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F. D. NEWELL

2,874,873

FROZEN FOOD CONTAINER VENDER

Filed March 23, 1953

2 Sheets-Sheet 1

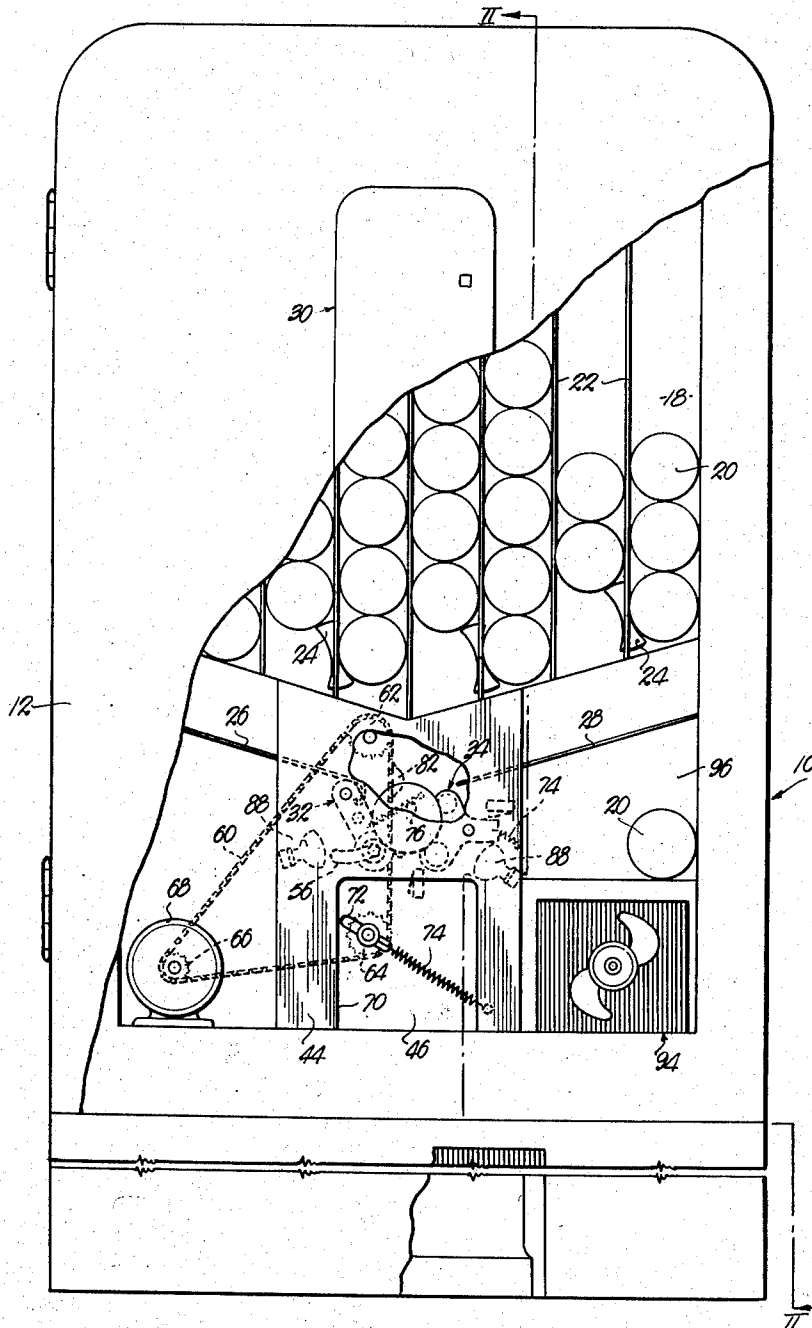


Fig. 1.

