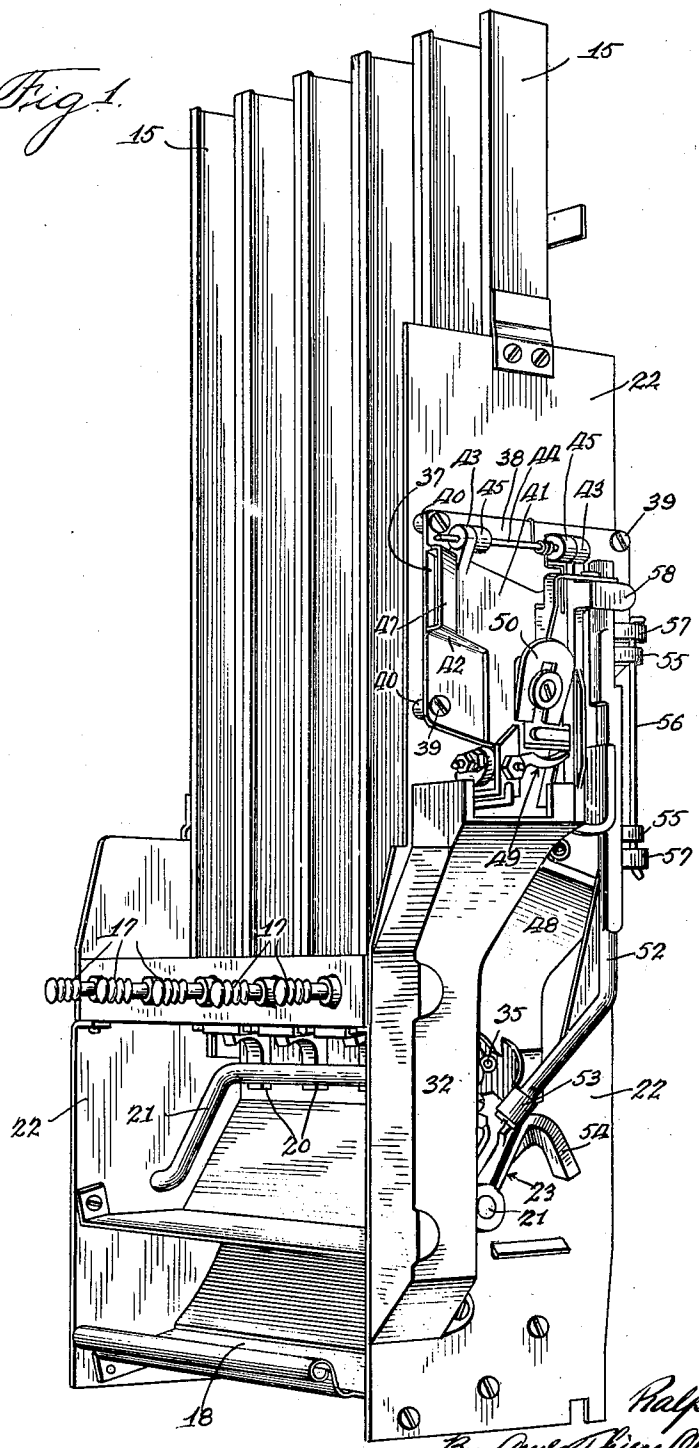
Feb. 4, 1941. R. E. BROWN 2,230,607

COIN-CONTROLLED DISPENSING MECHANISM

Filed April 30, 1938 4 Sheets-Sheet 1

Fig. 1.



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COIN-CONTROLLED DISPENSING MECHANISM

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Fig. 2.

