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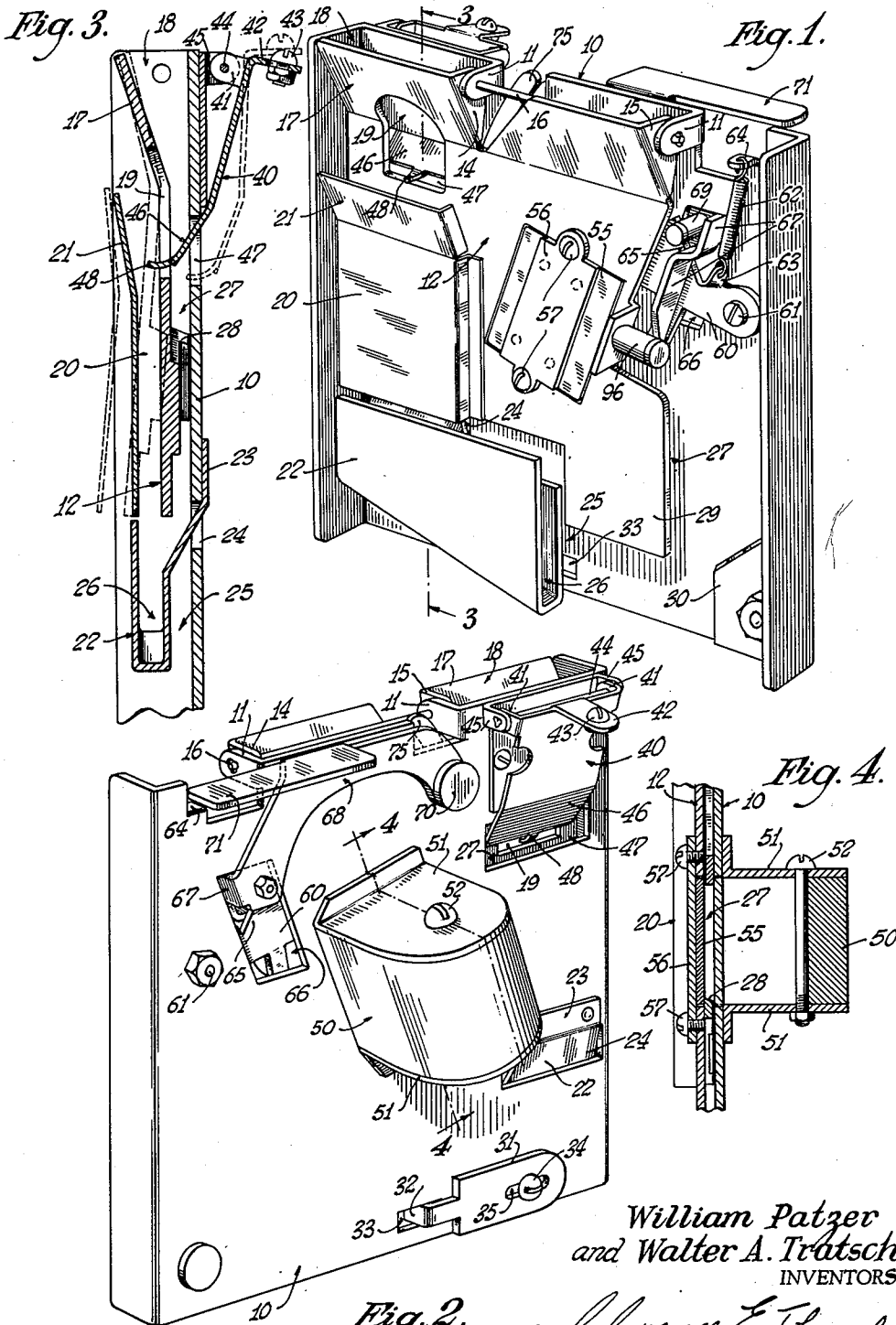
W. PATZER ET AL

