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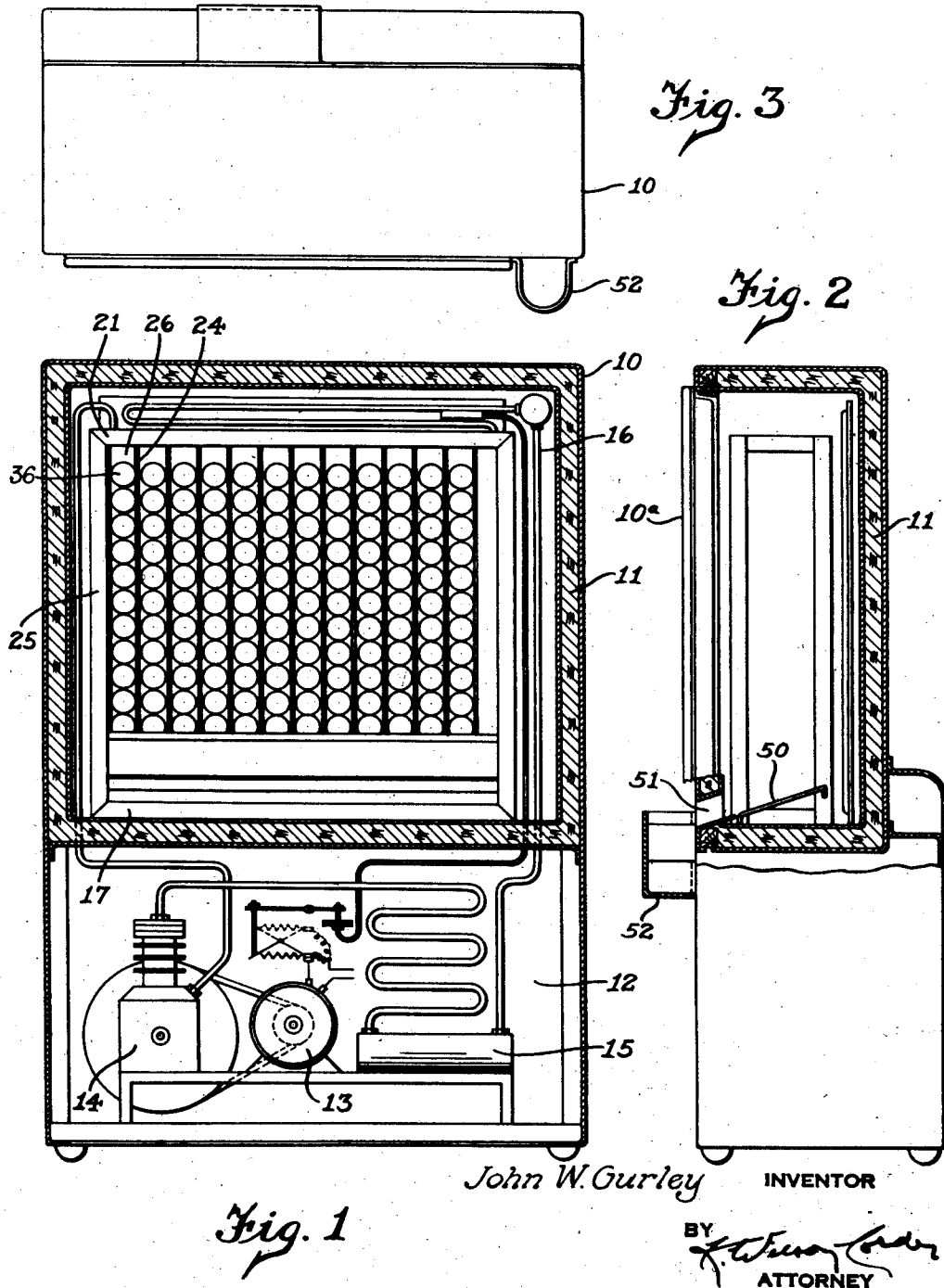
J. W. GURLEY

