July 10, 1962 J. L. MULLIN 3,043,474

MULTI-CHANNELLED AUTOMATICALLY CONDITIONED DISPENSING MACHINE

Filed June 25, 1959 3 Sheets-Sheet 1

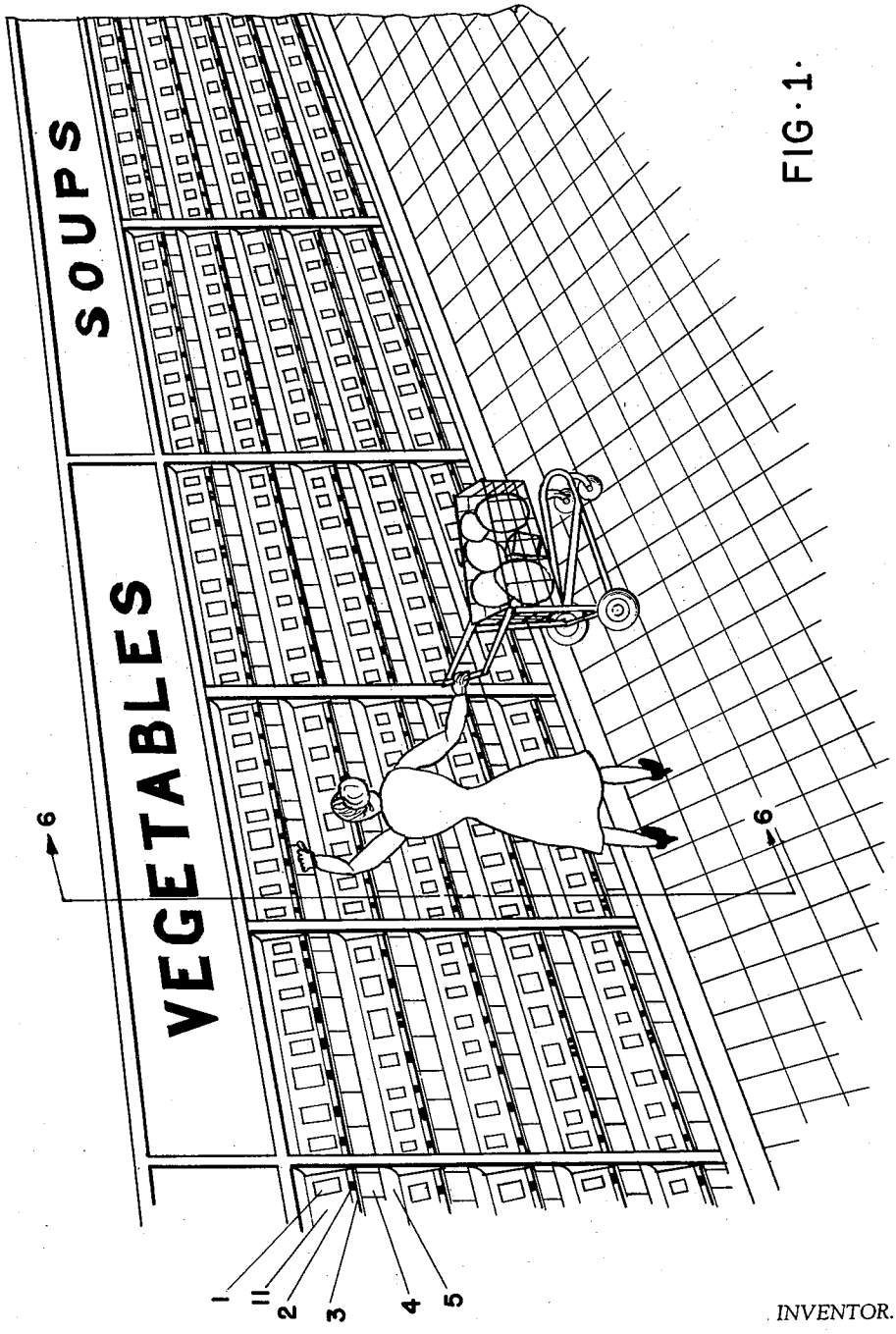


FIG. 1.

