July 9, 1957 M. L. GRANT 2,798,664

FARE BOX CONSTRUCTION

Filed Dec. 10, 1951 3 Sheets-Sheet 1

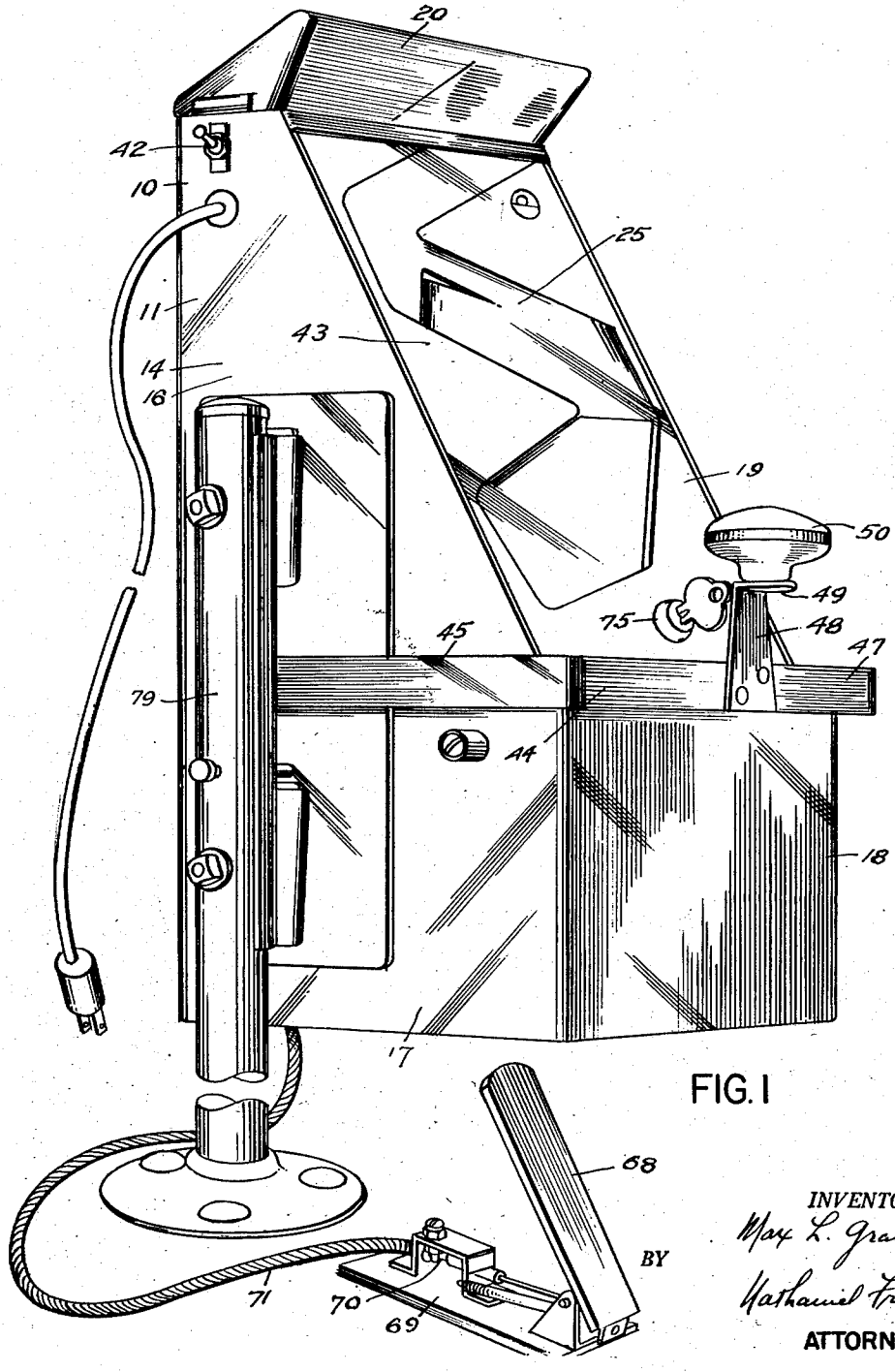


FIG. 1

