Dec. 18, 1962 L. J. LAVIANA 3,069,073

COIN COLLECTING APPARATUS

Filed July 7, 1959

4 Sheets-Sheet 1

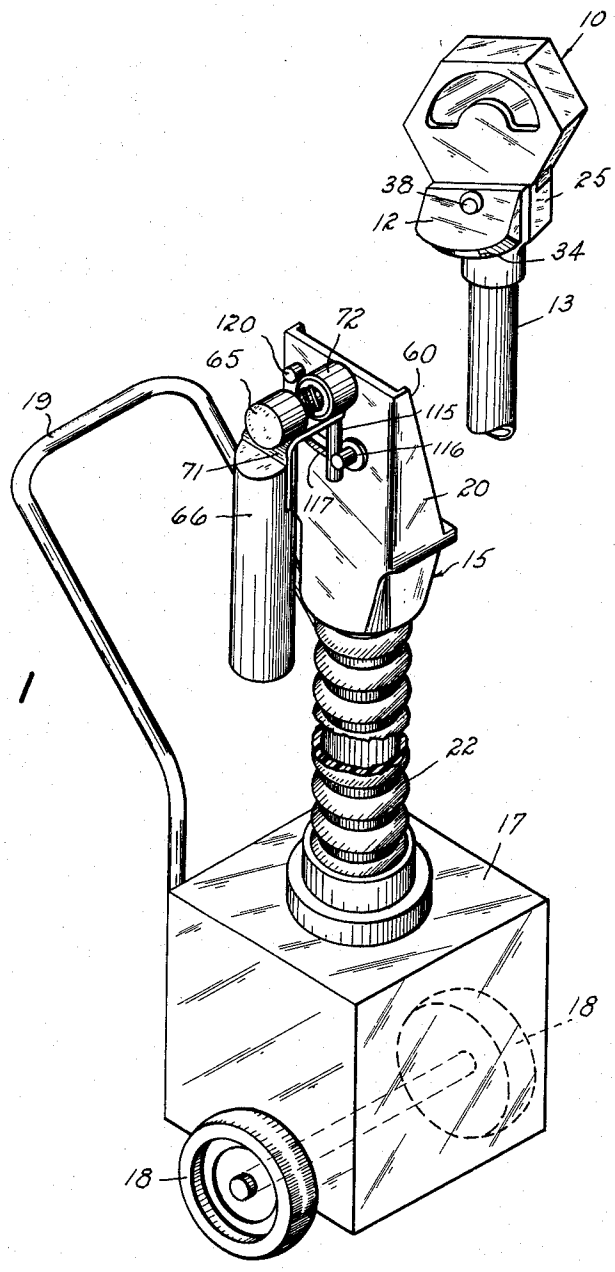

FIG. 1

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4 Sheets-Sheet 2

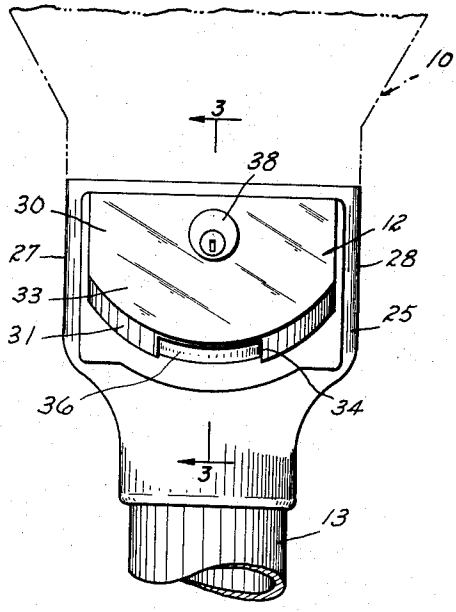

