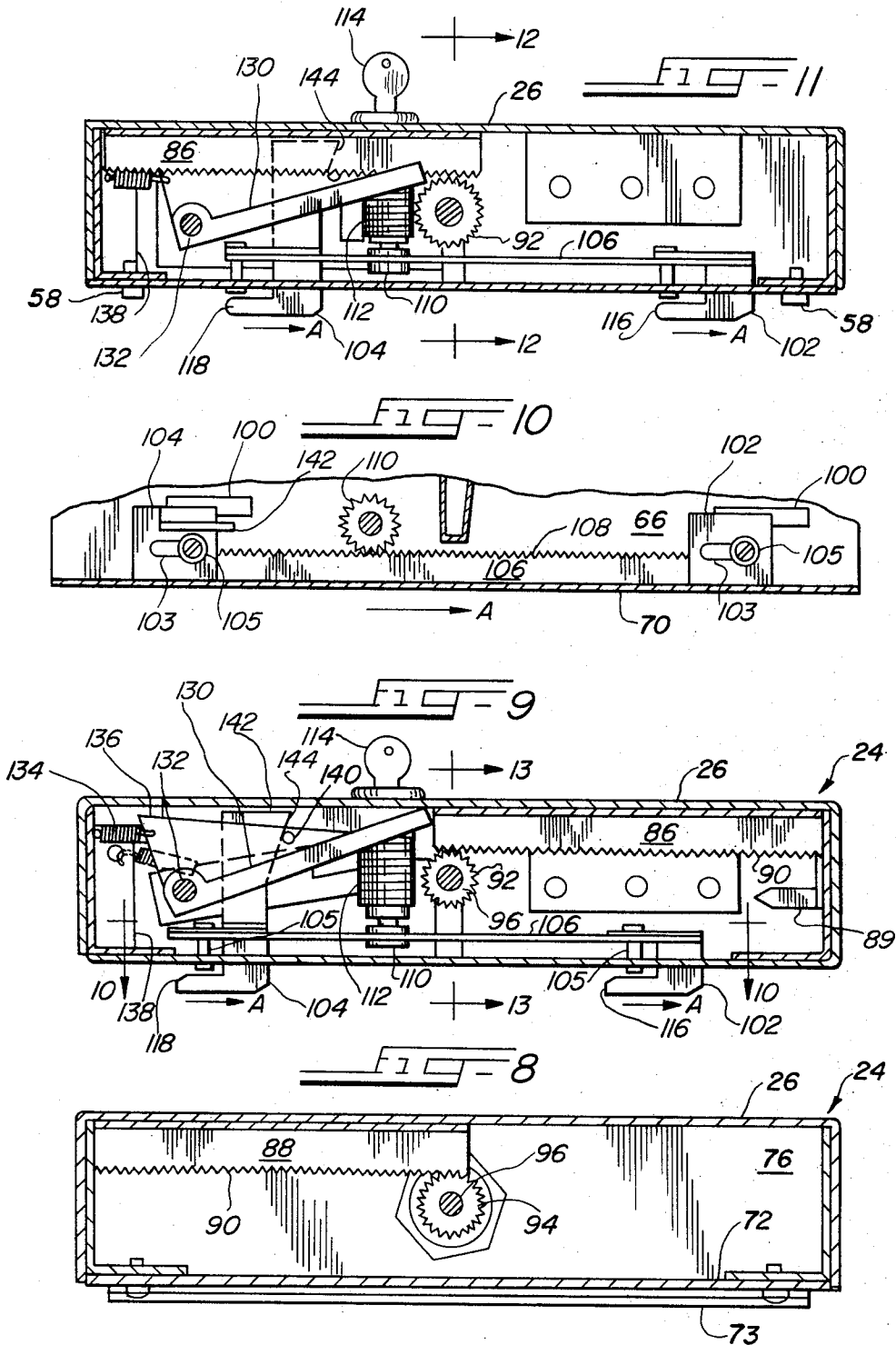
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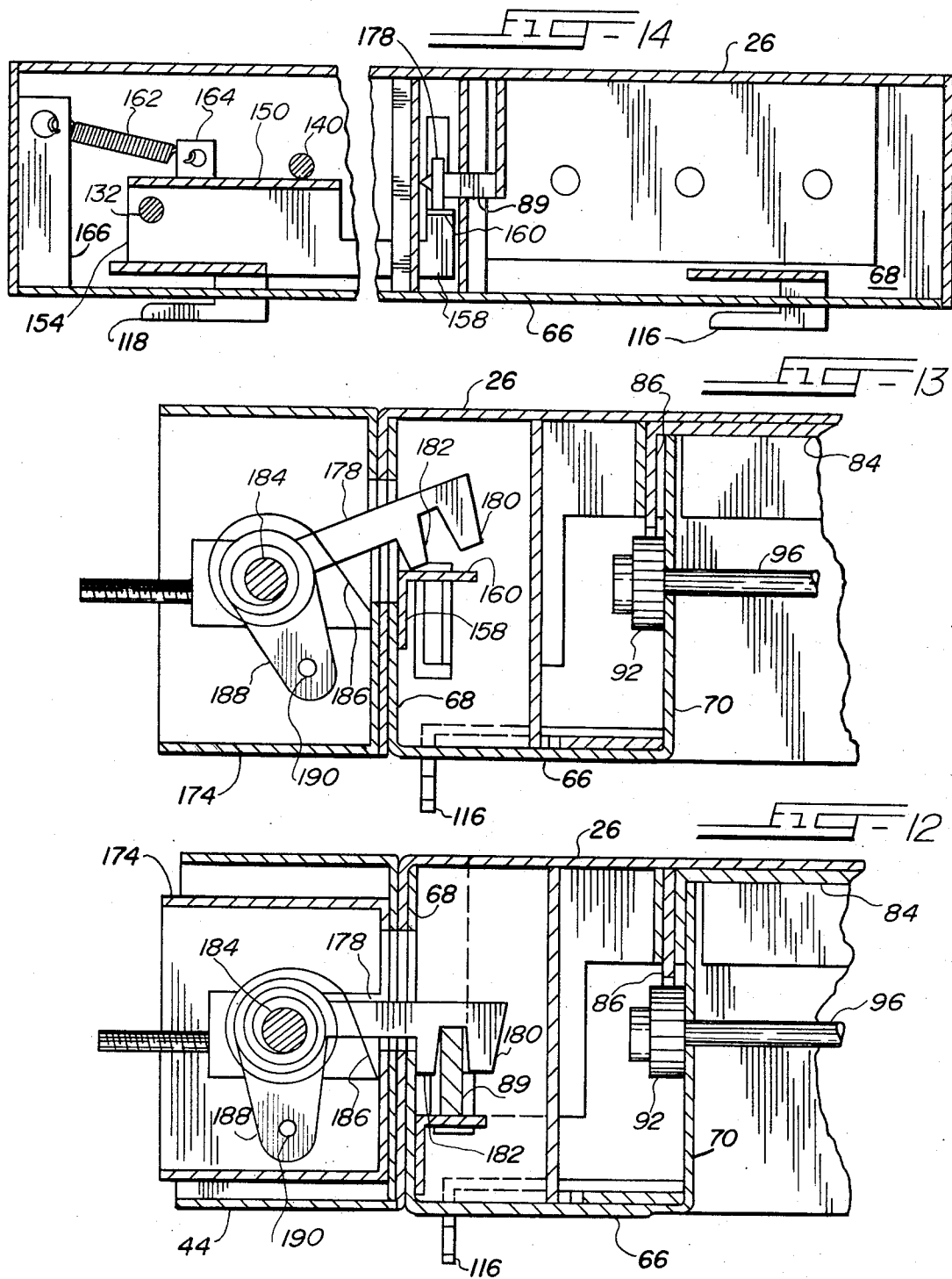
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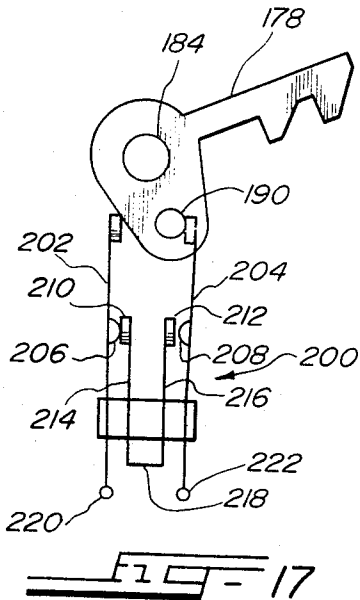
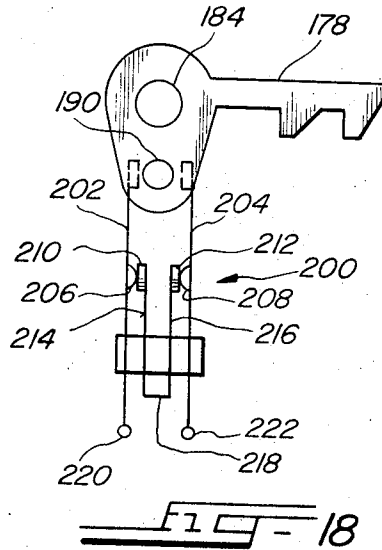
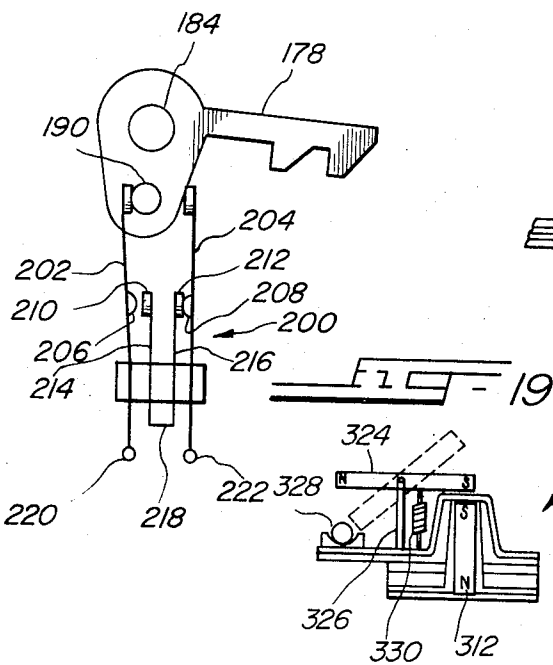
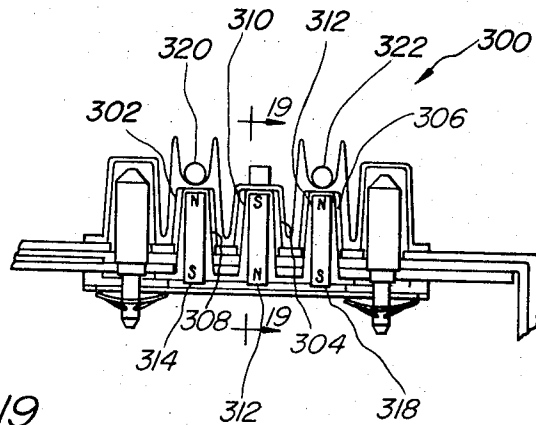


