Nov. 15, 1966 M. SYKES 3,285,380

COIN OPERATING MECHANISM

Filed Jan. 26, 1965 3 Sheets-Sheet 1

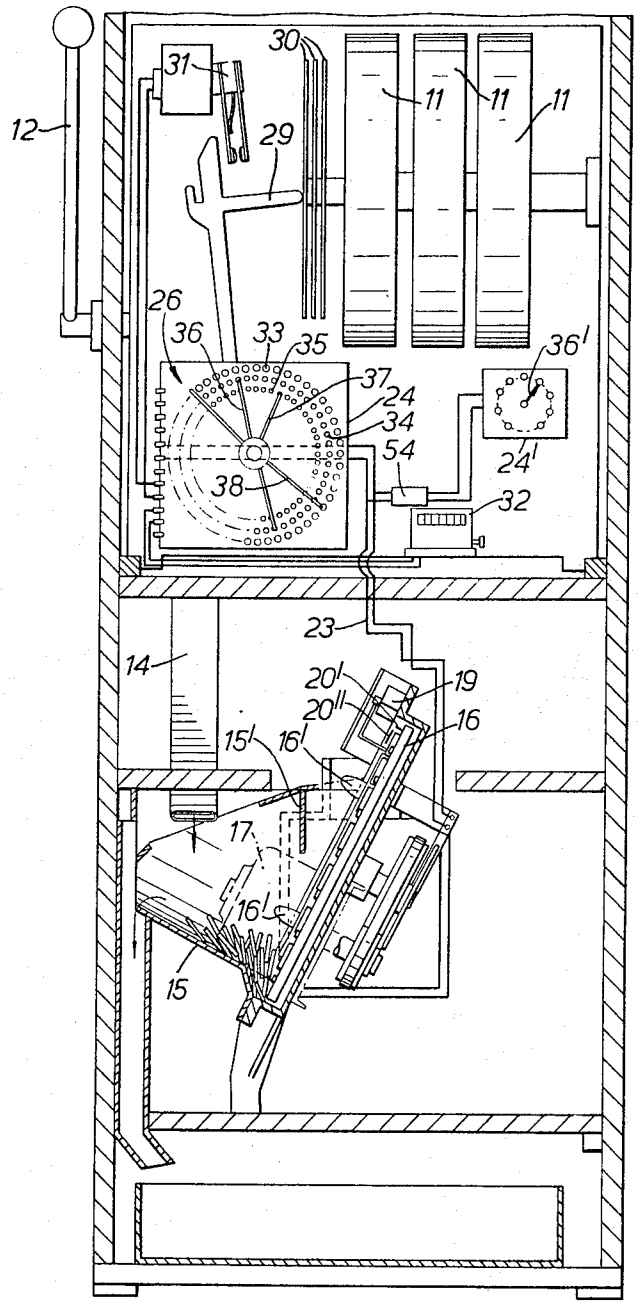

FIG. 1.