FIG. 2

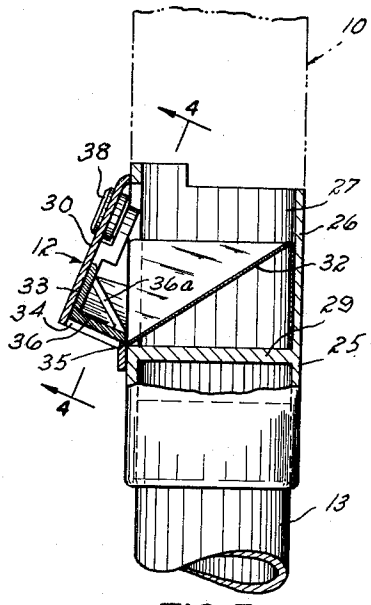

FIG. 3

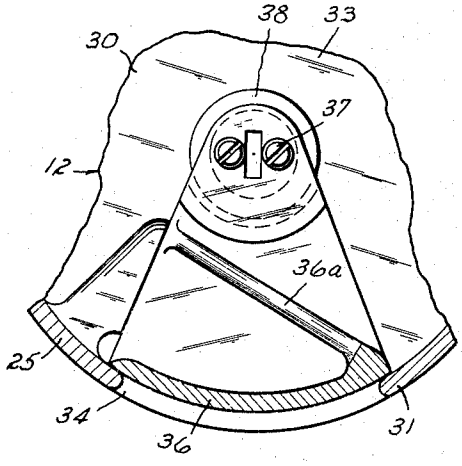

FIG. 4

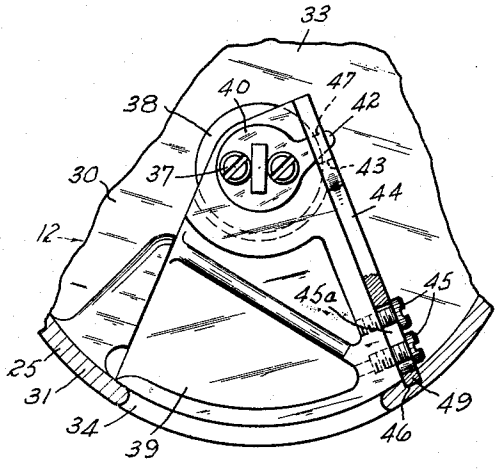

FIG. 5

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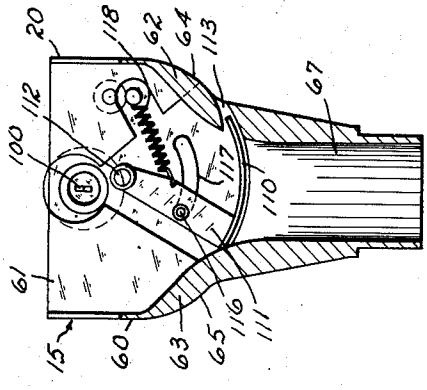

