Jan. 30, 1951 N. A. NELSON 2,539,855

COIN CHUTE

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Fig. 1

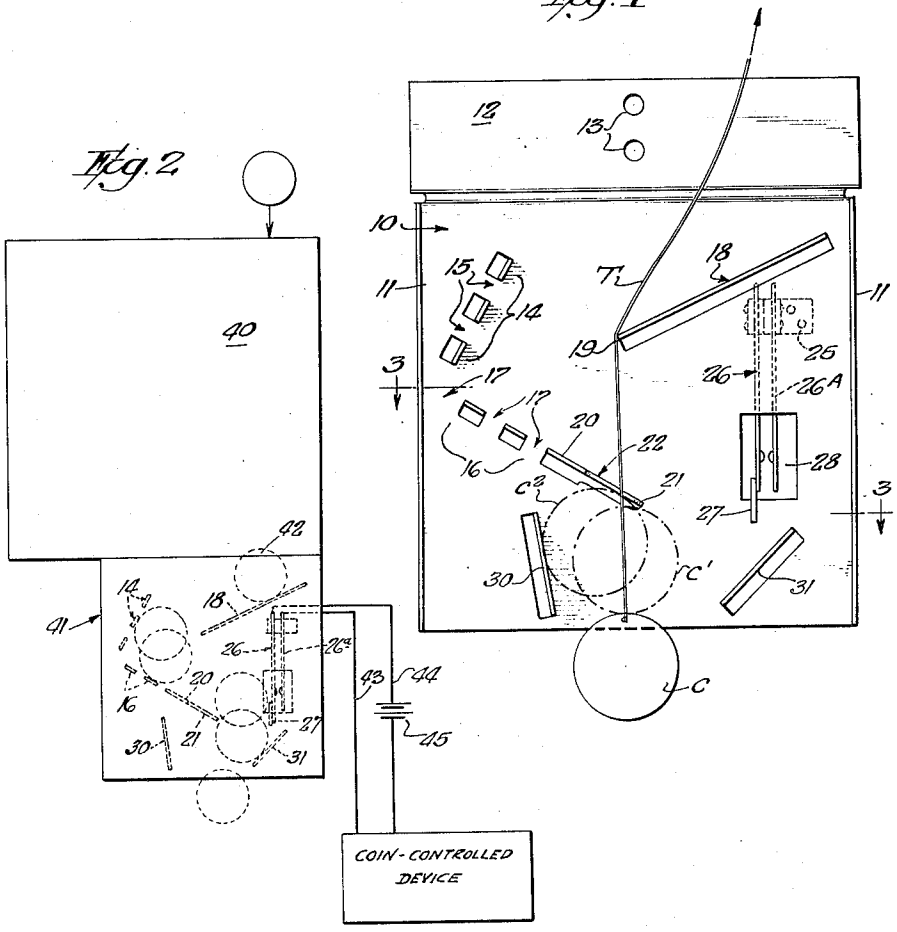
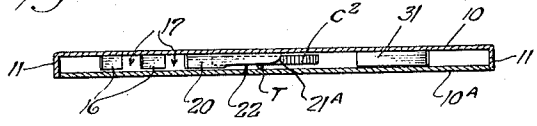


Fig. 2

Fig. 3



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COIN CHUTE

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3 Claims. (Cl. 194—97)

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This invention pertains to coin handling and testing devices and has as its principal object the provision of fraud-preventive means for use with coin chutes and coin-controlled machines, and operating to prevent the use of so-called captive coins in fraudulent operation of various coin-controlled devices, that is to say coins otherwise valid, but which have attached to them a fine wire or thread by means of which they are caused to traverse, and be accepted by, the usual types of coin testing device, and which are thereafter manipulated by the attached wire or thread to cause repeated or otherwise fraudulent operation of the coin-controlled machine.

More particularly, it is an object of the invention to provide a coin-control device adapted to receive a coin element and guide gravitating movement of the same into momentary operative relationship with a coin-operated switch or the like, and thereafter guide the coin relative to certain fraud-preventive means adapted to prevent retraction of the coin, if it be captive, back into operative engagement with the switch.