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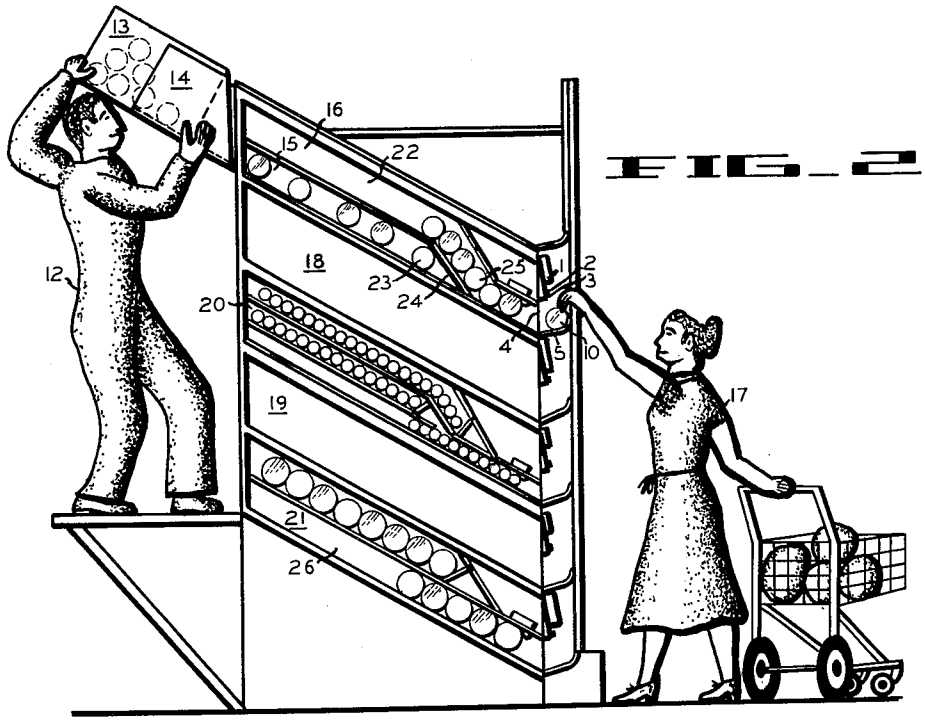


