

May 22, 1956

M. L. GRANT

2,746,675

FARE BOX

Filed July 24, 1951

2 Sheets-Sheet 1

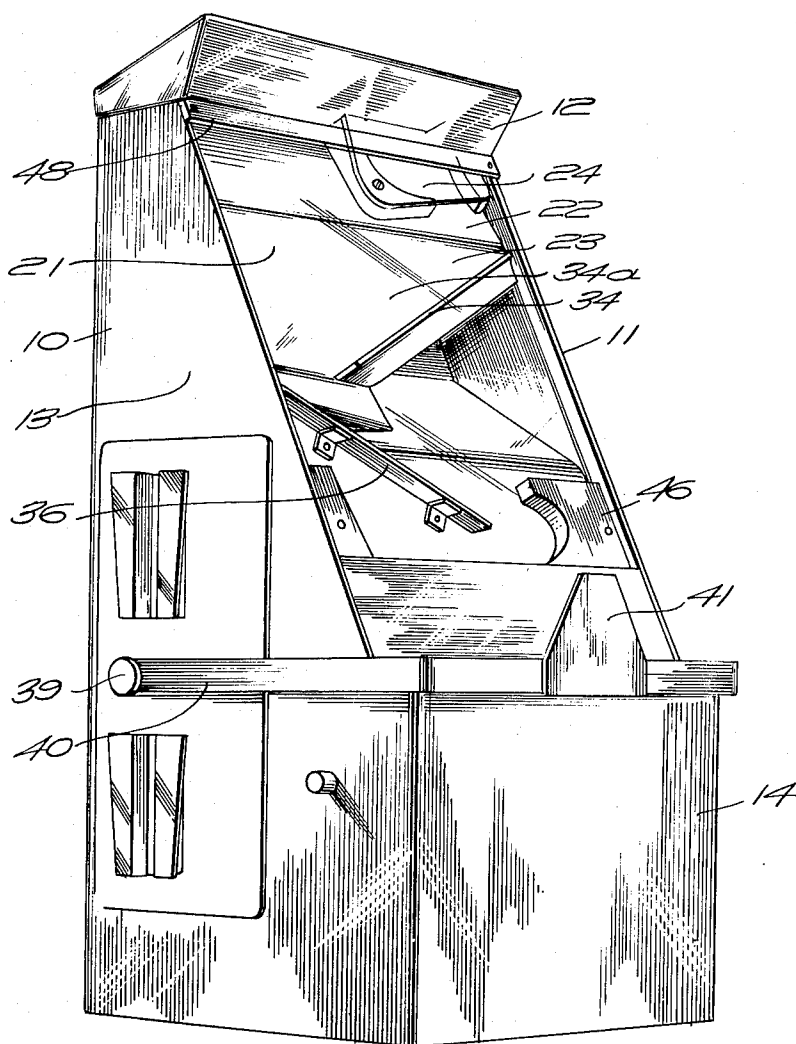


FIG. 1

INVENTOR.

