

March 8, 1932.

W. E. BIHL ET AL
DISPENSING APPARATUS

1,848,238

Filed Aug. 26, 1926

2 Sheets-Sheet 1

Fig. 2

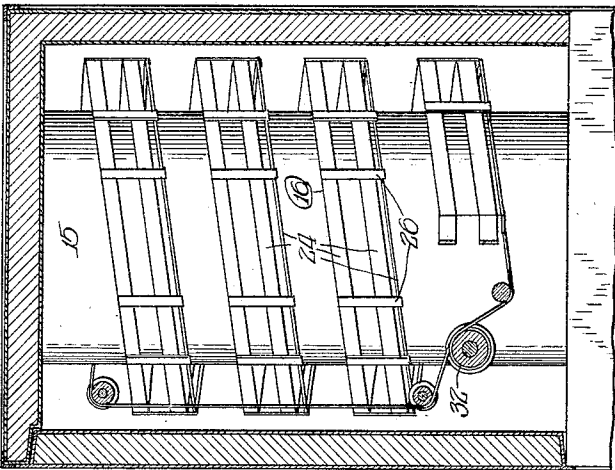


Fig. 6

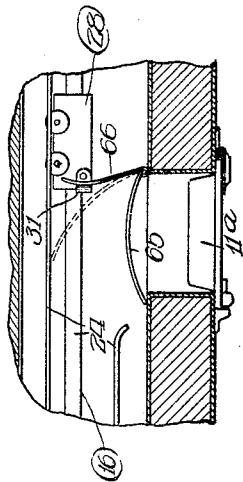
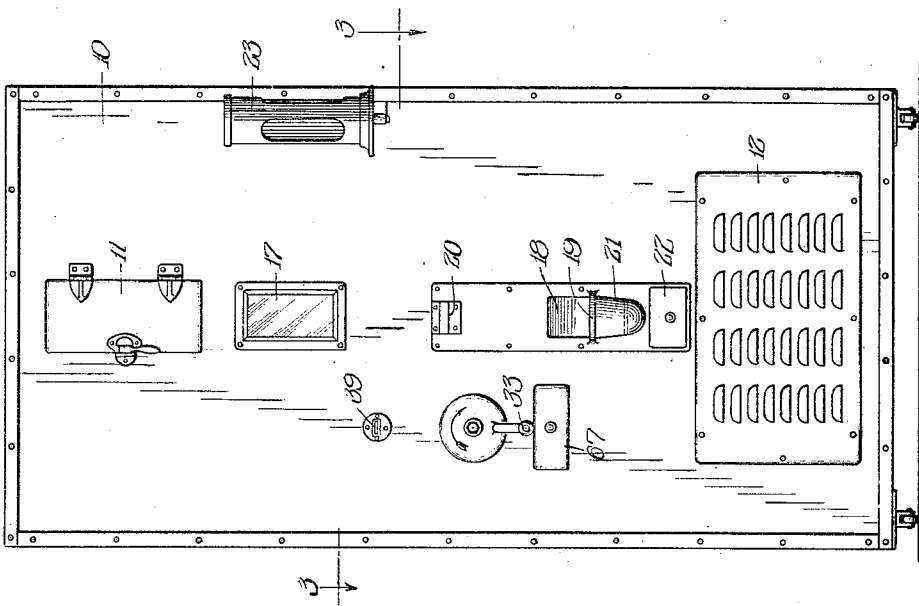


