Oct. 18, 1938. W. R. COX ET AL 2,133,430

DISPENSING DEVICE

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FIG. 1.

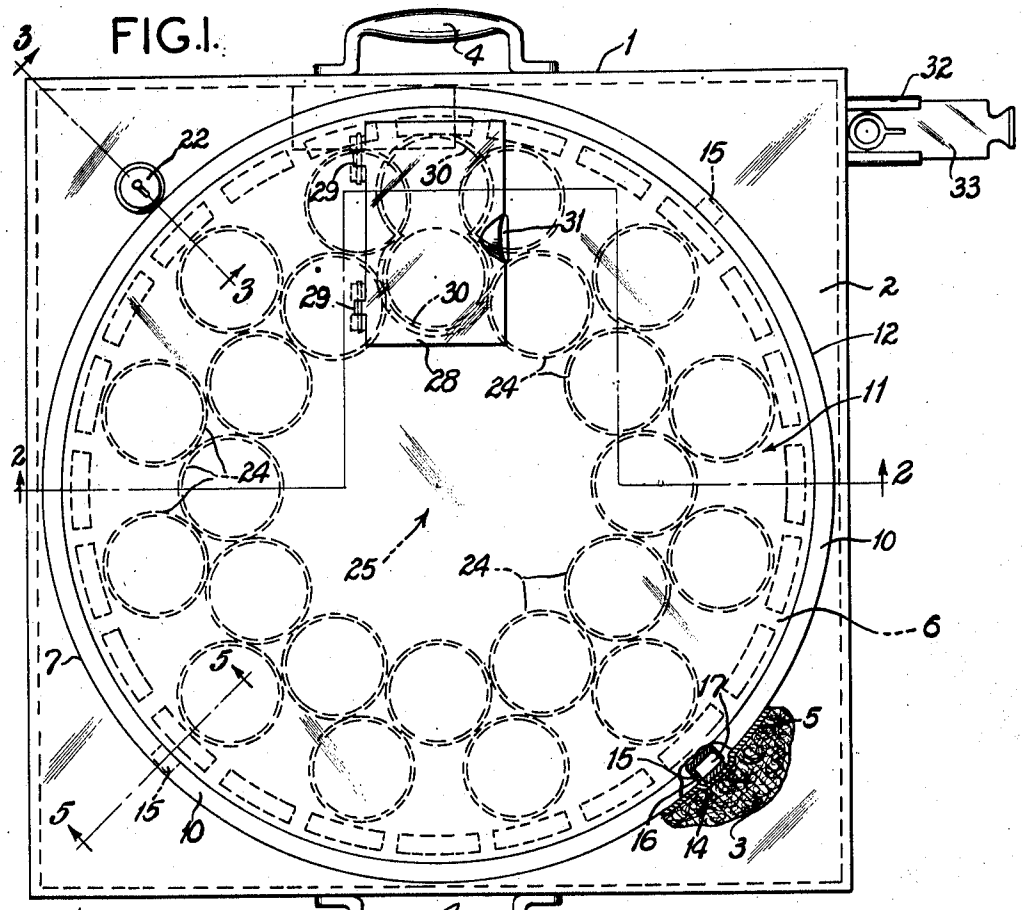
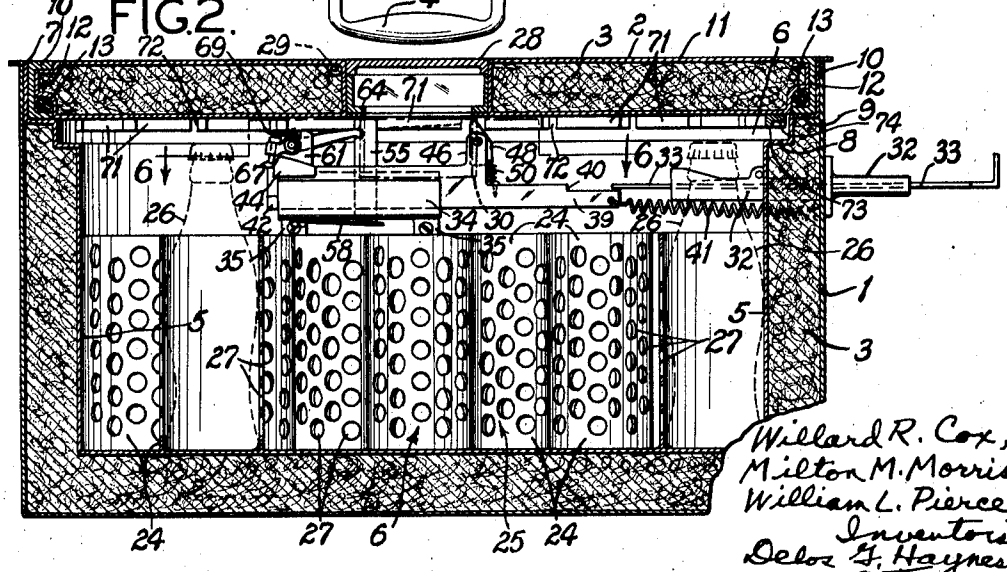