BY

May L. Grant

Nathaniel Frucht

ATTORNEY

May 22, 1956

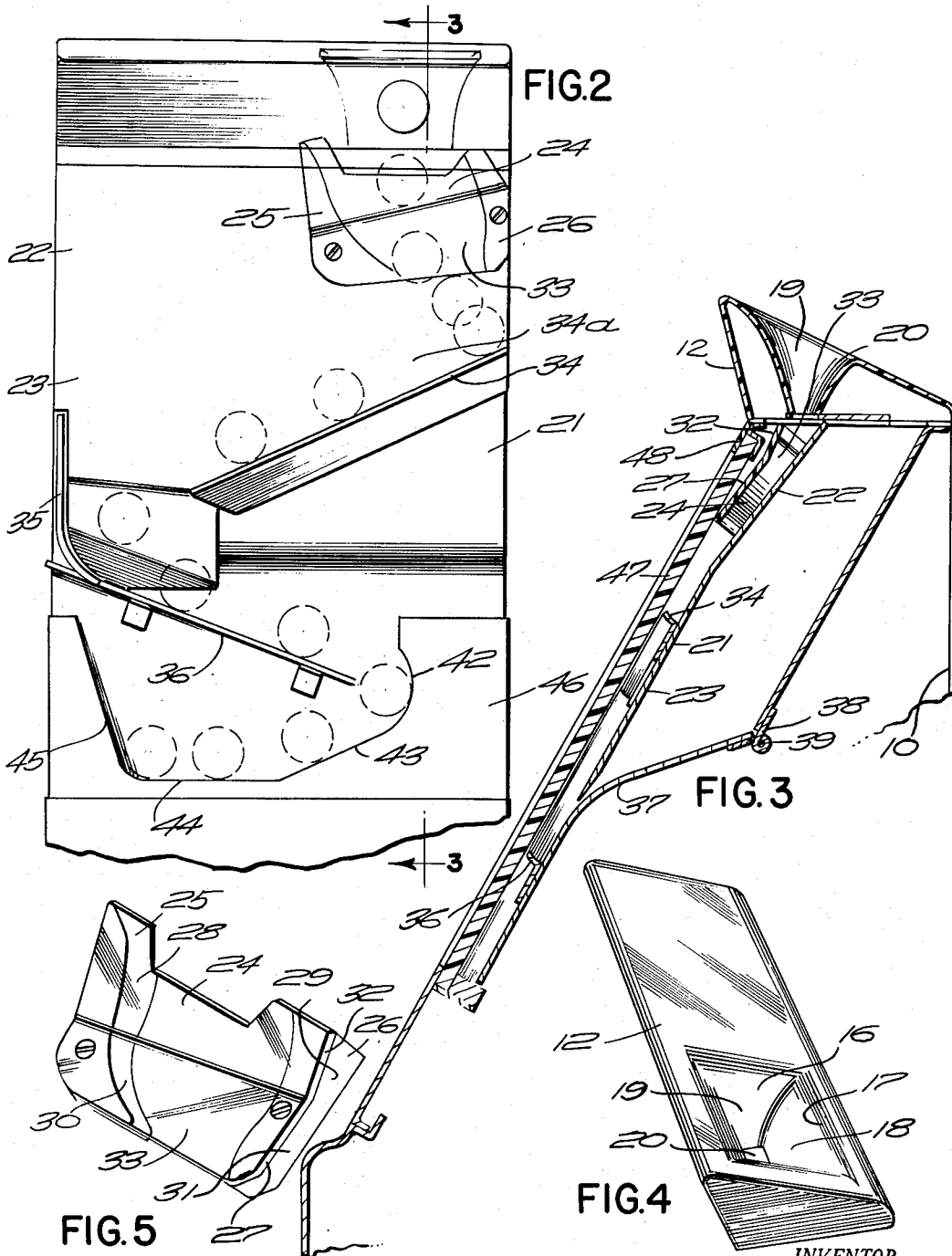
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FARE BOX

Max L. Grant, Providence, R. I.

Application July 24, 1951, Serial No. 238,284

2 Claims. (Cl. 232—7)

The present invention relates to coin collecting devices into which coins, tokens and the like may be dropped or inserted, and has particular reference to a novel construction for a fare box.

The principal object of the invention is to provide a fare box construction into which a number of coins constituting a fare may be simultaneously dropped, the coins being physically separated as they pass through an inspection area, whereby the fare total is readily noted and evaluated.

Another object of the invention is to provide a fare box construction which physically separates individual fares consisting of one or more coins as the fares pass through an inspection area, whereby the individual fares are readily noted and evaluated.

A further object of the invention is to provide a coin passageway in a fare box, in which a dropped coin is visible throughout its passage from the inlet slot until it passes into a collection box or a coin registering device.

An additional object of the invention is to provide a fare box construction which permits seeing an inserted coin at the instant of its insertion in the fare box.

A further object is to provide a fare box construction which permits continuous movement of an inserted coin or coins under the influence of gravity, while controlling the speed of movement at selected points so that an observer can visually note, inspect and evaluate each coin during its movement.

Another object of the invention is to provide a fare box construction with a coin inspection channel through which inserted coins pass on their way to a collection box or registering device, the speed of movement of the coins being momentarily reduced as they enter the inspection channel to permit inspection and evaluation.

An additional object of the invention is to provide a completely visible coin passageway in a fare box, whereby insertion of a coin holding device in any part of the passageway, or a collection or piling up of coins in any part of the passageway, becomes immediately visible to the fare paying passenger.

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 an illustrative fare box embodying the invention;

Fig. 2 is a plan view of the front plate and associated parts thereof;

Fig. 3 is a vertical section on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the coin receiving top; and

Fig. 5 is a perspective view of the coin direction guide.

The fare boxes and coin drop boxes heretofore used have had a coin inlet, into which a coin was inserted or dropped, baffles over which the dropped coin slid to a

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coin collection plate, and a collection box which received the coins when the operator swung the collection plate to drop the coins. The inspection plate permitted inspection and evaluation of one coin or the coins constituting one fare, but did not permit separate evaluation of several fares, as the swift descent of the coins and their collective deposit on the collection plate precluded visual separation of the individual fares.