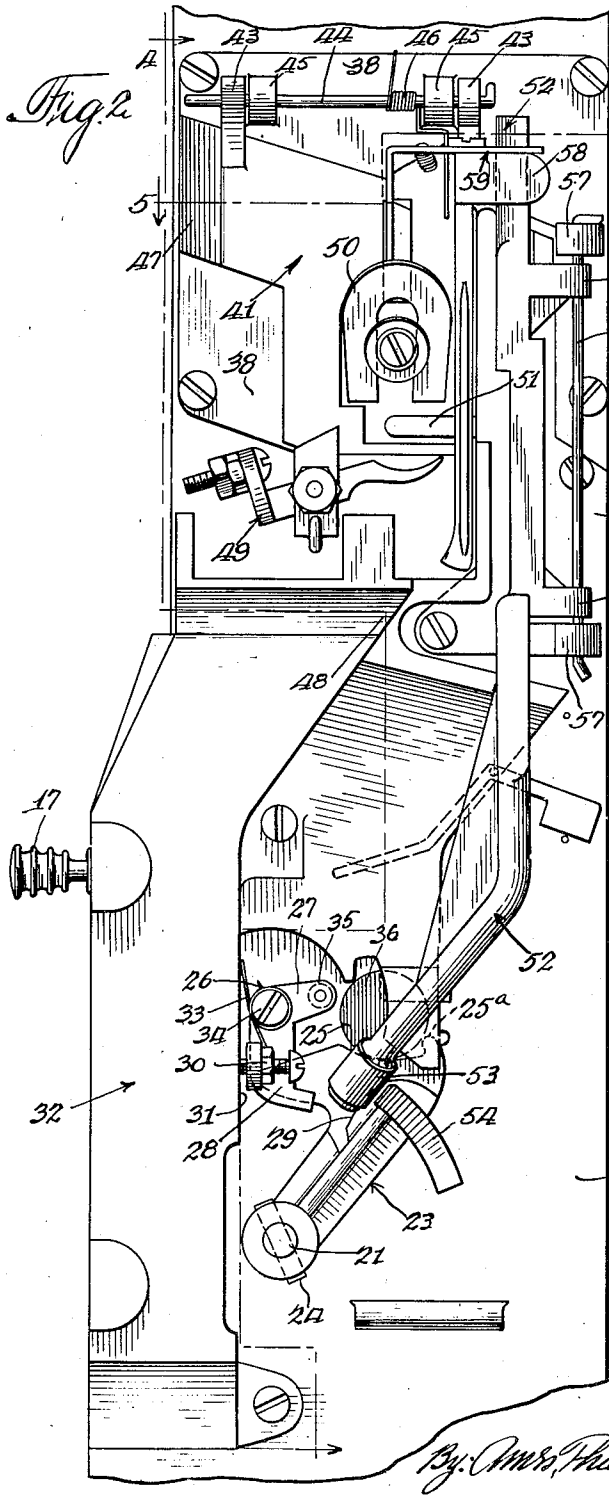
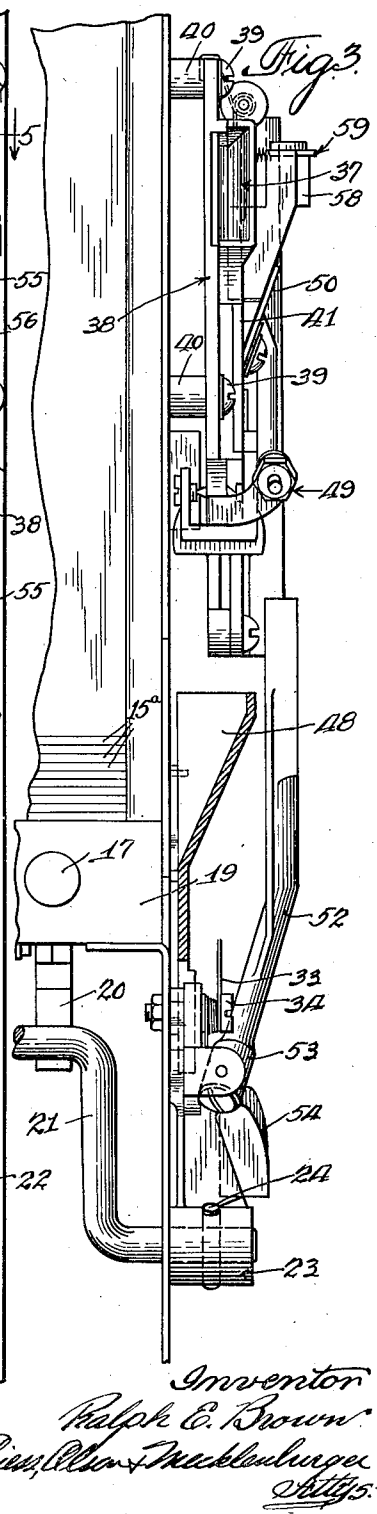


Fig. 3.



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COIN-CONTROLLED DISPENSING MECHANISM

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Fig. 5.

