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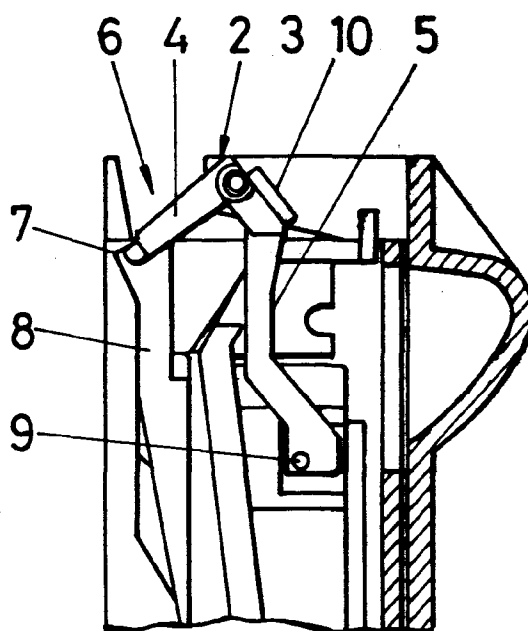
EUROPEAN PATENT APPLICATION

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31350 Peralta (Navarra) (ES)(54) **Improvements in coin selectors**

(57) Improvements in coin selectors of the type of coin selectors that are included in automatic machines that operate by inserting coins, and that in the passage through the same measurements of different parameters are obtained in order to validate the coins as acceptable. The improvements introduced are based on the string-proof mechanism, the coin drop damping mechanism and on the diameter and weight measurements, in such a way that the string-proof mechanism

comprises a generally L-shaped lever (2), rotating with respect to the vertex thereof, its wing (4) being considerably shorter than its other wing (5), the wing (4) of the lever (2) remaining in relation to the coin slot (6) and its other wing (5) remains with its free end, in the inoperative position, interfering with the beam of a diode (9) said lever (2) being provided with a counterweight (10) in wing (5) thereof that tends to keep the lever in its inoperative position, the end of its larger wing (5) interfering with the diode (9).

**FIG.1**

Description

OBJECT OF THE INVENTION

As expressed in the title of this specification, the present patent of invention consists of some improvements in coin selectors, which are useful to be included in all types of automatic machines that operate by inserting coins, in such a way that upon the coins being inserted the selector validates them, to lead the rejected coins to the refund box and the accepted coins are led towards the general coin box or to the refund boxes.

The coin selector throughout the passage of the coins through it include a series of mechanisms not only to validate the coins themselves, but also to avoid fraud and to better obtain the parameters of the coins to be measured.

In short, its object is to achieve that the measurements of the coins obtained are as reliable as possible and to prevent fraud from being committed as it is sought that the selector validate coins as accepted and the coins are not to be finally inserted in the general coin box or refund boxes and even products and money can be obtained as change without having inserted the coin towards the general coin box or until the corresponding container for its subsequent refund.

FIELD OF APPLICATION

The coin selector is applicable in all types of automatic machines that operate by inserting coins, and thus it may be applied in vending machines of different products, and in slot machines giving prizes, in which aside from the product obtained, coins are refunded and coins are issued when a prize is obtained.

BACKGROUND OF THE INVENTION

Over the years, coin selectors have been developing, in such a way that in the beginning the selectors basically referred to carrying out a reading of a series of parameters of the coins for their validation, for which in the through duct of the coins in the selector, they faced some sensors that carried out the corresponding readings.

In this way, if the readings carried out by the sensors were within a range of pre-recorded values in the selector itself, the coin was validated as acceptable and if said values were not within the pre-recorded intervals, the coin was validated as unsuitable, being rejected.

Later on, coin selectors developed upon including different safety string-proof mechanisms to prevent coins being tied to strings from being inserted thus activating the coin acceptance system. The coins were subsequently removed with different results.

Hence, certain selectors include close to the coin slot, a rotating lever that by its free end interferes with the beam of a pair of diodes, in such a way that upon

introducing the coin said lever moves and thus the beam is released, in such a way that until said beam is interfered with again, the system will not definitively accept the coin, whereby if the coin is tied to a string, this prevents the lever from returning to its initial position, whereby there is no acceptance of the coin, though it has been validated as acceptable.

On the other hand, as the coins fall freely through the coin slot, upon coming in contact with the base of the through duct opposite the measurement sensors, the coins bounce forward, which causes when the coins face said sensors that the relative position of the same is not always the same, thus there is a dispersion of measurements. It is convenient to make the measurements with the coins always in the same relative position with regard to the sensors.

