

March 19, 1957

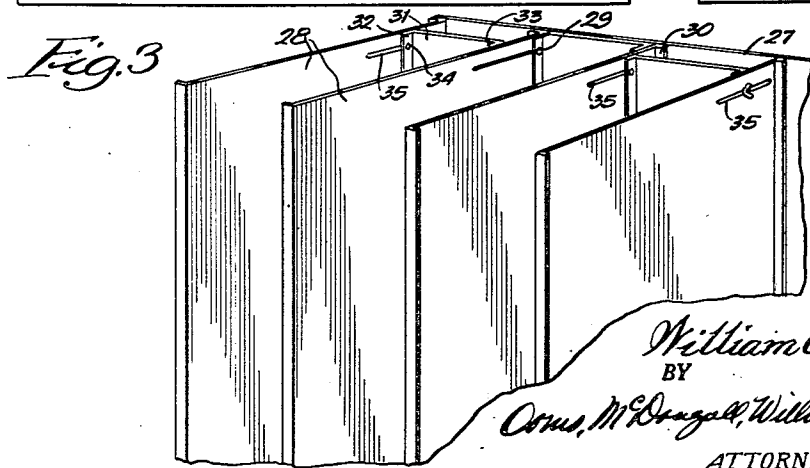
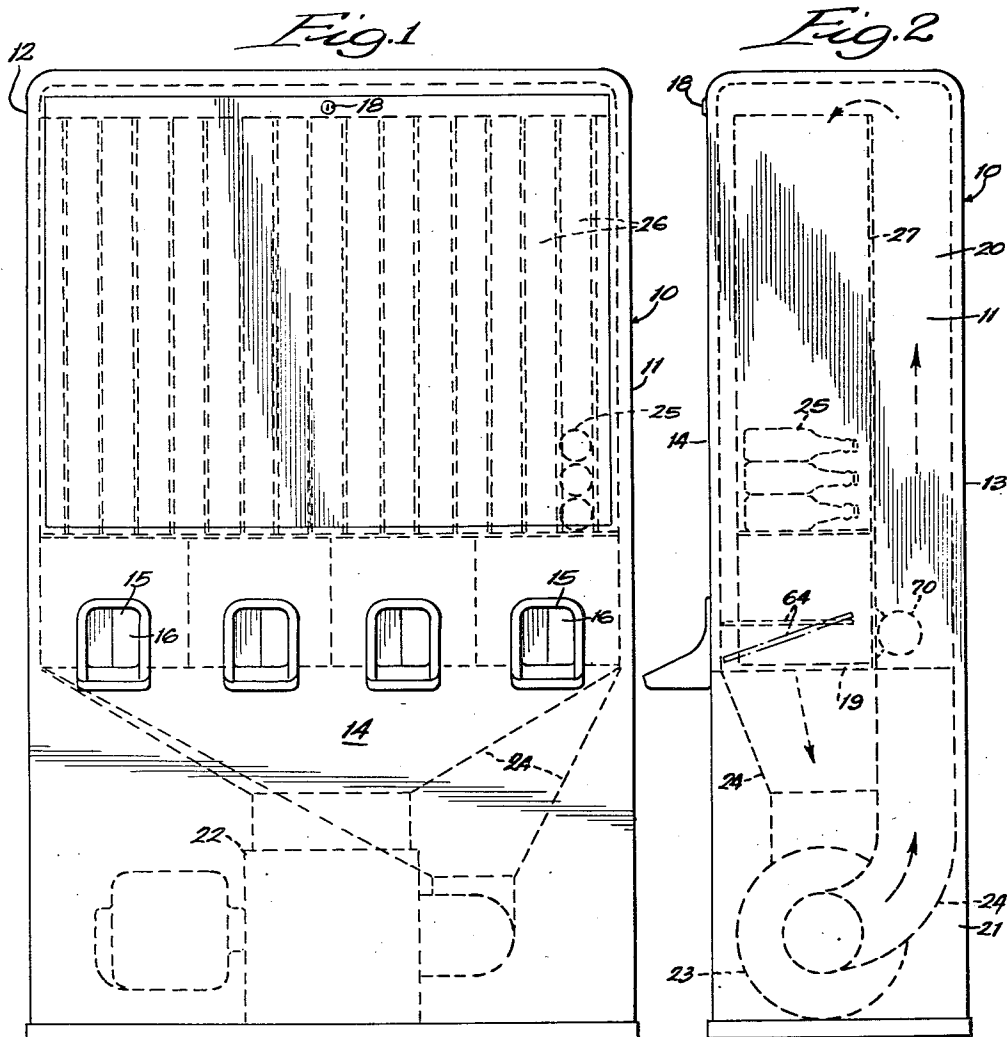
W. A. PATZER

2,785,828

DISPENSING MACHINE

Filed Oct. 24, 1952

5 Sheets-Sheet 1



INVENTOR:
William A. Patzer,
BY
Orms, McDougall, Williams & Hensch,
ATTORNEYS.

