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(54) Coin returning device

(57) Coin returning device, to be used adapted to a compact which comprises the coin selector, the separator and the actual returner of the same, with storage tubes for their devolution and the operational electronics, which are included in the automatic machines operational by means of the insertion of coins, and which comprises a shell (2) with rectangular plan, provided with lateral extensiones (12) between which, a pair of guides (11) are located for the assembly of a lower, displaceable carrier (10)

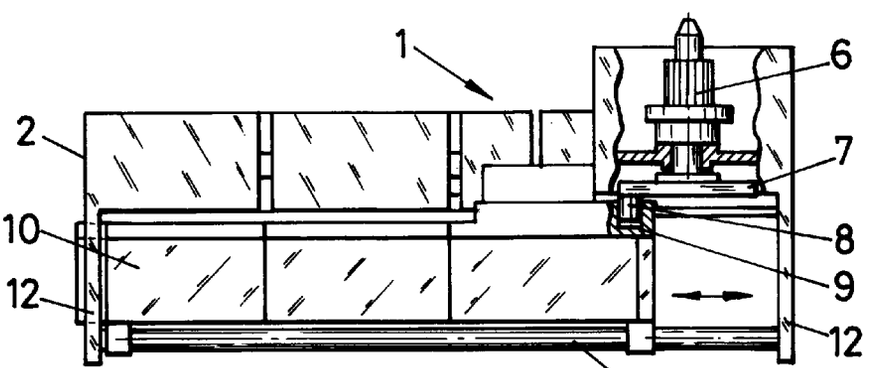

FIG.1

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Description

OBJECT OF THE INVENTION

The following invention, as expressed in the statement of the present descriptive report, consists of a coin returning device, to be used for its inclusion in all types of automatic machines, operational by means of the insertion of coins, and which shall form part of the compact which defines the coin selector, the coin separator, the same returner and the operational electronics, in such a way, that by means of the proposed returning device, a total of five coins, all of different value or not, may be simultaneously returned.

For this, the five tubes which act as storage deposit of the coins for their devolution have been placed on the shell of the returner, in such a manner that at the moment of the devolution, the coin extracted is the one to be found at the lower part of the deposit corresponding to the type of coin or coins to be returned.

Thus, under the fixed shell of the returner, with the deposits of the coins on the upper part of the same, a displaceable carrier is to be found between a pair of guides, the carrier being displaceable by means of a small motor, which, during a complete turn, provokes the displacement of the carrier in a rocking motion to reposition it in its position of rest.

FIELD OF APPLICATION

The coin returning device is applicable in all types of automatic machines which operate by means of the insertion of coins, in such a way, that at the same time that the extraction of the acquired product occurs, it carries out the devolution of the coins when this is necessary, due to the fact that the exact amount of money of the desired product has not been inserted. Likewise, it is applicable in recreational, gambling, slot machines for the delivery of prizes and of possible devolutions.

BACKGROUND OF THE INVENTION

Among the existing returners for their inclusion in automatic machines which are operational by means of the insertion of coins, may be cited the returner claimed in the Patent of Invention Nº 313.537 which refers to improvements in the mechanisms for the devolution of change in the automatic vending machines, which are formed by a fixed base, provided at its upper face with the storage deposits of the coins in relation to which, said base is provided with respective orifices which allow the drop of the lower coin towards the extracting body, situated parallel to the fixed base, and a lower body which is equally fixed.

On the other hand, the mechanism is provided with a rotational lever as regards the fixed base in such a manner, that one of its ends is finished of with a pair of metal bands on which the same acts when the product is extracted, whilst at its other end, the lever remain situated in relation to a pivot integral to the extractor, and which shows through a cut on the fixed base.

With this structure, when the user acts on the extraction knob, the turning of the lever is produced and consequently of the extractor which drags the money to be returned, since, during its displacement, it remains in relation to the conduit which carries the coins to the small devolution box, for which, logically, the lower fixed base remains open in relation to said conduit.

Likewise, may be quoted Utility Model Nº 287.503 which refers to a returner of coins, which is constituted by a support body on which the vertical cylindrical deposit is located for the deposit of the coins, open on its two bases, remaining under said support, open in relation to the deposit, a locking plate on which the lower coin abuts, and which is provided with an orifice with diameter approximately the same as that of the deposit, and arranged in offset position as regards the support orifice on which the deposit remains located.