2,187,568

VENDING MACHINE

Filed May 17, 1937

3 Sheets-Sheet 1



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2,187,568

VENDING MACHINE

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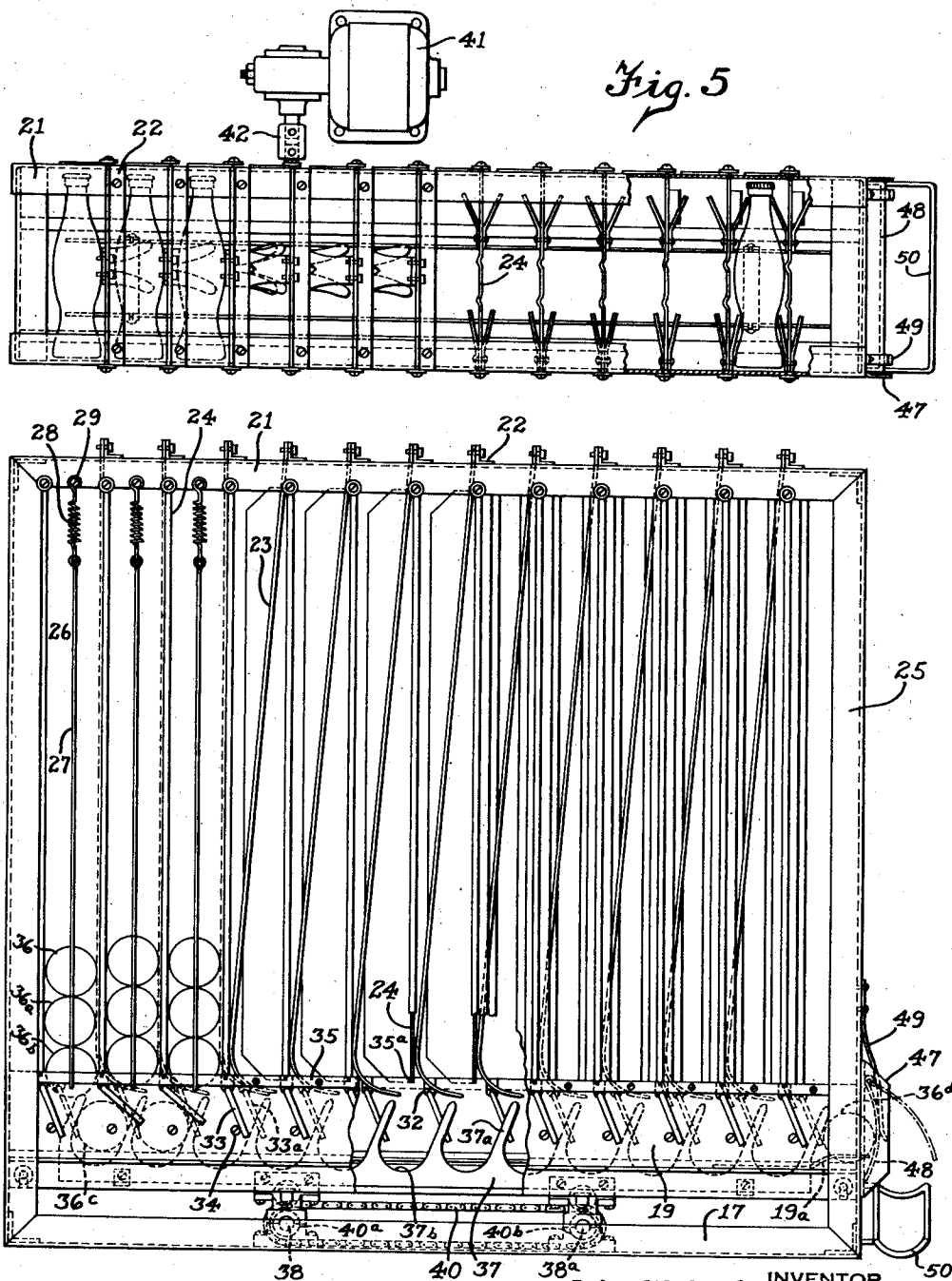


