Feb. 28, 1933. E. P. DONNELLAN 1,899,560

SPURIOUS COIN SEPARATOR

Filed Aug. 27, 1931 2 Sheets-Sheet 1

Fig. 1

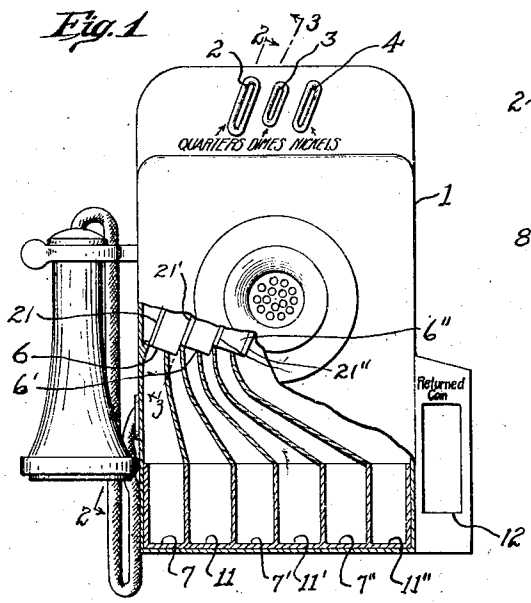
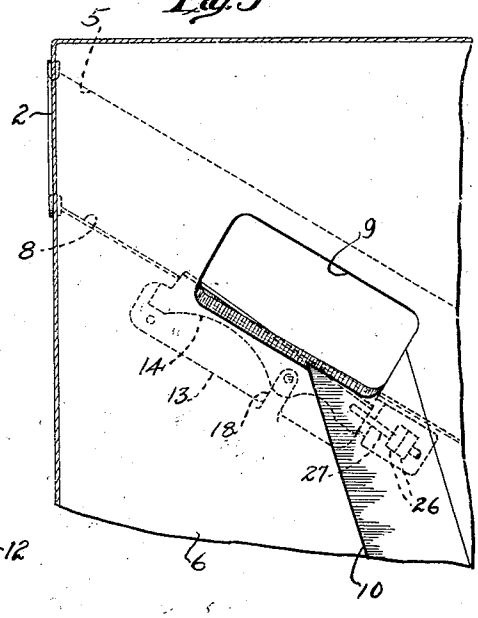