2,226,873

COIN CHUTE

Filed April 7, 1939

2 Sheets-Sheet 1



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Fig. 2. BY *Clarence E. Thedy*
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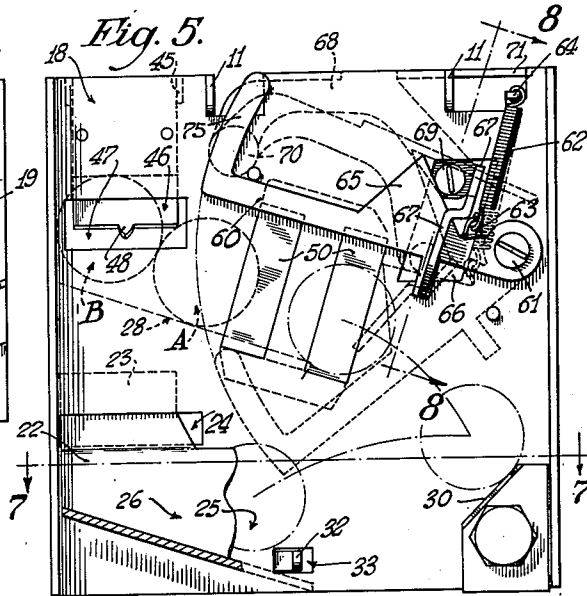
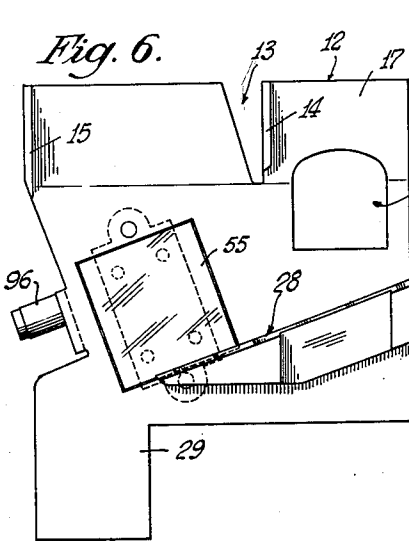
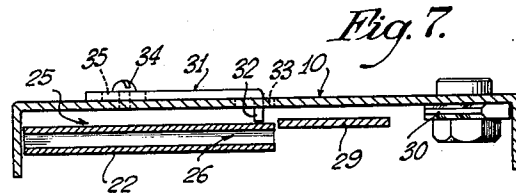
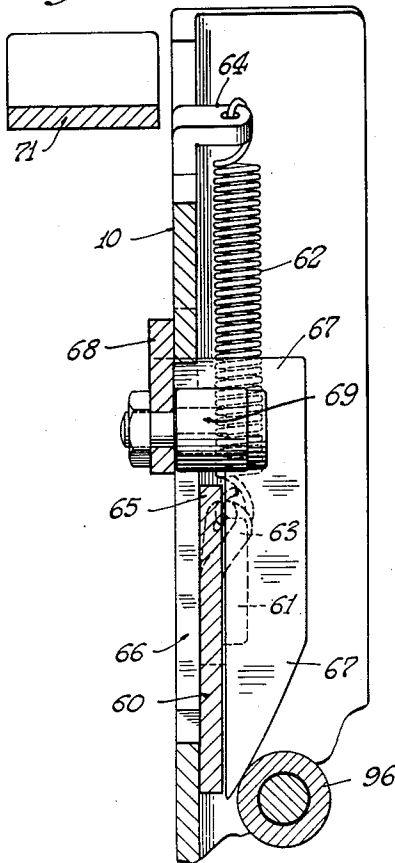


Fig. 8.



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UNITED STATES PATENT OFFICE

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COIN CHUTE

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Application April 7, 1939, Serial No. 266,582

4 Claims. (Cl. 194—101)

This invention relates to coin testing mechanism and has as its principal object the provision of improved ejecting and scavenging or clearing means for use in a gravity type chute.