Fig. 1



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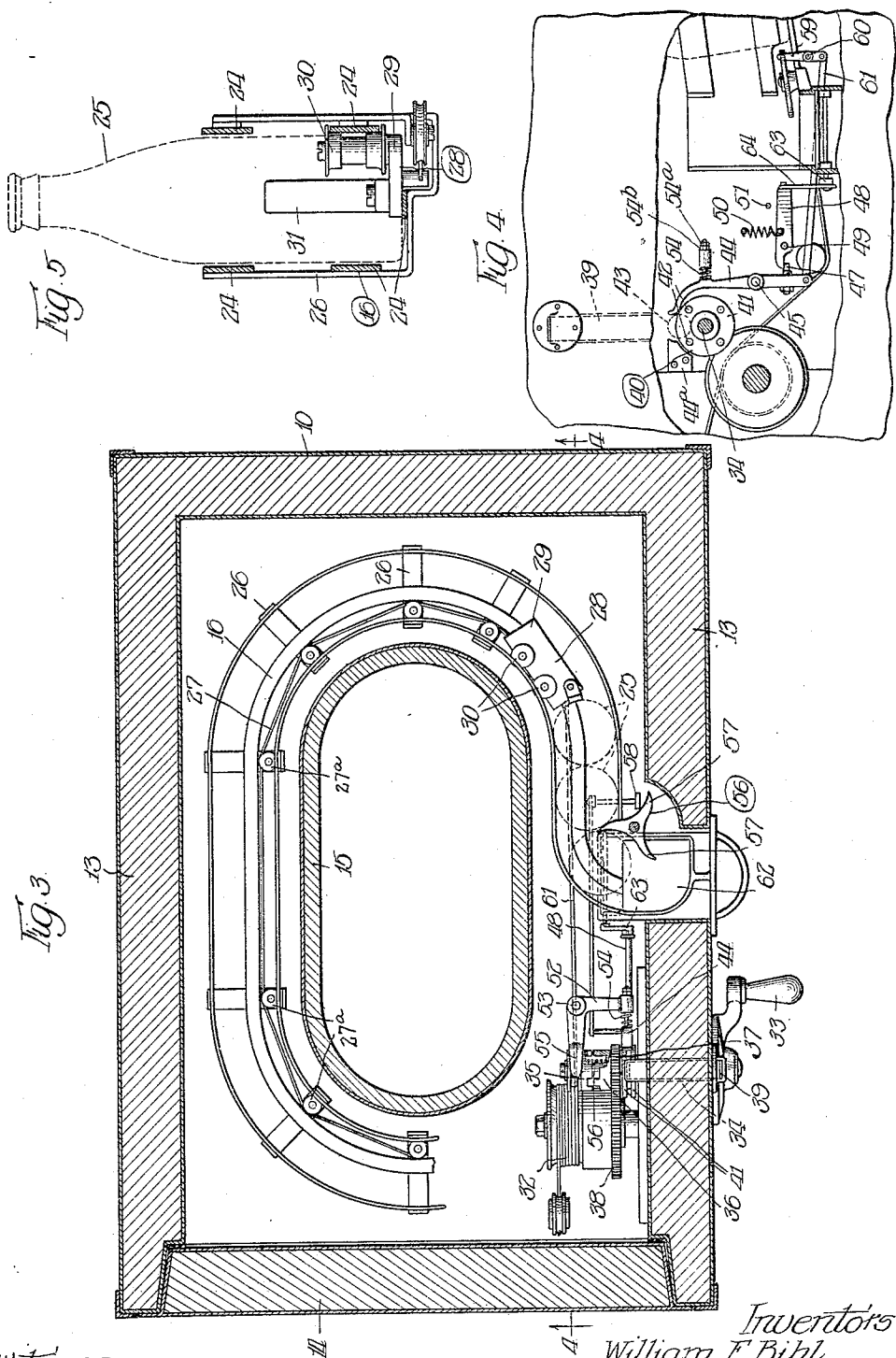
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UNITED STATES PATENT OFFICE

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DISPENSING APPARATUS

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The present invention relates to dispensing apparatus.

More particularly the present invention relates to coin controlled apparatus for dispensing articles and has particular reference to dispensing mechanism adapted to be used in connection with the refrigeration and dispensing of bottles of soft drinks, bottles of milk, and the like.

10 An object of the present invention is to provide mechanism of improved type for dispensing articles in response to the insertion of a coin.