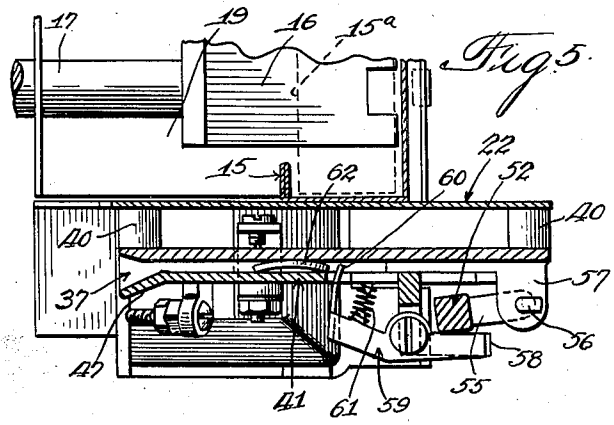


Fig. 7.

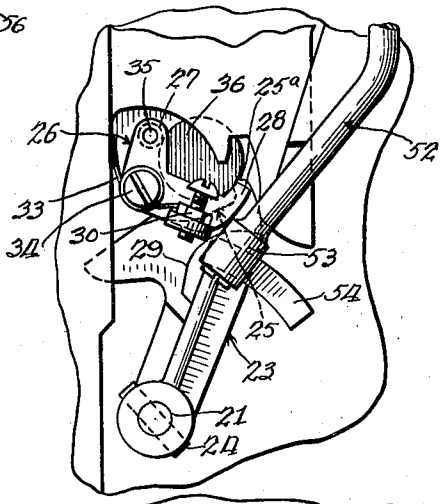


Fig. 6.

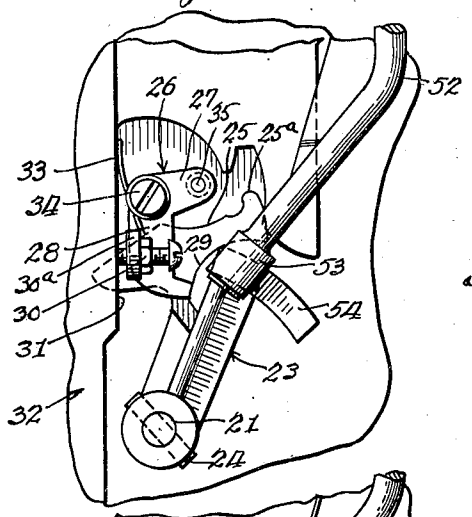
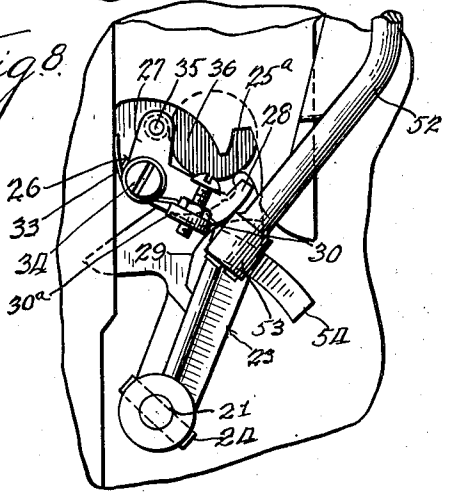


Fig. 8.



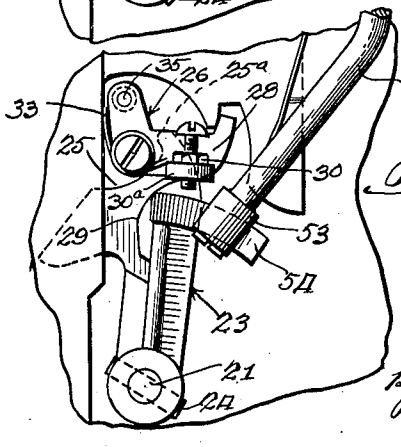


Fig. 9.

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COIN-CONTROLLED DISPENSING MECHANISM

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Fig. 4.

