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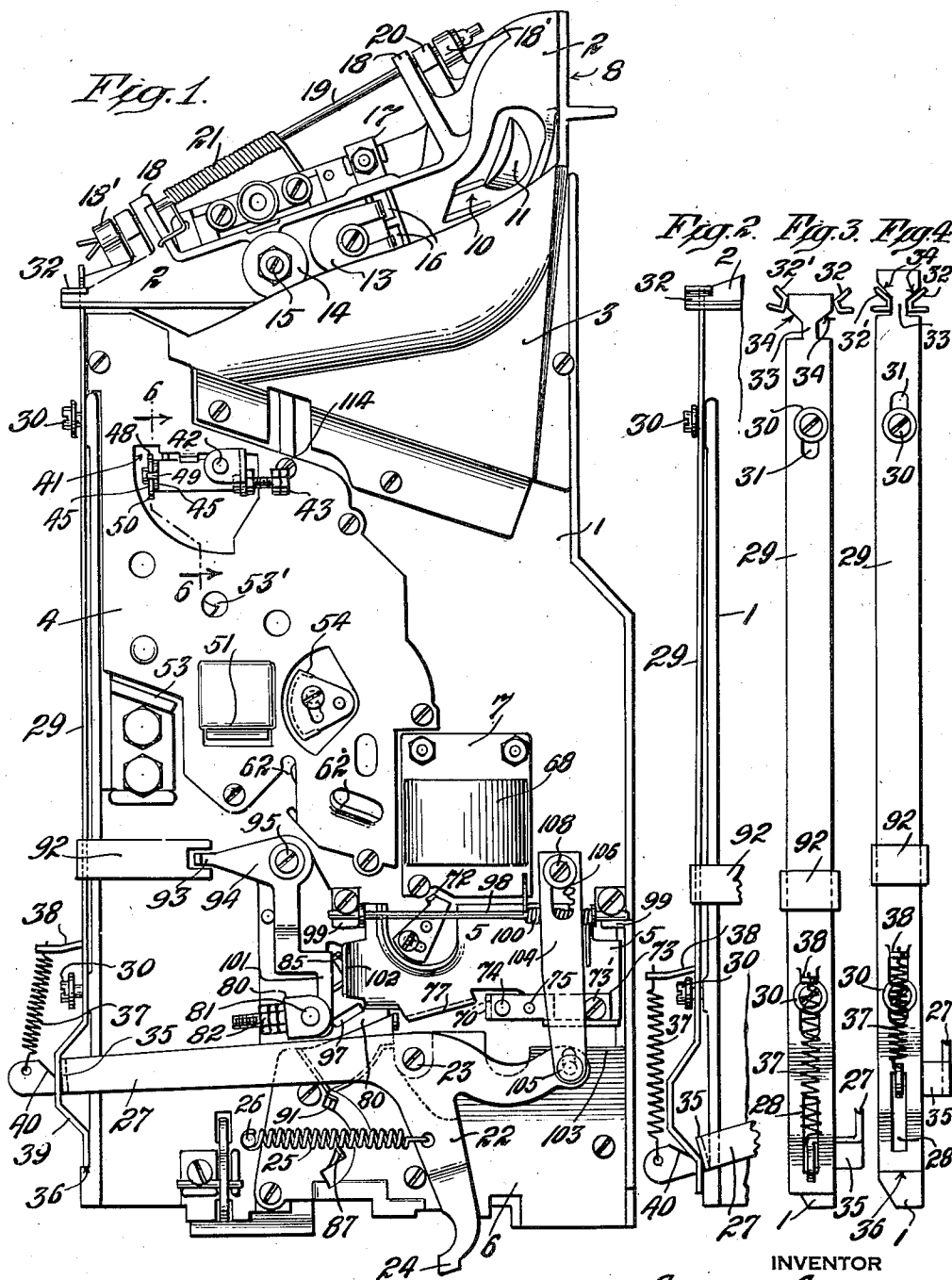
C. GABRIELSEN

