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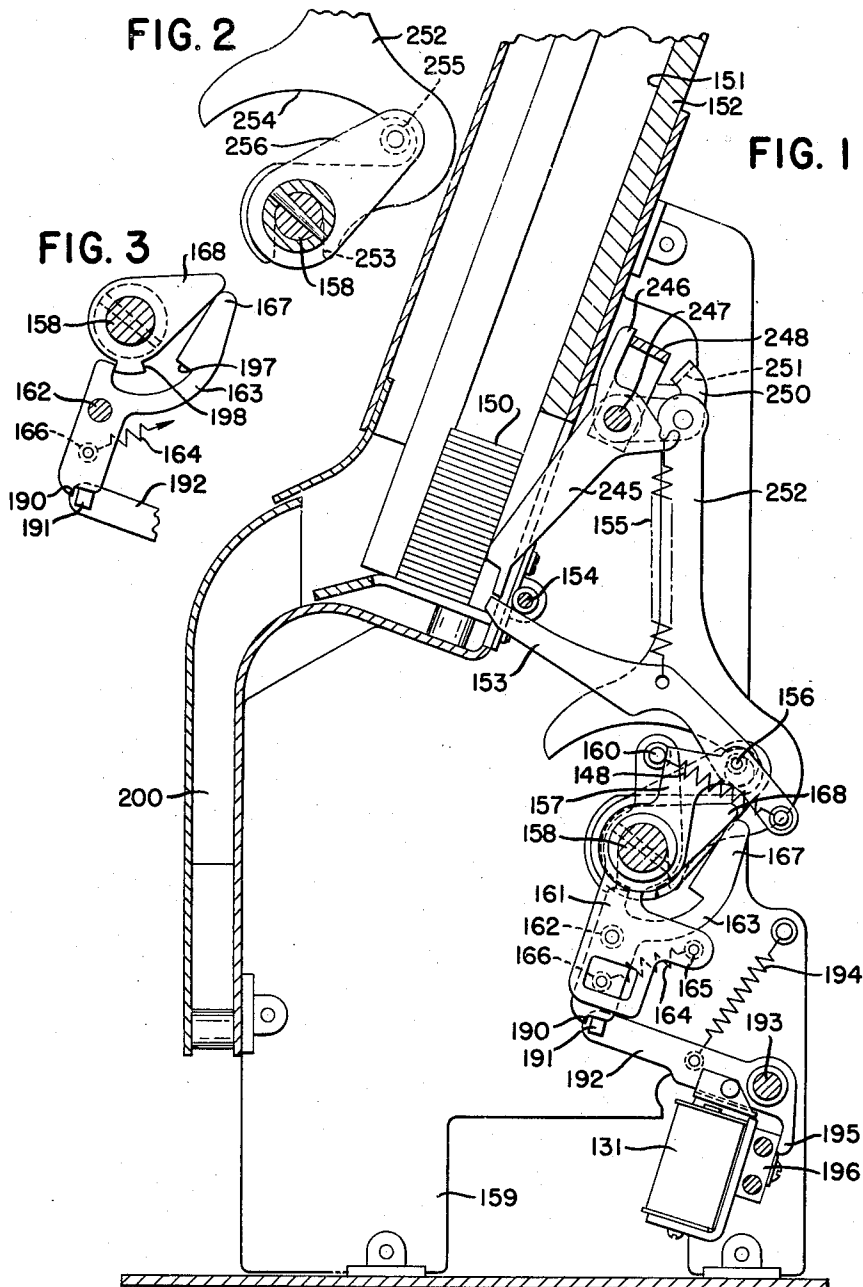
P. H. WILLIAMS ET AL

