May 2, 1967 L. W. OHLSSON ETAL 3,317,082

PRODUCT AND BAG DISPENSER

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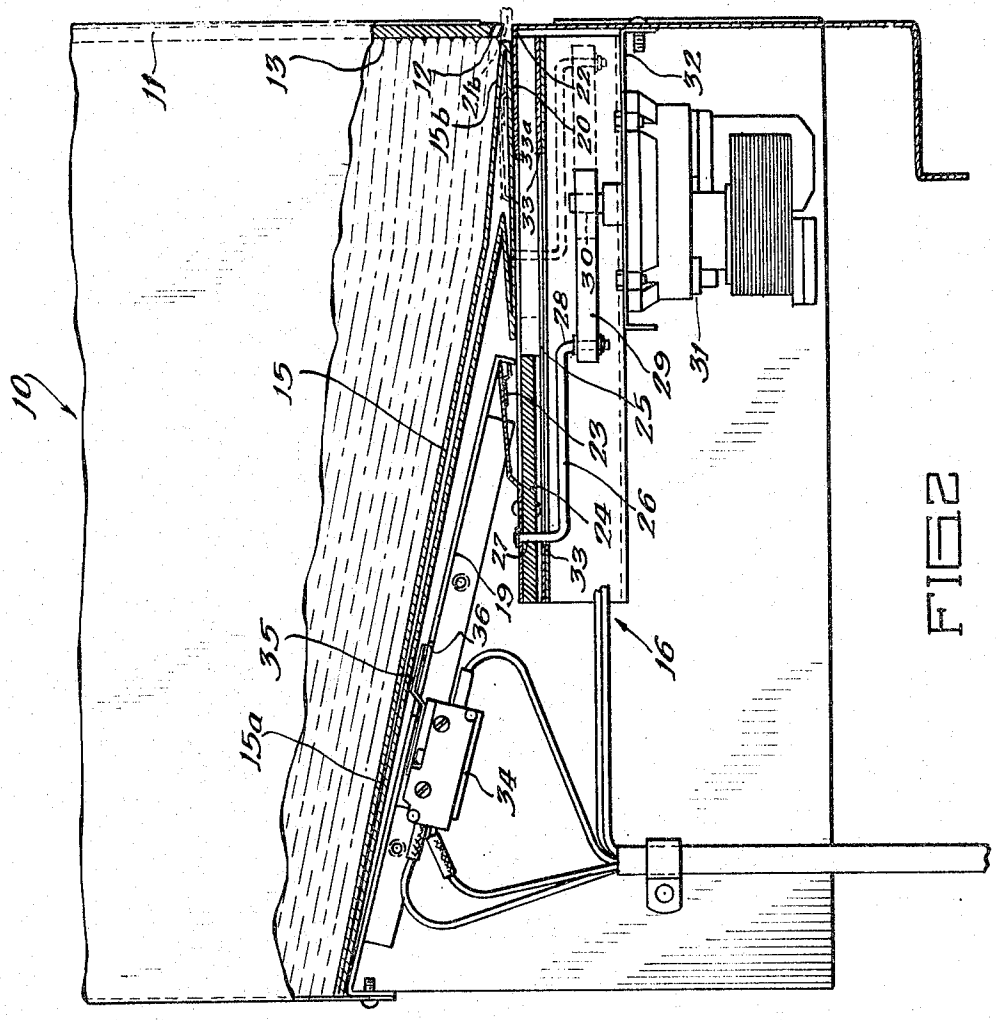

