July 16, 1935. B. RADTKE 2,008,038

COIN CHUTE

Filed Jan. 4, 1934

Fig. 1

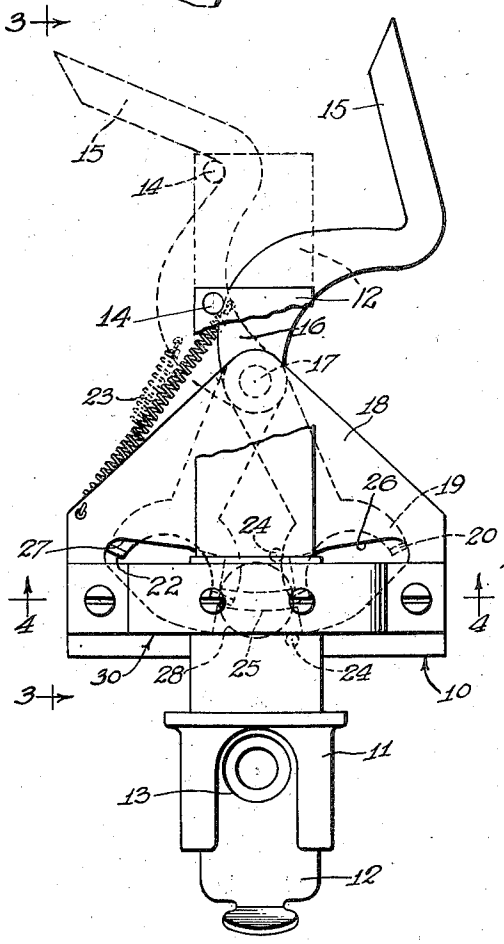


Fig. 2

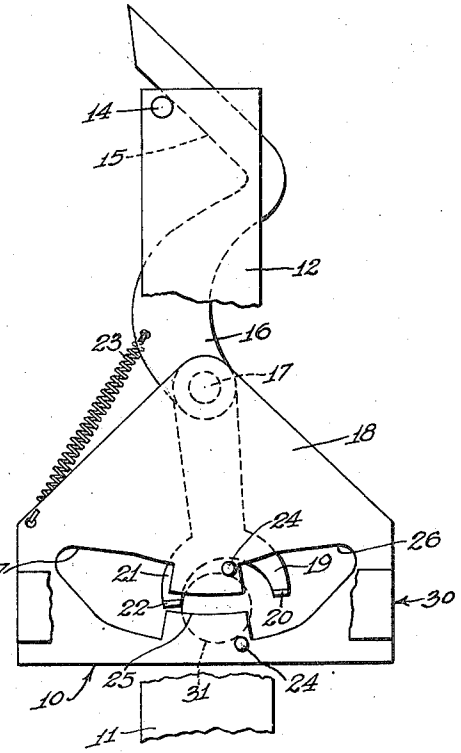


Fig. 3

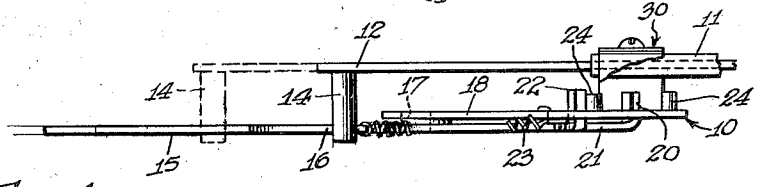
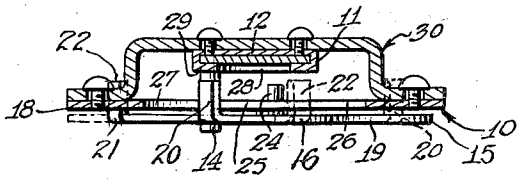


Fig. 4



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COIN CHUTE

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7 Claims. (Cl. 194—102)

This invention relates to coin chutes.

It is an object of this invention to provide an improved coin chute which is relatively simple and inexpensive in construction and efficient in use.

Another object of the invention is to provide a coin chute which includes a coin slide having a coin-receiving aperture and novel ejecting means associated with the slide to eject coins or substitutes therefor having a diameter less than that of the intended coin so as to prevent fraudulent operation of the vending machine with which the coin chute is associated by coins or substitutes therefor having a diameter less than that of the intended coin.

