

May 16, 1944.

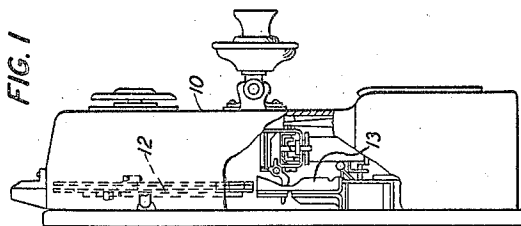
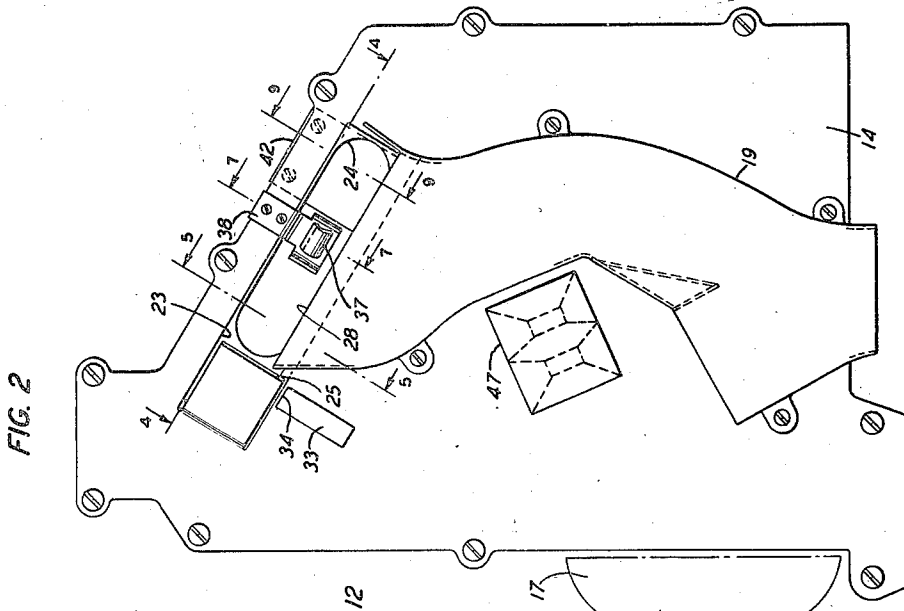
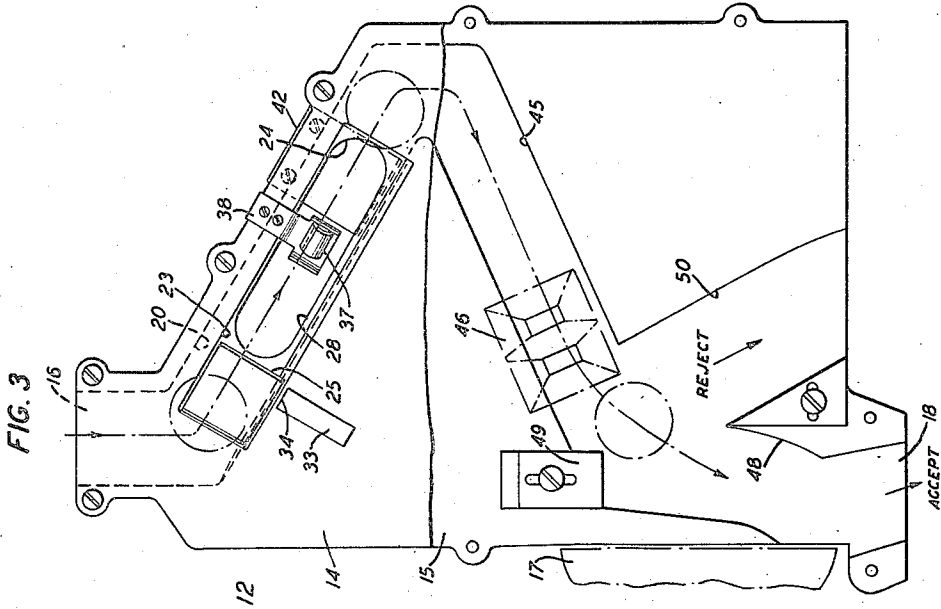
L. VIETH

