

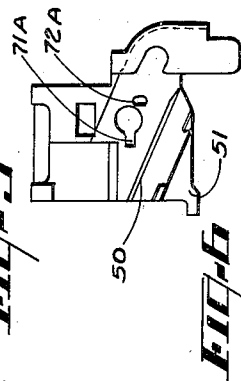
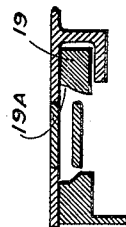
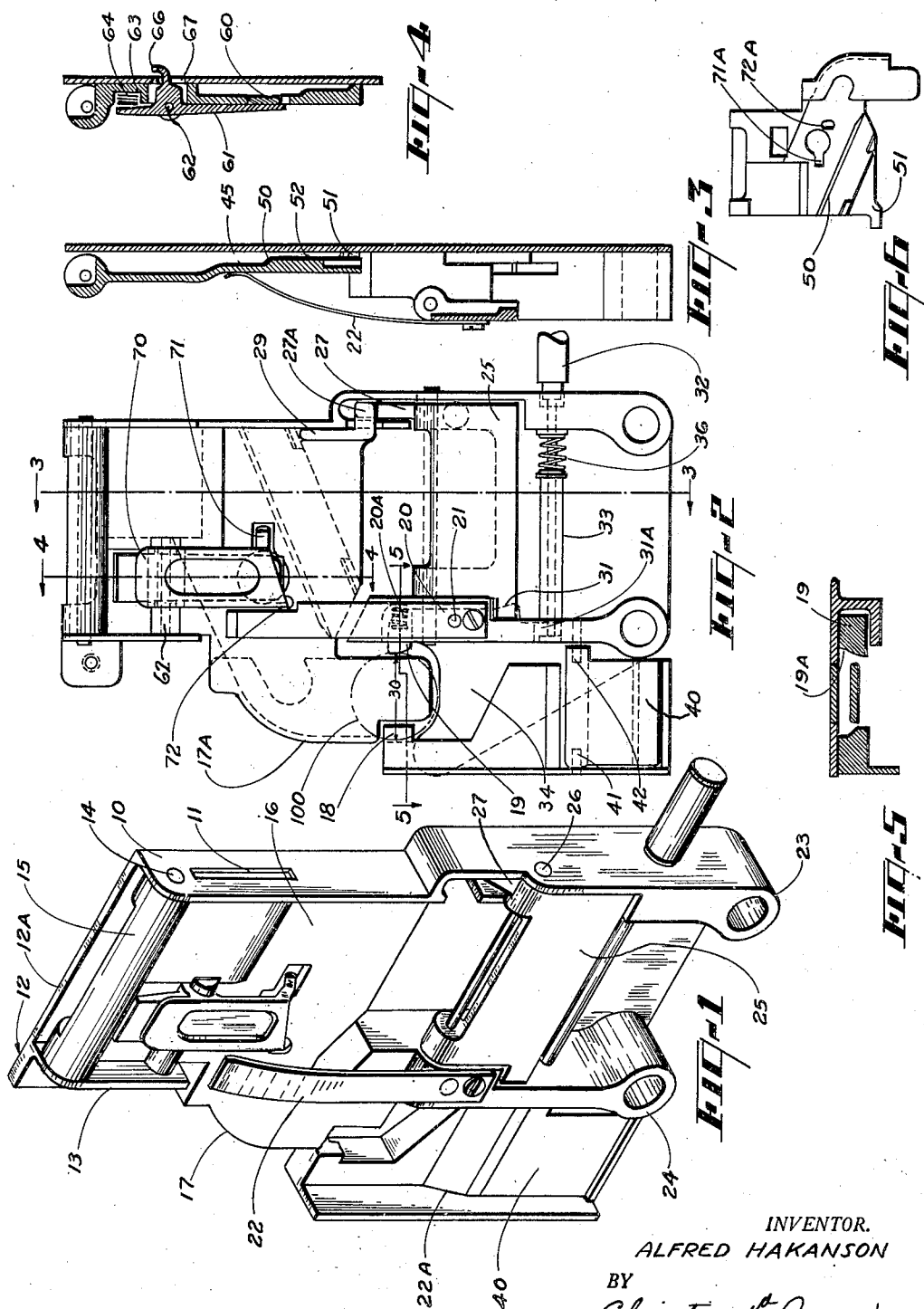
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CONTROL MECHANISM

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CONTROL MECHANISM

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This invention relates to coin-selecting mechanisms and particularly to coin-selecting mechanisms for use in vending machines and the like. It provides a simple and rugged mechanism adapted to select and separate desired coins, and detect and reject slugs and the like, releasing a vending mechanism only when a proper coin is inserted.

