

Dec. 4, 1962

F. TIPTON

3,066,858

MECHANICAL DUMPING DEVICE

Filed July 24, 1961

3 Sheets-Sheet 1

Fig. 3

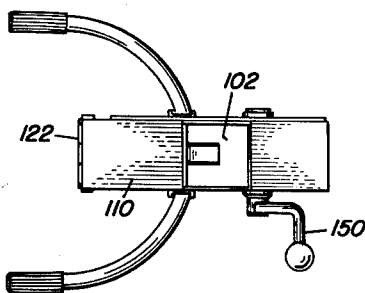
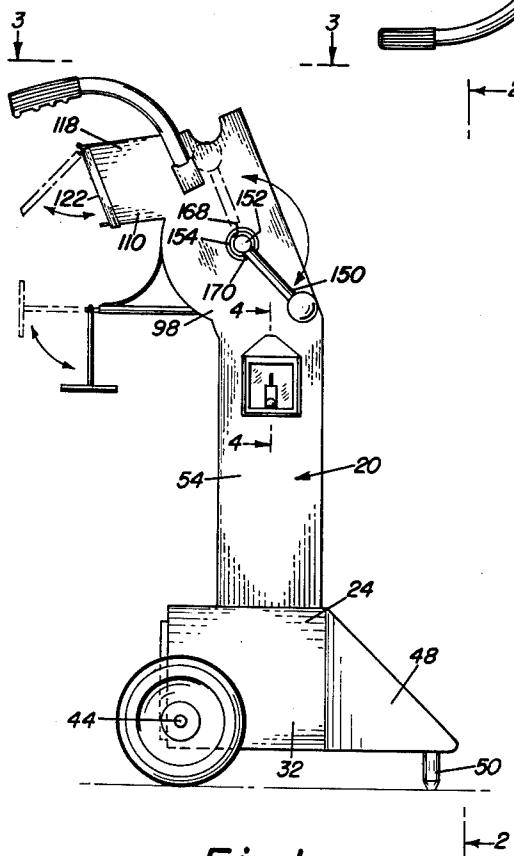