2,349,214

COIN OPERATED DEVICE

Filed Aug. 14, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 4

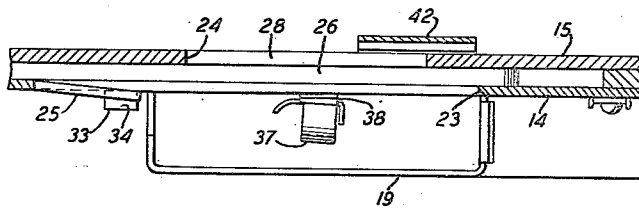


FIG. 5

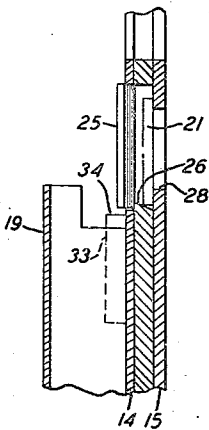


FIG. 7

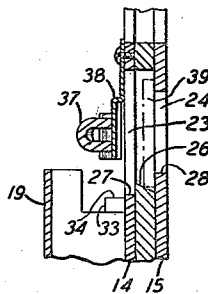


FIG. 9

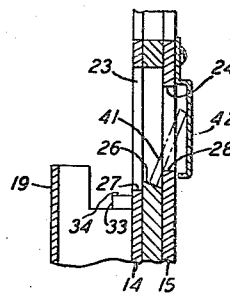


FIG. 6

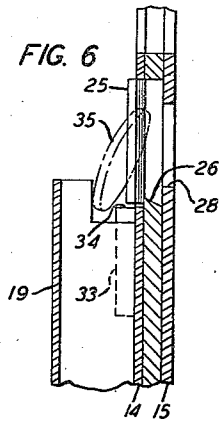
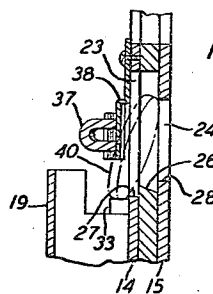


FIG. 8



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## UNITED STATES PATENT OFFICE

2,349,214

## COIN OPERATED DEVICE

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Application August 14, 1941, Serial No. 406,793

3 Claims. (Cl. 194-101)

This invention relates to coin operated devices and has for an object the rejection of magnetic slugs.

Attempts are occasionally made to secure the acceptance in coin operated devices of slugs that are wholly or partially magnetic. It has hitherto been proposed to employ a permanent magnet to attract magnetic slugs out of the legitimate coin channel and into a reject chute. But such prior arrangements are subject to the difficulty that if the magnet is made sufficiently strong to insure the rejection of slugs that are only partially magnetic, there is a danger that a wholly magnetic slug will freeze to the magnet and block the channel to the passage of legitimate coins.

In considering the magnetic slug rejecting arrangement provided by the present invention, it is convenient to divide magnetic slugs into two types. In one type the rim of the slug is of magnetic material while the remainder of the slug may or may not be made of magnetic material, such as a solid iron disc or an iron washer with its center hole filled in with a non-magnetic material. In the second type, only the central portion of the slug is magnetic such as a brass washer with an iron center.

In the preferred form of this invention, a slug deposited in a coin channel first encounters a permanent magnet so positioned that the magnet is effective only for slugs having a periphery of magnetic material to cause such slugs to be projected through a side wall opening and into a reject chute. If the slug has a non-magnetic periphery but with a central portion of magnetic material, the slug continues beyond this magnet in the same manner as a legitimate coin until the slug enters the field of a second magnet so positioned that its magnetic field is effective only on the central portion of the slug. The strength of the second magnet is of sufficient magnitude to direct such a slug through a side wall opening and into a reject chute but insufficient to cause such a slug to freeze to the magnet.

It has been found by providing two separate magnets, one effective only to reject slugs with magnetic rims followed by a second magnet effective to reject slugs with a central portion of magnetic material and a periphery of non-magnetic material that both types of slugs can be readily rejected from a legitimate coin channel without substantial danger of having any magnetic slug held in a position blocking the channel to the passage of legitimate coins.

Referring to the drawings,

Fig. 1 is a side view of a telephone coin collector employing a coin chute constructed in accordance with this invention;

Fig. 2 is a rear view of a coin chute assembly embodying the magnetic slug rejecting features of this invention;

Fig. 3 is similar to Fig. 2 except that certain portions of the coin chute assembly have been removed in order to disclose the nature of the coin runway;

Fig. 4 is a sectional view of the slug rejecting portion of the coin runway of Fig. 2 taken in the direction indicated by the arrows 4-4 on Fig. 2;

Fig. 5 is a sectional view of the coin runway taken along the plane indicated by the dotted line 5-5 of Fig. 2;

Fig. 6 is a sectional view similar to Fig. 5 except for showing the manner in which a magnetic slug of one type is rejected from the coin channel;

Fig. 7 is a sectional view of the coin runway taken along the plane indicated by the dotted line 7-7 of Fig. 2;

Fig. 8 is a sectional view similar to Fig. 7 except for showing the manner in which a magnetic slug is rejected from the coin channel; and

Fig. 9 is a sectional view of the coin channel taken along a plane indicated by the dotted line 9-9 of Fig. 2.

