March 5, 1968 J. L. ISAACSON 3,371,762

COIN CHUTE WIRE LOCKOUT AND CONTROL

Filed Sept. 17, 1965 3 Sheets-Sheet 1

Fig. 1.

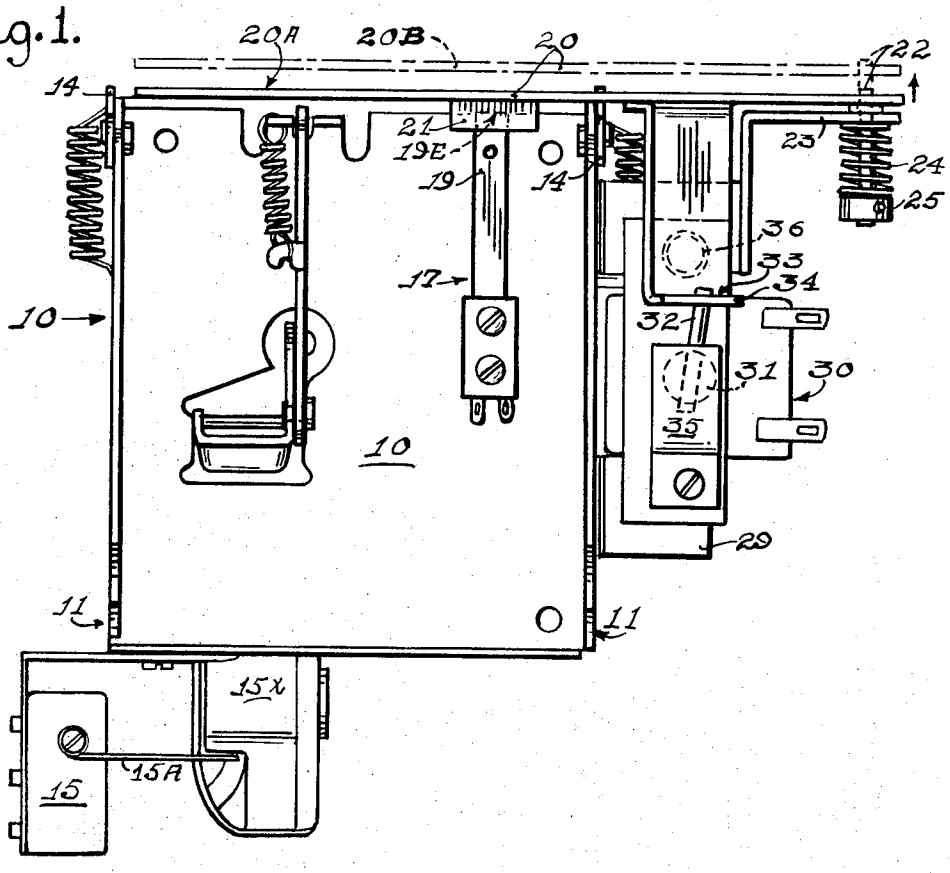
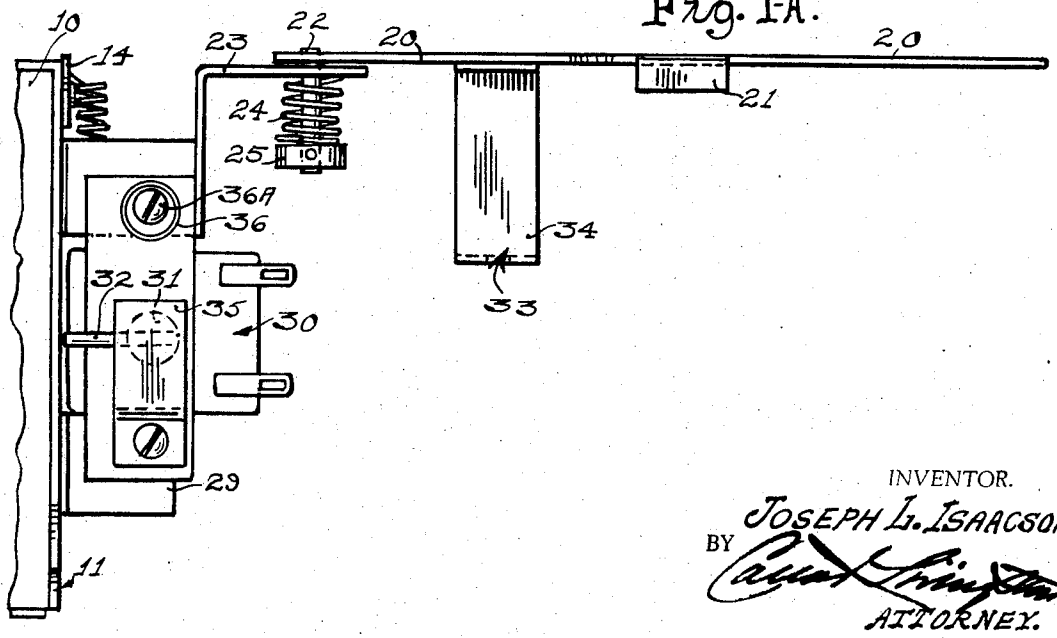


