

Oct. 13, 1959

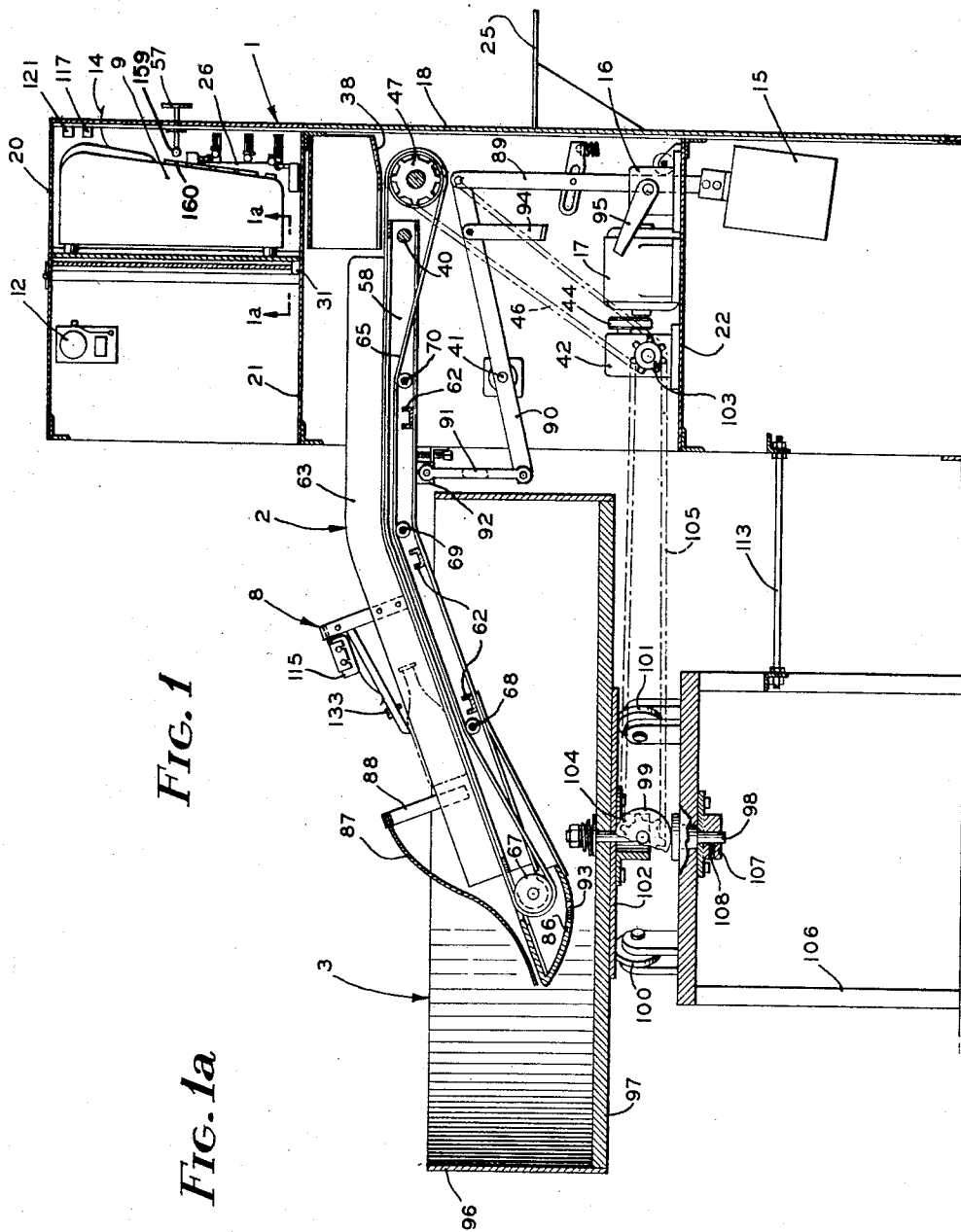
S. J. GUREWITZ

2,908,440

BOTTLE REGISTER

Filed June 19, 1953

6 Sheets-Sheet 1



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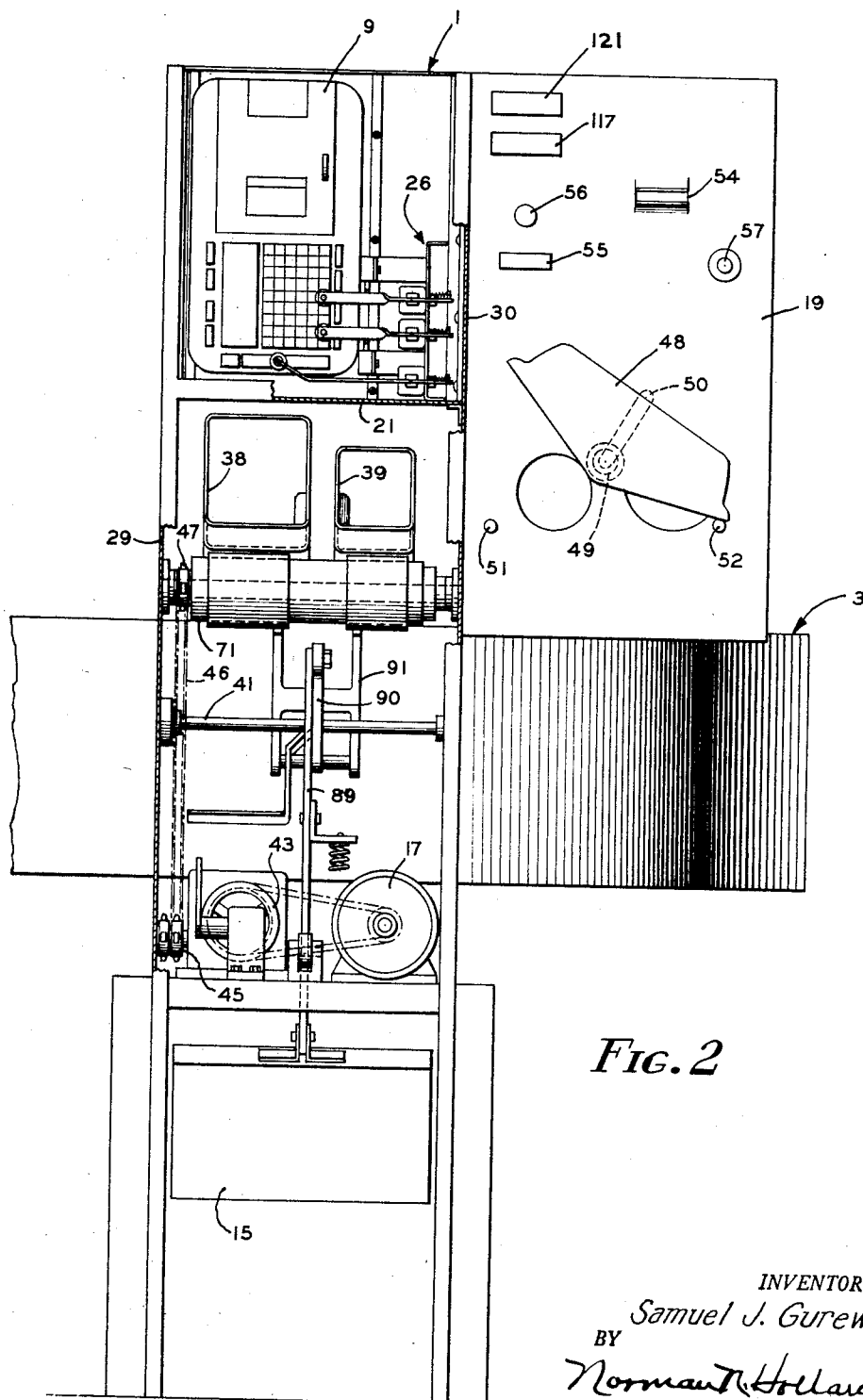