Fig. 4

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3 Sheets-Sheet 3

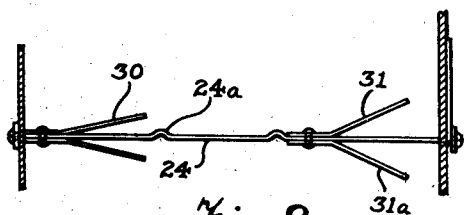


Fig. 8

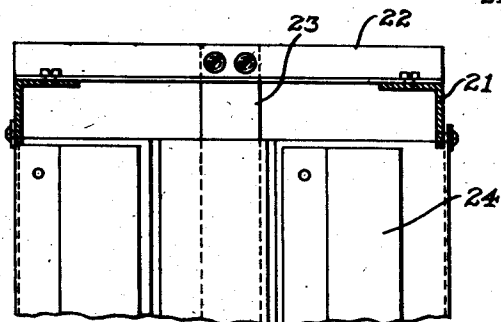


Fig. 6

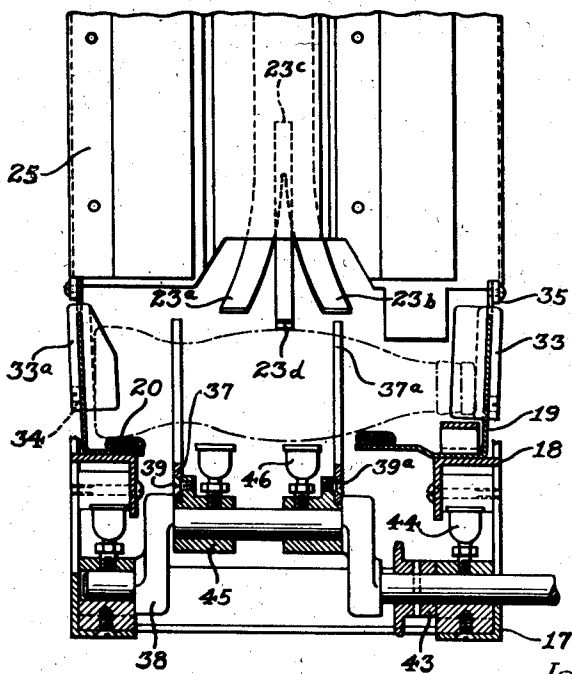


Fig. 7

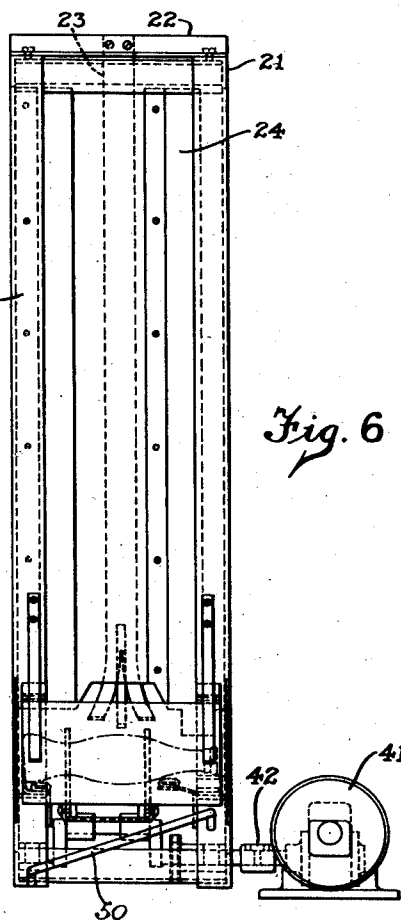
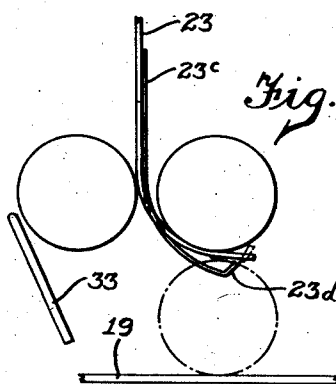


Fig. 9



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2,187,568

VENDING MACHINE

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Application May 17, 1937, Serial No. 142,949

9 Claims. (Cl. 312—36)

This invention relates to merchandising and more particularly to a new and improved vending machine, contemplated primarily for use in dispensing bottled beverages to the consuming public.

Heretofore many vending machines have been proposed, some of which devices have met with a degree of commercial success, and many of which, because of impracticality, mechanical deficiencies, and other reasons, have added little to the sum total of human progress. In fact, it may be said that while the vending machine art is complex and ramified, said art is not well developed in the sense of having produced sufficient devices of the instant type which are thoroughly satisfactory for all intended purposes, which fact is possibly best understood when considered in the light of the fact that many vending machines have been designed and devised in a haphazard manner without a full consideration and study of the fundamental problems involved, particularly in relation to the specific merchandise which is contemplated to be vend-
ed. In this regard, it will be noted that bottle vending machines generally have previously been designed in such a manner that the transport mechanism is required to handle or carry the weight of all the bottles within the machine at all times, which means that said mechanism is unduly weighted and burdened, with the result that it may break down at times, and with a further result that a greater amount of energy than is necessary is required to be expended in each vending operation.

Again, bottle vending machines are apt to be unduly complex, having a large number of moving parts requiring delicate adjustment, which factor means that servicing must be frequent, and that considerable potential profit time is lost during the course of each year because the machine is out of order.

A further and major objection to present-day bottle vending machines lies in the fact that such are not capable of taking care of an adequate amount of merchandise. That is, due to the design and general construction of such machines, their capacity is comparatively limited, which fact is seriously objectionable for a number of reasons. For example, these devices are frequently placed in factories and the like where employees working on a piece basis hesitate to leave their tasks during working hours, both because of the loss of wages to them, and because such action may incur the displeasure of the management, if frequently repeated. This means

that the vending machines must take care of peak demands at certain times of the day, such as during the noon or lunch hour for example, at which time a small capacity machine may be quickly emptied and profits lost because further merchandise is not available in properly refrigerated condition, this objection also carrying with it certain implications as relating to good will, a potential purchaser, who is denied a drink after he has decided to buy it and placed his coin in the mechanism, possibly reacting unfavorably to a company and/or product which thwarts his wishes in such a manner, this consideration, while largely psychological, possibly becoming important if such an experience is frequently repeated.