Fig. 1

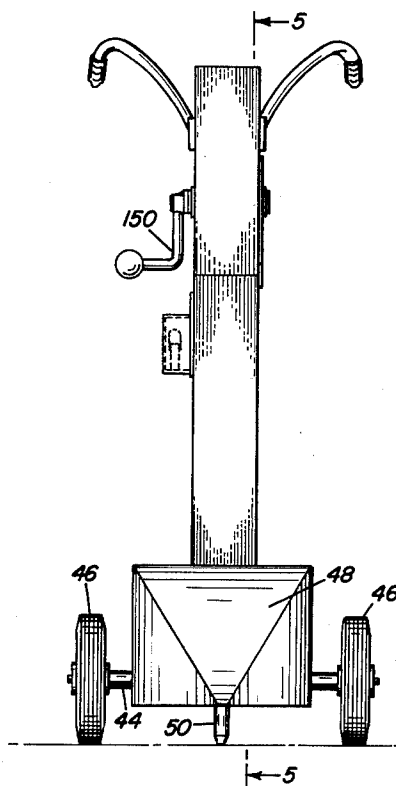


Fig. 2

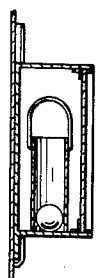


Fig. 4

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3 Sheets-Sheet 2

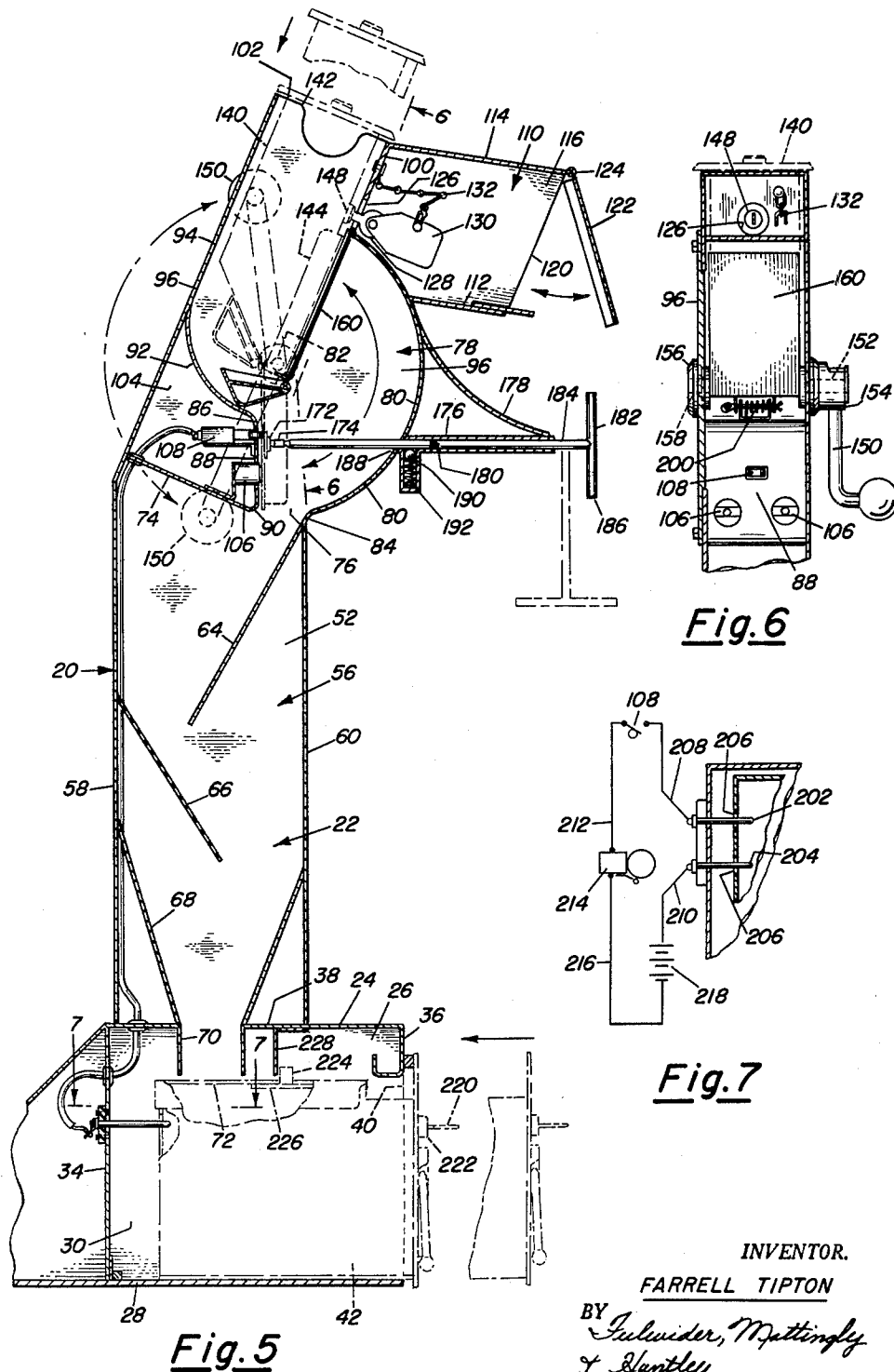


Fig. 6

Fig. 7

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3 Sheets-Sheet 3

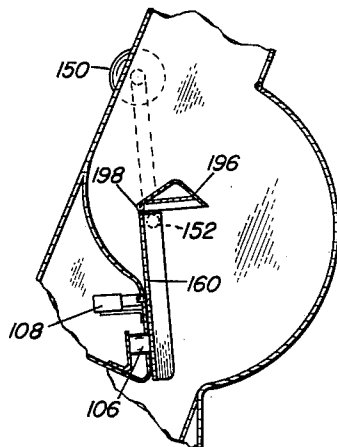


Fig. 8

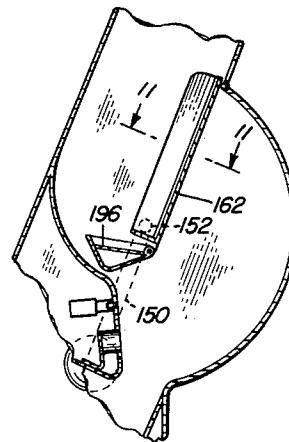


Fig. 9

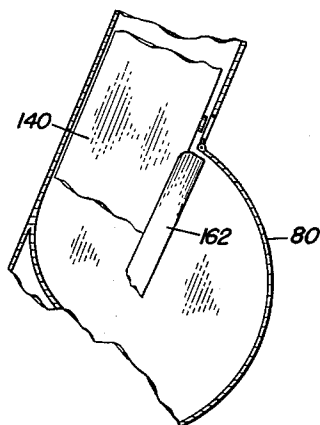


Fig. 10

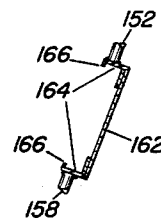


Fig. 11

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3,066,858
MECHANICAL DUMPING DEVICE
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6 Claims. (Cl. 232-16)

The present invention relates to a coin box dumping device.