15 A further object is to provide coin controlled dispensing apparatus which is not likely to get out of order and which insures the owner of the apparatus against the unauthorized withdrawal of the articles to be dispensed.

20 A further object is to provide coin controlled dispensing apparatus having relatively large capacity, which requires no particular care on the part of the attendant when charging said apparatus, and which is simple in operation.

25 A further object is to provide bottle refrigerating and dispensing apparatus which is well adapted to meet the needs of commercial operation.

30 With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

35 In the drawings, which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

40 Figure 1 is a view in front elevation of one embodiment of the present invention;

Figure 2 is a sectional view taken along a vertical plane, showing part of the interior of the construction shown in Figure 1;

45 Figure 3 is a sectional view taken along a horizontal plane, indicated by the arrows 3—3 of Figure 1, showing part of the interior construction of the structure shown in Figure 1;

50 Figure 4 is a sectional view taken along

a plane indicated by the arrows 4—4 of Figure 3; and

Figures 5 and 6 illustrate details of construction.

Referring first to Figure 1, the numeral 10 indicates a casing, which may be made of sheet metal. Said casing may be provided with doors for permitting access to the interior thereof for inspection, repairs, and for the insertion of articles to be dispensed. One of the doors referred to is indicated by the numeral 11 and is the door through which articles are charged into the apparatus.

The illustrated embodiment of the present invention constitutes means for refrigerating and dispensing bottles, as for example bottles containing soft drinks. The door 11 is therefore of a size and shape freely to admit soft drink bottles. Near the bottom of the casing 10 is a panel 12, which is removably secured to said casing 10 to permit access to the refrigerating means (not shown), which means may be a refrigerating machine.

Referring to Figure 3, it will be noted that the casing 10 is provided with heat insulating packing 13. A portion of one end wall of said casing, indicated by the numeral 14, is removable, to permit ready access to the interior of said casing 10. Symmetrically disposed within the casing 10 is the brine tank 15, which brine tank contains cooling fluid. Surrounding the brine tank 15 is the ramp 16, which provides a sloping surface from a region near the top of the casing 10 to a lower region disposed at a level above the floor at which a person of ordinary height may conveniently remove articles from said casing 10. Said ramp 16 may be described as having substantially helical conformation, though it is intended in this specification that the term "helical" shall have a broader meaning than its true mathematical meaning and shall include structures having an elliptical or other geometric shape in horizontal section.

Referring again to Figure 1, bottles may be inserted through the door 11 and placed upon the ramp 16. The window 17 may be provided through which bottles within the

casing 10 may be observed. As bottles pass down the ramp 16 they are discharged in succession through the outlet opening 18 onto the base 19. The base 19 may be provided with a rack (not shown) for supporting the bottles as they are deposited from said base 19. Located at a convenient point is the bottle cap remover 20, which cap remover may be of the ordinary conformation. Said cap remover 20 is preferably disposed directly above the base 19, whereby caps removed by said cap remover may drop through the rack in the base 19 into the chute 21, whence they may drop into the drawer 22. Said drawer 22 may be opened at any time by an attendant, and the caps removed. The numeral 23 indicates a receptacle for straws, which receptacle may be positioned at a convenient height.