FIG. 2.



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FIG.6.

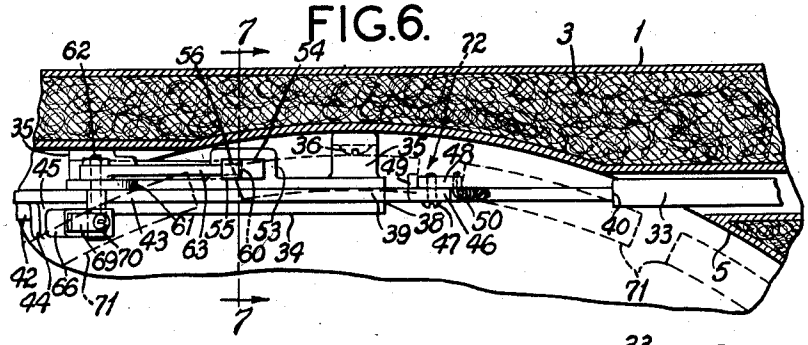


FIG.7.

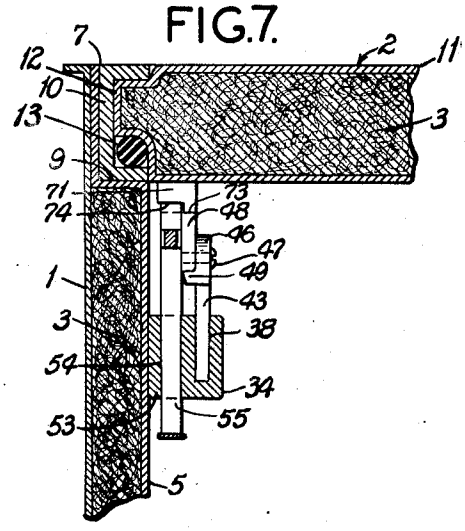


FIG.3.

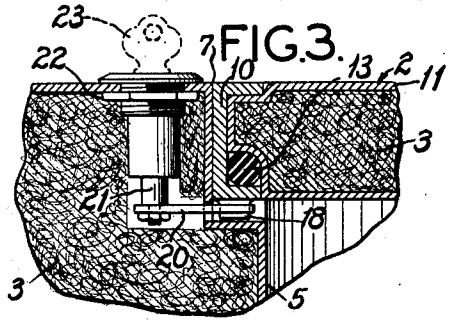


FIG.4.

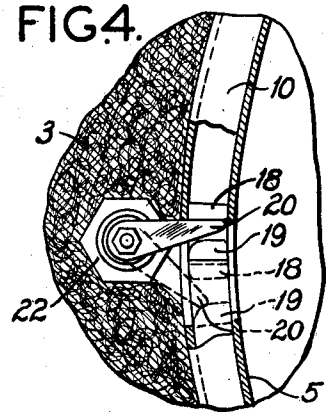
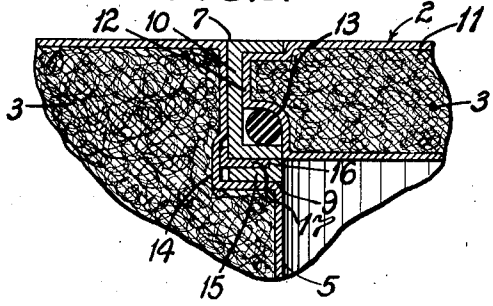


FIG.5.



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FIG.9.

