

Sept. 30, 1969

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3,469,669

COIN OPERATED MACHINE FOR MAKING CHANGE

Filed Nov. 22, 1967

3 Sheets-Sheet 1

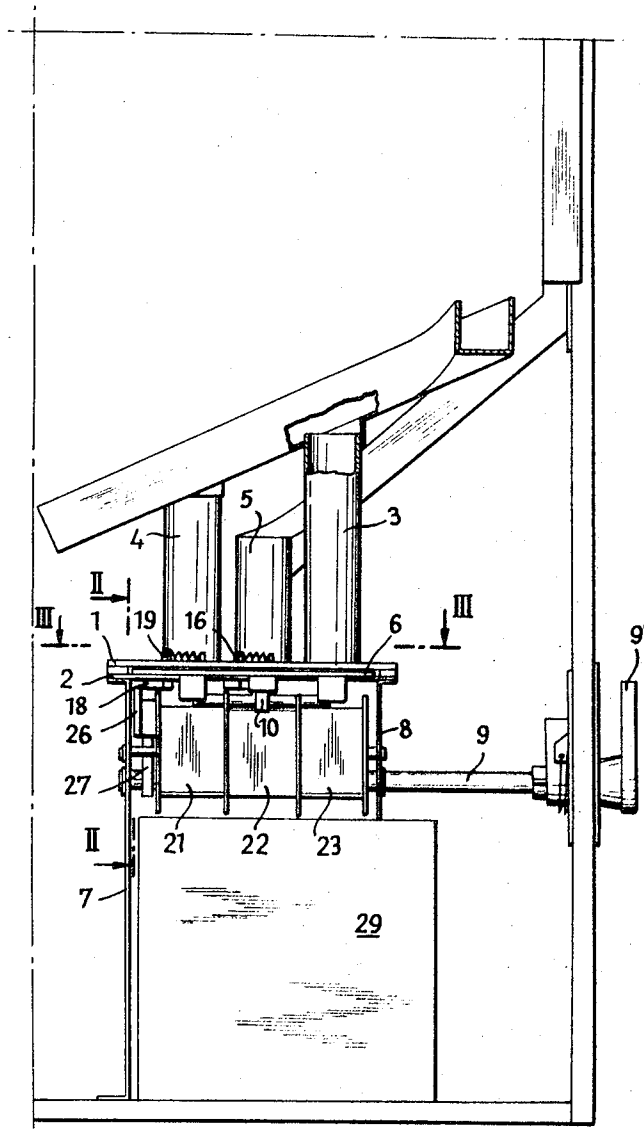


FIG. 1

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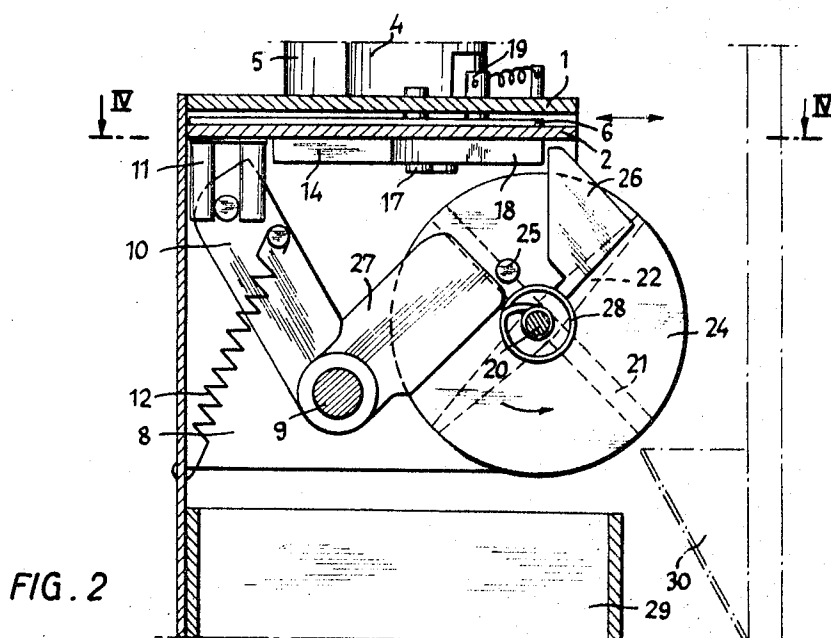
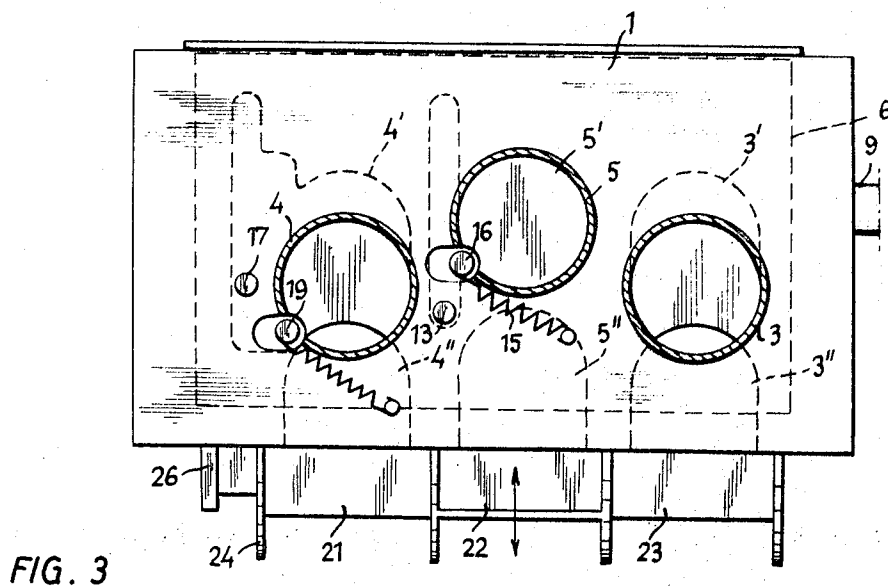
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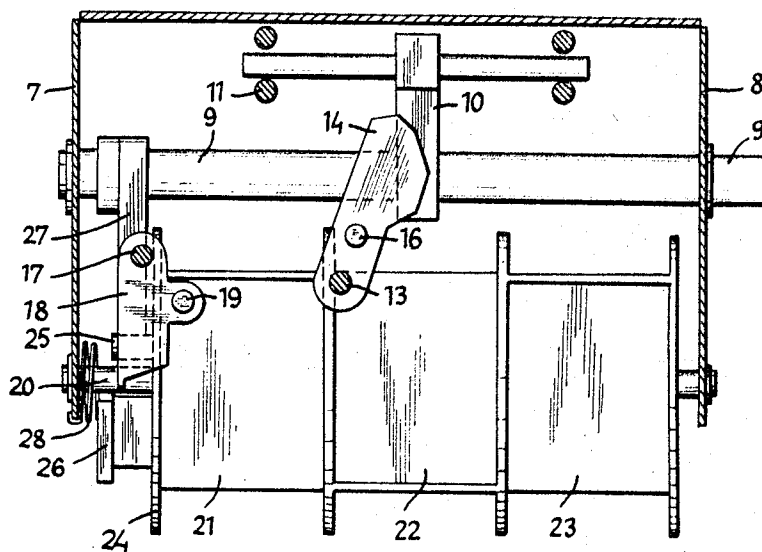


FIG. 4

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COIN OPERATED MACHINE FOR MAKING CHANGE

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Filed Nov. 22, 1967, Ser. No. 685,050

Claims priority, application Finland, Nov. 22, 1966,

3,087/66

Int. Cl. G07f 11/20, 11/22

U.S. Cl. 194—58

7 Claims

ABSTRACT OF THE DISCLOSURE

A coin operated machine for making change having a receiver for the coin to be changed and at least one storage tube for the change coins with a slide below the storage tubes to feed coins to the customer or to a cashbox. A rotatable guide plate receives the coins from the slide and, according to positioning of a guide pin in the path of movement of the coin, deposits the coin in the cash box or dispenses it to the customer.