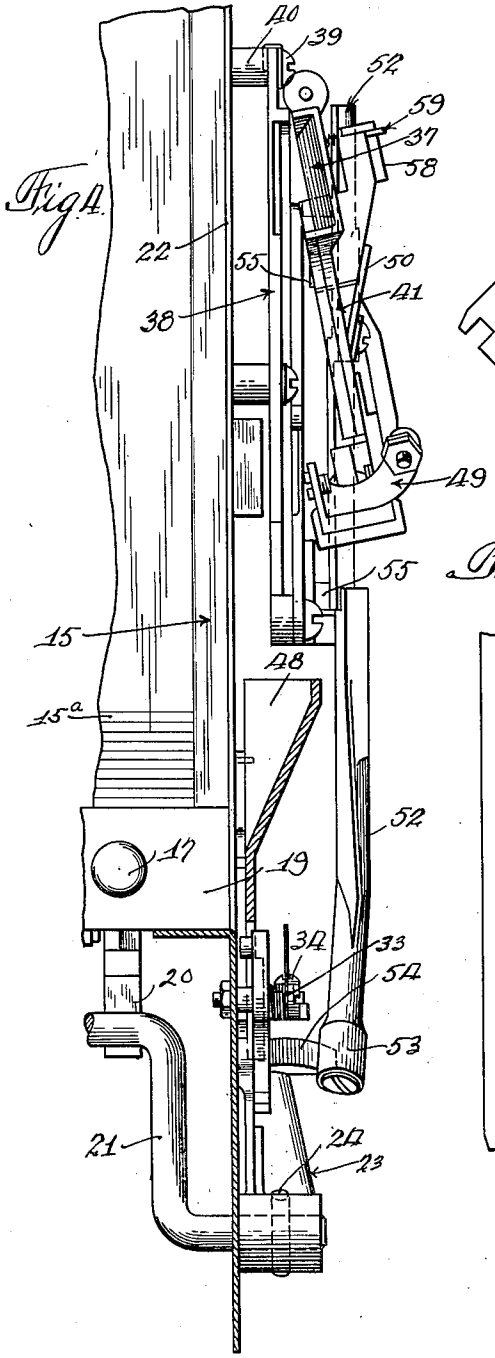


Fig. 10.

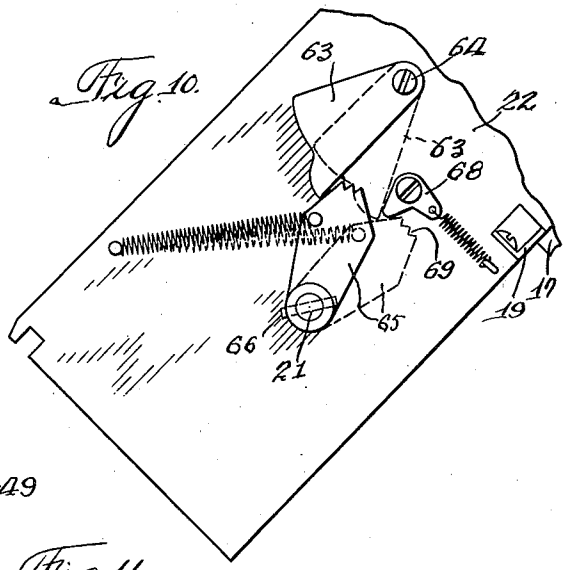
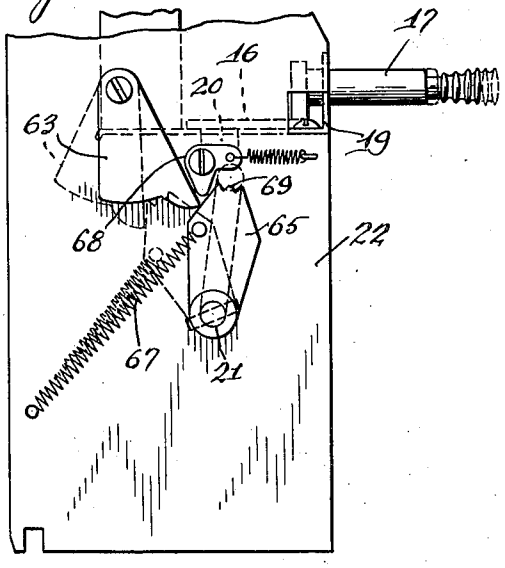


Fig. 11.



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UNITED STATES PATENT OFFICE

2,230,607

COIN-CONTROLLED DISPENSING MECHANISM

Ralph E. Brown, Oak Park, Ill.