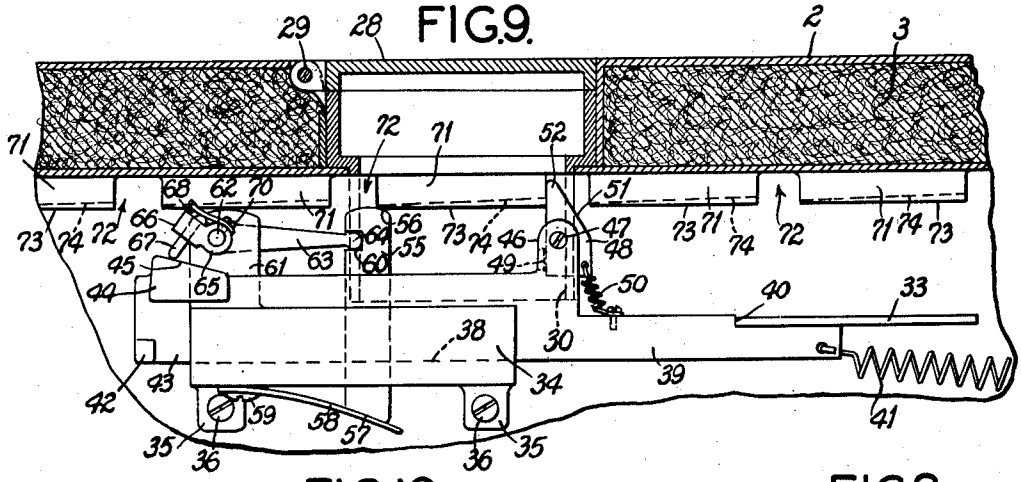


FIG 10

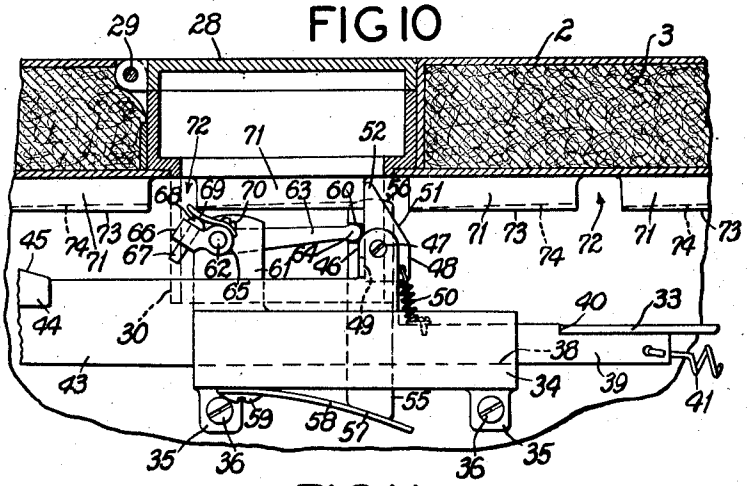


FIG.8.

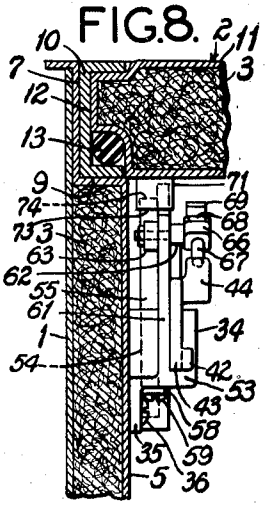
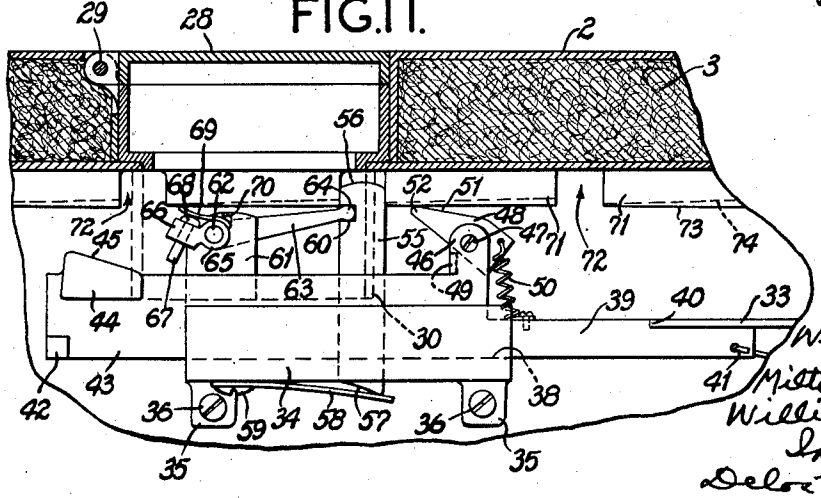


FIG.11.