2,305,860

COIN SELECTOR

Original Filed July 25, 1939

2 Sheets-Sheet 1



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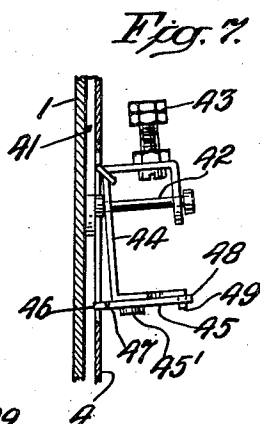
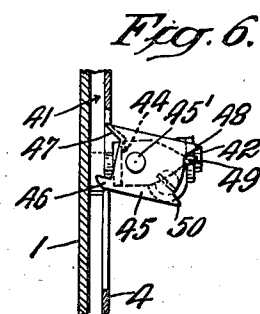
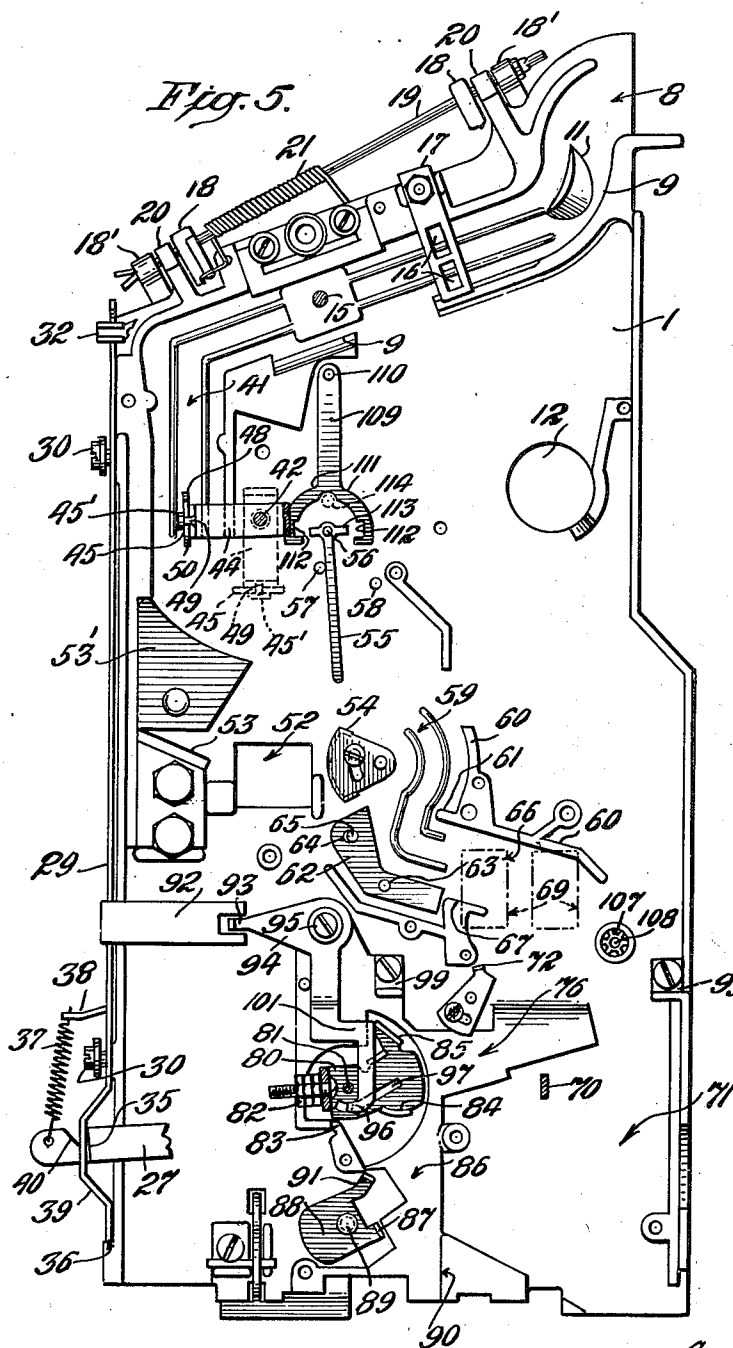
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UNITED STATES PATENT OFFICE

2,305,860

COIN SELECTOR

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Original application July 25, 1939, Serial No
286,302. Divided and this application June 7,
1940, Serial No. 339,340

2 Claims. (Cl. 194—97)

This invention relates to improvements in coin selectors or devices for detecting and rejecting spurious coins or checks.