Closely associated with this problem of capacity, is the problem of pre-cooling, it being apparent that when bottles of a beverage are placed within a vending machine, it is some time before the refrigeration thereof, regardless of its nature, has suitably cooled the drink to a point assuring a maximum potability. Hence, a customer coming upon a newly filled machine, may secure herefrom a warm or only partially cooled drink, which fails to slake his thirst, and renders him suspicious of vending machines for some time to come. To avoid this, it is desirable to pre-cool quantities of the merchandise to be vend-
ed, in such a manner that the bottles may be placed in the regular dispensing track and be immediately available for public consumption. This desirability of, if not necessity for, pre-cooling, further complicates the problem of securing a vending machine of suitable capacity, it being apparent that some provision must be made within the device for accomplishing this function, and the result often being a machine that is so large and unwieldy as to be objectionable both because of the amount of space it occupies, and because of the difficulty in installing and handling it generally.

An object of the present invention is to provide a vending machine which will provide maximum capacity, at the same time utilizing a minimum of floor space.

Another object is to provide simplicity of construction, and a minimum of moving parts in a device of the instant type.

Another object is to provide cheapness of construction, and economy of maintenance in a bottle vending machine.

A still further object is to provide, in a device of the instant character, an arrangement whereby the weight of the major portion of mer-

chandise available for vending is not carried by the transport mechanism, thereby relieving said mechanism of unnecessary and undue strain.

Another object is to provide an automatic, gravity, spring release feed in such a device.

Another object is to provide means for positively propelling merchandise through a bottle vending machine, insuring delivery of the article to the customer upon each actuation of the transport mechanism.

Still another object is to provide automatic cam means for handling a bottle in a device of the present type.

Another object is to provide automatic spring means augmenting and facilitating the functioning of said cam means.

Another object is to provide positive tamper proof discharge means within a bottle vending machine.

Still another object is to provide a vending machine in which pre-cooling of bottles may be readily and efficiently effected.

These and other objects made apparent throughout this specification are accomplished by means of my bottle vending machine, a full and complete understanding of which is facilitated by reference to the drawings herein, in which:

Fig. 1 is a front view of a vending machine embodying my invention, said view showing the cover removed and the device filled with bottles.

Fig. 2 is a side or end view of the structure disclosed in Fig. 1, with the front cover in place; and with certain portions broken away, primarily for the purpose of illustrating the discharge chute.

Fig. 3 is a top view of the structure illustrated in Fig. 1.

Fig. 4 is an enlarged view of the vending mechanism, said view being taken along the general lines of Fig. 1, and showing in detail certain mechanical features.

Fig. 5 is a top view of the structure illustrated in Fig. 4, certain parts being broken away for illustrative purposes.

Fig. 6 is an end view of the structure shown in Figs. 4 and 5, showing in further detail certain elements, including discharge features of the vending machine.

Fig. 7 is an enlarged fragmentary view of the structure shown in Fig. 6, said view being taken, however, at a point nearer the center of the device.

Fig. 8 is an enlarged top view, partially in horizontal cross-section, illustrating the bottle spacer elements within the feeding compartments.

Fig. 9 is an enlarged side view showing a modified form of the lower end of the article support release springs of the instant vending machine.

Like numerals refer to corresponding parts throughout the various figures of the drawings.

Referring now to the drawings (Fig. 1), my invention contemplates a cabinet 10, suitably insulated as at 11 for the purpose of housing bottles to be vended, and mechanism directly connected with said operation. Cabinet 10 is provided with a suitably insulated door 10a capable of being removed or swung to one side for the purpose of permitting access to the interior of the vending machine as for the purpose of replenishing the supply of merchandise therein. If desired, door 10a may be made in two sections, hinged on opposite sides of the front of the cabinet, thereby distributing the weight of the door and relieving a single pair of hinges of carrying the entire

weight thereof. In the lower portion 12 of the cabinet may be placed the refrigerating mechanism serving to properly cool the merchandise above, said mechanism comprising an electric motor 13 operatively disposed in relation to a hermetically sealed compressor unit 14, a condenser 15, and cooling coils 16 communicating with the condenser and compressor in a conventional manner, motor 13 being governed by a thermostat disposed within cabinet 10, so that when the temperature therein rises above a predetermined point, the mechanism becomes operative and remains so until the temperature has been reduced as desired. It is obvious that other refrigerating means, such as ice for example; or other refrigerating systems may be used in conjunction with cabinet 10 without departing from the scope of the instant invention which is concerned primarily with my vending mechanism per se.

Horizontally disposed within the upper portion of cabinet 10 are a pair of lower frames 17 (Figs. 4 and 7), to which frames are attached a pair of angle supports 18 which in turn carry guide rails 19, said elements being 90°-angle members for carrying articles to be vended, in a horizontal position, or otherwise, across the conveying surface or line of the machine which they form, as will be explained more in detail hereafter. Guide rails 19 may be insulated as at 20, to facilitate a silent and smooth operation of the device.

