Nov. 15, 1966 G. C. WILLIAMS III 3,285,382

ANTI-CHEATING DEVICE FOR COIN CHANGING MACHINES

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Fig. 1

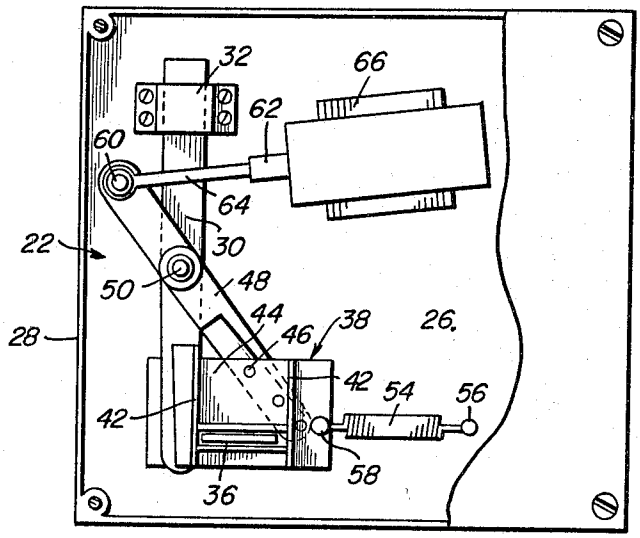
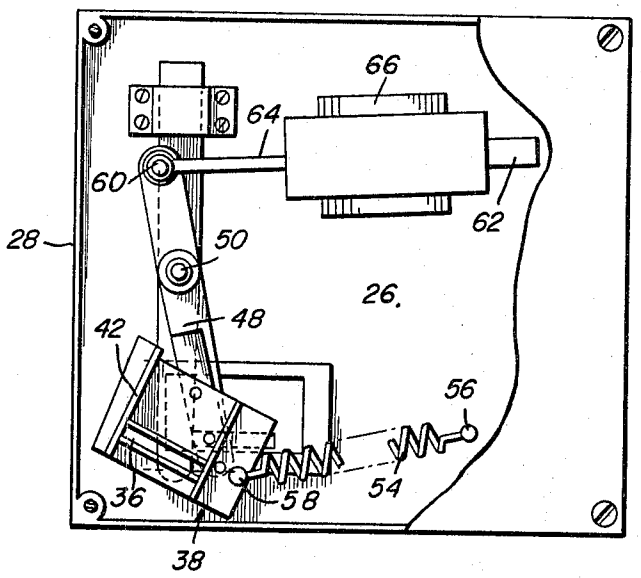