The present application is a division of my application Serial No. 286,302, filed July 25, 1939, for Coin selector and which is directed to the means disclosed for stripping the coin selector of coins retained therein.

It is an object of the invention to provide improved means for rejecting and disposing of washers and the like. Still another object of the invention is to provide improved means for separating the coins and checks from one another according to characteristics to be measured and for directing them into appropriate channels.

With the foregoing and other objects which will appear in the following description in mind, the invention consists in the combinations, arrangements and details of parts which will now first be described in connection with the accompanying drawings and then more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a side elevation of a coin selector embodying the invention;

Fig. 2 is a fragmentary view similar to Fig. 1 and showing the operation of part of the stripping mechanism;

Figs. 3 and 4 are edge elevations of the device of Fig. 1 still further illustrating the operation of the stripping mechanism;

Fig. 5 is a view similar to Fig. 1 but with certain parts removed to show internal features;

Fig. 6 is a view along the line 6—6 of Fig. 1 and showing the washer handling mechanism; and

Fig. 7 is a view similar to Fig. 6 but showing the parts in another position.

Referring particularly to Fig. 1, the device is generally of the known type in which coin selecting means for coins of different denominations are positioned on the two sides of a central supporting plate 1. This figure shows the dime selecting side of the device, it being understood that nickel selecting mechanism may occupy the opposite side (not shown) as in machines already known, or that the device may be employed for selecting checks, coins of other denominations or coins of other systems of coinage.

The various coin passages are formed by the plate 1 together with guides formed on or attached to it and by various plates 2, 3, 4, 5 and 6 and a magnet 7 all to be described later in more detail.

The upper portion of the machine comprises

a scavenger for diverting or holding spurious coins and checks of certain types, best shown in Figs. 1 and 5. A coin inserted at 8 rolls down an inclined chute between plate 1 and plate 2 upon curved guides or ribs 9. Plate 2 is formed with an opening 10 opposite which is a bulge 11 in plate 1 which deflects any coins inserted toward plate 2 so that undersized coins all pass through the opening 10, falling into a hopper formed by plate 3 and being directed thereby into an opening 12 communicating with a rejection chute (not shown) on the other side of plate 1. Fastened to plate 2 is a magnet 13 for stopping iron or other strongly magnetic coins and a thickness gauge 14 adjustable by means of screws 15 for stopping coins of too great thickness. The pole pieces of magnet 13 are positioned in openings 16 in a strip 17 attached to plate 1 and thus hold magnetic coins against, or immediately adjacent to, this strip. Plate 2, by means of arms 18 formed thereon, is swingably mounted on a shaft 19 supported at 20 upon plate 1 and a corresponding plate (not shown) at the other side of the device is similarly journaled by means of arms 18', both of these plates being held against plate 1 by a spring 21. This construction, insofar as it provides for a scavenger with a pair of hinged plates at the top of the machine, is generally similar to the scavenger of Gilchrist Patent No. 1,947,767 and it will be understood that opening the plates about their pivot against spring 21 will release thick coins from thickness gauge 14 and magnetic coins from magnet 13 permitting these coins to drop into the hopper provided by plate 3 and so to pass through opening 12 for return to the customer. New and improved stripping mechanism, however, for so operating these plates as well as for stripping coins from other parts of the machine is provided and forms an important feature of the present invention.

As best shown in Fig. 1, a bell crank lever 22 pivoted to plate 1 at 23 is provided, the lower end of this lever 24 extending below the device for operation by a plunger as usual and the lever being biased toward the position of Fig. 1 by a spring 25 attached to plate 1 at 26. Another arm 27 of bell crank 22 projects through a slot 28 in a link 29 slidably mounted on plate 1 by studs 30 passing through slots 31 in this link. Spring 25 through lever 22 will normally press link 29 upward against one of the studs 30 to the position of Figs. 1 and 4. As best shown in Figs. 1 to 4, the plate 2 is provided with a projection 32 having a beveled upper surface (the