2,954,037

COIN EJECTORS

Filed Nov. 22, 1957

2 Sheets-Sheet 1



INVENTORS
PAUL H. WILLIAMS &
WILLIAM K. BRAMLAGE

BY *Louis A. Kline*
Henry Silbereis
THEIR ATTORNEYS

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FIG. 4

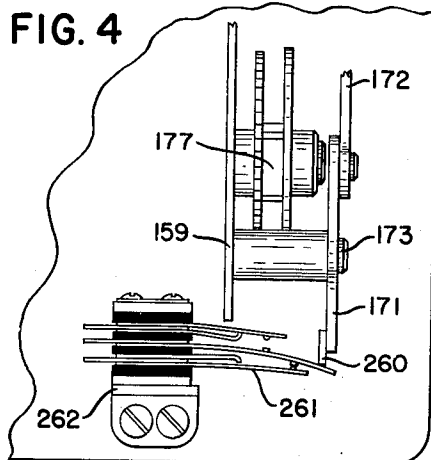


FIG. 7

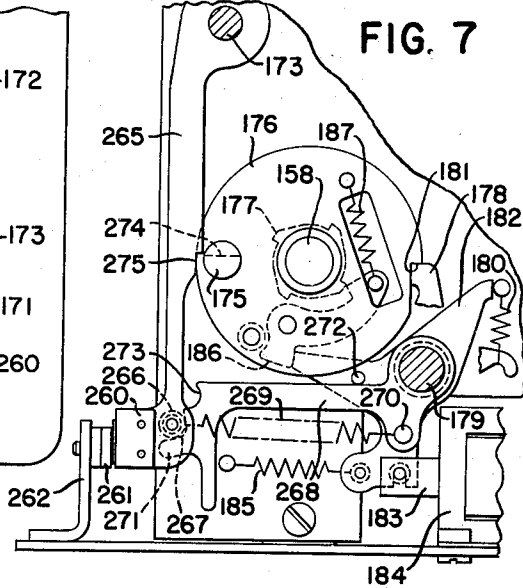


FIG. 5

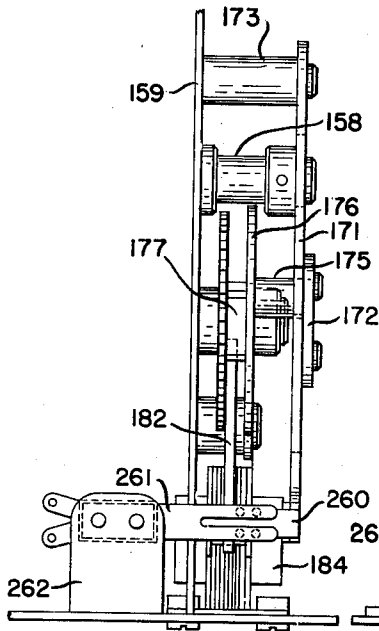
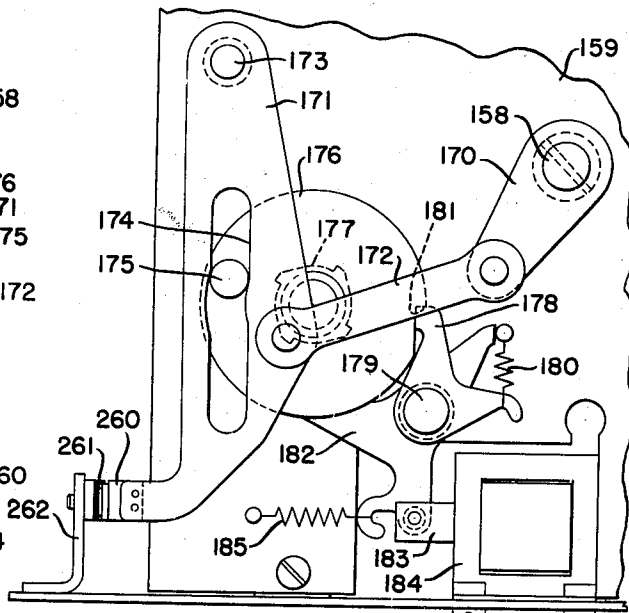


FIG. 6



INVENTORS
PAUL H. WILLIAMS &
WILLIAM K. BRAMLAGE

BY

Louis A. Kline
Henry Silberstein
THEIR ATTORNEYS

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2,954,037

COIN EJECTORS

Paul H. Williams and William K. Bramlage, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

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1 Claim. (Cl. 133-4)

This invention relates to improvements in coin-ejecting mechanism.