Fig. 2



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Fig. 3

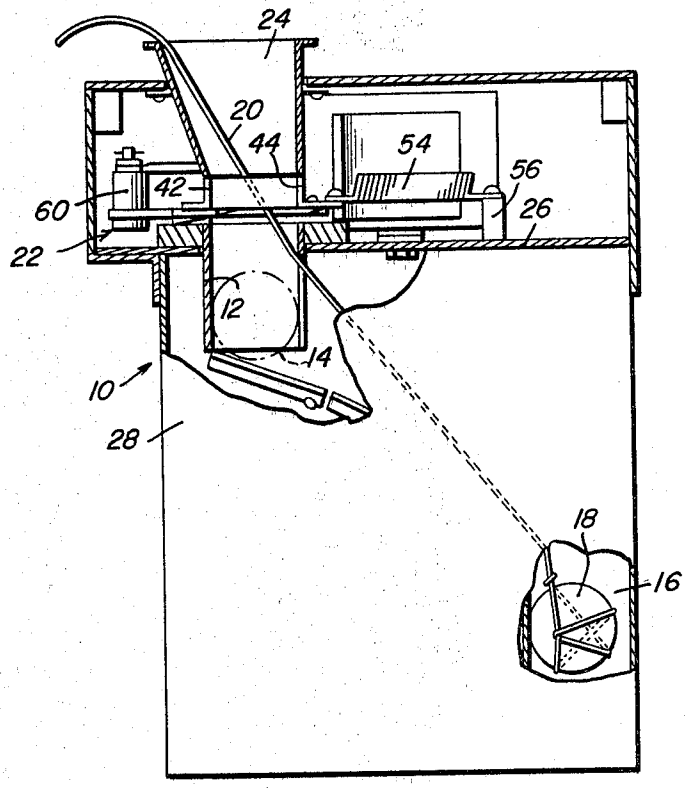


Fig. 4

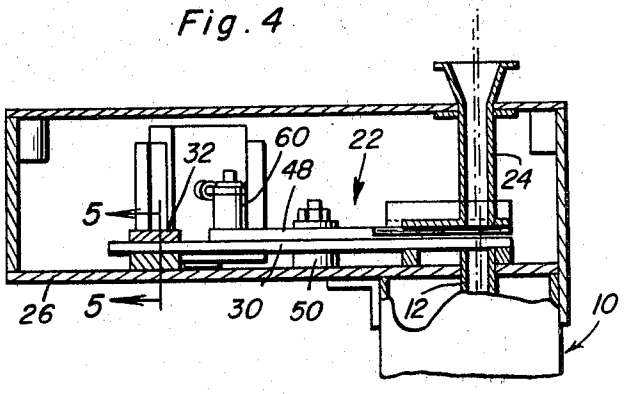
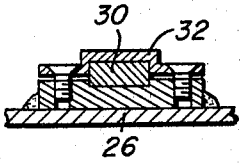


Fig. 5



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Fig. 6

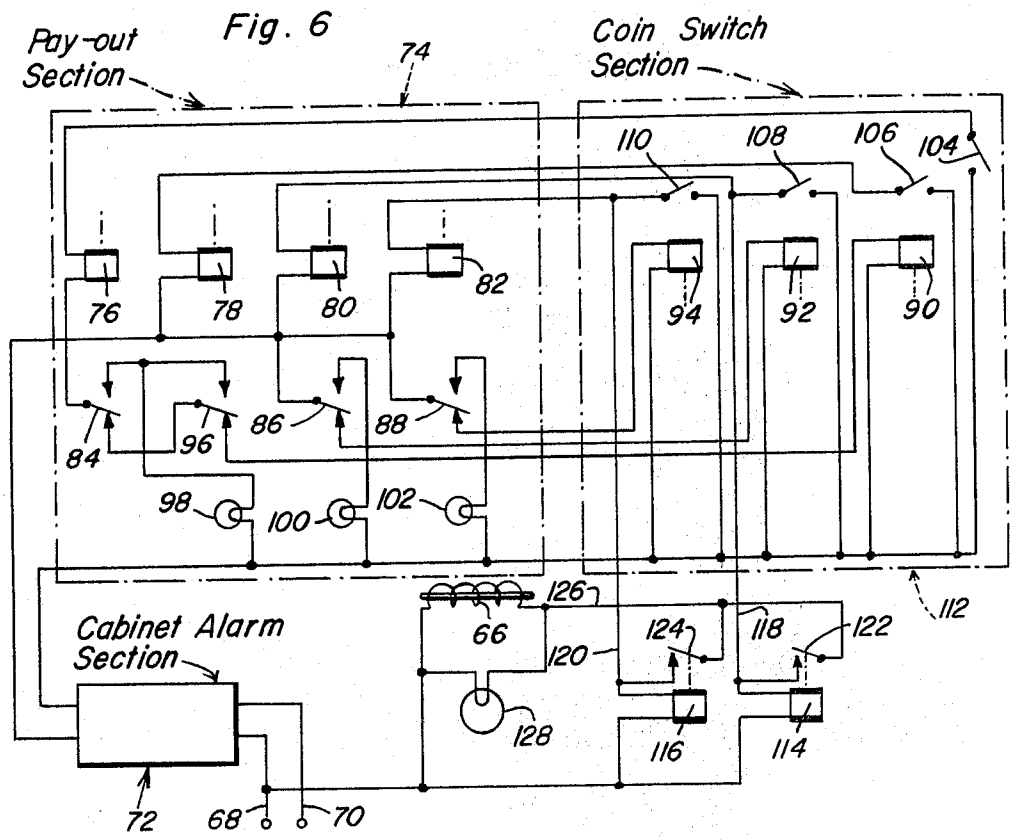
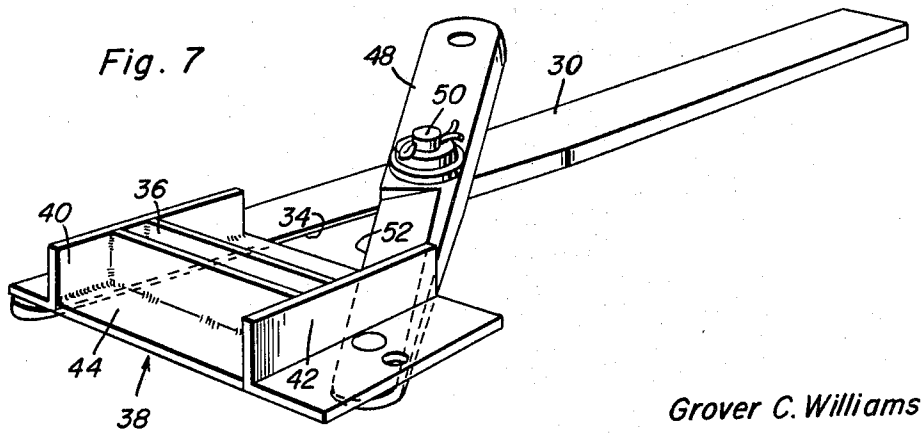