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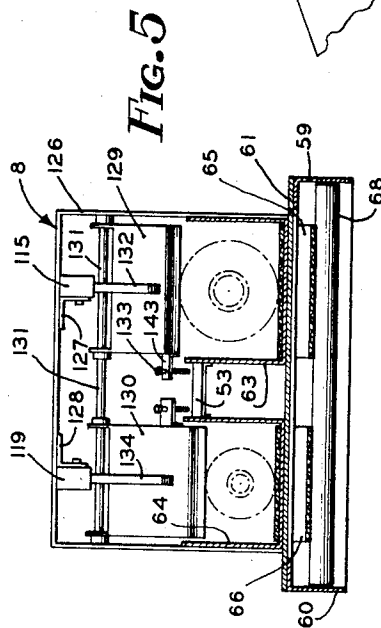
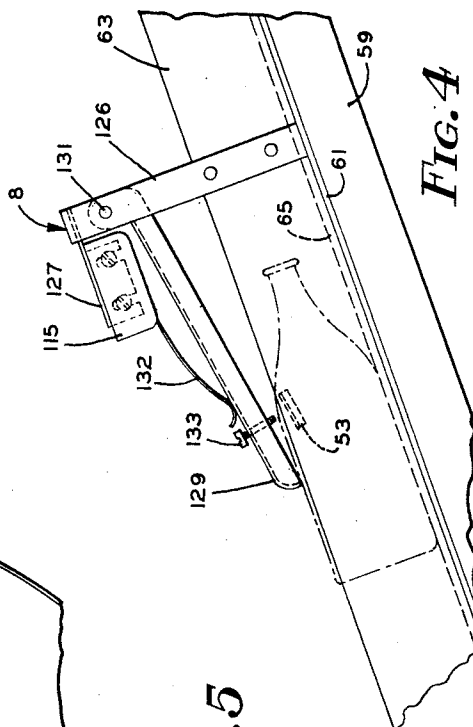
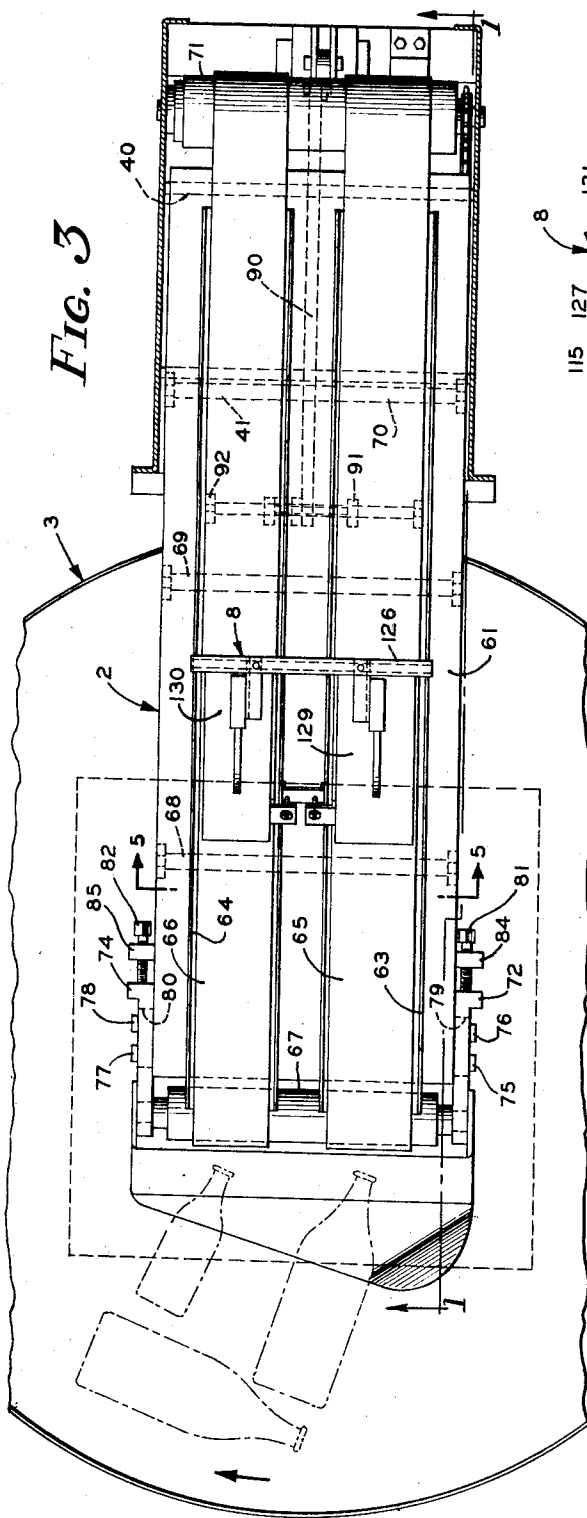
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BOTTLE REGISTER