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W. A. PATZER
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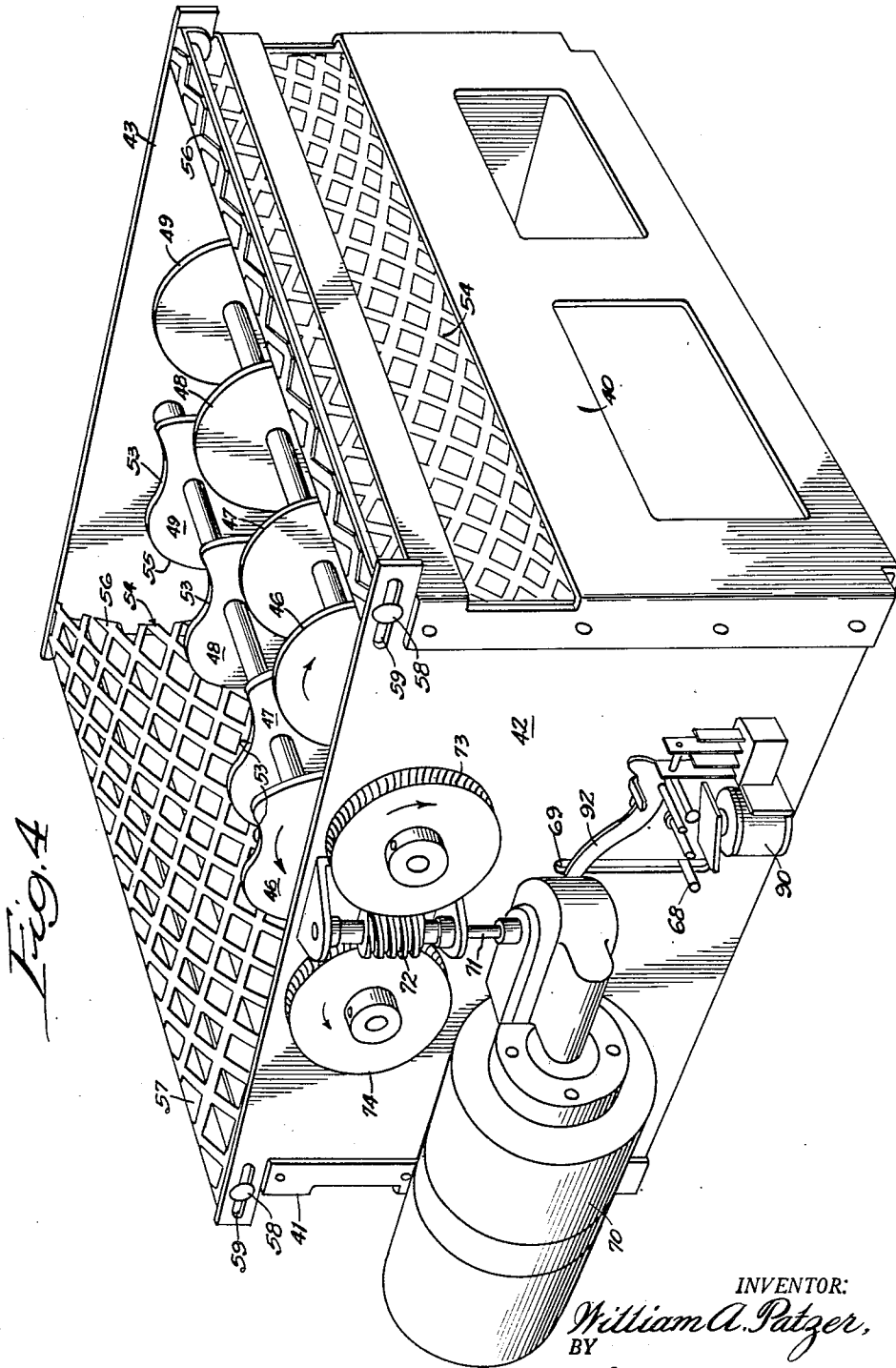


Fig. 4

INVENTOR:
William A. Patzer,
BY
Osmond Douglass, Williams & Herch,
ATTORNEYS.

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W. A. PATZER
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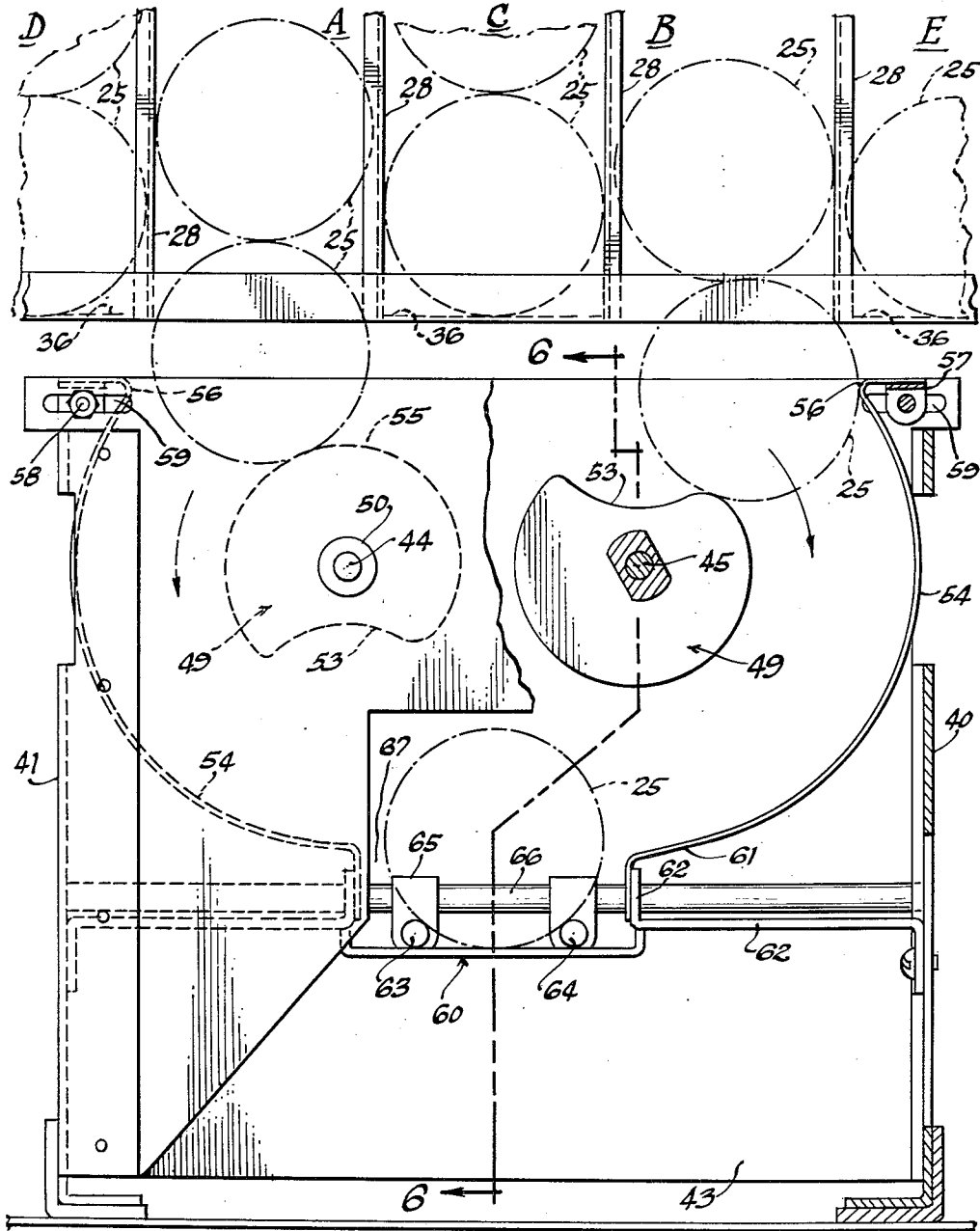