A pair of top frames 21 supported by side members 22 carry a series of transverse angle members 23 which serve as supports for a series of article supporting springs 23; and likewise attached to upper frames 21 are a series of vertically disposed compartment forming elements 24, which may be formed of sheet metal or other suitable material and reinforced as by longitudinal corrugations 24a (Fig. 8), and which serve to divide the space between end frame members 25 into a series of equally spaced compartments 26 which are substantially the same width as the diameter of the bottles contemplated to fit in the machine.

Vertically disposed across the front face of said compartments 26 at the middle thereof, may be a series of guide wires 27, connected at their tops to coil springs 28, which are in turn anchored to top frame members 21 as by screws 29.

A thin metal spring 30 (Fig. 8) may be associated with elements 24 on either side thereof so as to provide a full length vertical guide for the purpose of directing articles in the compartments in a straight perpendicular line down to the unloading mechanism, and also for the purpose of keeping the articles free to move downwardly and in a straight horizontal position. Spring members 31 and 31a having a similar function may likewise be disposed in relation to compartment forming elements 24.

Guide rails 19 are provided with a series of vertically extending slots 32 (Fig. 4), and near the top thereof and in pairs within said slots are disposed a series of U guide cams 33 and 33a (Figs. 4 and 7), said cams being in effect pivotally mounted in said slots, and free to move upwardly, their downward movement, however, being limited by a series of stops 34, with the result that when elements 33 and 33a are in their lowermost positions, they serve to provide downward sloping tracks, forming, in the case of the drawings, a 22.5° angle, which angle is merely cited for the purposes of illustration, and is not to be

taken in any limiting sense. It will be noted that the U guide cams are only in their lowermost position when in position below an empty compartment, or a compartment that is feeding, the other cams in the series riding upwardly on the sides of the bottles to be vended, as suggested in Fig. 4. Retaining rails 35 are attached to the tops of guide rails 19 for the purpose of holding the cams in place in the slots on said guide rails, members 35 in turn being provided with vertical slots 35a at spaced intervals to receive and retain compartment forming sections 24 at their bottoms.

Attention is now directed to article support release springs 23, said members comprising substantially flat spring metal elements anchored at their tops to cross members 22 as described heretofore, and being hooked or curved at their bottoms in such a manner as to cradle and retain a bottle or bottles when in vertical position, said bottoms preferably being branched or forked to provide side prongs 23a and 23b (Fig. 7), lying in the same horizontal plane. A supplemental spring members 23c (Figs. 7 and 9), having a sharply bent hook element 23d at its extreme lower end, may be attached to or otherwise suitably provided in connection with the lower middle portion of springs 23, said middle spring 23c extending somewhat below prongs 23a and 23b and normally lying in a slightly lower horizontal plane than said prongs. Or if desired, springs 23 may have simple unitary curved bottom portions, as suggested in Fig. 4, for the sake of simplicity. From the drawings, it is apparent that when compartments 26 are filled with bottles 36, said bottles tend to keep said springs in substantial vertical alignment, in such a manner that the bottom portions thereof extend over and across the next adjacent compartment, thereby closing the bottom thereof and retaining the merchandise therein in an effective manner, until such time as the first mentioned compartment is empty of bottles, when the spring, by virtue of its natural characteristics, will move sharply to the left thereby opening the second mentioned compartment and permitting the orderly discharge of merchandise therefrom, this operation being described in greater detail during the further progress of this specification.

Special attention is now directed to the transport mechanism of my vending machine, said mechanism consisting essentially of a pair of oppositely disposed impelling elements 37 (Figs. 4 and 7) said members having a series of equidistant projecting portions 37a for the purpose of pushing the articles to be vended forward on guide rails 19, the space between said projections forming bottle receiving apertures 37b. In the drawings, said prongs are illustrated as formed with an angle of 22.5°, said angle corresponding to that of U-shaped cams 33 and 33a, as previously described, but no limitation is to be inferred or implied from such suggestion.

Transports 37 are mounted in parallel relationship upon a pair of crank shafts 38 and 38a as by means of screws 39 and connecting studs 39a, and said crank shafts may be synchronized and joined together as by means of chain 40 operating on sprockets 40a and 40b mounted on the shafts which are driven by an electric-ratio motor 41 through coupling 42 (Fig. 6). If desired, the crank shafts may be mounted in suitable journal bearings such as 43, lubricated by oil cups 44, a similar arrangement being suggested for the attachment of transport members 37 to the crank

shafts, as by the employment of bearings 45 and lubricating elements 46.