FIG 2

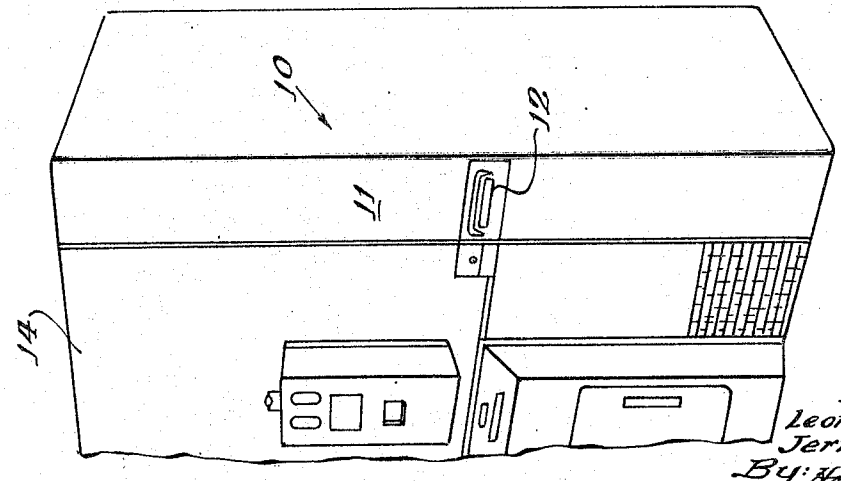

FIG 1

Inventors:
Leonard W. Ohlsson
Jerry W. Saddler
By: Hofgren, Wegner, Allen, Stellman & McCord
Attorneys