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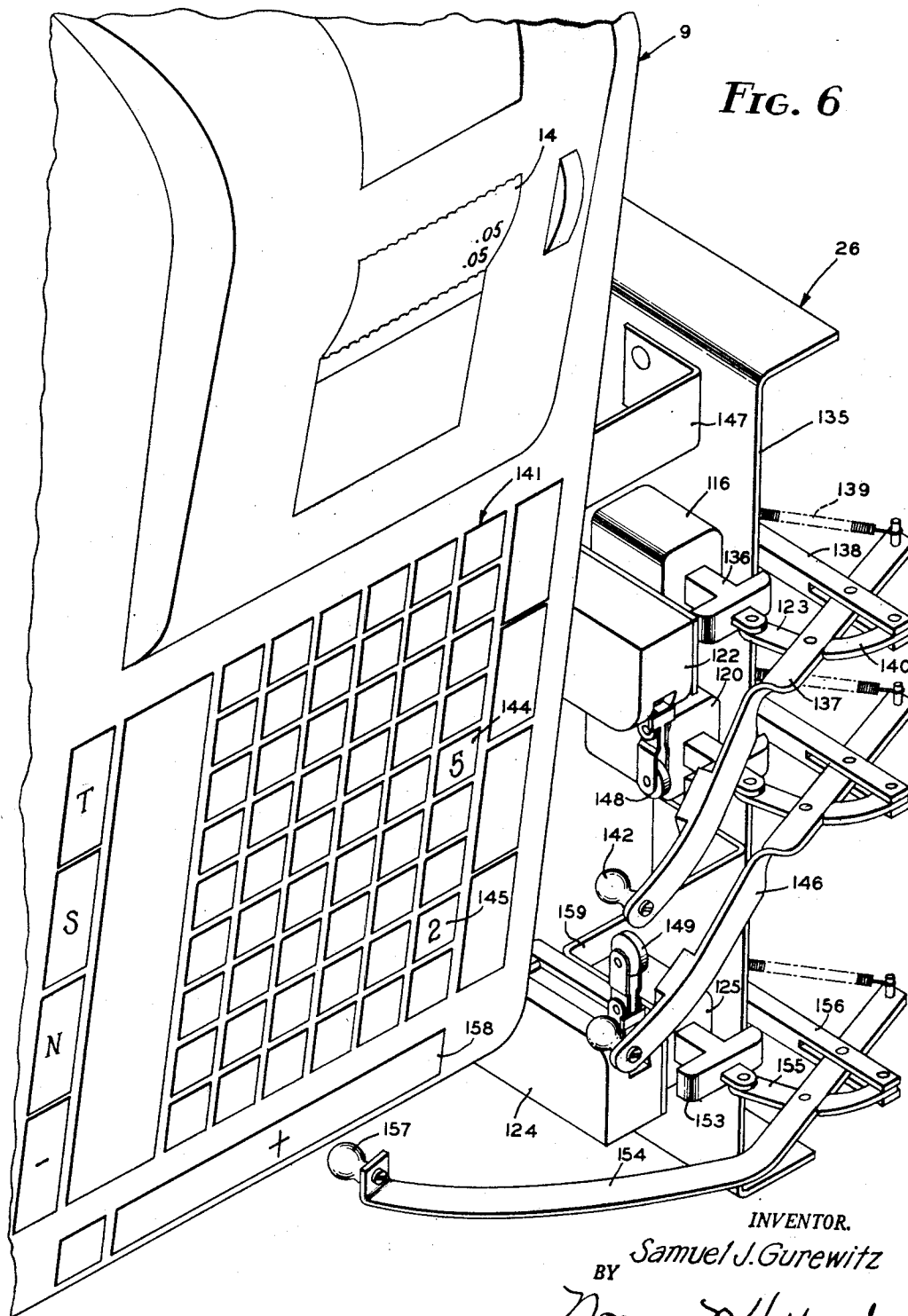


FIG. 6

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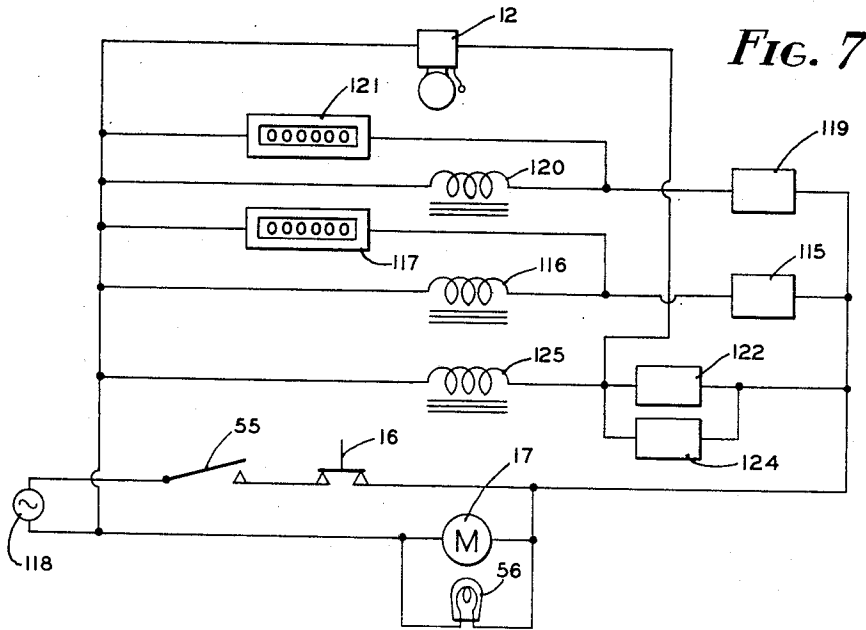