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FARE BOX CONSTRUCTION

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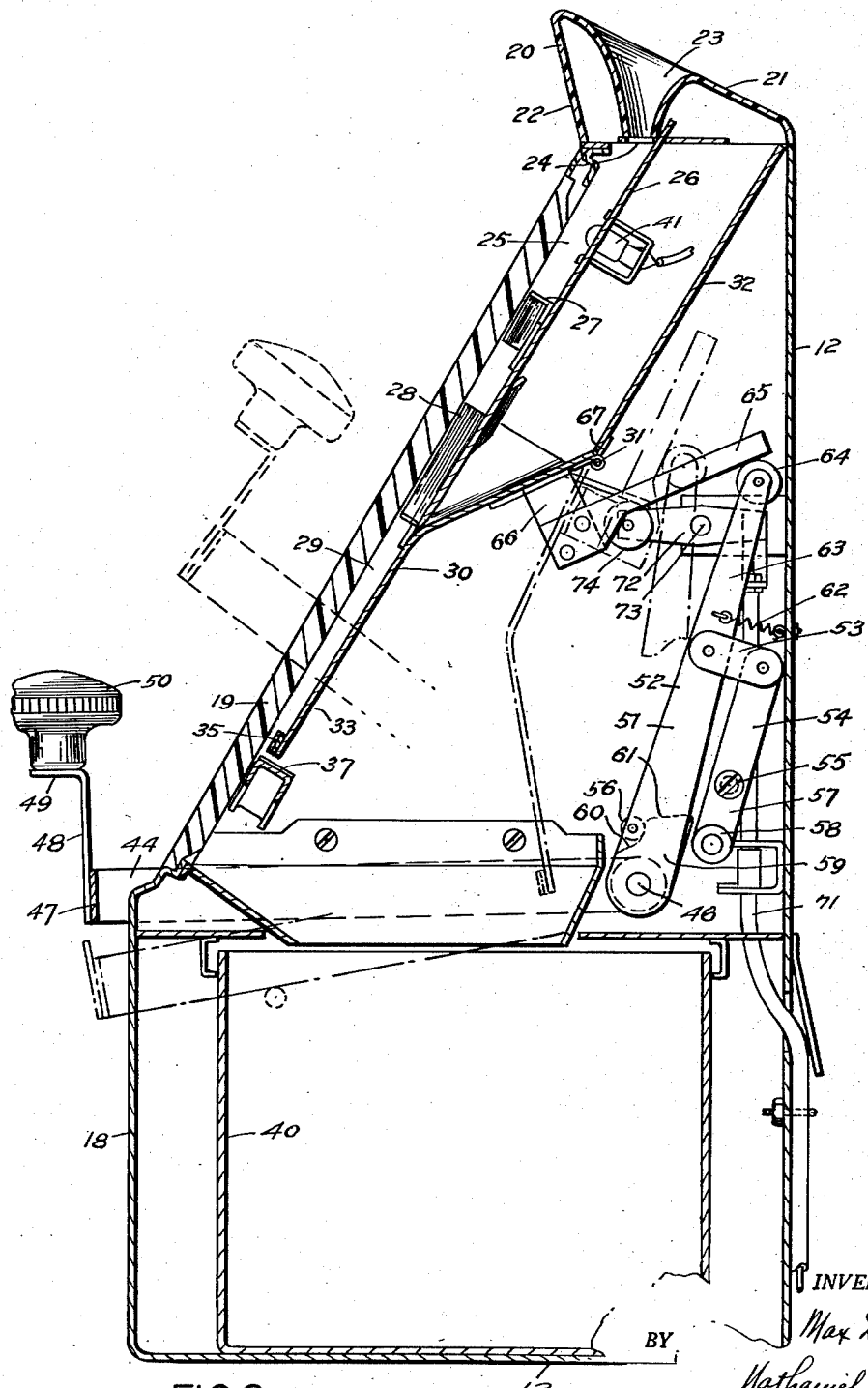