Further objects relate to the provision of a coin-control device in the nature of a coin chute which may be attached to known types of coin testing chute, or which may be used alone to receive a coin directly from any source; to the provision in such coin chute of coin runway means for guiding the transit of a coin in alternate downward direction therethrough; to the arrangement of a control switch with regard to a terminal portion of the runway such that a coin must have momentum to carry it into operative relationship with the switch, otherwise the coin will drop past the switch without operating it; to the provision of formation adjacent said terminal part of the runway such that if the coin be captive, the wire or thread will become lodged in said formation and efforts to retract the captive coin will be defeated by jamming of the coin with parts of the runway adjacent said formation; to the provision in said runway of additional formations adapted to deflect a coin in its downward movement, but also providing openings through which a defrauding wire or probe will pass harmlessly, instead of being deflected along the coin passage toward the coin switch where they can be manipulated to cause fraudulent operation of said switch.

Additional objects and aspects of novelty in the invention relate to details of construction and operation of the preferred embodiment illustrated in the drawing, in which:

Fig. 1 is a side elevation of the novel fraud-preventive chute with the cover plate removed;

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Fig. 2 is a side elevation of the novel control chute in assembled relation with a conventional coin-testing chute, with a schematic control circuit for a coin-controlled device;

Fig. 3 is a cross section along lines 3—3 of Fig. 1.

Referring to Fig. 1, the novel control unit is preferably constructed as a metal stamping from plate 10 having opposite vertical margins struck up to form side walls 11 and a top attaching flange 12 in which are screw holes 13 by which the device may be secured to a coin chute, as in Fig. 2.

Struck up from the body of plate 10 are a plurality of angularly disposed ears or lugs 14 constituting coin-deflecting means with probe-passing spaces or openings 15 therebetween, there being additional ears or lugs 16 below the first set of deflecting lugs and constituting part of the coin runway means. Runway lugs 16 also have probe-passing spaces 17 therebetween.

Fixed to the plate 10, as by welding or the like, is a downwardly directed ledge or runway member 18, the lower end 19 of which is spaced from the deflecting lugs 14 and above runway lugs 16 to provide room for passage of a coin downwardly toward and onto the runway lugs 16 and a lower runway section 20, also welded to plate 10.

Mounted on the outer (rear) face of plate 10, as by bracket means 25 is a leaf-spring switch 26 of known construction, and one of the contact leaves or arms of this switch has attached to the lower end thereof a coin-engaging plate 27 which projects horizontally into the coin chute passage through an opening 28 cut in the plate 10, plate or bar 27 being positioned opposite the lowermost end of the second or lower runway member 20, such that a coin rolling down the latter would tend to follow a trajectory toward and into engagement with the switch bar 27, causing switch arm or blade 26 to be flexed into circuit-closing engagement with its companion contact blade 26A.

However, it is important to observe that the spacing between bar 27 and the lower end 21 of runway section 20 is such that coins of predetermined or less than predetermined diameter will drop between points 21 and 27 without engaging the latter, that is without pressing against switch-operating bar 27. In other words, the spacing between points 21 and 27 is greater than the widest diameter of coin intended to be received in the control chute, so that a coin even of intended and proper diameter must have momentum enough to carry it into operative engage-

ment with the switch member 27 if the switch means is to be actuated.

Another feature of importance is the provision of a wire or thread trapping formation or slot 22 in lower runway member 20 (see also Fig. 3), which is afforded by cutting away portions of the side edge of this runway member so that the lower portions of the latter are narrower than the remaining portions thereof and narrower than the width of the coin passage afforded between main plate 10 and a cover plate 10A, Fig. 3, which is fitted between side walls 11 and against the several lugs 14, 16 and runway members 18 and 20, as well as against additional coin-deflecting bars or angles 30 and 31 welded to plate 10 in the angled positions shown for purposes to be explained.

The fraud-preventive action of the novel device is illustrated in Fig. 1, wherein a captive coin C having a thread T attached thereto has been lodged in the device and permitted to descend past the lower end 21 of the runway means, with or without also having caused an operation of switch means 26—27, depending on how the coin has been manipulated, it being pointed out however that, because of the spacing at 21—27, the coin must be dropped to a level where it will pass from runway 20 if the switch means is operated, and in these circumstances the coin will tend to assume the full-line position shown in Fig. 1, deflector 31 assisting in throwing the coin in a direction toward the lower end 21 of the runway, especially when retractive efforts are applied to the thread T.

