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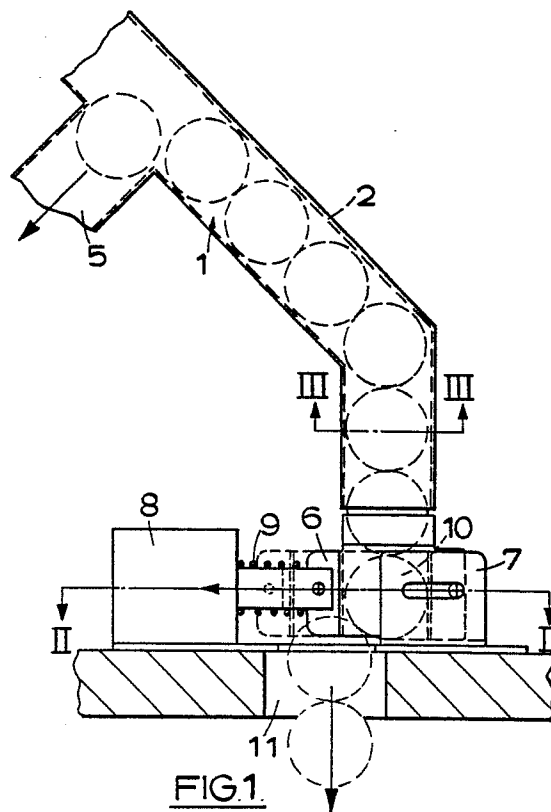
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54 **Dispensing coins.**

57 In a gaming or amusement machine coins are dispensed from a stack tube (1) by a payout slide (6) which moves horizontally to push the bottom coin (10) into an ejection chute (11). In contrast to previous arrangements, the coins are stacked on edge, one above another in the stack tube (1) which takes up less space in the machine than conventional, cylindrical stack tubes in which the coins are stacked flat. The stack tube (1) may be formed conveniently by machining a groove (2) in the side wall (3) of the machine and by attaching a flat strip (4) to the wall (3) to close off the groove (2).



EP 0 261 838 A2

DISPENSING COINS

This invention relates to the dispensing of coins, and within the term coin, we include also tokens. Coins are dispensed as prizes in gaming and amusement machines and also as change in vending machines and change-giving machines.

Although it is known to dispense coins from a hopper in which they lie in a random heap and from which they are picked up by a rotating inclined disc, the most widely used way of paying out coins is from a stack tube. In a stack tube, which is usually vertical, the coins are stacked one above the other with their major faces horizontal and a horizontally reciprocating solenoid-operated payout slide pushes the coins singly, or sometimes two or more at a time, from the bottom of the stack. The tube is replenished from the top, usually by coins paid in to operate the machine, and when the tube is full the surplus coins fall down an overflow channel to a cash box.

These stack tubes take up a significant amount of space in the machine. In particular in the case of gaming and amusement machines such as those known colloquially as fruit machines they take up valuable space in the very region which is needed for the reel mechanism and the display, as it is undesirable for the payout hopper, from which the player picks up his winnings, to be lower than necessary.

Another drawback of the known stack tubes is that the solenoid that actuates the payslide has to be powerful to overcome the frictional resistance engendered by the substantial pile of coins above.

The aim of the invention is to overcome these drawbacks and offer a payout system which is light to operate and can conveniently be incorporated into a machine in the minimum of space.

According to the invention the stack tube of coin-dispensing apparatus is so constructed and arranged that the coins to be dispensed are stacked not flat, but on edge, one above the other with their flat faces in the same, substantially vertical planes.

The coins may be dispensed, as in the known arrangement, from the bottom of the stack by a horizontally reciprocating payout slide. Preferably the slide moves in a horizontal or substantially horizontal direction parallel to the flat faces of the coins, although it would be possible to arrange it to move parallel to the axis of the coin to be dispensed, making for a very short stroke.

Although such an arrangement takes up a much greater height, for a given number of coins, than the orthodox arrangement, it has the great advantage that it takes up very little width in one direction and according to a further important fea-

ture of the invention full advantage is taken of this by forming the stack tube within, or substantially within, the thickness of the wall of the machine. Moreover the drawback of increased height is of less importance in the case of the current U.K. one pound coins, which have a lower ratio of diameter to thickness than most coins and which furthermore do not have to be stored in large numbers to achieve a reasonable payout.