This invention relates to a coin changing machine, which comprises a receiver tube or the like for coins to be changed and at least one storage tube for change coins and below the tubes a slide for feeding of the coins preferably one by one from each tube alternatively to the customer or a cash box of the coin changing machine.

In this connection the word "coin" refers first of all to ordinary metal coins, but it should also be understood to include coin substitutes, counters and similar, usually round pieces of metal. Thus for instance the money to be changed may be a metal coin and the change may be less valuable coins and/or substitutes.

Coin changing machines of this type are known, which the sensing member, which indicates the number of coins in store and prevents changing when the store of coins is empty, is placed on top of the stack of coins in the change tube. The disadvantage connected with this type of machine is that the change tubes cannot be continuously refilled with coins and besides the sensing member on top of the stack of coins takes up space in that direction.

It is the object of the present invention to eliminate the above disadvantages and the coin changing machine according to the invention is mainly characterized by the fact that there is for each coin tube a guiding plate, which is arranged beneath the slide and rotates between a cash box position and a customer position, which guiding plates receive the coins fed by the slide, and that at least one change tube has been provided with a control pin or the like, which is positioned at the path of movement of the coin pushed from the change tube by the slide and which is in operating engagement with the guiding plates in such a way that when the coin is pushed by the slide displaces the control pin, the guiding plate for the change coins moves into said customer position and the guiding plate or the coin to be changed moves into said cash box position, but when the control pin is undisplaced, the guiding plate for the change remains in the cash box position and the guiding plate for the coin to be changed remains in the customer position.

According to the present invention a coin changing machine is obtained, in which the sensing member, which indicates when the change tube is empty, is positioned at the lower end of the change tube, wherefore no devices are required on top of the stack of change coins. Thanks to this construction the change tubes can easily be provided with automatic coin refill devices, for instance if the coin changing machine is connected to a coin operated machine. Then the change tubes may be shorter,

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because the store of change need not be too large, since it is continuously supplied with coins used in the coin operated machine, and consequently the size of the machine may be decreased. Likewise the change tubes become shorter as the sensing member does not require any space on the top.

In one embodiment of the coin changing machine according to the invention the guiding plates are normally arranged to stay in a position permitting change, or in other words in a position where the customer's coin goes to the cash box and the customer gets the change, and they are only rotated out of this position if one of the change tubes is empty.

According to an alternative embodiment the guiding plates are normally arranged to stay in a position preventing change of a coin, or in other words in a position, where the customer's money is returned to the customer and the change goes to the cash box, and they are only rotated out of this position if all of the change tubes contain coins.

The invention is explained more closely below with reference to the accompanying drawings, in which

FIGURE 1 is a front view of an embodiment of the coin changing machine according to the invention,

FIGURE 2 is a coin changing machine seen from the end in cross section along line II—II in FIGURE 1,

FIGURE 3 is a coin changing machine seen from above in cross section along line III—III in FIGURE 1, and

FIGURE 4 is a coin changing machine seen from above in cross section along line IV—IV in FIGURE 2.

The coin changing machine visualized in the drawings comprises a vertical top plate 1 and a bottom plate 2, which is parallel to the top plate and attached at a certain distance therefrom. Vertical tubes 3 and 4 are fastened to the top plate for the storage of change coins and a tube 5 for receiving the coins to be changed and fed into the machine through corresponding slots in the top plate. Between the bottom plate and the top plate there is a slide 6, which may move back and forth as indicated by the arrow in FIGURES 2 and 3 through the effect of a displacing lever 10, which is fixed to a horizontal rocking axle 9 mounted on the side plates 7, 8 of the machine, and which is in engagement with a fork 11 fixed to the slide and which a spring 12 strives to return to its initial position in which the slide is withdrawn.

