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COIN CHUTE

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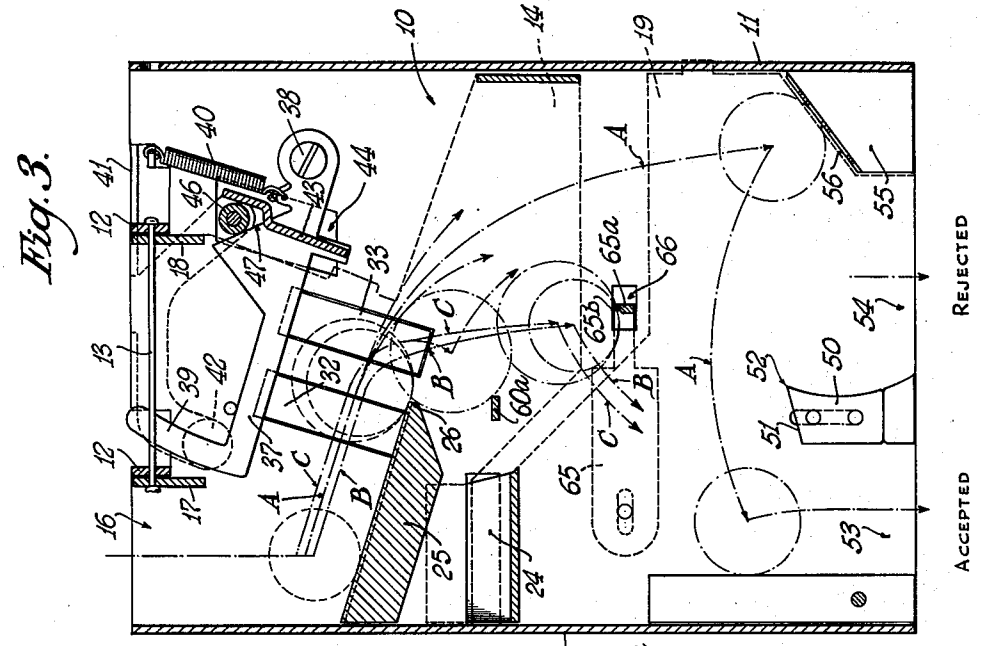


Fig. 3.

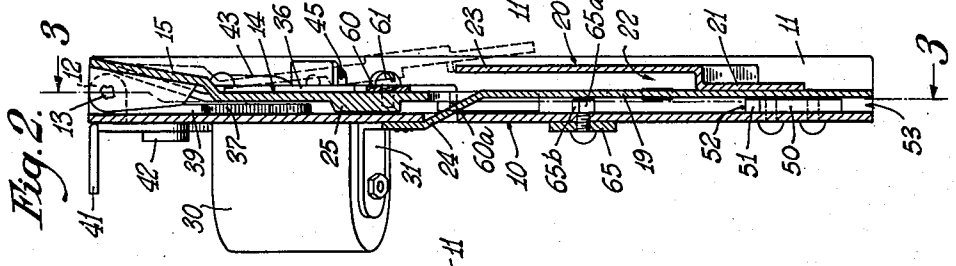


Fig. 2.