The present day fare boxes of standard type include boxes into which inserted or dropped coins fall directly on a bottom collection plate, or where the inserted or dropped coins traverse a passageway in which they are entirely or partially concealed until they impact on the collection plate.

One of the serious handicaps of present day fare boxes for a bus or similar vehicle is, that when a number of people get on and drop or insert their fares, which can consist of one or of several coins, the time elapsing between the insertion of the coins and their deposit on the collection plate is so short that the second and subsequent fares heap up or mingle with the first fare so that the individual fares are not distinguishable.

I have found it desirable to devise a fare box construction which guides and controls inserted coins so that individual coins and individual fares may be seen and evaluated during their descent from the coin inlet to a coin collection plate, whereby the movement of the coins is not stopped or unduly retarded so as to cause jamming, but the movement of the coins is guided and controlled so that the individual coins and the groups of coins forming individual fares are separated and are momentarily slowed down to permit inspection and valuation.

I have provided a coin movement control which permits detection of the coins at the instant of their insertion and during their entire movement over an inspection track to a collection plate, and which retards and controls the speed of movement of the coins momentarily at predetermined points in its travel, whereby the individual coins hesitate momentarily and thus give an observer time to inspect and evaluate each coin, and each fare, during its travel. The preferred coin movement control is accomplished by using an inclined inspection track along which the coins roll, the angle of the track being set to obtain a desired speed of movement and a separation of the coins, a coin direction guide being positioned to receive the dropped or inserted coins and to guide the coins towards the track at an angle which provides a substantial runway and impacts the coins on the track so as to create a momentary hesitation or reversal of direction and movement sufficient to momentarily slow the coins down to separate the slowed coins, thus permitting the desired inspection and valuation before the coins again pick up speed on their travel to the collection plate or to a registering device.

Rendering the coins visible from the moment of insertion and during their travel to the collection plate, has been found of substantial advantage for preventing the insertion of holding or pilfering devices into the fare box, as such devices and resulting jamming and piling up of coins adjacent the inlet or along the coin passage become immediately visible.

Referring to the drawings, the fare box 10 includes an outer housing 11 on which a coin receiver 12 is mounted, the upper part 13 of the housing preferably having an inclined face and the lower part 14 of the housing being a coin container designed to house a removable collection box and a coin registering mechanism, if desired, these parts not being illustrated.

The coin receiver 12, see Fig. 4, has its lower surface 15 shaped to seat on the housing 11, and is preferably rectangular in shape, with a coin inlet 16 which includes

an insert opening 17, and guide walls 18 forming a guide chamber 19 and converging to a coin exit slot 20. The coin receiver is made of transparent material, preferably plastic, whereby a coin becomes visible as soon as it passes the insert opening 17. The coin receiver, in the illustrated embodiment, is thus a coin drop, and constitutes a transparent top for the fare box.

A face plate 21, see Figs. 2 and 3, is positioned directly below the coin receiver 12, and has a rearwardly inclined upper portion 22 and an inclined lower portion 23, the face plate extending across the face of the housing 11 and being generally at an acute angle to the housing for a purpose hereinafter described.

A coin direction guide 24, see Fig. 5, is mounted on the upper portion 22 of the face plate, in position to receive the coins emerging from the slot 20. The guide 24 includes a left side piece 25, a right side piece 26, and a front piece 27, the side pieces respectively having enlarged downwardly tapering upper portions 28, 29 and lower portions 30, 31 with parallel sides, and the front piece 27 having a forwardly inclined upper portion 32, as illustrated, the parts being mounted on the face plate with the side pieces spaced to provide a coin channel 33. The parts forming the direction guide 24 are made of transparent material, preferably plastic, whereby a coin entering the direction guide is immediately visible and remains visible during its passage through the direction guide.

As clearly disclosed in Fig. 5, the left side piece 25 has a curved inner face with its lower portion 30 extending forwardly, and the right side piece 26 has its inner face slightly curved, as illustrated, whereby coins entering into the direction guide are forced to exit from the passage 33 towards the right and to impact angularly on an inspection track 34.

The inspection track 34 is secured to the face plate 21, and inclines downwardly, the angle of inclination being selected to provide a desired speed for the coins rolling thereon. As shown in Fig. 3, the track is concave, being slightly curved upwardly, whereby the rolling coins which tip rearwardly due to the inclination or slanting of the face plate, roll in single line contact with the track and with the face plate, and thereby reduce friction and maintain a self-cleaning clear track. The normal accumulation of dust and dirt on the track 34 does not therefore unduly slow up the speed of rolling.