The coin box, such as those used on fare receivers on city buses, pay telephones, and other like instruments, usually comprises a closed container having an opening through which the coin may be dumped. A hinged lid or cover is provided for this opening. A lock locks the cover in closed position. A detent prevents closing of the cover after it is unlocked. This detent must be shifted by a tool before the cover can be closed.

The coin box dumping device of the present invention includes a housing which forms a compartment for the coin box. This compartment has an opening, preferably in the top thereof for receiving the coin box. This compartment is provided also with a second opening which provides access to the keyhole for the lock for the cover of the box. The housing also includes a second compartment which houses the key for the lock and surrounds the second mentioned opening which provides access to the keyhole in the box. This second mentioned compartment is provided with an opening through which the operator of the device has access to the key.

The key is attached to the housing in such fashion that it cannot be removed from the second mentioned housing and the second mentioned housing is of such dimensions that it would be extremely difficult for a person to sever the means for attaching the key to the housing.

Means in the form of an oscillatable lever is disposed outside of the housing for moving the coin box cover to open position after it is unlocked while the box is in the first mentioned compartment. The housing is also provided with a compartment below the coin box for receiving the coins which are dumped from the coin box.

The compartment which receives the dumped coins is provided with a relatively large and similar coin box. This larger coin box is provided with two electrodes which are bridged by the coins in the box when the box is substantially full of coins. These electrodes are in a signal circuit and when bridged by the coin, warn the operator so that he will not endeavor to empty another coin box through the dumping device until an empty receiving coin box has been substituted for the one that was previously filled or substantially filled.

The housing of the present invention is provided with a wheel or wheels whereby it can be moved from bus to bus at the bus terminal.

The housing is also provided with an abutment which lies in the path of movement of the cover of the box when the cover is not completely closed so as to prevent removal of the coin box. As previously stated, when the cover is moved to open position, a detent prevents the closing of the cover. This detent must be released by the detent releasing mechanism. A special tool is provided for actuating the detent releasing mechanism. This tool extends from the exterior of the housing and is guided by the housing into cooperative relationship with the releasing mechanism.

The advantages will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the invention is illustrated.

In the drawings:

FIG. 1 is a view in elevation showing the right side of the coin box dumping device;

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FIG. 2 is a front view in elevation of the device;

FIG. 3 is a top plan view of the device;

FIG. 4 is a vertical section view taken along line 4-4 of FIG. 1, but on a larger scale;

FIG. 5 is a sectional view taken along line 5-5 of FIG. 2, but on a larger scale and showing a coin box in position;

FIG. 6 is a fragmentary sectional view taken along line 6-6 of FIG. 5;

FIG. 7 is a fragmentary sectional view taken along line 7-7 of FIG. 5;

FIG. 8 is a fragmentary view in section showing the position of the gate, which prevents the insertion of the coin box into operative position when the door opening mechanism is not in proper position;

FIG. 9 is a view similar to FIG. 8, but showing the door actuating mechanism in proper position at the time that the coin box is received by the dumping device;

FIG. 10 is a view similar to FIG. 9, but showing the mechanism in a position in which the detent release mechanism had not been operated; and

FIG. 11 is a fragmentary sectional view taken along line 11-11 of FIG. 9.

Referring more in detail to the drawings, the dumping device is indicated at 20 and includes a housing generally indicated at 22. This housing includes a lower section 24 forming a compartment 26. The compartment 26 includes a base 28, side walls 30 and 32, a front wall 34, a rear wall 36 and a top wall 38. The rear wall 36 is provided with an opening 40 for receiving a relatively large coin box 42. The rear of the section 24 carries an axle 44 which in turn carries wheels 46. The front of the compartment is provided with an extension 48; a front leg 50 depends from the extension 48.