corresponding plate on the opposite side of the device having a similar projection 32'). Link 29 is formed near its top with a narrow neck 33 and a pair of upward bevels 34 for engaging these projections 32 and 32', a movement of the link from the position of Fig. 4 to that of Fig. 3 serving to open plates 2 and strip the scavenger of any coins therein. The lower end of link 29 is bent outward and back to accommodate an offset shoulder 35 in the arm 27 of bell crank 22 and the extreme lowermost end of link 29 rests against an abutment or stop 36 formed on plate 1. The arm 27 is connected to link 29 by a spring 37 and bracket 38 so that rotation of the bell crank 22 will first tension spring 37, pressing link 29 against stop 36, and further rotation will bring the offset shoulder 35 upon arm 27 against slanting surface 39 of link 29, pushing this link outwardly, as shown in Fig. 2, and permitting spring 37 to snap link 29 downward, thus quickly separating plates 2 from plate 1 through the bevels 34 and projections 32 and 32' previously described. In order to retain the link 29 against plate 1 in the position of rest, the upper part of the end of arm 27 is provided with a notch 40, the beveled side of this notch pressing inwardly against the upper edge of slot 28.

The quick action stripping mechanism of the present invention, just described, prevents defrauding of the machine by operating the stripping mechanism slowly with a view to permitting improper coins to pass the various devices provided to retain them in the machine without directing them into the rejection passages provided to receive them, so that they may enter the passages provided for proper coins. In the present invention the stripping mechanism already described, as well as other stripping devices described below, is operated with a definite speed sufficient to insure rejection of spurious coins retained in the machine, and this speed of operation is substantially independent of the speed with which any plungers, or other mechanism which may be provided for manual operation of the stripping mechanism, may be operated by a purchaser.

Another important feature of the present invention is the provision of washer rejecting means which, instead of catching and holding washers in the machine until stripping means is operated by the pulling of a plunger provided for that purpose, direct a washer into a rejection chute and thus out of the coin selector. This is accomplished with certainty and simplicity and its advantage will be apparent in that such washers as may be inserted into the coin selector do not clog the machine against passage therethrough of proper coins. The washer rejection is accomplished in the following manner.

Coins passing the scavenger fall into a passage 41 between plate 1 and plate 4 (see Figs. 1 and 5), there encountering a washer balance pivotally mounted on a shaft 42 and biased upwardly by adjustable weights 43. This balance comprises a body portion 44 on one end of which is pivoted at 45' a member 45, having a toe 46 and a washer prong 47. The member 45 is normally biased by its own weight toward the position of Fig. 6 (solid lines in Fig. 5), being stopped in this position by projection 48 coming against a stop 49 upon member 44. A washer or coin with a hole through the center will pass down passage 41 until it encounters toe 46 and will

thereupon rotate member 45 so that washer prong 47 enters the hole in the washer. The weight of a washer thus held on prong 47 will rotate member 44 about its pivot from the position of Fig. 6 to that of Fig. 7. As shown in Figs. 6 and 7, shaft 42 is slanted so that member 44 swings outward as well as downward, rotating in a plane diverging from that of passage 41. Member 45 when holding a washer is stopped from rotating beyond the desired limit by stop 49 engaging a projection 50, so that in the position of Fig. 7 a washer held upon prong 47 will be discharged from the washer balance and will fall downwardly against the curved surface 51 (Fig. 1) formed in plate 4 and thus be directed through opening 52 (Fig. 5) in plate 1, passing into a rejection chute (not shown) at the other side of plate 1. Coins other than washers will engage the toe 46 in their course down passage 41 and will rotate the washer balance 44 to a point where toe 46 is in line with the wall of passage 41 being there discharged and falling upon an anvil 53. Lead coins or other coins of insufficient elasticity will roll off anvil 53 or bounce slightly off this anvil falling to the left of separating point 54 and being discharged through opening 52 previously referred to. Coins of somewhat greater but insufficient elasticity or coins of insufficient weight will strike a stop 55 pivoted to plate 1 at 56 and swingable between pins 57 and 58, and will be turned back by stop 55, passing also to the left of separating point 54 and being rejected through opening 52. A coin of sufficient elasticity and weight will swing the stop 55 about its pivot and thus pass to the right of separating point 54 into passage 59 for further testing. As shown in Fig. 5, where it is not desired in a particular locality or under special circumstances to use the bounce test provided by anvil 53, a curve guide 53' may be inserted above the anvil to direct coins to stop 55, as described.