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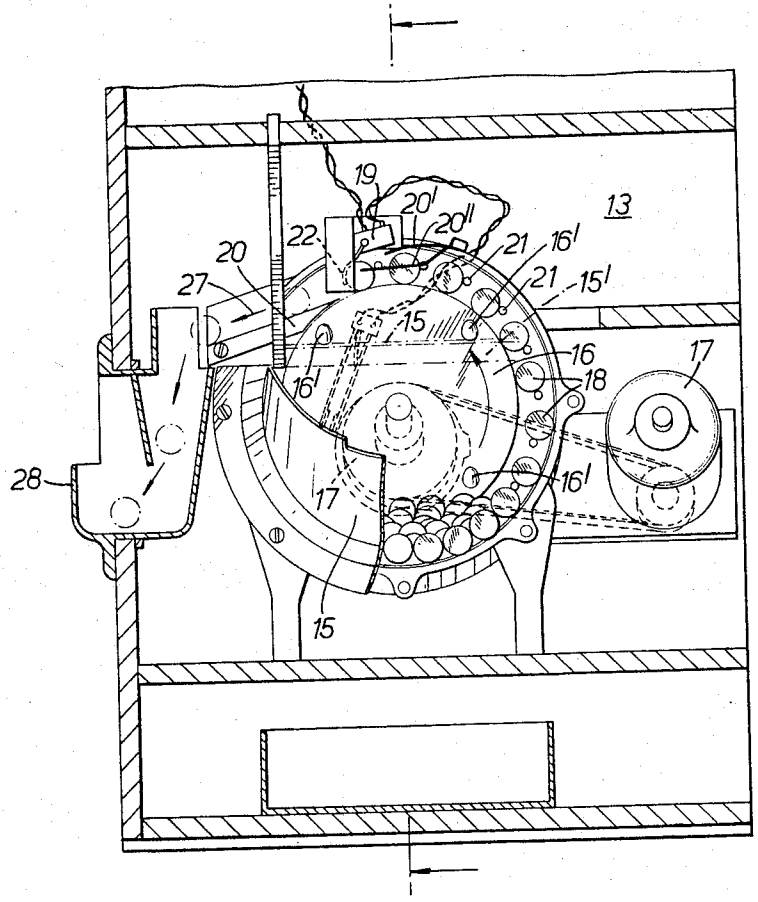

FIG. 2.

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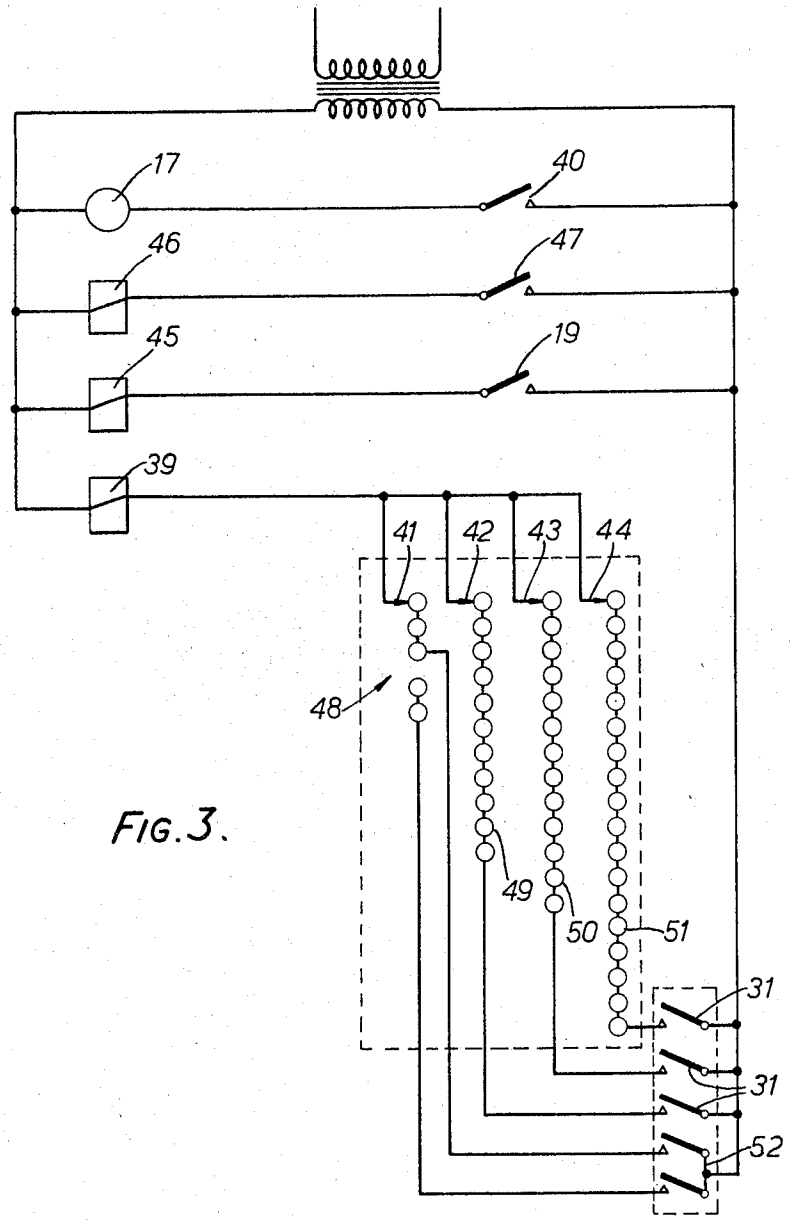

FIG. 3.