Fig. 7



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3,285,382

ANTI-CHEATING DEVICE FOR COIN CHANGING MACHINES

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Filed May 4, 1965, Ser. No. 452,971
8 Claims. (Cl. 194—10)

This invention relates to coin operated machines and more particularly to coin changing devices or coin operated machines having coin changing facilities which are susceptible to theft of coins stored therein by unauthorized operation of such machines.

It is therefore a primary object of the present invention to provide facilities in association with coin changing devices which will prevent theft of coins from the coin changing device.

An additional object of the present invention in accordance with the foregoing object, is to provide an anti-cheating device for coin changing machines which will prevent repeated activation of coin switches by the same coin in order to avoid unauthorized dispensing of change from the machine.

A still further object in accordance with the foregoing objects, is to provide an anti-cheating device for coin changing machines which is operative to sever any string, cord or filament that may be attached to a coin deposited into the coin operated machine through which the same coin may be withdrawn for repeated activation of the coin switches.

Yet another object of the present invention is to provide in combination with a coin changing machine, a solenoid operated cutter operatively positioned with respect to the coin receiving chute so that a coin deposited into the chute will pass between the cutting edges of the cutter before it activates a coin switch through which change dispensing operation of the machine is initiated.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a top plan view of a coin changing machine with parts broken away showing the thread cutting mechanism of the present invention;

FIGURE 2 is a top plan view similar to that of FIGURE 1 but showing the cutter mechanism in another operative condition;

FIGURE 3 is a side elevational view of the coin changing machine shown in FIGURE 1 with parts broken away and shown in section;

FIGURE 4 is a partial elevational view of the coin changing machine with parts broken away and shown in section so as to illustrate the cutter mechanism;

FIGURE 5 is an enlarged partial sectional view taken substantially through a plane indicated by the section line 5—5 in FIGURE 4;

FIGURE 6 is an electrical circuit diagram corresponding to a typical coin changing machine modified in accordance with the present invention; and

FIGURE 7 is a perspective view of the cutter mechanism associated with the present invention.