FIG. 7

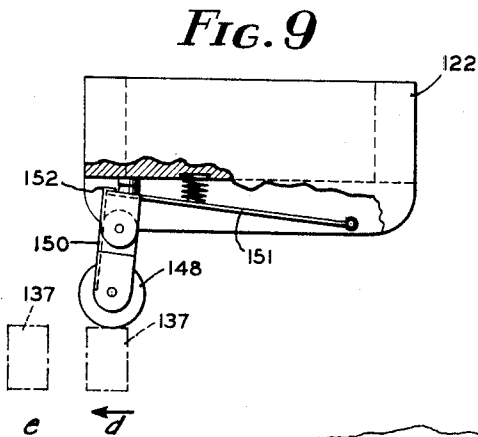


FIG. 9

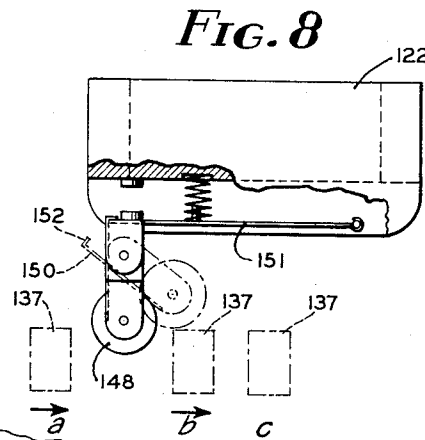


FIG. 8

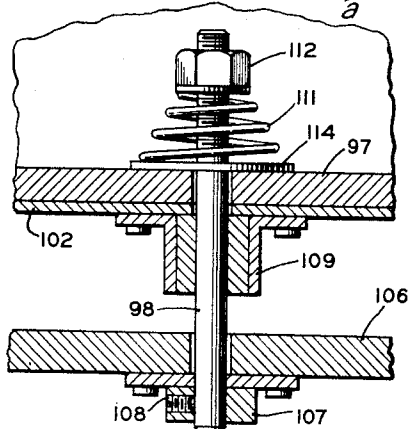


FIG. 10

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BOTTLE REGISTER

6 Sheets-Sheet 6

FIG. 11

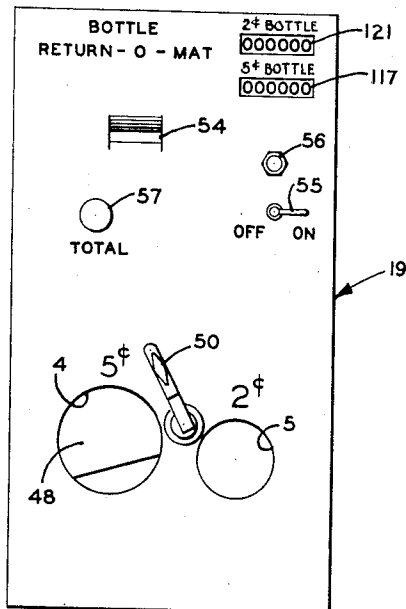


FIG. 12

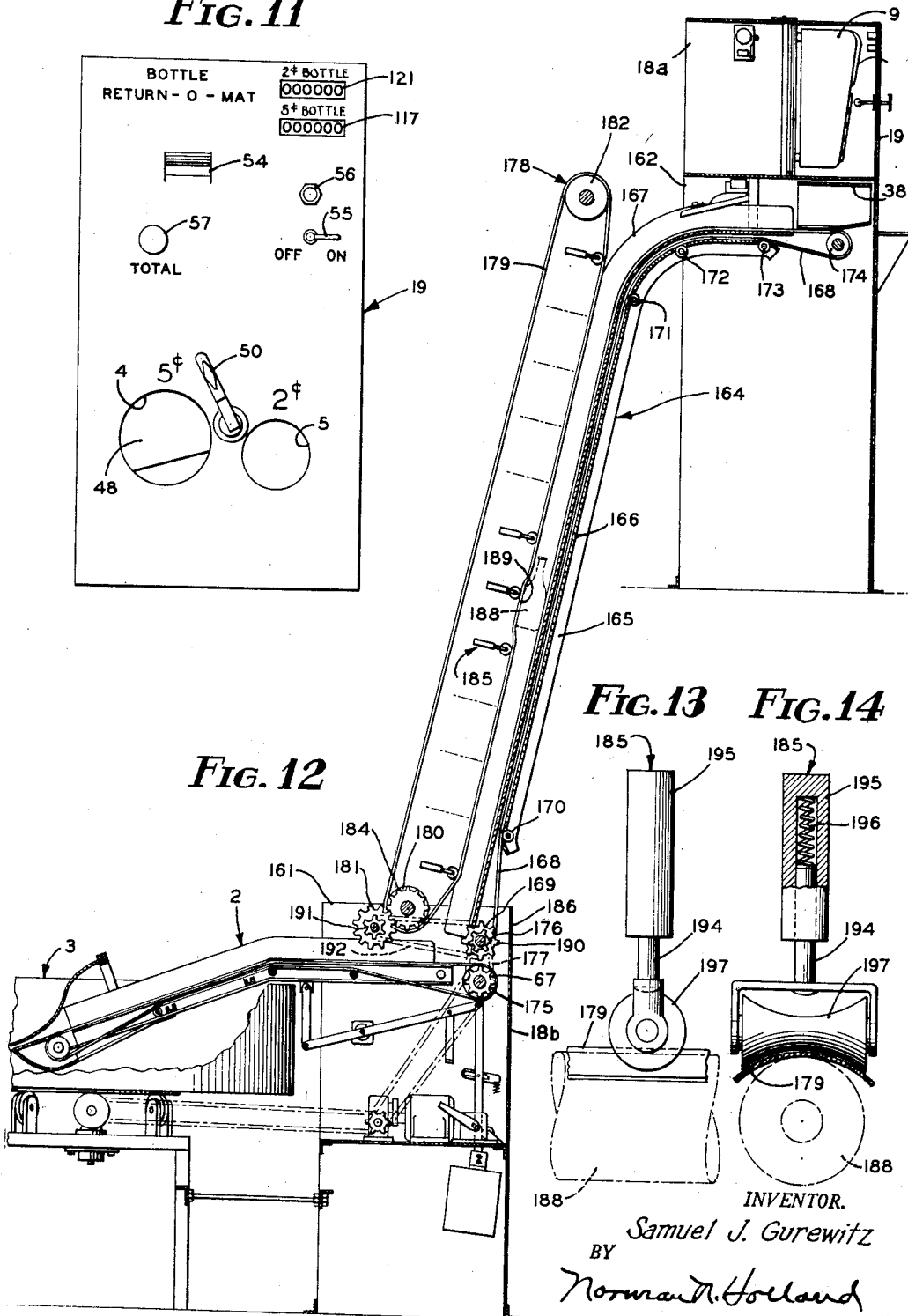
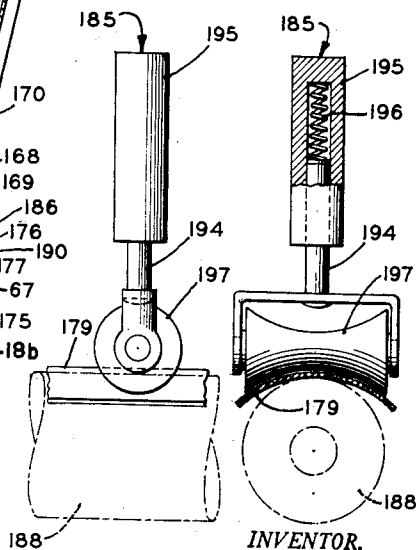


