Jan. 28, 1964 W. A. ESCHENBURG ETAL 3,119,518

ICE DISPENSING MACHINE

Filed Jan. 30, 1961 5 Sheets-Sheet 1

Fig. 1

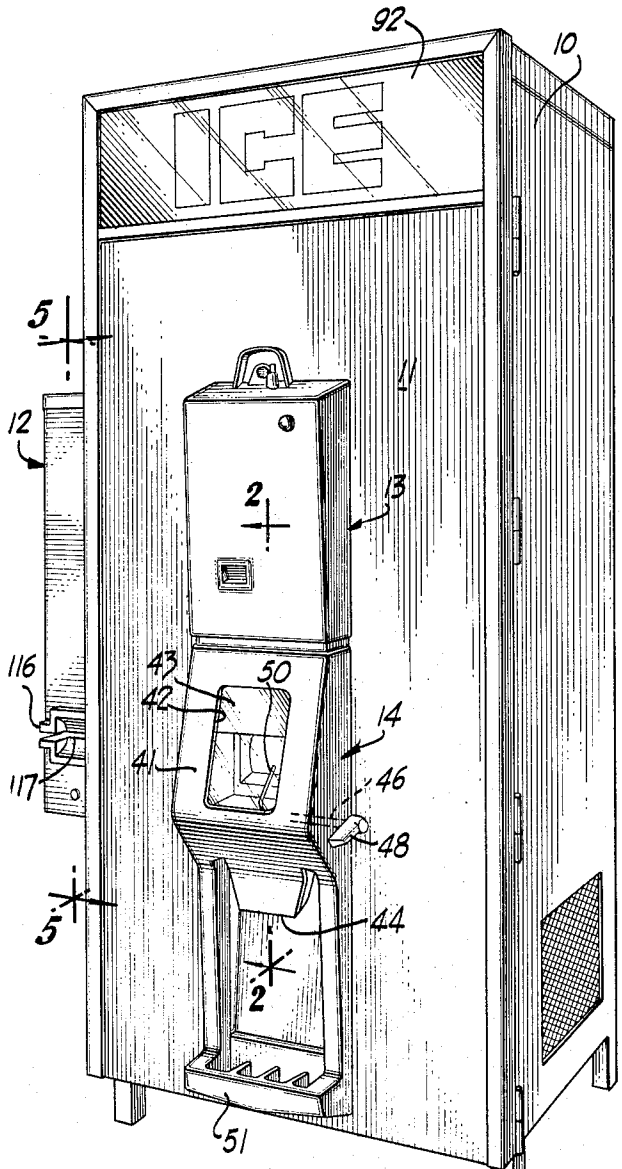


Fig. 7

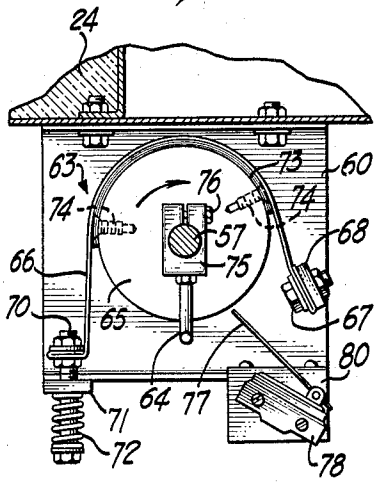
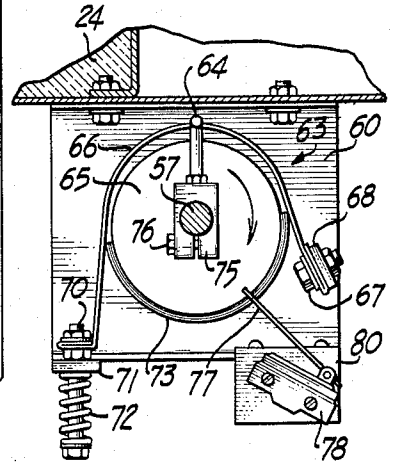


Fig. 8



INVENTORS
WILLIAM A. ESCHENBURG AND
WILLIAM S. TAYLOR
BY
Cromwell, Greist and Warden
ATTORNEYS

Jan. 28, 1964 W. A. ESCHENBURG ETAL 3,119,518

ICE DISPENSING MACHINE

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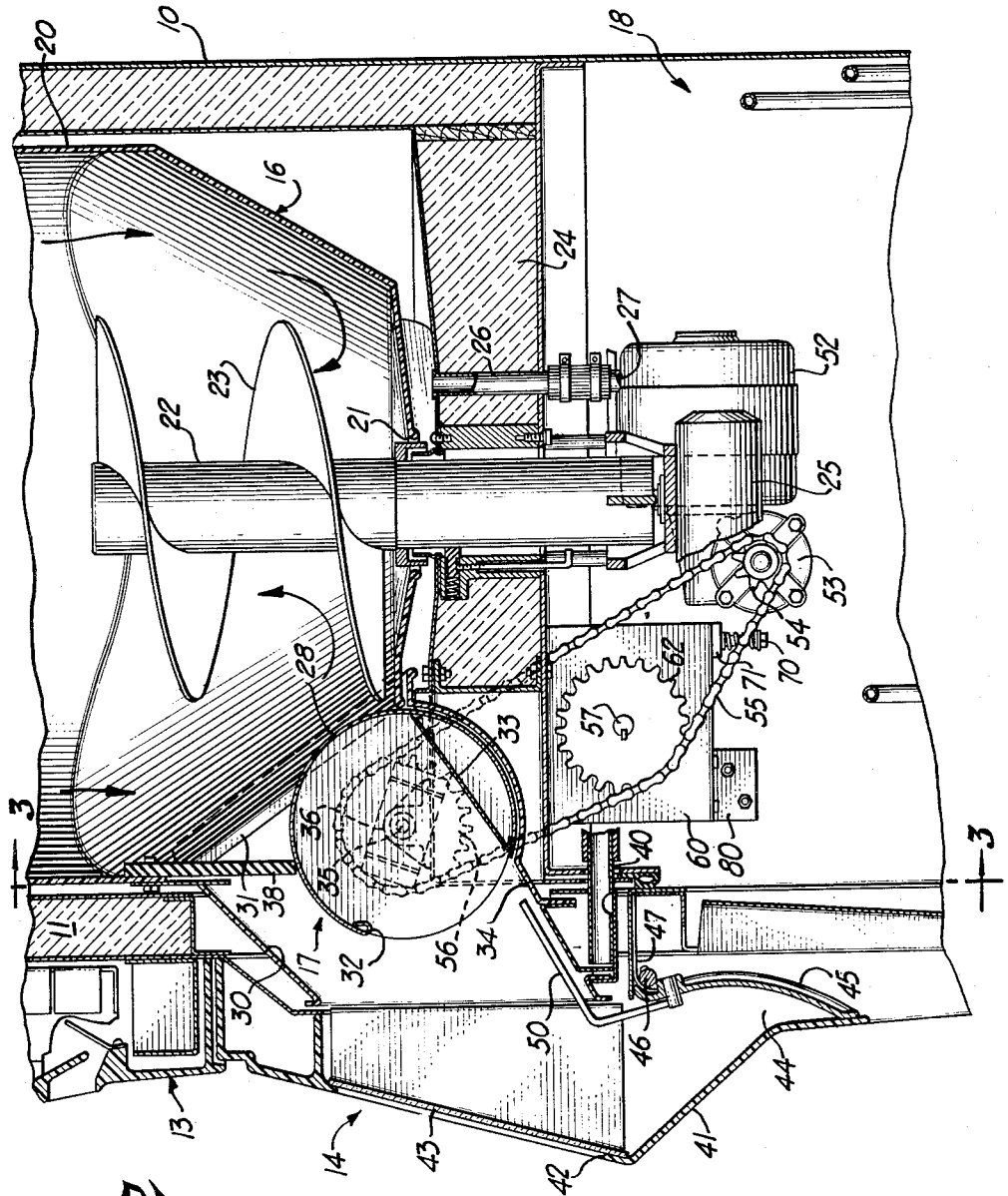