The invention disclosed herein comprises an improvement over the mechanism shown and described in our co-pending application, Serial No. 649,959, filed April 1, 1957. As illustrated therein, the mechanism is released for operation by controls set up in a cash register of the type disclosed in United States Patent No. 1,865,147, issued to Bernis M. Shipley on June 28, 1932, and in United States Patent No. 2,625,322, issued to Frank B. Moser on January 13, 1953.

The principal object of the present invention is to provide a coin-ejecting mechanism which is positive in its action and one which does not depend entirely on springs to actuate the ejecting mechanism.

Another object of the invention is to provide a novel mechanism for releasing a feeling member from engagement with a stack of coins in a chute, prior to the operation of the ejecting member.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

Of said drawings:

Fig. 1 is a side elevational view showing the coin-ejecting mechanism.

Fig. 2 is a detail view of a part of the mechanism shown in Fig. 1.

Fig. 3 is a detail view of a part of the mechanism shown in Fig. 1.

Fig. 4 is a top plan view showing certain switches in the control circuits for releasing the machine for operation.

Fig. 5 is a front elevational view of the mechanism shown in Fig. 6.

Fig. 6 is a side elevational view showing the machine releasing and operating mechanisms.

Fig. 7 is a side elevational view showing a modified machine releasing and operating mechanism.

GENERAL DESCRIPTION

Described in general terms, the novel means disclosed herein is attached to a machine of the type shown in the above-mentioned Shipley patent, which is capable of recording items of a sale, either multiple or single, and printing a sub-total thereof. The machine is also provided with a control for entering the amount tendered by the customer in payment for goods. The Amount Tendered key controls the add-subtract totalizer so that the amount tendered is subtracted from the balance standing therein, which provides a negative balance, or the amount of change to be issued. Upon clearing the negative total balance from the machine, certain circuits are set up automatically to actuate solenoids in the change-making mechanism, to set up a condition for issuing proper coins, making up the change due the customer. The change making and delivering operations are effective during the negative total clearing operation. Therefore, no mental calculation on the part of the operator is required to determine the amount of coins due the customer.

The machine as shown in the above-mentioned Shipley patent is provided with a series of amount banks of

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keys, which control the calculation of balances in a totalizer, which totalizer controls the operation of a switch during negative sub-totaling operations, which switches energize solenoids in the change-ejecting mechanism in the combinations required to issue the proper number of each of the coins. It is to be understood that one solenoid is provided for each ejecting mechanism, and there is a sufficient number of ejecting mechanisms to issue whatever number of coins is required in making the change.

Only one ejecting mechanism is shown in the present illustration. Each of the mechanisms in the machine is a duplicate thereof.

Coin-ejecting mechanism

The coins 150 (Fig. 1) are stacked in a chute 151 corresponding to each coin supported by the coin chute member. The coin chute mechanism illustrated in Fig. 1 is the one issuing two pennies. A coin chute member 152 extends across the entire machine, and the chutes 151 are provided for the desired denominational coins. For example, one chute is provided for half-dollars, three chutes for pennies, two chutes for dimes, one chute for nickels, and one chute for quarters. The coins 150 are ejected from the chute 151 by a coin-ejecting member 153, which is held in engagement with a roller 154 by a spring 155 and is pivoted on a stud 156, carried by a rocking arm 157, loosely pivoted on a shaft 158, carried by frames 159 of the coin-ejecting mechanism. A spring 148 urges the arm 157 counter-clockwise (Fig. 1) into engagement with a stud 160, carried by an arm 161, loose on the shaft 158. The arm 161 is provided with a stud 162, on which is pivotally mounted a latch arm 163. See also Fig. 3. A spring 164 stretched between a stud 165 on the arm 161 and a stud 166 on the latch arm 163, urges the latch arm 163 counter-clockwise, as viewed in Figs. 1 and 3. The upper end 167 of the latch arm 163 normally engages an arm 168, pinned to the shaft 158. The shaft 158 is rocked counter-clockwise (Figs. 1, 3, and 6) during each cycling operation of the coin-ejecting mechanism and thereafter returns in a clockwise direction to its normal position. The counter-clockwise and clockwise rocking movements of the shaft 158 are obtained by means of an arm 170 (Fig. 6) secured to the shaft 158, which is connected to an arm 171 by a link 172. The arm 171 is pivoted on a stud 173, carried by the right-hand frame 159. The arm 171 is provided with a cam slot 174, into which projects a stud 175, carried by a disk 176. A clutch member 177 (Figs. 6 and 7) is connected to a motor in the manner well known in the art. A clutch pawl 186, pivoted on the disk 176, is urged counter-clockwise by a spring 187 to engage the clutch member 177 when released. The disk 176 is held in its home position by a pawl 178, pivoted on a stud 179. A spring 180 normally maintains the upper end of the pawl 178 in engagement with a notch 181 in the disk 176. Secured to the arm 178 is a clutch arm 182, connected to the armature 183 of a solenoid 184. The connection may be either by a stud, as shown in Fig. 6, or by a stud and notch, as shown in Fig. 7. A spring 185 normally maintains the clutch arm 182 in position to maintain the clutch pawl 186 from engagement with the clutch disk 177, and, when the solenoid 184 is energized at the proper time during the machine cycling of the cash register, to which the present invention is shown applied, the solenoid rocks the clutch arm 182 counter-clockwise, to release the clutch pawl 186 to engage the clutch disk 177. Thereafter, the clutch member 177 rotates the disk 176 counter-clockwise (Figs. 6 and 7).