FIG. 5

INVENTOR.
William A. Patzer
BY
Corns, McDougall,
Williams & Hersh
Attorneys

March 19, 1957

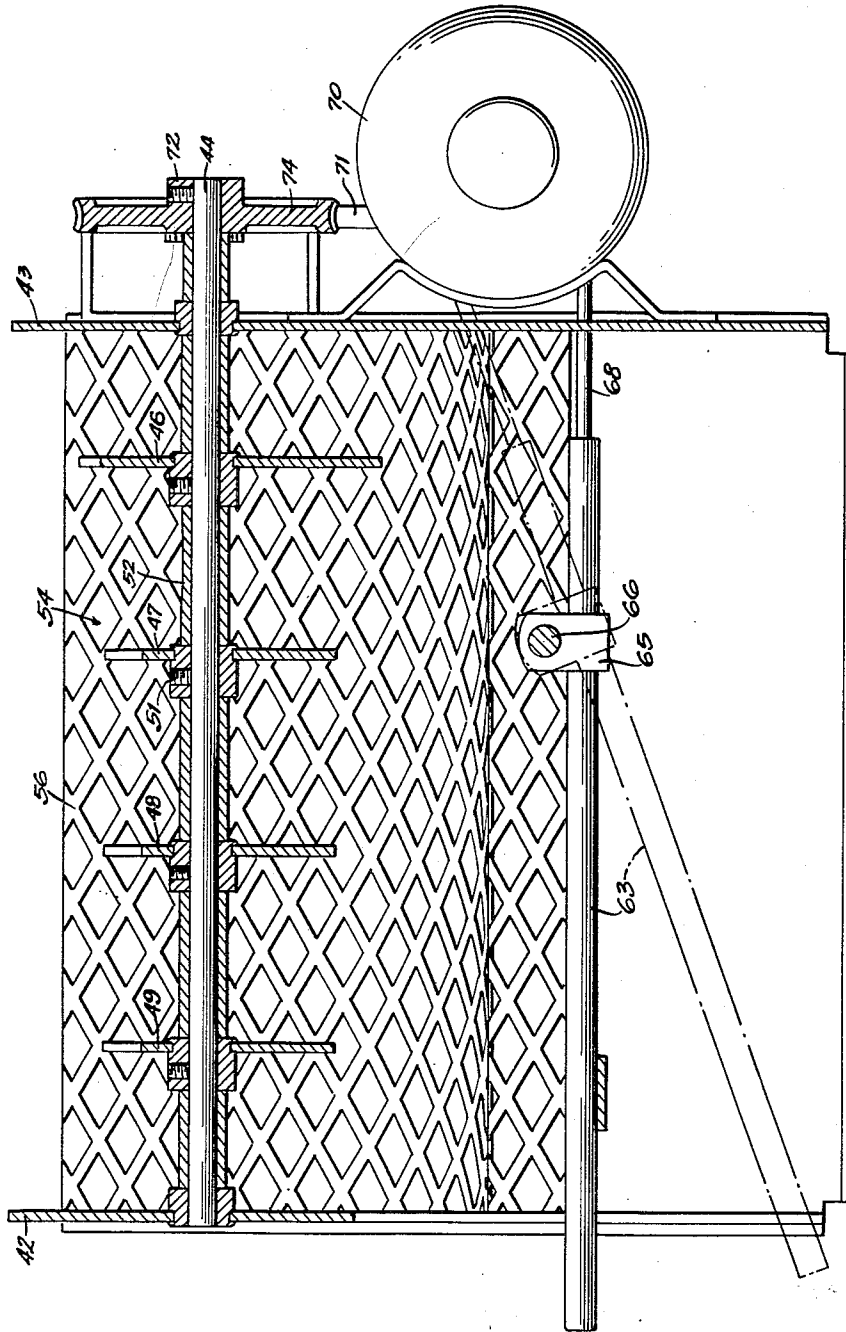
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Fig. 6



INVENTOR:
William A. Patzer.
BY
Olus, McDougall, Williams & Hersh
ATTORNEYS.

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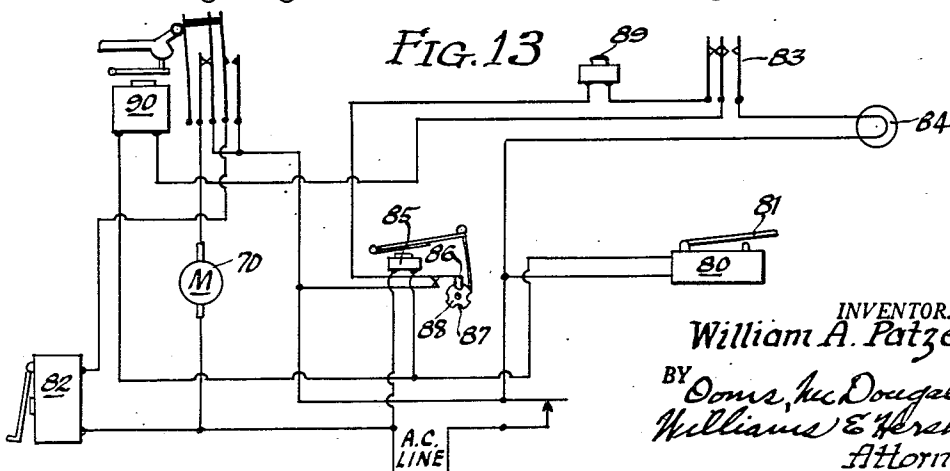
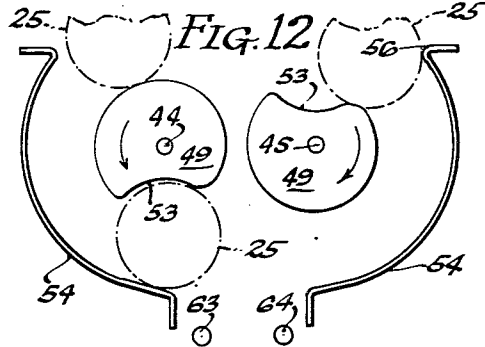
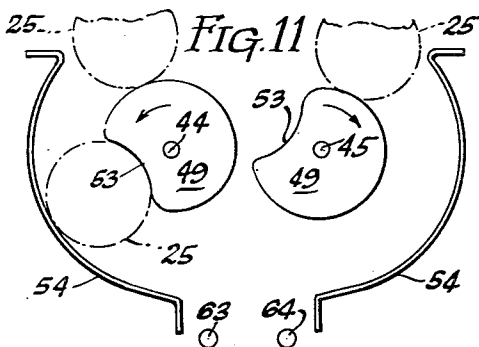
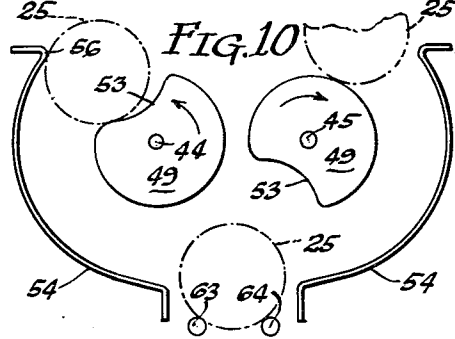
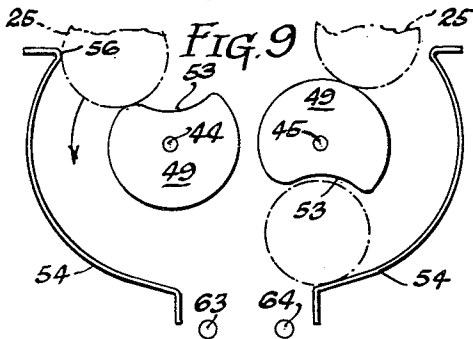
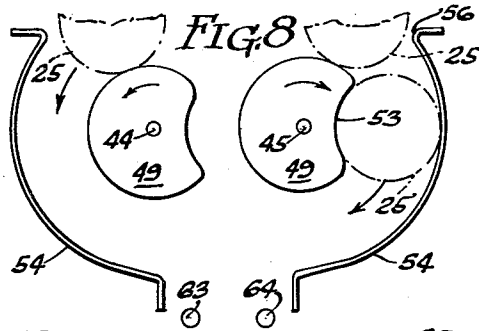
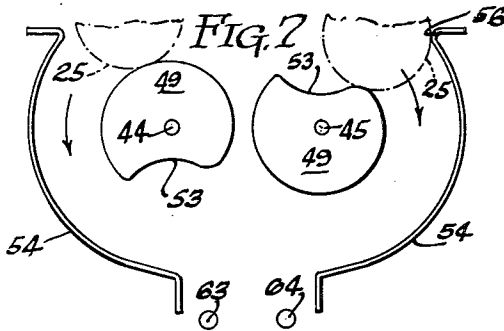
W. A. PATZER