FIG.2

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July 9, 1957 M. L. GRANT 2,798,664

FARE BOX CONSTRUCTION

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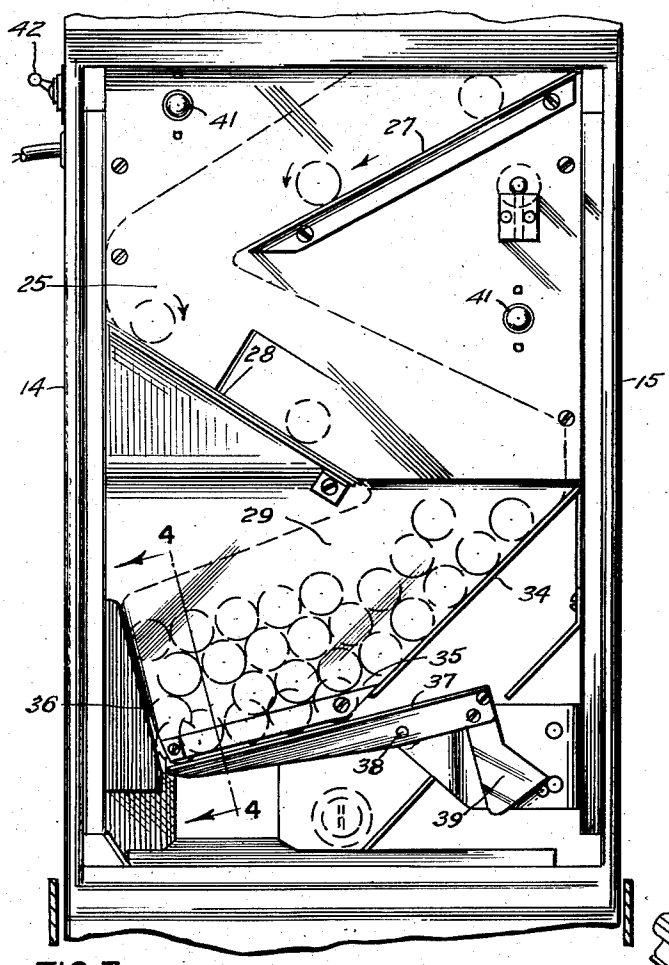


FIG.3

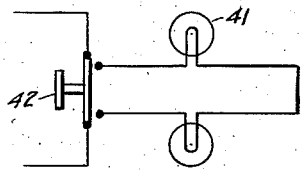


FIG.5

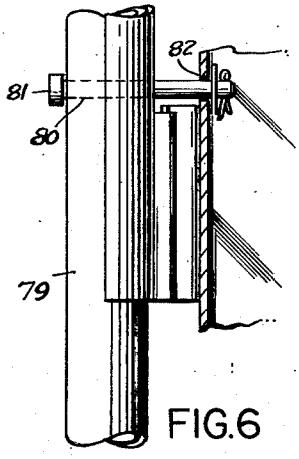


FIG.6

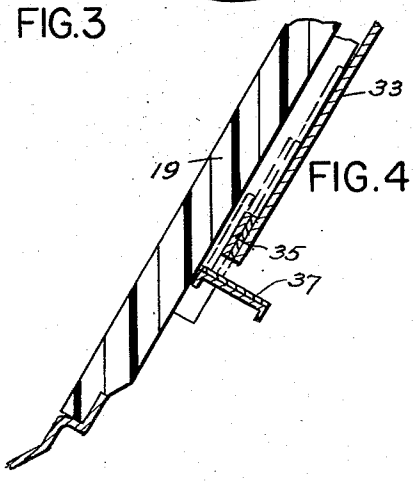


FIG.4

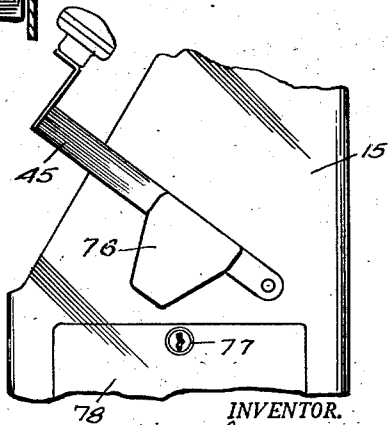


FIG.7

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FARE BOX CONSTRUCTION

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Application December 10, 1951, Serial No. 260,876

4 Claims. (Cl. 232—7)

The present invention relates to fare boxes for receiving deposited coins, and has particular reference to a novel construction therefor.