FIG. 13 FIG. 14



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BOTTLE REGISTER

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8 Claims. (Cl. 235—98)

The present invention relates generally to the automatic handling of returnable bottles in retail stores and more particularly to a self-service machine into which the customer will feed his empty bottles in exchange for a credit slip showing the amount of money owed him by the store for the returned bottles. The machine automatically accepts the bottles, differentiates the sizes such as two and five cent bottles, provides the customer with a credit slip for the amount due him and keeps a record of the number of each type of bottle returned for the storekeeper. The bottles are carried from the receiving point to a storage drum at a convenient location. This application discloses a bottle receiving machine of the general type shown in the inventor's co-pending application S.N. 272,443, filed February 19, 1952, now Patent No. 2,750,024, but having a different type of bottle receiving and conveying means adapted to provide a printed credit slip.

Many foods and drinks are now packaged in glass containers and the relatively high cost of these containers makes their reuse necessary. In order to encourage the return of these bottles, it is customary for the stores to collect a deposit which is repaid upon the return of the bottles. The handling of these returned bottles and the payment of the deposit present store managements with a troublesome problem. A store of the larger type such as a super market must handle several thousand empty bottles a day.

Present practice requires the bottles to be first checked in by a clerk or cashier. The clerk must then move the bottles from the check-in counter to a temporary storage location and eventually to a shipping point for return to the bottler. This requires the services of a clerk as well as additional personnel for the moving problem. The customer is required to go through a bothersome transaction for a few cents, the pleasantness of which may depend upon the mood of the clerk.

The present invention eliminates the need for the bottle clerk and provides a fast operating machine which will provide the customer with a refund ticket for one or many bottles in a rapid impersonal transaction. The customer deposits his bottles in the machine on his way into the store or even in the parking lot and in turn receives a credit check which may be used as a credit against his order or cashed at a later date. The store can locate the machine in a position convenient to the storeroom so that handling of the bottles is reduced to a minimum.

An object of the invention is to provide a new and improved bottle handling machine.

Another object of the invention is to provide a self-service type of deposit bottle return machine.

Another object of the invention is to provide a self-service deposit bottle return machine which provides a printed credit check for the customer with the store name or other information contained thereon.

Another object of the invention is to provide a self-

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service deposit bottle return machine which keeps a record of the total number of each price bottle returned.

Another object of the invention is to provide a self-service deposit bottle return machine which may be installed to operate on one or two floors.

Another object of the invention is to provide a self-service deposit bottle return machine for transferring bottles rapidly from one location to a remote location.

Another object of the invention is to provide a self-service deposit bottle return machine which automatically ceases operation when filled to the desired capacity or in the event of bottle jamming.

Another object of the invention is to provide a self-service deposit bottle return machine of sturdy construction, which requires little or no maintenance.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

Fig. 1 is a sectional view taken along the line 1—1 of Fig. 3 showing a preferred embodiment of the present invention;

Fig. 1a is a section along the line 1a—1a of Fig. 1;

Fig. 2 is a front elevational view of the device shown in Fig. 1 with the front panels removed;

Fig. 3 is a top plan view of the conveyor;

Fig. 4 is a detailed side view in elevation of the bottle counting micro-switch actuator;

Fig. 5 is a sectional view of the conveyor along line 5—5 of Fig. 3;

Fig. 6 is a detailed perspective view of the adding machine and its operating mechanism;

Fig. 7 is a schematic view of the electrical circuit;

Fig. 8 is a detailed side elevational view of the printer arm micro-switch indicating its operation for downward motion of the five cent key arm;

Fig. 9 is a detailed side view of the micro-switch of Fig. 8 for upward motion of the five cent key arm;

Fig. 10 is a detailed view partially in section of the hopper support shaft;

Fig. 11 is a detailed front view in elevation of the operating panel;

Fig. 12 is an elevational view in elevation of an alternate embodiment of the device for use between two floors;

Fig. 13 is a detailed side view of the spring roller; and

Fig. 14 is a detailed front view partially in section of the spring roller.

Described generally, the present machine comprises (Figs. 1 and 2) a cabinet like bottle receiving device 1, a horizontal conveyor 2 and a rotating storage drum 3. Bottles are inserted in the appropriate hole 4 or 5. Belt 65 or 66 then carries the bottle along the conveyor 2 to the drum 3. As the bottles are carried along the conveyor they operate indicator assembly 8 which through an electrical circuit activates adding machine 9, counters 117 and 121, and an audible signal such as a bell 12. The adding machine imprints a tape 14 from which the customer tears off his credit slip after a total of the deposit owed to him is printed thereon. The counters 117 and 121 register the total number of each size of bottle which is returned. The rotation of the drum 3 evenly distributes the bottles throughout the drum from which they may be removed when convenient. Conveyor 2 is balanced by a counterweight 15 so that the conveyor

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2 will rise as the level of the bottles in the drum 3 rises. When the level of the bottles in the drum 3 reaches the top of the drum a limit switch 16 associated with the counterweight system turns off the power for the entire machine preventing overloading.

Bottle receiving device

The bottle receiving device 1 is shown in Figs. 1 and 2. It comprises a suitable metal cabinet 18 provided with a hinge door portion 19, a hinged top portion 20, and other suitable top, side, back and front enclosing panels. The interior of the cabinet is divided into sections by shelf 21, shelf 22, and vertical sliding panel 24. Shelf 25 is mounted on the front of the cabinet to hold the user's bottles before he feeds them into the conveyors. The adding machine 9 and the adding machine actuating mechanism 26 are mounted on vertical sliding panel 24. Panel 24 slides between vertical guides 27 and 28 (Fig. 1a) on the cabinet side panels 29 and 30 and rests against a suitable stop 31 fitted on shelf 21. This panel may be removed through hinged top 20 by sliding it out vertically. This allows the adding machine 9 and the adding machine actuating mechanism 26 to be removed as a unit for adjustment or replacement. Adding machine 9 which is a standard model is removably mounted on panel 24. The regular rubber mounting legs such as legs 32 and 34 (Fig. 1a) are bolted to a plate 35. Plate 35 is slidably mounted in vertical guides 36 and 37 so that the adding machine alone may be slid out through top cover 20. Bell 12 is mounted in a convenient position behind panel 24.