Application April 30, 1938, Serial No. 205,179

4 Claims. (Cl. 194—63)

This invention relates to a coin-controlled dispensing mechanism and has special reference to a mechanism for use in vending machines to prevent tampering therewith or unauthorized use thereof.

More particularly, this invention relates to a coin-controlled dispensing mechanism having an operating device arranged to be moved from and returned to an initial position to perform a dispensing operation and a shaft oscillated by the movement of the operating device with a coin support fixed to the shaft and movable therewith for receiving coins which are delivered thereto, there being a pivotally mounted locking device normally operative to prevent performance of the dispensing operation, and a coin-engaging means on the locking device adapted to be engaged by a coin on the coin support to pivot the locking device by the movement thereof for permitting dispensing operation.

Also, the present invention contemplates a coin-controlled dispensing mechanism of the character indicated above in which coin-receiving and coin-restoring passages are employed with a coin-testing chute of a size to permit free passage of the standard coin of predetermined denomination to the coin-receiving passage, but to prevent passage of a substandard coin, there being means for intercepting and directing the substandard coin to the coin-restoring passage comprising a movably mounted arm normally disposed outside of the coin-testing chute and movable thereinto to obstruct the passage thereof upon an initial actuation of the operating device.

Further, the invention contemplates a coin-controlled dispensing mechanism of the character indicated above in which a segment is fixed to the oscillatable shaft and is movable therewith, a pivotally mounted gravity weight normally operative to permit performance of the dispensing operation when the dispensing mechanism is in an upright position, the gravity weight being automatically movable to engage the segment and lock the same in an initial position of actuation when the dispensing mechanism is tilted from an upright position to prevent dispensing operation.

The primary object of this invention is to provide a simplified form of dispensing mechanism which will operate only when a coin is present therein, the coin becoming a part of the mechanism and its presence in position on a coin-receiving support permitting the dispensing operation. The mechanism of which the coin becomes a part is composed of the minimum number of parts and may be produced at a comparatively small expense, the mechanism being such as to be durable and unlikely to get out of order during a normal period of use.

Another object of this invention is to provide means for testing coins or slugs before they are delivered to the coin-receiving support for the dispensing operation. The present invention provides means for intercepting and returning defective coins or slugs, and more particularly coins which have been bent so that they do not have flat faces but which are otherwise substantially perfect so that the ordinary testing as to weight, diameter and magnetism does not affect the rejection and return of the coin. Such coins, as well as slightly over-sized coins which pass the above tests, will hereinafter be referred to as "substandard coins," and those coins which are perfect will be referred to as "standard coins."

It is another object of this invention to provide means in a coin-controlled dispensing mechanism which will prevent tampering with the machine by tilting the mechanism from an upright position. Ordinarily, were not a feature of this type provided in such a mechanism, the machine could be tilted forwardly to prevent the coin from being released from the mechanism of which it forms a part in the dispensing operation, whereafter a continuous operation of the dispensing mechanism could be obtained with a single coin dispensing a substantial number of pieces therefrom.

Other objects and advantages will hereinafter be more particularly pointed out, and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when considered together with the accompanying drawings, in which latter:

Figure 1 is a perspective view of a coin-controlled dispensing mechanism embodying the features of this invention;

Fig. 2 is an enlarged fragmentary side elevational view of the dispensing mechanism shown in Fig. 1;

Fig. 3 is a fragmentary front elevational view of the structure shown in Fig. 2 partially in section as taken on the lines 3—3 thereof;

Fig. 4 is a view similar to Fig. 3 showing a changed position of the movable elements thereof;

Fig. 5 is a fragmentary plan sectional view taken on the lines 5—5 of Fig. 2;

Fig. 6 is a fragmentary elevational view of a

portion of the coin-receiving mechanism embodying the features of this invention;

Fig. 7 is a view similar to Fig. 6 showing a changed position of the movable elements thereof;

Fig. 8 is a view similar to Fig. 7 showing a continued movement of the movable elements thereof;

Fig. 9 is a view similar to Fig. 8 showing a completion of the operation of the movable elements thereof;

Fig. 10 is a fragmentary side elevational view of the opposite side of the dispensing mechanism with the dispensing mechanism shown tilted from the vertical; and

Fig. 11 is a view similar to Fig. 10 showing the dispensing mechanism in an upright position with the movable elements thereof shown in a changed position.