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UNITED STATES PATENT OFFICE

2,133,430

DISPENSING DEVICE

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Application May 18, 1936, Serial No. 80,402

2 Claims. (Cl. 312—36)

This invention relates to dispensing devices, and with regard to certain more specific features, to devices for dispensing refrigerated articles.

Among the several objects of the invention may be noted the provision of a dispensing device of the class described which is coin-controlled, but which involves only a single coin control mechanism for a large plurality of devices to be dispensed; a dispensing device of the class described which provides for complete refrigeration of the articles to be dispensed; the provision of a device of the class described which is portable, whereby it may be charged at a central distributing plant, and then delivered to a local position at frequent intervals; the provision of a dispensing device of the class described which has a minimum number of heavy moving parts whereby the device may be operated, as by a user, with a minimum of effort, and whereby there is a minimized wear on the moving parts comprising the device; and the provision of a dispensing device of the class described which is relatively simple in construction and operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a top plan view of a dispensing device embodying the present invention;

Fig. 2 is an ideal vertical cross section taken substantially along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary cross section taken substantially along line 3—3 of Fig. 1;

Fig. 4 is a bottom plan view of the fragment shown in Fig. 3;

Fig. 5 is a fragmentary vertical cross section taken substantially along line 5—5 of Fig. 1;

Fig. 6 is a horizontal cross section taken substantially along line 6—6 of Fig. 2;

Fig. 7 is a vertical cross section taken substantially along line 7—7 of Fig. 6;

Fig. 8 is a left hand end elevation of the mechanism shown in Fig. 6, certain parts being shown in section; and,

Figures 9, 10 and 11 are enlarged views of a portion of Fig. 2, showing succeeding stages in the operation of the present invention.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Figures 1 and 2, numeral 1 indicates a substantially square sheet metal box which is covered by a top 2. Both the box 1 and the top 2 are formed of two layers of sheet metal, the interval between the sheets being filled with a suitable heat-insulating material 3 (see Fig. 2). The sides of the box 1 are provided with handles 4, so that the box 1 may readily be carried about.

The inner wall 5 of the box 1 is of circular form, thereby providing within the substantially square box 1, a substantially circular chamber indicated by numeral 6. Said inner wall 5 extends by a series of setback flanges, presently to be described, to the top 2 of the box 1, thereby providing a circular opening 7 in said top 2. The aforesaid setback flanges in the wall 5 provide a pair of annular shoulders 8 and 9, the former being below and of less diameter than the latter. The wall 5 above the shoulder 9 is of such a diameter as to come into tangential relation with the outer walls of the box 1, at one point on each of the four sides of the box.

On the shoulder 9 is positioned a circular ring 10, which is channelled in cross section, the opening of the channel facing inwardly. The ring 10 is not permanently affixed to the shoulder 9, but is rotatable thereon. In the channel of ring 10 fits a circular cover piece 11 which is formed of spaced sheets of sheet metal with an insulating material packing 3. At its outer periphery, the cover 11 is provided with an outwardly extending rim or projection 12, which slides in the channel of the ring 10. The projection 12, however, is not as thick as the entire width of the channel of ring 10, and the remaining space therein is taken up by a rubber ring or washer 13, which is of circular cross section. The rubber ring 13 resiliently holds the cover 11 to the ring 10, and hence to the box 1, while at the same time permitting the rotation of the cover 11 within the ring 10 without too high a frictional resistance. The rubber ring 13 also provides a gasket or seal against any substantial leakage of liquid inside the box 1.

