April 12, 1960 F. G. NICOLAUS 2,932,374

COIN-CHUTE ANTI-FRAUD MEANS

Original Filed Jan. 25, 1950 2 Sheets-Sheet 1

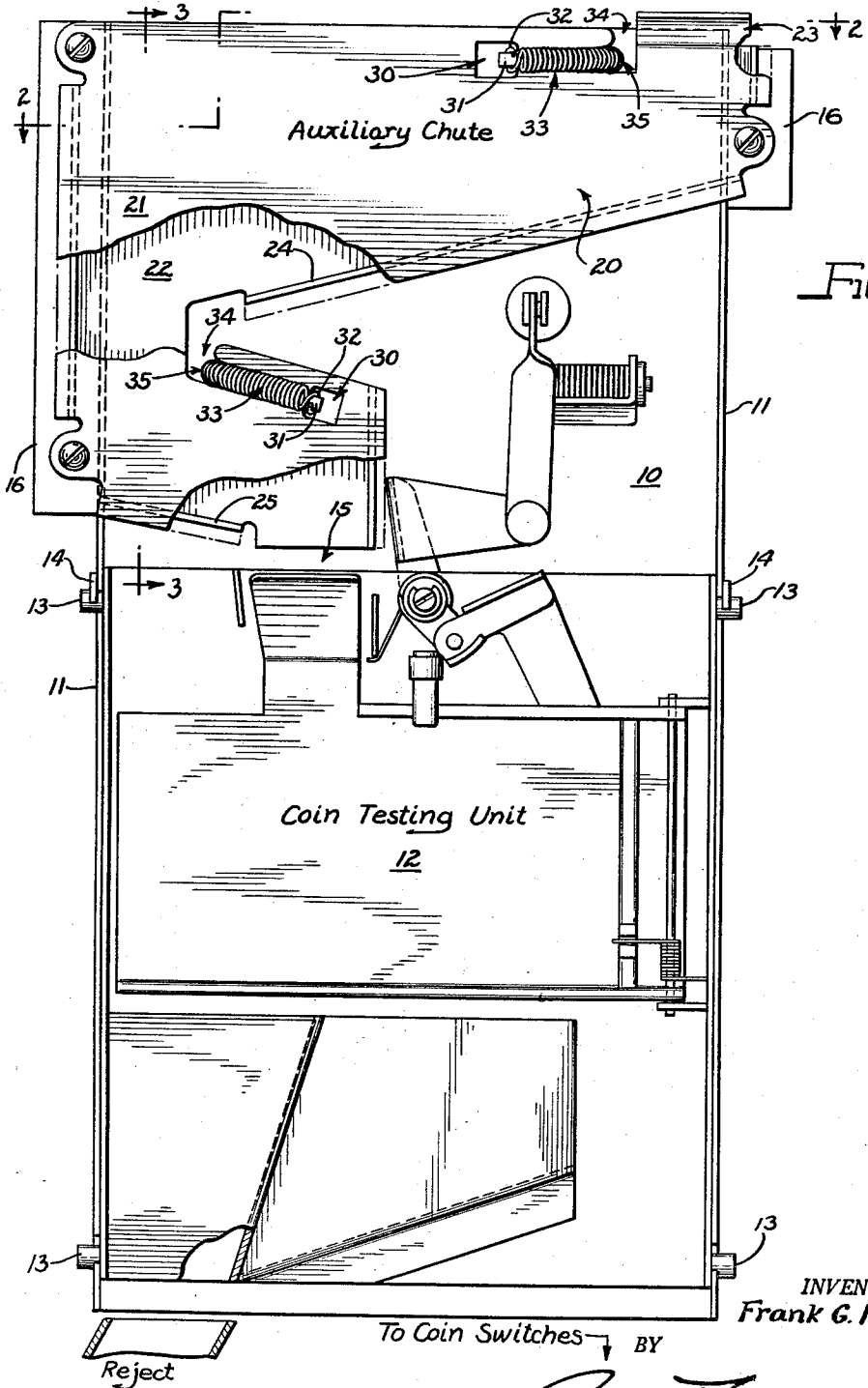

FIG. 1

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COIN-CHUTE ANTI-FRAUD MEANS

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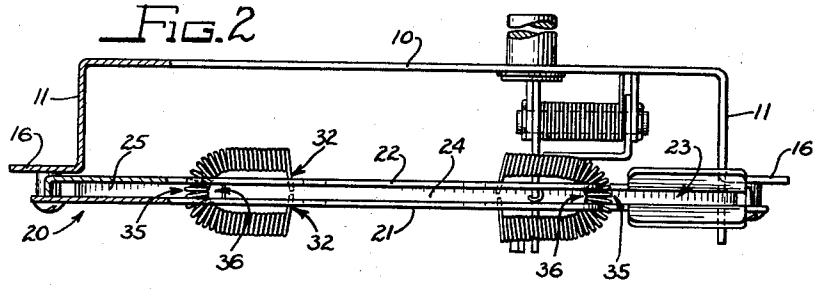