Beneath shelf 21 are located two hollow guide members 38 and 39. These guide members cooperate with holes 4 and 5 in the front door 19 and guide the bottles to the appropriate conveyor belt 65 or 66. Both the holes 4 and 5 and their corresponding guide members 38 and 39 are proportioned for the size of bottle which corresponds to a given refund. For example, the standard deposit bottles now are two cent and five cent bottles. Guide 39 and hole 5 are made small enough to accept the smaller two cent size only. Guide 38 and hole 4 are proportioned to accept the five cent size. It can be seen that the number and size of the guides and holes can be changed to suit the particular deposit system in use. For example, the device might be arranged for three different deposit sizes such as two, five and ten cents, or the device might have only one hole and conveyor.

The conveyor 2 is mounted on shaft 40 below the guides 38 and 39. Counterweight 15 with its associated levers is mounted below conveyor 2 on shaft 41. The conveyor 2 and its associated counterweight 15 will be more fully described below. Shelf 22 mounts motor 17, limit switch 16 and right angle reduction drive 42 which has output sprocket 45 at right angles to input pulley 43 and also has output sprocket 45 turning at a reduced speed from input pulley 43. Motor 17 turns drive 42 by belt 44 and pulley 43. The drive 42 is coupled to conveyor 2 through sprocket 45, chain 46 and sprocket 47. Motor 17 is protected by a conventional automatic thermal overload device which cuts the motor off when it overheats due to excess loading or stoppages. The function of limit switch 16 is related to the operation of conveyor 2 and will be more fully described therewith.

Hinged door 19 more fully shown in Figs. 2 and 11 opens to allow access to the upper portion of cabinet 18. Shutter 48 on door 19 is hinged in bearing 49. Handle 50 is used to rotate shutter 48 to block either the five cent or the two cent hole to allow the use of only one hole at a time. Stops 51 and 52 retain the shutter in the desired position. Adding machine tape 14 passes through slot 54 which is located in a position which allows the customer to readily tear off the printed portion showing his refund. The following elements whose use with the electrical circuit and the adding machine will be described below in more detail in connection with the counting and credit slip system are also mounted on door 19: Counters

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117 and 121, off-on switch 55, pilot light 56 and plunger 57. The steps to be followed by the customer are clearly described on the door. These may be indicated by suitable numbers i.e.: (1) Turn switch on. (2) Set handle for bottle size. (3) Deposit bottles. (4) Push total button. (5) Tear off credit slip.

Conveyor

Conveyor 2 shown in detail in Figs. 3 and 5 carries the bottles from the holes 4 and 5 to the storage drum 3. Conveyor frame 58 is supported on cabinet 18 by shaft 40. Frame 58 consists of side members 59 and 60, top plate 61 and suitable braces 62. Mounted on top plate 61 are two channel members 63 and 64. Rubber conveyor belts 65 and 66 are fitted into channels 63 and 64. These endless belts run through the channels, around roller 67, back along the bottom of frame 58 over rollers 68, 69 and 70 and up around roller 71. Roller 71 is mounted by suitable bearings on cabinet 18 and is driven from motor 17 as previously described through the chain and sprocket system. Roller 67 is mounted on two adjustable brackets 72 and 74. Bolts 75 and 76 and 77 and 78 hold the brackets against side member 59 and 60. The bolts pass through longitudinal slots 79 and 80 in the brackets 72 and 74 allowing the brackets and thus roller 67 to be moved longitudinally under the action of screws 81 and 82 which are threaded into brackets 84 and 85 on side members 59 and 60. End plate 86 has a curved cross section (Fig. 1) to allow bottles in the rotating storage drum 3 to slide under it and raise the end of the conveyor as will be described below. Slots 93 in the bottom of end plate 86 allow small objects such as bottle caps which have dropped into plate 86 from the belts to drop on into drum 3. A leather or rubber flap 87 is mounted on frame 88 and it extends the width of the conveyor and serves to restrain the bottles as they roll into the drum and to prevent too rapid movement of the bottles. Indicator assembly 8 is mounted on the channels 63 and 64 and will be described with the counter and adding machine operation.

Counterweight 15 is used to counterbalance the conveyor 2 so that the end plate 86 will rest gently on the uppermost layer of the bottles in rotating hopper 3. The connections between weight 15 and conveyor 2 consist of vertical arm 89, horizontal arm 90 and vertical frame 91. Arm 89 is rigidly attached to weight 15 and is pivotally connected to arm 90. Arm 90 is pivotally mounted on the cabinet 18 by shaft 41. Frame 91 is pivotally connected to the end of arm 90 at the bottom and to bracket 92 on conveyor 2 at the top. It is thus seen that the downward force of weight 15 is transferred to a vertical force on conveyor 2 by vertical frame 91. L-shaped arm 94 is mounted on arm 90 so that as the conveyor 2 is raised up by the bottles in drum 3 the lowering weight 15 will bring the arm 94 against arm 95 on limit switch 16. Arm 94 will be so proportioned that it opens limit switch 16 through arm 95 when the bottles have reached the top of rotating drum 3. Limit switch 16 (Fig. 7) disconnects the entire machine from the 110 volt power source 118.

Drum 3 consists of a cylindrical wall portion 96 and a circular bottom 97. The drum rotates on mounting shaft 98 and is supported on rollers 99, 100 and 101. A circular metal plate 102 is placed between bottom 97 and the rollers to provide a smooth contact surface. The rollers and shaft 98 are mounted on a suitable frame 106 which is attached to the frame 18 by rods 113. The rollers are made of a non-slipping material such as medium hard rubber or plastic. Roller 99 provides a friction drive to rotate the drum since it is turned by a drive system from right angle reduction drive 42 through sprockets 103 and 104 and chain 105. The details of mounting shaft 98 are shown in Fig. 10. Shaft 98 is set in a socket 107 attached to frame 106. Set screw 108 prevents rotation of shaft 98. Radial thrust bearing 109 fits on shaft 98. The axial thrust of the drum 3 is

against rollers 99, 100 and 101. In order to hold drum 3 against the rollers and to prevent tipping of the drum, spring 111 is compressed by nut 112 and washer 114.