On the other hand, a lock gate is situated between the coin deposit and the lower plate, equipped with an orifice with diameter similar to that of the deposit, said lock gate being activated by a cam which causes its displacement from the position of rest with its orifice in correspondence with the deposit and consequently with the coin in the same, until it remains positioned in relation with the orifice in the lower plate, which causes the drop of the dragged coin.

In direction to the extraction of the coin, the support is provided with an aperture and a continuous conduit which allows the exit and conduction of the extracted coin, the aperture and conduit being of less thickness than the thickness of double the coins, to prevent displacement of two of the coins during the extraction of the same.

Once the coin has been extracted, the lock gate returns to its position of rest, with one coin inside its orifice, to be extracted at the moment when the motor is activated and to act on the lock gate drag cam.

Finally, Utility Model Nº U8803476 may be cited, which refers to a coin returner device, in which the coin collector part, which is slidable on the base structure of the device, is provided with an orifice to house the coin to be returned, together with a channel for location of an excentric stub, of a cam activated by a motor controlled by a micro, said cam having a stop for its perfect positioning, in such a way that a complete turn of the cam produces a rocking movement of the coin collector part, leading the coin towards the output conduit to the returner coin storage department, and once again situated for a new devolution.

In short, it deals with unitary returners of coins, and in the case of returning various coins with one same value, it must activate the returner device, as many times as coins to be returned.

DESCRIPTION OF THE INVENTION

The present specification describes a coin returner device which allows the simultaneous devolution of up to five coins, the same having a minium volume to permit its inclusion inside the compacts assembled in automatic machines which operate by means of the insertion of coins. Said compacts, comprise the coin selector, the separator and the returner thereof, together with the operational electronics.

The returner is formed by a shell on which five circular compartments have been defined on the upper part, on said compartments are provided the tubes which act as storage deposits of the coins to be returned, as well as a small motor which is equipped on its lower part with an excentric ortogonal protrusion.

Likewise, the shell of the returner, of rectangular plant is provided, in relation to its inferior lateral sides, with inferior extentions, between which end vertexes it is equipped with a pair of guides, with a carrier between the same, displacable in such a way, that its displacement is produced by the described motor, when its excentric lower projection is meshed inside a transversal small box of the carrier, so that when the motor rotates one complete turn, it produces the displacement and rocking of the carrier, leaving it positioned once again in its position of rest.

On the other hand, the bottom of each one of the upper circular compartments of the shell, remains open, according to an approximate angle of 120°, and in its centrally solid part, it is provided with a groove running throughout all its length, and similarly, the lower wall of each one of the compartments housing the coins in relation to the open section, remains open to permit the passage of the coin during its extraction.

The extraction of the coins in their corresponding compartment or housing deposit, is put into effect by means of a small cam which is activated by a reel, each one of the five reels included remaining inside their corresponding small box of the returner displaceable carrier since each one of the reels correponds to one of the housing compartments of the coins to be returned.

Thus, at the moment of the devolution of the coins, the motor is activated, rotating one complete turn of its axis to cause the dragging of the carrier with a rocking motion which permits the displacement throughout the length of the guide, returning it once again to its position of rest, so that during the advancing movement, the reels, corresponding to the compartments which house the coins to be returned, are activated.

In consequence, on activation of one of the reels retracting its cores, it causes the turn of the cam rotationally joined to the free end of its core, so that its free end shows through the groove centrally defined in the corresponding compartment with which said reel is related, causing the extraction of the coin, so that once the coin has been extracted, the cam returns to its original position, placed under the bottom level of the compartments which house the coins, passing under the same.

To complement the description to be offered herewith, and with the object of facilitating a better understanding of its characteristics, the present descriptive report is enclosed with a drawing, in which figures, in an illustrative and nonlimitative manner, the most significant details of the invention have been represented, described in the present report.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a lateral elevational view of the coin returner, in which the carrier is placed in its position of rest, observing the dragging motor of the same, by means of the excentric projection below an iron plate, integral with the axis of the same, which remains housed inside a small transversal box of the lower carrier.