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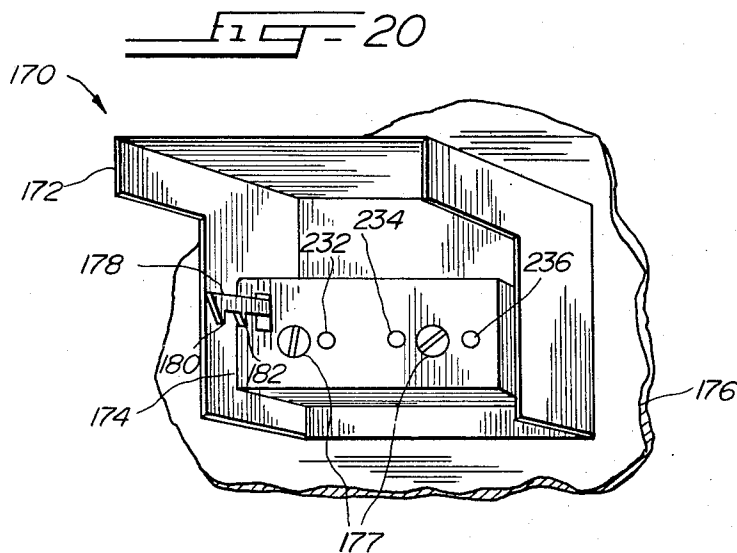
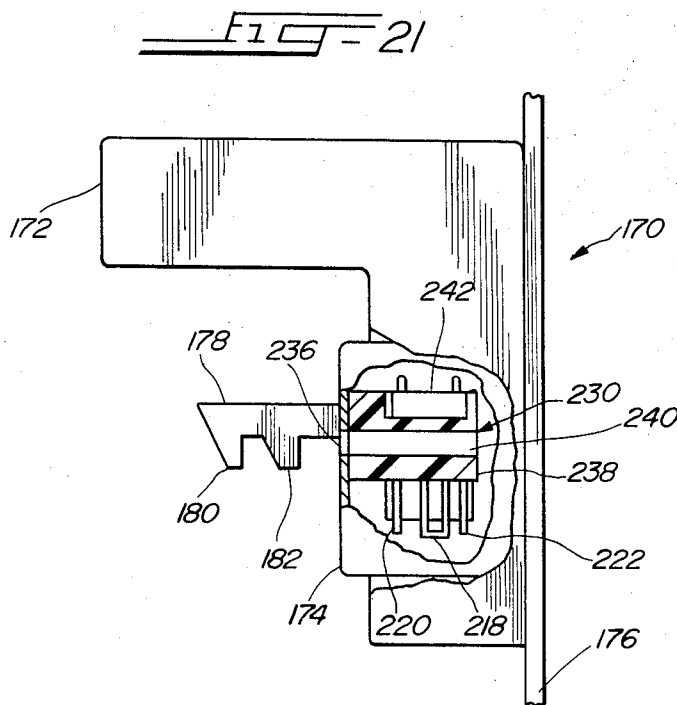
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SELF-LOCKING CASH BOX