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FIG. 3

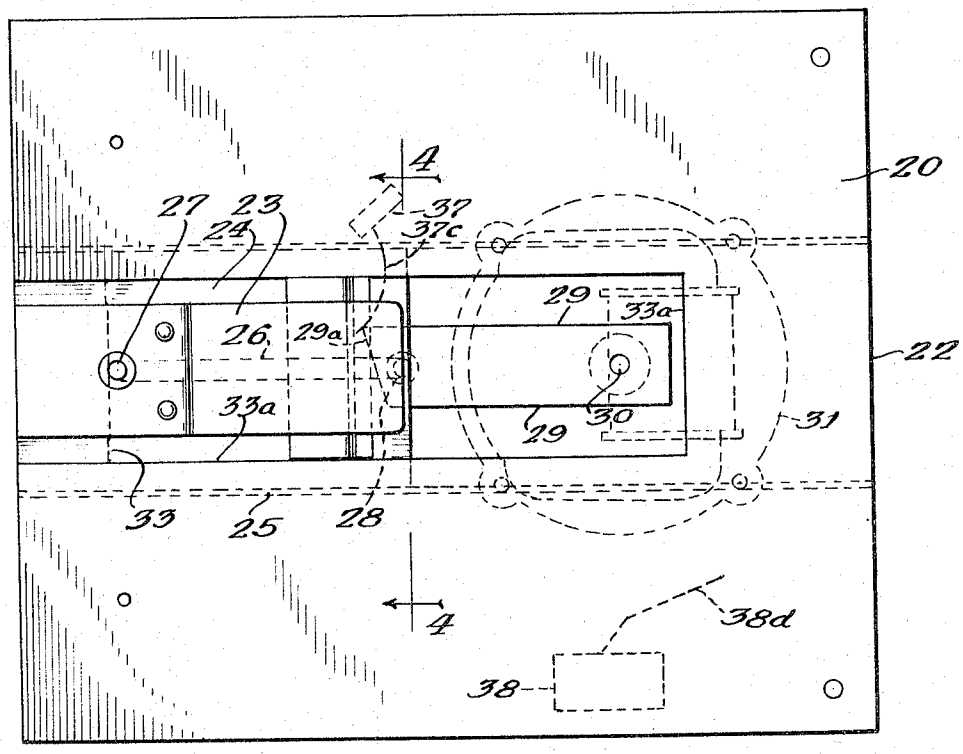


FIG. 5

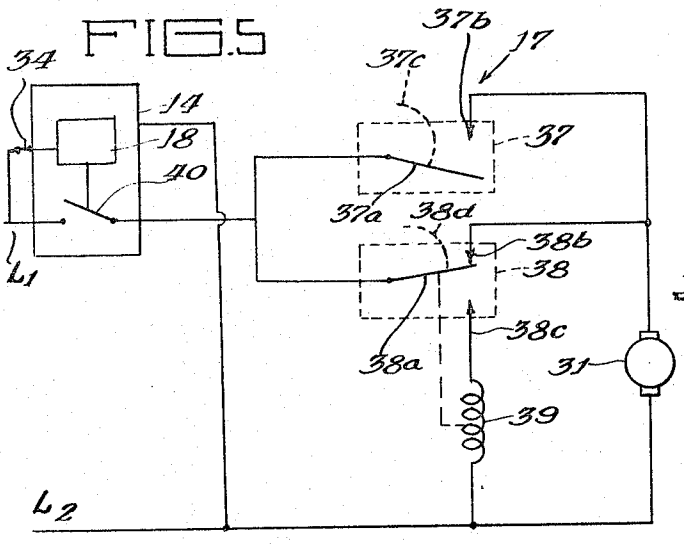
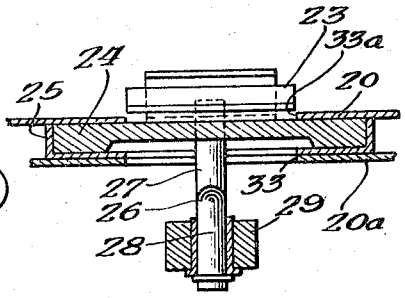


FIG. 4



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PRODUCT AND BAG DISPENSER

Leonard W. Ohlsson and Jerry W. Saddler, St. Paul, Minn., assignors to Whirlpool Corporation, a corporation of Delaware

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2 Claims. (Cl. 221—14)

This invention relates to vending machines and in particular to vending machines wherein the vended product is provided in a bag or the like.

In one form of vending machine, ice bodies are manufactured and stored in a collecting space for subsequent vending. A bag supply apparatus is associated with the ice making apparatus for providing a bag to be used to receive the vended ice bodies during the vending operation. The present invention comprehends a new and improved bag delivery apparatus associated with the ice making apparatus in a novel manner to provide improved control of the bag delivery operation.

Thus, a principal feature of the present invention is the provision of a new and improved bag providing means.

A further feature of the invention is the provision of such a bag providing means including new and improved means for controlling the operation of the bag providing means as a function of the ice making apparatus vending operation.

Another feature of the invention is the provision of such a bag providing means arranged to be actuated at the end of a bag delivery cycle while allowing the vending of the ice bodies to be completed and further arranged to set itself up for a subsequent bag delivery cycle upon initiation of a subsequent vending cycle.

Still another feature of the invention is the provision of such a bag providing means including means for storing a plurality of bags for delivery seriatim to an ejection position, and means for ejecting a bag from said ejection position to a dispense position including a discharge mechanism, means for operating the discharge mechanism through a discharge cycle wherein a bag is dispensed, and control means arranged to respond to an initiation of the cycle of operation of the ice vending machine mechanism to actuate the means for operating the discharge mechanism and thereby operate the discharge mechanism through one cycle, the control means being further arranged to deactivate the discharge mechanism at the end of the discharge cycle while allowing the cycle of operation of the ice vending machine mechanism to be completed, and set itself up for a subsequent discharge cycle upon an initiation of a subsequent cycle of operation of the ice vending machine mechanism.

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

FIGURE 1 is a fragmentary perspective view of a bag providing apparatus embodying the invention;

FIGURE 2 is a fragmentary enlarged side elevation thereof with a portion of the cabinet removed to illustrate more clearly the arrangement of the bag delivery mechanism;

FIGURE 3 is a top plan view of the mechanism;

FIGURE 4 is a fragmentary vertical section taken substantially along the line 4—4 of FIGURE 3; and

FIGURE 5 is a schematic diagram illustrating the electrical circuitry of the apparatus.