Fig. 1-A.



INVENTOR.
JOSEPH L. ISAACSON
BY
ATTORNEY.

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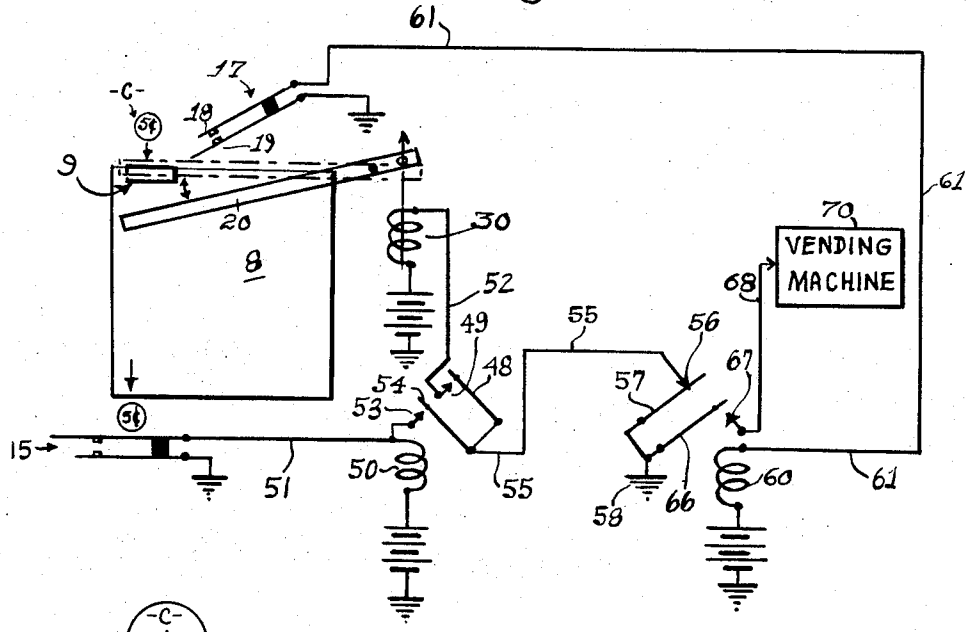
COIN CHUTE WIRE LOCKOUT AND CONTROL

Filed Sept. 17, 1965 3 Sheets-Sheet 2

Fig. 6.