Fig. 3



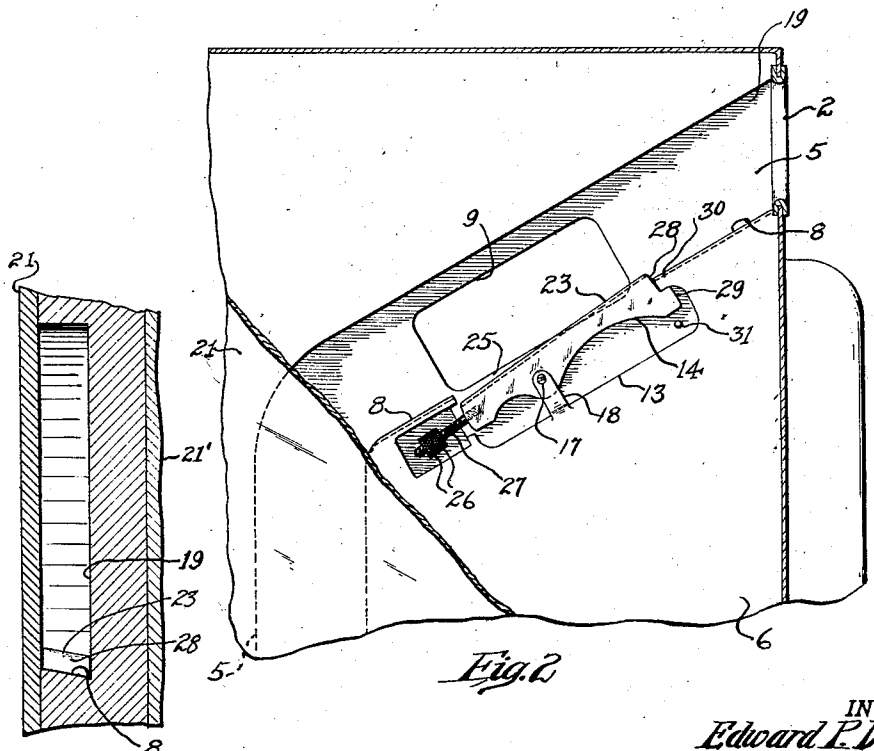


Fig. 2

Fig. 10

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SPURIOUS COIN SEPARATOR

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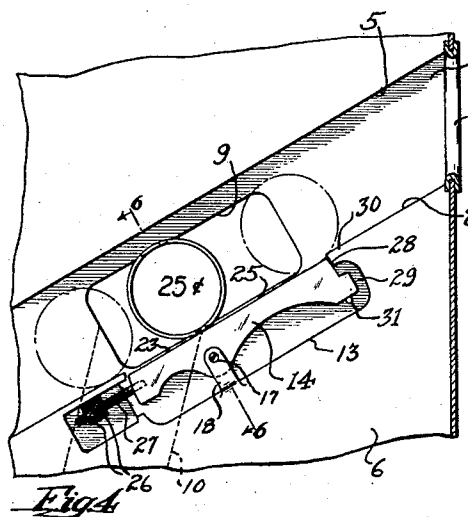