As the disk 176 is rotated, the stud 175 thereon, moving in the cam slot 174, rocks the arm 171 to move the link 172 toward the right (Fig. 6) and rock the arm 170

counter-clockwise to thereby rock the shaft 158 likewise. As the stud 175 passes 180 degrees of its rotation, the stud 175, moving in the cam slot 174, returns the arm 171 to its normal position, thus rocking the arm 170 and the shaft 158 clockwise back to its normal position.

When the shaft 158 is rocked counter-clockwise (Fig. 3), the arm 168 releases the pawl 163 to rock counter-clockwise under the action of the spring 164. Normally a shoulder 190 on the pawl 163 engages a stud 191 on an armature 192, pivoted on a rod 193, carried between the side frames 159. A spring 194 maintains the armature 192 in the position shown, with a finger 195 thereon engaging a block 196.

Thus, when the stud 191 of the armature 192 lies in the path of the shoulder 190, when the arm 168 is rocked counter-clockwise (Fig. 3), the arm 163 cannot follow. However, when the relay 131 is energized, the armature 192 is rocked counter-clockwise to withdraw the stud 191 from the path of the notch 190, and therefore, when the arm 168 is rocked counter-clockwise, the arm 167 is permitted to follow until a shoulder 197 thereon is moved into the path of movement of a shoulder 198, formed on the arm 168. Upon continued counter-clockwise movement of the arm 168, the shoulder 198, engaging the shoulder 197, carries the arm 163, together with the arm 161, counter-clockwise around the shaft 158. As the arm 161 rocks counter-clockwise, the arm 157, held in engagement with the stud 160 on the arm 161, rocks the arm 157, together with the ejector member 153, therewith, to eject the coins 150 from the chute and drop them into the delivery spout 200.

In order to arrest operation of the machine when no coins are left in the chute 151, a switch (not shown herein but fully illustrated in the above-mentioned application) is provided to break the circuit in the motor-operating circuits. This switch is controlled by a feeler 245, engaging the stack of coins 150 under the tension of the spring 155. The upper end of the finger 245 is provided with a projection 246, which engages a yoke 248, pivoted on a rod 247. The yoke 248 is provided with a finger (not shown) for actuating the switch when the yoke 248 is rocked clockwise.

In order to place a minimum load on the coins 150, so that they will be free to drop in the chute 151, means is provided for withdrawing the feeler 245 from engagement with the coins at the beginning of each cycling operation of the coin ejector. To accomplish this, an arm 250, having a flange 251, is provided, which flange lies in the path of movement of the yoke 248. Secured to the arm 250 is a pitman 252, the lower end being bifurcated at 253 (see also Fig. 2) to straddle the shaft 158. The pitman 252 is provided with a cam surface 254, which is engaged by a stud 255, carried by an arm 256, secured to the shaft 158.