A variety of coin-selecting mechanisms has been proposed heretofore, but many of them are too complicated or insufficiently rugged. There is a marked need for an inexpensive coin-selecting mechanism for use in penny vending machines and the like, where the income derived from an individual machine is relatively low. The apparatus of my invention supplies this need.

Basically, my invention contemplates a coin-selecting mechanism having a swinging member containing a downwardly directed coin chute terminating in an open lower end. The chute member is hinged, for example, to a stationary frame, to swing the open end of the chute transverse to the face of a coin resting in its lower end. Means are provided for so swinging the chute member, together with a coin-supporting means for holding the coin in the bottom of the chute but movable to release the coin as the chute is swung with a coin in it and a stop operatively connected with the coin-supporting means for holding the swinging member except when the coin is resting against the coin-supporting means.

Preferably the stop is connected to and movable with the coin-supporting means. Thus the coin-supporting means may be in the form of a lever having an actuating end against which the coin rests, so that the lever is caused to turn on its axis by the swinging of the chute member containing the coin. In other words, the coin itself supplies contact between the chute member and the actuating end of the lever. The stop may be mounted on the other end of the lever, so that it moves out of the way of the means for swinging the swinging member when pressure is applied with a coin in the chute.

In my preferred mechanism a spacer is mounted on or adjacent the coin chute opposite the actuating lever end, the space between the lever at rest and the spacer being defined accurately so that the mechanism is only actuated if a coin of proper diameter is resting in the end of the coin chute. Preferably the lever is held in fixed relationship to the spacer by a spring.

It is desirable to provide a coin release means by which the lever may be actuated and moved

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slightly away from the spacer when a customer wants his money back instead of the merchandise of the vending machine.

In order to avoid actuating the vending machine with slugs and the like, I prefer to mount ahead of the lower end of the coin chute one or more protective mechanisms for collecting or rejecting a variety of such bogus coins. Thus, my preferred device is provided with magnetic means for collecting and rejecting iron slugs and the like, a so-called washer catcher for catching and rejecting slugs with holes pierced in them, and a thin coin rejector in the form of a drop or trap through which coins of adequate thickness will not pass. In addition, the face of the coin chute should be so proportioned that coins of excessive size will not enter. Coins which are too small in diameter will not rest against the actuating end of the lever but will pass completely through the coin chute and be returned.

These and other aspects of my invention are described in detail with reference to the accompanying drawings in which

Fig. 1 is a perspective view of a preferred form of my coin-selecting mechanism;

Fig. 2 is a side view of the mechanism of Fig. 1;

Fig. 3 is a section through the mechanism taken along the line 3—3 of Fig. 2;

Fig. 4 is a section through the mechanism taken along the line 4—4 of Fig. 2;

Fig. 5 is a section through the lower end of the coin chute taken along the line 5—5 of Fig. 2; and

Fig. 6 is a side view of the swinging member of the apparatus containing the coin chute.

The coin selecting mechanism is adapted to be placed upright within a vending machine with a front flange 10 containing a coin slot 11 exposed on the face of the machine. The coin slot is proportioned to admit a proper coin, say a penny, but so that a coin that is substantially larger or thicker will not enter. The front flange 10 is formed integrally with and extends perpendicular to a main web 12A of the frame 12 of the apparatus. The main frame has an upright rear flange 13 formed integrally with the web and parallel to the front flange on the same side of the web on the upper portion thereof.