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a security enclosure for coins and currency inserted into a vending machine and the like, and more particularly to a self-locking cash box and associated interlock arrangements for a vending machine.

2. Description of the Prior Art

Self-locking cash boxes for vending machines heretofore known to the art have various disadvantages which restrict their security and permit easy tampering and entry, thereby facilitating theft of the contents by unauthorized personnel. Typically, prior art cash boxes for vending machines comprise a "mousetrap" type door arrangement in the lid which snaps shut and locks under spring force when the cash box is removed from the vending machine. This "mousetrap" arrangement has been unsatisfactory since it is relatively easy for a thief to insert a screwdriver or other appropriate article into the opening in the lid of the cash box, thereby preventing the door from snapping shut and locking when the cash box is removed from the vending machine.

A further disadvantage of the prior art cash boxes for vending machines is that, typically, the cash box need not be in position immediately below the coin chute for the vending machine to operate. Consequently, the unscrupulous proprietor of an establishment where the vending machine is located can remove the cash box for a period of time and insert a cardboard box or other suitable receptacle, thereby misappropriating a portion of the revenue of the vending machine. If the proprietor is careful to always reinsert the cash box prior to the time the routeman makes collections from the machine, the proprietor can continue his theft undetected.

Another disadvantage of the prior art cash boxes for vending machines is the ease with which an unscrupulous routeman can steal a portion of the collections made from the various vending machines. Typically, prior art locked cash boxes embody a single locking arrangement which permits both removal of the cash box from the vending machine and also access to the contents of the cash box. Thus, the employee or routeman who has access to the keys to the cash box can easily open the cash box and skim off a portion of the contents undetected. Such thefts are relatively common in the vending machine business and can go on undetected if the unscrupulous employee is extremely careful.

Further, prior art cash boxes heretofore known to the art have not provided a tamperproof junction between the coin and currency chute and the opening in the cash box. Thus, the thief can insert a piece of cardboard or sheet metal between the chute and the opening in the cash box and steal the money collected in the chute.

BRIEF SUMMARY OF THE INVENTION

In accordance with the present invention, a self-locking cash box comprises a metal box having an open top. A removable lid member completely closes off the open top and is securely attached to the metal box by engaging means. The lid member has a restricted opening in the top thereof which is adapted to be positioned immediately under the coin and currency chute of the

vending machine. Coins or currency deposited in the vending machine travel through the various operating mechanisms of the machine and eventually pass through the coin and currency chute into the cash box.

Attached to the vending machine is a restraining means which engages the cash box to prevent unauthorized removal thereof. Provided on the interior of the lid member is a slidable door which may be slid across the restricted opening in the lid member in response to operation of a first key operated means thereby closing the restricted opening. Once the door has been slid across the restricted opening, a locking means locks the slidable door in that position, and the routeman cannot reopen the slidable door to gain access to the interior portions of the locked cash box.

In response to the locking means locking the door over the restricted opening, a disengaging means disengages the restraining means from the cash box, thereby permitting removal of the cash box from the vending machine. Thus, it is impossible to remove the locked cash box until the door is locked securely across the restricted opening in the lid member. Provided in the restraining means are mechanically and magnetically operated switch means which are adapted to render the vending machine inoperable when the door is closed and while the cash box is removed from the vending machine. Thus, the unscrupulous proprietor of the establishment where the vending machine is located cannot remove the locked cash box and insert his own receptacle for the purposes of stealing the proceeds of the vending machine, and the routeman cannot close the door to prevent the coins and currency from entering the cash box. The vending machine remains inoperable until the same or compatible cash box having its slidable door in an open position is placed in the vending machine and the restraining means is in engagement with the cash box. If the cash box is inserted into the vending machine with the slidable door closed, the vending machine remains inoperable until the door is opened. Thus, it is impossible for the unscrupulous routeman to collect coins and currency in the chute above the closed door and steal this money after the cash box is removed. These features clearly eliminate major methods of theft from vending machine revenues.