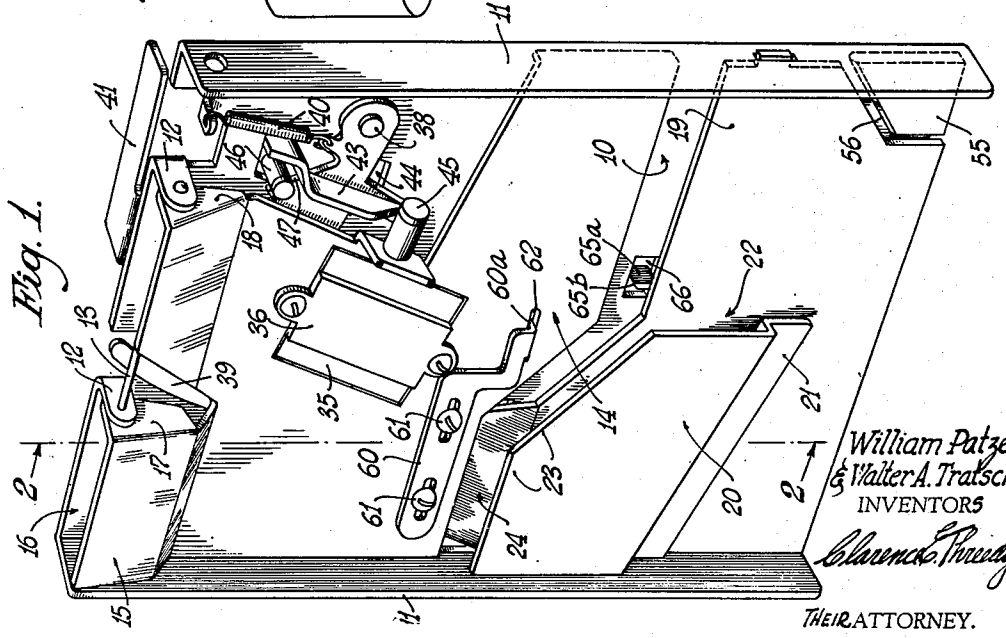


Fig. 1.

William Patzer
& Walter A. Tratsch
INVENTORS

Clarence E. Threedy

THEIR ATTORNEY.

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COIN CHUTE

William Patzer and Walter A. Tratsch,
Chicago, Ill.

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3 Claims. (Cl. 194—100)

This invention relates to coin testing devices and has as its principal object the provision of a gravity type chute which is capable of testing a plurality of denominations of coin, particularly nickels, dimes and quarters.

Viewed from another aspect, it is an object of the invention to provide a coin chute including a runway and means for maintaining a magnetic field across a particular part of the runway, together with selective deflecting and rebound means positioned below the end of the runway in a certain manner so that the various denominations of coin will follow certain trajectories and will be directed into a common acceptance passage.

Other objects, advantages and economies peculiar to the invention reside in certain details of construction as well as the arrangement of parts and mode of operation of the illustrative embodiment described hereinafter in view of the annexed drawing, in which:

Fig. 1 is a perspective view of a complete chute viewed from the side of the discharge gate;

Fig. 2 is a vertical section along line 2—2 of Fig. 1;

Fig. 3 is a side elevation of the chute passage with the gate removed to expose the testing means.

The illustrative embodiment of the improved chute includes a main plate member 10 having opposite vertical edge portions struck up to provide side flanges 11 and having portions along the top edge turned in to provide mounting ears 12 through which is extended a pintle 13 constituting a mounting means for a side opening or swinging discharge gate 14. Upper edge portions of the gate are offset to provide a widened scoop or funnel portion 15 cooperating with an opposite wall portion of the main plate to define an enlarged entrance opening 16 for the several denominations of coin, other portions 17 and 18 along the upper edge of the gate being offset to provide mounting lugs engaged with the pintle 13 for suspension of the gate.

The gate tends to gravitate into a lowered position in spaced relation with the opposite surface of the mounting plate 10 to define the main coin confining passage leading downwardly from the entrance 16. A stationary side plate 19 is mounted in spaced relation to the main plate 10 near the lower edge of the gate 14 to define the remainder of the coin confining passage. An offset plate 20 is secured along its lower edge portions 21, as by welding or the like, to define a reject chute with a discharge passage 22 at its lower end with its entrance extending all along the open upper edge portions 23 thereof. An upper portion of the stationary side forming plate 19 is offset to provide a discharge apron 24 adapted to direct discharged coin elements into the chute 20. A stationary ledge member 25 (Fig. 3) defines a short runway extending downwardly immediately below the coin entrance 16 so that its lower end 26 terminates almost halfway across the width of the chute passage and considerably above the bottom edge of the gate.

Testing means in the form of a permanent horseshoe magnet 30 (Figs. 2 and 3) is mounted on the outside of plate 10 by brackets 31, the pole pieces 32 and 33 of the magnet projecting through suitable openings in the plate 10 so as to lie nearly flush with the inner surface of the said main plate with the pole piece 32 lying close to the end 26 of the runway, and the remaining pole piece 33 spaced a short distance in a direction downwardly of the end 26 of the runway.

This magnet is substantially of the size shown and is preferably of the cobalt steel type adapted to retain its magnetism for a long period with substantially little diminution of the strength of its field. Intended for cooperation with the magnet 30 is a keeper in the form of a flat piece of steel 35 of high permeability secured in an opening in the gate by means of a non-magnetic strap 36 in a position opposite the pole pieces so that the magnetic field is concentrated in the region of the end 26 of the runway and, moreover, the life of the magnet is appreciably increased because of the effectiveness of the keeper, both with respect to its shape and proximity to the pole pieces. The keeper serves a further useful purpose in that it provides an automatic closing means for the gate since it is attracted toward the magnet when the gate is opened and tends to restore the gate quickly to its normal position.