A pin 14 passed through the upper portions of the two flanges supports a substantially horizontal hinge or journal 15 that is formed integrally with a swinging member 16. The swinging member has a downwardly directed chute 17 on its lower rear portion extending beyond the frame 12. The chute is rounded in its upper por-

tion and has two side walls defining a space slightly wider than the thickness of the appropriate coin, say a penny, and a rear wall 17A. The lower end of the chute is open on both sides adjacent a spacer 18 formed integrally with the main frame. Opposite the spacer is the actuating end 19 of a lever 20 that is supported on a pin 21. The pin is the axis of the lever and extends transverse to the major surfaces of the coin chute, i. e. its side walls, so that it is transverse to a coin 100 resting in the bottom of the coin chute against the spacer and the actuating end of the lever. A compression spring 20A holds the lever 20 in fixed relationship to the spacer, but allows it to be moved as described below.

An upright leaf spring 22 fastened to the main frame at its lower portion bears against the swinging chute member and presses it against the main frame.

The main frame has two upright projections or ribs 23, 24 with horizontal transverse holes at right angles to the web of the frame. Through these holes may be passed bolts or rods (not shown) to assemble the coin selector as part of a vending machine, for example, the vending machine disclosed in my copending application Serial No. 615,115, filed September 8, 1945.

The lock member 25, adapted to swing the coin chute outwardly from the main frame, is hinged to the main frame between the raised portions 23, 24 by means of a pin 26. The lock member has an upwardly projecting lever 27 that passes between a projection 27A on the lower portion of the chute member and the web of the main frame so that as the lower portion of the member 25 is pressed sufficiently toward the frame the chute member is swung out from the frame toward a coin box (not shown). The lock member 25 is adapted to be pressed toward the main frame by the locking mechanism of the vending machine proper (not shown) or by other means pressing horizontally toward the right (in Fig. 1) against the lower portion of lock member.

The lock member 25 can not be depressed sufficiently toward the main frame to flip out the coin chute unless a coin of appropriate dimension is resting in the bottom of the coin chute between the lever end 19 and the spacer 18. The horizontal distance 30 between the keeper and the rear side of the lever end 19 is closely proportioned to the dimensions of the penny 100 so that the latter is held in the illustrated position as the penny drops down the chute. The front portion of the lever end 19 (as viewed in Fig. 2) is enlarged so that it is closer to the spacer, presenting a slanting surface 19A (see Fig. 5) against which the penny bears as the chute flips out. With the penny 100 in position between the lever and the spacer, the lever will be swung out of the way of the member 25 as the latter is pressed toward the frame. Thus, the lower end of the lever carries a stop 31 which is moved out of the way (to the left in Fig. 2) as the upper end 19 of the lever travels toward the right pushed by the penny which in turn bears against the spacer 18. In other words, as the penny is swung outward by the chute it bears against the slanting face 19A and pushes it out of the way, at the same time moving the lower end of the lever to the left so that the stop which the lower end of the lever carries moves out of the way of the end of the lever 25.

Assuming that a proper coin, say the penny 100, has been dropped into the coin slot and

traveled downwardly to lodge in the coin chute between the spacer and the lever end 19, the lower portion of the member 25 may be pressed in toward the main flange of the frame so that the coin chute flips outwardly (toward the left in Fig. 1), whereupon the penny will drop into a coin box (not shown). If no coin is present in the end of the coin chute there is nothing to press the actuating end of the lever toward the right so that the stop 31 on the bottom of the lever interferes with the swinging of the member 25. Since the lock member 25 interferes with the operation of the vending machine no merchandise can be withdrawn.

If a coin should lodge in the bottom of the coin chute and the customer should change his mind and want his money back (for example when there is no merchandise in the machine), he can obtain it by pressing the end 32 of a rod 33 which has a restricted longitudinal movement and will press the lower end 31A of the lever 20 to the right slightly, say a few thousandths of an inch. This does not move the stop 31 sufficiently to permit the member 25 to be pressed in to flip out the coin chute, but does move the actuating end 19 of the lever to the right a few thousandths of an inch so that the coin is no longer held between the spacer and the lever end and drops through a return chute 34 and thence outside the machine to the customer. Unless the end 33 of the rod is pressed, it is held away from the lever by means of a spring 36.