More specifically, it is an object of the invention to provide a chute with a side opening discharge gate, testing means arranged near the gate to arrest certain coin elements, and ejecting means in the form of a sweep arranged for coaction with the gate to engage and dislodge arrested coin elements and effect movement of the same out of the chute when the gate is opened.

Another object is the provision of a gate having offset formations cooperable with other parts of the chute to provide a scuttle or funnel-shaped coin entrance to prevent jamming, the gate having a drop-out opening near the coin entrance, and improved feeler means arranged in a particular manner with respect to the drop-out opening and coin entrance.

Another object is the provision of a combination magnetic testing means and gate closing means.

Still another object is an improved sweep arranged for coaction with the gate to dislodge coin elements arrested by the magnetic testing means, the sweep being of a particular form which is effective to prevent movement of coins other than the dislodged coin element down the chute or toward the magnetic testing means so that the chute cannot be deliberately jammed, and all coin elements behind the one arrested will be discharged from the chute.

Yet another object is a simplified mounting means for a discharge chute arranged also to define a portion of an acceptance passage in the chute.

Other objects, advantages and economies residing in the invention pertain to certain details of construction, arrangement and operation of the parts described hereinafter in the specification of the preferred embodiment, and in view of the annexed drawings in which:

Fig. 1 is a perspective view of the gate side of the chute;

Fig. 2 is a perspective view of the opposite side of the chute shown in Fig. 1;

Fig. 3 is an enlarged fragmentary section along line 3—3 of Fig. 1;

Fig. 4 is a fragmentary section through the region of the magnet along line 4—4 of Fig. 2;

Fig. 5 is an elevation inside of the main chute plate;

Fig. 6 is an elevation of the inside of the gate;

Fig. 7 is a horizontal section along the line 7—7 of Fig. 5; and

Fig. 8 is an enlarged section through the sweep mechanism looking in the direction of line 8—8 of Fig. 5.

In the illustrative embodiment of Fig. 1, the chute includes a main mounting plate 10 having laterally offset ears 11 along its upper edge which constitute mounting lugs for a discharge gate 12. This gate is made from a metal plate (Fig. 6) having a somewhat V-shaped slot 13 cut in its upper edge with an edge portion of the slot offset laterally to provide a mounting ear 14. The upper edge portion of the gate plate is offset along a horizontal line between its vertical edges, and the right-hand (Fig. 1) extremity of this offsetting is further offset laterally to provide another mounting ear 15. A pintle rod 16 is passed through the ears 14 and 15 on the gate and the ears 11 on the chute plate to suspend the gate for movement toward and away from the plate about a horizontal axis extending parallel with the plane of the main plate, and the gate tends to hang in a lowered position in spaced relation with the inner surface of the main plate 10 to define a chute passage.

The left-hand offset 17 adjoining the ear 14 on the gate, serves, in conjunction with the opposite portion of the mounting plate to define a funnel or scoop-shaped coin entrance 18, the objects and advantages of which will be mentioned hereinafter. A portion of the gate in and immediately below the offset 17 is punched out to provide a drop-out opening 19. A discharge chute in the form of a channel-shaped plate 20 open at its upper and lower ends is secured to the side of the gate and has an offset upper edge portion 21 constituting a discharge apron disposed immediately below the drop-out opening 19; coin elements from the latter opening are guided through the chute 20 out the lower end of the latter and into a downwardly inclined chute section 22.

The chute section 22 is formed by bending a plate back upon itself to form a channel of the shape illustrated in Figs. 1 and 3, one side 23 of the channel-forming plate being offset and passed through an opening 24 in the main plate to be secured to the outside of the latter by welding or other suitable means, so that the chute section 22 is spaced from the inside of the main plate to define, in conjunction with the latter, an acceptance passage 25 adjacent the lower reject passage 26 defined by the section 22. The main coin passage 27 is defined

between the inner faces of the gate 12 and the main chute plate 10, this main passage extending from the flared entrance mouth 18 downwardly between the gate and mounting plate 5 along an inclined runway ledge 28 (Figs. 3, 4, 6) arranged on the inner side of the gate and terminating as seen in Fig. 6 adjacent the juncture of a tail 29 on the gate and opposite and above a rebound anvil 30 (Fig. 1). Coin elements descending in the main passage, after leaving the end of the runway 28, strike the anvil and rebound for movement between the tail 29 and the inside of the main plate 10 into the acceptance passage 25 defined between the innermost face 15 of the chute section 22 and the inside of the mounting plate 10.