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2 Sheets-Sheet 2

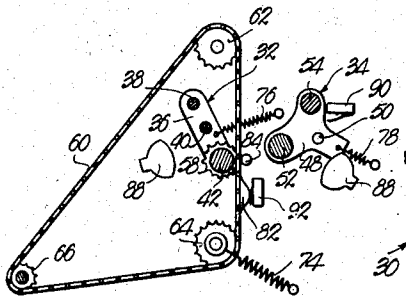


Fig. 3.

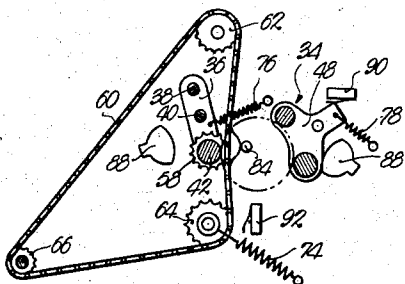


Fig. 4.

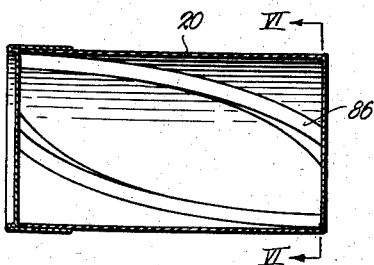


Fig. 5.

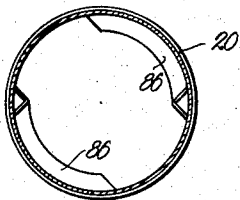
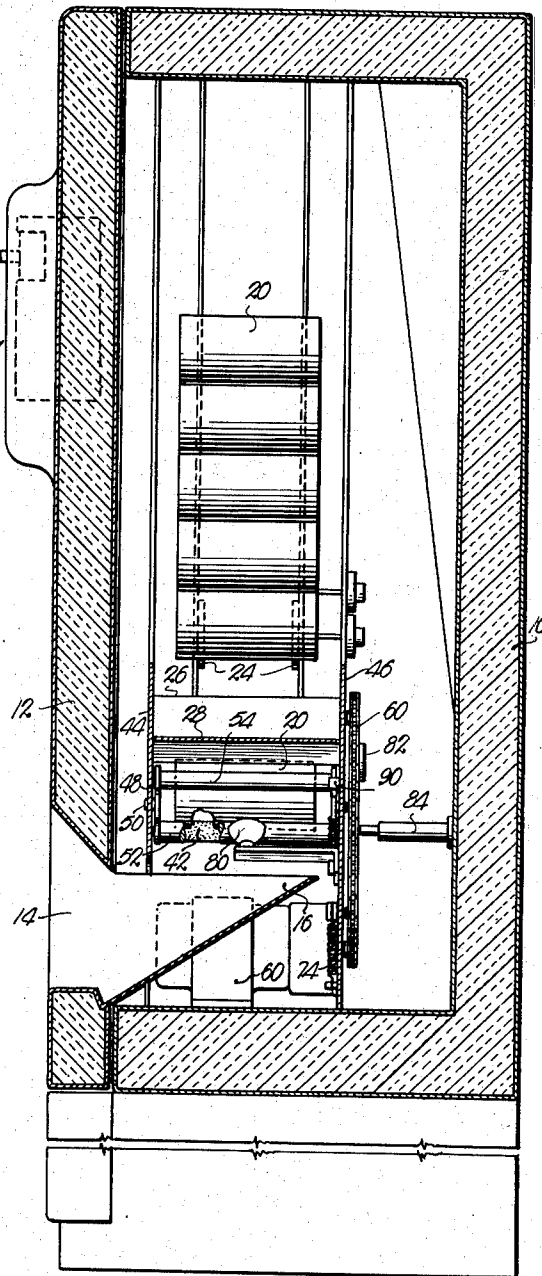


Fig. 6.



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## FROZEN FOOD CONTAINER VENDER

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Application March 23, 1953, Serial No. 343,820

7 Claims. (Cl. 221—203)

This invention relates to the handling of products normally packaged and stored in a frozen or other solid or semi-solid condition and requiring a change in its consistency prior to use such as by melting or partially melting the same into a flowable liquid, the primary object being to provide a method such as above described, apparatus for handling cartons within which the substance is packaged, and the provision of a satisfactory carton to carry out the method and render the apparatus operable as desired.