2,785,828

DISPENSING MACHINE

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5 Sheets-Sheet 5



INVENTOR.
William A. Patzer
BY *Omni, Inc. Dougall,*
Williams & Yersh
Attorneys

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2,785,828

DISPENSING MACHINE

William A. Patzer, Chicago, Ill., assignor, by mesne assignments, to Seih B. Atwood, Rockford, Ill.

Application October 24, 1952, Serial No. 316,575

8 Claims. (Cl. 221—116)

This invention relates to a vending machine in which a plurality of cylindrical containers or packages are positioned for dispensing in single fashion responsive to actuation, as by a coin controlled mechanism, and it relates more particularly to an article vending machine of the type described embodying a refrigeration system for cooling the articles to be dispensed therefrom.

With particular reference to the dispensing of containers in which a carbonated beverage or the like is sealed, vending machines of the type which have heretofore been developed have failed to provide for the elimination of impact or agitation during movement of the containers through the machine. When such agitation occurs substantially immediately in advance of dispensing, a state of instability is caused to exist in the content material whereby internal pressure builds up within the container upon release of gases. When the container is opened, the gases cause excessive effervescence and foaming of the content material to the extent that the fluids overflow from the bottle. This loss of carbonation detracts from the taste of the beverage and the overflow invariably causes soiling of one's hands, one's garments, carpeting or other furnishings in the immediate vicinity.

Other objectionable features in dispensing machines of the types which have heretofore been developed reside in the inability to make use of a machine for dispensing containers other than that for which it has been specifically constructed. When containers of a different length, width or shape are used or when it is desired to dispense other articles of a different size or shape, it has been necessary either to remodel the dispensing machine or to exchange the machine for another adapted for use with the particular article.

Thus it is an object of this invention to produce a dispensing machine of the type described in which the containers are adapted to move smoothly through the machine for delivery without impact or agitation thereby to maintain a desirable stable condition within the container and prevent the undesirable mixing of the content materials or release of gases which have heretofore caused effervescence and overflow upon opening of the container.

Another object is to produce a machine of the type described for dispensing refrigerated articles one at a time in response to coin or other control and to provide means for controlling the operation of the machine for the delivery of a container so long as such containers are present in position to be dispensed but to prevent the delivery of a container without the insertion of proper coins or to prevent delivery of more than one container per operation.

A further object is to produce a machine of the type described which is adjustable in a simple and expedient manner for multiple use in the dispensing of containers of different length, width and shape thereby to provide a universal machine having flexibility in use and operation not heretofore available and it is a related object to

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produce a machine of the type described embodying means for maintaining proper alignment of the containers and to avoid jamming notwithstanding the conversion of the machine to use with containers or different size and shape.

These and other objects and advantages of this invention will hereinafter appear and for purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawings in which—

Figure 1 is a front elevational view of a dispensing machine embodying features of this invention;

Figure 2 is a side elevational view of the machine shown in Figure 1;

Figure 3 is a perspective view in elevation of a partitioning member embodying additional features of this invention for use for partitioning the container storage into separate sections for storage of containers therein;

Figure 4 is an enlarged perspective view of a dispensing mechanism used in the practice of this invention;

Figure 5 is a fragmentary elevational view of the interior of the dispensing mechanism shown in Figure 1 illustrating specifically the arrangement of the dispensing mechanism with respect to the partitioning members in which the containers are stored;

Figure 6 is a side elevational view of the dispensing mechanism shown in Figure 4;

Figures 7-12 inclusive are diagrammatic view illustrating the relationship between parts in the dispensing mechanism during operation thereof for the delivery of containers; and

Figure 13 is a diagram of the electrical system of the dispensing machine shown in Figure 1.

For purposes of illustration, description will be made to the construction of a machine embodying features of this invention for dispensing carbonated beverages contained in elongate cylindrical bottles or packages and which are refrigerated before delivery for immediate consumption of the content materials. It will be understood, however, that other products in similarly shaped containers, with or without refrigeration, may be dispensed in a machine of the type described without departing from the spirit of the invention.

As shown in the drawings, a dispensing machine embodying features of this invention may include a conventional cabinet 10 having side walls 11 and 12 formed integral with a back wall 13 and a front wall 14 provided with laterally spaced apart openings 15 through an intermediate portion thereof for access to the containers delivered by the machine upon operation. Panels 16 are mounted for sliding or tilting movement between normal position to obstruct the openings to an open position to permit access to the interior for removal of the container delivered by the dispensing mechanism, which will hereinafter be described.