Fig. 4

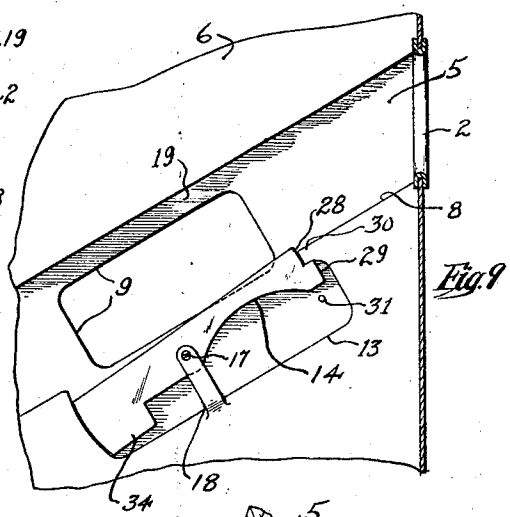

Fig. 9

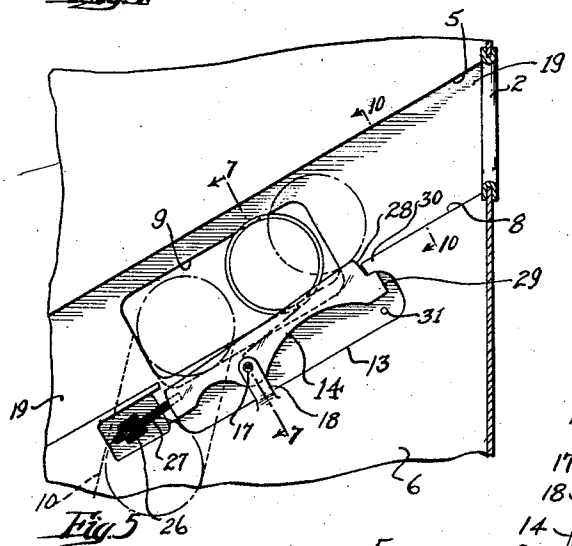

Fig. 5

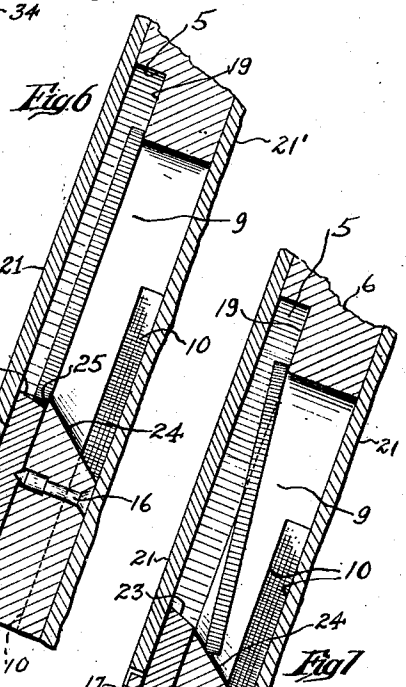

Fig. 6

Fig. 7

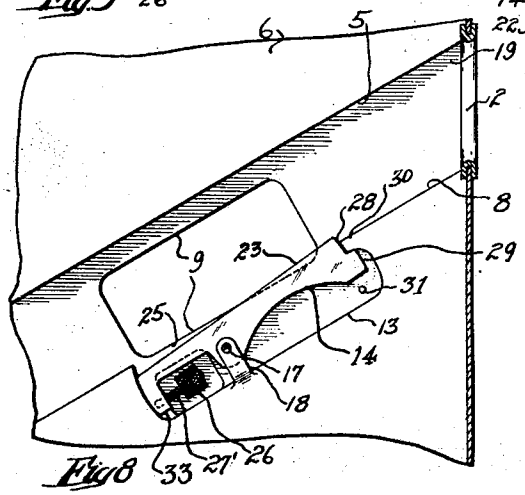

Fig. 8

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UNITED STATES PATENT OFFICE

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SPURIOUS COIN SEPARATOR

Application filed August 27, 1931. Serial No. 559,705.

This invention relates generally to coin separators, and the invention has reference, more particularly to a novel coin separator especially adapted for use in connection with slot machines for separating spurious or counterfeit coins from genuine coins.

Heretofore, considerable loss has been sustained each year by owners and operators of slot machines, such as slot vending machines and telephone pay stations, and the like, owing to the use by irresponsible persons of counterfeit coins or other simulated coins.

The principal object of the present invention is to provide a novel coin separator which is adapted to separate the great majority of spurious coins from genuine coins, the said coin separator being readily adapted for application to slot machines for effecting the rejection of spurious coins, thereby preventing the use of such spurious coins in these machines.

Another object of the present invention lies in the provision of a novel coin separator providing means for automatically separating spurious coins of either lesser weight or lesser diameter than genuine coins from the latter.

Still another object of the present invention is to provide a novel spurious coin separator which is of simple, compact construction and involves a minimum of parts and which may be easily manufactured in large quantities.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is a view in elevation with parts broken away showing a telephone pay station box equipped with the novel spurious coin separator of the present invention;

Fig. 2 is an enlarged part sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a fragmentary view similar to Fig. 2 illustrating the operation of the device when a genuine coin passes therethrough.

Fig. 5 is a view similar to Fig. 4 but illustrates the operation of the device when a spurious coin passes therethrough.

Fig. 6 is an enlarged sectional view taken along line 6—6 of Fig. 4;

Fig. 7 is an enlarged sectional view taken substantially along line 7—7 of Fig. 5;

Figs. 8 and 9 are views similar to Fig. 2 of slightly modified forms of construction; and

Fig. 10 is an enlarged fragmentary section taken along line 10—10 of Fig. 5.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference numeral 1 designates a slot machine equipped with the novel spurious coin separator of the present invention. Slot machine 1 is illustrated as consisting of a telephone pay station box, but it is to be understood that the novel coin separator of the present invention may be used with any type of slot machine. The telephone box of Fig. 1, is illustrated as having quarter, dime and nickel openings 2, 3 and 4 respectively. The novel spurious coin separator of this invention is similarly applied to each denomination of coil, so it would appear that a detail description need only be given of the device as applied to a single coin denomination, for example the quarter denomination.