Counting and credit slip system

The electrical diagram for the counting system is shown in Fig. 7. Normally open micro switch 115 is placed in series with the parallel combination of solenoid 116 and counter 117 and this series combination is placed across the 110 volt source 118. When switch 115 is closed both the solenoid 116 and the counter 117 are actuated. The function of counter 117 and solenoid 116 will be described hereinafter. Switch 119 is similarly connected with respect to solenoid 120 and counter 121. Normally open microswitches 122 and 124 are connected in parallel and the parallel combination is connected in series with solenoid 125 across 110 volt source 118. Bell 12 is connected in parallel with solenoid 125.

Microswitches 115 and 119 are mounted on indicator assembly 8 on the conveyor 2. A frame 126 is fastened to the sides of channels 63 and 64 (Figs. 4 and 5). Switches 115 and 119 are bolted to brackets 127 and 128. Also mounted on frame 126 are two contact plates 129 and 130 hinged on shaft 131. Actuating rods 132 and 134 on the switches 115 and 119 rest on the top of plates 129 and 130. When a bottle passes down the channel the free end of the contact plate is raised thereby pushing up the actuating rod and closing the microswitches. The heights of the free ends plates 129 and 130 are set by set screws 133 which are threaded into tabs 143 on the plates and which rest on member 53. The plates 129 and 130 are so shaped that they close the switches for the lowest portion of any bottle thus insuring that the microswitches are held closed during the passage of the bottle and that the switch does not open and reclose during the passage of a single bottle. As before noted the two cent hole 5 on the front door 19 is made small enough so that five cent bottles will not pass through. The five cent hole 4 of course will take two cent bottles. To prevent a customer from getting five cent credit for two cent bottles the plate 129 in the five cent channel is set high enough so that two cent bottles will not operate it.

The closing of the microswitch 115 as indicated above places voltage on solenoid 116 and counter 117. Counter 117 is a conventional type of electric counter which shows one count for each time an actuating voltage is applied. Thus counter 117 being associated with microswitch 115 in the five cent bottle channel counts each bottle that passes through the channel. The details of solenoid 116 operation which results in the five key being depressed on adding machine 9 are shown in Fig. 6. Solenoid 116 is mounted on a suitable mounting plate 135 adjacent adding machine 9. The armature 136 of solenoid 116 is coupled to arm 137 by a hinged link 123. Arm 137 is pivotally mounted on a suitable post 138. The arm is held in a normal up position against adjustable stop 140 when solenoid 116 is unenergized by a spring 139. During the short time solenoid 116 is energized by the closing of microswitch 115, the armature 136 pulls arm 137 toward keyboard 141 so that rubber knob 142 depresses the five cent key 144. Rubber knob 142 is threaded onto arm 137 and may be adjusted by turning it closer to or away from arm 137 to change its pressure on the adding machine key.

The two cent key 145 is similarly depressed by the action of arm 146 which is associated similarly with solenoid 120 and microswitch 119.

Microswitches 122 and 124 are mounted on plate 135 by suitable brackets 147 and 159 adjacent the arms 137 and 146. The arms 137 and 146 strike the wheels 148 and 149 respectively on both their stroke toward and outward from the keyboard 141. The switches 122 and 124 are designed, however, so that they close only as the arms 137 and 146 contact them on their outward stroke. This is shown schematically in Figs. 8 and 9.

In Fig. 8 arm 137 is shown at "a" at rest, at "b" in a

position part way toward the keyboard and at "c" in its position against key 144. The arm has merely rotated wheel arm 150 out of its way leaving contact arm 151 unmoved and the switch 122 open. On the outward stroke shown in Fig. 9 arm 137 strikes wheel 148 at "d" and since stop 152 prevents wheel arm 150 from rotating to clear arm 137, contact arm 151 is rotated closing the switch and allowing arm 137 to return to its rest position as shown at "e."

Therefore a short time interval after arm 137 has moved toward the keyboard and depressed the five cent key it closes microswitch 122 on its outward movement activating solenoid 125. Armature 153 of solenoid 125 is connected to arm 154 through link 155. Arm 154 is mounted on a post 156 similarly to arm 137. Armature 153 moves rubber knob 157 on arm 154 against add bar 158 on the keyboard 141. Add bar 158 causes the adding machine to print the amount set on the keyboard on tape 14, to move the tape forward and to clear the keyboard for the next cycle.

Switch 124 which is electrically coupled in parallel with switch 122 causes the same operation of solenoid 125 when it is operated by a similar mechanical motion between wheel 149 and arm 146 for two cent bottles.

Bell 12 is in parallel with solenoid 125 and rings whenever either switch 122 or 124 is closed indicating that a bottle has been recorded on the tape.

When the customer has deposited all his bottles through the appropriate holes he pushes plunger 57 on door 19. Plunger 57 has a rubber knob 159 on its end which strikes the total key 160 and causes the adding machine 9 to print a total credit due on tape 14. The customer then tears off the printed portion of the tape and presents it for a refund.

As above noted the adding machine 9 is an unaltered standard model adding machine. The device operates this machine in the same manner that a person would manually to add up a collection of deposit bottles. The appropriate key such as two or five is first depressed and then the amount is printed on the tape by the print key. When all the bottles have thus been recorded, the total key is depressed giving the total amount due and the printed tape is ready to be torn off. Since a standard machine is used it is readily replaced and can be cleaned and repaired by the regular business machine mechanic. Where a spare machine is kept on hand it can be employed as a regular adding machine until needed. In order to prevent counterfeiting the tape may be printed with a suitable design or trademark.

Two floor model

Fig. 12 shows a variation of the device with provision for carrying the bottles to a lower floor such as the store basement. The functions of the cabinet 18 in the previously disclosed variation are divided between two cabinets 18a and 18b. The upper cabinet 18a contains the elements of the counting and credit slip system such as adding machine 9 and its associated actuating members mounted on plate 135, door 19 and its associated equipment and guides 38 and 39.

Cabinet 18b supports a conveyor 2 similar to the one already described and contains the associated motor 17 and counterweight 15. A drum 3 similar to that already described is used with conveyor 2. Running between the open top 161 of cabinet 18b and an opening 162 in the back of cabinet 18a is a substantially vertical conveyor 164.

Conveyor 164 has a frame 165 curved to a suitable shape. Frame 165 is covered by a top plate 166. On top plate 166 are mounted channels such as 167 with a cross section to match channels 63 and 64 as required on conveyor 2. Channel 167 is suitably bent to fit against plate 166. Endless belts such as 168 are run along the inside of channel 167, around end roller 169, back over idler rollers 170, 171, 172 and 173 to end

roller 174. End roller 169 is connected to driven roller 67 by way of sprockets 175 and 176 and chain 177.