The housing 22 also includes a compartment 52 which is disposed above the compartment 26. This compartment 52 includes side walls 54 and 56, a front wall 58 and a rear wall 60. The bottom wall of the compartment 62 is common with the top wall 38 of compartment 26. The compartment 56 includes a plurality of downwardly extending baffles 64 and 66 and is provided with a chute 68 which registers with a portion 70 which extends downwardly from the top wall 38 of compartment 26 and also registers with the opening 72 and the coin box 42. The compartment 56 is also provided with a top wall 74 having an opening 76 for receiving the coins.

The housing 22 also includes a compartment 78, the rear wall 80 of which is arcuate in shape, the axis of which arc is at 82. The lower end of this wall 80 merges with the upper end of rear wall 60 at 84. The compartment 78 includes a front wall 86, the lower portion 88 of which extends vertically and the lower end of this portion merges at 90 with the rear of the top wall 74 of compartment 56. This merger at 90 lies forwardly of junction 84 to provide opening 76, forming the outlet for compartment 78. The upper portion of wall 86 is bowed outwardly and is indicated at 92. The upper end of this bowed portion 92 merges into an upwardly inclined front wall 94. The compartment 78 also includes a right side wall 96 and a left side wall 98. A rear 100 extends upwardly from the upper portion of the arcuate shaped wall 96 and is arranged parallelly of the front wall 94. The compartment 78 is provided with an opening 102 at the extreme upper end thereof.

The angling front wall 94 extends downwardly and merges with the front wall 58 of compartment 56 and forms with the top wall 74 of compartment 76 and wall 88, 92, 96 and 98, a compartment 104 which houses two permanent magnets 106 and the micro switch 108.

The housing 22 also includes an upper rear housing 110 including a rearwardly extending wall 112 which

merges with the arcuate shaped wall 96. It also includes a top wall 114 which merges with the top of 100 and includes a right side wall 116 and a left side wall 118. The rear end of this compartment 110 is open as at 120 but may be closed by a cover 122 which is hinged at 124. The rear wall 100 of the upper part of 78 is common with the front wall 110 and is provided with a keyhole opening 126. The cover 122 may be locked in covering position by any suitable means. The compartment contains a key 128 having an extension 130. One end of a heavy chain 132 is secured to the key extension 130 and the other end of the chain is secured to the housing. The operator may have access to the key through the opening 120 in compartment 110. The chain 130 is of such length so as to permit manipulation of the key and limits the outward movement of the key so that the key is confined at all times within the housing.

The coin box from which the coins are to be dumped is indicated at 140. This coin box is provided with an upper rim 142 upon which the coin box rests when it is inserted into the compartment 78 through the top opening 102. This coin box is of the type manufactured by Grant Money-Meters Company, of Providence, Rhode Island, and known as lock box. This lock box is provided with a lid or cover 144 which is hinged to 146, and, when the lock box is in position in the present device, this cover is at the rear and the hinge is at the bottom of the box. The rear of the box is provided with a lock 148 which may be unlocked by the key 128. This lock normally maintains the coin box in closed position but the cover may be operated after the key is turned to open-lock position.

The dumping device of the present invention is provided with a cover opening mechanism which is operated from the exterior of the device through the lever 150. This lever 150 is carried by a shaft 152 which is journaled in a bearing 154 carried by the wall 98, the axis of the shaft 152, coinciding with the axis 82. An aligned bearing 156 is carried in the opposite wall 96 and supports a trunnion or shaft 158. These shafts carry the door opening element 160. The door opening element 160 is more clearly shown in FIG. 10 and includes a back wall 162, forwardly extending side walls 164 and flanges 166 which extend towards one another from the side wall 164. When the coin box 140 is placed in position, these flanges 166 lie forwardly on the front edges of the cover 144 of the coin box. By rotating the lever 150 in a clockwise direction as viewed in FIG. 5, the flanges 166 hooked in front of the front edges of the cover 144, will cause the cover to be opened. In opening the cover, the lever 150 is swung far enough so that the element 160 extends substantially vertically as shown dotted by position in FIG. 5. Stops 168 and 170 are provided on the bearing 154 to confine the extent of movement of the lever and likewise the cover opening element 160 from the position shown in full to dotted lines as shown in FIG. 5. The two permanent magnets 106 tend to retain the metal element 160 in the dotted line position. Also when the element is in the dotted line position, the micro switch 108 is closed.