An adjustable segregating device is provided in the form of a member 31 (Figs. 2 and 5) having an offset lug portion 32 projected through a horizontally elongated slot 33 near the bottom edge of the main plate in the acceptance passage 25.

The member 31 is supported for horizontally adjustable movement by a screw 34 threaded into the main plate through an elongated slot 35 in the member 31. The offset lug portion 32 of the segregator is adjusted to lie in a particular position in the path of coin elements rebounding from the anvil 30 toward the acceptance passage 25, 30 coin elements of predetermined physical characteristics clearing the obstruction or lug 32 for movement into the acceptance passage and into a suitable collecting receptacle therebelow. Coin elements which do not rebound in the required manner strike the obstruction 32 and fall back toward the anvil in the region opposite the lowermost extremity of the reject passage 26 for return to the depositor.

One of the features of the invention is the improved testing means in the form of a feeler 40 which is made from a strip of metal having offset mounting ears 41 and an oppositely offset lug 42, adapted to mount an adjusting screw 43, arranged near its upper edge. The feeler is 45 mounted on a pintle rod 44 extended through the ears 41 and ears 45 on a mounting bracket screwed to the outside of the plate. The lowermost edge portion of the feeler is bent or offset to provide a deflector portion 46 which projects through an opening 47 in the main mounting plate 10 substantially opposite the drop-out opening 19 in the gate, the counterweight screw 43 in fact being adjusted so that the lower edge of the deflector portion 46 will bear against the gate at the drop-out opening and thus form a movable obstruction across the entrance zone to the main passage. A point 48 projects from the lower edge of the deflector portion 46 and extends through the drop-out opening 19 for engagement in apertured coin elements to arrest the same.

Additional testing means includes a permanent magnet 50 (Fig. 2) mounted on the outside of the main plate by brackets 51 secured at their offset end portions to the latter and clampingly engaging the magnet by a brass screw 52 (Fig. 4) passing therethrough and through the bight portion of the magnet, the latter being of the conventional horseshoe type. It will be observed 70 that the brackets 51 close the magnet off at all points and prevent dust and magnetically attractable particles from working toward the polar extremities of the magnet from the outside of the chute.

The poles of the magnet 50 are situated about

halfway down the main chute passage between the entrance 18 and the anvil 30 and maintain a constant flux across the passage for the purpose of selectively influencing the movement of coin elements toward the anvil so that acceptable coin elements will ultimately strike the anvil at a certain velocity.

Another feature of the invention is the provision of a combined keeper and gate closing means for the magnet and which includes a magnetically attractable member or block 55 (Figs. 1, 4, 6) secured by spot welding or other means to a mounting strap 56 attached by screws 57 on the outside of the gate, the block 55 resting in an opening cut in the gate so that the inner surface of the block is substantially flush with the inner surface of the gate, the block being positioned exactly opposite the pole pieces of the magnet 50 so that the field of force extending from the pole pieces is caused to be directed in greater concentration across the passage and through the block 55. This block constitutes a keeper for the magnet which prolongs its life and, in addition to this function and its effect in concentrating the field, it provides an automatic closing means for the gate, since the block is obviously attracted by the magnet so that the gate is normally but yieldingly urged into closed position.

Means for simultaneously opening the gate 30 and dislodging magnetically attractable coin elements arrested by the magnet 50, includes the provision of an elongated sweep arm 60 (Fig. 5) pivotally mounted as at 61 on the inner side of the main plate above the anvil and having an opposite end portion adapted to sweep downwardly past the pole pieces of the magnet 50 to engage and dislodge an arrested coin element from the influence of the latter. A spring 62 engaged at one end with an ear 63 on the sweep 40 and at its opposite end with a lug 64 on the chute, normally raises the sweep out of the path of coin elements as seen in Fig. 5.