A removable panel 17 is secured by lock mechanism 18 in position of use to enclose the upper portion of the housing and which upon removal permits access to the interior thereof for filling the machine, as will hereinafter be described. The cover panel 17 may be formed with windows or of other transparent material to permit observation of the packages contained therein for purposes of permitting selection or determination when refilling is necessary.

The interior of the housing 10 is divided by side supports 19 into an upper dispensing compartment 20 and a lower refrigeration compartment 21 which contains a conventional refrigeration unit 22 for cooling air circulated by fan means 23 through ductwork 24, preferably upwardly along the back side of the upper dispensing compartment and back down through the front side in which the bottles 25 containing beverage are stacked as indicated by the broken arrows in Figure 2. The walls

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of the housing are preferably insulated to reduce the transfer of heat, especially in the upper dispensing section through which the cold air is circulated.

The dispensing compartment is divided into a plurality of vertically disposed magazines 26 having a common back wall 27 and a plurality of vertically disposed panels 28 in laterally spaced apart relation extending forwardly from the back wall 27. The partitioning walls 28 may be fixed permanently to the back wall 27, as by welding, riveting or the like, or by attachment with bolt and nut members 29 to channels 30 fixed to the rear wall. The spaced relation between the partitioning walls is dimensioned to be slightly greater than the maximum cross sectional dimension of the containers to be dispensed therein so as to permit stacking of the containers 25 within the magazines without excessive amount of offset of one container from another in the column.

The portion of the dispensing machine which has been described to the present conforms in many respects with dispensing machines which have heretofore been developed. However, such machines in the past have been incapable of sufficient flexibility in construction to enable adjustment of a machine adapted for dispensing containers of one size and shape to a machine capable of equivalent use for dispensing containers of an entirely different size or shape or in the construction of a universal machine capable of expedient and simple adjustment in position of use for dispensing containers of one size and shape from one section and containers of a different size and shape from others. Such flexibility in construction would enable low cost mass production technique for the manufacture of but a single design for the dispensing of beverages most popular in particular parts of the country notwithstanding differences between the size and shape of the containers from one section of the country to the other or as between one beverage and another.

When, for example, a partitioning member is formed with the partitioning walls dimensioned for use in stacking bottles of Pepsi-Cola or the like, the same machine cannot adequately be used with bottles of Coco-Cola or other containers of equivalent length. Because of the tapers in the containers themselves and the open space which would be occasioned by the stacking of bottles of shorter length within the magazines designed for Pepsi-Cola, an unsuitable condition is caused to exist whereby one or more of the bottles, and usually the bottles uppermost in the column, become displaced and fall or otherwise become wedged into the open space available. This not only causes inadvertent jamming and interference with the normal displacement of the bottles in use and operation of the machine but sometimes causes breakage of bottles and other difficulties occasioned thereby.

In accordance with one of the concepts of this invention, universal adaptability of the machine for use with practically any container is achieved by the construction shown in greater detail in Figure 3 wherein a movable wall 31 is provided in each magazine from which the bottles are adapted to be dispensed to vary the effective length thereof. The movable walls are formed with flanges 32 and 33 which extend from the edges of the walls in parallel but in abutting relation with the adjacent partitioning walls. Openings 34 are provided in the flanges in alignment with elongate slots 35 at an equivalent level in the partitioning walls 28. The movable wall 31 is adapted to be secured in its adjusted position by bolt and nut members which extend through the flange openings and slots to secure the parts together upon tightening. Thus in one section, the movable wall may be adjusted forwardly to adapt that section for use with bottles of short length while the movable wall in other sections may easily and expediently be adjusted for use with bottles of greater lengths.

The principal concept of this invention resides in a new and novel mechanism for use in combination with

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elements of the type described for selectively displacing the lowermost container in a column of a selected variety of beverage and to deliver same without agitation of any of the containers to the delivery opening from which it may be removed from the machine for consumption. The delivery mechanism shown in detail in Figures 4, 5 and 6 of the drawings is adapted to operate in combination with two of the magazines, such as magazine A and magazine B, having a space therebetween which may be provided with a bottom wall 36 to form an inactive extra magazine C for storage of containers 25 for pre-cooling prior to replacement of containers dispensed from the magazines in operative connection with the dispenser mechanism.

For purposes of illustration, description will hereinafter be made in detail to the construction and operation of one dispensing mechanism positioned substantially to underlie the three magazines such as are illustrated by magazines A, B and C in Figure 5, but it will be understood that similar mechanism may be repeatedly used in cooperation with other magazines of a multiple machine for operation in a similar manner to displace and deliver other beverages from the machine.

Referring now to Figures 4 and 5 of the drawings, a dispenser mechanism embodying features of this invention comprises rigid side walls 40 and 41 interconnected at their ends to front and rear walls 42 and 43 respectively to form a rigid housing which is open at the top and at the bottom. Rotatably mounted within the housing are a pair of shafts 44 and 45 which extend lengthwise through the housing to the front wall and through the back wall. A plurality of cam plates 46, 47, 48 and 49 fixed onto hub members 50 are secured by setscrews 51 for rotational movement with the shafts and with spacers 52 therebetween to maintain a predetermined longitudinally spaced apart relation between the plates mounted on each shaft. The set of curvilinear plates mounted on each shaft may be formed to have substantially the same contour and to be of the same overall dimensions although they may vary in dimension from one end to the other more substantially to conform to existing conditions but each of the cam plates on one shaft are formed with aligned grooves 53 in one wall portion which grooves may vary in depth to correspond more substantially with the contour of the container adapted to be dispensed in cooperation therewith. Where two shafts are provided in cooperative relation to dispense containers from spaced apart magazines, as illustrated in the drawings, it is preferred to position the cam plates with the grooves in one set of cam plates at 180° relative to the grooves in the other set of cam plates so that one or the other of the groups of cam plates will be in position for delivery but both will not enable delivery to be made at the same time.

Unlike structures which have heretofore been employed, the grooves or recesses 53 formed in the cam plates are not of a depth substantially completely to receive the containers therein and the cam plates are not positioned substantially in vertical alignment with the center of the magazines for receiving containers therefrom during rotational movement. Instead, the grooved portions 53 merely constitute indentations in the peripheral portion of the cam plates in which only a small segment of the containers rest but which in cooperation with a retainer wall 54 of the dispensing mechanism permits smooth and guided passage of the lowermost container from the magazine about the retainer wall to the delivery chute without agitation of the bottles being delivered and without agitation of the bottles remaining in the magazine.