The principal object of the invention is to provide a fare box with a coin passageway which is completely visible throughout its entire extent.

Another object of the invention is to provide a fare box which conceals all parts other than the coin passageway, whereby the eye is compelled to follow the coin movements.

A further object of the invention is to provide a construction which separates the coins and guides them in sequence through the coin passageway, the speed of movement being controlled to permit ready evaluation of individual coins and groups of coins constituting individual fares.

An additional object is to provide novel mechanism for slowing the coins at particular points in their travel while maintaining the coins in spaced sequential relation.

Another object is to cause the coins to actuate a device to attract attention at selected points of travel of the coins as they sequentially pass through the coin passageway.

A further object of the invention is to provide an inspection chamber in which the coins collect in edge to edge relation for final inspection.

Another object is to provide means for a hand release for manually releasing coins from the inspection chamber to a coin collection box.

An additional object is to provide means for automatically releasing the coins from the inspection chamber under predetermined conditions.

Another object of the invention is to provide an arrangement which prevents removal of the coin collection box until all the coins in the coin passageway and the inspection chamber have been released to fall into the collection box.

A further object of the invention is to provide an alternative foot actuated release for the coins, whereby the operator may release the coins while making change, issuing transfers and doing other work.

With the above and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings,

Fig. 1 is a perspective view of a preferred fare box construction embodying the invention;

Fig. 2 is a vertical section showing the manual coin releasing mechanism;

Fig. 3 is a view of the front, the cover panel being removed to disclose the coin passageway and the coin inspection chamber;

Fig. 4 is an enlarged detail section on the line 4—4 of Fig. 3;

Fig. 5 is a wiring detail for the light bulbs shown in Figs. 1 and 2;

Fig. 6 is a detail of a pin mounting for the fare box which prevents removal of the fare box from its support post until the coin receiving box has been taken out; and

Fig. 7 is a fragmentary detail showing a safety feature for the collection box key base.

It has been found desirable to provide a fare box for receiving coins, which permits deposited coins to be viewed throughout their entire movement through the fare box to an inspection chamber, all operating mechanism and extraneous parts being concealed so that the eye is focussed and compelled to follow the movement of the coins. To permit ready evaluation and checking of the coins, the parts are so positioned and arranged that the coins are momentarily retarded as they enter and as they pass through the coin passageway hereinafter sometimes referred to as the evaluation chamber, to thereby separate the coins and cause them to proceed in sequence. In addition to the retardation of the coins whereby to effect their separation, means are also provided to intermittently slow the downward descent of the sequentially spaced coins whereby evaluation of the fare can actually be accomplished during the downward movement thereof. As the coins pass through the coin passageway, they actuate a device or devices at selected points of their travel to call attention to their unrestricted movement, and enter a coin inspection chamber in which the coins arrange themselves in edge to edge relation. The coins are thus readily inspected as individual coins and as groups of coins constituting separate fares during their movement through the coin passageway, and are then positioned in the inspection chamber for final examination. The fare box parts are designed to permit manual evacuation or release of the inspected coins to a removable coin collection box, or, if desired, to a register or the like, any desired accumulation of coins in the inspection chamber or in the coin passageway being released automatically into the coin collection box. The fare box is further designed to incorporate protective safeguards in that the coin collection box cannot be removed from the fare box unless all coins are first released to the coin collection box, and the fare box itself cannot be removed unless the coin collection box, which normally is provided with a self-closing top, is first removed.

