

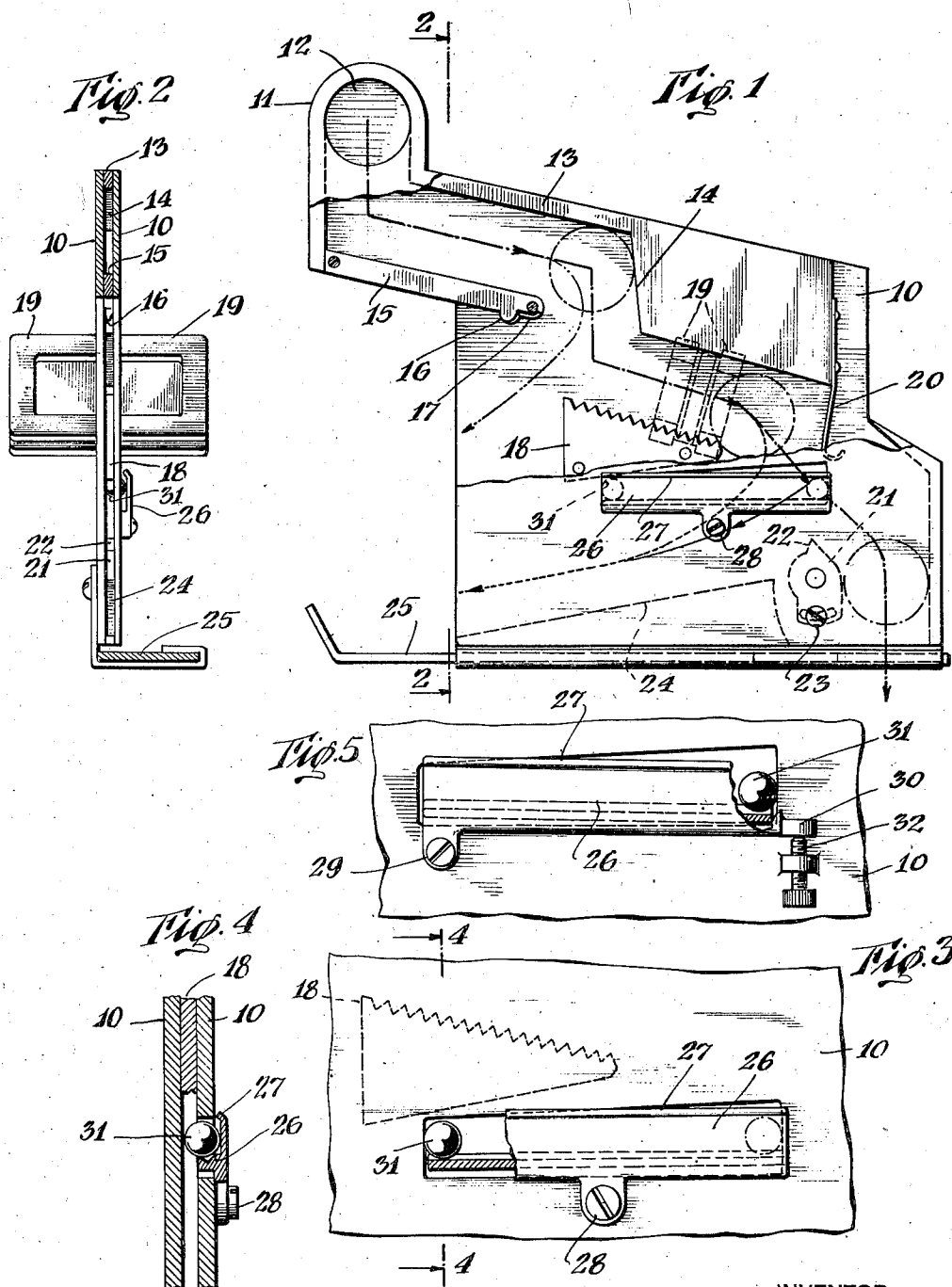
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DETECTING APPARATUS

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DETECTING APPARATUS

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6 Claims. (Cl. 194—97)

This invention relates to a structurally and functionally improved detecting apparatus.