Referring now more particularly to the drawings, the coin-controlled dispensing mechanism embodying the features of this invention is generally of the usual type having a series of vertically disposed package-containing compartments formed of substantially channel-shaped members **15**, at the bottom of each of which is a reciprocating ejector **16** operated by a handle **17**. The dispensing operation is performed by merely pulling out the handle **17** extending from the ejector and permitting the same to return to an initial position by the action of a tension spring, a package or piece **15***a* being ejected from the bottom of the stack in the vertically extending compartments on the return movement of the ejector for delivery to a tray **18**.

The reciprocating ejector **16** is fixedly secured to the handle **17**, the handle being guided in an aperture in the vertically-extending portion of an L-shaped plate **19** with the ejector moving along the substantially horizontally-extending portion of the plate **19** in its movement to eject the package **15***a* resting on the horizontally-extending portion of the plate **19** upon the return movement of the ejector after the handle **17** has been withdrawn. A depending arm **20** is fixed to the bottom of each of the ejectors **16** for engaging a crank shaft **21**, the crank shaft being, in turn, pivoted at its ends in opposed sides **22** of the casing. When any one of the handles **17** are moved, the ejector **16** and depending arm **20** move therewith to oscillate the crank shaft **21**.

A coin support **23** is mounted on one extending end of the crank shaft **21** and is fixed thereto and movable therewith as by means of a pin **24**. The coin support **23** is provided with an arcuate portion **25** and tip **25***a* on the periphery thereof for receiving and positioning coins delivered thereto. The normal inoperative position of the coin support is shown more particularly in Fig. 2 of the drawings. If the dispensing mechanism is sought to be operated without depositing a coin on the coin support **23**, with the handle **17** being moved outwardly in a direction away from the machine, performance of the dispensing operation is arrested by means of a pivotally mounted locking device **26**. Such a position is shown in Fig. 6 of the drawings.

The locking device **26** comprises preferably a bell-crank lever having arms **27** and **28**, the arm **28** being normally in the path of travel of a cam **29** and adapted for engagement therewith. The arm **28** is provided with an adjusting screw and lock nut **30** which engages a stop provided by the side wall **31** of a coin-restoring chute **32**. A spring **33**, disposed on the pivotal support **34** for the locking device **26**, has one end thereof bearing against the wall **31** of the coin-restoring passage **32** and the other end against an ear **30***a* through which the adjusting screw passes, the spring tending to hold the locking device in the path of movement of said coin support **23** normally operative to prevent performance of the dispensing operation.

In order to perform the dispensing operation, a coin **36** is received on the arcuate portion **25** of the coin support **23** and the operating handle **17** is moved outwardly in a direction away from the machine, the peripheral edge of the coin engaging a pin **35** extending laterally of the free end of the arm **27** to pivot the locking mechanism so that the arm **28** is moved out of the path of movement of the cam **29**. This position of movement is shown in Fig. 7, the coin **36** having moved the bell-crank lever to a position such that the arm **28** stands clear of the cam **29**.

It will be noted from the view shown in Fig. 7 that the coin **36** is positioned between the pin **35** and the end of the arcuate portion **25**, such that a line extending through a diameter of the coin passes through the axis of the pin **35** and the center of the arc of the tip **25***a*. A further movement of the coin support displaces the coin **36** from its position between the pin **35** and the tip **25***a*, the coin jumping up onto the top of the tip and the arm **28** falling back on the top of the cam **29** for engagement therewith as shown more particularly in Fig. 8. Since the arm **28** rests on the rounded surface of the cam, a continuous movement of the coin support **23** furthers the pivotal movement of the locking device **26** to the position shown in Fig. 9 of the drawings wherein the coin has rolled over the rounded tip **25***a* and dropped down into a coin container. Thus the coin **36** forms a part of the mechanism for performing the dispensing operation.

In order to prevent tampering with the dispensing mechanism and to prevent unauthorized use thereof, a coin-testing chute **37** is provided, the chute being formed by a backing plate **38** secured in a spaced relation from the casing **22** by means of screws **39** and spacers **40**. A movable plate **41** forming one side and the bottom **42** of the coin chute **37** is pivotally mounted to the backing plate **38** by means of ears **43** preferably formed integrally with the plate **41** and having apertures therethrough for receiving a shaft **44**. The shaft **44** is held in position on the plate **38** by reason of its extension through apertures in the ears **45** secured to the backing plate **38**. The plate **41** is held in a position against the plate **38** by means of a coil spring **46**.