Referring now to the drawings in detail, FIGURE 3 illustrates a typical coin changing machine generally referred to by the reference numeral **10**. It will be appreciated that the coin changing machine may be associated with any form of coin operated apparatus of vending machine and is adapted to accept coins of certain denominations for which change is to be dispensed. Coin changing machines of this type are well known and in wide commercial use and include for example, a stationary coin

chute **12** as shown in FIGURE 3 into which a coin **14** is deposited for passage downwardly through the machine so as to ultimately actuate an activating coin switch after passing through the coin passage **16**. Actuation of such activating switches is operative to dispense change to the customer. The change coins are stored within pay-out tubes within the coin changing machine as is well known. Coin changing machines of this type are, however, susceptible to unauthorized operation by repeated actuation of such coin activating switches by the same coin **18**, for example, as shown in FIGURE 3 having a thread, string or filament **20** attached thereto by means of which the coin **18** may be upwardly withdrawn through the passage **16** after it has initiated pay-out operation by actuating a coin switch. In this manner, coin changing devices have been "milked" or depleted of their supply of change utilizing the same coin. In order to prevent the foregoing unauthorized operation of the coin changing device **10**, a cutter mechanism generally referred to by reference numeral **20**, is operatively positioned above the inlet end of the coin chute **12** so that coins deposited into the coin-receiving inlet **24** will pass through the cutter mechanism **22** as shown in FIGURES 3 and 4. The cutter mechanism is adapted to be mounted, therefore, on the top mounting plate **26** secured to the housing **28** enclosing the coin changing device **10**.

Referring now to FIGURES 1 and 7 in particular, it will be observed that the cutter mechanism **22** includes a stationary cutter blade **30** adapted to be fixedly mounted on the plate **26** by any suitable means such as the mounting clamp bracket **32** as more clearly seen in FIGURE 5. Accordingly, the cutting edge **34** associated with the stationary blade will be positioned at one longitudinal end of the coin slot or entrance to the coin chute **12** which is aligned with the coin slot **36** formed in the coin guide closure member generally referred to by reference numeral **38**. The coin guide slot **36** is formed in the coin guide member between the upstanding flanges **40** and **42** secured to the guide plate portion **44** disposed below the inlet **24**. The coin guide member **38** is fixedly mounted by fasteners **46** to a movable blade member **48** of the cutter mechanism.

The movable blade member **48** is pivotally connected to the stationary blade member **30** by means of the pivotal connection **50** so that pivotal displacement of the movable blade member from the open position illustrated in FIGURES 1 and 7 to the closed position illustrated in FIGURE 2, will bring its cutting edge **52** across the cutting edge **34** of the stationary blade **30** in order to sever any thread, string or filament **20** which may extend into the coin chute **12**. The movable blade member **48** is, however, continuously biased to its open position together with the coin guide member **38** to which it is secured by means of a spring member **54**. One end of the spring member is therefore anchored by the anchor element **56** to the plate member **26** while the other end is anchored by the connecting element **58** to the guide member **38**. A pivotal connection **60** is mounted on the end of the movable blade member on that side of the pivotal mounting **50** opposite the cutting edge **52** so that the movable blade member may be displaced against the bias of the spring member **54** by a solenoid plunger **62** connected by the connecting rod **64** to the pivotal connection **60**. The solenoid plunger therefore is reciprocably mounted within a solenoid coil device **66** fixedly mounted in operative position on the plate member **26**. It will therefore be apparent that energization of the solenoid coil device **66** after a coin has passed through the coin guide slot **36** into the coin chute **12**, will be operative to sever any thread **20** which may be attached to such coin. The solenoid device **66** is therefore energized after any coin deposited into the

coin chute **12** has actuated a coin switch which initiates the pay-out operation of the coin changing device.

Referring now to FIGURE 6, one typical electrical control circuit is illustrated which has been modified in accordance with the present invention in order to timely and properly effect energization of the cutter operating solenoid coil device **66**.