In the exemplary embodiment of the invention as disclosed in the drawing, a bag providing apparatus generally designated **10** is shown to comprise a cabinet **11** defining a dispensing outlet **12** opening outwardly from the interior space **13** of the cabinet. The bag providing apparatus **10** may be disposed adjacent an associated apparatus such as an ice maker apparatus **14** which may be of conventional construction well known in the art. A plurality of bags **15** are disposed within cabinet space **13** and are delivered by a new and improved bag discharge mechanism **16** therefrom one at a time through the outlet **12** for use in receiving the products such as ice bodies from the apparatus **14** during a vending operation. The mechanism **16** includes a novel control **17** as shown in FIGURE 5 which is electrically associated with a control **18** of the apparatus **14** for controlling the bag dispensing apparatus **10** as a function of the operation of the ice maker apparatus **14**. More specifically, the control **17** functions to permit the operation of the bag dispensing apparatus **10** to deliver only a single bag during each vending cycle of operation of the apparatus **14**.

Referring now more specifically to FIGURES 2 and 3, the bag discharge mechanism **16** includes an inclined bottom plate **19** and a horizontal guide **20**. The individual bags **15** move downwardly through space **13** to have their upper portion **15***a* rest on the inclined plate **19** and their bottom folding portion **15***b* rest on the guide **20**. As shown in FIGURE 2, guide **20** extends forwardly to a front edge **22** which defines the lower edge of the outlet opening **12**.

The bag, as shown in FIGURE 2, is in an ejection position for movement to a dispense position, as shown in dotted lines, wherein the folded end of the bag projects substantially outwardly through outlet **12**. To effect the movement of the bag from the ejection position to the dispense position, a pusher arm **23** is mounted on a slide **24** which is moved successively forwardly and rearwardly (to the right and to the left as seen in FIGURE 2) in a channel **25** which is attached to channel support plate **20***a*. The slide is moved by means of a link **26** having a first upstanding end **27** pivotally connected to the slide **24** and a second downturned end **28** pivotally connected to an arm **29** fixed to the output shaft **30** of a conventional electric motor **31** carried on cabinet wall **11** by means of a bracket **32** subjacent the outlet **12**. The upturned end **27** of the link **26** extends through a slot **33**, in channel **25** and channel support plate **20***a*, and slot **33***a* in the guide **20** which extends forwardly from adjacent the rear end of the guide to adjacent the forward end thereof at outlet **12**. Thus, as the motor rotates in a counterclockwise direction, as seen in FIGURE 3, the arm **29** pulls the link **26** forwardly from the position of FIGURE 3 to a forward position, as shown in dotted lines in FIGURE 2. During this forward movement, the pusher arm **23** engages the folded end **15***b* of the bag **15** and urges it forwardly and outwardly through the outlet **12** to the dotted line dispense position of FIGURE 2 where the user may grasp the bag end and pull the bag from the cabinet **11** for use in receiving the ice body products of the associated apparatus **14**.

The apparatus **10** further includes means to preclude operation of the discharge mechanism **16** when the supply of bags **15** reaches a preselected low level. Herein, this means comprises a switch **34** carried on the inclined plate **19** and having an actuating finger **35** extending upwardly through an opening **36** in the inclined plate to be engaged by the lowermost bag **15** in the ejection position. The switch **34** is arranged to the held closed by the weight of a preselected number of bags. The switch **34** is associated with the control **18** of apparatus **14** so that when the bag supply reaches the low limit no subsequent vending of the ice body product can be initiated until a replenishment of the bag supply in cabinet **11** is effected.

Control **17** functions to eject a single bag each time the apparatus **14** is operated to initiate a vending cycle. As seen in FIGURE 5, control **17** includes a first switch **37** having a moving contact **37***a* which when in its normally

closed position is in engagement with a fixed contact **37***b* and an actuating finger **37***c*. As shown in FIGURE 3, the switch is disposed with the actuating finger **37***c* in the path of movement of the outer end **29***a* of the arm **29** to be actuated by the arm at a point just short of a complete counterclockwise revolution of the arm from the starting position of FIGURE 3. The control **17** further includes a second switch **38** having a moving contact **38***a*, which when in its normally closed position is in engagement with a first fixed contact **38***b* and a second contact **38***c*. Switch **38** further includes an actuating finger **38***d* which, as shown in FIGURE 3, is disposed in the path of movement of the arm end **29***a* at a point approximately one-quarter of a revolution of the arm from the starting position.