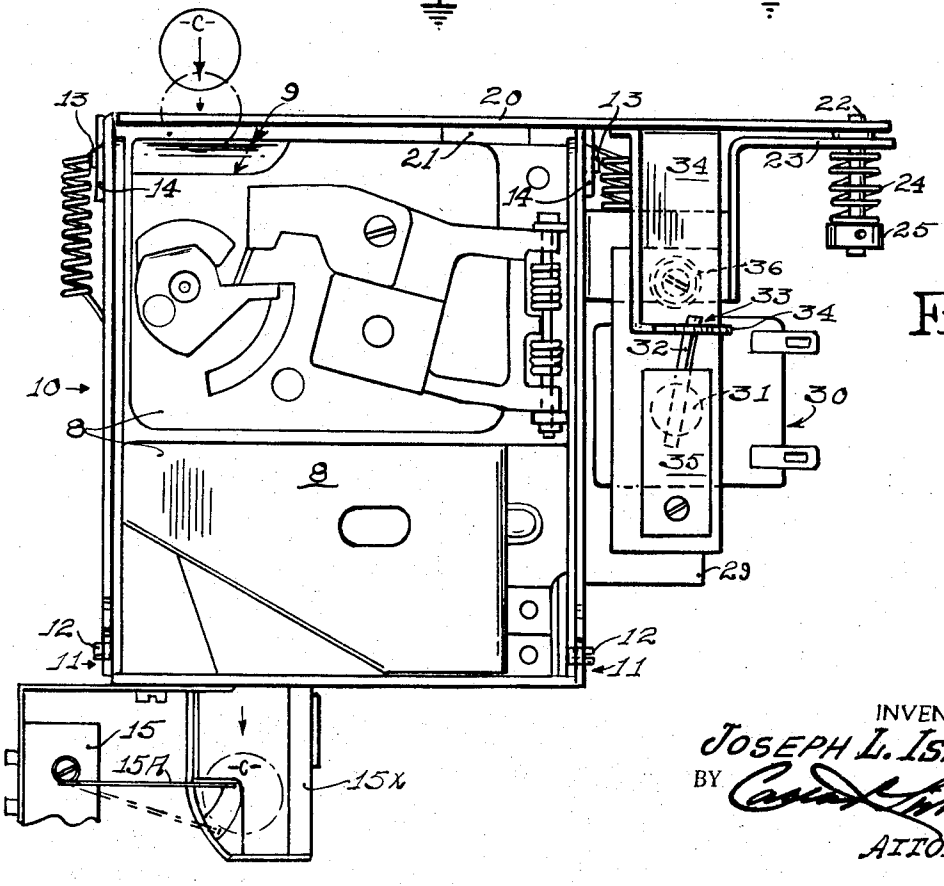


Fig. 2.

INVENTOR.
JOSEPH L. ISAACSON
BY
ATTORNEY.

March 5, 1968 J. L. ISAACSON 3,371,762

COIN CHUTE WIRE LOCKOUT AND CONTROL

Filed Sept. 17, 1965 3 Sheets-Sheet 3

Fig. 3.

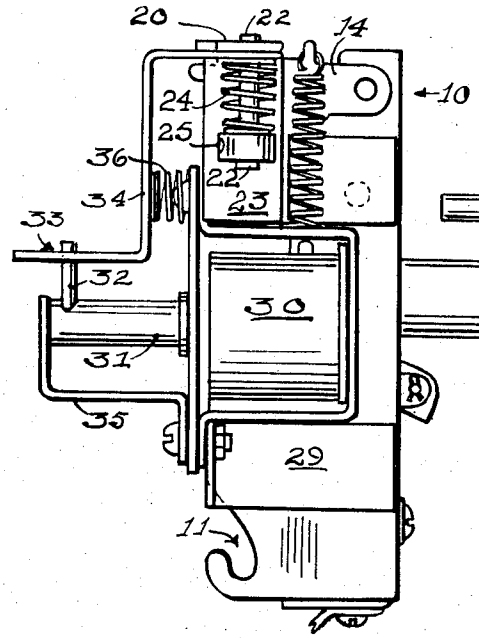


Fig. 4.