The present invention contemplates positive means for moving the bottles down the ramp 16, which positive means is responsive to coin controlled apparatus which will be described in detail hereinafter. The ramp 16, as illustrated, comprises the straps 24, which are shaped to provide a chute-way to hold bottles, indicated by the numeral 25, in a vertical position or in a position which is nearly vertical. Said ramp may be supported by any preferred supporting means. Said straps 24 are held in proper relation to one another by means of the holding means 26, which may be spaced at intervals along the ramp 16. The lowermost of said straps 24 is disposed symmetrically of the bottles carried thereby and offers very little friction to resist movement of said bottles. Also carried by the supporting members 26 are a plurality of pulleys 27^a disposed at intervals along the ramp 16, which pulleys form guiding means for a cable 27 to cause said cable to follow more or less generally the contour of the ramp 16. Said cable 27 is preferably an endless cable and has secured thereto the pusher 28. As indicated in Figures 3 and 5, the pusher 28 includes the member 29, having mounted thereon the roller bearings 30—30 adapted to have rolling engagement with one of the straps 24. Said member 29 is also provided with the upstanding member 31, adapted to engage the side of a bottle for pushing said bottle down the ramp 16. It will be understood that a line of bottles will be disposed upon the ramp 16, and that by pushing against the uppermost of said bottles the whole line will be pushed downwardly toward the discharge outlet 18. The cable 27 is adapted to be moved by the sheave 32, placed intermediate of the length of the endless cable 27. Said sheave 32 is adapted to be operated by the handle 33, which is connected through the shaft 34 to the clutch element 35, which clutch element is adapted to have clutching engagement with the clutch element 36. Said clutch element 36 is provided with the pinion

37 adapted to mesh with the gear 38, which gear 38 is rigidly connected to the sheave 32. After a person has deposited the necessary coin, he may, by turning the crank 33, connect the clutch elements 35 and 36, whereby by continuing to turn said crank 33 he will operate the sheave 32 to communicate motion to the endless cable 27 to cause movement of the pusher 28 and effect the discharge of a bottle from the outlet opening 18. Discharge of a bottle will automatically cause the disengagement of the clutch elements 35 and 36, whereby further rotation of the crank 33 will not effect the discharge of another bottle until another coin has been inserted.

The mechanism for performing the functions immediately above referred to will now be described. Referring to Figures 3 and 4, the numeral 39 indicates a coin slot which coin slot is adapted to deliver the coin to the wheel 40. Said wheel 40 comprises a pair of spaced plates 41—41, which plates are spaced apart a sufficient distance to receive between them, flatwise, a coin such as is intended to operate the mechanism. Disposed in the periphery of a circle between said plates 41—41 are the pins 42—42, which pins 42 with the side plates 41 comprise a cage for the reception of the coin. The parts are so designed that the coin, which is indicated in Figure 4 by the numeral 43, projects radially a sufficient distance to engage the lever 44, which lever is pivoted upon the pin 45 and is spring-pressed in a counter-clockwise direction by means which will be described presently. It will be obvious that as the handle 33 is turned to rotate the shaft 34 in a clockwise direction as the parts are viewed in Figure 4, the coin 43 will engage the upper extremity of the lever 44 to move said lever in a clockwise direction. Disposed to the left of the coin slot 39 as the parts are viewed in Figure 4 is the stop plate 44^a adapted to abut the coin 43 if a person, after inserting a coin, should turn the shaft 34 in a counter-clockwise direction. By reason of the provision of said stop plate 44^a, the danger is averted that a person might by turning the handle 33 in the wrong direction have the coin drop out of operative position without operating the lever 44. Mounted near the lower extremity of the lever 44 is the stud 47 adapted to cooperate with the lever 48, which lever 48 is pivoted about the pin 49 and is urged in a counter-clockwise direction by the spring 50, a stop 51 being provided for limiting the counter-clockwise movement of the lever 48. When the lever 44 is moved in a clockwise direction by reason of the engagement therewith of the coin 43, the stud 47 carried by said lever 44 will be moved out of engagement with the adjacent extremity of the lever 48, permitting the spring 50 to move said lever 48 up against the stop 51, in which position the extremity of lever 48 will

abut against the extremity of the stud 47, holding the lever 44 from returning to the position illustrated in Figure 4.

The numeral 52 indicates a bell crank lever 5 pivotally mounted upon the pin 53. One arm of said bell crank lever 52 is resiliently connected to the lever 44 by means of the spring 54, said lever 44 being provided with a pin 54a extending through an aperture in the adjacent extremity of the bell crank lever 52; said spring 54 being disposed between said lever 44 and said adjacent end of the bell crank lever 52. Nuts 54b are disposed on the extremity of the pin 54a. The other arm of said bell crank lever 52 is provided with a yoke 55, by means of which rotation of the bell crank lever 52 will communicate axial movement to the clutch element 35. The clutch elements 35 and 36 are urged apart by the coil spring 56, which coil spring, in a manner which will be obvious, insures the disengagement of said clutch elements 35 and 36, except when it is intended that they shall be engaged, and insures the smooth engagement of said clutch elements 35 and 36 in case said clutch elements are presented in non-meshing relationship with one another.