In the cycle of operation of the ejection mechanism **16**, a switch **40** of control **18** is closed upon the initiation of a cycle of operation of apparatus **14** as a function of the operation of control **18**. Switch **40** is connected in series from one power supply lead L_1 to each of the moving contacts **37***a* and **38***a* of switches **37** and **38**, respectively. A coil **39** is associated with switch **38** for holding the finger **38***d* in the thrown position whenever the moving contact **38***a* engages fixed contact **38***c*, providing switch **40** is in its closed position. When switch **40** is so closed, current may flow from the other power supply lead L_2 through the ejection motor **31** to fixed contact **38***b* of switch **38**, to the moving contact **38***a*, which is normally in engagement with fixed contact **38***b*, and thence through switch **40** to the other power supply lead L_1. Movement of the arm **29** by the operation of the motor **31** then permits contact **37***a* to move to its normally closed position in engagement with fixed contact **37***b* to establish a holding circuit from motor **31** through fixed contact **37***b* and moving contact **37***a* of switch **37** to the switch **40**. The continued energization of motor **31** causes the arm **29** to rotate in a counter-clockwise direction, as seen in FIGURE 3, until the slide **24** is in the outermost position (the righthand position shown in dotted lines in FIGURE 2). This movement of the slide urges the folded end **15***b* of the lowermost bag **15** outwardly through the outlet **12** to the dispensing position for grasping by the user.

Rotation of the arm **29** causes the arm end **29***a* to engage the actuating finger **38***d* of switch **38** whereupon the moving contact **38***a* is spaced from contact **38***b* breaking this half of the circuit from motor **31** to the switch **40**. Moving contact **38***a* is thrown into engagement with the second fixed contact **38***c* of switch **38** which is connected in series with the coil **39** between switch **40** and the power supply lead L_2. Thus, coil **39** is energized and holds the moving contact **38***a* of switch **38** in engagement with fixed contact **38***c* notwithstanding a subsequent movement of the arm end **29***a* beyond the finger **38***d* of the switch as a result of continued rotation of the arm.

The motor **31** remains energized through fixed contact **37***b*, moving contact **37***a* and switch **40** until the arm end **29***a* engages the finger **37***c* of switch **37**. This engagement causes moving contact **37***a* to become disengaged from fixed contact **37***b* to break the circuit from the motor **31** to the switch **40**, thereby deenergizing the ejection motor **31** notwithstanding the continuing of the cycle of operation of apparatus **14** by control **18** which is maintaining the switch **40** closed. Thus, no further operation of the ejection mechanism **16** can be effected at this time. When, however, the cycle of operation of the apparatus **14** is completed, control **18** causes switch **40** to move to the open position shown in FIGURE 5 whereupon the circuit is broken from coil **39** to power supply lead L_1, thereby deenergizing the coil **39** and permitting the moving contact **38***a* to move to its normally closed engagement with the fixed contact **38***b*. Thus, the circuit is restored to the arrangement of FIGURE 5 reestablishing it for subsequent initiation of an ejection cycle upon initiation of a vend cycle of apparatus **14** by means of control **18**.

While control **17** is extremely simple, it provides an improved correlated functioning of the bag ejecting mechanism relative to the vending cycle of apparatus **14**. The control **17** permits only a single bag to be ejected during each vending cycle of the apparatus **14** while automatically re-establishing itself for a subsequent bag ejection cycle upon a subsequent initiation of another vending cycle of apparatus **14**. Further, the apparatus **10** includes control means for precluding initiation of the vending cycle of apparatus **14** in the event that the supply of bags in the apparatus **10** reaches a preselected low level which may comprise a condition wherein all of the bags have been dispensed from the apparatus **10**.