Likewise, we can cite utility models U9402421 and U9500755 of the same owner as the present application, in such a way that Utility Model U9402421 claims an improved coin selector which in its coin slot has a rotating lever provided with a projection in contraposition to the wing placed in the slot, in such a way that upon the passage of the coins the rotation of said lever causes the rotation of a second lever related to it, that has an extension placed between the beam of a diode producing the release of said beam and the subsequent activation of the system.

On the other hand, in the coin through duct there is a coil-operated strip, in such a way that if the coin is not accepted as a valid one, it drops through said duct towards the refund box, while if the coin is accepted as valid, the coil is activated and the coin comes up against the strip, being deviated towards the final acceptance channel.

Upon the passage of the coin towards the final acceptance channel, it comes up against a safety mechanism that comes up against a lever and a pair of diodes placed below it, in such a way that for the final acceptance of the coin by the selector and so that the coin is counted as such, there must be a coin passage sequence opposite said pair of diodes.

Utility model U9500755 claims an improved coin selector, which in the coin slot has a rotating lever provided with an extension that remains fitted between a pair of projections of a second lever, likewise provided with an extension placed between a diode, it being provided for that the selector has a new rotating lever, position in relation to a wall of the through duct of the coins, which is provided with some projections in position transversal to the through duct, which the coins come up against upon dropping, bouncing towards a part that damps the fall, with the particularity that in the free end of the measurement sensors, the free end of the weight sensor is formed by a pair of gages, having in relation to the final acceptance duct of the coin a new lever that acts in combination with a pair of diodes.

DESCRIPTION OF THE INVENTION

The present specification describes some improvements introduced in coin selectors, which are fundamentally based on the string-proof mechanism, the coin drop damping mechanism, upon being inserted in the selector and on the measurements of the coin diameter and weight parameters.

Hence, the string-proof mechanism or device, comprises a generally L-shaped lever that remains rotating at its vertex with one of its wings over the coin slot, and the other considerably longer wing with its free end interposed to a diode, said lever being activated by a counterweight that tends to move it from its inoperative position, obturating the beam of the diode upon being between the emitter element and the receiver of the same.

Likewise, once the coins have been inserted, they come up against a movable projection of one of the walls of the through duct to damp the fall on the anvil, while in the rolling thereof, upon actuating on the cited rotating movable projection, it rises and leaves free passage to the coins to obtain the parameters to be measured.

In the through passage, the coins face the diameter measuring device, which comprises three diodes which by means of a passage sequence allows the obtainment of the diameter in a very reliable manner.

Likewise, the coins in the through duct thereof roll over a double gage to measure the weight, in such a way that said double gage close to its initial end can be provided with a stop that prevents vibrations or oscillations of the coin in its rolling in order to make a more reliable measurement.

In short, it is a question of obtaining the parameters of the coins to be measured in the most reliable manner possible, as well as preventing fraud when an attempt is made to insert a coin attached to a thread so that, once the selector has been activated and the coin has been accepted as valid, the same may be removed again, recovering not only the coin, but also obtaining the desired product and even the change.

In order to complement the description that is going to be made hereinafter, and for the purpose of providing a better understanding of the features hereof, a diagram in whose figures, the most significant details of the invention, described in the present specification, have been represented in an illustrative and non-restrictive manner, is attached hereto.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a detail view of the string-proof device placed in the coin slot of the selector, which comprises a generally L-shaped lever rotating at its vertex with a wing inserted in the slot.

Figure 2 shows a raised view of the selector, in the coin through duct section, wherein they face the three diodes to measure the diameter and they roll over the

double gage, it being possible to observe the movable projection that sticks out through a recess of one of the walls of the through duct.

Figure 3 shows a raised view of the selector in the coin through duct section according to the inside surface of the wall of the duct corresponding to the previous figure, where it is possible to see the rotation axis of the rotating movable projection as well as the three diodes.

DESCRIPTION OF A PREFERRED EMBODIMENT

In view of the cited figures and in accordance with the numbering used, we can see how the improvements introduced in the coin selectors (1) are based on the string-proof mechanism, the coin drop damping mechanism in the selector, and on the measurement of the coin diameter and weight parameters.

The string-proof mechanism or device comprises a lever (2) rotating with respect to the shaft (3) of its vertex in such a way that the generally L-shaped lever (2) has its two wings (4) and (5) of different lengths. Thus, the shorter wing (4) remains placed over the coin slot (6) of the selector (1) with its free end positioned in relation to a recess (7) of the opposite wall of the channel (8) upon which it remains.

On the other hand, the longer wing (5) of lever (2), remains with its free end interposed to a diode (9) and close to its vertex it has a counterweight (10) that tends to keep it in the inoperative position, that is to say with wing (4) inserted in the slot (6) and with the wing (5) interposed to the diode (9).