FIG_2

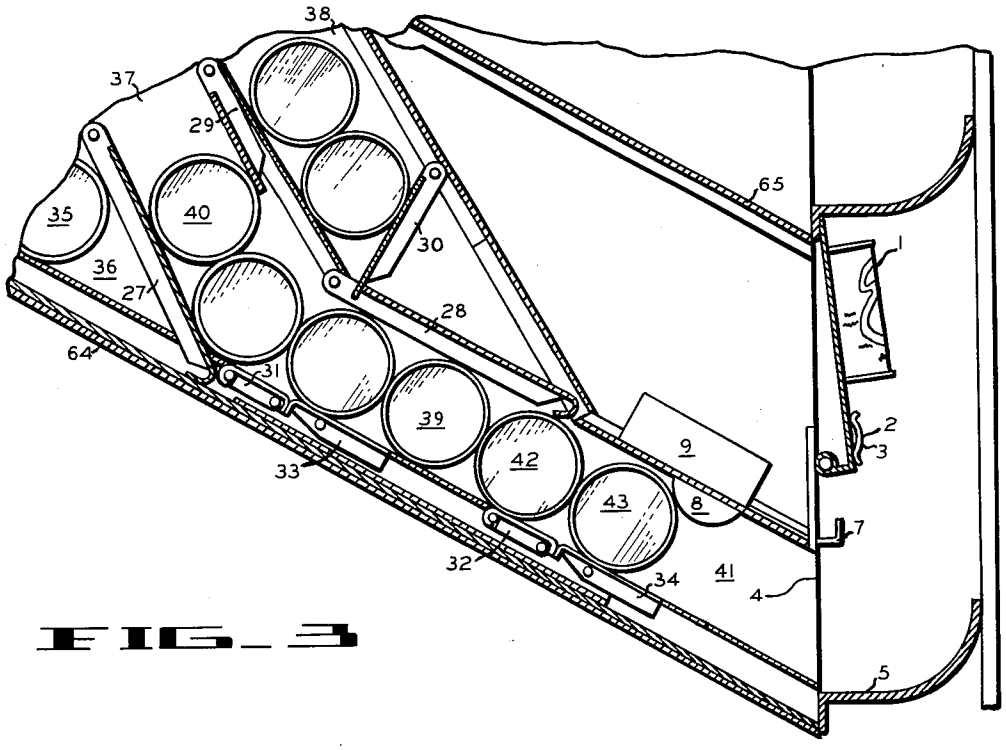


FIG_3

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MULTI-CHANNELLED AUTOMATICALLY CONDITIONED DISPENSING MACHINE

Filed June 25, 1959 3 Sheets-Sheet 3

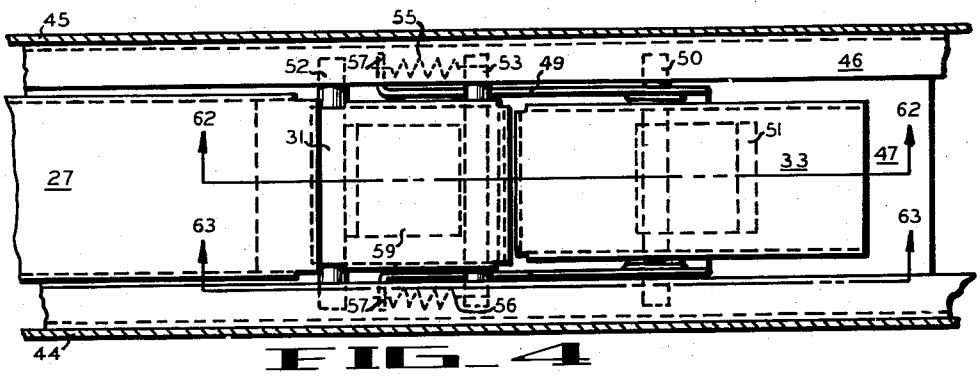


FIG_4

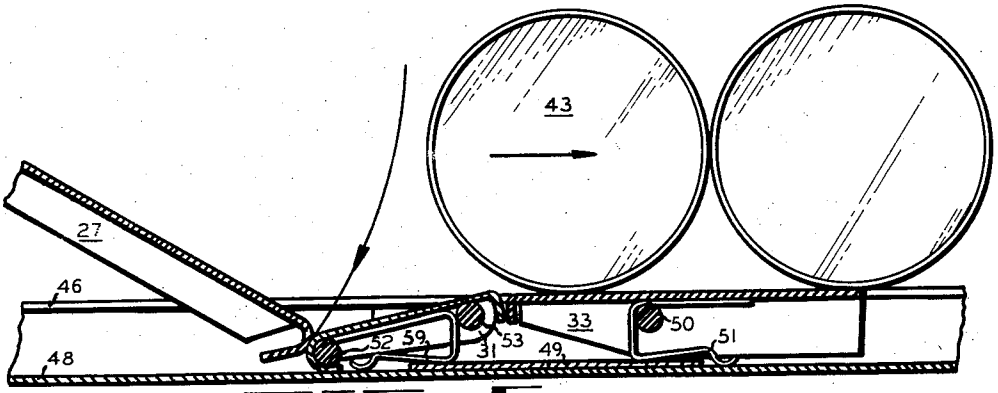


FIG_5

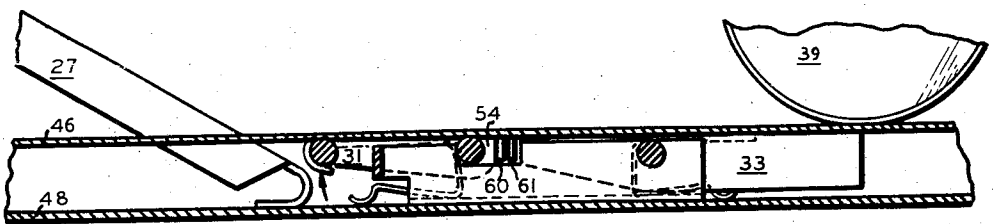


FIG_6

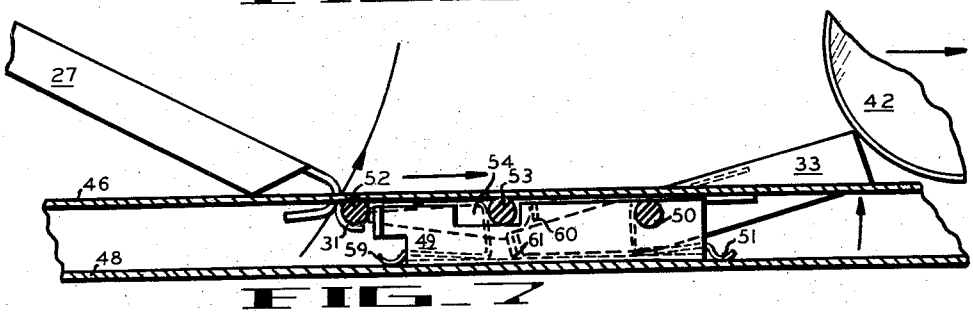


FIG_7

United States Patent Office 3,043,474 Patented July 10, 1962

3,043,474

MULTI-CHANNELLED AUTOMATICALLY CONDITIONED DISPENSING MACHINE

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Filed June 25, 1959, Ser. No. 822,817
9 Claims. (Cl. 221—109)

This invention relates to dispensing apparatus and more particularly to an improved dispensing machine adaptable to the receiving and dispensing of either cylindrical or spherical objects and more specifically to a type which is multi-channelled, rear-loaded, and gravity fed.

Multi-channelled, gravity fed, dispensers which feed into a common discharge channel are common in bottle vending machines. The patent to H. J. Smith, No. 2,212,797 and the patent to G. F. Albrecht, No. 2,336,387 illustrate two which could be identified as adaptable to rear loading.

A principal object of this invention is to provide an improved latching means to control flow of the cylindrical or spherical objects from the several storage channels into the discharge channel. These objects will be hereinafter referred to as "cans" for purpose of convenience without limiting in any way the scope of this invention.

Another object of this invention is to provide interlocking means which enable the recharging of any of the several channels at any time in any order. This is a necessary adjunct to render such a dispenser practical for use in groceries or other commercial institutions as a means of storing and dispensing cans.

Further objects and advantages will be apparent with reference to the following specification and drawings in which:

FIG. 1 illustrates a typical installation wherein one dispenser, as will be subsequently described, is employed for each canned item of stock.

FIG. 2 is a section on the line 6—6 of FIG. 1 showing five typical dispensers under several different conditions.