The quarter opening 2 conducts coins to an inclined quarter slot 5 (see especially Fig. 2) provided in an inclined member or plate 6. The slot 5 inclines downwardly and rearwardly, whereas the plate 6 containing the slot 5 inclines transversely somewhat with respect to a vertical position, so that coins while rolling down this slot are caused to lean upon and slide over the inner wall 19 of this slot. The slot 5 is adapted to conduct coins to a suitable quarter receptacle, such as receptacle 7, provided in the lower portion of the machine 1. It will be apparent that the coin before reaching receptacle 7 may pass through a registering device, if desired, or may perform other operations such as closing an electric circuit.

The lower wall or ledge 8 of slot 5 is pref-

erably undercut or inclined somewhat so as to make an acute angle with respect to the side or inner wall 19 (see especially Fig. 10). The inclined wall or ledge 8 thus acts to urge the coins toward the side wall 19 so that these coins are certain to slide over this inclined side wall as they roll downwardly along ledge 8. The wall 19 is provided with an opening or aperture 9, illustrated as of substantially rectangular shape, which opening serves as a discharge orifice for spurious coins. Opening 9 is of slightly lesser width than the diameter of a quarter so that genuine coins in moving along slot 5 will pass by this opening without falling therethrough. The lower wall 24 of opening 9 is downwardly inclined away from slot 5 as especially shown in Figs. 6 and 7. Opening 9 communicates with an inclined slot 10, (see Fig. 3) which inclined slot is adapted to convey spurious coins passing through opening 9 to a suitable receptacle. Thus in Fig. 1 the slot 10 conveys spurious coins simulating quarters to a receptacle 11. It will be apparent, however, that if desired these spurious coins could be conveyed to the "return coin" box 12.

The plate 6 has a recess 13 provided therein of the same depth as slot 5 and communicating with this slot. A lever 14 is pivotally mounted within recess 13 and cooperates with the opening 9 in ejecting spurious coins out through this opening 9. The lever 14 is preferably pivoted upon hardened point bearing pins 16 and 17, respectively, which pins project into conforming depressions provided in the sides of lever 14. The bearing pin 16 is illustrated as fixed in a suitable aperture provided in plate 6 (see especially Figs. 6 and 7), and the bearing pin 17 is illustrated as threaded through an aperture provided in a bearing lug 18 formed on the plate 6 in overlying relation to recess 13. A cover plate 21 is illustrated as mounted upon plate 6 and overlies slot 5 and recess 13. This cover plate is illustrated as cut out at 22, to accommodate the bearing lug 18. It will be apparent that the bearing lug 18 could be omitted and the bearing pin 17 directly mounted in cover plate 21, if desired.

The upper surface 23 of lever 14 is adapted to serve in effect as a continuation of lower ledge 8 so that genuine coins while passing by opening 9 roll along the upper surface 23. The upper surface 23 is also preferably inclined similarly to ledge 8 so as to form an acute angle with the inner wall 19 of slot 5. When lever 14 is positioned so that its upper surface 23 is parallel to ledge 8, as especially shown in Fig. 4, this upper surface 23 is positioned slightly below the lower edge of opening 9, whereby a narrow guiding edge portion 25 is provided by the inner wall 19 adjacent opening 9 to prevent the accidental shifting of the lower portion of the coin through opening 9. The lever 14 is normally biased by means of adjustable weights 26 so that its upper surface 23 is slightly inclined to ledge 8, as especially shown in Fig. 2.