FIG. 8

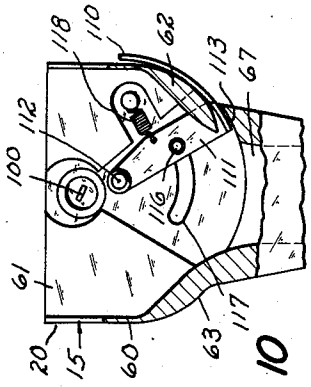

FIG. 10

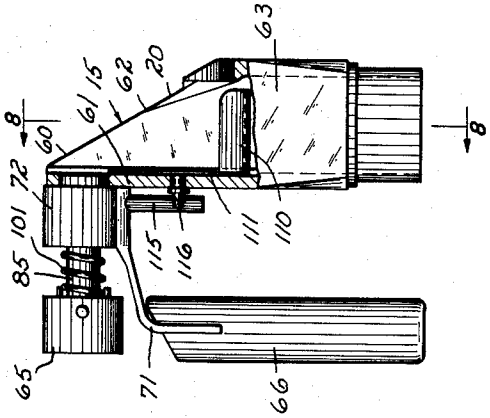

FIG. 7

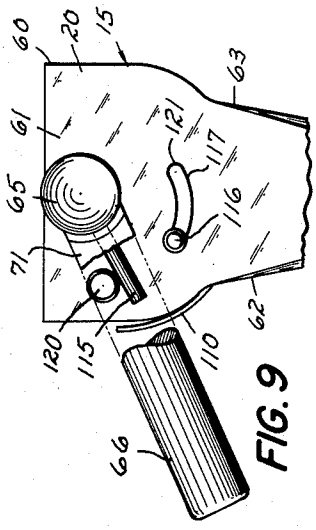

FIG. 9

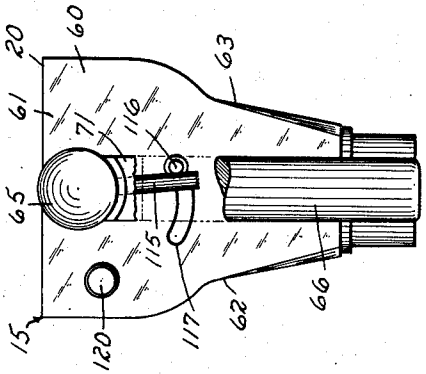

FIG. 6

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COIN COLLECTING APPARATUS

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FIG. 11

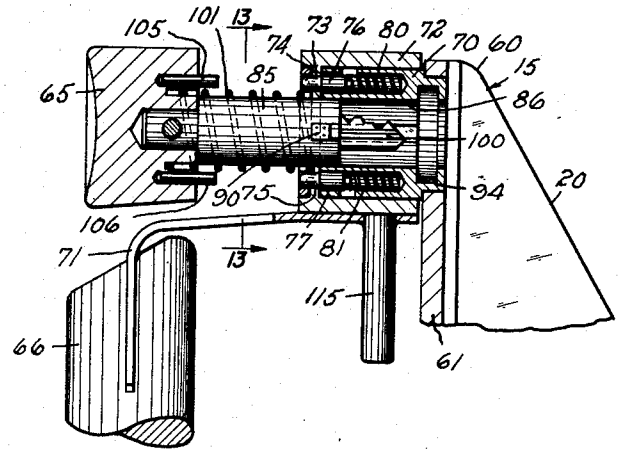
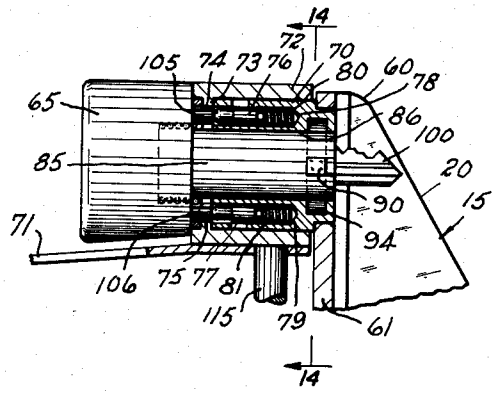


FIG. 12



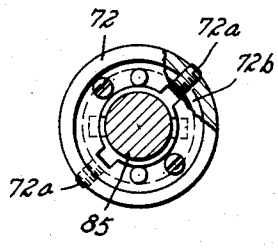


FIG. 13

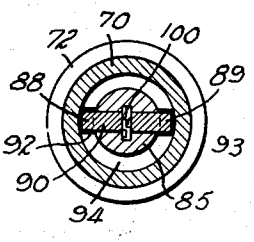


FIG. 14

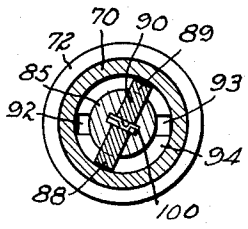


FIG. 15

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3,069,073

COIN COLLECTING APPARATUS

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Filed July 7, 1959, Ser. No. 825,474
6 Claims. (Cl. 232—16)

This invention relates to coin collecting apparatus for parking meters and the like which permits the removal of coins accumulated in the coin box of the parking meter without requiring removal of the coin box or permitting operator access to the coins removed from the coin box.

It is a general object of this invention to provide an improved coin collecting device which is economical to manufacture, easy to operate, and which substantially reduces the opportunity for pilfering of money removed from the coin box.

It is another object of this invention to provide an easily operated coin collecting device that can be rapidly operated so as to substantially reduce the cost of collecting the coins.

It is a further object of this invention to provide a coin collecting device having a single operating lever which has mounted therewith a coin box key that is operable only when the coin collecting device is in proper operating position.

It is a still further object of this invention to provide a coin collecting device for key-operated coin boxes wherein the key is integrally mounted with the collecting device and is interlocked therewith to prevent inadvertent breakage of the key.