At the lower end of each tube the slide is provided with corresponding holes 3', 4', 5', which are positioned in relation to the tubes as indicated in FIGURE 3. In the bottom plate there is also in front of each tube a dropping hole 3'', 4'', 5'', as will be explained more precisely below.

At the tube 5 for the coins to be changed there is a blocking lever 14, which is pivotally mounted below the bottom plate on a vertical axle 13 attached to the bottom plate, and which a spring 15 strives to keep in the initial position, where the blocking lever is pushed in front of the displacing lever 10, consequently preventing the slide from being moved. A blocking pin 16 is connected to the blocking lever and it projects upwards through corresponding apertures in the top plate and bottom plate. The blocking lever and the blocking pin are so arranged that the blocking pin in the position according to FIGURES 3 and 4 is situated on the path of movement of the coin at the bottom of tube 5 when the slide forces it towards the dropping hole 5'', but is displaced aside against the force of the spring 15, by means of the coin, in the tube 5 sufficiently for the blocking lever 14 to release the displacing lever 10 and enable the slide to move.

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At the change tube 4 there is correspondingly a pivoted stopper 18, which is mounted on an axle 17 and is provided with a control pin 19, which projects upwards through corresponding apertures in the top plate and bottom plate to block the path of movement of the coin at the bottom of the tube 4, and which a spring strives to keep in the initial position indicated in FIGURES 1 and 2.

Below the dropping holes 3", 4", 5" of the bottom plate there are guiding plates 21, 22, 23, which are mounted on a horizontal axle 20 connected to the side plates 7, 8, one for each tube, and which are shaped like chutes and together form an integral piece. The chute 22 for the coin to be changed forms a right angle with the chutes 21, 23. At the end of the group of chutes there is attached an end plate 24 and projecting therefrom a locking and resetting pin 25 and a locking lug 26. A guiding lug 27, which co-operates with the pin 25, is fixed to the axle 9. In FIGURE 2 the group of guiding chutes is shown in the initial position and a spring 28 on the axle strives to turn the group in the direction of the arrow in FIGURE 2, but the pin 25, which is pressed against the guiding lug 27, prevents the group from rotating.

In FIGURE 2 a cash box is marked 29 and a chute, which guides the coins to a place accessible to the customer, is marked 30.

The coin changing machine operates in the following manner: When the axle 3 is turned by a hand lever 9' the displacing lever 10 strives to push the slide outwards between the top plate and bottom plate. If there is no money in the tube 5 the slide can move only a short distance before the displacing lever 10 hits the blocking lever 14. When a coin has been inserted in the coin changing machine and gets into the tube 5 placing itself in the corresponding opening 5' in the slide, the slide pushes the coin ahead during said starting motion, and so the coin pushes the blocking pin 16 aside, and in turn the blocking pin moves the blocking lever 14 away from the displacing lever 10, which allows the slide to continue its motion. All through the motion of the slide the guiding lug 27 has been in the way of the pin 25 of the group of guiding chutes preventing it from turning.

When the slide is moved forward, the axle 9 takes along the undermost coins in the tubes 3 and 4. Then the coin from tube 4 pushes away the control pin 19, which in turn pivots the stopper 18 to move in front of the locking lug 26 of the group of guiding chutes. The turning angle of the guiding lug 27 is then set so as to press against the pin 25 and prevent the rotation of the group of guiding chutes until the stopper 18 according to the above has moved in front of the locking lug 26, which now in turn prevents said group from rotating, whereafter the guiding lug is released from the pin 25 when the axle 9 is further rotated. When the progressive motion of the slide continues the coins get to the dropping holes 3", 4" and 5", through which they fall down onto the corresponding guiding plates 21, 22, 23. In this position the guiding chutes are so placed that the change coins get into the chute 30, which brings the coins to the customer, and the coin which is changed is brought to the cash box.