It is the most important object of the present invention to provide a vending machine for cartons containing substances such as malted milk or other drinks which must be kept under refrigeration preferably in a frozen condition and which must similarly be reduced to a flowing condition prior to actual consumption by the purchaser or other receiver of the packaged product.

Another important object of this invention is to provide apparatus in the nature of a vending machine adapted to receive and store a plurality of cartons such as above mentioned, under refrigeration and having mechanism forming a part thereof for receiving, rotating and discharging the cartons singly from the machine, there being means to heat the frozen product contained in the carton as the same is being rotated.

A further object of this invention is to provide a novel carton for use in a machine such as above set forth and in the method contemplated by this invention, which carton is provided with specially formed baffles there-within to stir the product as the carton is rotated adjacent heating means forming a part of the machine.

Another object of this invention is to provide a vending machine having rotating apparatus adapted to receive the aforesaid cartons as the same are discharged singly from a storage compartment, continuously rotate the carton a predetermined number of revolutions, heat the carton as it is being rotated and subsequently discharging the carton automatically from the machine ready for use of the product which has been rendered flowable through the heating and stirring steps of the machine.

Other objects include the way in which the article rotating apparatus is in the nature of relatively swingable jaws having a roller that rotates continuously in engagement with the carton while the latter is held by the jaws; the way in which the friction roller is swung to a released position after the carton has been rotated a predetermined number of revolutions; the manner of providing a flexible chain or the like to impart rotation to the roller and to release the carton; and many more minor objects all of which will be made clear or become apparent as the following specification progresses.

This is a continuation in part of my co-pending application Serial No. 310,190, filed September 18, 1952, and entitled "Processes of Packaging, Melting And Mixing Pre-Prepared Frozen Confections Or Other Liquids," now abandoned.

In the drawings:

Figure 1 is a front elevational view of apparatus for handling frozen food containers made pursuant to the present invention and capable of carrying out the method hereof, the primary access door of the machine cabinet being broken away to reveal details of construction.

Fig. 2 is a cross-sectional view taken on irregular line II—II of Fig. 1.

Fig. 3 is a diagrammatic view illustrating the positions of the various parts of the rotating apparatus ready for receiving a carton from the storage compartment of the machine.

Fig. 4 is a view similar to Fig. 3 showing the position of the parts of the rotating apparatus as the carton is being discharged therefrom.

Fig. 5 is a substantially central, longitudinal, cross-sectional view through the novel container developed for carrying out the present invention; and

Fig. 6 is a transverse, cross-sectional view taken on line VI—VI of Fig. 5.

While the present invention will hereinafter be described in connection with the handling of frozen food products such as malted milks and milk-shakes, it is to be understood that the same has applicability in many other fields. There has developed however, a great need for a machine to dispense a food product of this type. Difficulties arise because of the necessity of keeping the same under refrigeration until consumed and it has been found that actual freezing of the product into a solid or semi-solid condition is to be preferred. Accordingly, in order for a process such as herein contemplated to become practical, means must be provided as an inherent part of the system to reduce the product from its frozen or partially frozen condition, to a flowable consistency such as is quite common in malted milks and milk-shakes as the terms are now generally understood, all prior to actual discharge of the product to the customer or potential user. All problems relating to the results herein intended have been overcome in the invention about to be described, and in referring to the drawings it will be seen that there is provided a hollow cabinet broadly designated by the numeral 10 that has an access door 12 of any suitable form.

In the form of the invention chosen for illustration, door 12 is in turn provided with an access opening 14 and an inclined, open-top chute or hopper 16 that extends into the hollow cabinet 10 when the door 12 is closed, as shown in Figs. 1 and 2.