It is an additional object of this invention to provide an improved coin box having an externally operated door that can be securely and effectively locked.

Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a partial perspective view showing a preferred embodiment of my coin collecting device and a parking meter;

FIG. 2 is a front plan view of my improved coin box with a portion of a parking meter shown in phantom;

FIG. 3 is a partial cross section taken along the lines 3—3 of FIG. 2;

FIG. 4 is a partial cross section taken along the lines 4—4 of FIG. 3;

FIG. 5 is a partial cross section view similar to FIG. 4 showing a second embodiment of my improved coin box;

FIG. 6 is a partial front plan view of the coin collecting head of my invention;

FIG. 7 is a partial side elevational view of the coin collecting head of FIG. 6;

FIG. 8 is a cross section view taken along the lines 8—8 of FIG. 7;

FIG. 9 is a partial front plan view of the coin collecting head in the open position;

FIG. 10 is a partial cross section view similar to FIG. 8 with the operating mechanism in the open position;

FIGS. 11 and 12 are partial cross section views of the key-operating mechanism of this invention;

FIG. 13 is a cross section view taken along the lines 13—13 of FIG. 11;

FIG. 14 is a cross section view taken along the lines 14—14 of FIG. 12; and

FIG. 15 is a cross section view taken along the lines 14—14 of FIG. 12 with the key operating mechanism in partially rotated position.

Referring to FIG. 1 which illustrates one embodiment of my invention for use in collecting coins from a parking meter, it is seen that a parking meter **10** is provided with a coin box **12** mounted on pedestal **13**. The coin collecting device designated generally as **15** includes a coin container **17** mounted on a cart having wheels **18** and handle **19** so that the coin collecting device can be conveniently pushed from meter to meter to permit the coin receiver or collecting head **20** to be engaged with the coin box to allow coins contained therein to drop through flexible tube **22** into container **17**.

Referring first to the coin box structure shown in FIGS. 2–5, it is noted that the meter **10** has a base **25** provided with a rear wall **26**, side walls **27** and **28**, bottom wall **29** and a removable front cover or wall **30** secured to side walls **27** and **28** in a conventional manner. The basic coin box construction, i.e., the side, bottom, and back walls, is of conventional rectangular construction such as is found in most existing metering installations today. To accommodate my improved coin collecting apparatus in an existing meter, a false bottom or coin deflecting plate **32** is mounted in coin box **12** and a modified front cover **30** is installed in place of a conventional flat cover to provide a bottom aperture **34** toward which the coins collected in the coin box are urged by the slope of bottom plate **32**. Of course, such facilities can be provided as original equipment in the meter.

As most clearly seen in FIGS. 2 and 3, front cover **30** has a generally arcuate portion **31** which extends outwardly at a slightly inclined angle from the lower edge **35** of bottom **32** and a generally flat inwardly sloping front portion **33** in which is mounted the lock mechanism **38**. Aperture **34** is closed by door **36** which is secured by screw fasteners **37** to the inner end of lock mechanism **38** so that rotation of the lock **38** with the appropriate key causes pivotal movement of door **36** to open and close aperture **34**. For ease and reliability of operation, door **36** is provided with a transverse angularly extending web or coin stirrer **36***a* so that rotation of door **36** in a counterclockwise direction to open the door forces the coins out of the path of the door to facilitate its opening movement and stirs the coins to ensure that they drop through aperture **34**.

In the alternate embodiment of my improved coin box illustrated in FIG. 5, the door **39** is pivotally mounted on the inner end of lock mechanism **38**. End plate **40** is fastened to the end of lock mechanism **38** by screws **37** which pass through slots in door **39** and is provided with a radially extending arm **42** which extends into slot **43** (dotted lines FIG. 5) in locking bar **44**. Locking bar **44** is mounted on the leading edge of door **39** (during opening movement) for sliding movement relative thereto by screw fasteners **45** which pass through elongated slot **45***a*. Groove **46** is provided in arcuate portion **31** of cover **30** adjacent aperture **34** in a position of alignment with end **49** of bar **44** when aperture **34** is closed by door **39**. Rotation of lock mechanism **38** in a counterclockwise direction causes arm **42** to move upwardly in slot **43** until it reaches end wall **47** at which time locking bar **44** is raised out of groove **46** and moved upwardly until the lower end wall of slot **45***a* engages lower fastener **45**. A positive driving connection is then established between lock mechanism **38** and door **39** to permit movement of the door in the opening direction. Closing of door **39** reverses the operating procedure.

