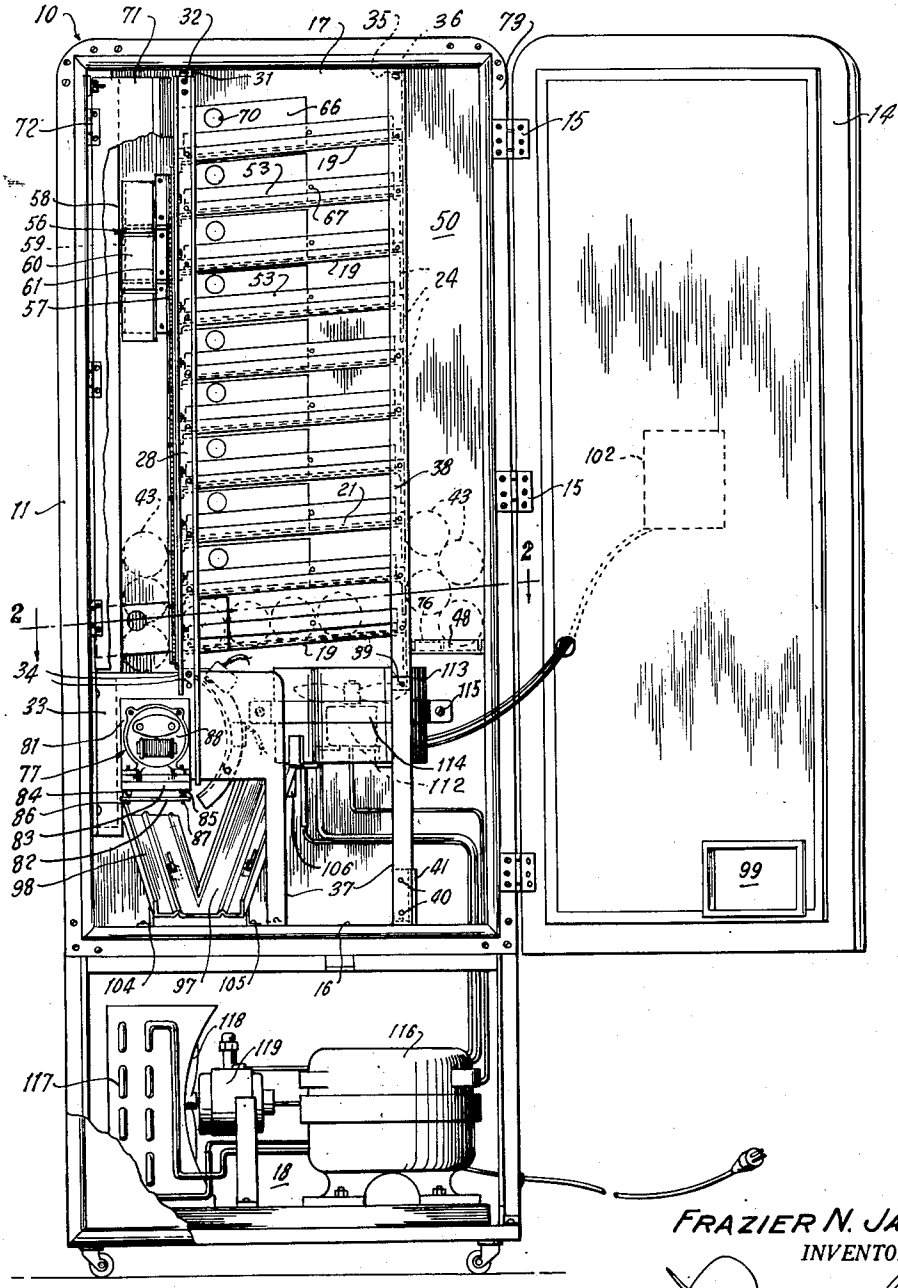
June 1, 1954 F. N. JAMES 2,680,051

VENDING MACHINE WITH DUAL MAGAZINES ARRANGED FOR ALTERNATE DELIVERY

Filed April 4, 1951 3 Sheets-Sheet 1

Fig. 1



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VENDING MACHINE WITH DUAL MAGAZINES ARRANGED FOR ALTERNATE DELIVERY