Thus, when the shaft 158 rocks counter-clockwise (Figs. 1 and 2), the stud 255, engaging the cam edge 254, raises the pitman 252 to bring the flange 251 into engagement with the yoke 248, which, through its engagement with the projection 246, rocks the feeler 245 counter-clockwise to withdraw the lower end of the feeler 245 from engagement with the stack of coins 150. The cam edge 254 is so developed that the pitman 252 is raised immediately after the arm 256 begins to rock, so that the pressure on the stack of coins will be relieved at once and will remain relieved until the very end of the machine operation, at which time the stud 255 again engages the recessed portion of the cam edge 254, to permit the pitman 252 to drop and withdraw the flange 251 from engagement with the yoke 248 and permit the spring 155 to again move the finger 245 into engagement with the stack of coins 150.

The lower end of the cam arm 171 (Fig. 6) is provided with a flange 260, which coacts with a switch 261, carried on a bracket 262, supported on the base of the machine. The switch 261 controls certain circuits in the

machine for controlling the time, during the machine operation, in which the relays 131 are energized. Since this part of the structure does not form a part of the novel mechanism, it is not further described, inasmuch as it is a part of the control circuits of the cash register to which the present invention is applied.

The mechanism for closing the switch 260, shown in Fig. 6, is satisfactory for operation in certain machines. However, in other cash registers to which the invention is attached, a quicker-acting switch mechanism is required. Such a mechanism is disclosed in the modified form illustrated in Fig. 7.

In the modified form of the mechanism, the arm 171 is cut short at its lower end, to leave off the switch-operating flange 260. A separately-operating arm 265 is pivoted on stud 173, adjacent the arm 171. The arm 265 is provided with the switch-operating flange 260. The arm 265 is provided with a stud 266, which is normally held in engagement with a notch 267 on the free end of a spring-actuated latch arm 268, pivoted on the stud 179. A spring 269, stretched between the stud 266 and a stud 270 of the latch arm 268, maintains the stud 266 of arm 265 in the notch 267. The stud 266, engaging an extension 271, limits clockwise movement of the latch arm 268. The latch arm 268 engages a stud 272 on the clutch arm 182.

When the solenoid 184 is energized, and the clutch arm 182 is rocked thereby to release the clutch pawl 186, the stud 272 rocks the latch arm 268 counter-clockwise to lower the notch 267 and permit the spring 269 to rock the arm 265 until the stud thereon engages a notch 273 in the end of the latch 268. At the end of the rotation of the disk 176, the stud 175 thereon restores the arm 265 to normal position and permits the latch arm 268 to be restored to normal position. The stud 175 is notched at 274 to provide a clearance for the arm 265 when released by latch arm 268. A cut-back 275 in the arm 265 provides clearance to allow the arm 265 to move when released by latch arm 268.

Thus it is clear that the switches 261 are actuated at the instant the machine is released. In the form shown in Fig. 6, the switches 261 are actuated by the stud 175 after a partial rotation of the disk 176.

While the forms of the invention disclosed herein are admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the forms or embodiments disclosed herein, for it is susceptible of embodiment in various other forms.

What is claimed is:

In a machine of the class described, the combination of a device for ejecting coins from a coin chute; means to actuate the device comprising a first rocking arm connected to said device; a second rocking arm; means biasing the second rocking arm into engagement with said first rocking arm; a latch arm pivotally supported on said second rocking arm; a rotatable actuator operable during each machine operation; a shoulder on the actuator engageable with the latch arm; an arm on the actuator to normally maintain the latch arm disconnected from the shoulder on the actuator and operable upon rotation of said actuator to release the latch arm; a second arm to normally hold the latch arm disconnected from the shoulder on the actuator; and means selectively operable to withdraw the second arm from engagement with the latch arm whereby the latch arm, the first and second rocking arms, and the device for ejecting coins are operated by the actuator.

References Cited in the file of this patent

UNITED STATES PATENTS

1,007,167	Wickline	Oct. 31, 1911
1,390,587	Rehwer	Sept. 13, 1921
1,745,737	Camp	Feb. 4, 1930
2,646,806	Gabrielsen	July 28, 1953