The sweep has an angular projection 65 constituting a cam which is positioned opposite an opening 66 (Figs. 1, 2, 5, 8) cut in the main plate and through which opening extends an arm 67 from an operating lever 68. A roller 69 projects through the opening 66 and engages the cam portion 65 of the sweep, and the offset portion 67 50 of the operating arm is provided with an angled edge which engages a roller 96 projecting from the gate. The operating arm 68 is pivoted as at 70 (Fig. 2) on the outside of the chute and has an offset flange 71 which may be engaged by the hand or other actuating means to depress the lever and cause the roller 69 to bear against the cam formation on the sweep and pivot the latter downwardly in sweeping action. At the same time the offset 67 engages the roller 96 on the gate and pivots the latter to open position. Thus, the sweep and gate are actuated simultaneously. When effort is removed from the lever 68, the same will be restored to its normally raised position by action of the spring 62 in its effort to raise the sweep to normal position. And the coaction of the magnet 50 and keeper 55 will positively restore the gate to normally closed position.

In the operation of the device, coin elements 70 are deposited into the scoop-shaped entrance opening 18 and strike the deflecting portion 46 of the feeler. If the coin element is of light weight or undersized in diameter, it will immediately pass out through the drop-out opening 19 75

due to the inclination of the deflector 46, otherwise such coin element thereafter will pass through the reject chute 20—22 for return to the depositor, or be sustained by the feeler until the gate is opened.

If the coin element is of proper weight and size, the feeler 40 will be pivoted out of the way to permit the coin to move into the main passage, provided the coin is not apertured. If the coin is apertured, the point 48 will engage in the apertured portion thereof and arrest the coin.

Assuming the coin succeeds in passing the feeler 40, it will move down the runway 28 into the field of the magnet 50 and be arrested by the latter if the coin element is magnetically attractable, otherwise it will continue down the passage off the end of the runway 28 and toward the anvil 30. If the coin is underweight or if its metallic composition is not that required, the coin will drop more or less directly off the end of the runway in the direction of the tracer arrow of Fig. 5. If the coin is of the acceptable variety, it will strike the anvil and rebound therefrom toward and over the segregating member 32 and into the acceptance passage 25.

The advantage of the funnel or scoop-shaped entrance formation 17 on the gate, resides in the fact that it prevents jamming by deposit of a plurality of coins in quick succession whether the coins are legitimate or spurious, it being possible in either case to cause coin elements to collect at the entrance region, one such method being to deposit a magnetically attractable coin element first, with the knowledge that it will be arrested by the magnet 50, and thereafter a plurality of other spurious coin elements may be deposited in quick succession to pile up behind the first one. In chutes not provided with the enlarged entrance formation 17, the foregoing method would be successful either in jamming the chute or putting it out of commission or, when a scavenging or clearing mechanism was operated, the first one or two coins might be discharged but one or more of the succeeding coins would be enabled by the congestion to continue down the passage. The advantages and construction of the enlarged entrance scoop are described and claimed in our copending application, Serial No. 250,679, filed January 13, 1939.

The present arrangement of the enlarged entrance structure includes an improvement over the disclosure of the aforementioned application in the form of the drop-out opening 19 and, in addition, the coating feeler 40, for it is impossible to cause certain undersized coin elements to collect in the enlarged entrance 18 by depositing the same in quick succession, since such elements will pass through the opening 19 as rapidly as they are deposited, the deflector portion 46 assuring positive action in this respect. When the gate is opened, any collection of coins in the enlarged entrance region 18 will tend to move more or less in unison into the chute section 22 as soon as the gate opens far enough to withdraw the ledge 28 from supporting position.