Fig. 1 represents a conventional telephone coin collector of the general type disclosed in the O. F. Forsberg Patent 1,043,219 except for the use therein of a coin chute assembly embodying the magnetic slug rejector of the present invention. Mounted on top of the upper housing 10 is a coin gauge 11 for receiving deposited coins and for directing them into a coin chute 12 by means of which they are directed into engagement with a suitable sound signaling device before entering the usual coin hopper 13 where the deposited coins are held in suspense for subsequent collection or refund depending upon conditions occurring after coin deposit.

A rear view of the coin chute 12 is shown in Figs. 2 and 3 while certain portions thereof are shown in section in the subsequent Figs. 4 to 9, inclusive.

The main coin chute comprises spaced plates, a rear plate 14 and a front plate 15 between which a coin runway is provided whereby a coin upon leaving coin gauge 11 passes into the runway at the coin entrance 16, strikes a bell 17 and leaves the chute at the coin exit opening 18. Mounted on top of plate 14 is a suitably formed reject chute 19 for

receiving various types of slugs rejected from the legitimate coin runway and for directing such slugs by means, not shown, into a refund chute having an opening in the front of the housing to enable such slugs to be returned to the depositor. The coin chute 12 is preferably mounted in collector housing 10 in a vertical position as shown in Fig. 1.

Along the longitudinally inclined runway section 20, the rear plate 14 has an elongated aperture 23 while the front plate 15 has a similar elongated aperture 24. Beginning near the upper end of the longitudinally inclined section 20, the coin supporting ledge 26 presents a transversely sloping surface to the edge of the coin, with ledge 26 sloping downwardly towards plate 15 as shown in Figs. 5 and 7 whereby the lower edge of a rolling coin is normally urged toward plate 15 and away from plate 14 as shown by the position of the standard coin 21 in Fig. 5. The bottom edge 27 of opening 23 in plate 14 lies below the level of ledge 26 so that the lower edge of a standard coin is prevented from projecting out through opening 23 solely by the sloping character of ledge 26. On the other side of the chute, the bottom edge 28 of opening 24 in plate 15 lies a short distance above ledge 26 to provide a guard rail for the bottom edge of all coins traversing the runway. The distance between ledge 26 and the upper edge of opening 24 is slightly less than the diameter of a standard coin so as to provide support for the upper edge of a standard coin; but opening 23 may have a height somewhat greater than the standard coin diameter since no coin support is needed on the plate 14 side of the runway either for the lower or upper edge of the coin.

Suitably mounted on plate 14 is a permanent bar magnet 33 so located that its upper end 34 lies a short distance below the adjacent portion of the coin supporting ledge 26. The strength of magnet 33 is preferably such that any deposited slug having a periphery of magnetic material will be deflected through opening 23 without permitting the slug to freeze to the magnet.

As soon as such a magnetic slug 35 in rolling down the runway reaches the vicinity of magnet 33, the attracting force of the magnet causes the bottom edge of the slug to ride up the sloping surface 26 towards and into the opening 23 whereupon the bottom edge of the slug is no longer supported and, hence, the slug is directed into reject channel 19 substantially in the manner as shown in Fig. 6. Since the rejection of such a slug 35 usually involves some turning movement about a vertical axis, it is advisable to provide additional width in the coin channel for this turning movement and this additional width is secured in the embodiment shown in the drawings by a vane or flared out portion 25 of plate 14, as shown in Fig. 4. It will also be noted from Fig. 4 that the preferred location of the upper end 34 of magnet 33 is closely adjacent the outer end of vane 25.

Slugs with a central portion of magnetic material and a periphery of non-magnetic material are not pulled out of the runway by magnet 33 but continue on down the runway for subsequent rejection by a small U-shaped magnet 37 suitably supported by a bracket 38 mounted on plate 14. The poles of magnet 37 are close together with the field of the magnet centered about the locus of the center of a slug of standard diameter so as to insure effective reaction on slugs having small iron centers. A standard coin such as coin 39 of Fig. 7 is not influenced by magnet 37 but when

an iron centered slug comes under the influence of magnet 37, the slug is directed up the sloping coin support and over the crest of ledge 26 whereby such a slug is deflected into reject chute 19 substantially in the manner shown for slug 40 in Fig. 8. The presence of opening 24 opposite magnet 37 is advantageous in order that there will be no restraint if the slug should make an abrupt turn on leaving track 26.