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Fig. 2

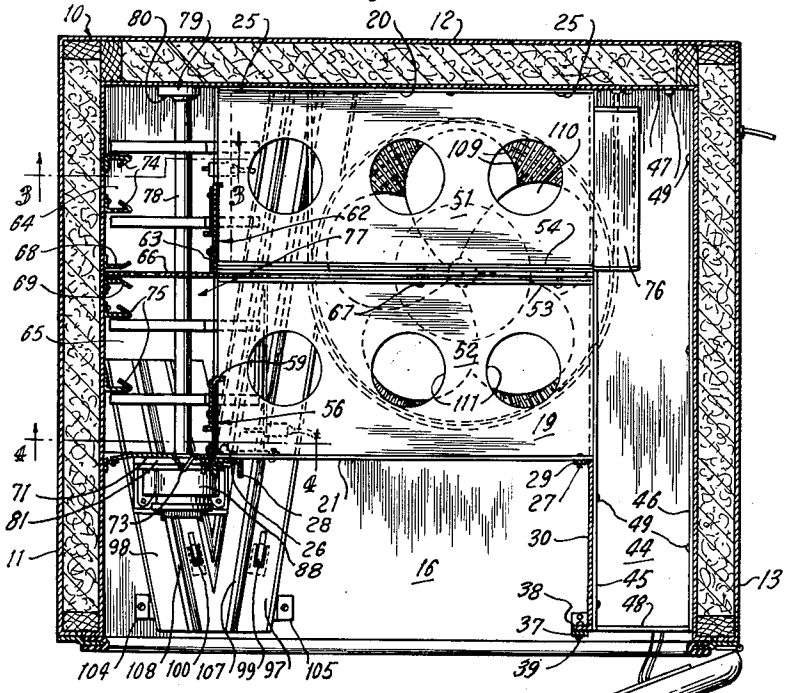


Fig. 3

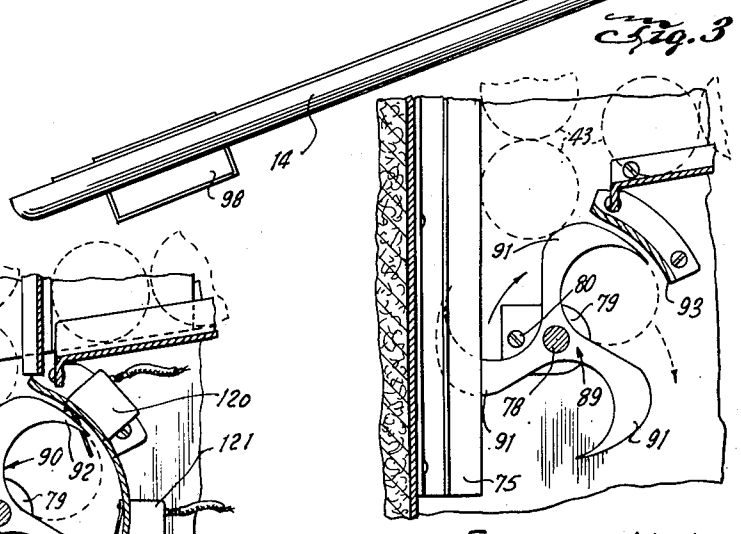
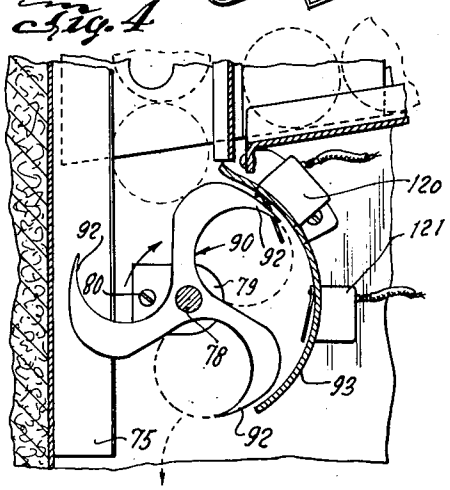


Fig. 4



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Fig. 5

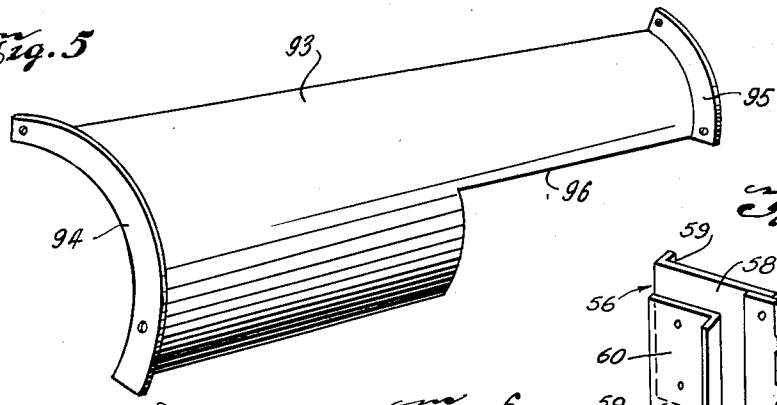


Fig. 8.