Associated with vertical conveyor 164 is a bottle gripping assembly 178. The bottle gripping assembly has endless belts such as belt 179 which are mounted opposite the belt 168. The width of belt 179 is made to correspond to the width of belt 168. Belt 179 is supported by end rollers such as 180 and 182. Roller 180 is driven from roller 169. Sprocket 190 drives sprocket 191 by chain 192. Gear 181 fastened to sprocket 191 meshes with gear 184 on roller 180 to turn belt 179 at the same speed as belt 168. Belt 179 also runs against spring rollers 185. These rollers hold belt 179 against the bottles such as bottle 188 causing a pocket 189 to be formed in belt 179 which grips bottle 188 and prevents it from sliding down inclined conveyor 164. These rollers 185 are spaced every few inches. Spring roller 185 is shown in detail in Figs. 13 and 14. It consists of a strut 194 slidably mounted in a support 195. Spring 196 holds wheel 197 of strut 190 against belt 179 (Fig. 12). Wheel 197 is shaped to curve belt 179 about bottle 188.

The relative lengths of the horizontal and the inclined portions of conveyor 164 may be varied to suit the particular dimensions of a given installation. The chain drive connection between belts 168 and 179 may be omitted. In this case belt 179 is moved by the bottle 188 as it is carried along by belt 168. Bottle 188 is deposited on conveyor 2 from the bottom end of conveyor 164. Fig. 12 shows only one bottle in conveyor 164, however, it is clear that it can handle a continuous line of bottles.

The operation has been fully described in the above description of the structure.

It will be seen that the present invention provides a new and improved machine for receiving bottles, for automatically counting the bottles and for printing a credit slip. The machine is a self-service device easily operated by the customer returning bottles for a refund. The device in addition to checking the bottles in and providing the customer with a credit slip also carries the bottles to a convenient point for temporary storage. The machine keeps a record of the number of bottles of each size returned on the electric counters.

The machine operates upon standard voltages and has automatic cut out devices to prevent overloading. All parts of the machine are of relatively simple and rugged construction. The credit slip printing portion employs a standard adding machine which is easily serviced and repaired. The machine reduces dropping or rubbing together of the bottles to a minimum to prevent bottle breakage.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A bottle registering machine for receiving empty bottles of two different diameters and for registering and recording the total deposit refund according to the numbers of the bottles received comprising a bottle receiving means, a bottle storage means, a conveyor to carry bottles from said receiving means to said storage means comprising first and second endless belts, a panel on said receiving means adjacent to the two belts having a first aperture adjacent to the first belt of a diameter great enough to allow bottles of the larger diameter to pass through and a second aperture adjacent to the second belt having a diameter small enough to prevent bottles of the larger diameter from passing through, a sensing device adjacent to each belt, said sensing device adjacent to said first belt spaced from the belt to be insensitive to bottles of the smaller diameter carried by the first belt,

register means operatively connected to each of said sensing devices to register the refund value of the bottles sensed, and manually controlled means operable to cause said register means to perform a total taking operation and to record the total deposit refund registered for a plurality of bottles.

2. The machine as defined in claim 1 in which said sensing device adjacent to said first belt comprises a contact plate pivotally mounted above said first belt, a switch engaging said contact plate and positioned to be actuated by swinging motion of the plate about its pivotal mounting when a bottle on said first belt engages said contact plate, and an adjustable stop member engaging said contact plate and determining its lower position whereby said contact plate may be positioned above bottles smaller than a given diameter to prevent their being sensed as they are moved beneath said contact plate by said first belt.

3. The machine as defined in claim 1 in which said register means comprises a standard adding machine detachably mounted on the bottle registering machine whereby it may be readily replaced by a similar standard machine.

4. The machine as defined in claim 1 in which said register means comprises the combination of an adding machine having a keyboard including an add bar, a pair of key engaging means adjacent to said adding machine each movably mounted for removably engaging a separate key on said machine, each of said key engaging means operatively connected to one of said sensing devices whereby said sensing device moves said key engaging means against a predetermined adding machine key when it senses a bottle, and a third key engaging means operatively connected to each of said pair of key engaging means to operate the adding machine add bar after either of said key engaging means contacts a key.

5. The machine as defined in claim 4 in which said third key engaging means comprises a pivoted lever positioned to swing into engagement with the adding machine add bar, a solenoid operatively connected to said pivoted lever to swing it against said add bar when energized, said solenoid connected to a source of electric power through parallel lines each having a switch therein, each switch operatively connected to one of said pair of key engaging means by a ratchet member, and said ratchet members positioned to close the switches on the movement of either of the pair of key engaging means away from the keys to actuate the third key engaging means to operate the add bar.

6. A bottle deposit registering device adapted to handle bottles of a plurality of diameters each of which has a different deposit value comprising the combination of a bottle receiving means, a bottle storage means, a conveyor to carry bottles from said receiving means to said storage means comprising a plurality of endless belts, a panel on said receiving means adjacent to the belts having a plurality of apertures therein each adjacent to a belt, said apertures having different diameters each one corresponding to a different bottle diameter and adapted to admit bottles smaller than a given diameter to its adjacent belt and to block bottles of a larger diameter, a sensing means adjacent to each belt spaced therefrom to sense bottles larger than a given diameter, register means coupled to said sensing means to register the refund value of each bottle sensed, and manually controlled means operable to cause said register means to perform a total taking operation and to record the total deposit refund registered for a plurality of bottles.

7. The device as defined in claim 6 in which said register means comprises the combination of an adding machine having a keyboard, a plurality of key engaging means adjacent to said adding machine each movably mounted for removably engaging a separate key on said machine, and each of said key engaging means operatively connected to one of said sensing means whereby

said sensing means moves said key engaging means against an adding machine key when a bottle is sensed.

8. The device as defined in claim 6 in which said register means comprises a standard adding machine detachably mounted to the bottle deposit registering device whereby it may be readily replaced by a similar standard machine.

References Cited in the file of this patent

UNITED STATES PATENTS

748,766 Marshall Jan. 5, 1904

5

10

1,119,955
1,760,462
1,949,283
1,987,835
1,991,652
2,059,277
2,493,464
2,557,001
2,581,693

Hayward Dec. 8, 1914
Yeo May 27, 1930
Murtaugh Feb. 27, 1934
Love Jan. 15, 1935
Bean Feb. 19, 1935
Rand et al. Nov. 3, 1936
Nelson Jan. 3, 1950
Kohl June 12, 1951
Mumma Jan. 8, 1952