The foregoing description of my improved coin box structure clearly illustrates the effective provision of an outwardly opening door for a coin box so that coins con-

tained in the coin box will fall by the force of gravity through the door when it is opened. By the embodiment shown in FIG. 5 I have provided a mechanical lock which effectively prevents forcing of the door and which does not depend upon the mechanical strength of the lock mechanism itself.

Turning now to FIGS. 6–10 taken in conjunction with FIG. 1, it is seen that my improved coin receiver **20** is provided with a housing **60** having a substantially flat front face or wall **61** and side walls **62** and **63** which overlie the outwardly extending portion of the coin box. That is, front face **61** overlies front face **30** of the coin box and positions plunger **65** in alignment with lock **38** when bottom wall **31** of front face **33** is engaged by rounded shoulder portions **64** and **65** of the receiver side walls. Side walls **62** and **63** cooperate to define a generally tubular passageway **67** which communicates with aperture **34** in the coin box and with flexible tube **22** and coin container **17** (shown in FIG. 1).

As most clearly seen in FIG. 11, front face **61** is provided with an aperture in which is secured a generally cylindrical projection **70**. Operating handle **66** is secured to lever **71** which, in turn, is secured to collar **72** mounted for rotation about cylindrical projection **70** by the cooperation of screws **72***a* and circumferential groove **72***b*. Collar **72** is provided with radial rim **73** in abutting engagement with the end of cylindrical projection **70** and has formed therein a pair of diametrically spaced apertures **74** and **75**. Detents **76** and **77** are carried in cylindrical passageways **78** and **79** in projection **70** and are urged outwardly through the apertures **74** and **75** in collar **72** by springs **80** and **81** to preclude rotation of handle **66** relative to the coin receiver.

Operating button **65** is positioned relative to handle **66** to permit inward axial movement thereof by thumb pressure when the operator's fingers grasp handle **66** and is secured to rod **85** which, in turn, is slidably mounted in the central bore **86** of cylindrical projection **70**. Rod **85** is provided with a pair of radially extending abutments **88** and **89** which, in the preferred embodiment, are in the form of a bar **90** extending through the rod **85**. Abutments **88** and **89** engage longitudinal slots **92** and **93** in the inner side wall of cylindrical bore **86**. Slots **92** and **93** terminate in annular groove **94** and cooperate with groove **94** to permit sliding and rotation of rod **85** relative to projection **70**. Rod **85** has affixed at its inner end a key **100** and spring **101** is provided between button **65** and projection **70** to establish a normal position for key **100** and rod **85** wherein the key is fully withdrawn into cylindrical bore **86**.

To establish driving engagement between collar **72** (and handle **66**) and rod **85** (and key **100**), a pair of diametrically opposed longitudinally extending pins **105** and **106** are mounted in the front face of knob **65**. As knob **65** is advanced toward cylindrical bore **86** to bring abutments **88** and **89** into alignment with annular groove **94**, the pins **105** and **106** engage detents **74** and **75** to move them axially against the force of springs **80** and **81** to the position shown in FIG. 12 wherein detents **74** and **75** are pushed out of engagement with collar **72**, pins **105** and **106** engage collar **72**, and key **100** is fully advanced. In this position, rod **85** and key **100** can be rotated by moving handle **66** so as to rotate projections **88** and **89** within annular groove **94**.

Operation of the mechanism thus far described is accomplished by bringing receiver **20** into engagement with coin box **12** so shoulders **64** and **63** and front wall **61** cooperate to position key **100** in overlying alignment with lock **38**. In this position, knob **65** is axially advanced by pressing inwardly against the force of spring **101** to bring key **100** into proper operating position within the mechanism of lock **38**. It is noted that handle **66** and collar **72** cannot be rotated until detents **74** and **75** are released. In addition, rod **85** cannot be rotated until abutments **88** and **89** are in alignment with annular groove **94** and until

driving engagement is established between collar **72** and knob **65** by pins **105** and **106**. Thus, the key cannot be rotated until it is properly seated in the lock mechanism thereby effectively preventing inadvertent breaking or damaging of the key by improper operation of the receiver mechanism.