Within cabinet 10, and at the discharge end of the conveying line is positioned a shield 47 for the purpose of protecting trapdoor 48, said door being held closed by springs 49. If desired, the discharge end of guide rails 19 may be provided with a slight rise or elevation as at 19a, for the purpose of affording a slight hump at this point over which the bottles must pass during the final discharge thereof from the vending mechanism, thereby guarding against tampering, or otherwise improperly removing a bottle from the machine. An article receiver and chute 50 is disposed somewhat below the point at which the bottle is ejected, said chute sloping downwardly towards the front of the vending machine (Fig. 2) and terminating in a rounded opening 51 at that point, through which a bottle normally passes base foremost in the vending process, said bottle then falling into an upright position in receiving cup 52, which cup may be suitably insulated if desired in order to effect silent operation of the machine and guard against accidental breakage of bottles.

Having now described the mechanical structure of my vending machine, I will refer to the operation thereof, which is as follows:

In compartment 26 we will assume that there are three bottles 36, 36a, and 36b, it being obvious of course that while such a number of bottles might well be in said compartment, and as a matter of fact, will be at one time during a normal emptying of the machine, initially it is contemplated that all compartments shall be filled to the tops thereof, the three bottles referred to being purely for illustrative purposes. From the drawings (Fig. 4), it is apparent that the transport mechanism is on high vertical center at which point a pair of projectal members 37a have previously contacted a bottle 36c, said bottle being securely retained in a space such as 37b. As cranks 38 and 38a are turned clockwise a cycle is started such as to cause impelling members 37 to impart a forward movement (to the right) to all bottles retained in spaces 37b. As projectals 37a move forward and downward, the opening between 37 and U-shaped cams 33 and 33a increases, and since said elements form an angle, such movement allows the bottle to cam down to guide rails 19, the bottle coming gently and smoothly to rest thereon, at which time a quarter cycle in the movement of the crank shafts has been consumed, the point further representing the maximum right horizontal position of the transport mechanism, this being the horizontal center of the crank shafts.

At the beginning of the next quarter cycle of movements, elements 37 start downwardly in a circular path until they reach the end of the second quarter of the initial cycle, which point represents the vertical lower center of the crank shafts, the projectal points 37a of 37 then being directly under the centers of the bottles positioned above.

Starting the third quarter cycle, the mechanism moves upwardly to the left horizontal center of the crank shafts; and starting the fourth quarter cycle, it is noted that points 37a move upwardly and forwardly in such a manner that the projectal at the extreme left end of the transport device engages bottle 36b and starts to move it forward on guide rails 19 in the manner previously described in relation to bottle 36c, this process continuing until the fourth

quarter of the cycle is complete, said bottle 36c at this time being locked in the second space of the transport elements 37 and having been moved forward on the guide rails its full diameter, bottle 36b (now occupying the position assigned to 36c in the drawings) in the meantime having been moved forward one-half of its diameter, the second half to be completed on the next quarter cycle movement of the crank shafts; a bottle moving forward its whole diameter with every complete cycle of said elements.

Referring now to the extreme right end of Fig. 4, we will consider the delivery of a bottle 36d from the machine. At the beginning of a cycle, the transport mechanism should always be in the position indicated in said Fig. 4, that is with the crank shafts on their high vertical center, and with a bottle in each of the compartments or spaces 37b formed by the projectals 37a. During the first quarter of the cycle just described, bottle 36d will have been pushed forward one-half of its diameter, which movement has raised door 48 to a position approximating that indicated by the dotted lines in the drawings, the bottle simultaneously being dropped to chute 50 and allowed to slide from the machine into receiver element 52, in the manner previously described herein. From this point, it may be grasped by a customer, and the crown removed by a bottle cap remover placed on the machine at a convenient point, a single merchandising operation then being complete. During the next three quarter cycles of the cycle just started, and particularly during the fourth quarter cycle thereof, the bottle formerly reposing in the space between the two right end projectals of 37 will have been placed in the position indicated for 36d in the drawings; the final ejection of the bottle then occurring during the initial quarter cycle of the next following revolution of the crank shafts. That is to say, with every such revolution, a bottle is discharged from the machine, and a bottle is likewise received by the transport mechanism.

Further attention is now directed to the operation of U cams 33 and 33a. In the position shown, it is apparent that said elements in conjunction with projectals 37a have served to gently but positively cam bottle 36b down to the guide rails in a position to be picked up by the transport mechanism during the fourth quarter cycle of a given revolution. It will likewise be noted that when a structure such as that disclosed and described in Fig. 9 is employed in conjunction with article retaining springs 23, a bottle passing thereunder urges spring element 23d upwardly in such a manner as to further facilitate the gentle camming down of bottle 36b to the guide rails, the movement being a continuous and smooth one with all elements simultaneously cooperating towards the accomplishment of this end. In Fig. 9 the operation of the device with this further refinement is suggested by the three bottles shown therewith.