The upper part of passage 59 is formed by separating point 54 on the one side and a member 60 on the other, provided with a jog 61. The lower part of passage 59 is formed by a member 62 pivoted to plate 1 at 63 and having an oversized aperture 64 surrounding a pin 65 attached to plate 1 and being in consequence free to vibrate or oscillate slightly upon being struck by a coin. The jog 61 and member 62 accordingly serve to slow down the coin going through passage 59 and to dampen oscillation of this coin. Jog 61 and member 62 define a reverse bend in the passage 59 communicating with a passage 66 formed by the lower portion of guide 60 and a second guide 67. The walls of passage 66 are formed by plate 1 and the face of magnet 68 (Fig. 1) the position of whose pole pieces is indicated in phantom (Fig. 5) by the numerals 69, it being understood that the corresponding magnet (not shown) for the other side of plate 1 may advantageously be positioned directly opposite so as to increase the strength of the magnetic field through which passage 66 directs the coins.

In accordance with well understood principles, a coin in its course through passage 66 will have eddy currents set up in it varying in strength with its conductivity, and will be slowed in its passage through the magnetic field to an extent depending upon its conductivity in conjunction with its weight. Highly conductive coins such as those made of copper, silver and aluminum

tend to be slowed down considerably, while coins made of materials of higher resistance will be slowed down to a less extent. Also heavier coins will be slowed down less than lighter ones, due to greater momentum. The magnetic field thus measures the conjunctive effect of the weight and conductivity of the coin. Such coins as are not sufficiently impeded by the magnetic field will pass therefrom with a relatively high trajectory going to the right of separating point 70 attached to plate 5 and passing into chute 71 for rejection. Also, coins which are slowed too much in passing through the magnetic field will strike separating point 72 and bounce over point 70, thus passing into passage 71 for rejection.

All coins of approximately proper conductivity and weight will pass from the magnetic field in a trajectory directed approximately toward the separating point 70, which is attached to plate 5 through a member 73 adjustably mounted on plate 5 by means of a screw 73'. Separating point 70 comprises a coin engaging portion disposed at right angles to plate 5 and an attaching portion lying along member 73, being pivotally carried thereon by pivot 74 and maintained in the position of Fig. 1 by a pin 75 upon member 73 passing through a loosely fitting aperture in the attaching portion of separating point 70. An unusually fine and reliable selection is provided by this loose mounting of point 70 previously referred to. By reason of the loose mounting any tendency of a coin to rebound elastically from the separating point 70 is eliminated and the selection between coins in slightly different trajectories is not controlled by their direction of rebound but simply by whether they strike the separating point 70 with their centers of gravity to one side or the other. Thus improper coins will strike the separating point 70 with their centers of gravity to the right of this point (Fig. 1) and proper coins will strike the point with their centers of gravity to the left. As will be readily appreciated, the direction of rebound of a coin from any surface and more particularly from an edge such as a separating point depends not only upon its trajectory but also upon the shape of that portion of its circumference which hits the surface. Thus a coin in a given trajectory may rebound to the right or the left of a rigidly mounted separating point in accordance with the presence or absence of milling, nicks or other irregularities on its circumference at the point where it hits the separating point. In the present construction this accidental and undesirable feature is substantially eliminated as the coin will fall to the left or right of a loosely mounted separating point substantially without regard to the condition of its circumference at the point of contact.

Such coins as fall to the left of point 70 are received in a passage 76, supported by an inclined angle 77 formed on plate 5 and a portion of plate 1, as shown in Figs. 1 and 5.

Coins passing the previously-mentioned test and hence entering passage 76, roll down this passage into a balance 80 pivoted upon plate 1 at 81 and counter-balanced by adjustable weights 82 to the position of Fig. 5, being stopped in this position by its lower surface against the boss 83. The balance comprises a coin receiving portion 84 and a coin stopping portion 85. A coin of sufficient weight upon entering the balance will rest upon the coin holding portion 84 overbalancing the counter-balance 82 and rotating the balance downwardly, being discharged thereby into

passage 86. A coin of insufficient weight will fail to overbalance counter-weight 82 and will remain in the machine. In such position, however, the stopping portion 85 of balance 80 will stop passage 76 so that a coin therein rests upon angle 77 of plate 5 previously referred to. Coins of sufficient weight to tilt balance 80 and be discharged therefrom fall into passage 86 striking the lower point 87 of a member 88 pivoted to plate 1 at 89 and rotating this member so as to pass between it and boss 90 defining the lower part of passage 86. In case a machine to which the coin selector of the invention may be applied already has sufficient coins in its coin control mechanism so that a coin in the lower portion of passage 86 cannot proceed further, it will hold the member 88 in this rotated position bringing the upper point 91 of member 88 into position to block passage 86 and directing any coins entering this passage over the boss 90 and thus into passage 71 for rejection and return.