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United States Patent Office 3,285,380 Patented Nov. 15, 1966

3,285,380

COIN OPERATING MECHANISM

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Filed Jan. 26, 1965, Ser. No. 428,144
Claims priority, application Great Britain, Jan. 27, 1964, 3,461/64
7 Claims. (Cl. 194—2)

This invention relates to coin operated mechanism in which different numbers of coins are paid out in dependence on the setting of the mechanism. An example of such mechanism is a coin operated gaming machine of the kind known as a fruit machine, or a coin counter, or a change giver.

Coin operated mechanism according to the present invention includes an electrical coin counter, arranged to dispense a selected number of coins, and an automatic setting device arranged to control the coin counter in dependence on the instantaneous positions of a number of independently movable mechanical components of the mechanism.

In the past, coins in the machine have been stacked in tubes of perhaps twenty coins and when it is desired to pay out a certain number of coins as a result of a certain winning combination having been established by a player, an appropriate mechanically operated or solenoid operated pusher pushes the appropriate number of coins off the stack of coins to a delivery passage. It is only practical to deliver up to about twenty coins in this way and since it is often desirable to provide a machine which will pay out large numbers of coins it has been the custom to provide a jack-pot in which a random number of coins is collected as the machine is played.

The preferred electrical coin counter used in the present invention can however, count hundreds of coins in a very short time so that it becomes possible to pay out a precisely determined large prize. It is then only necessary for the counter to be set to the appropriate large number when the winning combination of mechanical parts has been set up.

Preferably the coin counter includes a coin detecting element arranged to be engaged successively by each coin as it is counted, the detecting element being arranged to advance a movable element of the automatic setting device by one position for each coin counted.

According to a preferred feature of the invention the automatic setting mechanism includes a series of spaced contacts which are engaged successively by the movable element, the contacts being energised by a feeler arranged to engage the independently movable mechanical components.

The coin counter may be driven by an electric motor which is energised by the engagement of the movable element of the setting device with the energised contacts, the motor being de-energised when the movable element moves beyond those contacts which are energised by the feeler.

The invention may be carried into practice in various ways and one embodiment will now be described by way of example as applied to a conventional fruit machine.

Reference will be made to the accompanying drawings in which FIGURE 1 is a rather diagrammatic section of a hand operated fruit machine having three rotating drums **11** each bearing around its circumference a number of fruit or other symbols. The drums are rotated

when a handle **12** is operated and come to rest in arbitrary positions, with each having one symbol opposite a viewing window. Depending on the particular combination of symbols displayed a prize may be won by the player or not.

FIGURE 2 of the accompanying drawings shows a front view in section of the lower half of the machine shown in FIGURE 1 and in particular shows at **13** a coin counting mechanism for controlling the number of coins paid out when a prize is won. Certain conventional parts of the equipment are omitted in the interests of clarity.

FIGURE 3 is a circuit diagram of a slightly modified machine.

Referring to FIGURE 1, coins fed into the machine pass through a chute **14** directly into a collecting trough **15** forming a part of the coin counting mechanism **13**. This mechanism includes a plate **16** which can be rotated by a motor **17** to carry coins **18** from the trough **15** around to a micro switch **19**, acting as part of a counter.

For this purpose the plate is formed with an annular recess around its rim divided off by small studs **21** into a number of sectors in each of which a coin can be accommodated. As the plate rotates coins from the trough naturally fall into position in the individual sectors and are rotated with the plate past a mechanical coin detecting lever **22** which operates the micro switch **19**.