Assuming the occurrence of three complete cycles of operation of the transport mechanism, it will be apparent that bottle 36 (Fig. 4) will have now come to occupy the position indicated for 36c in the drawings, and concurrent with this last movement, spring 23 will have moved sharply to the left, because of the absence of anything further in compartment 26 to hold said spring in the vertical position indicated, this movement of the spring opening the second compartment and allowing the subsequent feeding of bottles

therefrom. If a spring such as that disclosed in Fig. 9 is employed, this movement of the article retaining element will be made still more positive, and sharply accentuated by the sharp downward snapping movement of element 23d when the last bottle passes from under this spring, the combination of the downward and leftward movement of 23d and the general leftward movement of 23 insuring that the composite retainer element will be positively displaced from the bottom of a given compartment at the proper time. It will likewise be noted that the cams 33 and 33a associated with the bottom of the second compartment, will fall into the position indicated for the corresponding member at the extreme left of the assembly illustrated in Fig. 4, upon bottle 36 passing into the second space of transport 37, as will occur during the next cycle. From this point on, the operation will be identical with that described with relation to the compartment farthest to the left; and when the second compartment has been exhausted, a movement of elements identical to that just described in relation to the opening of said second compartment will occur in connection with the third compartment, this feeding action continuing until all of the compartments have been emptied of their contents, at which time the machine is ready to be reloaded, and made ready for another day's work.

The actuation of the actual vending mechanism of my machine described above, aside from those elements which are inherently automatic in their nature, may be accomplished in any desired manner. For instance, the operation of motor 41 may be governed by suitable coin handling mechanism and coin controlled apparatus including proper starting and stopping switches; such devices not being illustrated herein because they are well known to the vending machine business, and may be considered conventional for the purposes of effectuating the instant invention. Suffice it that my device may readily be adapted as a coin controlled vending machine, either electrically or manually operated. Or, for that matter, when a simple vending machine with large capacity is desired, without the addition of further mechanism, the device may be actuated by a crank in the nature of a simple extension of either crank shaft 38 or 38a, such a machine possibly being desirable in stores where clerks are always present, the machine then taking the status of conventional coolers now in use, but having the advantages of capacity discussed heretofore.

From the structure of my device it is readily apparent that machines involving varying capacities may be readily constructed without disturbing such fundamentals as the machine compartment, the refrigerating unit, the vending mechanism, et cetera, this variation in capacity being effected by simply increasing the height of cabinet 10, and correspondingly increasing the length of compartments 26 and springs 23, such modification requiring comparatively few new dies, little increase in material, and affording great flexibility, particularly when it is found that the machines can be standardized in two or three heights or sizes. This element is important not only in adapting machines to given locations in view of the potential sales possibilities thereof, but is particularly important in connection with pre-cooling, it being apparent that a machine may always be made available which will normally contain a sufficient number of properly

cooled bottles to satisfy trade requirements or if there exists danger in a particular location of the machine being emptied and warm bottles placed therein, a pre-cooling compartment may be provided in the top of cabinet 10; or a sheet of metal designed to be slipped horizontally across all compartments 26 at a point sufficiently below the top of said compartments to provide a satisfactory number of bottles which are pre-cooled at this point, it being apparent that only the bottles below such a stop will feed during the normal operation of the vending mechanism, and that those above will be retained until the stop is removed such removal automatically making properly refrigerated bottles available for dispensing, and permitting other bottles then being placed in the machine to be suitably cooled before they are passed to the public. Such a stop will be described in detail and made the subject of another patent application dealing with my inventions in vending machines, the suggestion here being primarily in connection with the potential precooling advantage inherent in my machine.

Likewise, suitable provision may be made for disposing of empty bottles as by providing cabinet 10 with an aperture in its lower portion for receiving these articles; or by the employment of other means found suitable for this purpose.

While the instant invention has been described primarily in connection with the merchandising of bottled beverages, it will be readily apparent that it is susceptible to other uses, it not being my purpose to limit myself in this regard by virtue of having laid primary emphasis upon one use in this specification.

From the foregoing it is apparent that I have described a new and useful vending machine, the mechanism of which carries only a small part of the weight of the total amount of merchandise capable of being retained within the structure. That the device is substantially automatic in many of its features, positive in all of its actions and fully adapted for its intended purposes. That it makes possible the provision of a machine which will retain and dispense a number of bottled beverages far in excess of anything heretofore known to the art. That it is compact, economical, simple, easy to operate, and markedly superior to known comparable devices in the bottle vending machine field.

While I have described in considerable detail one form of my invention, I do not intend to limit myself thereby, but on the contrary fully contemplate and intend that certain changes, alterations, additions, subtractions, and rearrangements may be made without departing from the spirit and scope of the instant invention, as defined by the appended claims, which are to be liberally construed.