As will be recalled, certain coins may be retained by balance 80 or by plate 5 and means is provided for stripping such coins from the machine. As shown in Figs. 1 and 5, link 29 carries a fork 92 and this fork accommodates the end 93 of a bell crank 94 pivoted to plate 1 at 95, and the other end 96 of which enters a slot 97 in the balance 80. Slot 97 comprises a circular arc of sufficient length to accommodate the end 96 of the bell crank during the required movements of balance 80 and continues with a straight portion to accommodate this part during stripping. Downward movement of link 29 through the parts described will rotate bell crank 94, straightening balance 80 into the required position through slot 97 and ejecting any coin which may be therein. Due to the construction of the actuating mechanism for link 29, previously described, this motion will be sudden and of sufficient force to propel such a coin into passage 71 for rejection and return. Plate 5 is journaled on a shaft 98 mounted in projections from plate 1 at 99 and is biased toward plate 1 by a spring 100. A portion 101 of bell crank 94 is positioned under an outwardly flared end 102 of plate 5 and stripping motion of this bell crank thus cams or wedges plate 5 outwardly, freeing any coins which may be within it and also opening up an entirely clear passage for coins from the balance 80 into passage 71. Both passage 86 and associated structure as well as passage 71, previously referred to, are covered by the stationary plate 6, the upper part of which is flared outwardly as at 103 to catch coins directed into the latter passage.

The stripping mechanism provided is of great certainty, power and positiveness in action and may readily be used for both sides of the coin selector either by attaching forks similar to the fork 92 to the link 29 upon the other side of the machine, or by providing other forms of connection. Such connections may take the form of a link such as the link 104 (Fig. 1) connected to an arm of bell crank 22 as at 105 and formed with a rack 106 cooperating with a gear 107 (Figs. 1 and 5) mounted upon a shaft 108 and extending through plate 1 for operating similar stripping mechanism on the other side of the machine.

To prevent either failure to pass good coins or fraudulent operation through tipping of the machine, a very simple and effective device is provided, comprising a member 109 pivotally mounted on plate 1 at 110 (Fig. 5) just below the scavenger and formed with a pair of arms 111

having inwardly facing sockets 112. The stop 55 previously referred to may be formed with a T-shaped head 113. Tilting of the machine will then cause the member 109 to swing about its pivot 110 bringing one of the sockets 112 into a position where it surrounds one end of the T-shaped head of stop 55 thus preventing the stop 55 from swinging and directing all coins which pass the scavenger into rejection chute 52. In machines not apt to be tilted or where a machine must be used in locations where leveling is impractical, the member 109 may be rendered inoperative simply by inserting a screw 114 through plate 4 (dotted lines, Fig. 5).

What is claimed is:

1. In a coin selector, and in combination, a passage for solid coins, a substantially coplanar passage for washers branching therefrom, and a washer rejector comprising a member pivoted for rotation in a plane diverging downwardly from the plane of said passages, a projection upon said member extending into said passage and adapted for engagement by the edge of a

5 coin passing down said first passage to rotate said member to move said projection from said passage, and a washer-engaging prong movable by said projection to engage in the opening of a washer and by means of the weight of a washer so engaged to rotate said member to bring said prong and said washer into said second passage and to further rotate said member to bring said prong outside the plane thereof and leave said washer therein.

10 2. In a coin selector, and in combination, a passage for solid coins and a passage for washers branching therefrom, and a washer rejector pivotally mounted for rotation in a plane disposed at an angle to said passage, a projection upon said rejector extending into said passage for solid coins, adapted to engage a washer passing there-
15 through and to support the weight of said washer upon said rejector and thereby to rotate said rejector to carry said washer into the said passage for washers.

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