Referring to the drawings, which disclose an illustrative construction embodying the invention, the fare box is provided with an inlet in the form of a hopper into which coins are dropped, an evaluation chamber through which the coins pass at a controlled speed so that each individual coin and each group of coins constituting a fare may be evaluated, an inspection chamber into which the evaluated coins are received and in which they are arranged in edge to edge relation for final inspection, and a collection box into which the inspected coins are released, either by manual action or automatically as hereinafter described.

The fare box is designated **10** in the drawings, and includes a housing **11** formed by a rear wall **12**, a bottom wall **13**, side walls **14**, **15** which have upper generally right angled triangular sections **16** and lower rectangular sections **17**, a front lower wall **18**, and an upper inclined wall **19** preferably formed by a transparent glass or the like and mounted between the inclined front edges of the upper side wall sections **16**.

The upper portion of the housing is open to mount a hopper **20**, which has a rearwardly slanting upper surface **21** and a forwardly projecting front surface **22**, the hopper including a drop funnel **23** which has curved sides and an elongated narrow exit slot **24**. It will be understood that the hopper is adapted to receive a plurality of

simultaneously dropped coins where such constitutes the fare. The hopper is preferably of transparent material, such as plastic, whereby the inserted coins are fully visible and the exit slot **24** cannot be blocked up without disclosing an accumulation of coins in the hopper.

The coins leaving the hopper exit slot **24** enter an evaluating chamber **25**, which is formed by a rear inclined plate **26** mounted between the side walls in generally parallel but slightly converging relation to the front plate **19**. A downwardly directed track **27** is mounted on the plate **26** to receive the coins from the hopper exit slot **24**, the received coins from the slot **24** sliding along the inclined plate surface and separating as they roll down the track **27**, the track **27** being set so as to cause the coins to impact at an angle which slows the coins up. More specifically, when a plurality of side-by-side coins exit simultaneously through slot **24** and impact the track **27**, the friction between the plate **26** and the coin engaging thereagainst will retard that coin, relatively speaking, whereupon the outermost coin or coins will peel off in sequence thereby effecting almost immediate separation of the coins and resulting in the spaced sequential relationship shown most clearly in Fig. 3. A downwardly inclined second track **28** is mounted on the plate **26**, see Fig. 2, in spaced underlying relation to receive coins from the track **27**, this second track being preferably of resonant metal and separated (not shown) from the plate **26** for the greater part of its upward length, whereby the coins sound off as they impact the track **28**. It will be understood that the separation between track **28** and plate **26** above referred to is simply to provide sufficient resilience to the track **28** whereby it, in effect, acts as a musical reed to give off a sound when impacted by a coin. Thus element **28** functions both as a track guide means for the coins and also as an audible signal device. The angle of impact of the coins with the track **28** is set to momentarily halt and retard the coins so that they slow up in their descent, whereby the individual coins and groups of coins constituting separate fares are readily evaluated, the evaluation taking place during their downward movement.

Although the sound arrangement is disclosed as positioned at the beginning of the lower track **28**, it may be at any convenient location. Since the sound effect depends on free coin travel and impact of the coins themselves, the sound effect audibly discloses that the coin passageway is clear and unobstructed. Any other attention directing signal, such as for example, a light flash may be used in place of the audible signal described.

The coins leaving the evaluating chamber **25** enter an inspection chamber **29** having a rear plate **30**, see Fig. 2, which is hinged at **31** to a fixed support plate **32**. The plate **30** has a lower portion **33** normally constituting an extension of the plate **26**, with a guide track **34** mounted on the lower portion **33** to guide received coins over a base **35** and against an end abutment **36**. The received coins build up on the base **35** as illustrated in Fig. 3 until the inspection chamber **29** is substantially filled; additional coins impact and pass over the displayed coins to rest on a slightly lower movable track **37**, which is pivoted at **38** and is counterbalanced by a weighted leg **39**. As soon as a sufficient number of coins have accumulated on the track **37** to overcome counterbalance **39**, track **37** will move downwardly about its pivot **38** whereby to release said accumulated coins to a removable coin collection box **40** positioned in the lower portion of the housing. It will be understood that in practice the inspection chamber **29** will usually be cleared in a manner hereinafter to be described before coins begin to accumulate on the track **37**. In the event the inspection chamber is not so cleared, however, it will be obvious that the track **37** will act in the guise of a safety valve to prevent clogging of the inspection chamber and subsequent backing up of the coins to a point where they could be surreptitiously removed from the top of the fare box.