Instead of having the shafts and the cam plates in vertical alignment with the center of the respective magazines, each shaft is offset from the center to position the cam plates slightly below the open end of the magazine

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and in the direction away from the retainer wall cooperating therewith. This provides for predetermined movements of the containers during storage and delivery. While the lowermost container 25 rides upon the ungrooved portion 55 of the cam plates, the containers are urged by reason of the offset and by the frictional forces existing to tend to move in the direction of the retainer wall so as to maintain a contacting relation therewith. The spaced relation between the ungrooved peripheral portion 55 of the cam plates and the upper edge of the retainer wall is dimensioned to be less than the cross sectional dimension of the containers whereby the containers are prevented from passing between the cam plates and the retainer wall through the delivery mechanism are thereby supported between ungrooved portions of the cam plates.

The grooved portions of the cam plates are dimensioned to provide a distance between the base thereof and the upper edge of the retainer wall which is slightly greater than the cross sectional dimension of the containers thereby to permit the lowermost container resting upon the cam plates to enter the groove to be displaced downwardly upon entrance into the groove sufficiently to pass with the cam plates over the curvilinear surface of the retainer wall to the delivery device 60 located below the dispensing mechanism.

The retainer wall 54 is formed to curvilinear contour generally conforming to that of the cam plates to maintain a substantially uniform spaced relation therewith until the delivery end portion. It may be formed of solid or of perforated sheet stock of desired shape or of ribs formed to desired shape but sufficiently rigid to support the containers during passage from the magazine to the delivery chute.

In order to adapt the dispensing mechanism for use with containers which differ in their cross sectional dimension, the upper end defining the inlet portion 56 of the retainer wall against which the containers lean prior to delivery, is mounted upon an elongate supporting bracket 57 having pins 58 extending outwardly from the ends thereof through elongate slots 59 in the upper end portion of the front and rear walls 42 and 43 respectively with one end portion of the pin extending through the slot being threaded for engagement by a nut to secure the elements in an adjusted position within the slot. The bracket or supporting rod may be shifted inwardly towards the cam plates to decrease the spaced relation for use with containers of smaller cross sectional dimension or they may be shifted outwardly to increase the spaced relation for larger containers and then the bolt may be tightened to secure the elements in their adjusted position for use.

It has been found that the agitation usually resulting from upward displacement of the containers in their respective magazines followed by the sudden dropping of the containers in the magazines as the lowermost package falls into its slot may be completely and effectively eliminated in the present construction when, in addition to offsetting the cam plates relative the magazine, the plates themselves are contoured to provide a peripheral surface of maximum radial dimension beyond the groove 53 and gradually decreasing radial dimension to the sector immediately in advance of the groove in the direction of rotation. For best use, the curvature of the groove is adapted to continue to the periphery of the cam plate to provide for a substantially abrupt end at its trailing edge which is adapted to be engaged first by the next succeeding container as the lowermost enters the groove and passes therewith through the delivery mechanism.

The leading edge of the groove is preferably rounded gradually to merge with the periphery of the plate of minimum radial dimension to permit the container smoothly and slowly to become seated within the groove

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during rotational movement of the cam plates for delivery operations.

The lower end portions 61 of the curvilinear retainer walls 54 converge towards each other and are provided with a downturned portion secured to brackets 62 which support the retainer walls at their lower ends and to provide an elongate opening therebetween dimensioned to be slightly greater than the maximum cross sectional dimension of a container to be dispensed from the machine. Extending lengthwise through the opening slightly below the level of the lower end portion 61 of the retainer wall 54 is a cradle member in the form of a pair of closely spaced rods 63 and 64 supported adjacent their rearward end portion upon brackets 65 depending from a rod 66 rotatably mounted in the side walls 40 and 41 of the dispensing mechanism. A coil spring is provided normally to position the cradle in a raised position within the opening 67 defined by the lower end portions of the retainer wall with the rods 63 and 64 substantially horizontally disposed therebetween but the weight of the container 25 when deposited on the rods responsive to dispensing action is sufficient to overcome the force of the spring and rock the cradle downwardly about its pivot for tilting at an angle which causes the container to slide forwardly into the delivery chute, such as illustrated by the broken lines in Figure 6. A control arm 68 extends rearwardly from one of the ends of the cradle arms through a vertical slot 69 in the rear wall 42 of the housing for purpose of rendering the driving means ineffective responsive to rocking movement of the cradle for delivery of a container from the machine. It will be understood that other means responsive to the movement of a container through the dispensing mechanism or operation of the delivery mechanism may be adapted to control the operation to inactivate the means for driving the dispenser mechanism.

The cam plates on one shaft are adapted to be rotated in a direction opposite to the cam plates of the other shaft in cooperation therewith by a power source such as an electrical motor 70 mounted by brackets upon the rear wall 42 of the dispenser mechanism and connected by suitable gears to a vertically disposed shaft 71 upon which a worm 72 is mounted in operative engagement with worm gears 73 and 74 mounted upon shafts 44 and 45 for simultaneous rotation of said shafts in opposite directions.

In operation, magazines A and B are loaded with bottles of a beverage which preferably has been precooled by earlier storage in any of the adjacent inoperative or storage magazines C, D and E. Each of the latter are provided with a bottom wall to support the containers adapted to be precooled while stored therein while the bottom ends of the compartments A and B are open to permit the bottles to pass downwardly through the opening so that engagement will be established between the peripheral surface of the cam plates and the lowermost bottle in the magazine to enable delivery upon operation. The magazines in which the containers are stored for precooling need not be provided with movable walls for adjustment of length since displacement for delivery therefrom does not occur and jamming or misplacement does not interfere with the operation of the machine. In the other operative magazines, the rear wall 31 should be adjusted forwardly to within a short distance of the ends of the containers stacked therein to prevent inadvertent displacement and to prevent any containers from falling down into the open space between the containers and the wall.

The bracket upon which the upper ends 56 of the retainer walls 54 are attached should be adjusted within their respective slots 59 to a spaced relation slightly less than the cross sectional dimension of the containers when measured between any portion of the cam plates and the retainer wall but slightly greater than the cross sectional dimension of the containers when measured be-

tween the retainer wall and the grooved portion of the cam plates in which the lowermost bottles attempt to come to rest when the grooved portion of the cam plates passes thereunder.