The self-locking cash box of the present invention further comprises a second key operated means which permits removal of the lid member and also releases the locking means to allow the slidable door to be slid back away from the opening, thereby preparing the self-locking cash box for subsequent operations. The key for operating the second key operating means would normally be retained at the vending machine owner's place of business and only his trustworthy employees would then be able to open the cash box to count and bank the contents. In this manner unrestricted access to the interior of the locked cash box and resulting theft are substantially eliminated.

The self-locking cash box of the present invention further comprises a tamperproof junction between the coin and currency chute and the opening in the cash box. Thus, it is impossible to insert anything between the chute and the opening to prevent the coins and currency from entering the cash box.

Thus, it is an object of the present invention to provide a self-locking cash box for coins and currency op-

erated vending machines which substantially eliminates possible thefts of the contents of the cash box.

It is a further object of the present invention to provide a self-locking cash box for coin and currency operated vending machines and the like which can only be removed from the vending machine after the routeman has securely locked the door of the cash box thus preventing unauthorized entry into the cash box.

A further object of the present invention is to provide a self-locking cash box for coin and currency operated vending machines and the like which renders the vending machine inoperable any time the cash box is removed from the vending machine.

It is still a further object of the present invention to provide a self-locking cash box for coin and currency operated vending machines and the like which provides a second key operated means which permits access to the contents of the cash box and which may be operated by a key in the possession of the vending machine owner.

A further object of the present invention is to provide a self-locking cash box for coin and currency operated vending machines and the like which renders the vending machine inoperable if the door to the coin chute is closed before the cash box is removed from the vending machine.

A further object of the present invention is to provide a self-locking cash box for coin and currency operated vending machines and the like which provides a magnetic coded arrangement which renders the vending machine inoperable until the properly coded magnetic members are positioned adjacent the magnetic code received.

A further object of the present invention is to provide a self-locking cash box for coin and currency operated vending machines and the like which provides a tamperproof junction between the coin and currency chute of the vending machine and the opening in the cash box.

These and other objects, advantages and features of the subject invention will hereinafter appear, and, for the purposes of illustration, but not of limitation, exemplary embodiments of the present invention are illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a right front perspective view of a preferred embodiment of the present invention.

FIG. 2 is a right rear perspective view of a preferred embodiment of the present invention showing the removal of the lid member.

FIG. 3 is a bottom view of the lid member taken substantially along line 3—3 in FIG. 2.

FIG. 4 is a partially exploded perspective view of the lid member shown in FIG. 3.

FIG. 5 is a partially fragmentary bottom view of the locking arrangement of the preferred embodiment taken substantially along line 5—5 of FIG. 4.

FIG. 6 is a fragmentary view taken substantially along line 6—6 of FIG. 5.

FIG. 7 is a fragmentary view taken substantially along 7—7 of FIG. 5.

FIG. 8 is a fragmentary view taken substantially along 8—8 of FIG. 5.

FIG. 9 is a fragmentary view of the embodiment shown in FIG. 11 with the lid member in the closed position.

FIG. 10 is a partially fragmentary view taken substantially along line 10—10 of FIG. 9.

FIG. 11 is a fragmentary side view taken substantially along line 11—11 in FIG. 5.

FIG. 12 is a partially fragmentary view taken substantially along line 12—12 in FIG. 11.

FIG. 13 is a partially fragmentary view taken substantially along line 13—13 in FIG. 9.

FIG. 14 is a partially fragmentary view taken substantially along line 14—14 in FIG. 5.

FIG. 15 is a fragmentary partially schematic diagram of the latch and switch arrangement of the preferred embodiment of the present invention.

FIG. 16 is a fragmentary partially schematic diagram of the latch and switch arrangement of the embodiment of the present invention.

FIG. 17 is a fragmentary partially schematic diagram of the latch and switch arrangement of the preferred embodiment of the present invention.

FIG. 18 is a partially fragmentary view of a coded magnetic switch arrangement embodiment of the present invention.

FIG. 19 is a cross-sectional view of the coded magnetic switch arrangement taken substantially along line 19—19 in FIG. 18.

FIG. 20 is a right front perspective view of the latching arrangement of the preferred embodiment of the present invention.

FIG. 21 is a side partially fragmentary sectional view of the latching arrangement shown in FIG. 20.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to FIGS. 1 and 2, a self-locking cash box 10 for coin and currency operated vending machines comprises box member 12 having first, second, third and fourth sides 14, 16, 18 and 20, respectively, and bottom 22 joined together to form the hollow box member 12 which has an open upper end. A mating lid member 24 comprises essentially flat top member 26 and first, second, third and fourth flange side members 29, 30, 32 and 34, respectively, joined essentially perpendicular to the periphery of flat top member 26. Formed essentially perpendicular on the upper edge of first and third sides 14 and 18 are flanges 36 and 38. Provided in flange 36 are rectangular openings 40 and 42.

Positioned on first flange side member 28 is protective housing 44 which surrounds cylindrically shaped jacks 46, 48 and 50 which are mounted to first flange side member 28. Also provided within protective housing 44 is restrainer opening 52 through first flange side member 28.

Provided through flat top member 26 of lid member 24 is cash receiving opening 54 (see FIGS. 1 and 3). Protective flanges 56, 57 and 59 are positioned around three of the four sides of receiving opening 54. A gap in protective flange 56 is provided at the rear of receiving opening 54 to permit the coin and currency chute (not shown) to slide between flanges 56 and 59. Protective flanges 56, 57 and 59 prevent unauthorized insertion of a thin sheet over cash receiving opening 54 to prevent coins and currency from entering the cash box 12.