At four positions spaced ninety degrees apart, and preferably located near the corners of the box 1, the flange or shoulder 9 is provided with depressed portions 14 (see Fig. 5), which extend radially for a suitable distance, such as ten degrees. The depressions 14 are provided for the purpose of receiving doubled-back projections 15 on the lower edge of the ring 10. Only three of

these doubled-back projections 15 are provided, and they are quite short circumferentially, such as the order of one half inch. The doubled-back portion 15 provides a slot 16 facing outwardly. On the wall 5, in position to engage the slot 16, is welded or otherwise affixed a projection 17, which extends circumferentially only approximately as far as the doubled-back portion 15. In a region corresponding to the fourth depression 14 in the flange 9, the lower face of the ring 10 is provided with a pair of projections 18 and 19 (see Figures 3 and 4). Numeral 20 indicates a rotatable lever or arm, which is secured on the shaft 21 forming part of a lock mechanism 22. The lock mechanism 22 is mounted on the top 2 of the box 1, as indicated in Fig. 1.

When a key 23 (Fig. 3) is inserted in the lock 22, it is possible to rotate the shaft 21 so that the lever or arm 20 is swung from the dotted line position of Fig. 4, to the solid line position. When it so swings, the end of lever 20 bears against the forward projection 18, and rotates the ring 10 on the shoulder 9 in such a manner that all three slots 16 engage and fit over their respective projections 17. The position of engagement corresponds to the dotted line position of the lever 20 in Fig. 4. Thereafter, if the key 23 is removed from the lock 22, it is impossible to remove the circular lid assembly 11 from the box 1, although the lid 11 itself may be rotated in the ring 10, with respect to the box 1.

In the circular compartment 6 provided in the box 1, there are provided a plurality of circular bottle-receiving cans or partitions 24 (see Figures 1 and 2). The cans 24 are arranged in two concentric circles, and the cans of one of the circles are staggered with respect to the cans in the other circle. This arrangement is clearly shown in Figure 1. A central portion 25 of the compartment 6 is free of cans, and forms a convenient space for receiving crushed ice and the like, for refrigerating the bottles placed in the cans 24. Such bottles, for example, are indicated by numeral 26 in Fig. 2. Each of the cans 24 is provided with a multiplicity of perforations 27 in order to permit the free circulation of water or a like fluid that is charged into the box along with the crushed ice. In this manner, complete refrigeration or cooling of the bottles 26 in the cans 24 is accomplished.

Numeral 28 indicates a small rectangular lid which is hinged along one side, as indicated at numeral 29, in the rotatable cover 11. The lid 28 is just sufficiently long radially of the cover 11 to uncover the two rows of bottle-receiving cans 24, intersecting circular openings 30 with depending protective flanges being provided in the cover 11 to meet the lid 28 for this purpose. The lid 28 is provided with a thumb grip or the like 31, by which it may be opened to withdraw a bottle from one of the cans 24 through one of the openings 30. By reason of the staggered arrangements of the cans 24, it will readily be seen that when the lid 28 is open, it permits the withdrawal of only one bottle 26 from one can 24 for one radial position of the cover portion 11.

Numeral 32 (Figures 1 and 2) indicates a guide or supporting member which is mounted on one of the walls of the box 1, near the end thereof, and extends through said wall into the interior compartment 6 of the box 1. The guide 32 receives a slide 33, provided at its outer end with a manipulating handle. The elements 32 and 33 are desirably part of a coin-operated mechanism of a type well known in the art. For example, the slide 33 is equipped with a circular opening (Fig. 1) to receive a nickel or the like. The coin-controlled mechanism as here used will not be described in detail, as it constitutes a device which is well known in the art. Suffice to say that, unless a nickel or other suitable coin is placed in the opening, it is impossible to push the slide 33 into the box 1. The slide 33 operates an escapement mechanism within the chamber 6 of the box 1, which now will be described.

Numeral 34 indicates a bracket from which extends mounting projections 35 which receive screws 36 for mounting the bracket 34 on an interior side wall of the chamber 6, in line with the movement of the slide 33. As indicated in Fig. 6, the side wall 5 of the box 1 is provided with a suitable indentation to accommodate said bracket 34 and the working mechanism associated therewith. The bracket 34 is provided with an upwardly facing deep slot or track 38 in which freely slides an elongated plate member 39. The plate or bar 39 is provided, at its forward edge, with a notch 40 against the rearward face of which the end of slide 33 abuts in certain operative positions, to be described hereinafter.