By reason of the fact that the lower end region 21 of the runway means is rounded-off, as at 21A, Fig. 3, the tendency of the thread T is to pass into the relieved or cut-away portion 22 with the coin C hanging in the full-line position shown in Fig. 1; and if now an attempt is made to retract the thread T and coin C, the latter will be raised into the dotted-line position of coin C^1, it being noted that the position of the lower terminus 19 of the upper runway section is especially positioned above the lower runway sections 21—22 to assist such action, so that further retractive efforts on the thread will cause the coin to assume the position occupied by the dash-dot coin C^2 with deflector 30 assisting in the resulting jamming of the coin in this position, whereby it becomes practically impossible to work the captive coin back into position where it might cause an operation of the switch means.

It will also appear that if a probe wire be caused to enter the control chute in the direction of thread T, and made to follow the runway section 18, the lower end of such wire will in most cases pass through one of the spaces 15, but if such is not the case, but the wire is deflected downwardly by lugs 14, the end thereof will almost certainly then pass through one of the spaces 17 or 22, since skillful manipulation of such wires becomes more difficult with each change in direction through the chutes.

The normal operation of the device is illustrated in Fig. 2, wherein there is shown a conventional coin-testing chute 40 adapted to receive a coin in the upper edge region thereof and to deliver the coin, if acceptable, from the lower edge region thereof into the auxiliary control chute 41 so that the accepted coin 42 will drop onto upper runway section 18, descend against deflecting lugs 14 and runway lugs 16 and pass along lower runway section 20 to strike against switch-operating bar 27, thereby closing switch

contacts 26—26A to close an energizing circuit via conductors 43, 44, battery or power source 45 to actuate the indicated coin-controlled device, the coin thereafter being guided out of the control chute 41 by deflector 31.

The foregoing specific description is not intended to be limiting excepting as may be expressly provided by the following claims.

I claim:

1. In a coin chute, means defining a coin passage down which coins gravitate, oppositely pitched descending coin runway sections in said passage and one of the same having a terminal in approximately vertical alignment above the other, means forming a filament slot along a side of the lower one of said runway sections communicating into the terminal thereof to receive the attaching filament of a captive coin below said last-mentioned terminal, and means including a short deflector bar beneath said lower runway and pitched upwardly and away from said terminus to form with said lower runway an angular pocket narrowing upwardly for deflecting a coin which has graviated below said last-mentioned terminal in a direction beneath said terminal and lower runway section, such that if said last-mentioned coin be captive, the attaching filament thereof will move into said slot and lie in approximate parallelism with said vertical alignment of the terminals of the runway sections as aforesaid, retractive effort on said filament in said slot and in approximate parallelism as aforesaid causing the captive coin to be raised against the underside of said lower runway section to jam the captive coin.

2. In a coin chute, a first downwardly pitched runway, a second downwardly pitched runway directed oppositely to the first runway, said first runway having a terminal approximately overlying the second runway, a coin-operated element spaced in an approximately horizontal sense away from the lower terminus of the second runway and at a distance from the latter to be engaged by a coin only if said coin moves with a velocity sufficient to bridge said distance and strike against said element, coins having lesser velocity dropping away from said element, and formations in the region of said terminus of the second runway, and extending away from said terminus in a general direction away from said coin-operated element, providing an opening in said second runway and of a width less than the thickness of a coin intended to be received in said chute, said opening being adapted to receive the attaching filament of a captive coin disposed below the level of said terminus of the second runway, and means for deflecting a retracted captive coin, having its attaching filament in said opening, into jamming position against the underside of said second runway together with means below the level of said terminus of the second runway and coin-operated element for deflecting coins in a general direction away from said element and toward said deflecting means.

3. In a coin chute, means for trapping captive coins including, a first downwardly pitched runway section, a second runway section below the first section and pitched in the opposite direction from the latter, a coin-operated switch member spaced opposite the terminus of said second section, a short deflector bar beneath said switch and opposite said terminus member and pitched downwardly from the latter in the same sense as the pitch of said first section, and a

second deflector bar underneath said second section inwardly away from said terminus and pitched upwardly in a sense to converge upon said second section and form an angular pocket beneath said second section, and a filament trapping slot formed at one side of said terminus and approximately vertically beneath the lower end of said first section whereby to trap captive coins beneath said second section and prevent manipulation of such coins to swing the same repeatedly against said switch member.

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