Figure 2 shows a plan view of the returner, with a cut having been effected on the shell according to a horizontal plane, adjacent to the bottom of the formed compartments, observing the partially open bottom of the same with the central groove, through which, the free end of the coin extraction cam is showing, as well as the cut related to each one of the walls of the compartments in which mesh the coin deposit tubes.

Figure 3 shows a cross section of the returner, observing the upper compartments for the housing of the coin deposit tubes, as well as each one of the reels which correspond to the upper compartments of the same, and observing an activated reel with its rotated cam showing its free end through the groove on the bottom of the upper compartment for the extraction of the coin.

DESCRIPTION OF A PREFERRED EMBODIMENT

In view of the described figures and in compliance with the numbers adopted, it can be observed how the coin returner 1 is formed by a shell 2, which on its upper part defines five compartments 3, of generally cylindrical shape, by means of angular walls 4, in which mesh correspondiente tubes which house the coins for their devolution, said angular walls having an internal projection on which the tubes stop, to define a gap through which the lower coin shall be ejected. The tubes which act as deposit for the coins to be returned, are equipped on their base with a recess which, at the same time as they permit the exit of the lower coin, act as a stop for the upper coins, preventing the accidental exit of a second coin. All the tubes shall be provided with the corresponding recess, according to the thickness of the coins to be contained.

Likewise, shell 2 is provided with a motor 6 which transmits the rotational movement to a circular iron plate 7, integral with its axis, said axis being provided with a lower excentric protrusion 8, which remains meshed in

a hollow 9 of a carrier 10 below the shell, in such a way, that said carrier 10 remains assembled on a pair of guides 11, situated longitudinally to lateral extensions 12 of the shell.

Thus, a complete rotation of the transmission axis of motor 6 causes the displacement of the carrier 10 with a rocking motion, to displace it from its position of rest (figure 1) to the opposite end of guides 11, and replace it once more in its position of rest.

The bottom 13 of circular compartments 3, remain open according to an angle of approximately 120°, and said aperture 16 extends in advance direction of carrier 10 to permit the exit of the coins 14 to be returned at the same time as bottom 13 for coin 14 abuttment, presents a central groove 15 according to the advance axis of the carrier.

To bring about the extraction of coins 14, the carrier 10 has been provided with as many reels 17 as compartments 3 have been defined on shell 2, which is a total number of five reels, corresponding each one of them, with a compartment 3, so that in order to carry out the extraction of the coin or coins 14, in relation to the devolution, the necessary reels 17 shall be activated, to rotate cam 18 which is joined to the same, the free end 19 thereof showing through groove 15 of the bottom of the corresonding compartment, causing the advance and fall of coin 14 through aperture 16.

In this way, the devolution of the coins is produced with one single movement of motor 6, simultaneously returning the totality of the same, that is to say, up to five coins.

Carrier 10 may be observed in figure 1 in its position of rest and the moment in which motor 6 is activated, the advance of carrier 10 is produced to reach the opposite end of the guides 11 returning once again to its initial position ready for a new activation.

For this, the motor 6 transmits the rotational movement to an iron plate 7 provided with a lower projection 8 which meshes in hollow 9 of carrier 10 and the complete rotation of the axis of the motor 6 produces the rocking motion of the carrier.

In figure 2 it may be observed how coin 14 seats on the bottom of the compartment, highlighted, for a better visualization by shading with squares, and when coin 14 is extracted its drop through aperture 16 is produced, the corresponding cam 18 having caused said advance of coin 14, said cam being activated by reel 17 to which it is rotationally joined.

In figure 3 it may be observed how one of the cams 18 has been rotated by the activation of reel 17 to which it is rotationally joined, showing its free end 19 through the groove 15 of bottom 13 to cause the extraction of coin 14.

Reels 17 shall only be activated to cause the extraction of the coin corresponding to the compartment related to the same, and subsequently they remain in the position of rest under the level of the bottoms 13 of the returner compartments, the carrier being capable of displacement without any problem and causing the extraction of the suitable coins.

In this way, a returner is offered which permits the simulataneous devolution of up to five coins, occupying a minimum space which permits its inclusion in conventional compacts of standard measurements.