Fig. 2

INVENTORS
WILLIAM A. ESCHENBURG AND
WILLIAM S. TAYLOR
BY
Cromwell, Greist and Warden
ATTORNEYS

Jan. 28, 1964 W. A. ESCHENBURG ETAL 3,119,518

ICE DISPENSING MACHINE

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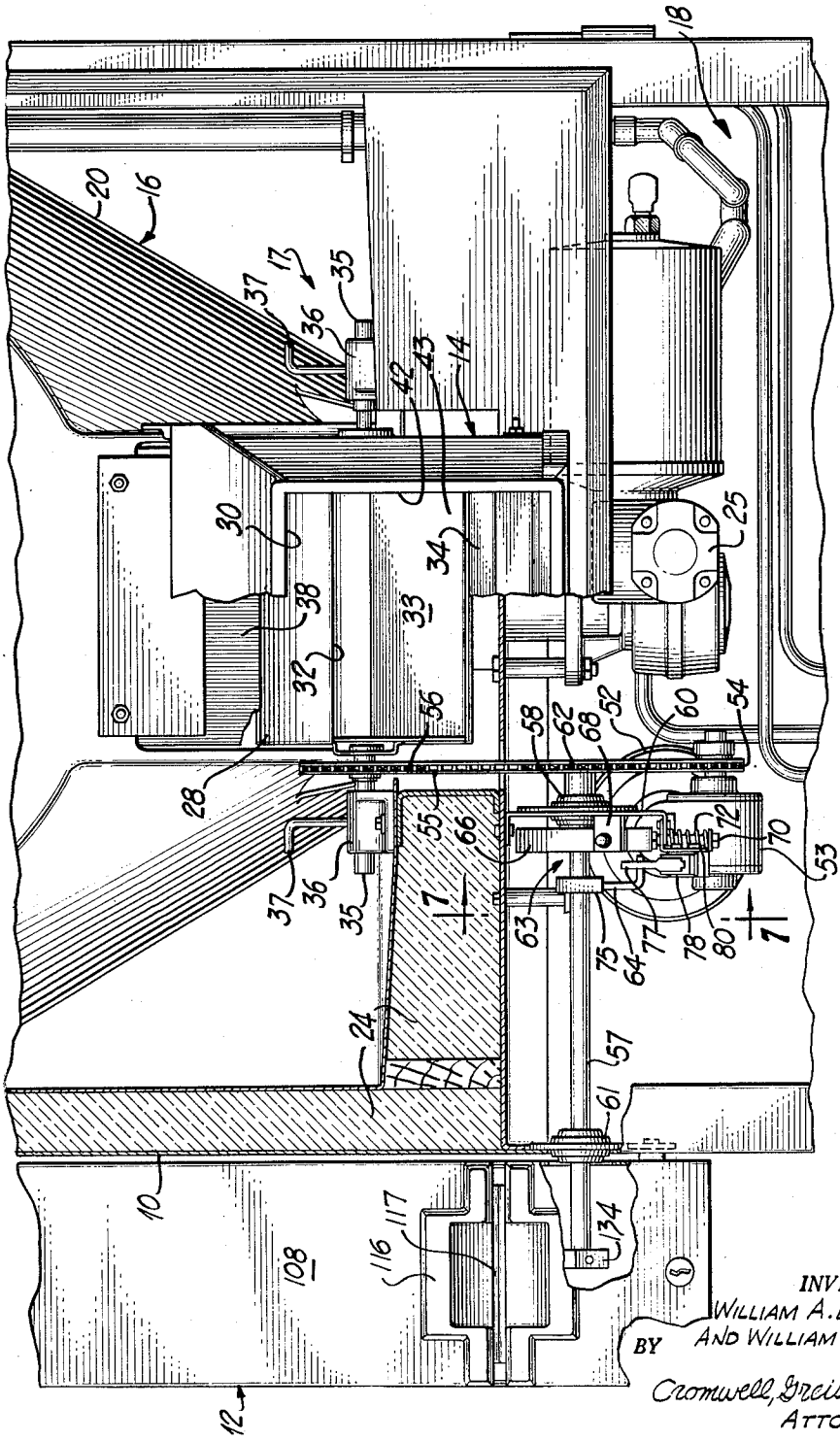


FIG. 3

INVENTORS
WILLIAM A. ESCHENBURG
AND WILLIAM S. TAYLOR
BY
Cromwell, Greistand Worden
ATTORNEYS