FIG. 3 is a section view of a typical dispenser in a larger scale.

FIG. 4 is a plan view of the interlock mechanism.

FIG. 5 is a section of the discharge channel through line 62—62 in FIG. 4 under one loading condition.

FIG. 6 is a section of the discharge channel through line 63—63 in FIG. 4 under a second loading condition; and

FIG. 7 is a section of the discharge channel through line 63—63 in FIG. 4 under a third loading condition.

Referring to the drawings as shown in FIGS. 1 and 2, the can dispenser, being of modular construction, is generally utilized as a component along with others of similar design to make up a complete installation for dispensing canned goods. As illustrated each dispenser arbitrarily displays a dummy display can 1 and a price marker 2 in a conventional channel 3 which is commercially available for that purpose. The can 10 rolls out through discharge opening 4 coming to rest against barrier 5. Parts 1, 2 and 3, shown mounted on display panel 11 and barrier 5, may also be component parts of individual dispenser modules as an alternative arrangement.

In FIG. 2 the attendant 12 is shown "pouring" cans from a conventional carton 13 into channel 15 of dispenser 16, utilizing a loading aid 14, which facilitates the bridging from carton to dispenser. The customer 17 is shown removing discharged can 10 from behind barrier 5. Dispensers 18 and 19 are shown as they might appear from outside their respective modular side frames. Dispensers 20 and 21 are shown in section, as is 16. Each is shown under a different condition of loading and each contains a different can size.

Referring to dispenser 16, it may be noted that upper

channel 22 is in a depleted condition such that the momentum of the cans being loaded into 15 should cause can 23 to cam ramp 24 up, jamming can 25 and thereby preventing further delivery from either channel 15 or 22. As will be shown later, this is overcome by a new and novel interlock system.

From dispensers 16, 20 and 21, it is apparent that the number of channels is arbitrary and limited only by the space available. Dispenser 21, in contrast to dispenser 16, shows the lower channel 26 active.