The present coin chute is particularly adapted for use with vending machines such, for example, as the so-called "digger" or crane machines in which the insertion of a coin of proper size and denomination is necessary in order to actuate a switch which controls the motor and associated mechanism for operating the crane, it being understood that the vending operation is not completed by the movement of the coin slide itself but by the action of the coin dropping from the coin slide upon a device which controls the circuit to the crane operating motor.

A further object of the invention is to provide a coin chute including a coin slide and a novel device associated with the coin slide for ejecting coins of the intended denomination and diameter into a discharge opening, from which they drop into position to actuate the motor which controls the operation of the vending crane, and to discharge coins or substitutes therefor of a diameter less than the diameter of the intended coin into another discharge opening and from which latter opening the second-named coins may be allowed to drop into a suitable receptacle without operating the switch which controls the operation of the motor for the vending crane.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing, showing the preferred form of construction and in which:

Fig. 1 is a top plan view illustrating a preferred form of the new coin chute and showing the coin ejector 16, in full lines, in the position which it assumes when the coin slide 12 is in its initial or coin-receiving position, and showing the coin ejector 16, in dotted lines, in the position it assumes just before the coin slide 12 reaches the inner end of its stroke;

Fig. 2 is also a top plan view showing the finger 22 of the coin ejector 16 jamming a coin of the intended or proper diameter against the stops 24 after the coin slide 12 has reached the inner end of its operative stroke and has deposited the intended or proper coin upon the shelf 18 between the upright fingers 22 and 20 of the ejector 16, and has started back toward its initial or coin receiving position;

Fig. 3 is a side elevational view on line 3—3 in Fig. 1; and

Fig. 4 is a transverse sectional view on line 4—4 in Fig. 1.

A preferred embodiment of the new coin chute is generally indicated at 10 in the drawing and the same includes a relatively stationary guide structure 11 which is adapted to be mounted in the cabinet of a coin controlled device. Carried by the guide structure 11 is a coin slide 12 which is provided with a coin-receiving aperture 13. The guide structure 11 includes a bottom horizontal wall 29 (Fig. 4) which is arranged below the coin slide 12, and this bottom wall 29 of the guide structure 11 is provided with a coin discharge opening 28. This coin discharge opening 28 is registered with the coin-receiving aperture 13, by inward movement or operative stroke of the slide 12, so as to discharge the intended coin, or one of less diameter, through the discharge opening 28 onto a receptacle having the form of a horizontal shelf 18 which is arranged below the bottom wall 29 of the guide structure 11 (Fig. 4); the coin slide 12 being retracted to coin-receiving position (as shown in full lines Fig. 1) after each operative stroke by a suitable spring (not shown).

Carried by and depending from the inner end portion of the coin slide 12 is a pin or abutment member 14 which is adapted to engage a cam surface 15 formed on a swinging or pivotal ejecting member 16. This ejecting member 16 is pivotally mounted between its ends, as at 17, below the coin slide 12 and to the under side of the horizontal shelf or receptacle 18. This shelf 18 is formed as a part of a supporting bracket 30 that is carried by the guide structure 11. The swinging or pivotal ejecting member 16 is urged in a counter-clockwise direction (Figs. 1 and 2) by a coil spring 23 which has one end attached to the member 16 and which has its other end attached to the horizontal shelf 18 of the supporting bracket 30.

The pivotal ejecting member 16 has a bifur-

cated end portion (Figs. 1 and 2) which provides thereon a pair of spaced arms 19 and 21, which terminate in upwardly projecting portions 20 and 22, respectively. These projections 20 and 22 of the arms 19 and 21, respectively, of the pivotal member 16 extend upwardly into correspondingly shaped openings 26 and 27, respectively, which are formed in the shelf 18 on opposite sides of the coin discharge opening 28. These openings 26 and 27 are interconnected by a slot 25 which is also formed in the shelf 18. This slot 25 extends (in plan, Fig. 2) diametrically across the coin discharge opening 28, and below the latter, for reasons to be explained hereinafter. Carried by and projecting upwardly from the shelf 18 is a pair of abutments or pins 24 which are spaced apart radially, relative to the center of the coin discharge opening 28 a distance less than the diameter of the coin discharge opening 28.