Jan. 28, 1964 W. A. ESCHENBURG ETAL 3,119,518

ICE DISPENSING MACHINE

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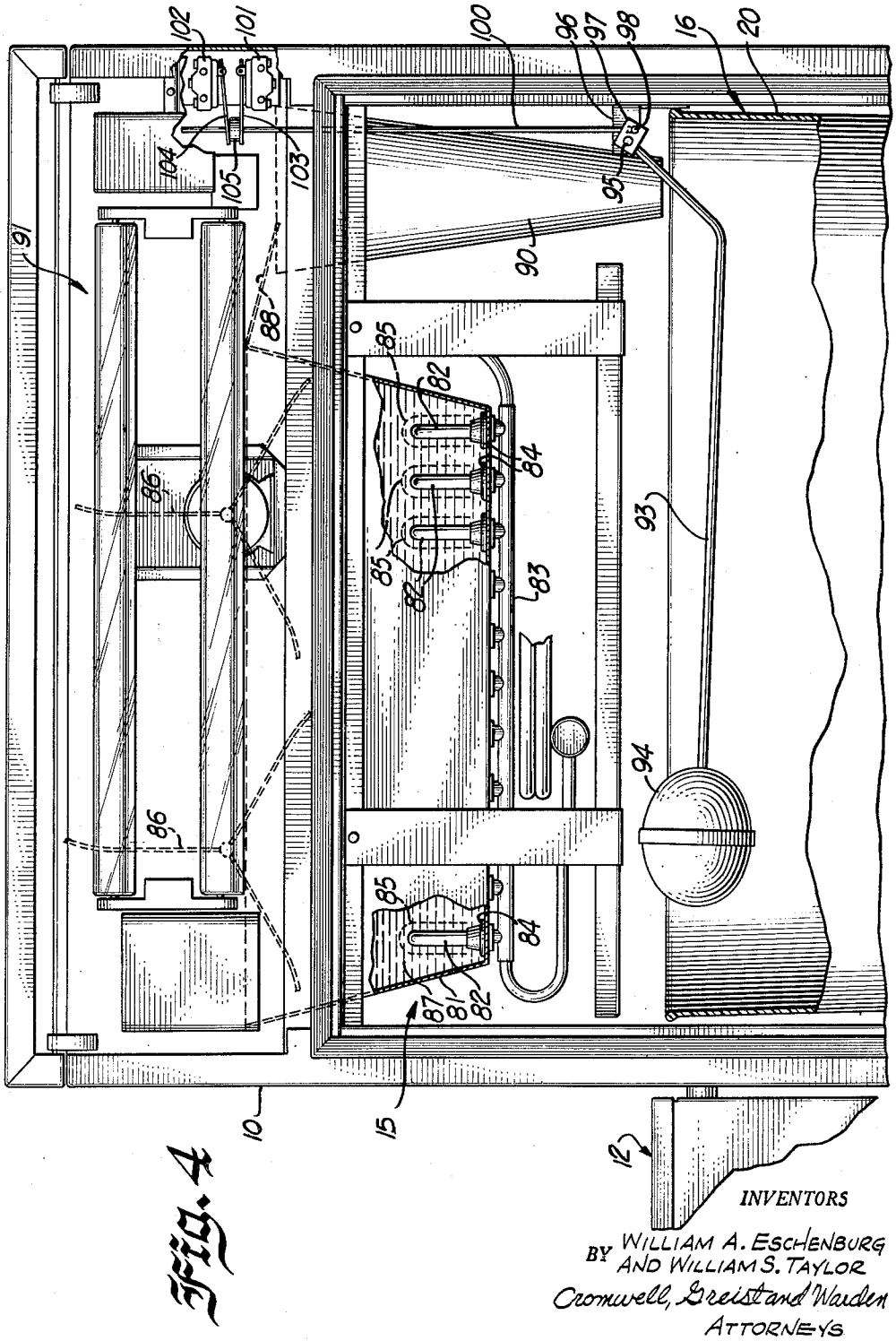


FIG. 4

INVENTORS

BY WILLIAM A. ESCHENBURG AND WILLIAM S. TAYLOR

Cromwell, Greist and Warden

ATTORNEYS

Jan. 28, 1964 W. A. ESCHENBURG ETAL 3,119,518

ICE DISPENSING MACHINE

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Fig. 5

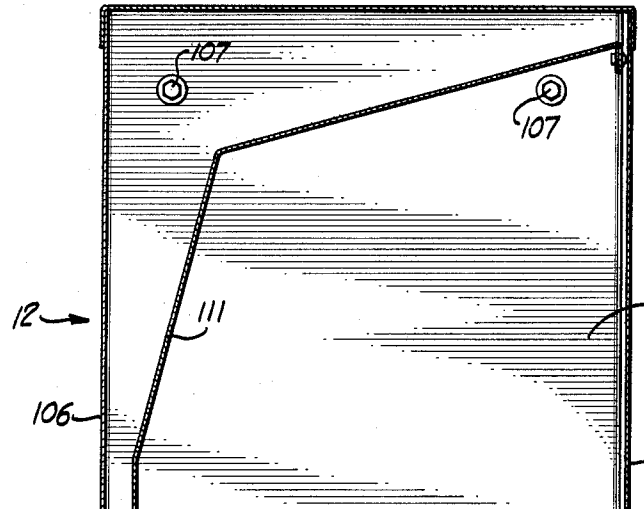
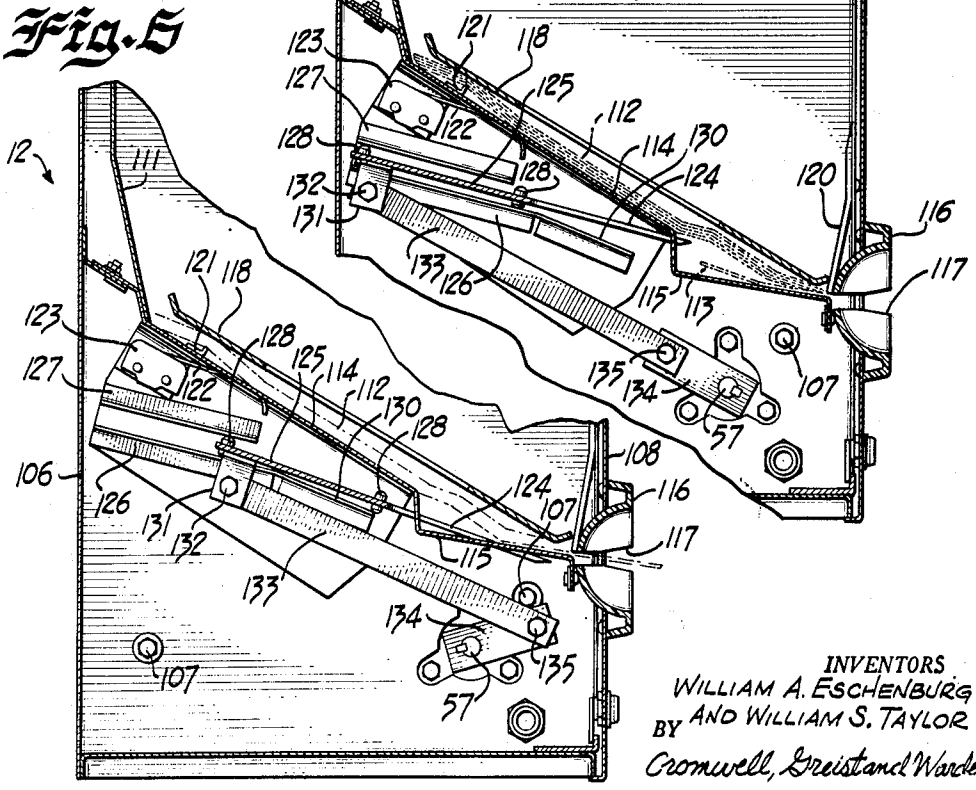