The sweep begins its dislodging movement at the time the gate starts to open, and the coin arrested by the magnet 50, as well as any additional coins lined up behind the first coin, all move downwardly, the arrested coin being moved as a result of the downward movement of the sweep, and the succeeding coins being freed to move as a result of the opening of the gate.

This is an advantage over an arrangement wherein the sweep and gate operate successively,

for the reason that in the latter arrangement rapid but incomplete opening motions of the gate in quick succession may enable one or more coins of a bunch to be worked past the first arrested coin without the sweep ever moving far enough to dislodge said first coin. If such fraudulent manipulation of the gate does not succeed in working one of the following coins past the first coin, it may, nevertheless, succeed in jamming the chute by causing a second magnetically attractable coin to be worked in position alongside the first so that the sweep will subsequently engage only one of the two coins attracted by the magnet and the sweep may become jammed by the remaining attracted coin when the gate is subsequently closed.

Another feature of the invention in connection with the sweep resides in the provision of an offset blocking arm 75 (Fig. 5) at the free end of the sweep. Assuming that two coins A and B, both magnetically attractable, are arrested in the positions shown in Fig. 5, the second coin B will be prevented from movement by attraction toward the magnet 50 when the coin A is swept downwardly by the sweep 60 as a result of the positioning of the arm 75 in blocking position in the path of the coin B. Otherwise, if it were not for the provision of the blocking means 75, the second coin B could be attracted in behind the upper edge of the sweep arm 60 when the latter had been fully lowered so as to block movement of the sweep back to normal position, thus jamming the chute.

The objects and advantages of the invention may be realized in other forms of construction, and the arrangement described specifically for purposes of illustration is not to be considered a limitation, it being the intention that the invention should be broadly interpreted in accordance with 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 chute passage having a movable side wall section constituting a discharge gate which is normally closed and which may be opened to provide a discharge exit, magnetic testing means arranged near said gate to arrest magnetically attractable coin elements, and means including a sweep arranged for movement from a normal position past said magnetic testing means to dislodge arrested coin elements and move the same in the general direction of said exit, and operating mechanism for moving said sweep in dislodging action and opening said gate simultaneously, and blocking means coacting with said sweep to block passage of coin elements toward said testing means when the sweep has been moved a predetermined amount away from said normal position.

2. In a coin chute, a coin passage having a discharge exit between its ends, a gate arranged normally to close said exit, magnetic testing means arranged opposite said gate to arrest magnetically attractable coin elements, a sweep arranged for pivotal movement from a normal position into said passage to engage an arrested coin element and move said element out of its condition of arrest by said testing means, means yieldingly urging said sweep into normal position, operating mechanism for moving said gate and sweep simultaneously from their respective normal positions, whereby the gate may begin its

opening movement and the sweep may begin its dislodging operation at the same time.

3. In a coin chute, a coin passage having a discharge exit between its ends, a gate arranged normally to close said exit, magnetic testing means arranged opposite said gate to arrest magnetically attractable coin elements, a sweep arranged for pivotal movement from a normal position into said passage to engage an arrested coin element and move said element out of its condition of arrest by said testing means, means yieldingly urging said sweep into normal position, operating mechanism for moving said gate and sweep simultaneously from their respective normal positions, whereby the gate may begin its opening movement and the sweep may begin its dislodging operation at the same time, said sweep having a lateral blocking arm disposed in said passage to block movement of coin elements toward said testing means when the sweep has been moved a predetermined amount away from said normal position.

4. In a coin chute including a descending coin passage having an entrance in its upper region, a discharge exit below the entrance, and magnetic testing means between said entrance and exit and adapted to arrest magnetically attractable coin elements, the combination of scavenging means in the form of a sweep arm pivoted to move within the plane of said passage in parallelism therewith from a normally raised unobstructing position in a direction downwardly past said testing means to engage and move arrested coin elements in a direction generally downward of the passage and out of the influence of said testing means for purposes of ejection from the chute, said arm having an upwardly offset portion adjacent an end nearest said entrance and serving to block movement of coin elements from said entrance toward said testing means during movement of said sweep from said normal position.

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