Operation

The pivotal ejecting member 16 is disposed as in full line position, Fig. 1, when the coin slide 12 is in retracted or coin-receiving position and when a coin 31 (Fig. 2) of proper denomination and diameter is inserted into the coin-receiving aperture 13 in the coin slide 12 and the coin slide 12 is pushed inwardly (toward the top of the sheet, Fig. 1), the depending pin 14 on the slide 12 rides off the cam surface 15 of the ejecting member 16 and the spring 23 thereupon pivots the ejecting member 16 (counterclockwise, Fig. 1). During this movement of the pivotal ejecting member 16 the upwardly projecting portion 22 of the arm 21 of the ejecting member 16 moves into the slot 25 (from left to right, Figs. 1 and 2), and when the coin aperture 13 in the slide 12 comes into registration with the coin discharge opening 28 the coin in the coin aperture 13 falls therefrom onto the horizontal shelf or receptacle 18 whereon it is deposited within the triangle which is defined (in Fig. 2) by the upwardly projecting pins or stop members 24 and the upwardly projecting portion 22 of the arm 21 of the ejecting member 16. When the parts are in this position the tensioned spring 23 acts upon the pivotal ejecting member 16 to tend to rotate the same (counterclockwise, Figs. 1 and 2) but the spring 23 is prevented from so rotating the ejecting member 16 by the engagement of the upwardly projecting portion 22 of arm 21 against the periphery of the coin 31 that is disposed on the shelf 18 within the triangle that is defined by the stops 24 and the vertical extension 22 of arm 21. This engagement of the vertical extension 22 of arm 21 against the periphery of a coin in the coin discharge opening tends to eject the coin laterally off from the horizontal shelf or receptacle 18 (to the right, Fig. 2) into the opening 26 but this ejection of the coin is prevented by the engagement of the coin at its periphery against the stop members or pins 24 between which the coin cannot pass because of the fact that the stop members 24 are spaced apart, on the shelf 18 and around the periphery of the coin discharge opening 28, (Figs. 1 and 2) a distance less than the diameter of the coin aperture 13 and of the intended coin.

The aforementioned engagement of the upward extension 22 of arm 21 of the ejecting member 16, and the engagement of the coin 31 with the stop members 24, takes place at a time (as shown in Fig. 2) just after the coin slide 12 has reached the inner end of its operative stroke, and has started back toward its initial or coin-receiving position. Consequently, as the coin slide 12 is retracted, (by a spring, not shown), the pin 14 engages the cam surface 15 of the pivotal ejecting member 16 and pivots the latter (clockwise, Fig. 2) against the action of the spring 23. During this movement of the ejecting member 16 the upwardly extending projection 20 of the arm 19 moves (from right to left, Fig. 2) into engagement with the periphery of the coin 31; whereupon the projection 20 of arm 19 moves through the slot 25 (from right to left, Fig. 2) and in so doing pushes the coin 31 laterally across the shelf 18 into the discharge opening 27 from which the thus discharged coin of the intended size and diameter may be allowed to fall by gravity onto any suitable coin-operated device (not shown), such as hereinbefore mentioned, for controlling the operation of the vending machine with which the present coin chute may be associated. Accordingly when the coin slide 12 reaches coin-receiving position the ejecting member 16 is again disposed as full lines in Fig. 1.

However, if a coin or a fraudulent substitute therefore, such as a metal disc, or the like, having a diameter less than that of the intended coin and, therefore, less than the distance between the stop members 24, is inserted into the coin-receiving aperture 13 and the coin slide 12 is moved inwardly to the limit of its operative stroke, the coin or substitute therefor will drop from the coin aperture 13, through the discharge opening 28, onto the horizontal shelf 18 whereon it will be disposed within the triangle defined by the stop members 24 and the vertical extension 22 of arm 21. Consequently, as the coin slide 12 is retracted to its initial or coin-receiving position (top to bottom, Fig. 1), the tensioned spring 23 acts upon the ejector 16 to pivot the latter upon the pivot 17 (counterclockwise, Fig. 2) and the upwardly projecting portion 22 of arm 21 bears against the periphery of the substituted coin or disc, whereupon the vertical extension 22 of arm 21 acting under the force of the tensioned spring 23, travels through the slot 25 (counterclockwise, Fig. 2), and ejects the substituted coin or disc laterally from the shelf 18 between the stop members 24 and into the discharge opening 26, from which the substituted coin, disc, or slug may be returned to the operator or conducted to a suitable receptacle, without having operated the vending machine with which the coin chute is associated. At the end of this operation the movement of the ejector 16 is stopped by the engagement of the vertical extension 20 of arm 19 with the wall defining the opening 26.