Referring specifically to the illustration shown in Figures 7-12 inclusive, it will be seen that as the cam plates mounted on the shaft to the right in each of the figures rotate in a clockwise direction from the position shown in Figure 7 to the position shown in Figure 8, passage of the lowermost container 25 to the delivery mechanism is obstructed by the cam surface of the plates 46, 47, 48 and 49. When seated therein, the bottle is able to pass beyond the upper edge 56 of the retainer wall and thus rides while seated within the groove over the inner surface of the retainer wall until released by the cam plates for continued movement over the retainer wall into the delivery opening 67. Thus the usual agitations in movement and reversals in movement during dispensing characteristic of cylinder systems which have heretofore been developed, are substantially completely eliminated. Since the surface first engaged by the lowermost container is that of greatest radial dimension trailing the groove and the subsequent peripheral surfaces upon which the container rides during a cycle of operation are of decreasing radial dimension, the stack of containers will lower gradually with the rotation of the cam plates until the lowermost container seats within the groove.

As the lowermost container 25 becomes displaced from the magazine, the peripheral surface of the cam plates of large radial dimension is uppermost, as shown in Figure 8 and obstructs the passage of the next adjacent container through the inlet space defined between the cam plates and the upper end 56 of the retainer wall. Because of the spaced relation between the partition walls and because of the offset of the cam plates in the direction away from the retainer wall, the lowermost container, resting upon the periphery of the cam plates is constantly acted upon to urge the containers in the direction towards the retainer wall.

As to the control of the operations of the machine, reference is made to Figures 4 and 13 of the drawings where-in illustration is made diagrammatically of the electrical system which will now be described in connection with the unit shown in the drawings and which may equally be adapted for operation of additional motors in connection with other delivery mechanisms for use with other magazines in the dispensing machine responsive to selection of the container desired, as will hereinafter be described.

As shown in Figure 13, the electrical circuit comprises a coin controlled unit of a conventional slug rejector type which controls a coin controlled switch 80 having contacts 81 adapted to be made momentarily in response to the insertion of the necessary coins in appropriate slots or the like when the machine is otherwise in condition to operate. The coin controlled unit also includes a blocking relay 82 for the rejection of coins inserted when the machine is incapable of operation to deliver the desired container, as when current failure takes place during the operating cycle or when the machine becomes empty. Indications thereof are given by way of a bulb 84 which is illuminated when contacts 83 are broken in response to the emptying of the respective magazine.

When the necessary coins have been inserted in the machine, the coin may be adapted to trip the micro-switch 81 which makes momentary contact and energizes a control relay 85, which may be of the rigid type illustrated to make contact as the element 86 enters one of the grooves 87 of the ratchet wheel 88. This conditions the machine so that as soon as the selector button 89 is operated, indicating the bottle desired, current flows from the control relay 85 to the motor start and stop relay 90 and unlocks the armature of the starting relay whereby contact is made to effect operation of the motor 70.

The motor drives the cam plates until a container is delivered from the dispensing device onto the cradle which upon being rocked to tilt the cradle in the direction for sliding the container into the delivery chute causes the arm 68 to be raised and strike the switch arm 92 which breaks the contact of the motor start and stop relay whereby the motor is de-energized and the cycle of operation completed. The motor will continue in operation until the current is shut off by operation of the cradle indicating the delivery of a container thereby. As a result, the cam plates will continue to rotate until a container is delivered and therefore one set of cam plates may be caused to make a complete cycle of 360° in the event that containers are not available for delivery from the magazine in cooperation with the other set of cam plates. A further important advantage in a control of the type described resides in the inability to start another cycle of the dispensing mechanisms by operation of the motor until the container has been removed from the cradle to permit return to normal position.

It will be apparent from this brief description that there is provided a new and improved dispensing machine which embodies a number of features not heretofore available in machines of the type described including flexibility for use in dispensing a number of packages of different size and shape and for modification of the machine in an expedient manner without the necessity for exchange of parts to adapt one unit of the machine for use in dispensing packages of a different size and shape than had previously been dispensed therefrom or for adapting the various units of one machine for the dispensing of packages which vary as to size and shape between the various units. This enables the mass production of machines of standard design for use in the dispensing of articles of any type notwithstanding the differences which might exist between containers for different content material and between containers in different sections of the country.

The dispensing machine described and claimed herein provides for constant movement of the containers in one direction through the machine and dispensing mechanism, without agitation of the containers thereby to eliminate such reversals in movement of the containers as is characteristic of present devices in operation and to avoid the sudden drop of the containers when the delivery opening rotates into position of use as is characteristic of machines of the type which have heretofore been developed.

Important in this unidirectional and impactless movement of the containers in the machine during the dispensing operations is the offset of the cam plates from the center of the magazines in which the containers are stacked and the decreasing radial dimension of the cam plates terminating in a smoothly rounded portion leading into the receiving groove whereby the container tends constantly to move slowly downwardly during rotation of the cam plates until the lowermost container becomes seated within the groove without any retrograde or sudden jarring movements of the type experienced with present constructions.

Important also is the improvement whereby the retainer walls may be adjusted relative the cam plates to provide a spaced relation best suited for use with the particular container to prevent inadvertent passage through the dispensing mechanism to the delivery chute and to provide for more effective control and smoother movement of the containers during passage through the delivery mechanism.

It will be understood that concepts of this invention may be adapted for use with dispensing units of different construction but that each of the concepts provides for more expedient and efficient operation of the machine of the type described whether or not they are used in cooperation with each other, and for the delivery of the containers without interference or agitation which is important to maintain a desired stability in carbonated beverage.

ages. For example, improvement in operation of a dispensing machine is secured by the offset of the cam member without variation of the radial dimension adapted to provide a cam surface for cooperating with the retainer wall in regulating the movement of the containers. Improvement is also secured merely by the use of cam plates of the type described having a peripheral surface of decreasing radial dimension without being offset from the center line of the magazine whereby the cam member continues to be able to cooperate with the retainer wall for control of the movements of the container. Improvement in operation will result even if the shaft is not offset and the plates are not formed to provide a cammed surface but in which adjustment is permitted in the retainer wall for movement in the direction toward and away from plates to vary the spaced relation in accordance with the cross sectional dimension of the containers thereby to enable adjustment of the dispensing unit for more effective use with containers having different cross sectional dimension or shape.

It will be understood that instead of separate cam plates mounted in longitudinally spaced apart relation on the drive shaft to support the containers in their respective magazines, use may be made of one or more cam cylinders, the periphery of which is of decreasing radial dimension from the portion following the groove to the portion leading into the groove and in which the longitudinal contour of the cylinders and the grooves may be varied to correspond generally to the shape of the bottle or container, as previously described in connection with the cam plates.

It will be further understood that the concepts of this invention may also be adapted in a delivery mechanism which makes use of but a single set of cam plates mounted on a shaft for rotational movement in the direction of decreasing radial dimension and offset from the center line of the magazine in a direction opposite that of the retainer wall cooperating therewith and it will be still further understood that other changes in the details of construction, arrangement and operation may be made without departing from the spirit of the invention, especially as defined in the following claims.