The coin chute **37** has a flared portion **47** which reduces to a size inwardly thereof to permit free passage of a standard coin of predetermined denomination to a coin-receiving passage **48**. A weight tester **49** is pivotally supported on the plate **41** above the coin-receiving passage **48** and the coin-restoring passage **32** so that, if the coin is under the standard weight, it will be retained by the weight tester and when the plate **41** is pivoted in a direction outwardly from the plate **38**, the coin will drop into the coin-restoring chute **32**. However, if the coin is of standard weight for a coin of the desired denomination, the coin weigher **49** will deflect the coin into the coin-receiving passage **48**.

A magnet **50** is mounted on the plate **41** adjacent the coin chute **37** so that, if slugs are employed of a material capable of being magnetized, the magnet **50** will prevent passage of the coin

to the coin-receiving passage 48 and will hold the same in position until the plate 41 is pivoted outwardly when it will be pushed off the magnet 50 by a stationary arm 51 into the coin-restoring chute 32.

The means for operating the plate 41 to pivot outwardly from the plate 38 comprises an arm 52 preferably having a roller 53 on its lower end in the path of movement of and for engagement with a cam 54 fixed to and movable with the coin support 23. The upper end of the rod 52 is provided with spaced ears 55 which extend laterally therefrom and are provided with apertures through which a rod 56 extends, the rod 56, in turn, being supported by spaced ears 57 extending from and being secured to the plate 38. The arm 52 being thus pivotally supported may be actuated into engagement with an ear 58 extending outwardly and laterally from the plate 41 to which it is secured, preferably integrally. The coin support 23, carrying therewith the cam 54, is movable by the operating handle 17 and directs engagement of the roller 53 on the arm 52 with the cam 54. The cam 54 moves the arm 52 outwardly on its pivotal support 56 to move therewith the ear 58 extending from the plate 41, the plate 41, in turn, pivoting outwardly on the rod 44.

It often happens that for malicious purposes competitors and vandals have inserted bent coins or coins of substantial thickness in the coin chute and, since the coin chute is initially flared, will permit a substantial entry thereinto of the bent or substandard coin so that it cannot be retrieved without difficulty, necessitating the services of a skilled repair man before the machine is adjusted for use. When such a coin is moved into the coin chute, the passage thereof, not being sufficient to take the substandard coin, will not permit its full entry into the coin-receiving chute, but will cause it to stick in the passage.

During the initial movement of the plate 41 outwardly, without special preventative devices, the coin may be carried by momentum or otherwise along the coin passage to the coin-receiving chute 48, and applicant has provided a means for preventing this passage. Such means comprises an arm 59 which is pivotally mounted on the ear 58 extending from the plate 41. By referring to Fig. 5, it will be noted that the arm 59 extends on both sides of the pivotal point thereof and that the vertically extending arm 52 has moved the arm 59 to a position such that a finger 60 on the arm 59 extends into the coin chute 37.

A compression spring 61 normally holds the finger 60 of the arm 59 in a position outside of the coin chute 37. However, an initial actuation of the arm 52 moves the finger 60 into the coin passage 37 prior to the arm 52 engaging the ear 58. A continuous movement of the arm 52 will cause an outwardly pivotal movement of the plate 41 together with the arm 59 to release the mutilated coin 62 and direct it to drop directly downwardly into the coin-restoring chute 32. Thus the arm 59 intercepts and directs the substandard coin to the coin-restoring passage after the plate 41 has released the substandard coin from the coin chute 37.

In order to prevent a continuous dispensing operation with the deposit of a single coin through a tilting of the dispensing mechanism forwardly from an upright position, a gravity weight member 63 is pivotally supported as at 64 to one side of the casing 22 above a gear segment 65 which is fixedly secured as by means of a pin 66 to the other end of the crank shaft 21. After a coin has been deposited in the coin chute and rests on the coin support 23, a tilting forwardly from upright position of the dispensing mechanism, while permitting the operating handle 17 to be drawn outwardly so that the gear segment 65 obtains a position such as is shown in dotted lines in Fig. 10, will not permit the return of the handle to complete the dispensing operation. The gravity weight 63 will fall of its own weight to the position such that the end of the gravity weight rests against the beveled edge of the gear segment 65.