Every time the micro switch **19** is operated by the lever **22** an electrical pulse is transmitted over conductors **23** to an operating coil on a stepping relay or rotary switch device **24** having rows of spaced contacts **33, 34, 35**, and three corresponding wipers **36, 37, 38** so that each coin counted turns the wiper assembly **36, 37, 38** of the relay **24** through one switch contact. In this way, when coins are being counted the wiper assembly is turned until one of the wipers reaches an end or zero position shown at **26** in FIGURE 1, in which position the wiper in question disengages from the energised row of contacts to disconnect or declutch the motor **17** and stop the further operation of the coin counter. At the same time a stop is dropped across a chute **27** for the counted coins to prevent further coins being delivered. The chute in fact delivers coins to a pay-out pocket **28** whence the operator can take his prize.

The rotary switch device **24** is set to three given prize values depending upon the positions taken up by the three drums **11**, and this acts as an automatic setting device for the coin counter.

After the machine has been played, a number of mechanical feeler devices, one of which is shown at **29**, are moved to co-operate with three steel plates **30**, each of which is connected to be driven with one of the three drums **11**. These plates have in them openings at certain positions permitting the respective feeler **29** to pass. Only when one of the selected winning combinations is achieved do three holes in the three plates **30** come into line opposite one of the feelers **29** to allow it to penetrate all three plates. When this happens the particular feeler actuates its associated blade switch **31** which directs the flow of current to the appropriate row of contacts of the stepping relay **24**, the number of contacts energised having been previously determined in dependence upon the value of the prize to be awarded for the particular combination achieved.

Each feeler device **29** has its own switch **31** which is actuated only when the respective feeler penetrates all

three plates **30**, as determined by the winning combination assumed by the drums **11** when they come to a complete stop.

As soon as a blade switch **31** is actuated, and as long as the wiper it is controlling is still on a joined row of contacts of the stepping relay **24**, then the coin counter will continue to deliver its prize and to advance the wiper assembly of the relay **24** one position per coin delivered until the particular wiper goes one step beyond the contacts which are energised. When this happens the coin counter ceases its operation as described above.

Thus, when one of the winning combinations is achieved the counter counts out the appropriate number of coins from the trough **15** and these are delivered as the prize. Then when the next coin is inserted, after a payout, and the handle **12** is depressed by the operator for another play, a switch on the mechanism is energised and resets the stepping relay to its normal position.

A diagrammatic circuit of the main electrical connections and components of a machine according to the invention is illustrated in FIGURE 3. The machine in this case is similar to that illustrated in FIGURES 1 and 2, and corresponding parts are given the same reference numerals, but the setting device is provided with four rings of contacts, and there are five feelers **29** co-operating with the discs **30**.

In this circuit the coin counter motor **17** is in series with a relay switch **40** whose contacts are actuated by a relay winding **39** arranged in series with four wipers **41**, **42**, **43**, **44**. The wipers are driven by a stepping relay **45** in series with the micro-switch **19**, which is actuated by the coin detector lever **22**. A wiper re-setting relay **46** is in series with a reset switch **47**, arranged to be actuated automatically after the machine has paid up a prize.

The four wipers respectively engage four rings of joined contacts **48**, **49**, **50**, **51**, having five, eleven, thirteen, and eighteen contacts respectively. Each of the last three rings of contacts is connected to a switch **31** actuated by one of five feeler devices **29**. The first ring of contacts **48** is divided into two groups, of three and two, which are connected respectively to the two blades of a double switch **52**, actuated by two further feelers, so as to provide in effect either three or five contacts in this row.

Thus when any one of the feelers moves into its operative position by penetrating aligned holes in the discs **30**, the corresponding switch **31** or **52** is closed, and current passes through the corresponding wiper to the relay winding **39**. This causes switch **40** to close, thus energising the coin counter motor **17**. As each coin is counted the switch **19** transmits a pulse to the stepping relay **45** which advances the wipers by one contact. When the particular wiper reaches the end of its ring of contacts the relay winding **39** is de-energised, and the counter halts. The re-set switch **47** then resets the wipers to their start position.