After key **100** is properly positioned in the mechanism of lock **38**, handle **66** is rotated thereby turning key **100** so as to rotate door **36** and open aperture **34** to permit the coins which are stacked up on top of slanted bottom plate **32** to fall into passageway **67** in receiver **20** and into coin container **17**. When all coins have passed into the container, the handle is returned to the position shown in FIG. 1 and button **65** is released to withdraw key **100** and permit removal of the receiver from the coin box. It is noted that the aforedescribed sequence operation is the same for the door structures of both FIGS. 4 and 5. As is apparent, it is unnecessary to touch the coins during the aforedescribed coin removal procedure and, in fact, it is impossible to touch the coins since the coin box mechanism is effectively sealed by the receiver mechanism during the coin removal operation.

In order to prevent the placing of obstructions in the tubular passageway **67**, the guard or gate **110** is provided in receiver **20**. Gate **110** is generally arcuate in shape and is supported at one end by arm **111** which, in turn, is mounted for pivotal movement about point **112**. Slot **113** is provided in the side of shoulder **62** to permit movement of gate **110** between the position shown in FIG. 8 wherein the passageway **67** is closed to the position shown in FIG. 10 wherein the passageway is fully open. Driving engagement between handle **66** and plate **110** is established by the engagement of drive pin **115**, mounted in collar **72** and gate pin **116** mounted on arm **111** and extending through slot **117** in front plate **61** of receiver **20**. In the illustrated embodiment, a spring **118** is provided to urge guard **110** into the open position so that rotation of handle **66** to open the coin box in the aforedescribed manner permits spring **118** to open passageway **67** to permit passage of coins therethrough. When handle **66** is returned to the closed or locked position of FIG. 7, the pin **115** engages pin **116** to drive guard **110** back to the closed position. If desired, a positive drive in both directions can be provided and the spring **118** can be eliminated.

It is noted that locating point **112** about which arm **111** and gate **110** pivot is positioned below and to the right of rod **85** as viewed in FIGS. 8 and 10 and enables gate **110** to be opened before the coin box door is opened. In addition, the pin **120**, mounted on front plate **61**, cooperates with drive pin **115** to act as a stop to limit opening movement of handle **66** and prevent breaking of key **100** (see FIG. 9). In a similar manner, drive pin **115** cooperates with gate pin **116** and end wall **121** of slot **117** to limit closing movement of handle **66** (see FIG. 6).

From the foregoing description of the construction operation of my improved coin collecting apparatus, it is apparent that I have provided an improved coin box which is positively locked in a mechanical manner independently of the key mechanism thereby to provide a practical coin box having an outwardly opening door through which coins can pass through the force of gravity and eliminating the necessity of removing the coin boxes from the associate parking meter and permitting use of a coin collecting mechanism therewith which eliminates necessity of contact by the operator with the coins themselves. In addition, I have provided an improved coin collecting device which is substantially fool proof in operation so as to permit extremely rapid operation by relatively inexperienced operators. The operating mechanism of my coin collecting device is interlocked to prevent inadvertent damage to the key. Further, I have provided a simple but effective device to forestall tam-

pering in the nature of tube blockages which would permit unintended removal of collecting coins.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. A coin collecting device for use with a parking meter coin box and the like having an external opening through which the coins fall by gravity and a door closing said opening rotatable with a key-operated lock, comprising a coin receiving head dimensioned to enclose the coin box opening and overlie the key-operated lock, said head having a first aperture therein communicating with a coin collecting container and a second aperture therein aligned with the coin box lock, a shield mounted on said head for movement between a position overlying and substantially closing said first aperture to a position displaced therefrom, a handle mounted for rotation coaxial with said second aperture, a key mounted in said second aperture and rotatable with said handle, said key being operatively engageable with the coin box lock when said coin receiving head is aligned with the door in said coin box, and means connecting said shield to said handle and key whereby rotation of said handle opens the coin box door and the shield to permit the coins contained in the coin box to drop through said coin receiving head into the coin container.