FIG. 2



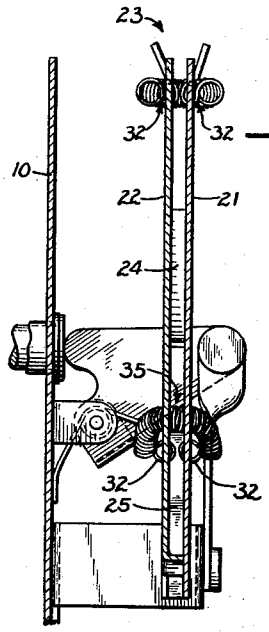


FIG. 3

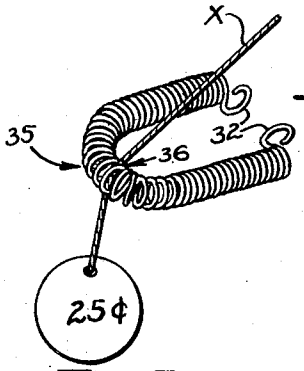


FIG. 4

FIG. 5

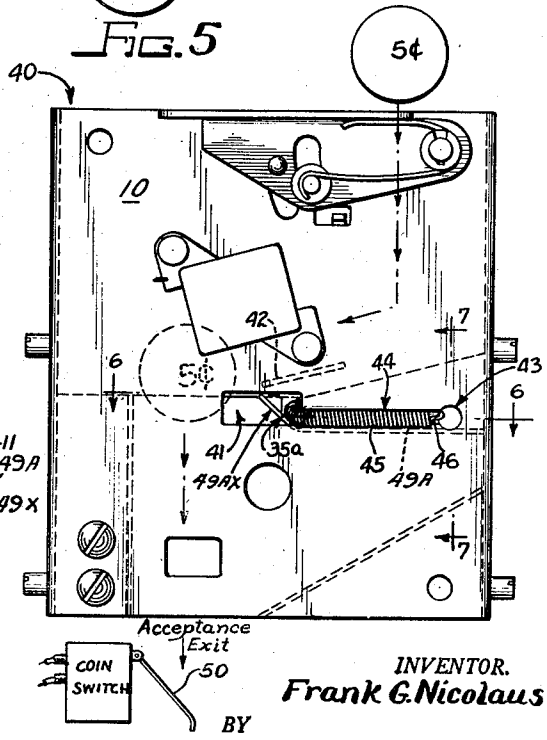


FIG. 6

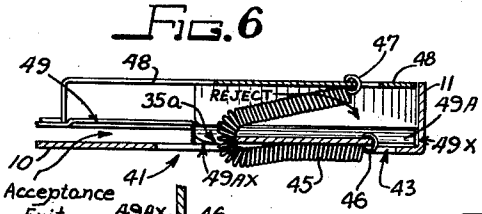
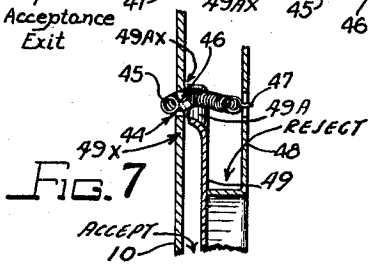


