Nov. 26, 1940. W. A. TRATSCH 2,222,863

COIN SEPARATOR

Filed May 26, 1939

Fig. 2.

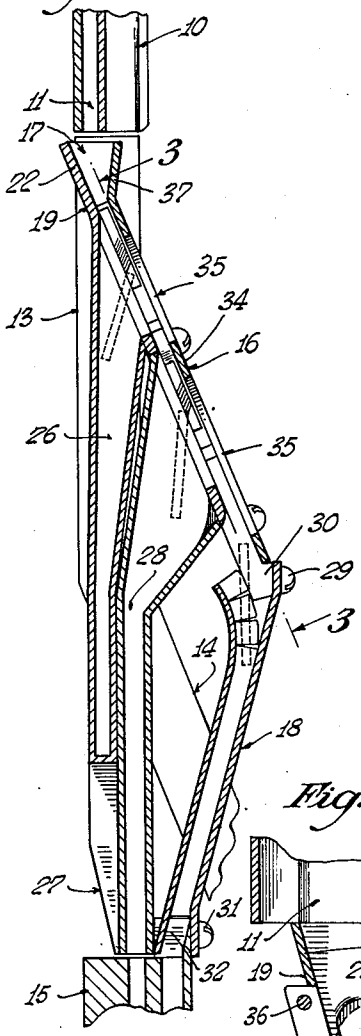


Fig. 1.

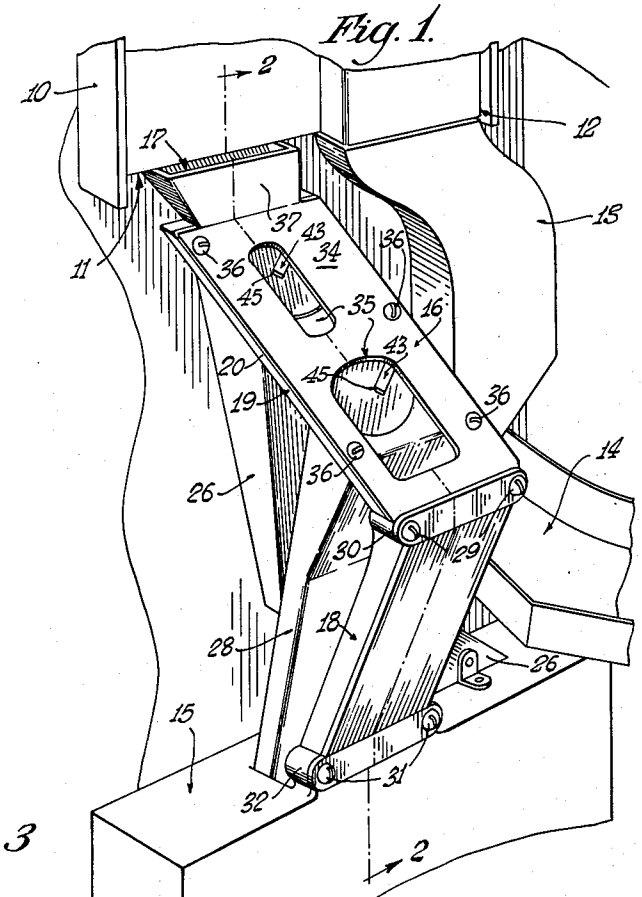


Fig. 3

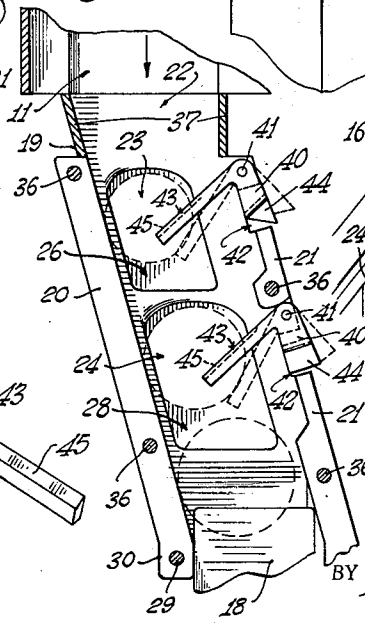


Fig. 4.