It will be observed that source of electrical energy is supplied through the power lines **68** and **70** to the cabinet section **72** of the control circuit usually associated with the coin changing device in order to prevent unauthorized tampering with the cabinet of the machine. The power lines are thereby connected to the pay-out section **74** within which a plurality of pay-out operating solenoids **76**, **78**, **80** and **82** are mounted. Accordingly, current from power line **68** is supplied to each of the pay-out solenoids and to plurality of pay-out tube switches **84**, **86** and **88** which are disposed in their illustrated positions when there are coins stored in each of the pay-out tubes. Therefore, as long as there are coins stored in each of the pay-out tubes energizing circuits will be maintained for the coin blocking solenoids **90**, **92** and **94**. Each of the coin blocking solenoids is therefore connected to the power line **70** so that an energizing circuit will be completed therethrough when each of the tube switches **84**, **86** and **88** is in the illustrated position including the tube switch **96** connected in series with the switch **84** to the coin blocking solenoid **90**. Should the supply of coins within the pay-out tubes become exhausted then one of the switches will be displaced toward its other operative position establishing an energizing circuit through one or more of the indicator lamps **98**, **100** and **102** to respectively indicate for example depletion of dimes, quarters and 50¢ pieces from the respective pay-out tubes. Pay-out operation is, however, affected by energization of one of the pay-out solenoids **76**, **78**, **80** and **82**, respectively associated with coin switches **104**, **106**, **108** and **110** within the coin switch section **122**.

Whenever one of the coin switches **108** and **110** is actuated by a coin possing through the coin passage within the coin changing device as hereinbefore indicated, an energizing circuit is completed either through the pay-out solenoid **80** or **82**. At the same time, a parallel energizing circuit is established through one of the relay coils **114** and **116**. The relay coils are therefore connected to the coin switches **108** and **110** in parallel with the pay-out solenoids **80** and **82** by the conductors **118** and **120**, current being supplied to the relay coils from the power line **68**. Associated with the respective relay coils **114** and **116**, are normally opened relay switches **122** and **124**. The relay switches are connected by the conductor **126** to one terminal of the cutter operating solenoid **66**, the other terminal of which is connected to the power line **68** so that upon closing of the relay switches, an energizing circuit is completed through either conductor **118** or conductor **120** and closed coin switch **108** or **110** to the return power line **70**. It will therefore be apparent that deposit of a quarter or 50¢ piece, for example will not only cause energization of the pay-out solenoid **80** or **82** but will also energize the relay coil **114** or **116** in order to operate the cutter mechanism through the solenoid **66**. The relays will prevent feedback to the pay-out solenoids when energizing the cutter operating solenoid **66**. Also connected across the cutter operating solenoid **66**, is an indicator lamp **128** which will be advantageous to any person servicing the coin changer since it will be illuminated each time a coin is deposited to thereby indicate that all electrical components are operating properly.

From the foregoing description, the construction, operation and utility of the present invention will be apparent. Accordingly, it will be appreciated that the

contribution of the present invention may be applied to all types of coin operated vending machines having coin changing devices. It will also be apparent that since the cutter mechanism of the present invention is positioned a substantial distance above the location of the coin activating switches associated with the coin changing device, it will permit passage of any coin through the machine with the cutter in its open position. Once a coin has initiated pay-out operation, the cutter mechanism is actuated toward its closed position barring the passage of any additional coins until the cutter is restored to its open position and thereby also severing any thread that may be attached to the deposited coin in order to prevent withdrawal of the coin into the coin passage. Repeated pay-out operation in response to actuation of the coin activating switches by the same coin is thereby prevented. Also, any coin that happens to be deposited while the cutter mechanism is in its closed position will be temporarily blocked until the cutter mechanism is restored to its open position. The anti-cheating facilities of the present invention will therefore be not only reliable in operation but will not disturb normal and authorized operation of the coin changing device.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a coin operated machine having a coin changing device rendered operative upon closing of an activating switch by coins deposited into a stationary coin passage, means for preventing withdrawal of said coins by filaments attached thereto after a coin has actuated said activating switch comprising cutter means operatively mounted in operative relation to said coin passage through which said coins pass, and cutter operating means operatively connected to said cutter means for severing any of said filaments in response to closing of said activating switch.