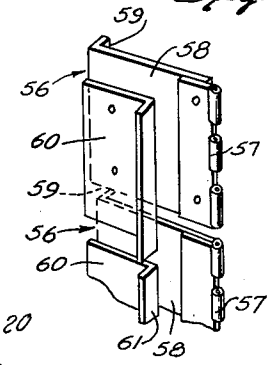


Fig. 6

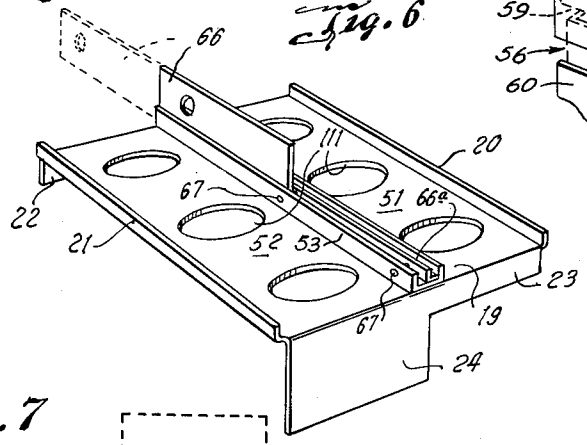
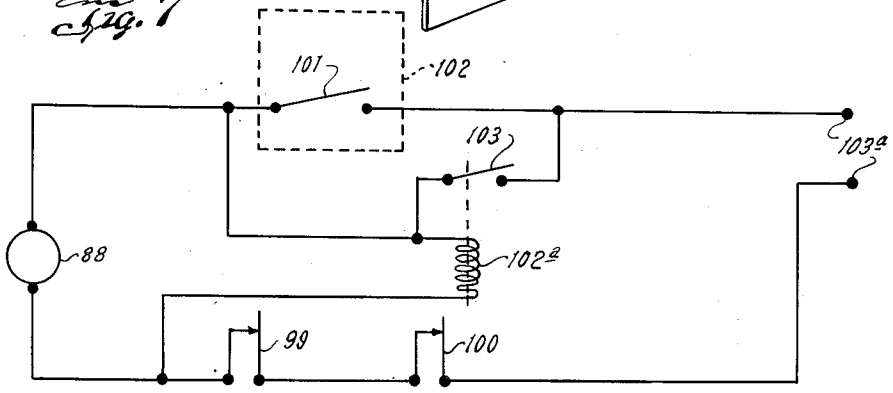


Fig. 7



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Patented June 1, 1954

2,680,051

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2,680,051

VENDING MACHINE WITH DUAL MAGAZINES ARRANGED FOR ALTERNATE DELIVERY

Frazier N. James, Dallas, Tex., assignor to Lone Star Vender Corp., Dallas, Tex.

Application April 4, 1951, Serial No. 219,253

13 Claims. (Cl. 312—48)

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This invention relates to vending machines and more particularly to such machines for vending elongated articles.

It is desirable in vending machines to store the articles vended, such as bottles or cans of beverage, in racks which are arranged in two or more tiers positioned in side by side relationship in order that a relatively great number of bottles or cans may be stored in a cabinet of such dimensions that it can be conveniently installed in most locations. Since the beverages may grow stale with prolonged storage, it is necessary to vend the bottles or cans from the two tiers of racks in such a manner that no bottles or cans placed in the machine at an earlier time are allowed to remain in the machine for prolonged periods of time while newer bottles or cans, placed in the machine at a later time or times, are vended. If one tier of racks is emptied before any bottles or cans are vended from a second tier of racks, the bottles or cans may be kept in the second tier of racks for prolonged periods of time since it will be the natural inclination of the person loading the machine merely to fill in the empty racks of the first tier instead of moving the old bottles or cans from the second tier of racks to the first tier and then replacing the old bottles or cans in the second tier with new bottles or cans of beverage. Even if this is done faithfully, the process of shifting the articles from one tier of racks to another is time consuming. It is desirable therefore to provide a dispensing device which will alternately dispense an article from one tier and then from the other for vending by the machine.

Accordingly, it is an object of the invention to provide a new and improved vending machine.

It is another object of the invention to provide a new and improved vending machine having a plurality of tiers of racks from which tiers articles may be dispensed at equal rates.

It is a further object of the invention to provide a new and improved vending machine having a plurality of tiers of racks from which articles are dispensed alternately.

It is still a further object of this invention to provide a dispensing device for vending articles alternately from each of two racks mounted in a vending machine.