In this way, upon inserting the coin in the selector (1), the same comes up against the wing (4) of lever (2) causing it to rotate with regard to the shaft (3), and the subsequent movement of the wing (5), releasing the beam of the diode (9), causing the activation of the system, in such a way that if in a specific amount of time the coin is not validated, the system is deactivated and the coin is led to the refund box.

Thus, if a coin tied to a string has been inserted, since the thread prevents the positioning of the wing (4) of lever (2), over the recess (7) of the wall opposite the one of its positioning, lever (2) has not returned to its inoperative position, the wing (5) not interfering with the beam of the diode (9); which after a specific amount of time goes by, the selector is deactivated and in no case will the coin be counted although it has been validated as acceptable.

On the other hand, the larger wing (5) of the lever (2) has a shape fractured into three sections, the ends being parallel to each other, so that less space is taken upon in the rotation thereof.

The damping mechanism comprises a movable projection rotating with regard to a shaft (12) which sticks out through a gap of one of the walls of the coin through duct, in such a way as the coin drops it comes up against said projection (11) and it is led towards the anvil (14) to damp said drop remaining in its rolling fac-

ing the three diodes that by means of a passage sequence allow the obtainment of the diameter of the coins in a totally reliable manner.

When the coins are rolling and come up against the movable projection (11), the projection rotates rising through the gap (13) and allowing the free passage of the coin without any problem.

The coin remains facing the three diodes (15, 16 and 17) in its passage through the duct (18) in such a way that upon passing in front of them, the knocking of four times takes place in order to calculate the diameter of the coin, the sequence being the following:

A) time from when the coin comes out of the diode (15) until it interferes with diode (16), or else between when it interferes with diode (16) and it comes out of diode (15).

B) time from when the coin interferes with diode (16) and comes out of the same.

C) time from when the coin interferes with diode (16) and interferes with diode (17).

D) time from when it interferes with diode (17) and it steps interfering with the same.

With these four measurements, total reliability in the measurement of the diameter of the large coins which cause the most difficulties for measurement thereof is obtained, since the coins with the larger diameter, come up against the outlet wall and the measurement is not very exact.

Likewise, once the coin is inserted in the selector and when dropping it comes up against the movable projection (11) being deviated towards the coin drop damping anvil, it rolls over the double weight measurement gage (22), which can be provided with a stop in its initial end to prevent the possible vibrations that cause oscillations in the weight parameter measurement.

Claims

1. Improvements in coin selectors, being of the type of coin selectors, that are inserted in automatic machines that operate by inserting coins, and that in the passage thereof through the same, measurements of different parameters are obtained in order to be able to validate the coins as acceptable, characterized in that the introduced improvements are based on the string-proof mechanism, the coin drop damping mechanisms and on the diameter and weight measurements, in such a way that the string-proof mechanism comprises a generally L-shaped lever with regard to its vertex, its wing (4) being considerably shorter than its other wing (5), the wing (4) of lever (2) remaining in relation to the coin slot (6) and its other wing (5) remains with its free end in the inoperative position, interfering with the beam of a diode (9) said lever (2) being provided with a

counterweight (10) in its wing (5) that tends to keep the lever in its inoperative position, the end of its larger wing (5) interfering with the diode (9).

2. Improvements in coin selectors, according to claim 1, characterized in that the damping mechanism comprises a movable projection (11) rotating with respect to the shaft (12) that sticks out through a gap (13) of one of the walls of the coin through duct, which deviates the coins toward the anvil (14) while in the rolling of the coins said projection rises upon turning thus facilitating the free passage of the coins.

3. Improvements in coin selectors, according to claim 1, characterized in that the coin diameter measuring device comprises three diodes (15), (16) and (17) that allow the obtainment of the measurement of four times in the passage sequence of the coins opposite them.

4. Improvements in coin selectors, according to claim 1, characterized in that the coin weight measuring device comprises a double gage (22) that has in its initial part close to the anvil (14) a stop that prevents the vibrations of coins when passing by.