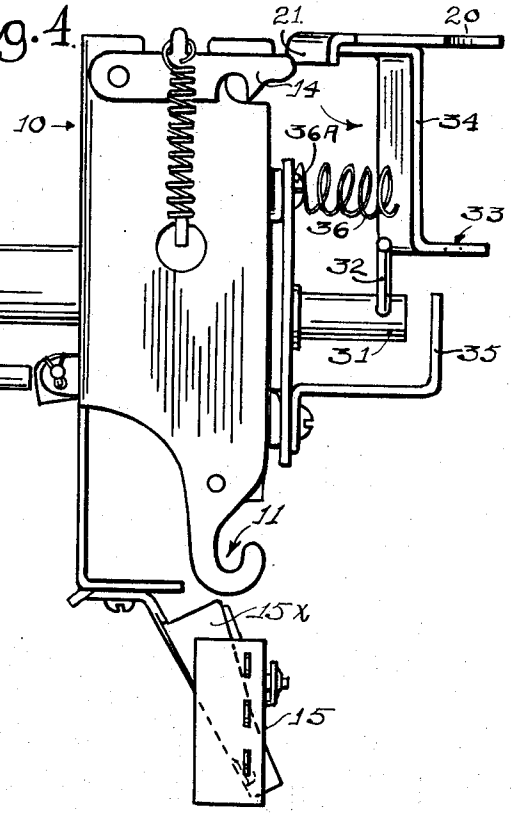
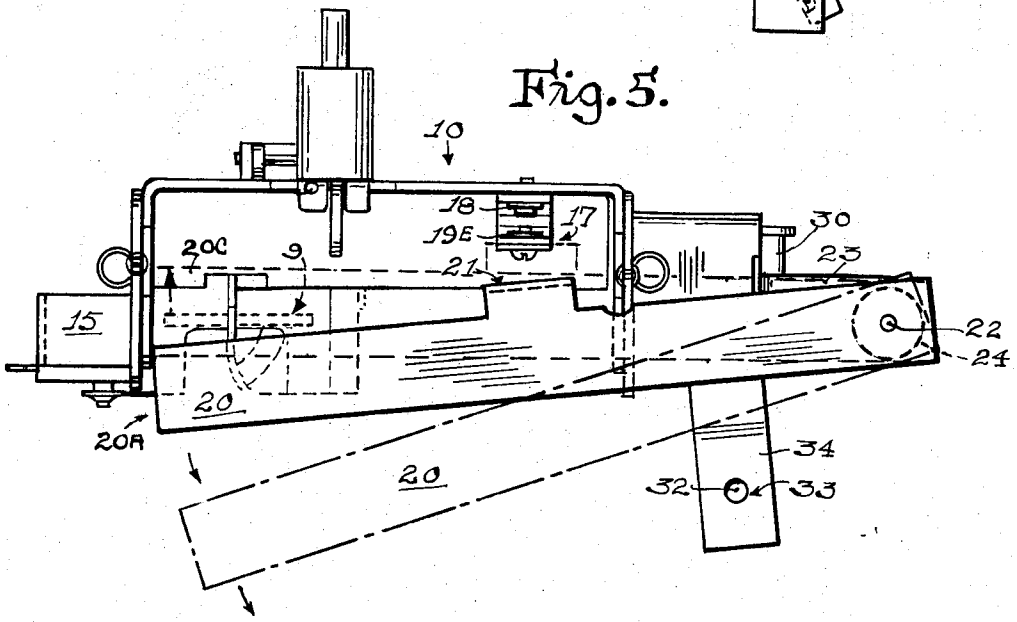


Fig. 5.



INVENTOR.
JOSEPH L. ISAACSON
BY
ATTORNEY.

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COIN CHUTE WIRE LOCKOUT AND CONTROL

Joseph L. Isaacson, New Orleans, La., assignor, by mesne assignments, to Lion Manufacturing Corporation, Chicago, Ill., a corporation of Illinois

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8 Claims. (Cl. 194—97)

ABSTRACT OF THE DISCLOSURE

A blocking lever is pivoted on a cradle to move across the entrance to the coin chute seated therein to block the same and bend to one side any wire or like probe or tether on a captive coin responsive to action of an electromagnet responsive to any operation of the coin switch located farther along the chute passage. Supplement to the subject: the blocking lever is both pivotable and axially shiftable and is mounted on the cradle by which the coin testing chute is removably supported; and the blocking lever can be shifted axially against spring tension out of the way of the chute for removal thereof from the cradle and for uncoupling with the electromagnetic means.

This invention relates to coin testing devices and more particularly to means for preventing fraudulent operation of such devices and associated vending and amusement machines by use of a tethered or captive coin, especially the type employing a wire filament attached to the coin, as distinguished from the type which uses flexible threads of nylon and similar synthetics, for which a different form of anti-fraud means is usually employed.

Because most coin chutes or coin "acceptors" in use today are equipped with one or more forms of captive-coin snare, cut-off or lockout, effective against both hard and soft threads and semi-stiff materials, the cheats have resorted to the use of wire having considerable stiffness without rigidity in order that more control can be exerted on the captive coin to permit forcing the coin to its destination (the coin-operated switch) and manipulation of the coin to effect repeated operations of the coin switch.

The disclosed improvements afford a simple form of lockout means found effective against the captive coin with a wire tether and one which has structural features enabling its use in conjunction with a mounting cradle in which various coin acceptors may be installed.

Among the features of novelty and utility of the disclosed fraud preventive means is the use of a pivoted wire lockout arm of substantial mass and rigidity adapted to swing across the entrance to the coin chute against the tethering wire in a way to bend the wire out of its course and to overlie and block the coin entrance.

Another feature relates to a means for yieldably pivoting the wire lockout arm in a way to facilitate installation and removal of the coin acceptor or chute from the cradle.

A further feature is the provision of a control circuit cooperable with the lockout means to prevent operation of the vending or other machine associated with the coin chute.