FIG. 3 illustrates flexibility of this dispenser. Cans in upper channel 38 are shown held back by latch 30 which is keyed behind ramp 28 which is prevented from hinging down by the can 39 upon which it rests. The currently active middle channel 37 is shown in a semi-depleted condition, as was channel 22 in dispenser 16, previously mentioned. The cans are shown rolling down ramp 27 while latch 29 (similar to 30) has been cammed up by weight of cans in channel 37. It is presently shown being supported by can 40. Latches 29 and 30 are normally urged clockwise by torsion-type springs. The latter are not shown, this detail not being important to the invention. Ramps 27 and 28 are free to pivot up or down as controlled and limited by the gravity fed cans and/or the interlock mechanisms. Cans and can 35 being loaded into lower channel 36 (as can 23 in channel 15) are prevented from lifting ramp 27 by interlock pawl 31, which is prevented from yielding by interlock stop 33. This will be clarified in succeeding explanations. Cans from the active channel 37, having reached discharge channel 41, are shown stopped against print roller 8 which is arbitrarily shown as a combination price marking means and escapement stop. Control of the print roller rests in an escapement in housing 9 and is released by manual operation of push lever 7 by the customer. Print means and escapement are not important to this invention and will not be further defined. It is apparent from the described condition and sketches that either, any, or all of channels 36, 37 and 38 may be restocked without necessity of manually preconditioning any part or mechanism.

Movement of the last can in channel 37 to position of can 42 will release ramp 27 under weight of cans in channel 36, as will be later explained, allowing the cans and can 35 to roll down to position 39. Can 42 would prevent the dropping of ramp 28 until this is completed. Subsequent clearing of all cans in channels 36 and 37 to position 43 will allow ramp 28 to drop, unkeying latch 30 which will yield counter-clockwise under weight of cans in 38 to a clear position such as latch 29 in channel 37. Cans from channel 38 would then roll down ramp 28 into discharge channel 41. Channels 36 and 41, though being the same channel, are so identified to differentiate between the two functions.

The interlock components shown in FIGS. 4, 5, 6 and 7 housed between the base 48 and the deck 46 in which hole 47 is cut to permit the operation which will be subsequently explained. A secondary function of the base 48 and/or deck 46 is to provide structural spacing of side frames 44 and 45 which limit endwise or axial movement of the cans and complete the modular construction of the dispenser.

FIGS. 4, 5, 6 and 7 show ramp 27, interlock pawl 31 and interlock stop 33 as shown in FIG. 3. The latter two are contained by channel-shaped interlock frame 49 in which interlock stop 33 is pivotally mounted on shaft 50 inserted through holes in interlock frame 49. It is limited by the weight of a single can from rotating counter-clockwise as urged by torsion spring 51. FIG. 7 shows it in the rotated position, as would occur when the last can moved into position 42 as shown here and in FIG. 3.

FIGS. 3, 4, 5, 6 and 7 show interlock pawl 31 with

two shafts, the first being 52 which serves as a stop preventing the rise of the pawl 31 above the plane of deck 46. The second is pivot shaft 53 which is affixed to pawl 31, its ends being contained in the spaces 54 in interlock frame 49 by deck 46. Springs 55 and 56 attached to shaft 53 urge it to the left (FIG. 4) towards spring ears 57 formed out from interlock frame 49 to which the reverse ends of springs 55 and 56 are attached. Torsion-type spring 59 exerts a clockwise pressure on interlock pawl 31. The latter shown here as a preformed leaf spring (as was spring 51). It must be free also to move with interlock pawl 31 right and left in its operation. As shown in FIG. 5, the ramp 27 has dropped, as the last can moved to position 43 (as shown in FIG. 5), camming interlock pawl down against spring 59. As ramp 27 passes pawl 31 the latter returns clockwise to normal position as shown in FIG. 6. Pressure provided by cans as in channel 36 (FIG. 3) will cause ramp 27 to lift. If a can, as shown as 39 in FIGS. 3 and 6, is preventing interlock stop 33 from rotating under pressure of spring 51, an interference occurs wherein ear 60 on pawl 31 is prevented from yielding right by ear 61 on stop 33. This prevents ramp 27 from escaping past interlock pawl 31. Subsequent movement of the last can to position 42 (FIGS. 3 and 7) allows interlock stop 33 to lift counter-clockwise under urging of spring 51 (as shown in FIG. 7) thereby dipping ear 61, allowing it to clear ear 60 on pawl 31, which is then free to yield right, as cammed by ramp 27. As ramp 27 escapes past pawl 31 the latter is restored left to its normal position by springs 55 and 56. Use of the previously explained mechanisms in remote controlled installations is equally practical, involving only the substitution of mechanical or electromechanically operated escapement.