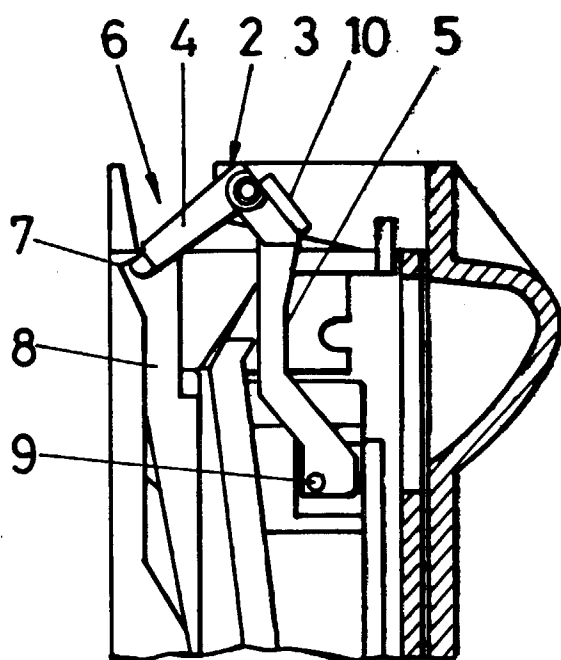


FIG.1

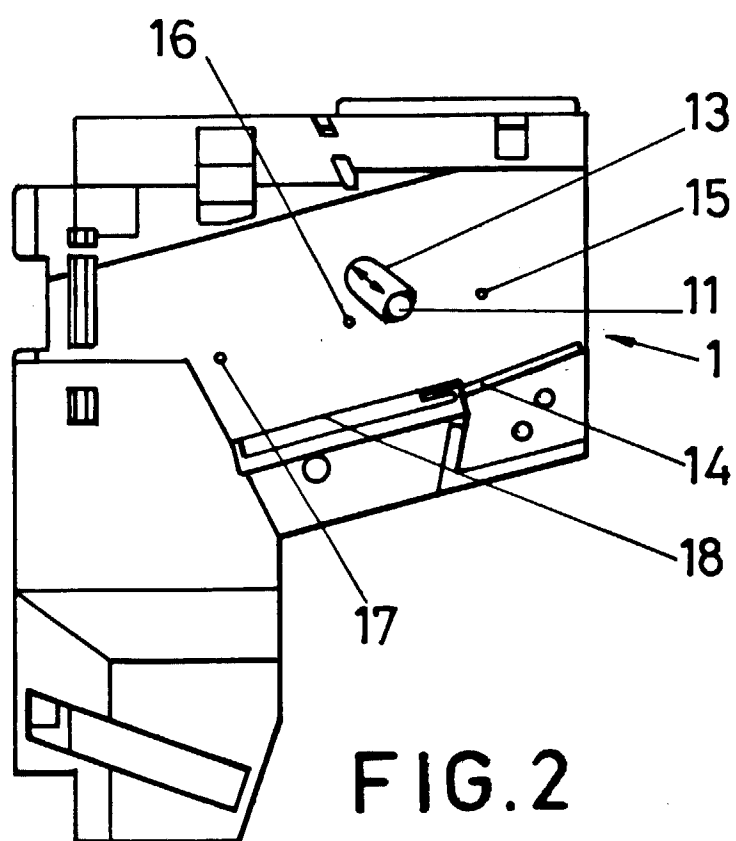


FIG.2

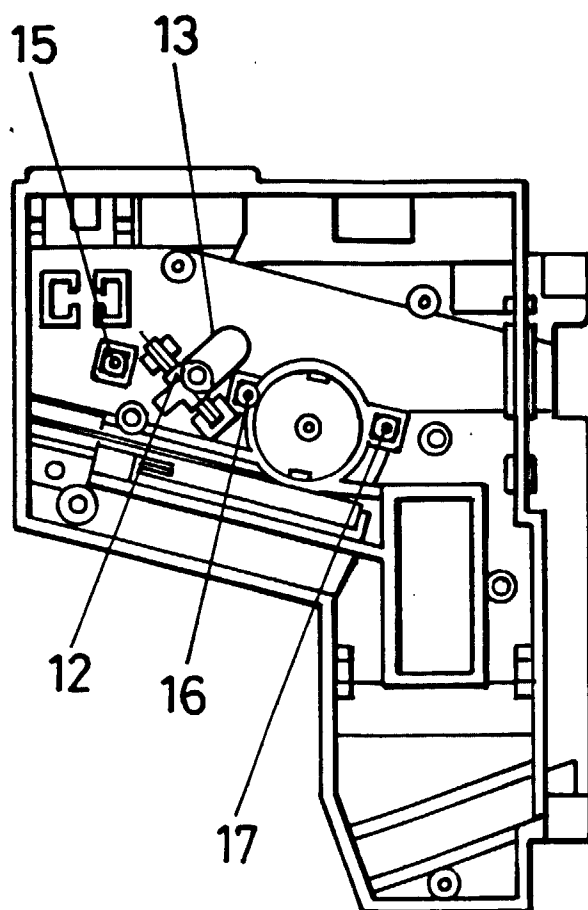


FIG. 3