Additional features of novelty and utility as set forth and claimed are described in view of the annexed drawings in which:

FIGURE 1 is a front elevation of a coin chute cradle with wire trapping means;

FIGURE 1–A is a fragmentary duplication of parts seen at the upper right of FIGURE 1 but showing the trapping arm swung out 180°;

FIGURE 2 shows the cradle of FIGURE 1 with a coin chute installed therein;

FIGURES 3 and 4 are elevations of opposite sides of the cradle;

FIGURE 5 is a top plan view of the cradle and trapping mechanism;

FIGURE 6 is a circuit diagram.

In FIGURE 1 there is shown the front of a standard coin-chute cradle **10** which is adapted to receive and seat a coin-testing device or "coin acceptor" unit **8** of known construction in the manner depicted in FIGURE 2, the cradle as seen in this view and in FIGURES 3 and 4 being provided at the base of its opposite side walls with hooked slots **11** into which pins **12** on the chute are fitted before rocking the chute upwardly into its fully seated condition, in which another set of pins **13** at the top thereof snap beneath spring-urged retaining hooks **14**.

Reverting to FIGURE 1 and the view of the inside wall of the cradle there shown, the fraud-preventive improvements comprise the provision of a blade or stack-type supervisory switch **17** mounted on said wall with the upper movable free end **19E** of the outer blade contact **19** disposed close to the upper margin of the cradle to be engaged and moved into circuit-closing engagement with its companion contact **18** (FIGURE 5) by a lug **21** carried by a long lockout arm or gate bar **20**.

As seen in FIGURES 1 and 1–A, the lockout arm **20** pivots on a pin **22** working in an angle bracket **23** affixed to the side wall of the cradle, said pin depending through a spring **24** captured thereon by a set-screw collar **25** so that the pin is urged downwardly, and the pin being fixed at its upper end in the lockout arm accordingly pulls the arm downwardly flush onto the bracket in the full-line positions seen in FIGURES 1 and 1–A.

Normally, the lockout arm **20** is turned into the full-line position seen in FIGURE 1, but by pushing upwardly against the bottom of the pin and collar **25** the lockout arm may be elevated to the dotted-line position **20B** (FIGURE 1), thus uncoupling the lockout arm from a driving means (to be described) and clearing the coin-testing chute for removal from the cradle.

Carried on another bracket **29** affixed to the side of the cradle beneath the bracket **23** is an electromagnetic solenoid **30** (FIGURES 2 and 3), the plunger-armature **31** of which carries a radial drive pin **32** long enough to engage freely in a hole **33** in an angled pendant operating arm **34** spot-welded to the lockout arm and which substantially overlies the end of the solenoid plunger and said drive pin when the lockout arm is turned into normal operative position as at **20A** (FIGURE 5).

The solenoid plunger is freely rotatable about its own axis in the core of the solenoid coil in order to dispose the drive pin in upright position and alignment with the hole **33** in the lockout arm when the latter is sprung up to the elevated position **20B** (FIGURE 1) in a manner such that when the lockout arm is allowed to return to its normally spring-urged lowered condition, the pin fits into the hole **33** and the lockout arm is again operatively coupled to the solenoid.

A spring **36** (FIGURES 1–A, 3 and 4) is fixed by a solenoid mounting screw **36A** in position behind the pendant operating arm **34** to urge the latter and hence the lockout arm itself outwardly away from an otherwise blocking position overlying the top of the coin chute and especially the coin entrance **9** thereof.

Energization of the solenoid attracts the plunger **31** and causes the drive pin **32** to move inwardly (away from the viewer) to swing the lockout arm into blocking position across the top of the coin chute and the coin entrance **9**, as in FIGURE 5 at **20C**; also in this condition the lug **21** on the lockout arm bears against the upper end **19E** of switch blade **19** to close circuit with contact blade **18** for purposes to appear.

When the solenoid is deenergized the spring **36** pushes the bracket **34**, the arm **20** and the plunger **31** back to the normal position determined by a stop bracket **35**.

The wire trap may be utilized in vending and amusement machines in conjunction with a control circuit such as shown in FIGURE 6 wherein closure of the coin-operated switch **15** by deposit of an acceptable coin C in the deposit entrance **9** will energize a coin relay coil **50** via conductor **51** and do two things, the first of which is to close coin relay contacts **53**, **54**, which will set up a holding circuit for the coin relay via conductor **55** through the closed normal contacts **56**, **57** of a vend relay **60** to the common return or operating ground **58**.