If desired, the two openings 23, 24 may also be employed to reject under-diameter coins. When an under-diameter coin such as coin 41 of Fig. 9 reaches the longitudinally inclined section 20, the upper edge of the coin is not supported by the portion of plate 15 above opening 24 so that the sloping ledge 26 tends to cause the rolling coin to take a position such as shown by coin 41 in Fig. 9 with the top edge of the coin contacting plate 42; and the coin may keep this angular position until the coin strikes the lower end of opening 24 whereupon the under diameter coin is forced out through opening 23 into reject channel 19.

The legitimate coin channel subsequent to the longitudinally inclined section 20 may include a reversely downwardly directed section 45 having near the lower end thereof opposed magnets 46, 47 for retarding the speed of a coin or non-magnetic slug in accordance with its electrical resistivity whereby a legitimate coin will have sufficient velocity on leaving track 45 to reach acceptance channel 48 while a slug of different resistivity than a standard coin will be diverted directly, or indirectly by means of shoulder 49, into a reject channel 50. For such a rejection on the eddy current principle, the magnets 46 and 47 are customarily of such strength that a slug containing magnetic material would be held frozen to their poles clogging the runway but as previously described, the earlier magnets 33, 37 insure that no slug containing magnetic material will get into coin chute section 45.

What is claimed is:

1. In a coin collector, a coin chute comprising spaced front and rear plates lying in substantially vertical planes and a downwardly inclined coin track down which a deposited coin rolls under the influence of gravity, said rear plate having an elongated opening above said track, and means for rejecting from said chute slugs containing magnetic material, said rejecting means comprising a first magnetic means for directing through said opening a first type of slug having a periphery of magnetic material while permitting a second type of slug having a center of magnetic material and a periphery of non-magnetic material to continue rolling down said track, said rejecting means comprising a second magnetic means spaced from said first magnetic means for directing through said opening a slug of said second type.

2. In a coin collector, a coin chute comprising spaced front and rear plates and a longitudinally inclined bottom wall between said plates down which a deposited coin may roll under the influence of gravity, one of said plates having an elongated opening above said wall through which non-standard coins or slugs are adapted to be discharged, and means for rejecting from said chute slugs containing magnetic material, said rejecting means comprising magnetic means adjacent the upper end of said opening for creating a relatively strong magnetic field in a region traversed by the periphery of a deposited slug and a

relatively weak field in a region traversed by the central portion of a deposited slug whereby a slug having a periphery of magnetic material will be diverted through said opening, said rejecting means comprising a second magnetic means mounted adjacent a later portion of said opening for creating a relatively strong magnetic field in a region traversed by the central portion of a deposited coin, whereby slugs having a central portion of magnetic material and a periphery of non-magnetic material will be deflected through said opening, both of said magnetic means being of insufficient strength to exert any appreciable retarding effect on a coin or slug made wholly of non-magnetic material.

3. In a coin collector, a coin chute comprising spaced front and rear plates and a downwardly inclined supporting track between said plates down which a deposited coin may roll under the influence of gravity, said front plate having an elongated opening above said track through which non-standard coins or slugs are adapted to be discharged, the major portion of said track along said opening and in a direction normal to the path of coin travel sloping downwardly towards said rear plate whereby a deposited coin is biased towards said rear plate, the bottom edge of said opening being substan-

tially aligned with the upper face of said track, and means for rejecting from said chute slugs containing magnetic material, said rejecting means comprising magnetic means adjacent one 5 portion of said opening for creating a relatively strong magnetic field in a region traversed by the periphery of a magnetic slug and a negligible field in a region traversed by the central portion of a deposited slug, said magnetic means being 10 so positioned relative to said track that when a deposited slug having a periphery of magnetic material enters the field of said means the slug due to magnetic attraction will be pulled up the slope of said track and into said opening for re- 15 jection, said rejecting means comprising a second magnetic means adjacent a later portion of said opening for creating a relatively strong magnetic field in a region traversed by the central portion of a deposited slug, said second 20 means being so positioned relative to said track that when a deposited slug having a periphery of non-magnetic material and a center portion of magnetic material enters the field of said second means the slug due to magnetic attraction 25 will be pulled up the slope of said track and into said opening for rejection.

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