FIG. 7



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COIN-CHUTE ANTI-FRAUD MEANS

Frank G. Nicolaus, Chicago, Ill., assignor to Raymond T. Moloney, Chicago, Ill.; American National Bank and Trust Company of Chicago, executor of said Raymond T. Moloney, deceased

Substituted for abandoned application Serial No. 140,399, January 25, 1950. This application March 25, 1957, Serial No. 648,442

4 Claims. (Cl. 194—97)

This application is substituted for my application Serial No. 140,399, filed January 25, 1950, now abandoned.

The improvements disclosed herein pertain to coin-testing devices and to fraud-preventive means therein for discouraging use of captive coins, which is to say, valid coins to which a fine thread or wire is attached, by means of which the coin is repeatedly manipulated in coin chutes for the purpose of fraudulently procuring unlimited operations of the associated dispensing or other machine.

Numerous contrivances have been devised over a period of years for combatting use of captive coins, some of which operate upon a mechanical blocking principle by which retractive movement of the coin is automatically blocked; or the thread is snared or lodged against a knife-edge to be severed.

The fraudulent manipulation of a captive coin generally involves a necessity for swinging or jiggling the coin back and forth against a switch or a control of some sort, or for quickly retracting the coin a short distance, once it has struck the switch or lever, in order that the coin may not drop past the operating position or be blocked or caught by any of the numerous devices which automatically operate to seize or disable the coin once the switch or lever is first actuated.

The devices employing a cut-off knife are generally defeated by use of fine but tough wire instead of thread.

The snaring arrangements generally involve use of a notch or slot critically situated along the coin runways so that there is a chance for the tether thread or wire to become lodged therein.

One of the principal objects of the present invention is the provision of a snare for captive coins employing a simple, easily installed and serviced spiral or helical device, having a multiplicity of yieldable snaring openings or jaws of a nature tending to hold or grab the tether thread or wire, so that not only is the possibility of manipulating the wire, by skill or chance, past the snare greatly reduced, but the probable seizure of the filament by the device tends to eliminate possibilities for escape from the snare by jiggling and like maneuvers.

It is a further object to provide an anti-captive coin device including a spiral spring and means mounting the same with a portion thereof extending (axially) in a transverse sense across a coin passage, and means for imparting a bias or curvature to the transverse portion of the spring so as to spread the coils thereof somewhat at the entering side toward the tether thread, whereby to permit easy entry of the thread between the turns of the spring in which it becomes seized and trapped.

It is another object to provide a spring snare of the class described and so arranged as to tend to seize and ensnare a captive coin the more securely in response to retractive efforts on the tether to free the same and the coin.

Another object is to provide an anti-fraud attachment for use with various types of coin chute or testers and affording a preliminary runway for deposited coins,

wherein the novel snare means is critically situated to prevent the captive coin from reaching the main testing unit at all.

Other objects and aspects of novelty and utility pertain to details of the construction and operation of the embodiments of the invention described hereinafter in view of the annexed drawings in which:

Fig. 1 is a side elevation of a coin handling unit embodying the invention;

Fig. 2 is a horizontal cross-section along lines 2—2 of Fig. 1;

Fig. 3 is a vertical section looking in the direction of lines 3—3 of Fig. 1;

Fig. 4 is a magnified perspective illustrating the trapping action of the helical snare on a captive coin;

Fig. 5 is a side elevation of another form of coin chute incorporating the invention;

Fig. 6 is a horizontal section looking down on lines 6—6 of Fig. 5;

Fig. 7 is a vertical section looking in the direction of lines 7—7 of Fig. 5.

The coin-handling unit depicted in Fig. 1 includes an elongated channel-shaped base plate having a back wall 10 and opposite side walls 11 (see also Fig. 2).