The adjustable weights 26 are illustrated in Figs. 2 to 5 as threaded upon a rod 27 projecting from the lower end of lever 14. The weights 26 tend to turn the lever 14 counterclockwise, as viewed in Fig. 2, so that the upper and forward end of this lever projects above the ledge 8 and provides a forward abutting surface or shoulder 28, which shoulder is impinged upon by coins rolling down ledge 8. The weights 26 are so adjusted that the weight of a twenty-five cent piece rolling down ledge 8 and engaging the lever will just counterbalance the effect of these weights and will depress the forward end of lever 14 and bring the upper surface 23 of this lever into parallel position with respect to ledge 8, as shown in Fig. 4. The lever 14 is formed with a forward projection 29 adapted to engage an overhanging portion 30 of ledge 8 to limit the counterclockwise turning movement of lever 14 under action of weights 26. A pin stop 31 is illustrated as provided within recess 13 and serves to limit the clockwise movement of lever 14 as viewed in Fig. 2, this clockwise movement being caused by coins passing over the lever.

In use, when a genuine coin, i. e. a quarter, is inserted through opening 2, the same drops onto ledge 8 and commences to roll down this ledge with the flat surface of the coin sliding over the inner wall 19 of slot 5. When the coin reaches the forward shoulder 28 of lever 14, the coin tends to ride up on this shoulder and the weight of the coin, being such as just to counterbalance the action of weights 26, serves to depress the forward end of lever 14 so that this lever turns into the position illustrated in Fig. 4. As the coin continues to roll, it rides over the upper surface 23 of lever 14, the bottom edge of the coin engaging the narrow guide portion 25 of the back wall 19 and the upper edge of the coin engaging the upper marginal edge portion of opening 9, so that the coin is prevented from falling through opening 9 and passes this opening and is later conveyed into the coin receptacle 7. As soon as the coin moves off of lever 14, the weights 26 serve to turn this lever into its inclined position shown in Fig. 2.

Let it be assumed that a spurious coin of lesser weight than a genuine quarter is now inserted through opening 2. This coin falls onto ledge 8 and rolls down this ledge until the same strikes the forward shoulder 28 of lever 14. Since the spurious coin is of lesser weight than a quarter, the same will fail to depress the forward end of lever 14 and this coin will therefor ride up and over the shoulder 28, as illustrated in dot and dash lines in Fig. 5. The coin now continues to roll

along the upper surface 23 of lever 14, but since this upper surface is now positioned above the lower edge of opening 9, the coin will be discharged through this opening as soon as it arrives opposite the same, as especially shown in Figs. 5 and 7. This is because the coin normally bears somewhat against the inner wall 19, and as the bottom edge of the coin can not engage the lower marginal edge portion 25 of rear wall 19, this bottom edge slides inwardly under the action of gravity, as especially shown in Fig. 7, causing the coin to drop through opening 9, sliding over the inclined wall 24, and into the inclined slot 10 to be discharged into the spurious coin receptacle 11 or to be otherwise disposed of, as desired. It will be noted that the coin will be discharged through opening 9 regardless of the relative diameter of the coin. Thus, the coin may be either larger or smaller than a quarter and yet the same will be discharged through opening 9 by the action of lever 14. Inasmuch as the great majority of spurious coins are lighter than the corresponding genuine coins, the great majority of fictitious coins are thusly discharged through the opening 9 by the action of lever 14.

In the event that the fictitious coin inserted through opening 2 is heavier than a genuine coin or quarter, the same will roll down ledge 8 and will depress lever 14 and will roll along the upper surface 23 of this lever. If this fictitious coin is of the same diameter or of a larger diameter than a genuine coin, the same will not fall through opening 9, but will be conveyed to the coin receptacle 7. However, if this fictitious coin is of lesser diameter than a genuine coin, the upper edge thereof will not engage the uper edge of opening 9, and hence such fictitious coin will be discharged through opening 9 and into the fictitious coin receptacle. Thus, it will be noted that the novel coin separator of the present invention serves to separate out all spurious coins with the exception of those which have the same or greater weight than a genuine coin and the same or slightly greater diameter than a genuine coin. Of course, should the fictitious coin have a relatively large diameter, the same could not be inserted through opening 2. The slots (not shown) in plates 6′ and 6″ for conveying the dime and nickel coins, respectively, are similarly equipped with the separating mechanism heretofore described in connection with the quarter slot 5, so that fictitious coins of these denominations are discharged into receptacles 11′ and 11″, respectively, whereas the genuine coins are discharged into receptacles 7′ and 7″, respectively. Plates 6′ and 6″ have cover plates 21′ and 21″, respectively, (see Fig. 1).