As previously stated the coin box 140 is of the type having a detent (not shown) which prevents the complete closing of the cover until the detent is released. Detent releasing mechanism, generally indicated at 172, can be actuated by any suitable mechanism such as bit 174. The bit 174 is slidably carried in a rearwardly extending tube 176. This tube is connected with the rear wall 80 and is provided with a brace 178. The bit 174 is hinged at 180 to a T-shape handle 182, including a rod 184 and a handle section 186. This bit is guided by the tube 176 into detent releasing position by pushing inwardly on the rod 184. Then by turning the bit the detent release is actuated. After the release mechanism is actuated, the handle 182 is pulled rearwardly until the pivot 180 clears end of the tube 176 and then the handle may be dropped

to the dotted line position as shown in FIGS. 1 and 5. When the bit is in operative position, it is yieldingly held in this position through a groove 188 therein which receives a ball 190 which is yieldingly forced upwardly by a spring 192.

FIG. 10 shows a position of the cover 144 of the box 140 prior to the releasing of the detent and when an attempt is made to close the cover without releasing the detent. It will be observed that the cover strikes the upper part of the arcuate wall 80 which upper part then forms an abutment for preventing the removal of the box. Thus it will be seen that before the box can be removed from the dumping device, the detent must be released by the releasing mechanism through the bit 174.

It is necessary to prevent the insertion of the coin box into its operative position in the device if the cover opening element 160 was previously moved to the open position accidentally. A gate 196 is provided for preventing the insertion of the coin box into dumping position should the cover opening element be in the wrong position at that time. This is best shown in FIG. 8. This gate 196 is hinged at 198 to the lower part of the element 160. When the element is in proper position, a spring 200 normally biases the gate 196 to the position shown in FIG. 9, however, the weight of the coin box is sufficient to depress the gate to the position shown in FIG. 5 when the coin box is in dumping position.

It will be seen that if the coin box could be inserted into dumping position while the cover opening element 160 was previously accidentally moved to the cover opened position, then by unlocking the cover, there would be no means to bring the cover down to a position in which the bit 174 could be actuated to release the releasing mechanism for the detent, and, consequently the detent would hold the cover in such position that the coin box could not be withdrawn from the dumping device.

Referring now particularly to FIG. 7, it will be seen that the front wall 34 of the section 24 carries two rearwardly extending electrodes 202 and 204. These electrodes extend through openings 206 in the front of the coin box 42. These electrodes are adjacent the top of coin box 42 and are adapted to be bridged by the coins when the coin box 42 is substantially full of the same. These electrodes are insulated from the wall 34 and are connected, respectively, with wires 208 and 210. These electrodes are in a circuit including the coins, the micro-switch 108, a wire 212, a signal device 214, herein shown as a bell, a wire 216 and a storage battery 218. Thus it will be seen when the coins bridge the electrodes 202 and 204, and inasmuch as the micro switch is closed by the cover actuating element 160, the signal 214 will be actuated. The operator should then prevent further dumping of coins through the device until the filled coin box 42 is replaced by one which will receive more coins.

The person authorized to remove the larger coin box is provided with key 220 which actuates a lock and this lock is only for the purpose of releasing the large coin box 42 from the compartment 26. This box 42 is similar to the box 140 except it is much larger; it is of the type in which a gate is provided for the opening 72 therein and this gate is automatically opened by inserting the box 42 into the compartment 26; a button or lug 224 on the gate 226 engages a projection 228 which extends downwardly from the top wall 38 of the compartment 26 for opening the gate. This gate is sprung to closed position and automatically locked closed when the coin box is withdrawn from compartment 26. A separate key, usually held by a bonded person, must be used to open the box 42 for removing the coins.

From the foregoing it will be seen that the operator of the device cannot have access to the coins which are discharged into the main storage coin box 42. Nor can he have access to the coin in box 140, since the key 128 cannot be removed from compartment 110 and this compartment 110 is of such small size that it would be ex-

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tremely difficult for inserting a severing tool into the compartment to cut the chain 130 and remove the key.

In operating the device, the lever 150 is moved to a position in which the cover opening element 160 is in the full line position as shown in FIG. 5. The coin box 140 is then placed into position, as shown in FIG. 5. The key 128 is then manipulated by the operator by extending his hand into compartment 110 through the opening 120. This unlocks the cover. The cover is then swung downwardly through the operation of the cover manipulating mechanism 160. The cover is then held in position by the two magnets 106. The coins will be discharged from the box and will flow through throat 76 along the baffle 64 and 66 and through the chute 70 and the opening 72 in the coin box. To remove the coin box from the device, the detent release 172 is actuated by the bit 174 and then the lever 150 is turned from the dotted line position to the full line position, as viewed in FIG. 5. The detent having been released, permits the cover actuating mechanism 160 to close the box and then when the key is withdrawn, the box 140 may be removed and another box inserted.