A conventional, drop-type, coin-testing unit 12 is removably mounted in the lower portion of the base plate by means of lug-pins 13 seated in notches (not seen) formed in side walls, and secured by spring catches 14. Acceptable and rejected coins leave the lower end of this chute at various positions thereacross; and the coin entrance therefor is situated at 15 on the top edge.

Mounted on flanges 16 on the upper sidewalls is an auxiliary anti-fraud chute 20 consisting of a pair of spaced plates 21 and 22 (see also Fig. 2), having a coin entrance 23 at an upper end thereof and communicating with a downwardly pitched upper coin runway 24, and a shorter, oppositely directed lower runway 25 terminating above the coin-testing chute entrance 15 to discharge coins into the unit 12 at 15.

Anti-captive coin means are provided in the auxiliary chute at several positions or levels, i.e. adjacent the coin entrance 23 and below the terminus of the upper runway and above the discharge runway 25.

Formed in both of the passage or chute-defining plates 21 and 22, adjacent the foregoing positions, are aligned cut-outs or openings 30, each having a marginal lug 31 to which are respectively anchored the looped, opposite ends 32 of spiral snare springs 33.

Also formed in the wall plates 21 and 22 in spaced relation to cut-outs 30 are hooking notches 34 opening into the edges of the respective plates.

The snare springs 33 are looped and are of a length such that the median bight portions thereof will be slightly stretched to seat and hook into the corresponding notches 34, thereby disposing said springs in the biased, curved or looped condition depicted in Figs. 2, 3, and 4, with the median coils (as at 35, Fig. 2) biased open at their outermost peripheries or leading sides (facing the general direction of approach of a retracted coin or its tether), while compressing or crowding the innermost peripheral sides of these median turns, as at 36 (Fig. 2).

As will appear from the magnified illustrative view of Fig. 4, the leading face 35 of the snare spring presents diverged or open coils, while the coils at the rearward or trailing side 36 are crowded, in consequence of which the tether thread or wire X is afforded a plurality of entrances into the snare; and the curvatures presented by the coils also tend to facilitate movement of the thread in between the same.

Any retractive pull on the tether tends to force it toward the trailing side or compressed bight 36 of the snare spring, and also to flex the curved part of the spring

in a manner to further compress the median coils and thereby seize the filament more firmly. Such slippage as may occur upon retraction of the thread merely raises the coin into abutment with the spring and the trapping lodgement becomes increasingly effective in proportion to the retractive effort applied.

It is also important to observe that the seizure of the filament stops any downward teasing or dangling of the coin to prevent easing it into or beyond the testing chute toward the conventional coin switch (not shown) used with such devices.

It may be observed that in the embodiment of Fig. 1 the upper snare is principally effective after a captive coin has been allowed to descend to a position below or to the left of said upper snare, whether the coin reaches the lower helix or not.

In Figs. 5 to 7, the spring snare is shown as applied to a coin testing unit **40** of known design, and having an opening **41** in a side wall thereof adjacent the coin passage and just below the lower terminus of a short coin runway or ledge **42**.

Spaced horizontally away from the first wall opening **41** is a second wall opening **43**, and there is preferably, but not necessarily, an elongated depression or groove **44** interconnecting said openings.

A snare spring **45** has one end **46** anchored to an edge portion of the second hole **43**, the median or bight portion of the spring being bowed around a margin of the first wall opening or hole **41**, and the remaining end **47** (Figs. 6 and 7) of the spring being anchored in a hole on a plate portion **48** of the chute spaced laterally from the main wall plate **10**, so that the leading diverged bow or bight coils **35***a* (Fig. 6 particularly) confront the general downward line of travel of the coin toward the coin switch, the acceptance trajectory of the coin being indicated by dash-dot lines.

In the type of control shown in Fig. 5, the accepted coin will descend to operate a control device such as the switch shown. The object of the cheater in employing a captive coin would be to cause the coin to descend through the acceptance exit and be dangled at a point just touching the control switch arm **50**, so that by slight manipulations the coin could be lowered and raised or swung to effect repeated operations of the switch.