It is still another object of the invention to provide a new and improved dispensing device driven by a single motor for vending articles alternately from each of two racks mounted in a vending machine.

Briefly stated, the new and improved vending

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machine comprises two tiers of racks mounted in a cabinet in side by side relationship. The racks are slanted downwardly toward a pair of vertical chutes, which is made into individual chutes by a suitable partition so that articles placed on the racks will tend to roll down into the chutes. A rotatable shaft is mounted beneath the chutes and is provided with two sets of spaced curved radial arms which engage the articles in the two chutes and move them from the chutes past an arcuate shield or shroud and to a slide down which the articles slide to the outside of the machine. One set of the arms engages the articles from one tier of racks and the other set of arms engages the articles from the other tier of racks. The shroud is cut away at one end so that the articles engaged by one set of arms will be delivered to the slide at different positions of rotation of the shaft than the articles engaged by the other set of arms. An electric motor is provided for rotating the shaft and its operation is controlled by a coin operated switch device and by a pair of switches mounted adjacent the slide which are actuated by the articles from the tiers as they move down the slide. The motor is started by the deposit of a coin in the switching device and rotates until one article slides down the slide to actuate one of the switches. The degree of rotation of the shaft is controlled by the switches so that articles are delivered alternately from the two tiers until all the articles from one tier are delivered if for some reason less articles were stored in one tier than in the other. The shaft thereafter rotates each time a coin is deposited to deliver an article to the slide from the other tier until all articles are delivered and the machine is emptied.

For a better understanding of the invention, reference may be had to the following description taken in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

In the drawings:

Figure 1 is a front plan view of the vending machine with its door open and with some parts broken away;

Figure 2 is a cross-sectional view of the machine taken along line 2—2 of Figure 1;

Figure 3 is a sectional view taken along line 3—3 of Figure 2;

Figure 4 is a sectional view taken along line 4—4 of Figure 2;

Figure 5 is a perspective view of a part of the machine;

Figure 6 is a perspective view of another part of the machine.

Figure 7 is a diagrammatic illustration of the electrical control circuit of the machine,

Figure 8 is a detail view of the gate structure on a larger scale.

Referring now to the drawing, the vending machine comprises a cabinet 10 having insulated walls 11, 12 and 13 and a door 14 which is secured to wall 13 by means of the hinges 15. A shelf or horizontal partition 16 divides the cabinet into an upper chamber 17 and a lower chamber 18. A plurality of inclined plates 19 are mounted in the upper chamber 17 to support the articles which are to be vended.

Each of the inclined plates 19 has upturned side flanges 20 and 21, a downwardly extending front end flange 22 and a downwardly extending rear end flange 23 which has a further downward extension 24. The plates 19 are mounted in spaced superposed relation in the upper chamber 17 by the screws 25 which fasten the side flanges 20 to the rear wall 12 of the cabinet and by the bolts 26 and 27 which fasten the side flanges 21 to the vertical channel 28 and the rear flange 29 of a vertical partition 30, respectively. The top end of the channel 28 is secured to a depending bracket 31 of the cabinet by bolts 32 and its lower end is bolted to a support plate 33 by bolts or screws 34. The upper end of the partition 30 is provided with a flange 35 which is fastened to the cabinet by means of screws 36. The lower end of the partition 30 is supported by a bar 37 whose upper end is secured to the front flange 38 of the partition 30 by a screw 39 and whose lower end is secured by screws 40 to a bracket 41 mounted on the horizontal partition 16. It will be apparent now that the plates 19 are rigidly mounted in the upper chamber 17 and are capable to support such articles as the cans 42 indicated by broken lines 43.

The plates 19 are mounted with the flanges 23 proximate to the wall 13 of the cabinet and with their extensions 24 positioned at the front of the cabinet. A shelf 44 having upturned side flanges 45 and 46 and end flanges 47 and 48 is secured in the cabinet by means of screws 49 which secure its flanges to the vertical partition 30, the rear wall 12 and the side wall 13. The shelf 44 is positioned at a slightly lower level than the lowest plate 19 and forms the bottom of a pre-cooler storage space or chamber 50 in which cans 43 of beverage may be stored.

Each of the plates 19 is divided into two racks 51 and 52 by a channel member 53 which is secured to its associated plate 19 by screw or any other conventional manner. The back of each rack 52 is closed by the downward extension 24 of the plate 19 which lies immediately above it. The back of each rack 51, which lies adjacent the rear wall 12 of the cabinet, is open so that the cans can be loaded on each rack 51 through its back from the storage chamber 50.