If there is no change in the tube 4 the control pin 19 and the stopper 18 are prevented from moving at all, and if the guiding lug 27 rotates enough for the pin 25 to be released therefrom, the group of guiding chutes is free to turn by approximately 90°, through the effect of the spring 28. The stopper 18 does not now prevent the group from rotating. Then the guiding chutes have rotated in a position where the coin to be changed by the customer gets into the chute 30 and the possible coins in the change tube 3 get into the cash box 29. When the spring 12 rotates the axle 9 back into the initial position, the guiding lug 27 acts against pin 25 and turns the group of guiding chutes back by 90° into the initial position by means of the pin 25, whereafter the machine is ready for a new operation.

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The drawings and the specification pertaining thereto are only intended to visualize the invention. If necessary the tube 3 may therefore also be provided with a control pin and stopper, unless the machine is provided with an automatic feeder as shown in FIGURE 1. Instead of the group of guiding chutes normally staying in place and rotating by 90° only when there is no change in the tubes, the machine may be adjusted to turn the group of guiding chutes by approximately 90° always when there is change in the tubes and to be unrotated only in the contrary case. The invention can also be adjusted to feed more than one coin with the slide at the same time from every one or any one of the change tubes and/or the tube for the coins to be changed.

What I claim is:

1. A coin changing machine comprising a receiver tube or the like for coins to be changed and at least one storage tube for change coins and below the tubes a slide for feeding of the coins, preferably one at a time from each tube alternatively to the customer or a cash box of the coin changing machine, characterized in that there is for each coin tube a guiding plate, which is arranged beneath the slide and rotates between a cash box position and a customer position, which guiding plates receive the coins fed by the slide, and that at least one change tube has been provided with a control pin or the like, which is positioned at the path of movement of the coin pushed from the change tube by the slide and which is in operating engagement with the guiding plates in such a way that when the coin pushed by the slide displaces the control pin, the guiding plate for the change coins moves into said customer position and the guiding plate for the coin to be changed moves into said cash box position, but when the control pin is undisplaced, the guiding plate for the change remains in the cash box position and the guiding plate for the coin to be changed remains in the customer position.

2. A coin changing machine according to claim 1, characterized in that the guiding plate for the coin to be changed is arranged to be in said customer position and the guiding plate for the change to be in said cash box position and that the control pin is arranged to cause the guiding plate for the coin to be changed to rotate into said cash box position and the guiding plate for the change to rotate into said customer position when the control pin is displaced by the coin through the motion of the slide.

3. A coin changing machine according to claim 1, characterized in that the guiding plate for the coin to be changed is arranged to be in said cash box position and the guiding plate for the change in said customer position and that the control pin is arranged to cause the guiding plate for the coin to be changed to rotate into said customer position and the guiding plate for the change to rotate into said cash box position when the control pin remains undisplaced when the slide is moved.

4. A coin changing machine according to claim 2, characterized in that the guiding plates are rotatably mounted on an axle to be under the influence of springs, and that the control pin is coupled to a stopper, which in the undisplaced position of the control pin is in engagement with the guiding plates to prevent them from rotating.

5. A coin changing machine according to claim 3, characterized in that the guiding plates are rotatably mounted on an axle to be under the influence of springs, and that the control pin is coupled to a stopper, which, when the control pin is displaced, is in engagement with the guiding plates to prevent them from rotating.

6. A coin changing machine according to claim 1, characterized in that the guiding plates are fixedly connected to each other on a mutual rotating axle in such a manner that the guiding plate for the coin to be changed is turned by 90° in relation to the guiding plate or plates for the change coins.

7. A coin changing machine according to claim 1, characterized in that there is provided at the receiver tube for the coin to be changed a blocking pin or the like, which is positioned at the path of movement of the coin removed from the tube by the slide, and which blocking pin is in operating engagement with the slide in such a way that when the blocking pin is displaced by the coin moved by the slide, the slide is free to move, but when the control pin is undisplaced, the slide is blocked.

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