The second result of the aforesaid operation of the coin relay is to energize the gate or trap solenoid **30** which will swing the gate or lockout bar **20** into coin-blocking position across the coin chute deposit entry **9**, the blocking condition being maintained owing to the described holding action of the coin relay **50** at another pair of its own contacts **48**, **49**, and conductor **52** to the gate coil **30**.

When the gate bar **20** moves to full blocking position it will close the gate switch contacts **18**, **19** thereby energizing via conductor **61** the vend relay coil **60**.

Operation of the vend relay, as aforesaid, will produce two further results: first, an actuation of the controlled vending or amusement machine or other instrumentality **70**, and secondly, a breaking of the coil relay hold circuit.

The vending means **70** will be actuated by a control circuit via the now-closed vend relay contacts **66**, **67** and conductor **68**.

Dropping of the coin relay is effected by an opening of the holding ground at vend relay normal contacts **56**, **57**; and this operation in turn will drop out the guard or trap circuit by deenergizing the gate or trap coil **30**, so that the spring **36** may swing the trap bar **20** back to normal position and reopen the coin entrance **9**.

So long as the lockout arm **20** is pulled by the solenoid into blocking position across the coin entrance, manipulation of a captive coin equipped with a wire tether will be rendered impossible in most cases, and extremely difficult in all cases.

This wire-guard means is ordinarily not effective against extremely fine nylon and like synthetic threads which are wholly flexible or have some degree of stiffness but inherent pliability with very slight diameter, the prevention of this latter type of captive coin fraud being achieved by a different type of apparatus (e.g. see Ser. No. 445,361) now Patent 3,279,574.

The gate or trapping bar **20** is itself purposely provided with a considerable mass and the solenoid driving means **30**, **31**, **32**, **34** is capable of supplying a very powerful drive to the large bar **20** so that the usual types and gauges of coin-tethering wire will be easily deflected and bent over the narrow coin entrance portion **9**, as a result of which it becomes impossible to drop the coin farther into the chute or manipulate it retractively with the slight movement required, owing to the deformation of the wire.

In conformity with accepted practice, the coin switch **15** is actuated as the result of depression of the switch operating arm **15A** (FIGURE 2); but the switch operates only after this arm is swung a predetermined distance (e.g. to the dotted-line position) which is sufficient to permit the coin to drop past the lowered arm in the usual coin-guarding guideway **15X**. Once the coin passes the operating arm in the critical lowered position necessary to operate the switch, it cannot be retracted by the wire tether to effect a second fraudulent operation because the switch operating arm **15A** immediately snaps back to the full-line position and thereafter blocks any upward movement of the coin in the guideway.

Thus, if the wire-captured coin operates the switch and passes the switch arm, it cannot again be retracted for a repeat operation, but if by any delicate manipulation of a captive coin the switch arm can be moved just far enough to cause an operation of the coin relay and then quickly retracted a very trifling distance sufficient to prevent the coin from dropping past the switch arm, then fraudulent repeat operations may be effected by teasing the switch arm with similar slight advances and retractions of the coin. For such fraudulent manipulations, a stiff wire is needed in order to effect the necessary slight and delicate movement of the coin. A string or thread will not afford the necessary precision.

In the disclosed apparatus any wire tether will be bent or crimped by the powerful gate mechanism on the first operation of the coin switch and further operations will be impossible or extremely unlikely.

The usual operation of the device is such that if the coin switch can be actuated and the coin can be prevented by the manipulator from dropping beyond the switch arm, the wire tether will be trapped by the gate bar **20** before the coin switch reopens and the coin relay will thus never be released from its hold-in condition, so that no repeat operations can be effected and the machine will be out of service until the fraudulent coin is removed.