It will be noted, see Fig. 2, that the coins emerging from the direction guide impact the track 34 at substantially an acute angle, and at a point adjacent the upper end of the track, whereby the whole length of the track is utilized. This impact slows up the coins, and the momentary hesitation causes the coins to initially slowly roll down the inclined inspection track, and then to speed up, whereby the coins separate. This separation is assisted by the line contact of the upper edges of the coins with the face plate. The coins are therefore readily inspected and evaluated as they slide and roll down the track, as they are easily followed by the eye of an observer. The area above the track 34 thus constitutes an inspection passage or chamber 34a. The angle of impact of the coins on the inspection track and the inclination of the track are predetermined so that separate fares are readily inspected and evaluated. Thus, if three coins constitute a fare, the track inclination is set to provide a greater coin speed than if one coin constitutes the fare, in order to clearly visually separate the fares.

Since fares are normally deposited in sequence in the coin inlet, each fare, whether consisting of one or several coins, separates out with a slightly greater separation between the coins of the individual fares, and the eye thus sees the separate coins of each fare and also the fares as separate sets. Experience has shown that a bus operator, for example, easily checks on each coin and each fare as the coins roll down the track.

As the coins roll down the track 34, they are caused to impact a curved end guide 35 mounted on the face plate and abruptly reversed in direction to roll down an inclined rail 36 which is preferably aligned with the lower end of the end guide 35. The rail 36, see Fig. 2, is also preferably slightly concave. I prefer to make the track 34, the end guide 35, and the rail 36, which constitute baffles for guiding and conveying deposited coins to the collection box of transparent material such as transparent plastic to ensure full visibility without obscuring view of the coins as they pass through the coin conveying area.

The rail 36 is mounted on a lower face plate 37, see Fig. 2, which is hinged to the housing at 38, the ends of the hinge shaft 39 extending outwardly from the housing and being connected to a U-shaped lever 40, see Fig. 1, having a hand engageable tab 41. When the tab 41 on the lever 40 is pushed down, the lower face plate will swing open as hereinafter described.

The coins leaving the rail 36 impact a curved guide surface 42 and roll down a track 43 to line up in end to end relation on a horizontal collection track 44 which has an inclined end abutment 45. The change in direction at the end guide 35 and the curved surface 37 also retards the coins, to facilitate further inspection and evaluation of the coins as they descend, and the final line up on the horizontal track 44 permits an extended check on any particular coin.

The surface 42, track 43, track 44 and abutment 45 are preferably formed by a thick sheet 46 of plastic or similar material which is secured to the sides of the housing 11, and the face plate 21 and the lower face plate 37 are covered by a transparent glass or plastic plate 47, whereby the coins are completely visible from the moment they are deposited until the lower face plate 37 is swung back, at which time they drop into the lower part of the housing. Further the upper lock bar 48, see Fig. 1, which locks the plate 47 in the housing, may also be made of transparent plastic, if desired.

It is thus clear that inserted coins are completely visible as they pass through the coin receiver inlet opening, through the coin receiver guide passage and exit slot, through the coin direction guide, over the inspection track, over the change direction tracks, and on the horizontal collection track. The coins are momentarily retarded as they impact the inspection track, and are subsequently again retarded as they change direction, whereby each coin and each set of coins constituting a fare, can be inspected and evaluated, and this inspection and evaluation is accomplished while the coins are in free transit from the coin receiver inlet to the collection track or plate.

Since the upper portion or top of the fare box is transparent, and the coin passages are visible, the coins are fully visible at all times; it becomes impossible to insert trapping or hold-back devices or coin removal devices such as fishing straps or the like into the fare box, without detection. If such devices are made of transparent material, then the coins bunch and jam up at some point in the coin passageway, and thus disclose a restrictive interference with their free travel.

Although I have described a coin fare box, the principles of operation and the structural features disclosed may be applied to any coin collection device, ticket fare box, or combined coin and ticket fare box, as desired.

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

I claim:

1. In a fare box, a coin receiver having a coin inlet with a narrow exit slot, whereby coins exit therefrom in edge upright position, a coin inspection and transfer chamber having an inclined face plate slanting down-

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wardly and forwardly, and a longitudinally inclined coin inspection track mounted on said face plate, said track being transversely inclined upwardly away from said face plate whereby further to cause coins to incline rearwardly against said face plate, said face plate further having thereon guide means adjacent said exit slot, said guide means serving to deflect the upright coins to said track after passage of the coins from said exit slot whereby the path of movement of said coins makes an acute angle with said track just before impact therewith.

2. In the combination of claim 1, said track being concave in transverse cross-section.

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