Claims

1. COIN RETURNING DEVICE to be used adapted to a compact which comprises the coin selector, the separator and the actual returner of the same, with the storage tubes for their devolution and the operational electronics, which is included in the automatic machines which operate by means of the insertion of coins, characterized in that the returner (1) comprises a shell (2) with rectangular plan, provided with lateral extentions (12) between which are to be found a pair of guides (11) for assembly of a lower, displaceable carrier (10).

2. COIN RETURNING DEVICE, according to claim 1, characterized in that on the upper side of shell (1) five compartments (3) have been formed, in which mesh the corresponding storage tubes of the coins (14) when angular walls (4) are defined.

3. COIN RETURNING DEVICE, according to claims 1 and 2, characterized in that the angular walls (4) are internally provided with projections against which the storage tubes stop.

4. COIN RETURNING DEVICE, according to claims 1 and 2, characterized in that the compartments (3) are provided with a bottom (13) open according to an approximate angle of 120°, said aperture extending in the extraction direction of the coins, and having centrally to its solid part, a groove (15).

5. COIN RETURNING DEVICE, according to claim 1, characterized in that the shell (2) is provided with a motor (6) which transmits the rotational mmovement to a circular iron plate (7) provided excentrically and below a projection (8) which meshes in a transversal hollow (9) of the lower carrier (10), so that a complete rotation of the axis of the motor (6) produces a rocking movement of carrier (10) for the extraction of the coins and their return to their position of rest.

6. COIN RETURNING DEVICE, according to claim 1, characterized in that carrier (10) is provided with a reel for each one of the compartments (3), being related with the corresponding compartment so that respective cams (18) remain joined to the core of each one of the reels.

7. COIN RETURNING DEVICE, according to claims 1

and 6, characterized in that the retraction of the reel (17) core causes the rotation d of the corresponding cams (18) their free end (19) showing through the groove (15) at the bottom of the respective compartment (3) to cause the ejection of the lower coin of the same.