Removably attached to the interior portion of the lid member 24 by screws 58 is door and locking assembly 60. Door and locking assembly 60 comprises first and

second channel members 62 and 64 respectively. First channel member 62 comprises a base member 66, first side member 68 and second side member 70. Similarly, second channel member 64 comprises base member 72, first side member 74 and second side member 76. Rigidly attached to base member 72 is locking flange 73 adapted to engage with flange 38 on third side 18 when lid member 24 is positioned on box member 12.

Provided in first side member 68 is restrainer opening 78 in a position to align with restrainer opening 52 when door and locking assembly 60 is assembled into lid member 24. Provided on the upper portion of the second side member 70 of the first channel member 62 and first side member 74 of second channel member 64 are door running surfaces 80 and 81 respectively bounded at each end by offset protrusions 82. Slidably riding on door running surface 80 and 81 is door member 84. Formed on each end of door member 84 are guide flanges 86 and 88 (more clearly shown in FIGS. 8 and 9). Guide flanges 86 and 88 have formed at the extremity thereof gear teeth 90 adapted to mate with gears 92 and 94 respectively.

Gears 92 and 94 are attached to shaft 96 which passes through openings in the second side member 70 of first channel member 72 and first side member 74 of second channel member 64. Shaft 96 extends through gear 94 and is attached to a conventional key actuated mechanism 98 (shown in FIG. 5). Actuation of key actuated mechanism 98 by key 100 rotates shaft 96 and attached gears 92 and 94. When rotated, gears 92 and 94 engage gear teeth 90 on guide flanges 86 and 88 of door member 80 thereby sliding door member 84 along door running surfaces 80 and 81 on first and second channel members 62 and 64.

Provided in base member 66 of first channel member 62 are elongated openings 100. Extending through elongated openings 100 are engaging members 102 and 104 adapted to fit into rectangular openings 40 and 42 respectively in flange 36 on first side 14 (see FIG. 2).

With reference to FIGS. 5, 9, and 10, engaging members 102 and 104 are rigidly attached to connector member 106 which has provided at one edge thereof gear teeth 108 which engage with the teeth of gear 110. Gear 110 is operably attached to second key actuated mechanism 112 which extends through flat member 26 of lid member 24 to permit access by key 114. Provided in the upper base portion of engaging member 102 and 104 are elongated openings 103 through which extend the upper portion of guide support posts 105. Actuation of key 114 rotates gear 110, thus moving connector member 106 laterally in either direction until the ends of elongated openings 103 contact guide support posts 105.

Provided on engaging members 102 and 104 are engaging finger protrusions 116 and 118 (best shown in FIGS. 9 and 11). By actuating second key actuated mechanism 112, connector member 106 and engaging members 102 and 104 may be moved in the direction of arrow A in FIGS. 9, 10 and 11 until the ends of elongated openings 103 contact guide support posts 105. In this position, lid member 24 may be placed over box member 12 by sliding locking flange 73 over flange 38 and then placing engaging members 102 and 104 into rectangular openings 40 and 42 in flange 36. Once lid member 24 is in this position on box member 12, key 114 may be rotated in the opposite direction to actuate second key actuated mechanism 112 to move engaging

members 102 and 104 in a direction opposite to arrow A in FIGS. 9, 10 and 11 until finger protrusions 116 and 118 engage the edge of rectangular openings 40 and 42 thereby securely retaining lid member 24 on box member 12.

With reference to FIGS. 5, 9 and 11, locking lever 130 is pivotably attached by pin 132 to first and second side members 68 and 70 of first channel member 62. Spring biasing means 134 is attached at one end to a flange 136 on locking lever 130 and at the opposite end to support member 138. Support member 138 is affixed to base member 66 of first channel member 62. Also affixed to flange 136 of locking lever 130 is pin 140 which extends outwardly approximately perpendicular to flange 136. Attached to engaging member 104 and extending upwardly therefrom is cam member 142. Cam member 142 has formed thereon an angular surface 144 which contacts and rides upon pin 140.

Also mounted to pin 132 is a disengaging member 150 which comprises an inverted U-shaped channel member having side members 152 and 154 joined by flat top portion 156 (see FIG. 6). Extending from side member 154 is cantilever extension 158 (see FIGS. 5 and 14) having formed at the end thereof a shelf protrusion 160 extending essentially perpendicular to cantilever extension 158. Spring biasing means 162 is attached at one end to lever member 164 which is attached to flat top portion 156 of disengaging member 150. The opposite end of spring biasing means 162 is attached to flange 166 the base of flange 166 is attached to base member 66 of first channel member 62. Spring biasing means 162 tends to urge disengaging member 150 to pivot around pin 132 until flat top portion 156 of disengaging member 150 contacts pin 140 attached to flange 136 of locking lever 130.

When door member 84 is in its normally opened position so that cash receiving opening 54 is opened to allow coins and currency to enter the cash box 10, guide flange 86 of door member 84 is positioned as illustrated in FIG. 11. In this position, the free end of locking lever 130 rides against gear teeth 90 of guide flange 86 of door member 84. In this position pin 140 presses against flat top portion 156 of disengaging member 150 (see FIG. 6) thus holding disengaging member 150 in a static position against the urging of spring bias means 162.

With reference to FIGS. 20 and 21, restraining mechanism 170 comprises tamperproof housing 172 and latching and switch mechanism 174, both of which are attached to an interior wall 176 of vending machine (not shown) by screws 177. Latching and switch mechanism comprises a pivotably mounted latching member 178 which has first gripping protrusion 180 and second gripping protrusion 182. Latching member 178 is pivotably attached to the interior portion of latching and switching mechanism 174 by pin 184 (see FIGS. 12 and 13). Spring biasing means 186 tends to rotate latching member 178 in a clockwise direction, as illustrated in FIGS. 12 and 13. Provided on cam extension 188 of latching member 178 is switch pin 190.