2. A coin collecting device for use with a parking meter coin box or the like having an external opening through which the coins contained therein fall by gravity and a door closing said opening mounted on and rotatable with a key-operated lock comprising a coin receiving head dimensioned to enclose the coin box opening and overlie the key-operated lock, said head having a first aperture therein communicating with a coin collecting container and a second aperture therein aligned with the coin box lock, a handle mounted for rotation coaxial with said second aperture, a shield pivotally mounted on said head and movable from a position substantially closing said first aperture to a position giving substantially free access to said first aperture, means operatively connecting said shield and said handle to effect simultaneous movement, a key mounted in said second aperture for rotation with said handle and for axial movement toward and away from the coin box lock, and means preventing rotation of said handle and said key until said key is fully advanced into said lock.

3. A coin collecting device for use with a parking meter coin box and the like having an external opening through which coins fall by gravity and a door closing said opening which is rotatable with a key operated lock comprising a coin receiving head dimensioned to enclose the coin box opening and overlie the key operated lock, said head having a first aperture therein communicating with a coin collecting container and a second aperture therein aligned with the coin box lock, a cylindrical projection mounted on said receiving head in alignment with said second aperture, a handle mounted for rotation about said cylindrical projection, a shield pivotally mounted on said head and movable from a position substantially closing said first aperture to a position giving substantially free access to said first aperture, means operatively connecting said shield and said handle to effect simultaneous movement, a rod mounted in and coaxial with said cylindrical projection and having a key extending inwardly therefrom, drive means engageable between said rod and said handle to effect simultaneous rotation, a longitudinal slot in the inside wall of said cylindrical projection, an abutment on said rod in engagement with said slot and an annular groove positioned at the inner end of said longitudinal slot, said abutment preventing rotation of said rod except at the fully advanced position of said rod and key wherein said abutment is aligned with said rod and groove.

4. The coin collection device as set forth in claim 3 wherein said shield is mounted for rotation about a point that is below the axis of said cylindrical projection whereby rotation of said handle causes said shield to fully open before the door of said coin box is opened.

5. A coin collecting device for use with a parking meter coin box or the like having an external opening through which coins fall by gravity and a door closing said opening which is rotatable with a key-operated lock comprising a coin receiving head dimensioned to enclose the coin box opening and overlie the key-operated lock, said head having a first aperture therein communicating with a coin collecting container and a second aperture therein aligned with the coin box lock, a cylindrical projection mounted on said receiving head in alignment with said second aperture, a collar mounted for rotation about said cylindrical projection, a rod mounted in and coaxial with said cylindrical projection and having a key extending inwardly therefrom, drive means engageable between said rod and said collar to effect simultaneous rotation, a longitudinal slot in the inside wall of said cylindrical projection, an abutment on said rod in engagement with said slot, and an annular groove positioned at the inner end of said longitudinal slot, said abutment preventing rotation of said rod except at the fully advanced position of said rod and key wherein said abutment is aligned with said annular groove whereby advancing said rod to insert said key into the lock permits rotation of said collar and said key to open the coin box door and permit the coins contained therein to drop through said coin receiving head into the coin container.

6. Apparatus for collecting coins from parking meters and the like comprising a coin box having an outwardly facing aperture therein through which coins fall by gravity, a key operated lock mounted in said coin box, a rotatably mounted door closing said aperture, said door being rotatable tranversely of said aperture by said key-operated lock, a coin receiving head dimensioned to enclose said outwardly facing aperture and to overlie the key-operated lock, said head having a first aperture therein aligned with said outwardly facing aperture and communicating with a coin collecting container, a second aperture in said head aligned with said coin box lock, a handle mounted for rotation in said second aperture, a key mounted in said second aperture for rotation with said handle and for axial movement toward and away from said key operated lock whereby rotation of said handle after said key is advanced into operative engagement with said lock opens said coin box door to permit the coins contained therein to drop through said coin receiving head into the coin collecting container.

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