The lowest end of each rack 52 is partly closed by a gate 56 which is pivotally secured to the channel 28 by a hinge 57. Each gate 56 has a plate 58 provided with a flange 59 which extends into its associated rack 52 when the gate is in closed position. An overlap plate 60 is secured to each plate 58 and has a downwardly extending portion which overlaps the plate 58 of its adjacent lower gate 56. Each overlap plate 60 has a stiffening flange 61. It will now be apparent that the gate 56 can open only if the gate

positioned immediately above it is open. The function of the gate 56 will be described below.

Each of the racks 51 is also provided with a gate 62, similar to the gates 56 of the racks 52. The hinges 63 of the gates 62 are secured to the front flanges 22 of the plates 19 by screws or in any other conventional manner. The gates 62, when in closed positions, and wall 11 of the cabinet form a vertical chute 64 which receives the cans which roll off the racks 51 during the vending operation of the machine. The gates 56 and the wall 11 form a similar vertical chute 65 which receives the cans which roll off the racks 52 during the vending operation. In order to separate the vertical chutes 64 and 65 so that the cans in one chute will not interfere with the movement of the cans in the other chute, a sliding partition 66 is positioned between each channel member 53 and an angle member 66a rigidly secured to the channel member by pins 67. The upward sliding movement of each sliding partition 66 is limited by one pin 67 while its downward movement is stopped by the wall 11 of the cabinet. A pair of spaced vertical strips 68 and 69 are secured to the wall 11 to receive the sliding partitions 66 therebetween when they are in their lowermost positions and prevent lateral movement thereof. Each sliding partition 66 is provided with a finger hole 70 so that it may be easily manipulated. The front open side of the chute 65 is closed by an elongated door 71 which is mounted on the wall 11 by means of hinges 72. The door 71 has a vertical groove 73 into which the stiffening flanges 61 may extend when the gates 56 are opened.

The chutes 64 and 65 are each provided with a pair of vertical spacing members 74 and 75, respectively, which are secured to the wall 11 in any conventional manner and which serve to keep the cans in properly aligned positions while in the vertical chutes.

The manner in which the cans 43 are loaded into the racks and chutes will now be described. Assuming now that all the cans in the racks 51 and 52 and the vertical chutes 64 and 65 have been vended, the elongated door 71 is opened and the gates 56 are swung to closed position. The sliding partitions 66 are then slid back until their movement is stopped by the pins 67. The gates 62 are then closed. Pre-cooled cans 43 are now taken from the storage chamber 50 and placed in vertical chute 64. As the cans are piled higher, the sliding partitions are moved downwardly into their extended positions. The chute 65 may then be filled with cans from the storage chamber 50. It will be noted that the gates 56 and 62 will be maintained in closed position by the cans in the vertical chutes. When both chutes are filled, the door 71 is closed. Door 71 may be provided with any conventional latch or lock to maintain it in closed position. The front racks 52 are now filled with cans 43 by slipping them between the side flange 21 of one plate 19 and the bottom of the next plate 19. It will be noted that the downward extensions 24 of the plates 19 prevent loading of the front racks 52 from the ends proximate to the cooler chamber 50. The rear racks 51 are then loaded through their ends which open on storage chamber 50. If the number of pre-cooled cans 43 is insufficient to fill all racks 51 and 52, the upper racks are filled first, and the warm cans are loaded on the lower racks since the cans on the lower racks are vended only after the cans in the upper racks have been vended.

After all the racks have been loaded, the storage chamber 50 is re-loaded. It is necessary to stack the cans which are at the end of the racks 51 in such a fashion as to prevent the cans in the storage chambers from entering into any of the racks 51 as these are emptied during vending operations of the machine. A small shelf or abutment 76 is disposed immediately adjacent the loading ends of the racks 51 so that the first can placed on shelf 44 will necessarily abut the wall 13 of the cabinet. The next can will then abut the lower can and the flange 23 of the nearest plate 19. This arrangement of the cans relative to the plates 19 is repeated until the portion of the storage chamber 50 at the end of racks 51 is filled with cans. The cans in the storage chamber 50 can never, therefore, enter racks 51 unless placed there by hand. This prevents the vending of warm cans from the storage chamber. The shelf 76 may be formed from the same piece of sheet metal as the shelf 44. A similar shelf or abutment is not necessary immediately adjacent the ends of the racks 52 since the downward extension 24 of each plate 19 closed off the end of the rack 52 which is positioned immediately beneath it.