The present invention is particularly adapted for use in conjunction with vending machines of the so-called "digger" or crane type and in machines of this character, the mechanism which controls the operation of the vending crane is in turn controlled by a coin-actuated switch which is operable only by a coin of the proper size and weight discharged through the coin discharge aperture 27, but not through the coin aperture 26. Consequently, coins of less than the intended size and weight, being discharged through the coin aperture 26, will not actuate the vending mechanism with which the present coin chute is intended to be associated even though the coin slide 11 may be moved to the full inward limit of its operative stroke after a coin of less than the intended size, etc., has been discharged through the coin aperture 26. Thus, for example, the German two-pfennig coin, which is only

very slightly lighter in weight and smaller in diameter than the ten-pfennig coin will not operate the aforementioned vending machines with which the present coin chute is intended to be associated if the vending machine is intended for operation only by the ten-pfennig coin since the smaller two-pfennig coin will be discharged through the coin aperture 26 into a suitable receptacle provided therefor and will fail to engage the coin-actuated switch which controls the operation of the vending crane.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification, without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having described my invention what I claim as new and desire to protect by Letters Patent is:

1. A coin or token separator comprising the combination of: a guide structure provided with a coin discharge opening; a coin slide carried by the said guide structure and provided with a coin-receiving aperture; a coin-supporting member arranged below the said coin discharge opening and in communication therewith; spaced coin-stopping members arranged upon said coin-supporting member; a coin-ejecting member; means coacting with the said coin-ejecting member, at one stage in the operation of the said coin slide, to urge a coin or token having the diameter of the intended or proper coin or token into abutting engagement with said coin-stopping members or, at the same stage in the operation of said coin slide, to urge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and off from said coin-supporting member; said coin-ejecting member coacting with the said coin slide, at another and subsequent stage in the operation of the latter, to urge a coin or token having the diameter of the intended or proper coin or token out of abutting engagement with said coin-stopping members and off from said coin-supporting member.

2. A coin or token separator comprising the combination of: a guide structure provided with a coin discharge opening; a coin slide carried by the said guide structure and provided with a coin-receiving aperture; a coin-supporting member arranged below the said coin discharge opening, in communication therewith, and provided with spaced coin discharge apertures; spaced coin-stopping members arranged upon said coin-supporting member; a coin-ejecting member; means coacting with the said coin-ejecting member, at one stage in the operation of the said coin slide, to urge a coin or token having the diameter of the intended or proper coin or token into abutting engagement with said coin-stopping members or, at the same stage in the operation of said coin slide, to urge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and into one of said coin discharge apertures; said coin-ejecting member coacting with the said coin slide, at another and subsequent stage in the operation of the latter, to urge a coin or token having the diameter of the intended or proper coin or token out of abutting engagement with said coin-stopping members and into the other of said coin discharge apertures.

3. A coin or token separator comprising the combination of: a guide structure provided with a coin discharge opening; a coin slide carried by the said guide structure and provided with a coin-receiving aperture; a coin-supporting member arranged below the said coin discharge opening, in communication therewith, and provided with spaced coin discharge apertures; spaced coin-stopping members arranged upon said coin-supporting member; a coin-ejecting member; means coacting with the said coin-ejecting member, at one stage in the operation of the said coin slide, to urge a coin or token having the diameter of the intended or proper coin or token into abutting engagement with said coin-stopping members or, at the same stage in the operation of said coin slide, to urge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and into one of said coin discharge apertures; said coin-ejecting member coacting with the said coin slide, at another and subsequent stage in the operation of the latter, to urge a coin or token having the diameter of the intended or proper coin or token out of abutting engagement with said coin-stopping members and into the other of said coin discharge apertures; said coin discharge apertures being arranged on opposite sides of said coin slide, relative to the longitudinal edges thereof.