With reference to FIGS. 15, 16 and 17, provided within latching and switch mechanism 174 is switch arrangement 200 (schematically illustrated in FIGS. 15, 16 and 17). Switch arrangement 200 comprises first lever contact member 202 and second lever contact member 204. At approximately the middle of contact members 202 and 204 are attached electrical contact

protrusions 206 and 208 respectively. In the normal closed position, electrical contact protrusions 206 and 208 contact electrical contacts 210 and 212 on contact arms 214 and 216 respectively. Electrical continuity is provided between contact arms 214 and 216 by shunt 218 so that when switch arrangement 200 is in its normal closed condition (as shown in FIG. 16) electrical continuity is provided from lug 220 on first lever contact member 202 through electrical contact protrusion 206, electrical contact 210, contact arm 214, shunt 218, electrical contact 212, electrical contact protrusion 208, second lever contact member 204 to lug 222. As FIGS. 15 and 17 illustrate, when latching member 178 is rotated in either direction, switch pin 190 contacts the free ends of either first lever contact member 202 or second lever contact member 204 opening the contact between electrical contact protrusion 206 and electrical contact 210 or electrical contact protrusion 208 and electrical contact 212 thereby breaking electrical continuity between lugs 220 and 222.

With reference to FIG. 21, latching and switch mechanism also comprises magnetic switch arrangement 230. Provided in the front of latching and switch mechanism 174 are circular openings 232, 234 and 236 which are adapted to receive and mate with cylindrically shaped jacks 46, 48 and 50 respectively attached to lid member 24. Provided immediately behind circular openings 232, 234 and 236 is magnetic switch support lock 238 through which is formed cylindrical passageways 240 immediately adjacent circular openings 232, 234 and 236. Positioned immediately above cylindrically shaped passageways 240 are magnetic switches 242. Cylindrically shaped jacks 46, 48 and 50 have a hollow interior portion (not shown) in which may be inserted cylindrical magnets (not shown). Magnetic switches 242 are normally open switches which close to provide electrical continuity in the presence of a magnetic field provided when cylindrical shaped jacks 46, 48 and 50 containing cylindrical magnets are inserted into circular openings 232, 234 and 236.

When the self-locking cash box 10 is inserted in the proper position into the vending machine (not shown) cylindrically shaped jacks 46, 48 and 50 are inserted into circular openings 232, 234 and 236 and latching member 178 enters restrainer opening 52 in first flange side member 28 and restrainer opening 78 in first side member 68 of first channel member 62. In this position, latching member 178 is positioned as illustrated in FIG. 12 with second gripping protrusion 182 in contact with first side member 68 of first channel member 62 immediately adjacent the lower edge of restrainer openings 78 and first gripping protrusion 180 in engagement with latching lever restraining arm 89. In this position, latching member 178 holds switch arrangement 200 in the closed position as illustrated in FIG. 16. Further, the magnets in cylindrically shaped jacks 46, 48 and 50 close switches 142 which are in series with switch arrangement 200 thereby providing electrical continuity through the entire latching and switch mechanism 174. Latching and switch mechanism 174 is in electrical continuity with the operable portions of the vending machine and opening of any of the switches in switch arrangement 200 or magnetic switch arrangement 230 renders the vending machine inoperable.

Attached to guide flange 86 of door member 84 is latching lever restraining arm 89. Latching lever restraining arm 89 is formed to extend one end thereof

between first gripping protrusion 180 and second gripping protrusion 182 on latching member 178 (as shown in FIG. 12). When door member 84 is in its normally open position as illustrated in FIG. 11 and the cash box 10 is properly positioned in the vending machine, second gripping protrusion 182 contacts first side member 68 of first channel member 62 and first gripping protrusion 180 contacts latching lever restraining arm 89, thereby preventing removal of cash box 10 from the vending machine.

When a routeman wishes to remove the cash box 10 from the vending machine (not shown), he inserts key 100 into first key actuated mechanism 98 and rotates first key actuated mechanism and connected shaft 96. Rotation of shaft 96 rotates gears 92 and 94 causing engagement with gear teeth 90 on guide flanges 86 and 88 of door member 84, thereby sliding door member 82 in a lateral direction across cash receiving opening 54 in lid member 24. As door member 84 slides laterally across cash receiving opening 54 latching lever restraining arm 89 is moved laterally from between first and second gripping protrusions 180 and 182 on latching member 178, thereby permitting latching member 178 to rotate slightly in a clockwise direction (as illustrated in FIG. 12) under the urging of spring biasing means 186 until the edge of latching member 178 contacts the bottom edge of restrainer openings 52 and 78, in this position latching member 178 is in the position illustrated in FIG. 17 and continuity of switch arrangement 200 is broken thereby rendering the vending machine inoperable. The purpose of this feature is to prevent the unscrupulous routeman from closing door member 84 before placing the cash box 10 into the vending machine so that coins and currency will pile up in the coin chute immediately above the closed door member 84 thereby allowing the routeman to misappropriate the money when it falls out of the chute after the cash box is removed.

Further, rotation of key 100 moves door member 84 completely across cash receiving opening 54 until the edge of guide flange 86 clears the free end of locking lever 130 permitting locking lever 130 to pivot about pin 132 under the urging of spring biasing means 134. In this position, locking lever 130 prevents door member 84 from being reopened by reverse rotation of key 100 thereby securely closing off access to the interior of the cash box 10.

The pivoting of locking lever 130 to a locking position (as illustrated in FIG. 9) causes pin 140 to move upwardly through a circular arc. The upward movement of pin 140 permits disengaging member 150 to pivot around pin 132 under the urging of spring biasing means 162. This pivoting by disengaging member 150 causes shelf protrusion 160 on the end of cantilever extension 158 to contact the lower surface of second gripping protrusion 182 on latching member 178 thus rotating latching member 178 until second gripping protrusion 182 clears the lower edge of restrainer opening 78 and 52 (as illustrated in FIG. 13), thereby permitting the cash box 10 to be removed from the vending machine.