To prevent robbery by removing the entire vending machine from its support, say the column in a subway station, and turning it upside down, the coin selecting mechanism is provided with a gate 40 hinged at its top to the main frame and disposed below the coin chute at the entrance to a coin box or other receptacle (not shown). If the entire vending machine is upended to shake the coins out, this gate 40 swings out and seals the passage from the coin box. It will be observed that the gate 40 is hinged by pins 41, 42 to the main frame.

As has been observed, a coin which is physically too small, say a dime, will simply drop through the end of the coin chute into the chute 34 and thence be returned to the customer. A coin that is too large, can not be inserted in the coin slot 11. However, there remains to provide for bogus coins of magnetic material, washers, etc. and very thin disks of tin and the like which are sometimes introduced into vending machines. The travel of the coin from the slot 11 to the chute 17 proper takes place in a space 45 defined between the swinging member and the web of the frame (see Fig. 3). The swinging member has a slanting raised track 50 directed downwardly toward the coin chute proper (see Figs. 3 and 6). A coin of appropriate thickness rolls downwardly on this track to the coin chute. However, the track is not pressed snug against the flange of the main frame, being held out by a raised stop 51 leaving a slight space 52 between the track and the frame through which very thin coins or slugs will drop out of the selecting mechanism and be returned to the customer.

The apparatus is provided with a magnet 60 fastened on the end of a lever 61 that is supported by a pin 62 in the swinging member, this pin being parallel to the pin 14 by which the swinging member is attached to the main frame. The

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magnet passes through a hole in the swinging member and is held in the path of the coin by means of a coil spring 64 which is under compression and is fitted into a recess 63 in the upper portion of the swinging member (see Fig. 4). The lever is provided with a catch 66 which extends through an aperture in the swinging member and hooks over the upper edge of another aperture 67 in the web. If a disc of magnetic material is introduced into the coin slot it is caught by the magnet, whereupon the machine is placed out of operation and the path for the coin is blocked until the member 25 is pressed in sufficiently to flip the magnet with respect to the swinging member, thus releasing the magnetic slug so that it drops out of the machine. It will be noted that the locking member 25 can be moved slightly, for example, by attempting to operate the associated vending mechanism, but without swinging the chute.

A washer catcher 70 is hinged to the same pin 62 which holds the magnet lever and lies over the magnet lever with two projections toward the path of the coin. The front projection 71 passes through a slot 71A in the swinging or chute member and serves as a slanting guide which turns the washer slightly so that it drops onto the rear member 72 which is a pin projecting into the path of the coin through an aperture 72A. Thus any washers are caught on the second pin 72 and must be released as described in the case of a magnetic slug.

To review the operation of the apparatus, a penny dropped in the coin slot will travel down the track over the ramp 50 into the coin chute and be suspended at that point by the spacer 18 and the lever end 19. If then the vending machine proper is actuated to push the bottom of the lock member 25 toward the web, the coin will push the lever 20 and move its stop 31 out of the path of the lock member, whereupon the coin chute will be swung substantially to the left (as viewed in Fig. 1), and the coin will be released to drop to the left of the assembly into a coin box or the like.

If the customer, after dropping the coin, wants his money back he may receive it by pushing the knob 32 of the coin release mechanism which will move the upper end 19 of the lever 20 slightly to the right (as viewed in Fig. 2) allowing the coin to drop into the return chute.

If no coin is lodged between the spacer 18 and the lever end 19, there is nothing to actuate the latter, so that the device remains locked and the chute cannot be swung completely away from the web.

If a too-small coin, say a dime, is dropped into the coin slot, it will roll into and drop through the coin chute and be returned.

A too-thin coin or a thin slug will not roll down the track but instead will drop through the space 51 into the coin return. A washer will roll down the ramp 50 until it is caught by the pin of the washer catcher. It will be held in this position but can be released by moving the locking member slightly. If a magnetic slug is introduced, it will be caught by the magnet and released as described in the case of a washer or other holed disc.