Fig. 6



INVENTORS
WILLIAM A. ESCHENBURG
AND WILLIAM S. TAYLOR
BY Cromwell, Greistand Warden
ATTORNEYS.

United States Patent Office 3,119,518 Patented Jan. 28, 1964

3,119,518

ICE DISPENSING MACHINE

William A. Eschenburg and William S. Taylor, Beloit, Wis., assignors, by mesne assignments, to J. B. Post Company, Wilkes-Barre, Pa., a corporation of Pennsylvania

Filed Jan. 30, 1961, Ser. No. 85,654
4 Claims. (Cl. 221—96)

The present invention relates to new and improved vending apparatus and product container dispensing means forming a part thereof, the apparatus in the embodiment to be described being especially adapted for use in the forming, storing and vending of ice particles. More specifically, the present invention is directed to improvements in the ice making and vending machine of our application Serial No. 693,928, filed November 1, 1957, now Patent No. 2,969,650 issued January 31, 1961, of which this is a continuation-in-part.

Different forms of unitized product storing and dispensing machines have been developed for substantially widespread commercial use. Examples of the simpler types of such machines which are most commonly known include candy vending and other solid article vending machines. Vending machines of a more complicated nature are those designed for handling liquid products, such as soft drinks, wherein the drinks are actually mixed automatically within the machine and are dispensed therefrom upon operation of the same. Because of the automatic operational characteristics of such machines, widespread use of the same is common and considerable quantities of the products can be sold without any substantial expense from the standpoint of labor accompanying such sales. With this advantage along with other well known advantages, the demand for automatic vending machines for use with many different types of products is great. However, limitations in the use of coin operated or otherwise automatically operated vending machines exist where the product involved is difficult to store or handle for vending purposes, the electro-mechanical operating mechanisms of the machines are of a complex nature requiring frequent and expensive maintenance, and vended product container dispensing means are subject to uncontrolled use to an extent that container supply is exhausted well prior to predetermined intervals of planned vending machine servicing.

The foregoing limitations are especially applicable to apparatus proposed for the vending of particles of ice, in cube form or the like, suitable for immediate use without further size reduction. Ice cubes are used for a variety of purposes in substantial quantities and due to their tendency to become fused together during storage, it is difficult to store a quantity of the same without coherence or fusing occurring unless, of course, each individual cube is maintained separately out of contact with adjacent cubes. Separation of ice cubes for storage purposes is impractical and our above identified copending application discloses a special storage arrangement whereby a substantial mass of accumulated ice particles may be indefinitely stored for the purpose of meeting periodical peak demand in vending and without undesirable coherence or fusing between particles occurring.

In the vending of ice particles it is necessary that containers be supplied for use by the purchaser. Without an adequate supply of containers available, the vending machine would be subjected to periods of inoperation thus materially limiting its commercial value. The provision of an uncontrolled supply of containers is considered impractical as the containers are often wasted or used for other purposes. An ice making and vending machine of the type disclosed in our earlier application is fully automatic in that the machine is capable of continuously producing an adequate supply of ice particles for vending purposes and storing an adequate accumulated mass of the ice particles for the accommodation of periodical peak demands in vending. Thus, with a machine of this type, it is essential that automatically controlled container dispensing means are provided in order to make full utilization of the fully automatic characteristics of the basic machine.

It is an object of the present invention to provide a new and improved combination vending machine for multiple product mass vending, and container dispensing means for dispensing product mass containers concurrently and automatically with product mass vending.

Another object is to provide a new and improved drive means for use in a combination vending machine and container dispensing device, the drive means being adapted to provide concurrent operation of multiple product mass vending means and product mass container dispensing means in an uncomplicated manner and with minimum maintenance requirements.

Still a further object is to provide a new and improved bag dispenser for use with a vending machine, the dispenser being adapted to store a plurality of product containers therein and including means for automatically dispensing separate containers in an efficient successive manner.

Still a further object is to provide a new and improved ice making and vending machine which provides for controlled ice particle formation, substantial capacity ice particle storage without coherence and fusion occurring and efficient ice particle vending as controlled by means preventing ice particle mass formation during the vending operation.

Other objects not specifically set forth will become apparent from the following detailed description of the present invention made in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective of the ice making and vending machine of the present invention including as a part thereof the container dispensing means;

FIG. 2 is an enlarged fragmentary section of a portion of the machine of FIG. 1 taken generally along line 2—2 therein, this view illustrating the drive means constituting a part of the present invention and a part of the ice particle storage means as well as the ice particle vending means of the machine;

FIG. 3 is a fragmentary section of the elements of FIG. 2 taken generally along line 3—3 therein;

FIG. 4 is an enlarged fragmentary and partly sectioned view of the ice making portion of the machine of FIG. 1 as well as the top portion of the ice storage means of the machine, the illustration of FIG. 4 being viewed from the front face of the machine of FIG. 1 with the top cabinet door portion thereof removed;

FIG. 5 is an enlarged fragmentary section of the product container dispensing means forming a part of the invention, this view being taken generally along line 5—5 in FIG. 1;

FIG. 6 is a fragmentary section of the lower portion of the product container dispensing means of FIG. 5 illustrating operation thereof;

FIG. 7 is an enlarged fragmentary section of a portion of the drive means taken generally along line 7—7 in FIG. 3; and

FIG. 8 is a view similar to FIG. 7 illustrating operational aspects of the portion of the drive means shown therein.