While we have shown and described one embodiment of our invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as defined in the appended claims.

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows:

1. In an apparatus utilizing bags for holding a product and having a first mechanism including a control providing a preselected cycle of operation thereof, means for providing bags one-at-a-time from a supply for use in said apparatus, said bag providing means comprising:

means for storing a pluraltiy of bags for delivery seriatim to a discharge position; and

means for discharging a bag from said discharge position to a dispense position including a discharge mechanism, means including an electric motor for operating said discharge mechanism through a discharge cycle wherein a bag is discharged, and control means arranged to respond to an initiation of the cycle of operation of said first mechanism to energize said motor and thereby operate the discharge mechanism through one cycle, said control means being further arranged to de-energize said motor at the end of the discharge cycle while allowing the cycle of operation of said first mechanism to be completed, and set itself up for a subsequent discharge cycle upon initiation of a subsequent cycle of operation of said first mechanism, said control means including a first switch connected in series with said motor and arranged to be opened at the initiation of the cycle of operation of said first mechanism, and a second switch connected in parallel with said first switch and arranged to be closed at the initiation of the cycle of operation of said first mechanism to energize said motor at that time, means associated with said motor for opening said second switch after a preselected amount of operation of the discharge mechanism, means for holding said second switch open until completion of the cycle of operation of said first mechanism, and means associated with said motor for closing said first switch prior to the opening of said second switch and subsequently opening said first switch after the opening of said second switch to terminate the energization of said motor, said control means further including a third switch and means responsive to the weight of bags in the storing means to preclude operation of the first mechanism whenever the supply of bags therein is below a preselected minimum.

2. In an apparatus utilizing bags for holding a product and having a first electrically operable product dispensing mechanism arranged to operate in preselected cycles, means for providing bags one-at-a-time from a supply for use in receiving the product dispensed from said apparatus, said bag providing means comprising:

means for storing a plurality of bags for delivery seriatim to a discharge position; and

means for discharging a bag from said discharge position to a dispense position including a discharge

mechanism, electrically operable means for operating said discharge mechanism through a discharge cycle wherein a bag is discharged, and electrical control means actuatable to initiate a cycle of operation of said product dispensing mechanism only when there is at least a preselected number of bags in said storing means, and only after said initiation of said cycle of operation of the product dispensing mechanism to actuate said means for operating said discharge mechanism and thereby operate the discharge mechanism through one cycle, said control means including means responsive to the weight of bags in the storing means to preclude operation of said control means whenever the quantity of bags in said storing means is below a preselected minimum greater than one, said weight responsive means being arranged to be engaged by a bag in both said discharge position and said dispense position, said control means being further arranged to deactivate the discharge mechanism at the end of the discharge cycle while allowing the cycle of operation of said product dispensing mechanism to be completed, and upon completion of said cycle of operation of said product dispensing mechanism set itself up for effecting a subsequent discharge cycle upon initiation of a subsequent cycle of operation of said product dispensing mechanism.

References Cited by the Examiner

UNITED STATES PATENTS

948,226	2/1910	Jones	221—240
1,696,659	12/1928	Ward.	
1,799,106	3/1931	Laxo	221—14
2,558,522	6/1951	Knapp	221—93 X
2,609,779	9/1952	Goldsworthy.	
2,627,369	2/1953	St. Laurence	221—96 X
2,719,528	10/1955	Gabrielsen	221—14 X
2,726,026	12/1955	Gould et al.	221—96 X
2,862,642	12/1958	Shipman	221—240
2,986,897	6/1961	Howard	221—96 X
3,051,286	8/1962	Stange et al.	194—10
3,119,518	1/1964	Eschenburg et al.	221—240
3,191,801	6/1965	Standish	221—14
3,214,058	10/1965	Sergio	221—34

WALTER SOBIN, *Primary Examiner.*

ROBERT B. REEVES, *Examiner.*