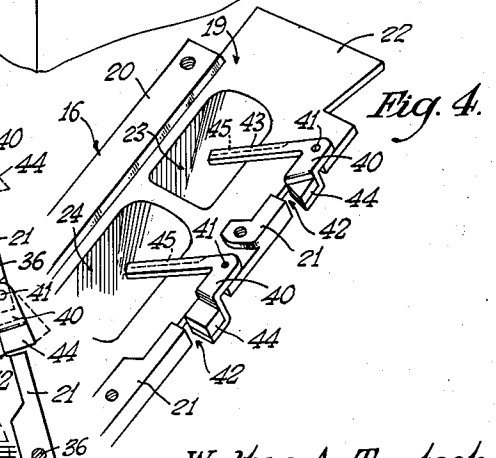
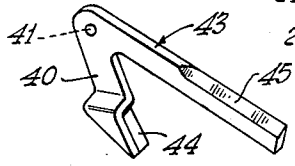


Fig. 5.



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COIN SEPARATOR

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4 Claims. (Cl. 133—3)

This invention relates to coin separating devices for use with coin chutes or coin-controlled apparatus. An important object of the invention is the provision of a separator having a single coin entrance for the reception of coin elements of a plurality of denominations, and means for separating said coin elements according to denomination and guiding the same into certain passages.

A further object is the provision of deflecting means arranged with respect to selective coin openings to deflect proper coin elements into the corresponding passage or to yield to permit coin elements of different denomination to continue movement toward other selective openings and deflectors.

Another object is the provision of a simple and inexpensively constructed coin separator especially suited for use with upright coin testing devices adapted to discharge coin elements from a lower region thereof into a coin receptacle disposed below the testing device and substantially in the same vertical plane as the testing device, whereby space may be conserved and effective separation of the different denominations of coin accomplished.

A further and more specific object is the provision of a coin separator which includes a downwardly inclined chute section having an entrance at its upper end adapted to underlie a coin testing device for reception of coins from the latter, the chute section having a discharge opening at its lower end and a plurality of exit openings of different width between its ends and through which coin elements of different diameter, corresponding to different denominations, may fall. The invention further provides for a plurality of downwardly inclined chute sections, one for each denomination of coin and communicating from the proper coin opening in the main chute so as to discharge all coins into a common receptacle.

A further object is the provision of gravity-operated deflecting levers in the main separating chute, there being one lever for each coin opening and each lever having an arm portion normally disposed across the chute passage to overlie a corresponding discharge opening, the overlying portions of the lever arms being beveled to assist in the deflection of coin elements of proper diameter into the corresponding discharge opening, coin elements having a diameter too large to permit passage through any given opening, pivoting the deflecting levers out of the way for continued movement until they reach an opening large enough for passage from the separating chute.

Other objects and advantages of the invention reside in certain details of construction, as well as the arrangement of parts of the preferred embodiment described hereinafter in view of the annexed drawing, in which:

Fig. 1 is a perspective view of the separator mounted for cooperation with a testing device and coin receptacle;

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

Fig. 3 is a section through the separating chute looking in the direction of line 3—3 of Fig 2;

Fig. 4 is a fragmentary top perspective view of the separating chute section with the cover plate removed;

Fig. 5 is a bottom perspective view of one of the deflecting dogs.

In Fig. 1, the separator is used in conjunction with a coin testing device 10 having an exit 11 in its lower region and through which accepted coin elements are ejected. To the right of the acceptance exit is a discharge exit 12 for slugs or imperfect coins. Aligned with the reject exit is a reject chute 13 terminating in an inclined apron 14 which directs coin elements not accepted back to the patron through a wall of the cabinet or other housing in which the apparatus is mounted.

Accepted coin elements from the exit 11 are ultimately directed into a receptacle 15 in which is situated control mechanism in the form of a plurality of switches (not seen) adapted to be actuated by coins of varying denomination to control some instrumentality, such as a vending mechanism or automatic phonograph mechanism, in accordance with the value of the coin deposited. If desired, however, the receptacle 15 may simply have a plurality of compartments in which the accepted coins are to be distributed in accordance with their respective values.

The invention is concerned particularly with the provision of means for separating the coins according to denomination and guiding the same into certain positions for operation of certain switches in the receptacle 15, or into separate compartments in such a receptacle.