The numeral 56 represents a star wheel having three vanes 57—57, which vanes are successively disposed in obstructing relationship to the bottles 25 upon the ramp 16. The numeral 58 indicates a stop for preventing the turning of the star wheel 56, except when said star wheel should be moved by engagement therewith of a bottle to be discharged from the machine. Said stop member 58 is illustrated in the form of a lever 59 pivoted upon the pin 60. One extremity of said lever 59 is adapted to be disposed in obstructing relationship to star wheel 56. The other extremity of said lever 59 is connected by means of rod 61 to the lever 44. When said lever 44 has been moved in a clockwise direction following the insertion of a coin, the rod 61 will be moved to the left as the parts are viewed in Figure 4, whereby the upper extremity of the lever 59 will be disposed out of obstructing relationship with the star wheel 56.

As each bottle 25 is moved in succession to the lower extremity of the ramp 16, it is adapted to drop upon a trap door 62. Said trap door 62 is provided with the crank 63, which crank is connected to the lever 48 by means of the link 64. The dropping of the trap door 63 will cause a downward movement of the link 64, resulting in clockwise movement of the lever 48 in opposition to the spring 50. This movement will disengage the left-hand extremity of the lever 48 from stud 47 (Figure 4), whereby the lever 44 may move into the position shown in Figure 4, thereby completing the cycle of operation.

When the attendant of the illustrated dispensing apparatus desires to charge bottles into said apparatus, he may, by inserting a

coin, connect the clutch elements 35 and 36 in the manner above referred to by turning the shaft 34 in a clockwise direction; thereafter, by turning handle 33 in a direction to move the shaft 34 in a counter-clockwise direction, he may move the pusher 28 up to the upper region of the ramp 16. He may then charge bottles into said dispensing apparatus one after another.

Attention is now directed to the structure illustrated in Figure 6. Before charging bottles into the apparatus, the attendant should, of course, move the pusher 28 to its uppermost position to the right of the door 11 as the parts are viewed in Figure 1; otherwise the bottles charged into the apparatus will be in rear of said pusher 28 and will not be pushed downwardly by said pusher when said pusher is moved downwardly by the coin controlled mechanism. Accordingly, the present invention contemplates the provision of a shutter 65, spring-pressed to closed position across the opening controlled by the doorway 11. Said shutter is provided with a finger 66 adapted to be engaged by the member 31 or other part of the pusher 28. When said pusher 28 is moved to the upper limit of its travel, said pusher will, by reason of its engagement with the finger 66, positively move the shutter 65 into the diagonal or guiding position indicated in dotted lines in Figure 6, in which the swinging edge of said shutter abuts against the inner strap 24. Said shutter 66 is curved about a vertical axis, and when said shutter is in guiding position, it serves as guide means for directing the bottles in the proper direction onto the ramp 16. When said shutter 65 is in closed position, as indicated in full lines in Figure 6, it will indicate to the attendant that the pusher 28 is not in its uppermost position and that said pusher should be moved to said uppermost position before bottles are charged into the apparatus. If desired, a suitable warning may be placed upon said shutter 65.