While the teachings of the present invention may be employed in numerous different associations, it is a primary object of the invention to furnish a mechanism which may be associated with vending and other coin controlled apparatus so that only tokens or coins of a genuine and predetermined nature may be utilized in connection with the apparatus, the latter serving to reject or detect counterfeit tokens or coins.

A further object of the invention is that of furnishing a mechanism of this nature and which will be rendered inoperative by attempted tampering.

A still further object is that of furnishing a detecting apparatus which will be extremely compact and which may, with facility, be included within the area of coin controlled telephones, vending machines, turnstiles, and similar mechanisms without it being necessary to materially reconstruct or enlarge such mechanisms or the casings enclosing the same. Moreover, by means of the present invention, an apparatus is furnished which will embrace relatively few parts, each individually simple and rugged in construction, these parts being capable of ready assembly and also being capable of achieving the foregoing objects, and which apparatus will function over long periods of time with freedom from difficulties.

Additionally, the present invention contemplates a detecting apparatus in which if, incident to wear, some adjustment of the parts is necessary, such adjustment may be achieved in a simple and efficient manner, aside from the fact that such adjustments as may be necessary at the time of "setting up" the apparatus may be accomplished with facility.

With these and other objects in mind, reference is had to the attached sheet of drawings illustrating practical embodiments of the invention, and in which:

Fig. 1 is a side view of the detecting apparatus and with certain of the parts broken away to disclose the underlying mechanism;

Fig. 2 is a transverse sectional view taken along the lines 2—2 and in the direction of the arrows as indicated in Fig. 1;

Fig. 3 is an enlarged fragmentary view of a portion of such apparatus;

Fig. 4 is a transverse sectional view taken along the lines 4—4 and in the direction of the arrows as indicated in Fig. 3; and

Fig. 5 is a view similar to Fig. 3 but showing an alternative form of structure.

According to certain aspects, the present invention aims to provide a structure presenting certain improvements over that disclosed in my copending application Serial No. 30,436, filed in the United States Patent Office on July 9, 1935.

In that disclosure, as well as in the construction of certain vending mechanisms heretofore designed, the entire apparatus may, in certain instances, be rendered inoperative by seizing the mechanism with which it is associated and tilting such mechanism. In this manner the values set up are disturbed and a spurious token or coin may be caused to traverse the mechanism in the same manner as would have been the case if an authentic or proper token or coin had been employed.

With the foregoing in mind, it will be seen in the annexed drawing that there has been disclosed a mechanism for use in connection with the United States five cent piece, and which will serve automatically to detect and reject all tokens, coins, slugs and washers such as those commonly used by irresponsible persons to obtain an unauthorized operation of the coin controlled mechanisms. It will be apparent to those skilled in the art that the present apparatus might be suitable modified to, for example, function in connection with coins of other value.

Thus, in these views the numeral 10 indicates a pair of spaced plates which may be formed of metal or other suitable material and which, adjacent their upper edges, may mount or be continued in the form of a guarded chute 11 having an aperture 12 of an area adequate to permit of the sidewise passage of a United States five cent piece. Mounted between the plates 10 is a strip 13 extending adjacent the upper edges of the plates and having a downwardly projecting body portion 14. Spaced from the strip 13 a distance substantially equal to the height of a five cent coin is a magnetic bar 15. Both the strip 13 and this bar are inclined to define a downwardly extending chute, and the bar terminates at a point spaced from the bar 14 to a sufficient extent to permit of the ready passage of a coin between these elements. Adjacent its lower end the bar 15 may have a projection 16 and a knife edge portion 17. This structure serves, as pointed out in my previous application, to assure an automatic detachment of steel slugs from the bar magnet as such slugs follow the path defined in Fig. 1 by the dash and double dot line.

Also mounted between the plates is a member

18 having an upper serrated edge which is spaced from the lower edge of the body 14 a distance in excess of the height of a five cent coin. Mounted by the plates in line with the path defined between the body 14 and the member 18 are a suitable number of permanent magnets 19 having an extremely powerful field and which magnets are of relatively small size. The rear edge of the body 14 mounts a strip 20 or otherwise provides a suitable projection such that tokens, slugs or washers having certain characteristics will rebound therefrom. Below this strip there is pivotally mounted a member 21 preferably presenting a tooth-like projection 22. This member may be shifted around its point of mounting and secured in any desired position by utilizing, for example, a pin and bolt structure such as has been indicated at 23. To the rear of the member 21 an inclined runway 24 is mounted between the plates and extends to a point adjacent the forward edges thereof.