Thus it will be seen from the foregoing that it is practically impossible for the operator of the device having access to the coins in either of the boxes or in the device.

While the form of embodiment herein shown and described constitute a preferred form, it is to be understood that other forms may be adopted falling within the scope of the claims that follow.

I claim:

1. A coin box dumping device for a coin box of the type comprising a container for coins having an opening, a movable cover for the opening, a lock for the cover having a keyhole and requiring a key for actuating the lock; Said dumping device including a housing forming a compartment for the coin box, said compartment having an opening for receiving the coin box and having a second opening providing access to the keyhole; a key received by the keyhole for unlatching said lock, said housing having a second compartment surrounding the second opening in the housing and confining the key, said second compartment having an opening through which the operator has access to the key; means attached to the key and housing for limiting movement of the key within the second compartment for preventing removal of the key from the second compartment; and means actuated from the exterior of the housing for moving the coin box cover to open position after the cover is unlatched, said housing forming a compartment for receiving the coins discharged from the coin box when the cover is moved to open position.

2. A coin box dumping device as defined in claim 1, including a gate in the first mentioned compartment lying in the path of movement of the coin box for preventing seating of the coin box into the position in which the cover can be unlatched, said cover opening means being movable from a first position to a second position for removing the gate from the path of movement of the coin box and movable from the second position to the first position for moving said cover to open position.

3. A coin box dumping device as defined in claim 1, characterized in that said coin receiving compartment is adapted to receive a coin box for receiving the coins discharged from the first mentioned coin box, and including a circuit embodying: a source of current, an electrically actuated signal, a switch lying in the path of movement of the cover of the first mentioned coin box and adapted to be closed when the said cover is in the open position, and electrodes carried by the housing and extending into

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the upper portion of the second mentioned coin box when said second mentioned coin box is disposed in the coin receiving compartment, said electrodes being adapted to be bridged by the coins in the second mentioned coin box when the coin collection reaches a predetermined level in the second mentioned coin box.

4. A coin box dumping device for a coin box of the type comprising a container for coins having an opening, a movable cover for the opening, a lock for the cover having a keyhole and requiring a key for actuating the lock, said cover including a detent for preventing closing of the cover and including a detent releasing means; said dumping device including a housing forming a compartment for the coin box, said compartment having an opening for receiving the coin box and having an opening providing access to the keyhole; a key received by the keyhole for unlatching said lock, said housing having a second compartment for surrounding the second opening in the housing and confining the key, said second compartment having an opening through which the operator has access to the key; means attached to the key and housing for limiting movement of the key within the second compartment for preventing removal of the key from the second compartment; means actuated from the exterior of the housing for moving the coin box cover to open position after the cover is unlatched and for moving said cover toward closed position, said housing having an abutment lying in the path of movement of the cover for preventing the removal of the coin box from the first mentioned compartment when the detent is effective for preventing closing of the cover; and means actuated from the exterior of the housing for actuating the detent releasing means to permit closing of the cover, said housing forming a compartment for receiving the coins discharged from the coin box when the cover is moved to open position.

5. A coin box dumping device as defined in claim 4, including a gate in the first mentioned compartment lying in the path of movement of the coin box for preventing seating of the coin box into the position in which the cover can be unlatched, said cover opening means being movable from a first position to a second position for removing the gate from the path of movement of the coin box and movable from the second position to the first position for moving said cover to open position.

6. A coin box dumping device as defined in claim 4, characterized in that said coin receiving compartment is adapted to receive a coin box for receiving the coins discharged from the first mentioned coin box, and including a circuit embodying: a source of current, electrically actuated signal, a switch lying in the path of movement of the cover of the first mentioned coin box and adapted to be closed when the said cover is in the open position, and electrodes carried by the housing and extending into the upper portion of the second mentioned coin box when said second mentioned coin box is disposed in the coin receiving compartment, said electrodes being adapted to be bridged by the coins in the second mentioned coin box when the coin collection reaches a predetermined level in the second mentioned coin box.

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