2. The combination of claim **1** wherein said cutter operating means comprises relay means connected to said activating switch for energization in response to closing thereof, and solenoid means connected to the cutter means and the relay means for operating the cutter means in response to energization of the relay means.

3. In a coin operated machine having a coin changing device rendered operative upon closing of activating switches by coins of certain denominations deposited into a coin passage, means for preventing withdrawal of said coins by filaments attached thereto after a coin has actuated one of said activating switches comprising cutter means operatively mounted above said coin passage through which said coins pass, and cutter operating means operatively connected to said coin changing device and rendered operative simultaneously therewith by the activating switches for actuating the cutter means to sever any of said filaments, said cutter operating means comprising relay means connected to said activating switches for energization in response to closing of one of said switches, and solenoid means connected to the cutter means and the relay means for operating the cutter means in response to energization of the relay means, said cutter means comprising a stationary cutter blade fixedly mounted in operative relation to the coin passage, a movable cutter blade operatively mounted for movement between an open position and a closed position, a coin guide mounted on the movable blade through which coins may pass into the coin passage when the movable blade is in said open position, means continuously biasing said movable blade to the open position

and means connecting the movable blade to the solenoid means for displacement thereto to the closed position wherein the coin guide blocks passage of coins into the coin passage.

4. In a coin operated machine having a coin changing device rendered operative upon closing of activating switches by coins of certain denominations deposited into a coin passage, means for preventing withdrawal of said coins by filaments attached thereto after a coin has actuated one of said activating switches comprising cutter means operatively mounted above said coin passage through which said coins pass, and cutter operating means operatively connected to said coin changing device and rendered operative simultaneously therewith by the activating switches for actuating the cutter means to sever any of said filaments, said cutter means comprising a stationary cutter blade fixedly mounted in operative relation to the coin passage, a movable cutter blade operatively mounted for movement between an open position and a closed position, a coin guide mounted on the movable blade through which coins may pass into the coin passage when the movable blade is in said open position, means continuously biasing said movable blade to the open position and means connecting the movable blade to the cutter operating means for displacement thereto to the closed position wherein the coin guide blocks passage of coins into the coin passage.

5. In a coin changing machine having at least one pay-out solenoid energized in response to closing of a coin switch by a coin deposited into a coin chute, means for preventing repeated closing of said coin switch by the same, comprising cutter means mounted in operative relation to the coin chute, relay means connected to the coin switch in parallel with the pay-out solenoid for energization simultaneously therewith, means connected to

the cutter means for biasing thereof to an open position permitting passage of a coin into the coin chute, and actuating means connected to the relay means for displacing the cutter means in operative relation to the coin chute to sever any thread attached to the coin in response to closing of the switch by the coin.

6. The combination of claim 5 including guide means mounted on the cutter means for blocking passage of the coin through the coin chute until the cutter means returns to the open position.

7. In combination with a coin operated machine including a coin passage having an inlet end and a coin switch actuated in response to deposit of coins into the passage, an anti-cheating device comprising, closure means responsive to actuation of the coin switch following deposit of a coin for closing the inlet end of the coin passage, and cutter means mounted by the closure means for displacement across the inlet end of the coin passage in response to said closing thereof, whereby anything attached to the deposited coin and extending outwardly through the inlet of the coin passage will be severed.

8. The combination of claim 7 wherein said cutter means comprises, a fixed blade mounted adjacent to said inlet end of the coin passage and a movable blade connected to the closure menas for movement therewith toward the fixed blade.

References Cited by the Examiner

UNITED STATES PATENTS

2,583,461	1/1952	Arnett.	
3,168,947	2/1965	Greenwald	194—97

ROBERT B. REEVES, *Primary Examiner.*

STANLEY H. TOLLBER, *Examiner.*