It will, of course, be understood that the spacing of the plates 10 is slightly in excess of the proper width of a five cent piece. As taught in my prior application, a coin of proper value will pass over the upper edge of the bar magnet 15, strike against the body 14, roll over the serrated edge of the member 18, and will drop downwardly and rearwardly after moving out of supporting relationship with respect to the member 18 and pass in the manner indicated in dot and dash lines between the element 20 and the member 21. As previously brought out, tokens, slugs or washers formed of steel will simply roll over the edge of the bar magnet 15, will remain in contact with the same as they move over the lower and rear edge of such magnet and incident to the small area of contact due to the knife edge 17 and/or striking the projection 16 will automatically disengage themselves from the magnet and move out from between the plates along the path indicated by double dot and dash lines. Spurious tokens or coins, washers and slugs, which do not embody a large amount of metal or have the characteristic of being attracted by the bar magnet 15, will pass over the bar magnet to the member 18. If they are formed of relatively soft metal, fiber or its equivalent, they will move relatively slowly over the serrated upper edge of the member and will consequently drop out of supporting relationship therefrom against the forward edge of member 21 to be diverted along the upper edge of runway member 24 and thence be delivered from between the forward edges of the plates. If such slugs are formed of a material having even low magnetic property but which material would not be of sufficient ductility to be indented by the serrations of member 18, their movements will be slowed down by the magnets 17 to where they will again follow the path of travel defined by the dash lines and as previously brought out in connection with slugs having some degree of ductility and/or having insufficient mass. In the case of coins or slugs which are relatively hard and which are incapable of being magnetically attracted, such elements will strike against the projection 20 or its equivalent and rebound therefrom to the runway 24, so that they are again detected and rejected.

As shown in the instant application, an angular and guarded chute 11 serves to prevent a person projecting a spurious token, washer or slug over the bar magnet 15 with great velocity and in a manner calculated to have the spurious

element follow the path of a genuine five cent coin. Moreover, there has been shown in this application a coin shifting member 25 which will receive and/or cooperate with a coin of proper value, to suitably release or actuate coin controlled mechanism after the coin has reached a final and proper position. This showing has been only general, and it is apparent that according to the peculiarities of any given mechanism this structure might be modified as desired. At this time it will also be observed that the present illustration is as general as possible, consistent with properly showing the invention, it being understood that, with the exception of the guarded chute 11 and actuator 25, all of the foregoing mechanism would be suitably encased and properly disposed with reference to mechanism with which it was to cooperate. Also, as previously brought out, the parts might be modified to cooperate with coins or tokens of almost any desired characteristics.

In connection with a mechanism of this nature, difficulties may be encountered, in that a person having sufficient knowledge may seize the mechanism and apparatus with which it is associated and tilt the same so that certain types of slugs or tokens will follow to final destination, the path which is exclusively reserved for a proper token or coin. In order to avoid all difficulties in this connection, it is proposed to furnish a trap or gate serving as a barrier for the passage of coins or tokens in the event the apparatus is manipulated in this manner.

Two preferred forms of this mechanism have been illustrated. In each instance, and at points adjacent the lower and rear end of the member 18, one of the plates is slotted in a generally horizontal or forwardly inclined direction. Mounted to extend within this slot is a member 26 having, for example, its upper face grooved to form a track. The outer edge of this member may be guarded by a flange portion 27 and, as shown in Figs. 3 and 4, the member may be pivotally mounted intermediate its ends as at 28. In the form of apparatus shown in Fig. 5, the member is mounted by a pivot 29 mounted adjacent one of its ends and at its opposite end may have a projection 30 for cooperation with an adjusting bolt 32 so that the member may be rocked by minute amounts around the pivot 29. Supported in the groove of the member is a spherical element 31 which extends into the space between the plates to a considerable degree. With the parts properly set up, the operator makes certain that the member 26 extends in an inclined direction towards the forward edges of the plates (i. e., to the left as viewed in Fig. 1). Under these conditions the sphere 31 will lie below the member 18 and will be inoperative to all intents and purposes. However, if a person rocks the apparatus, the sphere 31 will immediately move along the track and occupy a position such as that indicated in dot and dash lines in Fig. 3 and in full lines in Fig. 5. In such position any and all tokens, slugs, coins or other elements passing over member 18 will strike the element 31 and rebound therefrom to the runway 24. In other words, not even genuine five cent pieces could, under these circumstances, move to a position where a proper and subsequent operation of the mechanism could occur. Regardless of whether the space at the forward edges of the plates communicated with a "reject" receptacle (not shown), or simply returned elements deposited through opening 12 to the operator, is immate-