It is to be observed that if a particularly rare combination is required to give a prize of many coins, the sort of prize that is termed a "jackpot," the mechanism can still be arranged to count the appropriate number of coins, possibly one hundred, by operation of the coin counter and stepping relay and thus it is not necessary that the jackpot prize shall be a random number of coins while yet the mechanism for delivering prizes is simple.

If it is desired to change the value of the prizes awarded this can be simply done by replacing the plates **30**, or altering the positions of the wiper blades **36**, **37**, **38** on their driving spindle, without otherwise changing the equipment.

An electrically driven counter **32** can be arranged to be operated every time the wiper assembly moves over a contact step to retain a record of the total number of coins paid out over a period.

A further feature of the invention is that the machine can be used for giving its own change. For example

if the machine utilizes sixpences and a user has only a half crown he can insert this in a "half crown slot" in the machine and a simple mechanism can be arranged so that when the half crown is inserted the wiper **41** is turned through five contacts with the result that five sixpences are counted out from the trough **15** to give the player his coins for playing on the machine.

Alternatively, the insertion of the half crown can operate a release mechanism enabling the operator to play five times without inserting further coins.

The lower part of the machine containing the mechanism **15–19** is connected to the upper part containing the playing mechanism through the electrical connections **23**, and it is possible for the upper part to be separable with a plug and socket connection, so that the lower part could be used independently as a change-giver and/or a coin counter.

The counter can in any case be used to count the coins when the machine is emptied from time to time.

If it is desired to pay out a large number say 250, coins if a rare combination is achieved, a second stepping relay **24'** can have a wiper **36'** set by an appropriate feeler such as **29**, and the stepping relay **24'** can receive operating pulses from a divider **54** receiving the pulses at **23** and passing every tenth pulse to the relay **24'**. Thus 25 steps of the relay **24'** will represent a payout of 250 coins.

Instead of the mechanically driven wheels **11**, light rotary switches can be driven during play to cause images of the fruit symbols to be projected onto those screens as the switches rotate. Feelers **29** can detent whether the switch discs finish rotating in positions representing a winning combination, or this could be determined electrically. Thus, different electrical circuits can be arranged to be completed if the switch discs stop in certain positions, and completion of such a circuit can be arranged to have the same effect as closing a switch such as **31**.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a coin operated mechanism including independently movable mechanical components to indicate a predetermined condition, the improvement of an electrical coin counter comprising a trough for storing a supply of coins, a coin carrier device for carrying the coins sequentially from the trough, a coin delivery passage for receiving the coins from said carrier device, means for sensing the passage of individual coins in said delivery passage, a setting device responsive to the position of said movable members to set a predetermined number of coins to be delivered to said passage, stepping means responsive to said sensing means to reset said setting device with the passage of each coin, and means for terminating the delivery of said coins when said setting device reaches a predetermined position thereby indicating said predetermined number of coins have been delivered.

2. Coin operated mechanism as claimed in claim **1**, including a feeler for engaging the independently movable mechanical components, and in which the setting device includes a movable element and a series of spaced contracts which are engaged successively by the movable element, the contacts being energised by the feeler.

3. Coin operated mechanism as claimed in claim **2**, including an electric motor for driving the coin carrier, and means for energising the motor in response to the engagement of the movable element of the setting device with the energised contacts, and means for de-energizing the motor when the movable element moves beyond those contacts which are energised by the feeler.

4. Coin operated mechanism as claimed in claim **1**, in which the setting device comprises a rotary stepping electrical relay.

5. Coin operated mechanism as claimed in claim **1**, including a number of feelers for setting the setting device and arranged to engage the independently movable mechanical components, each feeler being arranged to move

into an operative position only when the mechanical components each assume a selected position.

6. Coin operated mechanism as claimed in claim 5, in which each feeler is arranged to energise selectively a series of contacts of the setting device, and the setting device comprises a corresponding number of movable wipers or contacts.

7. Coin operated mechanism as claimed in claim 1, in which the independently movable mechanical components are each provided with a series of spaced symbols which are displayed to an operator to provide a visual indication of their instantaneous positions.

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