Since magnetically attractable coin elements are frequently arrested by the magnet, a mere opening of the gate will not effect dislodgement of such elements, and there is therefore provided a scavenging means in the form of a sweep arm 37 pivoted on the inside of the main plate 10 as at 38 for movement downwardly across the pole pieces to dislodge arrested coin elements. The sweep has an offset arm 39 which serves to block other coin elements from attraction toward the magnet during or after dislodgement of an arrested element by the sweep arm 37; the spring 40 normally raises the sweep out of obstructing

position in the coin passage. Mechanism for operating the sweep includes a lever 41 pivoted as at 42 on the outside of the chute and having an offset arm portion 43 which projects through a slot 44 in the main plate for engagement with a roller 45 on the gate to shift the latter to open position when the lever 41 is depressed. A laterally projecting roller 46 is also provided on the operating lever and projects through the opening 44 to engage a slanted cam edge 47 formed on the sweep arm so that when the operating lever is depressed the sweep will be pushed downwardly to dislodge an arrested coin and the gate 14 will be opened simultaneously to provide an exit for said coin, the coin dropping into the reject chute 20.

The construction and arrangement of parts just described, particularly the enlarged opening 16 and the combination keeper and gate restoring means 35, as well as the sweep 37 and operating means 41—43—45—46—47 which is arranged to effect simultaneous operation of the sweep and gate, all constitute improvements particularly described and claimed in our copending application Serial No. 266,582, on which Patent No. 2,226,873 has issued, a variation of the enlarged entrance means 16 being described and claimed in our copending application Serial No. 250,679.

The particular improvements of the present invention relate especially to the arrangement of the runway 25 with respect to the magnet poles 32—33 and other testing and selecting means now to be described.

The lower edge portion of the chute plate is open or unobstructed but is divided into two adjacent passage zones by a segregating member 50 having an inclined upper edge portion 51 which terminates at its upper inclined end in a coin engaging point 52. The member 50 is spaced between the opposite vertical edge portions 11 of the chute to define an acceptance passage 53 and a reject passage 54. A rebound anvil 55 such as described and claimed in our copending application, Serial No. 212,891 on which Patent No. 2,159,117 has issued, is positioned in spaced relation to the separating means 50 in the direction of descent of coin elements on the runway 25, the arrangement being such that certain coins, namely legitimate five-cent pieces (U. S. coin) will follow substantially the trajectory indicated at A in Fig. 3, this coin overreaching the end 26 of the runway and descending more or less directly against the angled contact face 56 of the anvil to rebound and jump over the reject opening 54 and the selective segregator 50 into the acceptance passage 53. Certain other spurious coin elements or tokens will move more or less directly into the reject opening 54 either due to the angle of departure from the end of the runway 26 or failure to rebound adequately from the anvil 55, or due to improper engagement with certain other testing means hereinafter described. It may be remarked, however, that some coin elements rebounding from the anvil may strike the point 52 of the segregator at a certain angle and be deflected back into the opening 54 or if the coin be of an acceptable nature (e. g. a worn coin), it may engage the point 52 and/or the inclined edge 51 in a manner to be deflected into the acceptance opening 53.

Certain coin elements are prevented from dropping directly off the end 26 of the runway toward the acceptance opening by an adjustable deflector 60 which is mounted on the outside of the gate 14 by adjusting screw means 61 and which has an offset end portion 60*a* projecting through a slot 62 on the gate into obstructing position across the passage beneath the end 26 of the runway in a position such that light-weight coin elements will engage the blocking portion 60*a* and be deflected for movement toward the anvil or directly into the reject passage 54.

Means for selectively influencing the trajectory of certain other legitimate coin elements, namely ten and twenty-five cent pieces, includes an adjustable deflector 65 mounted on the outside of the main plate 10 in a manner similar to the deflector 60, the deflector 65 having an offset coin engaging part 65*a* which projects through a slot 66 in plate 10 across the passage in the region below the deflector 60*a* and at a point substantially above the center of the reject passage 54, the deflector portion 65*a* being beveled as at 65*b* so as to provide a slanted edge directed downwardly toward the acceptance opening 53.

The arrangement of the magnet with respect to the end 26 of the runway is such that ten and twenty-five cent pieces will respectively and substantially follow the trajectories B and C and engage the deflecting portions 65*a* of the second adjustable deflector substantially in the manner illustrated in Fig. 3 so that they will be deflected more or less directly into the acceptance passage 53, the segregating means 50—51—52 acting to direct legitimate coin elements into the acceptance passage where such elements deviate slightly from the normal trajectory, as in the case of worn coins, substantially in the manner described following the movement of the five-cent piece through the chute.