Removal of the vending machine allows latching lever 178 to rotate clockwise (as illustrated in FIG. 17) thereby breaking continuity of switch arrangement 200 rendering the vending machine (not shown) inoperable. In addition, when cash box 10 is removed, cylindrically shaped jacks 46, 48 and 50 are withdrawn from cir-

cular openings 232, 234 and 236 thereby removing the magnetic field from the vicinity of magnetic switches 242, thereby opening switches 242 and also breaking continuity to the operable portions of the vending machine. Once removed from the vending machine, a similar compatible cash box may be inserted in place of cash box 10 thereby rendering the vending machine operable for subsequent vending purposes.

The removed cash box 10 may then be transported by the routeman back to a central accounting office where the cash contents of the cash box 10 may be removed, counted and banked. Provided on cash box 10 for additional security purposes is eye 11 which is welded to third side 18 of box member 12. A chain or metal rod may be inserted through the opening in eye 11 to firmly attach and lock cash box 10 to a suitable portion of the routeman's truck to prevent theft while the routeman is servicing other vending machines.

To remove lid member 24 from box member 12, key 114 is inserted into second key actuated mechanism 112 and rotated to cause gear 110 to rotate and engage gear teeth 108 on connector member 106. Rotation of key 114 thereby moves connector member 106 and attached engaging members 102 and 104 laterally until finger protrusions 116 and 118 disengage from the edges of rectangular openings 40 and 42 in flange 36 thereby permitting lid member 24 to be lifted off of box member 12.

Lateral movement of engaging member 104 by rotation of key 114 causes attached cam member 142 to also move laterally to the right as illustrated in FIG. 9. This movement of cam member 142 causes angular surface 144 to contact pin 140 on locking lever 132, thereby causing locking lever 130 to rotate clockwise as illustrated in FIG. 9 until the end of locking lever 130 clears the edge of guide flange 86 thereby unlocking door member 84. With locking lever 130 in this position, key 100 may be rotated to move door member 84 laterally back to its normally open position thereby opening cash receiving opening 54 so that cash box 10 may be inserted into vending machine for subsequent use.

An alternate embodiment of a coded magnetic switching arrangement for utilization with the present invention is illustrated in FIGS. 18 and 19. A coded magnetic switch arrangement 300 comprises cylindrical shaped jack receiving channels 302, 304 and 306. Hollow cylindrically shaped jacks 308, 310 and 312 are positioned in receiving channels 302, 304, and 306 respectively when cash box 10 is in its proper position in the vending machine. Provided within the hollow interior portion of cylindrically shaped jacks 308, 310 and 312 are cylindrical magnets 314, 316 and 318. Provided adjacent the end of receiving channels 302 and 306 are magnetic switches 320 and 322 which are normally in open continuity and are closed as a result of the presence of a magnetic field produced by cylindrical magnets 314 and 318 being inserted into receiving channels 302 and 306.

Magnet 324 is pivotably attached at approximately its center by support 326 (see FIG. 19). Also provided adjacent magnet 324 is magnetic switch 328. The coded magnetic switch arrangement 300 operates as a result of known magnetic physical principles, i.e., like poles of a magnet tend to repel one another and opposite poles of a magnet tend to attract one another. By inserting the cylindrical magnets 314, 316 and 318 in

such a way as their north and south poles are arranged as indicated by the letters "N" and "S" in the FIGS. 18 and 19, a unique switching arrangement can be achieved. When cylindrically shaped jacks 308, 310 and 312 are inserted into receiving channels 302, 304 and 306 magnets 314 and 318 cause magnetic switches 320 and 322 respectively to close. The presence of the "S" pole of magnet 316 in immediate proximity to the "S" pole of magnet 324 tends to exert a repellent force upon the "S" pole of magnet 324 thereby rotating magnet 324 counterclockwise (as illustrated by broken lines in FIG. 19) until the "N" pole is immediately adjacent magnetic switch 328. In this position, magnetic switch 328 closes to create electrical continuity through switches 320, 322 and 328, thereby rendering the vending machine operable. However, if magnet 316 is reversed, the "S" pole of magnet 324 is attracted to magnet 316 and consequently magnetic switch 328 remains open. The coded magnetic switch arrangement 300 illustrated in FIGS. 18 and 19 provides the additional advantage of making it more difficult for a thief to fabricate a magnetic jack arrangement in an attempt to circumvent the security features of the present invention. Further, by the mere addition of additional pivotal magnets at the end of each receiving channel, nine different magnetic pole coded combinations may be achieved.

It should also be understood that various other changes, modifications, and variations in the structure and function of the present invention may be effected without departing from the spirit and the scope of the present invention as defined in the appended claims.

I claim:

1. A self-locking cash box for receiving coins and currency deposited in an associated apparatus comprising:
 - a hollow receptacle having an open top;
 - lid means adapted to be positioned over the open top of said receptacle, said lid means having an opening therein for receiving coins and currency;
 - engaging means attached to said lid means for securing said lid means over the open top of said receptacle;
 - first key operated means positioned on said lid means;
 - slidable door means adapted to slidably move to close the opening in said lid means in response to actuation of said first key operated means;
 - disengageable restraining means attached to the associated apparatus and adapted to engage said lid means to prevent removal of the cash box from the associated apparatus until said restraining means is disengaged;
 - locking means inaccessably positioned on the inside of said lid means for locking said slidable door means over the opening in said lid means to permit the cash box to be removed from the associated apparatus; and
 - second key operated means positioned on said lid means, said second key operated means adapted to disengage said engaging means to permit removal of said lid means from said receptacle and thereby permit access to the contents of the cash box.
2. A self-locking cash box as claimed in claim 1 and further comprising a switch means, said switch means adapted to render the associated apparatus inoperable

when said restraining means is disengaged from said lid means.