Cabinet 10 is provided with a storage chamber 18 for a plurality of cartons 20 containing the frozen or semi-frozen product to be vended. Cartons 20 are preferably arranged in stacked relationship as shown in Figs. 1 and 2, the stacks being separated by vertical partitions or other guides 22. A suitable control member 24 may be provided for dispensing the cartons 20 singly to inclined chutes 26 and 28 that converge toward the vertical center of the cabinet 10.

The members 24 chosen for illustration are each designed to control the gravitational discharge of cartons 20 from a pair of stacks thereof and, therefore, the members 24 are mounted for oscillation on horizontal axes. Since the particular type of control means used may be varied to suit the desires of the manufacturer, and forms no part of this invention, it may be pointed out that whenever a member 24 is swung in one direction, it will discharge a carton 20 from one stack and hold the cartons in the next-adjacent stack from being discharged to the underlying inclined shelf or chute 26—28. Any suitable control mechanism may be provided to cause successive operations of the members 24, and to this extent, such control mechanism may also be in turn governed by the

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operation of coin-control mechanism broadly designated by the numeral 30 and shown in the drawings mounted upon the door 12 of cabinet 10.

When a carton 20 is caused to fall upon one of the inclined guides 26 or 28, it will roll toward the center of the machine and into the article rotating apparatus about to be described. Such rotating apparatus includes a pair of opposed, swingable jaws 32 and 34 such as shown in Figs. 1 to 4 inclusive. The jaw 32 is composed of a pair of links, one of which is shown in Figs. 1, 3 and 4 and designated by the numeral 36. The spaced links 36 are joined by a pair of horizontal, parallel pins 38 and 40 and by a friction roller 42 below pin 40.

The jaws 32 and 34 span the distance between a pair of vertical support plates 44 and 46 suitably mounted in the cabinet 10 below the shelves 26 and 28, and the uppermost pin 38 extends through these plates 44 and 46 to mount the jaw 32 thereon for swinging movement on a horizontal axis that is substantially parallel with the longitudinal axes of the cartons 20 when the latter are stored in the chamber 18 and when the same are received by the jaws 32 and 34 as will hereinafter be made clear.

The jaw 34 has a pair of spaced, substantially T-shaped plates 48 joined by a pivot pin 50 that likewise extends through the plates 44 and 46, thereby mounting the jaw 34 for swinging movement on a horizontal axis in spaced, parallelism with the pivot pin 38. The jaw 34 includes additionally, a pair of spaced, horizontal rods 52 and 54 mounted rigidly to the swingable plates 48 and spanning the distance therebetween.

The shaft upon which roller 42 is rigidly mounted extends through an arcuate slot 56 in the plate 46 as shown in Fig. 1 of the drawings, slot 56 thereby limiting the extent of swinging movement of the jaw 32. This extended shaft receives a small sprocket wheel 58 that is disposed between the plate 46 and the rear wall of cabinet 10 and receives a continuous chain 60 that passes also over idler sprocket wheels 62 and 64 suitably mounted on the plate 46 and over a sprocket wheel 66 mounted on the drive shaft of an electric motor 68 housed within the cabinet 10.

It is noted in Fig. 1 of the drawings that the plate 44 has a clearance opening 70 for cartons 20, discharging from the rotating apparatus and gravitating into the hopper 16, and Fig. 1 also illustrates the provision of a slot 72 in plate 46 that guides the sprocket wheel 64 for reciprocable movement with respect to plate 46.

A spring 74 interconnects the sprocket wheel 64 and the plate 46 to yieldably hold the continuous chain 60 taut around the sprocket wheels 62, 64 and 66. Likewise, a spring 76 interconnects the jaw 32 and the plate 46 to yieldably hold the jaw 32 biased toward the upper end of arcuate slot 56 and to hold the sprocket wheel 58 on roller 42 in mesh with the chain 60. A centering spring 78 interconnects the plate 46 and the jaw 34 to yieldably hold the latter in the normal position shown by Fig. 3 of the drawings.