The ice making and vending apparatus of FIG. 1 generally comprises an insulated cabinet-type housing **10** closed along the front face thereof by a hingedly mounted door **11**. Suitably mounted on one side surface of the

cabinet **10** is a container dispensing means in the form of a bag dispenser **12** which forms a part of the present invention. The door **11** carries a known type of coin operated vending control mechanism **13** which does not form a part of the present invention, and a chute-type product delivery housing **14** which is suitably aligned with a product delivery opening formed in the door **11**. The cabinet **10** as covered in our aforementioned application generally includes therein an ice particle forming portion, an ice particle storage portion, an ice particle vending portion and a suitable refrigeration system operating mechanism. The ice particle forming portion **15** is located in the top of cabinet **10** and is generally illustrated in FIG. 4. The ice particle storage portion **16** is positioned below the ice particle forming portion **15** in the cabinet **10** and is generally illustrated in FIGS. 2–4. The ice particle vending portion **17** is located to one side of the bottom portion of the ice particle storage portion **16** and is illustrated in FIGS. 2 and 3. The operating components of the refrigeration system are mounted in the cabinet **10** below the ice particle storage means **16** in an area generally designated by the numeral **18** as illustrated in FIGS. 2 and 3.

Referring particularly to FIGS. 2 and 3, the ice particle storage means **16** comprises a storage bin **20** formed with a bottom section which is frusto-conical in shape. The bottom section, by way of example only, may conform to a 60° true angle cone. The upper edge of the cone-shaped bottom section has integrally joined therewith a rectangular section the lower margin of which conforms to a true line of intersection of a rectangle with a cone. The particular shape of the storage bin **20** is covered in our aforementioned application and it is believed sufficient for the purposes of the present invention to merely describe the storage bin **20** as being adapted to receive therein an accumulation of ice particles which, by reason of the shape of the lower section of the bin, tend to accumulate toward the center bottom surface area of the bin.

The bottom surface of the bin **20** is provided with a centrally located aperture **21** through which projects an upstanding auger **22** provided wtih a continuous helical blade portion **23**. The auger **22** is suitably journaled through an insulated partition **24** forming a part of the cabinet **10** and isolating the upper portion of the cabinet wherein ice particles are made, stored and vended from the lower portion **18** of the cabinet wherein the refrigeration system operating apparatus is mounted. An electric motor **25** is suitably mounted in the lower portion **18** of the cabinet **10** and is drivingly connected to the auger **22** through cooperating means of any suitable type which are not shown. The motor **25** operates continuously during use of the ice making and vending machine thus providing a continuous drive for the auger **22** which rotates in the storage bin **20**.

A a result of continuous auger rotation in the storage bin **20**, an accumulated mass of ice particles contained therein is subjected to a constant boiling-type agitation or motion to prevent coherence and fusing between the ice particles during their retention in the storage bin. This unique method of storing ice particles is fully covered in our aforementioned application and generally consists of continuously and slowly moving a centrally located mass of ice particles in an upwardly direction from the bottom of the bin **20** and radially outwardly from the upper center portion of the bin **20** in all directions relative to the auger **22**. The ice particles deposited on the top surface portion of the accumulated mass then slowly move downwardly in response to the gravitational effect and eventually, by reason of the shape of the lower section of the storage bin **20**, return into contact with the blade **23** of the auger **22**. Thus continuous circulation of the ice particles accumulated in the storage bin **20** occurs with the circulatory motion of the particles being maintained at a sufficiently slow rate to prevent breakage thereof, but at a sufficiently fast rate to prevent fusing coherence

therebetween. Any water collecting in the storage bin **20** flows therefrom through the bottom opening **21** onto the top surface of the insulated partition **24**. This top surface is shaped for drainage of water into a drain pipe or tube **26** which is suitably connected to a flexible hose **27** or the like which provides for water removal from the machine.

The ice particle vending means **17** generally comprises a rotatable drum **28** which is mounted in a chute-like vending member **30** wihch extends through a delivery opening in the cabinet door **11** and into communication with the delivery chute device **14** mounted on the door **11**. As best shown in FIG. 2, the drum **28** is mounted adjacent an opening **31** in the bottom section of the storage bin **20**. The drum itself is provided with an ice particle receiving and discharge opening **32** which rotates toward and away from the bin opening **31**. The drum further includes internally thereof a false bottom **33** providing a flat ice particle supporting surface which becomes aligned with the bottom ice particle delivery surface **34** of the chute **30** in the vending position of the drum as illustrated in FIG. 2.

Referring particularly to FIG. 3, the drum **28** is formed with opposite end projecting pins **35** suitably received in bearings **36** which are mounted on the cabinet partition **24**. Releasable locking members **37** function to suitably confine the pins **35** in the bearing **36** but are readily removable to permit complete disassembly of drum **28** from the machine for cleaning and maintenance purposes.

Referring particularly to FIG. 2, vending operation of the machine as actuated by the coin operated mechanism **13** results in rotation of the drum **28** with eventual alignment of the drum opening **32** with the storage bin opening **31**. At this point of rotation of the drum **28** a predetermined quantity of ice particles is delivered by gravity from the bin **20** into the drum and continued rotation of the drum results in the discharging of this predetermined quantity onto the bottom surface **34** of the chute member **30**. A resilient scrapper-type blade member **38** is suitably mounted in the cabinet **10** and projects downwardly into the chute member **30** and into rubbing engagement with the outer surface of the drum **28**. This member prevents the movement of ice particles from the bin **20** around the outer surface of the drum **28** and into the delivery chute **30**. Any water flowing from the drum **28** onto the surface **34** of the delivery chute **30** is collected in a drain member **40** and delivered by suitable hose-type means to a collection pan or external drain not shown.

The vended mass of ice particles delivered onto the surface **34** moves along the same into the delivery chute assembly **14**. This assembly comprises a housing portion **41** having an aperture **42** formed therein which is closed off by a transparent plate **43** through which ice particle vending may be observed. The central bottom portion of the housing **41** as shown in FIGS. 1 and 2 is inclined inwardly and defines internally thereof a nozzle-type ice particle discharge area **44** which is closed off by a movable closure plate-like member **45**.