4. A coin or token separator, comprising the combination of: a supporting and guide structure provided with a coin discharge opening; a coin slide carried by the said supporting and guide structure and provided with a coin-receiving aperture; a coin-receiving member arranged below said coin discharge opening in communication therewith and having a slot or opening formed therein; a coin-ejecting member pivotally mounted upon the said supporting and guide structure below said coin-receiving member and having a pair of spaced upwardly extending arms movable in said slot; a pair of spaced upright coin-stopping members arranged upon said coin-receiving member on opposite sides of said slot; means coacting with the said coin-ejecting member to pivot said coin-ejecting member in a direction to move one of the said arms thereof through said slot and between said coin-stopping members so as to discharge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and off from said coin-receiving member; and a member carried by the said coin slide and coacting with said coin-ejecting member to pivot the latter in a direction opposite to the said first-named direction so as to move the other of the said arms thereof through said slot and between said coin-stopping members and thus discharge a coin or token having the diameter of the intended or proper coin or token off from said coin-receiving member in a direction opposite to the said first-named direction.

5. A coin or token separator, comprising the combination of: a supporting and guide structure provided with a coin discharge opening; a coin slide carried by said guide structure and provided with a coin-receiving aperture; a coin-receiving member arranged below said coin discharge opening in communication therewith and having a slot or opening formed therein; said coin-receiving member having a pair of spaced coin-discharge apertures formed therein and said

coin-discharge apertures being arranged at opposite ends of said slot; a coin-ejecting member pivotally mounted upon the said supporting and guide structure below said coin-receiving member and having a pair of spaced upwardly extending arms movable in said slot; a pair of spaced upright coin-stopping members arranged upon said coin-receiving member on opposite sides of said slot; means coacting with said coin-ejecting member to pivot said coin-ejecting member in a direction to move one of the said arms thereof through said slot and between said coin-stopping members so as to discharge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and into one of said coin discharge apertures; and a member carried by the said coin slide and coacting with the said coin-ejecting member to pivot the latter in a direction opposite to the said first-named direction so as to move the other of said arms thereof through said slot and thus discharge a coin or token having the diameter of the intended or proper coin or token off from said coin-receiving member into the other of said coin-discharge apertures.

6. A coin or token separator, comprising the combination of: a supporting and guide structure provided with a coin discharge opening; a coin slide carried by the said supporting and guide structure and provided with a coin-receiving aperture; a coin-receiving member arranged below said coin discharge opening in communication therewith and having a slot or opening formed therein; a coin-ejecting member pivotally mounted upon the said supporting and guide structure and having a pair of spaced arms movable in said slot; a pair of spaced upright coin-stopping members arranged upon said coin-receiving member on opposite sides of said slot; means coacting with the said coin-ejecting member to pivot said coin-ejecting member in a direction to move one of the said arms thereof through said slot and between said coin-stopping members so as to discharge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and off from said coin-receiving member; and a member carried by the said coin slide and coacting with said coin-ejecting member to pivot the latter in a direction opposite to the said first-named direction so as to move the other of the said arms thereof through said slot and between said coin-stopping members and thus discharge a coin or token having the diameter of the intended or proper coin or token off from said coin-receiving member in a direction opposite to the said first-named direction.

7. A coin or token separator, comprising the combination of: a supporting and guide structure provided with a coin discharge opening; a coin slide carried by said guide structure and provided with a coin-receiving aperture; a coin-receiving member arranged below said coin discharge opening in communication therewith and having a slot or opening formed therein; said coin-receiving member having a pair of spaced coin-discharge apertures formed therein and said coin-discharge apertures being arranged at opposite ends of said slot; a coin-ejecting member pivotally mounted upon the said supporting and guiding structure and having a pair of spaced arms movable in said slot; a pair of spaced upright coin-stopping members arranged upon said coin-receiving member on opposite sides of said slot; means coacting with said coin-ejecting member to pivot said coin-ejecting member in a direction to move one of the said arms thereof through said slot and between said coin-stopping members so as to discharge a coin or token having a diameter less than that of the intended or proper coin or token between said coin-stopping members and into one of said coin discharge apertures; and a member carried by the said coin slide and coacting with the said coin-ejecting member to pivot the latter in a direction opposite to the said first-named direction so as to move the other of said arms thereof through said slots and thus discharge a coin or token having the diameter of the intended or proper coin or token off from said coin-receiving member into the other of said coin-discharge apertures.

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