It will be aparent that many changes may be made in the construction of the novel spurious coin separator of this invention while still remaining within the scope of this invention. For example, the threaded rod 27′ instead of projecting outwardly from the lower end of lever 14, may extend in underlying relation to one arm of this lever, as shown in Fig. 8. In this figure, the rod 27′ is secured in an extension 33 formed on the lower arm of lever 14. This construction makes the device more compact than that disclosed in the preceding figures, while still retaining the adjustability of weights 26. It will be apparent that these weights may be locked against one another in any position desired along the rod 27′. If desired, the weights 26 may be omitted in some instances, in which case the lever 14 will be provided with a projection 34 to take the place of weights 26, as shown in Fig. 9.

It will be noted that the novel spurious coin separator of this invention is of extremely simple construction, of compact design, and in practice the same has been found to substantially eliminate the use of spurious coins in slot machines, the same serving to eject the spurious coins which are commonly returned to the users of such coins. The adjustability of the weights 26 enables the lever 14 to be readily adjusted to suit any denomination of coin, or if desired, different levers may be cast for the several denominations of coins, as suggested in Fig. 9. The width of the opening 9 will, of course, vary in accordance with the varying denominations of coins.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A spurious coin separator comprising, a member having a coin slot therein for conveying coins toward a receiving receptacle, said member having a spurious coin discharge opening communicating with said slot, said member being transversely inclined in a direction toward said opening, a lever pivotally carried by said member and positioned ajacent said slot and said discharge opening, said member having a passage between said lever and said slot through which said lever is arranged to project so as to extend into said slot above the adjacent margin of said discharge opening for the purpose of ejecting spurious coins through said discharge opening, said lever being depressible by a proper coin so as to be offset below the adjacent margin of said discharge opening.

2. A spurious coin separator comprising, a member having a coin slot therein for con-

veying coins toward a receiving receptacle, said coin slot having a side wall with a spurious coin discharge opening therein and a lower wall serving as a runway for coins, said side wall having the discharged opening being outwardly and upwardly inclined, said member having a recess communicating with said slot, a lever pivoted within said recess and arranged to project into said coin slot so as to lie in the path of movement of coins passing therethrough but with a portion thereof above the lower margin of said discharge opening, said lever being arranged to be forced out of said coin slot and below the lower margin of said discharge opening by genuine coins moving in said slot but acting to remain in said slot during the passage of spurious coins, to thereby divert said spurious coins outwardly through said spurious coin discharge opening.

3. A spurious coin separator comprising, a member having a coin slot therein for conveying coins toward a receiving receptacle, said coin slot having a side wall with a spurious coin discharge opening therein and a lower wall serving as a runway for coins, said member being transversely inclined toward said discharge opening, said member having a recess below said coin slot and communicating with the latter, a lever pivotally mounted within said recess and being biased so that a portion thereof initially projects upwardly into said coin slot adjacent said spurious coin discharge opening and above the lower margin thereof, said lever serving to partially obstruct the passage of coins through said coin slot and being arranged to be depressed downwardly into said recess and below the lower margin of said discharge opening by the passage of genuine coins, but acting to elevate the lighter spurious coins so that the same are ejected through said spurious coin discharge opening.