The cans in the vertical chutes 64 and 65 are dispensed alternately from each chute by a dispensing device 77 which comprises a horizontal shaft 78 which extends beneath both chutes and has one end journaled in a bearing block 79 mounted on the wall 12 by means of screws 80. The shaft 78 is also journaled in a motor mount plate 81 which is secured to the support plate 33 in any conventional manner. The motor mount plate 81 has a horizontal extension 82 on which is yieldably supported a motor stand 83. The motor stand 83 is yieldably supported by a pair of springs 84 and 85 which are disposed about a pair of vertical pins 86 and 87, respectively, and supports a motor 88 which is connected to shaft 79 in any conventional manner.

Two pairs of armed members 89 and 90 are rigidly secured to shaft 78 and disposed beneath chutes 64 and 65, respectively. Each member 89 is provided with three curved arms 91 and each member 90 is provided with an equal number of similar arms 92. The members 89 and 90 are so disposed on shaft 78 that the arms 91 and 92 are aligned. A shield or shroud 93 having end flanges 94 and 95 which are secured to the support plate 33 and the wall 11 by screws or other conventional means is mounted adjacent the curved members 89 and 90. The shroud is curved to fit quite closely to the arms 91 and 92 as they revolve past the shroud.

A lower portion of the end of the shroud 93 which lies beneath the racks 51 and which is adjacent the arms 91 of members 89 is cut away, as at 96, for a purpose to be described below. A pair of aligned arms 91 of the members 89 engages the lowermost can in chute 64 and carries it in a clock-wise direction, Figure 3, as the shaft 78 is revolved by the motor 88. The shroud 93 will prevent the can from falling out from the arms 91 until it is carried past the shroud to the cut away portion 96. The can will then drop by gravity onto a slide 97 to slide into a tray 98 provided in an opening 99a in the door 14. At the same time, a pair of aligned arms 92 of the members 90 engage the lowermost can in chute 65 and carry it also in a clockwise direction, Figure 4, as the shaft 78 is revolved. Since the arms 92 revolve past the wide portion of the shroud 93, the can carried by the arms 92 will still be held between the arms 92 and the shroud 93 when the can carried by the aligned pair of arms 91 is allowed to drop to the slide 97. The shaft 78 will have to be revolved through a further angular distance to cause the can carried by the arms 92 of the armed members 90 to be dropped to a slide 98.

It will be apparent now that pairs of aligned arms 91 and 92 of members 89 and 90, simultaneously engage the lowermost cans in chutes 64 and 65, respectively, as the shaft 78 is revolved but that, due to the cut away portion 96 of shroud 93, the can carried by the pair of arms 91 will be allowed to drop to the slide 97 before the can carried by the arms 92 is allowed to drop to the slide 98 as the shaft 78 is allowed to continue to revolve. Cans will therefore be dispensed alternately from the chutes 64 and 65 and dropped on the chutes 97 and 98, respectively, as the shaft 78 is revolved.

A pair of normally closed switches 99 and 100 are secured to the slides 97 and 98, respectively, and are opened each time a can slides down slides 97 and 98, respectively, to stop the motor 88. The motor 88 is started each time by a switch 101, in a conventional coin operated switching device 102, is closed by the deposit of a coin. The switch 101 connects both the motor 88 and a relay coil 102a across a supply circuit 103a. The relay coil 102a closes the contact 103 and keeps the motor connected to the supply circuit even after the switch 101 opens as the coin which originally closed the switch 101 drops into the collection box of the device 102. Contact 103 will be maintained in its closed position until either the switch 99 or the switch 100 is opened by a can sliding down the slide 97 or 98 as the case may be. When one of the switches 99 or 100 is opened, the relay coil 102a is de-energized and the contact 103 moves to open position. Simultaneously, the motor 88 stops. The motor can now be started only if another coin is deposited in the device 102 to close the switch 101 and repeat the above cycle of operation. The coin operated device 102 is installed in the door 14 as is conventional in the art.

The slides 97 and 98 are secured to the horizontal partition 16 by means of brackets 104 and 105. Slide 97 is also fastened to the wall 12 by a bracket 106. The slides 97 and 98 are provided with central ribs 107 and 108, respectively, to stiffen the slides and also to minimize the areas of contact of the cans with the slides in order to decrease the sliding friction therebetween.

The gates 56 and 62 provided for each rack 51 and 52, respectively, are employed to prevent the cans in lower racks from interfering with the downward movement of the cans in the vertical chutes 65 and 64, respectively, by also moving into the chutes. It will be noted that a gate 56 or 62 will swing open only when the cans in its chute fall below the level of the lower edge of its overlap plate 60.