The closure member **45** is in the form of a bowed or arcuate plate which is suitably attached to a transverse operating rod **46** journaled in the housing **41**. As shown in FIG. 2, a leaf spring **47** fixed to the door **11** of the cabinet has and end portion which functions with the closure member **45** to spring urge the same into nozzle closing position. FIG. 1 illustrates an operating handle **48** which is suitably connected to the rod **46** and which upon downward movement pivots the closure plate **45** away from the bottom of the housing **41** to open the nozzle area and permit the ice particles collected therein to be discharged downwardly.

The closure plate **45** as shown in FIG. 2 carries a generally L-shaped, relatively rigid finger member **50** which extends upwardly and over the ice particle receiving surface **34** of the chute member **30**. Closure plate opening operation results in the finger **50** moving upwardly and

away from the ice particle receiving surface 34 and thus through the mass of ice particles deposited thereon to separate any cohered ice particles and provide for complete separation of the mass from the surface 34. In this manner delivery of all of the ice particles vended by the durm 28 is assured and the cooperating delivery chute elements will not become clogged by cohered of fused masses of ice particles.

Referring particularly to FIG. 1, the housing 41 of the delivery chute assembly 14 mounted on the door 11 has a portion thereof extending downwardly to form a container supporting rack-like member 51. A suitable container such as a bag or the like may be supported on the rack 51 and the top open end of the bag may be received about the nozzle-like area of the delivery chute assembly. Thus upon vending operation of the ice machine, a measured mass of ice particles is delivered into the delivery chute assembly 14 and may be readily observed by the purchaser through the transparent plate 43. Simultaneously with vending a bag-type container is automatically dispensed from the bag dispensing device 12 as will be described. The vended mass of ice particles is retained in the delivery chute assembly 14 while the purchaser opens the dispensed bag and places the same in covering relation about the bottom nozzle delivery portion of the assembly 41. The handle 48 is then pressed downwardly and the nozzle area 44 of the chute assembly 14 is opened and the ice particles drop into the bag supported on the rack 51.

The unique drive mechanism constituting a part of the present invention is best illustrated in FIGS. 2 and 3. This mechanism includes an electric motor 52 suitably mounted in the bottom area 18 of the cabinet 10 and connected to a gear box 53 to power a sprocket 54 attached thereto. The sprocket 54 is engaged with a drive chain 55 which in turn is engaged with a driven sprocket 56 suitably mounted on a pin 35 of the drum 28. The insertion of a coin in the coin operated mechanism 13 results in energization of the motor 52 through means of an electrical circuit not shown but which is of well known type. The chain 55 drives the drum 28 and the ice particle mass vending operation previously described results.

In providing for concurrent container dispensing during product vending, and further to provide for predetermined operational cycle termination, a special power take-off mechanism forms a part of the drive arrangement. This mechanism includes a rotatable shaft 57 which is supported near opposite ends thereof in a bearing assembly 58 suitably carried by a bracket 60 attached to the insulated partition 24, and a bearing assembly 61 mounted in the side wall of the cabinet 10 immediately adjacent the bag dispensing device 12. The innermost end of the shaft 57 as viewed in FIGS. 2 and 3 carries thereon an idler sprocket 62 which is engaged with the chain 55 and is driven thereby resulting in rotation of the shaft 57. Between the bearing assemblies 58 and 61, the shaft 57 has operatively associated therewith a brake assembly generally designated by the numeral 63 and a switch operating finger 64. FIGS. 7 and 8 illustrate these elements and the functioning thereof in detail.

The brake assembly 63 comprises a brake drum 65 fixedly mounted on the shaft 57 with its center offset from the center of rotation of the shaft 57. Thus the brake drum 65 is eccentrically mounted on the shaft 57 for controlled engagement and disengagement with a metallic brake band-type element 66. This element is mounted at one end thereof by a fixed bolt assembly 67 which is suitably attached through a flange 68 to the bracket 60. The other end of the band-like element 66 is attached to a spring mounted bolt assembly 70 which extends through a flange like member 71 carried by the bracket 60. A coil spring 72 forming a part of the bolt assembly 70 provides for resilient movement of the band element 66 in response to brake drum pressure thereagainst.

Rotation of the shaft 57 to the position shown in FIG. 7 results in tight engagement of a friction brake pad or

lining 73 with the inner surface of the band element 66. The lining 73 is suitably secured to the outer periphery of the brake drum 65 by screws 74 or the like. The lining 73 covers only a prescribed portion of the outer periphery of the brake drum 65, this portion being that which is located relative to the true center of the brake drum 65 to place the true center between the lining and the shaft 57. When the lining 73 is engaged wtih the band 66 as shown in FIG. 7, the bolt assembly 70 is pulled upwardly as illustrated resulting in compression of the coil spring 72. Thus tight frictional engagement occurs between the band 66 and the lining 73 to an extent that rotation of the shaft 57 is stopped. As shown in FIG. 8, rotation of the shaft 57 to an extent that the lining 73 is moved out of contact with the band 66 results in expansion of the coil spring 72 and a drawing downwardly of the band 66. With the lining 73 out of contact with the band 66, the shaft 57 is free to rotate through a prescribed arc.

De-energization of the motor 52 is controlled by the switch operating finger 64 carried on the shaft 57. As best shown in FIGS. 7 and 8, the finger 64 is fixedly carried by split yoke member 75 which is fixed to the shaft 57 by a fastening element 76. The finger 64 is generally L-shaped and the outer end thereof rotates about the center of the shaft 57 concentrically therewith. The positioning of the outer end of the finger 64 is arranged for contact with a switch operating arm 77 forming a part of a motor control switch 78 suitably mounted on a bracket member 80 which is attached to the bracket 60. The finger 64 projects generally away from the lining 73 carried on the drum 65 to provide for contact thereby with the switch arm 77 just prior to full frictional engagement of the lining 73 with the band 66. Thus in the direction of rotation of the shaft 57 as indicated by the arrow in FIG. 7, the outer end of the finger 64 will engage the switch arm 77 and operate the switch 78 just prior to complete engagement of the lining 73 with the band 66 in the position shown in FIG. 7.