The coin-selecting mechanism described is adapted to be placed to the right of a bank of vending mechanisms. In operating the vending mechanism, a lever, pawl, rod, or cam, depending upon the type of machine, is caused to press against the bottom of the locking member (from

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the right as viewed in Fig. 1). If a coin is in place, the chute will trip out and release the coin to the coin box and the vending mechanism will open. Otherwise the vending mechanism will remain closed and tamperproof.

The assembly of the coin-selecting mechanism upon a vending machine is disclosed in my co-pending application Serial No. 615,115, filed September 8, 1945.

I claim:

1. In a coin-selecting mechanism, the combination which comprises a swinging member containing a downwardly directed coin chute terminating in an open lower end, and hinged to swing the open end of the chute at right angles to the face of a coin resting in the lower end, means for so swinging the chute member, a coin-supporting means for holding the coin in such position but movable to release the coin as the member is swung, and a stop operatively connected to the coin-supporting means which blocks movement of the means for swinging the swinging member except when the coin is resting on the coin-supporting means.

2. Apparatus according to claim 1 in which the coin-supporting means is a lever, one end of which supports the coin with the stop attached to the other end of the lever.

3. In a coin-selecting mechanism, the combination which comprises a swinging member containing a downwardly directed coin chute terminating in an open lower end, and hinged to swing the open end of the chute at right angles to the face of a coin resting in the lower end, means for so swinging the chute member, a coin-supporting means for holding the coin in such position but movable to release the coin as the member is swung with the coin in position, and a stop attached to the coin-supporting means and movable therewith and which blocks movement of the means for swinging the swinging member except when the coin is resting on the coin-supporting means.

4. Apparatus according to claim 3 in which the coin-supporting means is a lever with an actuating end against which the coin rests, the actuating end having a face that slants inward to the coin chute in the direction in which it swings when it contains a coin, the stop being connected to the other end of the lever.

5. In a coin-selecting mechanism, the combination which comprises a swinging member containing a downwardly directed coin chute terminating in an open lower end with at least one side open to expose the edge of a coin resting in the chute, the swinging member being hinged to swing the open end of the chute at right angles to the face of such coin, means for so swinging the chute member, a lever with its axis at right angles to the coin face and having an actuating end adjacent the open side of the coin chute so that the coin rests against it, the other end of the lever having a stop which blocks movement of the means for swinging the swinging member except when the coin is resting against the actuating end.

6. Apparatus according to claim 5 provided with a spring which holds the lever in coin-supporting position but permits its movement when pressure is exerted by the swinging member through the coin against the actuating end.

7. Apparatus according to claim 5 wherein the coin chute is open at both sides at its lower end and the apparatus is provided with a spacer disposed on the opposite side of the open lower end

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of the chute from the actuating end of the lever when the latter is in its normal position, the actuating end being movable away from the spacer when the chute is swung with a coin in it.

8. In a coin-selecting mechanism, the combination which comprises a swinging member containing a downwardly directed coin chute terminating in an open lower end with at least one side open to expose the edge of a coin resting in the chute, the chute member being hinged to swing the open end of the chute at right angles to the face of such coin, means for so swinging the chute member, a lever with its axis at right angles to the coin face and having an actuating end adjacent the open side of the coin chute so that the coin rests against it, the other end of the lever having a stop which blocks movement of the means for swinging the swinging member except when the coin is resting against the actuating end; and coin-release means for imparting restricted movement to the actuating end of the lever to release the coin without moving the stop to the extent that it ceases to block the movement of said means for swinging said swinging member.

9. In a coin-selecting mechanism, the combination which comprises a chute member containing a downwardly directed coin chute terminating in an open lower end with at least one

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side open to expose the edge of a coin resting in the chute, the chute member being hinged to swing the open end of the chute at right angles to the face of such coin, means for so swinging the chute member, a lever with its axis at right angles to the coin face and having an actuating end adjacent the open side of the coin chute so that the coin rests against it, the actuating end having a projection which slants into the path of the coin in the direction in which the swinging member is swung, the other end of the lever having a stop which blocks movement of the means for swinging the chute member except when the coin is resting against the actuating end, but moves out of the way when the lever is moved with a coin resting on its actuating end.

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