The separating mechanism includes a downwardly inclined separating chute section 16 having an entrance opening 17 at its upper end and positioned beneath the acceptance exit 11 of the testing device. The lower end of the chute section 16 opens into an oppositely inclined chute

section 18 into which coins of the largest denomination, in this instance twenty-five cent pieces, are delivered. Coins of lesser denomination including five and ten cent pieces, are discharged from the section 16 into other downwardly inclined chutes leading from positions beneath discharge openings in the bottom of the section 16. All of the separating chutes ultimately lead into different parts of the receptacle 15.

As shown in Figs. 3 and 4, the separating chute section 16 consists of a bottom member or plate 19, which may be cast or stamped with opposite raised longitudinal flange portions 20 and 21. In other terms, the plate 19 is channeled in the direction of its length, and the bottom of the channel extends beyond the side flanges thereof at the upper end of the plate to provide a lip 22 which underlies the exit 11 from the testing device and cooperates with an offset part of the cover plate to define the entrance 17 to the separator chute.

Situated between the upper and lower ends of the channeled plate 19 are a plurality of separating openings 23 and 24, the former of which is of a width adequate to permit a coin having the diameter of a dime to drop through the bottom of the chute and into a downwardly directed delivery chute 26 which is angled as at 27 to enter the receptacle 15 at a side thereof to the right of the entrance of the remaining delivery chutes, including the section 18.

The opening 24 is of a width adequate to permit a coin having the diameter of a five cent piece to drop therethrough and into a middle delivery chute 28, the lower end of which enters the top of the receptacle 15 just behind the quarter delivery chute 18. The upper end portions of the several delivery chutes 26 and 28 are secured to the under side of the channel plate 19 by any convenient means such as spot welding, etc., while the upper end of the quarter chute 18 is attached to the lower end of the separator chute by means such as the screws 29 which are threaded into suitable bosses 30 at the lower end of the section 16. At its lower end the quarter chute 18 is secured by screws 31 threaded into bosses 32 on the top of the receptacle 15. Thus, the entire separator unit may be supported by the attachment of the quarter delivery chute 18 to the top of the receptacle. The lower ends of the nickel and dime chutes 26 and 28 may also afford support.

The channeled bottom plate 19 of the main separator section is closed by a cover plate 34 in which there may be sight openings 35 aligned with the intermediate coin separating openings 23 and 24, this plate being held in position by means such as the screws 36 threaded into the flange portions 20 and 21 of the bottom plate. The upper end of the cover plate has an offset extension 37 which cooperates with the lip 22 on the bottom plate to define the entrance scoop or mouth 17 receiving coins from the testing unit.

Means for effecting positive movement of proper coin elements through the several selector openings 23 and 24 includes the provision of levers or dogs 40, pivoted as at 41 in suitable notches or cut-out portions 42 in the flange formation 21 on the right side of the bottom plate 19. Each of the dogs has an arm 43 which is positioned by gravitation of a weighted lever portion 44 into the positions shown in Figs. 3 and 4, so that the several arms 43 are in a position to be engaged by the advancing edge parts of coins sliding along the bottom of the channel plate 19.

The separating chute section 16 is tilted in two directions, i. e. downwardly toward the length of the chute 18 and sideways so that the flange portion 20 is somewhat lower than the opposite side, so that the coins will lie face down and slide on the plate 19 with their rims rolling against the flange portion 20.

Each of the dogs 43 has a beveled edge portion 45 (Fig. 5) along that side thereof which is engaged by the coin in sliding down the chute. If the coin is of a size which will pass through the opening 23, for example, the edge portions of the coin nearest the corresponding dog will work beneath the beveled edge portion 45 thereof while at the same time slightly pivoting the dog, with the result that the edge portion of the coin nearest the dog, that is, opposite the flange 20, will be positively guided down into the opening 23, so that the coin gravitates free of the section 16, and in the case of a dime passing through the opening 23, moves into the corresponding delivery chute 26 for passage into the receptacle 15.

If the coin happens to be a five cent piece, it will pivot the upper dog 43 at opening 23 out of its way and continue toward the opening 24 to fall through the latter and into the delivery chute 28, the lower dog 43 cooperating to expedite the movement of the five cent piece through the opening 24, as described in connection with the operation of the upper dog.