Operation of the switch 78 in the manner described results in de-energization of the drive assembly and de-energization of the motor 52 to complete the ice particle vending and bag dispensing cycle. The brake assembly 63 is provided to prevent overdrive or overrun of the vending drum 28 upon completion of the vending cycle of operation. It will be appreciated that mere de-energization of the motor 52 itself will not result in complete and immediate stopping of the various elements of the drive arrangement. Accordingly, the drum assembly 63 provides a positive stop control arrangement and the various elements are related to provide for consistently accurate stopping of the vending drum 28 in the position shown in FIG. 2. The electrical circuit including the switch 78 and coin operated switch (not shown) in the coin operated mechanism 13 is of a known type capable of being energized by coin operation involving a resetting of the switch 78 for subsequent de-energization of the circuit by contact of the finger 64 with the switch arm 77. Use of the rotating shaft 57 in operating the bag dispensing mechanism 12 will be subsequently described.

FIG. 4 illustrates the ice forming portion 15 of the machine and in conjunction therewith illustrates a storage bin full and empty control mechanism forming a part of the present invention. The ice forming mechanism 15 illustrated is of known type and is fully disclosed in U.S. Patent No. 2,696,717. For this reason, only certain of the basic structural features will be described for the purpose of understanding the operation of the machine. The mechanism 15 includes an open top tank 81 having mounted on the bottom wall thereof a plurality of vertically upwardly directed freezing tubes or fingers 82 which, as disclosed in the aforementioned patent, are hollow tubes having received therein centrally disposed refrigerant conduits which feed refrigerant from a distributor line 83 into the fingers 82 in a continuous manner with the refrigerant being continuously withdrawn therefrom

by suitable conduit means. Rubber grommets 84 insulate each finger 82 relative to the bottom wall of the tank 81 and the tank is substantially filled with fresh water for ice particle forming purposes.

The particular form of ice particle or body 85 formed on each finger 82 is illustrated in broken lines in FIG. 4. The ice particle is generally of a size readily usable in individual glasses for beverage cooling purposes and is provided with a relatively flat bottom surface having a central opening extending upwardly short of the top rounded end thereof. Thus each ice particle takes the general shape of its associated finger 82 during formation of the same.

Suitably mounted above the tank 81 are a pair of paddle members 86 which rotate in a counter-clockwise direction as viewed in FIG. 4 to continuously agitate the body of water 87 contained in the tank 81. One of the functions of the paddle members 86 is to provide for continuous agitation of the water thus permitting the formation of substantially clear ice particles on the tubes 82. The cycle of ice particle formation is controlled by suitable means (not shown) forming a part of the refrigeration system which permits circulation of hot refrigerant through the tubes 32 following completed ice particle formation thereon to automatically detach each ice particle from its respective tube and permit the same to float upwardly towards the surface of the water 87 in the tank. Upward floating of the ice particles results in contact thereof with the paddle members 86 and these members move the ice particles toward the right-hand side of the tank 81 as viewed in FIG. 4. The right-hand paddle member 86 as viewed lifts the ice particles over the adjacent edge of the tank 81 and these particles slide along a supporting surface 88 into a downwardly directed delivery chute 90 which deposits the ice particles in the storage bin 20. The top portion of the cabinet 10 may also include a lighting fixture generally designated by the numeral 91 for illumination of a translucent advertising panel 92 shown in FIG. 1.

When the ice machine is subjected to at least fairly frequent vending operations, continuous operation of the ice forming assembly 15 is necessary to replenish the supply accumulating in the storage bin 20. However, during periods of extended inoperation, the storage bin 20 will be filled and the ice forming assembly 15 must be de-activated. In order to provide an automatic control for the level of ice particles accumulated in the storage bin 20, a float-like member 93 is mounted in the upper end of the bin. This member includes a bulb-like end portion 94 which maintains contact with the top surface of accumulated ice particles in the bin. The arm portion of the member 93 is pivotally attached through a pin 95 to a bracket element 96 carried by the cabinet 10. The arm portion has fixedly attached thereto a plate-like link 97 which also pivots about the pin 95 and in spaced relation to the pin 95 has attached thereto a second pin 98. This pin is attached to a rocker-type arm 100 which extends upwardly in the cabinet 10 to one side of a pair of fixedly positioned, juxtaposed switches 101 and 102. These switches include operating switch arms 103 and 104 respectively. The upper end of the rocker-type arm 100 carries a fixed block-like element 105 thereon which moves with the arm in contact with the switch arms 103 and 104. Thus pivoting of the float-like member 93 results in vertical reciprocal movement of the rocker-type arm 100 and alternate operation of the switches 101 and 102 through the switch arms 103 and 104.

The switch 101 is connected to a suitable electrical circuit which provides for on and off operation of the ice particle forming assembly 15. The switch 102 is connected to the electrical circuit controlling vending operation. As illustrative of operation of the full and empty control, the float-like member 93 in the position illustrated in FIG. 4 indicates a filled bin 20. The switch arm operating block 105 is positioned to provide for opening of the switch 101 and closing of the switch 102. The switch 101 by reason of being open prevents operation of the ice particle forming assembly 15 and thus interrupts further delivery of ice particles into the bin 20. The switch 102 being in the machine vending cycle and being closed as illustrated in FIG. 4 permits vending operation of the machine. In the event that excessive vending occurs to the point that the accumulated supply of ice particles in the bin is completely exhausted and continuous operation of the ice particle forming assembly 15 is insufficient to provide a supply of ice particles adequate to meet the vending requirements, the float-like member will be pivoted downwardly and the rocker-type arm 100 will be moved upwardly to an extent that the switch 101 is closed and the switch 102 is open. Thus the vending circuit will be interrupted and vending cannot take place. Meanwhile, the ice particle forming assembly will be operating and when sufficient ice particle acumulation occurs in bin 20, the rocker-type arm 100 will be positioned to result in the closing of the switch 102 to permit vending operation while also maintaining the circuit including the switch 101 closed for continued ice particle forming operation.

FIGS. 5 and 6 illustrate in detail the bag dispensing mechanism 12 of the present invention. This mechanism includes a housing 106 suitably attached by fasteners 107 to the cabinet 10 of the ice machine. The front face of the housing is formed with a removable plate 108 by means of which access is gained into the housing into the container or bag storage area 110 which is defined by an inner housing 111. The inner housing includes an upwardly inclined top wall portion, a concave rear wall portion and a downwardly inclined bottom wall portion. The shape of the housing 111 is such that a substantial supply of folded paper bags 112 illustrated in broken lines may be stacked therein. The bags 112 are formed in the conventional manner having an open end portion and a closed bottom end portion which is folded upon itself to provide a bottom flap-like portion 113. The bags are stacked with the bottom flap portion 113 facing down for a purpose to be described.