The base **35** of the illustrated inspection chamber is fixed to the plate **33** and the track **37** is sufficiently lower to permit inspection of the coins on the base **35** and on the track **37**. If desired, the base **35** may be pivotally mounted in the manner of the track **37**, to automatically release the coins from the inspection chamber whenever the accumulated coins build up sufficiently.

The evaluation chamber **25** and the inspection chamber **29** are illuminated by light bulbs **41** placed at suitable locations, the bulbs being electrically illuminated and having a hand switch **42** positioned on the housing for turning on and off. The surface of the plate **19** which is not required for evaluation and inspection is blacked off as indicated at **43**, note Fig. 1, to prevent eye distraction and to confine the eye to the coins and their travel through the fare box, the eye being thus compelled to follow the coins in their travel.

The plate **30** is movable to dump the coins from the inspection chamber into the coin collection box **40**, the movement being accomplished by hand or by remote control. To this end, a U-shaped strap **44** has its sides **45** keyed to a transverse shaft **46**, see Fig. 2, which is rotatably mounted in the housing, the front bar **47** of the strap having an upstanding angle element **48** with a horizontal tab **49** to which a manually operable knob **50** is secured.

The shaft **46** has the lower end **51** of a lever **52** pivotally mounted thereon, the lever having pivoted thereto intermediate its ends one end of a link **53** which is pivoted at its other end to a lever **54** pivoted intermediate its ends on a stub shaft **55**. The lower end **51** of the lever **52** has a roller **56** mounted thereon, and the lower end **57** of the lever **54** has a roller **58** mounted thereon, whereby a cam **59** fixed on the shaft **46** is movable forwardly engaging edge **60** with the roller **56** or rearwardly to press against and engage a cam edge **61** with the roller **58** when the knob **50** is moved downwardly or upwardly respectively. Thus it will be seen that no matter whether the knob **50** be moved downwardly or upwardly, the end result will be to pivot the lever **52** in a counterclockwise direction.

The lever **52** has a tension spring **62** for urging it to rearward position, and the upper end **63** of the lever **52** has a roller **64** engaging an arm **65** extending outwardly from a support block **66** which is secured to the rear surface of the movable plate **30** adjacent the upper hinged end thereof. When the knob **50** is moved downwardly, shaft **46** and its cam **59** rotate counterclockwise whereby the cam edge **60** presses against the roller **56** and turns the lever **52** counterclockwise also, whereby the lever roller **64** rotates the arm **65** and swings the plate **30** open about pivot **31** to release accumulated coins to the collection box, as clearly shown in the broken line position of Fig. 2. The plate **30** has a coil spring **67** mounted on its hinge to swing the plate **30** back into inspection position as soon as the opening parts are restored to their former position by the tension spring **62**. When the knob **50** is moved upwardly, shaft **46** rotates clockwise and the cam **59** engages the roller **58** to produce a counterclockwise movement of the link **53** and similar counterclockwise movement of the lever **52**, whereby the plate **30** is also opened; in this position, the cam edge **61** seats beneath the roller **58** and is shaped to be so held against the action of the spring **62**, for a purpose hereinafter explained.

A foot control lever **68**, see Fig. 1, which is movably spring pressed upwardly on its base **69**, is foot movable to pull a flexible wire **70**, housed in a protective cable **71**, and thus pull down the outer end of a lever **72**, see Fig. 2, pivotally mounted on a pin **73** secured to the housing, the inner end of the lever **72** having a roller **74** which presses upwardly against the arm **65** to turn the plate **30** for releasing the coins to the coin collection

box. This provides a remote release control operable alternatively to the manual control at the option of the operator.