4. A spurious coin separator comprising, a member having a coin slot therein for conveying coins toward a receiving receptacle, said coin slot having a side wall with a spurious coin discharge opening therein and a lower wall serving as a runway for coins, said member being transversely inclined toward said discharge opening, said member having a recess below said coin slot and communicating with the latter, a lever pivotally mounted within said recess and being weighted so that a portion thereof projects upwardly above the lower wall of said coin slot adjacent said suprious coin discharge opening and above the lower margin of the latter, said lever being arranged to be depressed substantially out of said coin slot and below the lower margin of said discharge opening by the weight of a passing genuine coin, but remaining partially within said coin slot and above the lower margin of said discharge opening during the passage of a lighter spurious coin, to thereby divert said coin so that the latter is ejected through said spurious coin discharge opening.

5. A spurious coin separator comprising, a member having a coin slot therein, said member having a spurious coin discharge opening communicating with said coin slot, said member being transversely inclined toward said discharge opening, a lever pivotally carried by said member adjacent said coin slot, said lever being adjustably weighted so that a portion thereof normally projects into said coin slot above a margin of said discharge opening, the weighted adjustment of said lever being such that a genuine coin in passing through said coin slot will substantially remove said lever portion from the path of movement of the coin and below said margin of said discharge opening, whereas a lighter and spurious coin will fail to so remove said lever portion with the result that said spurious coin is deflected by said lever portion outwardly through said spurious coin discharge opening.

6. A spurious coin separator comprising, a member having a coin slot therein provided with an inclined lower wall, said member having a spurious coin discharge opening communicating with said coin slot, said member being transversely inclined toward said discharge opening, a lever pivotally carried by said member adjacent said coin slot, the lower wall of said coin slot being partially cut away to accommodate said lever, said lower wall and the upper surface of said lever serving in use as a coin runway, said lever being adjustably weighted so that the forward end portion thereof normally projects upwardly into said coin slot above said lower wall and above a margin of said discharge opening, the weighted adjustment of said lever being such that a genuine coin in advancing upon the raised forward end portion of said lever acts to depress such lever forward portion below said margin of the discharge opening, causing the upper surface of the lever to move into substantial alignment with the lower wall of said coin slot, whereupon said genuine coin continues along said coin slot while rolling over said lever, whereas a lighter spurious coin, in advancing upon said lever forward portion, fails to depress the same, but in riding upon such forward portion is raised above the margin of said discharge opening so as to fall outwardly therethrough.

7. A spurious coin separator comprising, a member provided with a transversely tipped coin slot having a lower wall with an elongated opening therein, a lever pivoted below said coin slot and having its upper surface arranged to substantially close the opening in said lower wall, weighted means on said lever for causing an end portion

thereof to project upwardly into said coin slot, whereby a coin in rolling down said coin slot is caused to engage said lever projecting end portion, said weighted means being of such magnitude that a genuine coin will depress said lever end portion causing said lever to be turned downwardly so that its upper surface moves into substantial alignment with the lower surface of said coin slot, said coin slot having a spurious coin discharge opening positioned in the side wall thereof just above said lever upper surface when such surface is in substantial alignment with said coin slot lower wall.

8. A spurious coin separator comprising, a member provided with a coin slot having a lower wall with an elongated opening therein, a lever pivoted below said coin slot and having its upper surface arranged to substantially close the opening in said lower wall, weighted means on said lever for causing an end portion thereof to project upwardly into said coin slot, whereby a coin in rolling down said coin slot is caused to engage said lever projecting end portion, said weighted means being of such magnitude that a genuine coin will depress said lever end portion causing said lever to be turned downwardly so that the upper surface moves into substantial alignment with the lower surface of said coin slot, said coin slot having a spurious coin discharge opening positioned in the side wall thereof just above said lever upper surface when such surface is in substantial alignment with said coin slot lower wall, said spurious coin discharge opening being somewhat narrower than the diameter of a genuine coin, the coin slot side wall containing said discharge opening being inclined with respect to the vertical so that a coin will lean thereagainst as the same passes said discharge opening.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 21st day of August 1931.

EDWARD P. DONNELLAN.