I claim:

1. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming members fixedly mounted upon said frame and rails, vertical guide rods disposed across the fronts of said compartments, article supporting springs having curved ends, anchored at their tops to said frame and extending downwardly in such a manner that the end of a given spring closes the bottom of the next adjacent compartment when the spring is held in vertical position by the presence of merchandise to be vended in the compartment in which the spring is disposed, cam means for directing merchandise from a feeding compartment to said guide rails, and means for impelling the

merchandise forward thereon so as to periodically eject such from the machine.

2. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming members fixedly mounted upon said frame and rails, guide means disposed across the fronts of said compartments, article supporting springs having curved ends, anchored at their tops to said frame and extending downwardly in such a manner that the end of a given spring closes the bottom of the next adjacent compartment when the spring is held in vertical position by the presence of merchandise to be vended in the compartment in which the spring is disposed, a series of cams in pairs pivotally mounted upon said guide rails in such a manner as to direct merchandise from a feeding compartment down upon said guide rails, and means for impelling the merchandise forward thereon so as to periodically eject such from the machine.

3. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming members fixedly mounted upon said frame and rails, article supporting springs having curved ends, anchored at their tops to said frame and extending downwardly in such a manner that the end of a given spring closes the bottom of the next adjacent compartment when the spring is held in vertical position by the presence of merchandise to be vended in the compartment in which the spring is disposed, spacer springs disposed vertically along the sides of said compartments, and means for impelling merchandise forward on the guide rails so as to periodically eject such from the machine.

4. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed reinforced compartment forming members fixedly mounted upon said frame and rails, vertical guide rods disposed across the fronts of said compartments, article supporting springs having curved ends, anchored at their tops to said frame and extending downwardly in such a manner that the end of a given spring closes the bottom of the next adjacent compartment when the spring is held in vertical position by the presence of merchandise to be vended in the compartment in which the spring is disposed, pairs of spacer springs disposed on opposite sides of said compartment forming members, and means for impelling merchandise forward on the guide rails so as to periodically eject such from the machine.

5. In a vending machine, a series of vertically extending compartments in which articles of merchandise feed downwardly by gravity, and automatic releases for said compartments, said releases comprising flat springs having straight upper portions and forked curved ends extending over and closing the bottom of an adjacent compartment when said upper portions are pressed into vertical position by the presence of an article in the compartment in which they are disposed, supplementary spring members disposed between the forked ends of said releases and tending to accentuate the sideward movement of said members upon the emptying of a given compartment; and means for progressively ejecting merchandise from the machine.

6. In a vending machine, a series of vertically extending compartments in which articles of merchandise feed downwardly by gravity, and automatic releases for said compartments, said

releases comprising flat springs having straight upper portions and curved ends extending over and closing the bottom of an adjacent compartment when said upper portions are pressed into vertical position by the presence of an article in the compartment in which they are disposed, supplementary spring members disposed between the ends of said releases and helping to cushion and direct the downward feeding of merchandise from the compartments; and means for progressively ejecting merchandise from the machine.

7. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming elements disposed within said frame above said rails, spring releases positioned adjacent the bottoms of said compartments, a series of cams pivotally mounted upon the guide rails for the purpose of directing merchandise from successive compartments, down upon said guide rails; and a transport mechanism operatively disposed below the compartments, said device comprising a pair of pronged impelling elements rotably mounted upon a pair of crank shafts in such a manner that on the upward movement of the cranks, the prongs engage articles of merchandise lying on said guide rails and carry said articles forward thereon, one-half of their diameter, and during the next quarter-revolution of said cranks, move said articles forward another such distance.

8. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming elements disposed within said frame above said rails and forming compartments each having an opening in its bottom end, spring releases operatively disposed

in relation to the bottoms of said compartments, a series of cams pivotally mounted below the openings of said compartments, stop means for said cams, supplementary springs integral with said releases cooperating with said cams in the direction of merchandise from the compartments to the guide rails; and a transport mechanism operatively disposed below the compartments, said transport mechanism comprising a pair of pronged impelling elements rotably mounted upon a pair of crank shafts in such a manner that on the upward movement of the cranks, the prongs engage articles of merchandise lying on said guide rails and carry said articles forward thereon one-half of their diameter, and during the next quarter-revolution of said cranks, move said articles forward another such distance.

9. In a vending machine, a supporting frame, parallel guide rails carried thereby, vertically disposed compartment forming elements disposed within said frame above said rails, spring releases positioned adjacent the bottoms of said compartments, a series of cams in pairs pivotally mounted upon said guide rails and forming an angle with the vertically extending walls of said compartments when in their lowermost position; and a transport mechanism operatively disposed below the compartments, said transport mechanism comprising a pair of pronged impelling elements rotably mounted upon a pair of crank shafts in such a manner that on the rotation of the cranks, the prongs engage articles of merchandise lying on said guide rails and carry said articles forward thereon, said prongs being formed with an angle corresponding to that of said cams when such are in operative position.

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