It will be noted, see Fig. 1, that the angle element **48** is positioned so as to normally cover a key base **75**, which serves to release the front plate when a key is inserted and turned.

The U-shaped strap **44** has one side **45** provided with a depending plate **76**, see Fig. 7, which normally extends over and covers a key base **77** forming part of the outer wall **78** of the removable coin collection box, whereby it is not possible to unlock the collection box unless the strap is first moved up into coin releasing position. When the strap has been moved upwardly, it remains in up position due to the aforedescribed positioning of cam edge **61** beneath the roller **58** so that the coin collection box is readily removed or inserted. The construction thus prevents removal of the coin collection box until all the coins in the fare box have been released to the coin collection box, which automatically self locks upon removal from the fare box.

I have provided a standard **79** for supporting the fare box, the standard having a transverse opening **80** through which a headed pin **81** extends to pass through an opening **82** in the side wall of the fare box and be locked therein, as by a cotter pin and end opening. This prevents removal of the fare box from the standard unless the collection box is first removed, as the collection box normally prevents access to the cotter pin, thus providing an additional safety feature.

The illustrated embodiment is designed for collecting fares on a bus, street car or the like, but the construction is adaptable to other uses, as for example for rereciving coins in restaurants and the like, and for self-serving sales devices. The phrase "fare box" as used in the specification and claims is thus intended as a generic term to designate coin receivers in which coins are deposited for evaluation and appraisal.

Although I have disclosed a specific constructional embodiment of my invention, it is obvious that changes in the size, shape and arrangement of the parts may be made to meet different coin collection requirements, without departing from the spirit or the scope of the invention as defined in the appended claims.

I claim:

1. In a fare box of the character described, a coin passageway, a coin inspection chamber having a movable coin support, a coin collection box removably positioned in said fare box, manually operable means for moving the support to release coins from the inspection chamber to the coin collection box, and a key lock for said collection box, said manually operable means being movable upwards to move the support, and having a fixed depending portion normally positioned to seat over the key lock.

2. In a fare box of the character described, a coin passageway, a coin inspection chamber having a movable coin support, a coin collection box removably positioned in said fare box, manually operable means for moving the support to release coins from the inspection chamber to the coin collection box, and a key lock for said collection box, said manually operable means being movable upwards to move the support, and having a fixed depending portion normally positioned to seat over the key lock, and means releasably retaining the manually operable means in up position.

3. In a fare box of the character described, a coin passageway, a coin inspection chamber having a movable coin support, a coin collection box removably positioned in said fare box, manually operable means for moving the support to release coins from the inspection chamber to the coin collection box, and a key lock for said collection box, said manually operable means being selectively movable upwards or downwards to move the support, and having a fixed depending portion normally positioned to seat over the key lock.

4. A fare box of the kind which has a hopper in which a fare may be deposited and from which the deposited fare drops directly into an evaluation chamber through which the coins, constituting the fare, move downwardly by gravity action into an inspection chamber where they come to rest, means which provides a forwardly and downwardly inclined surface constituting the rear wall of the evaluation chamber against which coins lean as they pass through the evaluation chamber, a transparent panel constituting a front wall for both the evaluation and inspection chambers, the front-to-rear distance between said panel and the rear wall being so small that a coin is constrained to move edgewise in traversing the evaluation chamber, downwardly inclined tracks in the evaluation chamber along which the coins roll on edge with their broad surfaces visible through the transparent front panel, the inspection chamber having a rear wall which is normally substantially parallel to the inner surface of the transparent front panel and normally in substantially the same plane as the rear wall of the evaluation chamber, a barrier in the inspection chamber capable of retaining a plurality of coins in full view and while stationary within the inspection chamber, said barrier comprising a transversely extending rail fixed to the rear wall of the inspection chamber with its front face so spaced rearwardly from the transparent panel as to permit coins to pass between it and said panel, and a retainer for such coins as pass between the barrier and the transparent panel, said retainer being so constructed and arranged as automatically to release coins held thereby when a predetermined weight of coins has accumulated on the retainer.

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