Accordingly, when the jaws 32 and 34 are disposed as illustrated in Fig. 3, they are in a position for receiving a carton 20 discharged from one of the stacks thereof in compartment 18 and rolling down one of the inclined chutes 26 or 28 into a position between, and supported by the jaws 32 and 34. It is noted that the lowermost ends of the chutes 26 and 28 are spaced-apart to clear the downwardly rolling carton 20 for discharge into the rotating apparatus. The carton 20 is disposed as illustrated in Fig. 1 of the drawings, when supported for rotation by the jaws 32 and 34. It is to be noted that the carton 20 is in frictional engagement with the roller 42 and in order that the latter will effectively rotate the carton 20 on its horizontal, longitudinal axis, roller 42 is roughened or provided with frictionable material as shown in Fig. 2 of the drawings. By virtue of the provision of springs 76 and 78 for jaws 32 and 34 respectively, the carton 20 will be rotatably gripped or

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held in place between the jaws 32 and 34 in engagement with the roller 42 and the rods 52 and 54. To this end therefore, the last mentioned rods may be mounted for rotation in the plates 48 if desired.

It is now apparent that upon energization of the motor 68 to drive the chain 60, roller 42 will likewise be rotated on a horizontal axis through the operable connection between the chain 60 and the sprocket wheel 58. As the roller 42 rotates it will impart a rotative movement to the carton 20 which it engages. After the chain 60 has travelled a complete revolution, a small, outwardly extending cam 82, rigidly mounted thereon, moves into engagement with a pin 84 mounted on the rear wall of cabinet 10 as shown in Fig. 2. Pin 84 operates to flex the chain 60 inwardly by its own inherent resiliency and looseness of fit around the sprocket wheels and/or by virtue of the resiliency of the spring 64 which yields to the action of cam 82 coming into engagement with pin 84. This manifestly swings the roller 42, and for that matter the entire jaw 32, downwardly and inwardly toward the lowermost end of the arcuate slot 56 as shown in Fig. 4 of the drawings, whereupon the carton 20 is released for gravitational movement through the opening 70 and into the hopper 16 for access by the customer or potential user.

Fig. 1 of the drawings also illustrates how the spring 78 yields to slight downward, swinging movement of the jaw 34 when the carton 20 is held thereby, and in Fig. 4 of the drawings, it is seen how the jaw 34 swings downwardly toward the lowermost end of its path of travel as permitted by the resiliency of spring 78 when the carton 20 is being discharged from the rotating apparatus.

The rotating of the carton 20 a predetermined number of revolutions before discharge into the receiving hopper 16, is for the purpose of melting and stirring its contents and to this end, there is provided a novel arrangement within the carton 20 as shown in Figs. 5 and 6 of the drawings for effecting a stirring or agitating action.

Carton 20 is provided with a plurality of elongated baffles 86 extending longitudinally of the carton 20 and taking the form of a spiral or, more appropriately, a semi-spiral in reverse volute. Baffles 86 are preferably triangular-shaped as shown in Fig. 6 of the drawings, and when the carton 20 is rotated by the roller 42, the baffles 86 will effectively stir the contents.

Simultaneously with the rotating action, the carton 20 and its contents, are heated through the provision of a plurality of lamps 88 properly mounted within the cabinet 10. It is preferred that the contents to be mixed in the cartons 20, be reduced to a soft consistency through use of endothermic heating and to this end, infra-red lamps 88 are preferred. Furthermore, it is desirable that the outer face of the cartons 20 be of a relatively dark color to enhance the action of the lamps 88 in heating the contents of the cartons.

Timing of course, may be controlled by the provision of speed-control mechanism in connection with the motor 68 and it may be energized by closing of a switch not shown within a conventional wiring circuit that also energizes the lamps 88 simultaneously with the operation of motor 68.