The chamber 17 of the cabinet 10 is cooled in a conventional manner by a refrigerating system having cooling coils 109 disposed in the chamber 17 and a fan 110 for circulating air past the cooling coils and up through the racks. The plates 19 are provided with holes 111 to obtain a thorough circulation of air past the cans in the racks. The fan is driven by a motor 112 mounted on the tubular housing 113 of the fan. The housing is rigidly clamped to the wall 12 of the cabinet by a strap 114 which is secured to the wall 12 by screws 115.

The cooling coils 109 are part of a conventional refrigerating system driven by a compressor unit 116 in the lower chamber 18 and having condenser coils 117 which are cooled by air driven by a fan 118 powered by a motor 119. The sides of the lower chamber are made of grill work to allow easy passage of air therethrough.

A pair of cut-off switches 120 and 121 mounted on the shroud 93 are actuated by the cans carried by the set of arms 91 and 92. When the machine is empty, these switches actuate a circuit which prevents the operation of the motor and rejects coins deposited in the device 102. They may also be employed to cause lamps to light to give a visual indication that the machine is empty.

It will be apparent now that a vending machine has been illustrated which has two tiers of racks 51 and 52 in which articles, such as the cans 43, may be placed to be dispensed alternately from each tier of racks through the opening 99 in the door 14. Moreover, a dispensing device has been disclosed in which one motor driving a single shaft will dispense articles alternately from the two tiers.

Various changes and modifications may be made in the illustrated embodiment without departing from the invention. For example, a single slide may be employed if the shroud 93 is not cut away at 96 and if the arms of the members 89 are not aligned with the members 90. The arms of each pair of the members 89 and 90 will be aligned with respect to each other. In this case, the cans will be dropped onto the same slide alternately from one chute 64 or 65 and then from the other chute 65 or 64. The switches 99 and 100 would then be so positioned on the single slide that the motor 88 would be stopped each time a can was dropped on the single slide.

Various other changes and modifications may be made in the disclosed embodiment of the invention without departing from the invention and it is intended, therefore, in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; means co-acting with one set of armed members to retain an article in engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; and means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the articles engaged and carried by aligned arms of one set of armed members being dispensed when the aligned arms of said one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when the aligned arms of said other set of armed members are moved to the second predetermined position.

2. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms on one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; means co-acting with one set of armed members to retain an article in engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the articles engaged and carried by aligned arms of one set of armed members being dispensed when aligned arms of one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when aligned arms of said other set of armed members are moved to the second predetermined position; and slide means positioned below each set of armed members to receive the dispensed articles and deliver them to a common point.

3. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft; one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; means co-acting with one set of armed members to retain an article in

engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the articles engaged and carried by aligned arms of one set of armed members being dispensed when the aligned arms of said one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when the aligned arms of said other set of armed members are moved to the second predetermined position; slide means positioned below each set of armed members to receive the dispensed articles and deliver them to a common point; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of the dispensed articles for stopping the motor each time an article is dispensed by a set of the armed members.

4. In a dispensing, apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; means co-acting with one set of armed members to retain an article in engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the articles engaged and carried by aligned arms of one set of armed members being dispensed when the aligned arms of said one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when the aligned arms of said other set of armed members are moved to the second predetermined position; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of the dispensed articles for stopping the motor each time an article is dispensed by a set of armed members.

5. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; and a rigid elongated arcuate member disposed parallel to said shaft and adjacent said arms and co-acting with the sets of armed members to retain articles in engagement with said arms as said shaft is rotated, said arcuate member having a wide portion adjacent one set of armed members and a narrow portion adjacent the other set of armed members whereby articles engaged and carried by aligned arms of one set of armed members are dispensed when the aligned arms of one set of armed members are moved to a first predetermined position by the rotation of said shaft and articles engaged and carried by aligned arms of the other set of armed members are dispensed when aligned arms of said other set of armed members are moved to a second predetermined position by the rotation of said shaft.

6. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means for providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; a rigid elongated arcuate member disposed parallel to said shaft and adjacent said arms and co-acting with the sets of armed members to retain articles in engagement with said arms as said shaft is rotated, said arcuate member having a wide portion adjacent one set of armed members and a narrow portion adjacent the other set of armed members whereby articles engaged and carried by aligned arms of one set of armed members are dispensed when the aligned arms of one set of armed members are moved to a first predetermined position by the rotation of said shaft and articles engaged and carried by aligned arms of the other set of armed members are dispensed when aligned arms of said other set of armed members are moved to a second predetermined position by the rotation of said shaft; and slide means positioned below the lowermost edges of the narrow and wide portions of the arcuate member to receive the dispensed articles and deliver them to a common point.

7. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side

by side relation; means for providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; a rigid elongated arcuate member disposed parallel to said shaft and adjacent said arms and co-acting with the sets of armed members to retain articles in engagement with said arms as said shaft is rotated, said arcuate member having a wide portion adjacent one set of armed members and a narrow portion adjacent the other set of armed members whereby articles engaged and carried by aligned arms of one set of armed members are dispensed when the aligned arms of one set of armed members are moved to a first predetermined position by the rotation of said shaft and articles engaged and carried by aligned arms of the other set of armed members are dispensed when aligned arms of said other set of armed members are moved to a second predetermined position by the rotation of said shaft; slide means positioned below the lowermost edges of the narrow and wide portions of the arcuate member to receive the dispensed articles and deliver them to a common point; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of the dispensed articles for stopping the motor each time an article is dispensed by a set of the armed members.

8. In a dispensing apparatus, two tiers of article suporting, inclined racks disposed in side by side relation; means for providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column; a rigid elongated arcuate member disposed parallel to said shaft and adjacent said arms and co-acting with the sets of armed members to retain articles in engagement with said arms as said shaft is rotated, said arcuate member having a wide portion adjacent one set of armed members and a narrow portion adjacent the other set of armed members whereby articles engaged and carried by aligned arms of one set of armed members are dispensed when the aligned arms of one set of armed members are moved to a first predetermined position by the rotation of said shaft and articles engaged and carried by aligned arms of the other set of armed members are dispensed when aligned arms of said other set of armed members are moved to a second predetermined position by the rotation of said shaft; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of the dispensed articles for stopping the motor each time an article is dispensed by a set of armed members.

9. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute; a first means rigidly secured to said shaft and disposed below one of said columns for engaging the lowermost article in said one of said columns; a second means rigidly secured to said shaft and disposed below the other of said columns for engaging the lowermost article in the other of said columns, the first and second means dispensing articles alternately from the two columns of articles as said shaft is rotated; a third means co-acting with said first means to retain an article in engagement with said first means until the shaft is rotated to position an article engaged by said first means in a predetermined angular position with respect to the shaft; and a fourth means co-acting with said second means to retain an article in engagement with said second means until the shaft is rotated to position an article engaged by said second means in a second predetermined angular position with respect to the shaft, the articles engaged and carried by said first means being dispensed when they are moved to said first predetermined position by rotation of said shaft and the articles engaged and carried by said second means being dispensed when they are moved to said second predetermined position by rotation of said shaft.

10. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute, two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column, means co-acting with one set of armed members to retain an article in engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the ar-

ticles engaged and carried by aligned arms of one set of armed members being dispensed when the aligned arms of said one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when the aligned arms of said other set of armed members are moved to the second predetermined position; slide means positioned below said first and second means to receive the dispensed articles and deliver them to a common point; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of dispensed articles for stopping the motor each time an article is dispensed.

11. In a dispensing apparatus, two tiers of article supporting, inclined racks disposed in side by side relation; means providing a vertical chute for receiving articles moving off the lower ends of the racks under the influence of gravity, said articles being stacked in two columns in said vertical chute, one column being fed with articles by the racks of one tier and the other column being fed with articles by the racks of the other tier; a rotatable shaft extending below the chute, two sets of armed members rigidly secured to said shaft, one set of said armed members being disposed beneath each of said columns of articles, each of the armed members having a plurality of arms, the arms of the armed members being aligned on the shaft, aligned arms of one set of armed members engaging the lowest article in one column and aligned arms of the other set of armed members engaging the lowest article in the other column, means co-acting with one set of armed members to retain an article in engagement with aligned arms of said one set of armed members until the shaft is rotated to position an aligned pair of arms in a first predetermined angular position; means co-acting with the other set of armed members to retain an article in engagement with aligned arms of the other set of armed members until said shaft is rotated to position an aligned pair of arms in a second predetermined angular position, the articles engaged and carried by aligned arms of one set of armed members being dispensed when the aligned arms of said one set of armed members are moved to the first predetermined position and the articles engaged and carried by aligned arms of the other set of armed members being dispensed when the aligned arms of said other set of armed members are moved to the second predetermined position; a motor for rotating said shaft; means for starting the motor; and switch means disposed in the path of travel of dispensed articles for stopping the motor each time an article is dispensed.

12. In the device of claim 1, partition means disposable between the two columns to prevent the articles in one column from contacting the articles in the other column.

13. In the device of claim 11, partition means disposable between the two columns to prevent the articles in one column from contacting the articles in the other column.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
957,720	Starr	May 10, 1910
2,002,753	Parks et al.	May 28, 1935
2,315,515	Gibson et al.	Apr. 6, 1943
2,405,891	Larimore	Aug. 13, 1946