In the position shown in dotted lines in Fig. 10, the operating handle 17 cannot be returned to eject a package from the vertically-extending compartments since the crank shaft is not permitted to return by reason of the gear segment 65 being held against movement by the gravity weight. However, when the dispensing mechanism is returned to an upright position as shown in Fig. 11, the gravity weight member 63 is merely retained by friction in the position shown therein in full lines, whereafter the operating handle is moved slightly outwardly to relieve this friction. The release of the friction therefrom permits the gravity weight to return to its initial position as shown in dotted lines in Fig. 11 and the handle to return to its initial position.

The gear segment 65 is continuously under tension such that it is urged to remain in its initial position. A suitable tensioning means is shown by the tension spring 67, one end of the spring being secured to the casing 22 and the other end thereof being secured to the segment at its free end. Also, in order that the ejector, after having an initial movement imparted to it by the handle 17, be forced to complete a dispensing operation, a pawl 68 is pivotally mounted above the segment 65 so that the pawl will engage the teeth 69 of the segment and prevent movement excepting in the direction of initial travel until all of the teeth pass the pawl, whereafter the segment will be permitted to return to its initial position as directed by the compression spring 67.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. In a coin-controlled dispensing mechanism, an operating device arranged to be moved from and returned to an initial position to perform a dispensing operation, a shaft oscillated by said operating device upon movement thereof, a coin support fixed to said shaft and movable therewith to which coins are delivered, a cam on said coin support, a pivotally mounted locking device normally operative to prevent performance of said dispensing operation by engagement thereof with said coin support, coin-engaging means on said pivotally mounted locking device adapted to be engaged by a coin on said coin support to pivot said locking device into engagement with said cam of said coin support upon an initial actuation of said operating device, a continued actuation of said operating device pivoting said locking device to conclude the dispensing operation.

2. In a coin-controlled dispensing mechanism, an operating device arranged to be moved from and returned to an initial position to perform a

dispensing operation, a shaft oscillated by said operating device upon movement thereof, a coin support fixed to said shaft and movable therewith to which coins are delivered, a cam on said coin support, a pivotally mounted bell-crank lever having an arm normally operative to prevent performance of said dispensing operation by engagement thereof with said coin support and having another arm adapted to be engaged by a coin on said coin support to pivot said bell-crank lever to a position such that said first mentioned arm engages said cam upon an initial actuation of said operating device, a continued actuation of said operating device moving said cam to pivot said bell-crank lever for concluding the dispensing operation.

3. In a coin-controlled dispensing mechanism, an operating device arranged to be moved from and returned to an initial position to perform a dispensing operation, a shaft oscillated by said operating device upon movement thereof, a coin support fixed to said shaft and movable therewith, said support having an arcuate portion on the periphery thereof to which coins are delivered, a cam on said coin support, a pivotally mounted bell-crank lever having an arm normally operative to prevent performance of said dispensing operation by engagement thereof with said coin support and another arm adapted to be engaged by a coin within the arcuate portion of said coin support to pivot said bell-crank lever to a position such that said first mentioned arm engages said cam and said coin is dislodged from said arcuate portion, a continued actuation of said operating device moving said cam to pivot said bell-crank lever for concluding the dispensing operation.

4. In a coin-controlled dispensing mechanism, an operating device arranged to be moved from and returned to an initial position to perform a dispensing operation, a shaft oscillated by said operating device upon movement thereof, a coin support fixed to said shaft and movable therewith, said support having an arcuate portion on the periphery thereof to which coins are delivered, a cam on said coin support, a pivotally mounted bell-crank lever having an arm normally operative to prevent performance of said dispensing operation by engagement thereof with said coin support, spring means for resiliently maintaining said bell-crank lever in said normally operative position, said bell-crank lever having another arm adapted to be engaged by a coin within the arcuate portion of said coin support to pivot said bell-crank lever against the tension of said spring means to a position such that said first mentioned arm engages said cam and said coin is dislodged from said arcuate portion, a continued actuation of said operating device moving said cam to pivot said bell-crank lever for concluding the dispensing operation.

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