A twenty-five cent piece will pivot both dogs 43 out of its way, and being of larger diameter, glides safely past both openings 23 and 24 for discharge into the delivery chute 18.

It is not intended that the invention should be limited to the precise arrangement described in detail in the foregoing specification, except as may be provided in the appended claims.

I claim:

1. In a device of the class described, a separating chute having a substantially flat bottom with a coin entrance at one end thereof, said chute being adapted for mounting with said entrance uppermost and to be inclined so that said bottom will be tilted to cause coin elements to move face down thereon from said entrance, a series of drop-out openings of increasing width being arranged along said bottom below said entrance so that coin elements moving down said bottom will pass through openings of appropriate width, and means for effecting positive movement of coin elements through appropriate discharge openings, said means including a dog pivoted at one side of each of said openings and yieldingly disposed in a normal position, each dog having an arm projected into a normal coin-engaging position over the corresponding opening for movement in a plane substantially parallel with said bottom into and out of normal position responsive to pivotal movement of the dog, each of said dogs being arranged to yield for movement out of normal position as aforesaid to permit passage of a coin element past the corresponding drop-out opening if said element is too large to drop through said opening, each of said arms on the dogs having a beveled edge portion disposed for engagement by the advance portions of coin elements moving toward said exit and pitched to deflect coin elements into the corresponding openings if said elements are of a diameter to pass through said openings.

2. In a coin separator, an elongated downwardly inclined separating chute having an entrance at its upper end and a substantially flat

bottom; said chute being disposed so that coin elements may slide face down on said bottom toward the lower parts thereof, said chute also being inclined so that one longitudinal side is lower than the other so that the rim portion of said coin elements will tend to bear or roll against said lower longitudinal side, said chute having a series of drop-out openings arranged along said bottom below said entrance, said drop-out openings being of relatively increasing width crosswise of the chute so that coin elements of different diameter moving down the chute will continue toward the lower end thereof unless they are of a diameter to pass through one of said drop-out openings, and deflecting means for each opening and including a dog mounted for pivotal movement in a plane parallel to the plane of said bottom and the corresponding opening and each situated at that side of the corresponding opening which is on a side of the chute opposite to said lower longitudinal side thereof, each dog being pivoted by gravity into a normal position and each having a coin engaging arm normally projecting over the corresponding drop-out opening for engagement with the leading edge portion of descending coin elements, each arm being adapted to be pushed out of the way of any such coin element which is of a diameter too large to pass through the corresponding opening, each of the arms having a beveled edge portion positioned for engagement by the leading edge portion of a descending coin in a manner to cause said coin to tend to work beneath the arm toward the corresponding drop-out opening for deflection through the latter provided such coin is of a diameter to permit movement through the opening.

3. In a coin segregator of the type including a downwardly inclined chute section having a bottom upon which coin elements slide face down toward a lower end of said section and a plurality of intermediate exits of different width and through which coin elements of corresponding or lesser width are adapted to pass in sliding down the chute section, the combination with said chute section and exits of means for effecting movement of proper coin elements into corresponding exits, said means comprising a dog including a coin engaging arm mounted to pivot in parallelism with the plane of the bottom of said chute section above one of said exits therein, means yieldably urging said arm into a position over the corresponding exit for engagement with a coin sliding down said bottom, said arm being provided with a beveled edge portion engaged by said coin, said beveled edge being pitched in a direction generally toward the corresponding exit whereby to guide a coin engaging said beveled edge in a direction toward said exit, said dog yielding to permit coin elements too large to pass through the corresponding exit to continue down the chute section.

4. In a coin segregator of the type including a downwardly inclined chute section having a bottom on which coins slide on one face and an exit of a width adapted to permit the passage therethrough of a coin element of a given or less than given diameter, the combination of means for guiding coin elements of appropriate diameter into said exit, said means comprising an arm mounted to pivot in a plane in substantial parallelism with said bottom into and out of position projecting over said exit, said arm having an edge portion pitched in a direction generally toward said exit and disposed to be engaged by the edge of a coin sliding down the chute to tilt said coin into said exit, means yieldably urging said arm into a normal position across said exit, said arm yielding to permit passage therepast of a coin element too large to move into said exit.

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