In the commercial embodiment illustrated in Fig. 5, the acceptable coin being confined to travel generally along the dash-dot line path, the tether thread or filament will work into the coils at **35***a* in the manner and with the same results as heretofore described for the embodiment of Fig. 1.

The construction of the chute shown in Fig. 5 includes two stamped metal plates to define a lower "reject" passage and a lower "acceptance" passage as shown in Figs. 6 and 7.

The "reject" passage is defined between the outer plate **48** and an inner plate **49**, the latter having a laterally offset edge or wing **49A** fittting close to the main base plate **10** to close off part of the acceptance passage (see Fig. 7). This wing **49A** angles upwardly at its end **49AX**, as viewed in Fig. 5.

However, there is a relief affording some space between the edge of the offset wing and the base plate **10**, as indicated at **49X** in Figs. 6 and 7, and this relief is sufficient to admit a thread or like tether on a captive coin. The side of the short runway **42** is similarly relieved (not shown) to permit a thread to work therepast.

I claim:

1. Anti-fraud means for coin chutes comprising in combination with a gravity coin passage having an upper coin entrance communicating through a narrow downward passage having a change in direction to guide a coin into operative engagement with a coin-operated instrumentality which is offset from the gravitating path of coin travel thereto: a snare for tethered coins comprising a helical coil spring mounted across said passage at a position between said entrance and control instrumentality and transversely of the inward direction of coin movement therein such that the coin and portions of the tether filament must pass beyond and below the location of said spring, and retractive effort upon the tether plus the weight of said coin cause the tether to move laterally in a direction to work in between convolutions of the spring.

2. Coin-operated mechanism including: means defining a narrow coin passage having a coin entrance; a captive-coin filament snare comprising an elongated coil spring having convolutions about and along its long axis and extended across said passage and located at a point spaced inwardly away from said entrance such that the planes of convolution of the several coils thereof are approximately parallel to the plane of the coin in negotiating said passage so that the filament tether of a captive coin when moved toward the spring axis can enter between any of a plurality of adjacent spring convolutions; and a coin-actuated device situated in communication with said passage at a position beyond both said entrance and snare spring and offset from a straight line connecting said entrance, said spring, and a point in said passage at a distance beyond the spring toward said coin-actuated device by an amount sufficient to cause said tether to assume a non-linear condition when a tethered coin is substantially in operative position relative to said coin-actuated device and to have a movement component toward said axis and assume a substantially linear condition when a retracting pull is exerted on the tether to re-actuate said device, said spring location being chosen so that the tether in assuming said substantially linear condition tends to work in between a pair of adjacent spring convolutions.

3. In a coin control device, the combination of: a coin passage means having a coin entrance and a coin-controlled means remote therefrom in a location such that a coin travels from said entrance along a non-linear path having at least one change in direction to direct the coin into operative engagement with said controlled means; and a snare for tethered coins comprising an elongated member having a series of adjacently spaced convolute portions about its long axis and disposed in said passage means with said axis crosswise thereof at a point between said entrance and controlled means at one side of the point of change in direction aforesaid by reason of which a retractive pull on the tether to move the coin back for operative reengagement with the controlled means will cause the tether to be moved toward said axis by resistive action of the coin in a direction to work in between adjacent convolute portions of the snare.

4. In a coin receiver having a coin entrance communicating into a descending coin passage leading to a coin-operated instrumentality which is offset in the direction of coin travel from said entrance in a manner requiring the coin to change direction of travel at least once in moving to operatively engage said instrumentality, improvements in a snare for the filamentary tether of a captive coin comprising: the provision across said passage of a helical coil spring the axis of which is substantially transverse to the travel of said coin and which is located between said entrance and the point of change in direction but close to the latter in a position such that a filamentary tether extending between the entrance and a coin located operatively close to said instrumentality will upon retractive movement tend to work in between the convolutions of the spring.

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