rial to a consideration of the present structure. It is apparent, however, that, as afore brought out, a tilting of the unit results in the elimination of all tokens or coins deposited.

5 Necessarily, an operator, in setting up the structure shown in Figs. 3 and 4, will use great care to be certain that the member 26 is properly inclined, taking into consideration the location of the mechanism and the fact that the blocking element 31 must, under normal conditions, always return to its inoperative position. The mechanism shown in Fig. 5 will, of course, be of assistance to the operator in readily shifting the member 26 to have exactly the inclined position 15 desired.

Obviously, numerous changes in the construction and rearrangement of the parts might be resorted to without departing from the spirit of the invention as defined by the claims, in which 20 it is to be understood that, for the purpose of simplification, only the word "coin" is intended to designate any token, coin or equivalent, the introduction of which is supposed to secure a proper operation of the mechanism, and in which 25 the word "slug" is intended to define any washer, coin or token of improper type which should be detected and rejected by the mechanism.

Having thus described the invention, what is claimed is:

30 1. A detecting apparatus including means to receive elements to cause a functioning of a coin controlled mechanism, means defining a path to be followed by coin elements in traversing said apparatus, means defining a path to be followed 35 by slug elements in traversing said apparatus, and means responsive to a shifting of such apparatus to block the path of the coin elements, said means including a rolling member movable in a plane parallel to that of said path when 40 the apparatus is shifted.

2. A detecting apparatus including means to receive elements to cause a functioning of a coin controlled mechanism, means defining a path to be followed by coin elements in traversing said 45 apparatus, means defining a path to be followed by slug elements in traversing said apparatus, and means responsive to a shifting of such apparatus to block the path of the coin elements and to cause the latter to be diverted to the path 50 of the slug elements, said means comprising a

member adapted to roll into blocking position by shifting of said apparatus.

3. A detecting apparatus including an element receiving means, means defining a path to be followed by coin elements introduced through 5 such receiving means, means defining paths to be followed by slug elements introduced through such receiving means, and means functioning responsive to a shifting of such apparatus to block 10 the path of said coin elements and to divert the same to one of the paths followed by said slug elements, said means including a member with a ball movable therein for positioning in the path of a said slug element by shifting of said apparatus.

4. A detecting apparatus including an element 15 receiving means, means defining a path to be followed by coin elements introduced through such receiving means, means defining paths to be followed by slug elements introduced through such receiving means, and a normally inoperative 20 means including an adjustably inclined ball runway and a ball therein shiftable responsive to a tilting of such apparatus to block the path of coin elements, such last named means being positioned to divert coin elements which have been 25 so blocked to the path of the slug elements.

5. Coin control apparatus including a coin chute member with an entrance zone and a plurality of discharge outlets, means for directing 30 a coin from said entrance zone toward said outlets, and anti-tilt means including a pivotally adjustable support attached to said member between said entrance zone and said outlets and having a ball member movable therein to block 35 the movement of coins from said entrance zone toward one of said outlets when said chute is tilted.

6. Detecting apparatus comprising an element chute with an entrance zone, a depositing outlet, and an exit outlet, and means for directing an 40 element from said entrance zone toward said outlets, together with means including a member adjustably supported on a wall of said chute and having a rolling member therein with a portion 45 extended into said chute, said rolling member being movable to block the movement of an element relative to said depositing outlet when said apparatus is tilted and cause said element to be deflected toward said exit outlet.

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