I claim:

1. The combination with a mounting cradle for removably seating a coin chute having a coin entrance and an exit for acceptable coins and switch means to be actuated by coins passing from said exit, of improvements in fraud-preventive means comprising: a long gate bar and means pivotally mounting the same on said cradle with the pivot axis located at a point remote from the coin entrance of a coin chute when seated in the cradle, for pivotal movement of the bar to and from a position overlying and blocking said entrance, said bar having a leading edge passing across said entrance when the bar is pivoted to a predetermined blocking position whereby to engage and deflect wire and like tethers on a captive coin in a direction across the entrance thereby impairing the manipulation of said tether to control fraudulent switch-operating movements; and cooperative electromagnetic and spring means operating in a non-energized condition of the electromagnetic means to position the gate bar out of said blocking position, and to dispose the gate bar in said blocking position when the electromagnetic means is energized, said means pivotally mounting the gate bar being arranged and constructed to provide a range of movement of the bar to and from a normal operative position in close proximity to the coin chute and coin entrance when in the cradle, to a release position in a direction away from the coin chute and cradle, in which release position the gate bar is displaced to a predetermined non-obstructing position from the path of the coin chute to permit installation and removal thereof from the cradle.

2. Apparatus according to claim **1** wherein said means mounting the gate bar permits bodily displacement along the pivotal axis thereof as well as the said pivotal movement thereof, and the bar is spring-urged axially by said axis to normal position relative to the coin entrance and permitting axial displacement of the gate bar in a direction away from the coin entrance whereby the gate bar may be moved to a predetermined non-obstructing position relative to the coin chute.

3. Apparatus according to claim **1** wherein the electromagnetic means is a solenoid mounted on the side of said cradle beneath the pivotal mounting of the gate bar, and having a plunger movable in a direction substantially at right angles to the pivotal axis of the gate bar, said gate bar further having an operating extension directed to overlie a portion of said plunger and disengageable means providing a driving interconnection between the plunger and said overlying operating extension.

4. Apparatus according to claim **3** wherein the disengageable means is a pin extending laterally of the plunger axis and parallel to the gate bar pivotal axis and having removable coupling engagement with said operating extension; said gate bar being shiftable in the direction of its pivotal axis to effect disengagement with said pin.

5. Apparatus according to claim **3** further characterized by the provision of a gate control switch mounted on said cradle in position to be engaged and actuated by means carried by said gate bar in the blocking position of the latter; and a control circuit including a first relay

means actuated by said coin switch and a second relay actuated by said gate switch; contact means connecting with said electromagnetic means and operated by said first relay means to effect movement of the gate bar to blocking position; and further contact means connecting with said first-mentioned contact means and operated by said second relay means to provide an operating connection for a vend circuit responsive to actuation of both the gate switch and coin switch and the corresponding relay means respectively actuated thereby.

6. The combination with a coin chute cradle adapted for mounting in an upright position and of channel shaped cross section including a vertical main wall and opposite vertical side walls and a substantially open upper end, said cradle adapted to receive a coin chute having a coin entrance disposed at said open upper end of the cradle to receive a coin for acceptance delivery at an exit near the lower part of the cradle and a coin switch adapted to be operated by accepted coins moving from said coin chute exit of improvements comprising: a supervisory gate switch on said main cradle wall; a long flat gate bar and a pivot means and pivot-supporting means carried at one of said side walls remote from the position of said coin chute entrance and pivotally mounting the gate bar to swing about a vertical axis in a horizontal direction across and close to said open upper cradle end to overlie and block said coin entrance; said gate bar pivot means comprising a long pivot element shiftable vertically in said pivot supporting means so as to elevate the gate bar above said upper cradle end to facilitate insertion and removal of a coin chute therein, and spring means normally acting upon the gate bar at said pivot means to lower the gate to an operative position close to a coin chute entrance as aforesaid.

7. The combination, with a cradle for mounting a coin-testing chute having a coin entrance disposed close to a margin of the cradle, of fraud obstructing means comprising a long flat blocking member and means pivotally mounting said member at one side of the cradle to swing back and forth across and close to a said coin entrance of a testing chute mounted in the cradle, said pivotal mounting means being arranged and constructed to permit axial shifting of the blocking member in the direction of the pivotal axis thereof from a predetermined close proximity to said coin chute entrance and cradle away therefrom to a non-obstructing position where it will not interfere with installation or removal of the coin chute from the cradle; together with electromagnetic actuating means mounted at said one side of the cradle in operative juxtaposition to a driving extension part of said blocking member, and means providing a driving intercoupling between said actuating means and said driving extension part and permitting at least the said axial shifting movement of the blocking member for the purpose aforesaid.

8. The combination of claim 7 further characterized in that said intercoupling means additionally permits uncoupling of the actuating means and the driving extension part so that the blocking member may be moved wholly independently both pivotally and axially of the actuating means.

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ROBERT B. REEVES, *Examiner.*