After having charged the apparatus, the attendant will then turn the handle 33 in a direction to move the shaft 34 in a clockwise direction as the parts are viewed in Figure 4. Inasmuch as the shutter 65 is spring-pressed to closed position, it will close automatically when the pusher 28 is moved downwardly. Inasmuch as the clutch elements 35 and 36 are in engagement, motion will be communicated from said handle through clutch elements 35 and 36 to pinion 37 and gear 38 to turn the sheave 32. This action will move the cable 27, whereby the pusher 28 will move the line of bottles downwardly. At this time the lever 44 will be held in its clockwise position, whereby the rod 61 will hold the lever 59 out of obstructing relationship with the star wheel 56. Movement of the pusher 29 will therefore result in the moving of the bottle 25 to the

trap door 62, whence said bottle will drop through the outlet opening 18 onto the base 19, from which said bottle may be removed. As noted above, movement of the trap door 62 will cause the crank 63 to move the link 64 downwardly, moving the lever 44 in a clockwise direction, allowing the lever 44 to move to the position indicated in Figure 4. Such movement of the lever 44 will cause the clockwise movement of the bell crank lever 52, resulting in disengagement of clutch elements 35 and 36. The operator may then insert the bottle which he has discharged back into the machine through the door 11 for storage purposes and may lock said door 11.

When any person, desiring to secure a bottle, inserts a coin within the slot 39 and communicates a turning movement to the handle 33 in a direction to move the shaft 34 in a clockwise direction, the coin, indicated by the numeral 43 in Figure 4, will cause the lever 44 to swing in a clockwise direction, resulting in the engagement of the clutch elements 35 and 36 as above described, whereby turning of the handle 33 will push the bottle onto the trap door 62, from which said bottle will drop through the outlet opening 18 onto the base 19 in a manner described above. As also described above, the operation of the trap door, by reason of its connection with the lever 48, will interrupt the driving connection between the clutch elements 35 and 36.

After each coin 43 has passed the upper extremity of the lever 44 it will drop out into a convenient coin receptacle, such a receptacle being indicated in Figure 1 by the numeral 67.

Though a handle 33 has been illustrated for operating the mechanism for moving the pusher 28, it will be clear that any other preferred motive means may be used if preferred. It should be noted, further, that the refrigerating and dispensing apparatus embodying the principles of the present invention permits dry, regulated refrigeration, delivering dry bottles.

It has been found in practice that ordinary soft drink bottles will slide with sufficient ease on the ramp 16, particularly with the speed reduction gears 37 and 38, so that no anti-friction bearings are required for said bottles. Any such bearings may be used, of course, if preferred.

Though a preferred embodiment of the present invention has been described in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is—

1. In bottle dispensing apparatus, in combination, a casing, a ramp enclosed within said casing for holding a plurality of articles thereon, coin controlled means for posi-

tively moving said articles downwardly along said ramp, and means for positively checking the downward movement of said articles at the end of the operation of said last means.

2. In bottle dispensing apparatus, in combination, a casing, a ramp enclosed within said casing, moving means for positively moving articles downwardly along said ramp, motive means, means for checking downward movement of said articles at the end of operation of said first means, and coin controlled mechanism for connecting said motive means to said moving means.

3. In bottle dispensing apparatus, in combination, a casing, a ramp enclosed within said casing, means for positively moving articles downwardly along said ramp, motive means, coin-controlled mechanism for connecting said motive means to said moving means, and means responsive to the delivery of one of said articles from said apparatus for interrupting the operative connection between said motive means and said moving means.

4. In bottle dispensing apparatus, in combination, a casing, a ramp enclosed within said casing, means for positively moving articles downwardly along said ramp, motive means, coin controlled mechanism for connecting said motive means to said moving means, means responsive to the delivery of one of said articles from said apparatus for interrupting the operative connection between said motive means and said moving means, stop means for preventing the unauthorized delivery of articles from said apparatus, and means responsive to said coin controlled mechanism for governing said stop means.

5. In cooling and dispensing apparatus, in combination, a casing, a ramp disposed in said casing, a pushing member cooperatively associated with said ramp, an endless cable connected to said pushing means, means for moving said cable, said means including motive means and clutch means, and coin controlled mechanism for operating said clutch means to connect said motive means in operative relationship to the remainder of said cable moving means.