3. A self-locking cash box as claimed in claim 2 wherein said switch means is further adapted to render the associated apparatus inoperable when said slidable door means closes the opening in said lid means.

4. A self-locking cash box as claimed in claim 1 wherein:

said lid means comprises a flange means adapted to fit over said receptacle to form a tamperproof junction therewith; and

said flange means has an opening therein for receiving said restraining means.

5. A self-locking cash box as claimed in claim 4 wherein said restraining means further comprises:

a lever member pivotally mounted at one end, said lever member having formed at the other end thereof a first projection and a second projection extending downwardly approximately perpendicular to said lever; and

spring means tending to urge said lever member to pivot so that said first and second projections move downwardly.

6. A self-locking cash box as claimed in claim 5 and further comprising an engaging ear means on said door means for engaging said first projection on said lever member when said door means is positioned so that the opening in said lid means is fully open and disengaging said first projection when said door means is slidably moved to close the opening in said lid means.

7. A self-locking cash box as claimed in claim 6 wherein said second projection on said lever member is adapted to engage the bottom of the opening in said flange means and retain the cash box in the associated apparatus.

8. A self-locking cash box as claimed in claim 7 wherein said disengaging means comprises:

an arm member pivotally mounted at a first end thereof and having a second end thereof positioned adjacent the opening in said flange means; and

a spring means urging said second end to pivot upwardly across the opening in said flange means, said arm member adapted to pivot in response to said locking means locking said slidable door means thereby contacting said second projection on said lever member to pivot said lever member until said second projection disengages the bottom of the opening in said flange means thereby permitting the cash box to be removed from the associated apparatus.

9. A self-locking cash box as claimed in claim 8 and further comprising one or more hollow columnar projections located on and extending outwardly from said flange means.

10. A self-locking cash box as claimed in claim 9 wherein said restraining means further comprises one or more comating female receptacles for receiving said hollow columnar projections.

11. A self-locking cash box as claimed in claim 10 and further comprising:

magnetic field producing means located in said hollow columnar projections; and

magnetic field responsive switches positioned adjacent said receptacles and adapted to render the associated apparatus inoperable when said projections are removed from said receptacles.

12. A self-locking cash box as claimed in claim 10 wherein said restraining means further comprises:

elongated magnets pivotally mounted at approximately their center, said elongated magnets further positioned with first ends adjacent said female receptacles;

magnetic switch means positioned in alignment with the arc of pivotal travel of second ends of said elongated magnets so that said second ends will pivot to be in immediate proximity with said magnetic switch means when said first ends of said elongated magnets are pivoted away from said female receptacles,

whereby by inserting magnets into said hollow columnar projections so that the magnetic poles of said magnets are opposite to the magnetic poles of said first ends of said elongated magnets and inserting said projections into said female receptacles, said elongated magnets will pivot until said second ends are adjacent said magnetic switches thereby closing said switches and rendering the vending machine operable.

13. A self-locking cash box as claimed in claim 1 and further comprising a tamperproof junction means located about the opening in the lid means and engaging the associated apparatus to prevent any impediment from being positioned between the associated apparatus and the opening in said lid means.

14. A self-locking cash box for receiving coins and currency deposited in an associated apparatus comprising:

a hollow receptacle having an open top;

lid means adapted to be positioned over the open top of said receptacle, said lid means having a first opening therein for receiving coins and currency; engaging means attached to said lid means for securing said lid means over the open top of said receptacle;

first key operated means positioned on said lid means;

a shaft operably connected to said first key operated means so that operation of said first key operated means rotates said shaft;

gear means attached to said shaft;

slidable door means adapted to slidably move to close the first opening in said lid means, said slidable door means having formed thereon gear teeth in operable engagement with said gear means on said shaft whereby said slidable door slidably moves to close the first opening in said lid means in response to operation of said first key operated means;

a restraining member pivotally attached at a first end to the associated apparatus and having a first projection and a second projection formed at a second end and extending downwardly approximately perpendicular to said lever, said restraining member positioned and adapted to enter a second opening in said lid means when the cash box is placed in the associated apparatus;

spring means tending to urge said restraining member to pivot so that said first and second projections move downwardly and said second projection engages a bottom edge of the second opening in said lid means when the cash box is placed in the associated apparatus, thereby retaining the cash box in

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the associated apparatus until said restraining member is disengaged;

locking means inaccessably positioned on the inside of said lid means for locking said slidable door means when said slidable door means is moved to a position to close the first opening in said lid means;

a disengaging member pivotally mounted at a first end and having a second end positioned adjacent the second opening in said lid means, said disengaging member adapted to pivot in response to said locking means locking said slidable door means thereby contacting said second projection on said restraining member to pivot said restraining member until said second projection disengages the second opening in said lid means thereby permitting the cash box to be removed from the associated apparatus; and

second key operated means positioned on said lid means, said second key operated means operably connected to said engaging means and said locking means so that operation of said second key operated means disengages said engaging means to permit removal of said lid means from said receptacle and unlocks said locking means to permit said slidable door means to be slid back to an open position.

15. A self-locking cash box as claimed in claim 14

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and further comprising an engaging ear means attached to said slidable door means, said engaging ear means positioned to engage said first projection on said restraining member when said door means is positioned so that the first opening in said lid means is fully open and disengage said first projection when said door means is slidably moved to close the first opening in said lid means.

16. A self-locking cash box as claimed in claim 15 and further comprising a switch means operably connected to said restraining member, said switch means adapted to render the associated apparatus inoperable in response to pivotal movement of said restraining member when said engaging ear disengages said first projection or when said second projection disengages the second opening in said lid means.

17. A self-locking cash box as claimed in claim 15 and further comprising:

magnetic field producing means located on said lid means; and

magnetic field operated switches positioned on the associated apparatus adjacent said magnetic field producing means and adapted to render the associated apparatus inoperable when the cash box is removed and said magnetic field producing means are no longer in proximity with said magnetic field operated switches.

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