It will thus be apparent that the invention provides a simple testing means of the gravity type which is capable of selectively accepting legitimate five, ten and twenty-five cent pieces and directing movement of the same into a common acceptance opening, and rejecting spurious and other unacceptable coin elements into a common reject passage. The advantages of such an arrangement are for the most part obvious and relate particularly to the compactness, simplicity and effectiveness of a device made in accordance with the present disclosure, these advantages flowing particularly from the aforesaid arrangement of the runway 25—26, the magnet 30 and the deflecting and testing means 50—55—60*a*—65*a* substantially as set forth.

The objects and advantages of the invention may be realized in other forms of construction, arrangements and modes of operation of the parts specifically described for purposes of illustration, and the invention is not to be limited to such specific details except as may be provided in the appended claims.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In a coin chute, means providing a descending runway, means for maintaining a constant magnetic field across the lower end portion of said runway, means defining adjacent acceptance and reject openings in the region below said end of the runway and spaced apart in the direction of movement of coins down said runway, rebound testing means arranged at one side of one of said openings, constituting the reject opening and remote from the other said opening in the direction of movement of coins away from said end of the runway, and deflecting means

arranged in the region below said end of the runway out of the path of legitimate U. S. five-cent coins and above said acceptance and reject openings and rebound testing means for engagement by legitimate U. S. ten and twenty-five cent pieces in a manner to be deflected into said acceptance opening, the arrangement being such that legitimate U. S. five-cent pieces pass over said deflecting means and are deflected by said rebound testing means over said reject opening into said acceptance opening.

2. In a device of the class described, means providing a coin passage having an acceptance passage and a reject passage in its lower region, said passages opening vertically into the coin passage, means providing a descending runway above the opening into said acceptance passage, means providing a rebound anvil adjacent said reject passage and at a side thereof remote from said acceptance passage in the direction of movement of coin elements off the lower end of said runway, deflecting means arranged in said main passage in a predetermined position beneath the lower end of the runway and above the openings into the acceptance and reject passages, and means for providing a magnetic field across the lower end region of said runway for selectively influencing the departure of a legitimate U. S. five-cent coin piece from said end of the runway for movement above said deflecting means onto said anvil to rebound from the latter over the opening into the reject passage and into said acceptance passage, the arrangement of said magnetic field with respect to the runway and deflecting means further being such that legitimate U. S. ten and twenty-five cent coin pieces will depart from the lower end of the runway so as to strike said deflecting means with their respective centers of gravity disposed relative to said deflecting means to cause said coin pieces to be deflected into said acceptance passage.

3. In a device of the class described, means defining a descending coin passage having a coin entrance in its upper region and open in its bottom region, an impact type of coin segregator arranged at said open bottom region to divide the latter into two passage zones one of which constitutes an acceptance opening and the other of which constitutes a reject opening, a downwardly inclined runway having an upper portion situated below said coin entrance and a lower end terminating in said passage in vertically spaced relation substantially above said segregator, said runway and said acceptance and reject passages all being disposed within a plane such that the acceptance opening lies beneath the runway and the reject opening is spaced away from the acceptance opening in a direction away from said lower end of the runway, a rebound anvil positioned at the far side of said reject opening from said acceptance opening, means for maintaining a magnetic field across the lower end region of said runway, the arrangement being such that legitimate U. S. five-cent pieces will roll off said runway through said field and along a trajectory to strike said anvil to rebound from the latter over said reject opening and past said segregator into said acceptance opening, a dime and quarter deflector situated in said passage downwardly out of said trajectory above said reject opening in the region above said reject opening and spaced in a direction away from said lower end of the runway and said segregator toward said anvil in a position to be struck by legitimate U. S. ten and twenty-five cent pieces following predetermined corresponding trajectories from said end of the runway below said first-mentioned trajectory in such manner that respective centers of gravity of said ten and twenty-five cent pieces will lie at one side of said deflector toward said acceptance opening whereby to cause said legitimate U. S. ten and twenty-five cent pieces to be deflected toward and into said acceptance opening, said magnetic field being arranged with respect to said lower end of the runway so as to cause legitimate ten and twenty-five cent pieces to follow the aforesaid certain corresponding trajectories, and deflecting means situated in said passage in the region below said lower end of the runway but above said dime and quarter deflector and at a side thereof toward said acceptance opening and runway.

WILLIAM PATZER.
WALTER A. TRATSCH.