The bottom downwardly inclined portion of the inner housing 111 defines a bag supporting surface 114 which includes a downwardly offset portion 115 in which the bottom ends of the bags 112 are received. The offset portion 115 is aligned with a dispensing face member 116 which is formed with a bag delivery slot 117. A weight in the form of a relatively flat plate 118 is placed on top of the stack of bags 112 received in the inner housing 111 to force the same downwardly against the bottom supporting surface 114. A plate guide member 20 is suitably mounted within the housing 111 and the outer edge of the weight plate 118 rides against the guide plate 120 to hold the plate in proper position. The free edge of the guide member 120 is spaced from the offset portion 115 sufficiently to permit a single bag to be pushed by the dispensing mechanism between the elements into the dispensing slot 117. A bag lift element 121 is carried on the supporting surface 114 near the upper end thereof and functions to raise the upper ends of the bags 112 to permit dropping of an end of a single bag during dispensing thereof onto a counter spring 122 attached to a counter mechanism 123 for bag inventory purposes.

The offset portion 115 of the supporting surface 114 is suitably slotted to receive therethrough a bag engaging means in the form of a projecting finger 124. The finger 124 is designed to engage the bottom end of a bag 112 between the rearwardly folded portion 113 thereof and the main portion of the bag and in doing so to permit pushing of the bottom bag out from under the bag stack and into the dispensing slot 117. The bottom end of the bag will then project out of the main housing 106 and a purchaser may readily grasp the same and completely

remove the bag from the mechanism 12 for ice particle filling thereof in the manner previously described.

The bag dispensing operating mechanism includes the finger 124 described above which constitutes a part of a sliding plate-like member 125 which is slidably mounted between a lower guide plate 126 and an upper guide plate 127. The plate 125 has fixedly secured therethrough transversely extending guide pins 128 which control the positioning of the plate between the guide means 126 and 127. The lower outermost end of the guide plate 126 is provided with a downwardly inclined plate support portion 130 on which the outermost pin 128 will slide during fully extended movement of the plate 125 and finger 124 during the dispensing operation.

The plate 125 is provided with a depending flange 131 to which is pivotally attached by means of a fastener 132 a rocker-type arm 133. The opposite end of the arm 133 is pivotally attached to a rocker lever 134 by a fastener 135. The lever 134 is fixedly attached to the rotating shaft 57 previously described and as best illustrated in FIG. 3.

Rotation of the shaft 57 occurs during vending operation of the ice machine as described above. During rotational operation of this shaft the lever 134 rotates therewith and the rocker-type arm 133 functions to reciprocate the plate 125 and finger 124 towards the right and back to the left as viewed in FIGS. 5 and 6. During this operation the end of the finger 124 engages the free folded bottom portion 113 of a bag 112 and ejects the same through the slot 117 of the bag dispensing member 116. One complete rotation of the shaft 57 returns the plate 125 and finger 124 to its original position from which it can again operate during the next vending cycle to eject another bag. Operation of the brake assembly 63 in the manner previously described also functions to prevent overrun or overdrive of the operating elements of the bag dispensing assembly 12 and thus provides for positively controlled uniform bag dispensing with each vending cycle.

Obviously certain modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

We claim:

1. In combination, a vending machine for multiple product mass vending, and container dispensing means for dispensing product mass containers concurrently with product mass vending, said vending machine comprising product storage means, product dispensing means cooperatively associated with said storage means to remove a predetermined product mass therefrom upon vending operation of said machine, drive means for said dispensing means, and means for energizing said drive means, said container dispensing means comprising multiple container storage means, and single container discharging means operative to dispense a single container concurrently with the dispensing of a predetermined product mass from the storage means of said vending machine, said drive means including power take-off means coupled with said container discharging means to operate the same concurrently with said product dispensing means, said power take-off means including means to de-energize said drive means upon completion of predetermined operation of said power take-off means, and brake drum means eccentrically rotatably operated by said power take-off means and operative with resilient drum engaging means mounted independently of said power take-off means to terminate product mass vending and container dispensing upon predetermined operational cycle completion.

2. Drive means for concurrent operation of multiple product mass vending means and product mass container dispensing means, said drive means comprising power means for connection with a rotating drum-type device forming a part of said vending means for operation thereof, power take-off means connected with said power means for concurrent operation therewith and with said drum-type device, said power take-off means being adapted for connection with said container dispensing means to operate the same, said power take-off means including a brake device operative on said power take-off means to terminate rotation of said drum-type device and operation of said container dispensing means upon predetermined operational cycle completion, said brake device including an eccentrically rotatably mounted brake drum which engages an independently and resiliently mounted brake band element upon operational cycle completion of said drive means and prevents overdrive of said vending and dispensing means.

3. Drive means for concurrent operation of multiple product mass vending means and product mass container dispensing means, said drive means comprising power means for connection with a rotating drum-type device forming a part of said vending means for operation thereof, first switch means connected to said power means to control energization thereof, power take-off means connected with said power means for concurrent operation therewith and with said drum-type device, said power take-off means being adapted for connection with said container dispensing means to operate the same, second switch means connected to said power means to control de-energization thereof, said power take-off means including a second switch means operating means and a brake device operative to terminate rotation of said drum-type device and operation of said container dispensing means upon predetermined operational cycle completion, said brake device including an eccentrically mounted brake drum which engages a resiliently mounted brake band element upon operational cycle completion of said drive means and prevents overdrive of said vending and dispensing means.

4. Drive means for concurrent operation of multiple product mass vending means and product mass container dispensing means, said drive means comprising power means for connection with a rotating drum-type device forming a part of said vending means for operation thereof, first switch means connected to said power means to control energization thereof, rotatable shaft power take-off means connected with said power means for concurrent operation therewith and with said drum-type device, said power take-off means being adapted for connection with said container dispensing means to operate the same, second switch means connected to said power means to control de-energization thereof, said power take-off means including a second switch means operating means projecting radially therefrom and a brake device operative to terminate rotation of said drum-type device and operation of said container dispensing means upon predetermined operational cycle completion, said brake device including an eccentrically mounted brake drum which engages a resiliently mounted brake band element upon operational cycle completion of said drive means and prevents overdrive of said vending and dispensing means.

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