It is not intended that the scope of the invention is to be limited to component design as illustrated herein.

From the foregoing it will be seen this invention is well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the invention. It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of this invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping storage channels for receiving and holding articles to be dispensed, a common delivery channel communicating with said storage channels, a pivoted ramp for enabling articles in a storage channel to discharge into the common delivery channel, a blocking latch preventing movement of the articles from a higher storage channel into the common delivery channel, means operated by depression of the pivoted ramp for releasing said blocking latch, a pawl for holding the depressed ramp in its depressed position, a stop to prevent pawl release, and means operated by passage of the last article in the channel for releasing said stop, its pawl and ramp thereby enabling articles in a lower channel to discharge into the common delivery channel.

2. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a common delivery channel, a plurality of superposed sloping channels for receiving articles to be dispensed above said common channel, a pivoted ramp enabling articles being received in an upper channel to discharge directly into the common delivery channel, a blocking latch preventing movement of said articles into the common discharge channel, means operated by depression of the pivoted ramp for releasing said blocking latch, a pawl for holding a depressed ramp in its depressed position, a stop to prevent pawl release, and means operated by passage of the last article in the channel for releasing said stop, its pawl and ramp thereby enabling articles being received in the lower channel to discharge directly into the common delivery channel.

3. A remote controlled multi-channelled automatically conditioned dispensing machine capable of receiving, storing and dispensing articles, comprising a plurailty of superposed sloping channels for holding articles to be dispensed, a common delivery channel below said sloping channels, a pivoted ramp for enabling articles stored in a higher storage channel to discharge into the common delivery channel, a blocking latch preventing movement of the articles from the higher storage channel into the common delivery channel, means operated by depression of the pivoted ramp for releasing said blocking latch, a pawl for holding a depressed ramp in its depressed position, a stop to prevent pawl release, and means operated by passage of the last article in the channel for releasing said stop, its pawl and ramp, enabling articles stored in a lower channel to be discharged into the common delivery channel.

4. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping channels for storing articles to be dispensed, a pivoted ramp for carrying and causing articles stored in a higher storage channel to pass into the adjacent lower channel, a blocking latch preventing movement of the articles from the higher storage channel into said lower channel, and means operated by depression of the pivoted ramp for releasing said blocking latch.

5. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping channels for receiving articles to be dispensed, a pivoted ramp for carrying and causing articles being received in an upper channel to discharge into the adjacent lower channel, a blocking latch preventing discharge into said lower channel, and means operated by depression of the pivoted ramp for releasing said blocking latch.

6. A remote controlled multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping channels for storing articles to be dispensed, a pivoted ramp for carrying and causing articles stored in an upper channel to discharge into the adjacent lower channel, a blocking latch preventing discharge into said lower channel, and means operated by depression of the pivoted ramp for releasing said blocking latch.

7. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping channels for receiving and holding articles to be dispensed, a common delivery channel below said sloping channels, a retaining member to prevent discharge from a lower channel holding articles into the common delivery channel, a pawl for latching said retaining member, a stop to prevent pawl release and means operated by passage of the last article in the channel immediately above for releasing said stop, its pawl and retaining member enabling articles stored or being received in the lower channel to discharge into the common delivery channel.

8. A multi-channelled automatically conditioned dispensing machine capable of receiving, storing and dispensing articles, comprising a plurality of superposed sloping channels for receiving articles, a common discharge channel below said sloping channels, a retaining member to prevent discharge from a lower channel receiving articles into the common discharge channel, a pawl for latching said retaining member, a stop to pre-

vent pawl release and means operated by passage of the last article in the channel immediately above for releasing said stop, its pawl and retaining member enabling articles being received in the lower channel to discharge into the common delivery channel.

9. A remote controlled multi-channelled automatically conditioned dispensing machine capable of receiving, storing, and dispensing articles, comprising a plurality of superposed sloping channels for receiving and storing articles, a common discharge channel below said sloping channels, a retaining member to prevent discharge from a lower channel storing articles into the common discharge channel, a pawl for latching said retaining member, a stop to prevent pawl release, and means operated by passage of last article in the channel immediately above for releasing said stop, its pawl and retaining member enabling articles stored in lower channel to discharge into the common delivery channel.

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