I claim:

1. In a dispensing machine of the type described having an upper compartment divided by laterally spaced vertical partitions into a plurality of magazines in which containers are stacked one upon another, a dispensing mechanism including a cylindrical cam section for each of said magazines open at the bottom end for passage of containers therethrough and spaced a short distance below the open end thereof, said cam section being mounted for rotational movement about a horizontally disposed axis which extends lengthwise of the magazine between one side wall and the center line thereof, each cam section having a groove extending longitudinally through a peripheral portion thereof with the remainder of the peripheral surface decreasing in radial dimension from the trailing end of the groove to the portion leading into the groove, a curvilinear retainer wall spaced from the cam section in the direction opposite its offset by an amount when measured by the maximum distance between the periphery of the cam sector and the upper inlet end portion of the retainer wall immediately below the magazine which is less than the cross-sectional dimension of the containers but slightly greater than the cross-sectional dimension of the containers when measured from the upper inlet end portion of the retainer wall to the base of the groove whereby the lowermost container rides upon the periphery of the cam sector and is prevented from passing beyond the inlet end portion of the retainer wall until the container enters into the groove, means for adjusting the space relation between the inlet end portion of the retainer wall and the cam section and means for rotating the cam section in the direction opposite its decreasing radial dimension, means for activating the cam

member for rotational movement, and means for inactivating the delivery mechanism responsive to the delivery of a container therefrom.

2. In a dispensing machine of the type described having an upper compartment divided by laterally spaced partitions into a plurality of magazines in which containers to be disposed are stacked one upon another, a dispensing mechanism comprising a cam member mounted for rotational movement about a horizontal axis extending lengthwise a short distance below the open end of a magazine in the area between one side wall and the center line thereof, a groove dimensioned to have a depth less than one-half the diameter of the container in the corresponding portions in lengthwise alignment therewith extending longitudinally through a peripheral portion of the cam member with the remainder of the peripheral surface of the cam member decreasing in radial dimension from the trailing end of the groove to the leading edge thereof, a curvilinear retainer wall cooperating with the cam member having an inlet end portion spaced from the cam member opposite the direction of offset by an amount when measured by the distance between the peripheral surface of smallest radial dimension and the inlet end portion of the retainer wall immediately below the magazine which is less than the cross-sectional dimension of the container but greater than same when measured from the inlet end portion of the retainer wall to the base of the groove whereby the lowermost container in the magazine rests upon the peripheral surface of the cam member and is prevented from passage beyond the inlet end until the container comes to rest within the groove.

3. A dispensing machine of the type claimed in claim 2 in which the peripheral portion of the cam member leading into the groove is rounded and merges gradually into the lower wall thereof.

4. In a dispensing machine of the type described having an upper compartment divided by laterally spaced partitions into a number of magazines in which containers to be dispensed are stacked one upon another, a dispensing mechanism comprising a cam member mounted for rotational movement about a horizontal axis extending lengthwise below the open end of a magazine in the area between one side wall and the center line thereof, and having a groove extending longitudinally through a peripheral portion of the cam member, a curvilinear retainer wall cooperating with the cam member and having an inlet end portion immediately below the magazine and spaced from the cam sector opposite the direction of offset by an amount when measured by the distance between the peripheral surface of the cam member and the inlet end portion of the retainer wall which is less than the cross-sectional dimension of the containers but greater than same when measured from the inlet end portion of the retainer wall to the base of the groove whereby the lowermost container in the magazine rests upon the peripheral surface of the cam member and is prevented from passing beyond the inlet end portion of the retainer wall until the container comes to rest within the groove, and means for adjusting the inlet end portion of the retainer wall in the direction toward and away from the cam member to adjust the spaced relation in accordance with the cross-sectional dimension of the containers.

5. In a dispensing machine of the type described having an upper compartment divided by laterally spaced partitions into a plurality of magazines in which containers to be dispensed are stacked one upon another, a dispensing mechanism comprising a pair of spaced cam members mounted for turning movement on axes positioned to extend lengthwise below the open ends of magazines spaced from one another, and offset in the direction toward each other from the center line of the respective magazines cooperating therewith and each cam

sector having a groove extending longitudinally through a peripheral portion thereof while the remainder of the peripheral surface of the cam members decrease in radial dimension from the trailing end of the groove to the leading edge thereof, curvilinear retainer walls cooperating with each of the cam members and having inlet end portions immediately below the magazine and spaced from the cam members opposite the direction of offset by an amount when measured by the distance between the peripheral surface of smallest radial dimension and the inlet end portion of the retainer wall which is less than the cross-sectional dimension of the containers but greater than same when measured from the inlet end portion of the retainer wall to the base of the groove whereby the lowermost containers in the magazines rest upon the surface of the cam members disposed thereunder and are prevented from passage beyond the inlet end portions of the retainer walls until said containers enter into the groove.

6. A dispensing machine as claimed in claim 5 in which the grooves in one of the cam members is positioned to be about 180° from the grooves of the other cam member cooperating therewith.

7. In a dispensing machine, means for delivering containers one at a time during each cycle of operation from the bottom of a stack in a magazine having spaced side walls and an open bottom into a delivery chute spaced below the open end of the magazine comprising a horizontally disposed shaft mounted a short distance below the open end of the magazine for rotational movement about an axis lengthwise of the magazine and offset from one side thereof towards the center line of the magazine, cam discs fixed on longitudinally spaced apart portions of the shaft for rotational movement therewith and having their peripheral surfaces lying in the path of the containers in the magazine so that the lowermost container rests upon the surfaces thereof and, each of said cam discs being formed with an arcuate groove in the peripheral portion thereof with the remainder of the peripheral surface decreasing in radial dimension from the trailing edge of the groove to the leading edge, a curvilinear re-

tainer wall spaced from the disc members immediately beneath the opposite wall of the magazine by an amount which when measured by the distance between the peripheral surface of the disc member and the upper end portion of the retainer wall is less than the maximum cross-sectional dimension of the containers in the magazine but slightly greater than the maximum cross-sectional dimension of the containers when measured from the upper inlet portion of the retainer wall to the base of the groove in the cam disc.

8. A dispensing machine as claimed in claim 7 in which cam sections are provided for operation with laterally spaced apart magazines which are open at the bottom and in which the axes of the cam sections are offset from the center lines of the respective magazines in the direction toward each other and wherein the grooved portions of one cam section are at an angle of 180 degrees with the grooved portions of the other cam section and wherein both cam sections alternately advance containers from their respective magazines to a common outlet.

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