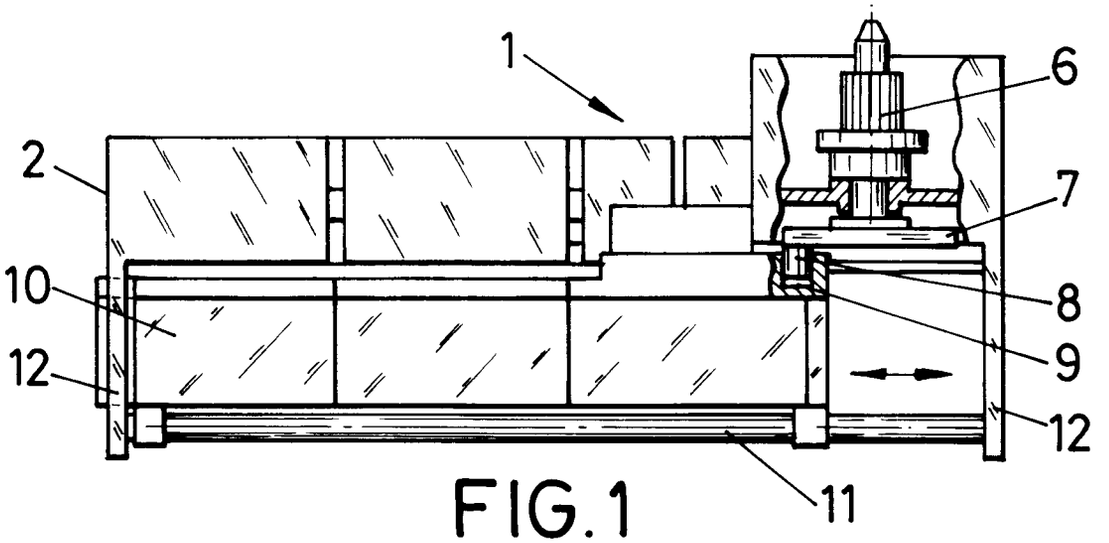

FIG. 1

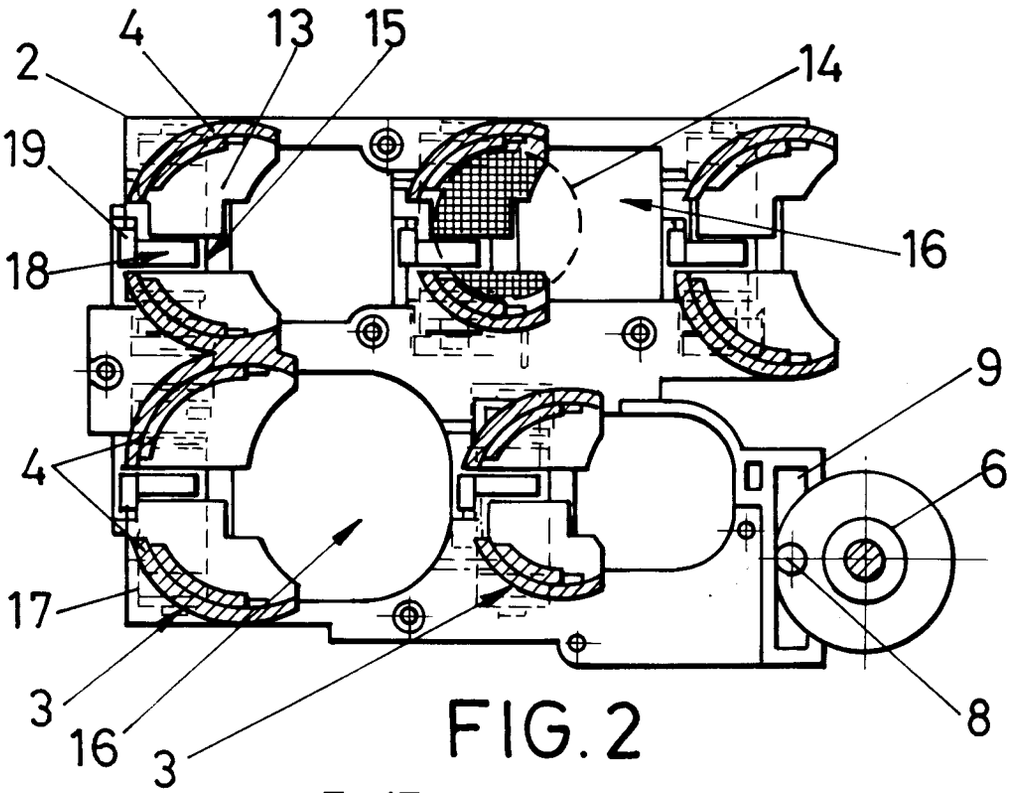

FIG. 2

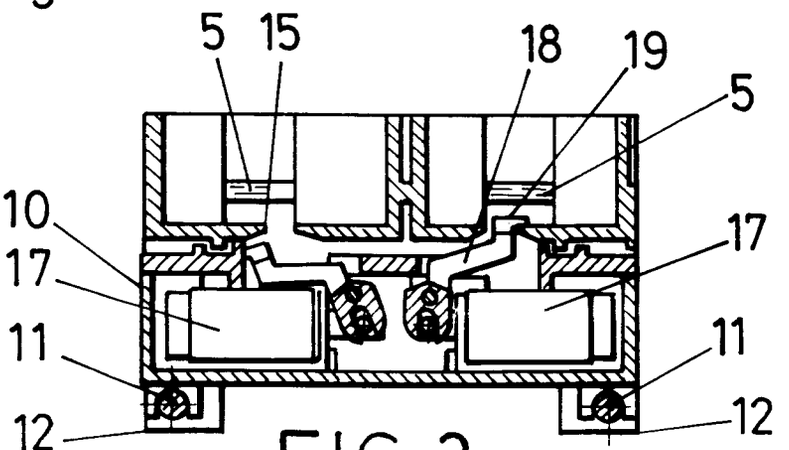

FIG. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 50 0141

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE 29 23 751 A (FUJI ELECTRIC) * page 9, line 11 - page 10, line 31; figures 2-4 *	1-7	G07D1/00
X	US 4 313 450 A (KIRISAWA) * abstract; figures *	1-7	
X	DE 27 12 314 A (NIPPON COINCO) * page 8, line 12 - page 10, last paragraph; figures 1,9,10 *	1-7	
X	GB 2 077 016 A (LAUREL BANK) * page 3, line 102 - page 4, line 22; figures 1,2 *	1-7	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

G07D
G07F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 April 1997	Neville, D

CATEGORY OF CITED DOCUMENTS

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