6. In cooling and dispensing apparatus, in combination, a casing, a ramp disposed in said casing, a pushing member cooperatively associated with said ramp, an endless cable connected to said pushing means, means for moving said cable, said means including motive means and clutch means, coin controlled mechanism for operating said clutch means to connect said motive means in operative relationship to the remainder of said cable moving means, and means responsive to the passage of an article along said ramp for rendering inoperative said cable moving means.

7. In cooling and dispensing apparatus, in combination, a casing, a ramp disposed in said casing, a pushing member cooperatively

associated with said ramp, an endless cable connected to said pushing means, means for moving said cable, said means including motive means and clutch means, coin controlled mechanism for operating said clutch means to connect said motive means in operative relationship to the remainder of said cable moving means, means responsive to the passage of an article along said ramp for rendering inoperative said cable moving means, and stop means constituting an obstacle to the passage of articles along said ramp, said stop means being responsive to said coin controlled mechanism.

8. In dispensing apparatus, in combination, a casing, a ramp within said casing, moving means for positively moving articles downwardly along said ramp, motive means, coin controlled mechanism for connecting said motive means to said moving means, said coin controlled mechanism including a coin receiving cage and stop means cooperating with said cage and coin carried thereby for preventing reverse movement of said motive means until after said motive means has been turned through a predetermined distance in a direction to connect said motive means to said moving means.

9. In dispensing apparatus, the combination of a casing, delivery apparatus including a pusher disposed in said casing for dispensing the contents thereof, means for operating said delivery apparatus including a cable connected thereto, and a windlass for operating the cable, means for imparting motion to said operating means, a clutch for connecting said operating means and said last named means, means for controlling said clutch through a token dropped into the apparatus, and means for positively maintaining said clutch in operative position until a dispensing function has been performed.

10. In dispensing apparatus, the combination of a casing, article holding means disposed in said casing, article receiving means in communication with said holding means for receiving dispensed articles, a movable member in said article-holding means and co-operable with the articles to be dispensed for moving said articles into said receiving means, means for moving said movable member including rotatable members, a normally disconnected clutch for connecting said members, coin operated mechanism for connecting said clutch, said mechanism including a coin receiving member, means adjacent said receiving means for normally preventing article dispensing, a connection operable by a coin in said coin receiving member for permitting operation of said last named means, a member operated by said connection for connecting said clutch, a member movable by operation of said connection to maintain said clutch operatively connected, and means engageable by an article dispensed for moving

said last named member to cause declutching.

11. In a bottle dispensing apparatus, in combination, a casing, a ramp inclosed within said casing, pushing means for positively moving articles downwardly along said ramp, a crank, coin controlled clutch mechanism for connecting said crank to said pushing means, and means including a bell crank lever operative responsive to the delivery of one of said articles from said apparatus for interrupting the operative connection between said clutch and said crank, a star wheel for preventing the unauthorized delivery of bottles from said apparatus and a stop lever operated responsive to an operation of said coin controlled mechanism for governing said star wheel.

12. In a cooling and dispensing apparatus, a casing, a ramp disposed in said casing, pushing means cooperatively associated with said ramp, an endless cable mounted on pulleys and a windlass, said endless cable being connected to said pushing means, a normally disengaged clutch a bell crank adapted to operate said clutch, and coin controlled mechanism for operating said bell crank lever to connect said clutch in operative relationship with said cable moving means.

13. A coin controlled mechanism for dispensing apparatus having, in combination, article holding means, a device for governing the delivery of articles from said holding means, a normally disengaged clutch mounted on a shaft and operable by a crank, a lever operated responsive to the insertion of a coin for releasing said device to permit one article to be dispensed, a bell crank resiliently connected to said first named lever and operable to engage said clutch, a latch engaging said first named lever for holding it in its operated position until an article has been dispensed and trip means for releasing said latch upon delivery of the article.

Signed at Chicago, Illinois, this 21st day of August, 1926.

WILLIAM ERICK BIHL.
AXEL RAMCLAU.