When the carton 20 moves to the position shown in Fig. 4 of the drawings, jaw 34 swings upwardly to actuate a switch 90 and thereby deenergize the lamps 88. As the cam means 82 on chain 60 continues downwardly, it will move into engagement with a switch 92 to deenergize the motor 68 until an operator institutes the next cycle of operation. Manifestly, the cabinet 10 is kept under refrigeration through the medium of a refrigerating system broadly designated by the numeral 94 and it is desirable further to provide a number of auxiliary compartments 96 in the cabinet 10 to pre-cool or freeze additional cartons 20 for replenishing the compartment 18.

It is clear from the foregoing that the amount of heat

that is required and the number of revolutions that must be imparted to the cartons 20, will depend upon the consistency desired in the product to be consumed from the cartons 20, and these factors in turn will be controlled by the nature of the product itself. Manifestly, it is not desired in the case of malted milk or milk-shakes to reduce the same to a completely melted condition, but the same should at least be sufficiently melted so as to be flowable or satisfactory for eating as may be desired by the consuming public.

Determination of these needs may be made by those skilled in the art and such changes and modifications as may be needed or desired to alter the intended operation of the present invention, are contemplated hereby, and it is therefore, desired to be limited only by the scope of the appended claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In article rotating apparatus, a releasable device for rotatably supporting an article to be rotated, said device including a rotatable element for rotating the article, said element being swingable to and from a position frictionally engaging the article when the latter is supported by said device; a continuous, flexible member coupled with said element for rotating the latter; means for driving the member; and means including structure on the member for swinging the element to a position releasing the article from said device after the element has rotated the article a predetermined number of revolutions.

2. In article rotating apparatus, a releasable device for rotatably supporting an article to be rotated, said device including a rotatable element for rotating the article, said element being swingable to and from a position frictionally engaging the article when the latter is supported by said device; a continuous, flexible member coupled with said element for rotating the latter; means for driving the member; cam means on said member; and a deflector disposed for engagement by the cam means after the element has rotated the article a predetermined number of revolutions for flexing the member to swing the element to a position releasing the article from said device.

3. In article rotating apparatus as set forth in claim 2 wherein is provided a rotatable part in supporting relationship to said member, said part being spring-loaded

for facilitating the flexing of the member as the cam means engages the deflector.

4. In article rotating apparatus, a cradle having a pair of spaced, swingable, article-receiving jaws; yieldable means for each jaw respectively normally holding the same in a position for supporting the article; a rotatable friction element forming a part of one of the jaws for engaging and rotating the article when the same is supported between the jaws; and mechanism coupled with said element for rotating the latter, said mechanism including means for swinging said one jaw against the action of its yieldable means to release the article by gravitational movement after the element has rotated the article a predetermined number of revolutions, the other jaw being disposed for free swinging movement against the action of its spring under influence of the gravitating article.

5. In article rotating apparatus as set forth in claim 4 wherein said mechanism comprises a continuous, flexible member coupled with said element; and means for driving the member.

6. In article rotating apparatus as set forth in claim 5 wherein said means for swinging the one jaw includes structure mounted on said member.

7. In article rotating apparatus as set forth in claim 6 wherein said structure comprises cam means on the member, and wherein is provided means disposed within the path of travel of said cam means for engagement thereby to flex the member and thereby swing the one jaw.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

1,655,381	Parker	Jan. 3, 1928
1,818,325	Happel	Aug. 11, 1931
2,012,816	Holt	Aug. 27, 1935
2,160,351	Bemis	Mar. 30, 1939
2,256,976	Ford	Sept. 23, 1941
2,265,696	Mullins	Dec. 9, 1941
2,279,936	Brodie	Apr. 14, 1942
2,308,532	Mills	Jan. 19, 1943
2,493,223	Brock	Jan. 3, 1950
2,501,291	Rue	Mar. 21, 1950
2,528,341	Creely	Oct. 31, 1950
2,531,292	Page	Nov. 21, 1950
2,549,485	Silverman	Apr. 17, 1951
2,592,485	Stair	Apr. 8, 1952