Conventional fruit machines have cabinets made of chipboard or plywood and grooves are already machined on the inside faces of the side walls to receive shelves and other items so there is very little increase in cost in machining vertical or inclined grooves of the thickness of a pound coin. The stack tubes can be formed of the material of the wall itself with no separate lining, and it is only necessary to close off the inner face of the groove with a flat sheet, for example of plastics, preferably transparent, in order to form the tube at negligible cost.

Coins enter the top end of the tube from a validator of a known kind and at the bottom end of the tube there is a slide which displaces the bottom coin laterally to allow it to drop into a payout hopper. As soon as the bottom coin has been displaced a small amount, the weight of the stack above acts to help further displacement, and so the solenoid can be of lighter construction than those used hitherto.

An example of a coin dispensing arrangement according to the invention is illustrated by way of example only in the accompanying drawings, in which:-

Figure 1 is a side elevation of a stack tube and payout slide;

Figure 2 is a section on the line II-II of Figure 1;

Figure 3 is a section on the line III-III of Figure 1; and

Figure 4 is a section on the line IV-IV of Figure 2.

A tube 1 is formed as a shallow groove 2 machined in the side wall 3 of an amusement machine, closed by a flat transparent plastics strip 4 attached to the side wall 3. The upper part of the tube 1 is inclined and is joined by an overflow channel 5, similarly formed, into which coins are directed when the tube is full. The lower part of the tube is vertical and terminates in a slide 6 displaceable horizontally relative to a stationary guide 7 by a solenoid 8 against the action of a spring 9. It will

be seen that only a short travel is necessary, around half the diameter of a coin, in order to align the bottom coin 10 with an ejection chute 11 leading to a payout hopper (not shown).

A conventional coin validator handles successive coins on edge and so coins can pass direct from the validator into the upper end of the tube 1 without having to turn and lie flat as in conventional stack tubes. This gives an added security against jamming or other problems.

It would be possible, within the scope of the invention, to have two, or even more, columns of coins side-by-side in the tube with the coins in each column on edge one above another and to dispense the coins two or more at a time. In such an arrangement each coin in one of the columns preferably has a flat face in contact with the flat face of an adjacent coin in an adjacent column.

Claims

1. Coin-dispensing apparatus for a gaming machine, an amusement machine, a vending machine or a change-giving machine which apparatus comprises a stack tube (1) in which coins are stacked one above another and a horizontally reciprocating payout slide (6) which is arranged to push one or more of the coins from the bottom of the stack, characterised in that the stack tube (1) is so constructed and arranged that the coins are stacked on edge one above another with their flat faces in the same, substantially vertical planes.

2. Coin-dispensing apparatus according to claim 1 characterised in that the stack tube (1) is of such a form as to allow two or more columns of coins to be stacked side-by-side with the coins in each column on edge one above another.

3. Coin-dispensing apparatus according to claim 1 or claim 2 characterised in that the payout slide (6) is movable in a horizontal or substantially horizontal direction parallel to the flat faces of the coins.

4. Coin-dispensing apparatus according to claim 1 or claim 2 characterised in that the payout slide (6) is movable in a horizontal or substantially horizontal direction perpendicular to the flat faces of the coins.

5. Coin-dispensing apparatus according to any one of the preceding claims characterised in that the payout slide (6) is operated by a solenoid (8).

6. A gaming, amusement, vending or change-giving machine which includes, within its housing, coin-dispensing apparatus in accordance with any one of the preceding claims.

7. A machine according to claim 6 characterised in that the stack tube (1) is formed within or substantially within the thickness of a wall (3) of the machine housing.

8. A machine according to claim 7 characterised in that the stack tube (1) comprises a vertical groove (2) and/or an inclined groove provided in the inner surface of a wall (3) of the machine housing.

9. A machine according to claim 8 characterised in that a flat strip or sheet (4) is attached to the wall (3) of the housing to close off the groove (2).

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