The extreme forward end of the bar 39 receives one end of a tension spring 41, the other end of which is secured to the box wall as indicated in Fig. 2. The tendency of the spring 41 is to maintain the sliding bar 39 in its right hand position, relative to the bracket 34. In order to prevent the bar 39 from being pulled entirely out of the bracket 34, it is provided at its left hand end, with a stop projection 42, which abuts the bracket 34 (see Fig. 2).

The left hand portion 43 of the bar 39 is widened in a vertical plane, so that its upper surface is positioned well above the upper surface of the top porition of the bracket 34. Near the left hand end of the portion 43, there is provided a camming projection 44, which extends outwardly from the plane of the sliding bar 39 and provides a sloping camming face 45, the purpose of which will be made more apparent hereinafter. At the right hand end of the portion 43, there is provided an upstanding projection 46, to the upper end of which is pivoted, as by a screw 47, a rotatable dog member 48. The projection 46 likewise includes a stop 49, against which the dog 48 is urged by a tension spring 50 attached at one end to the dog 48 and at its other end to forward portion of the sliding bar 39. The dog 48 has a sloping face 51, providing a point 52. The normal tendency of the spring 50 is to hold the dog 48 in such position that the point 52 is vertically up, as illustrated in Figures 9 and 10.

About midway between its ends, the back face of the bracket 34 is provided with a backwardly extending projection 53 (see Figures 6 and 7). The projection 53 is vertically slotted, as indicated at numeral 54, to receive, with a sliding fit, a vertically movable bar 55. The upper end 56 of the bar 55 is somewhat rounded while the lower end 57 is provided with a sloping face to abut a leaf spring 58 secured at its other end by a screw 59 on the bottom face of the bracket 34. The leaf spring 58 tends to maintain the bar 55 in its uppermost position at all times. Near the top of the bar 55, along its rearward edge, there is provided a notch 60, for purposes to be described hereinafter.

Numeral 61 indicates an upward projection from the left hand end of the bracket 34, along the rear portion of said bracket. A pin or pivot 62 is mounted in the projection 61 near its top. Behind the projection 61 there is secured to the pivot 62 a lever 63, the forward end 64 of which is rounded to fit in the notch 60 in the vertical sliding bar 55. On the forward end of the pivot 62, there is mounted a collar 65, from which projects a second collar 66, in a plane at right angles to the plane of the collar 65 and somewhat displaced, radially, therefrom. The collar 66, receives with a sliding fit, a pin 67 having a head 68. The head 68 limits the downward movement of the pin 67 in the collar 66. A short leaf spring 69 is mounted by a screw 70 on the collar 65 in such manner that its free end bears upon the head 68 and tends to maintain the pin 67 in its lowermost position. The collar 65 and the lever 63 are arranged for coextensive rotation with the pivot 62.

Numerals 71 indicate projections that are mounted on, and extend downwardly from the lower face of the rotatable lid or closure 11. The projections 71 are disposed on the cover 11 in a circular arrangement, each two projections 71 being separated by a notch 72. The notches 72 are just sufficient in width to accommodate the upper end of vertical sliding bar 55, for purposes to be pointed out hereinafter.

Each projection 71 has a radially inward portion 73, the lower edge of which is parallel to the lower face of the cover portion 11, and a radially outward portion 74, the lower edge of which slopes upwardly from one projection to the next. The portion 73 is in the plane of movement of the dog 48, while the portion 74 is in the plane of the movement of the vertical bar 55.

The operation of the device as thus provided is as follows:

It is assumed that the Fig. 2 shows the operating parts of the escapement in their normal or rest position. A prospective customer now approaches the dispensing device and places a suitable coin in the opening in slide 33. He is thereupon permitted to grasp the handle and press the slide 33 inwardly. The inner end of the slide 33 abuts the face of the notch 40 on the sliding bar 39. Meanwhile, it will be noted that the vertical sliding bar 55 is sprung upwardly by the spring 58 into position in one of the notches 72. The dog 48 is likewise sprung upwardly by the spring 50 into the next notch 72 to the right of the notch 72 occupied by the end of vertical sliding bar 55, but with a lost-motion space therebetween. With the abutment of the end of slide 33 against the face of notch 40 in sliding bar 39, the bar 39 will be slid to the left, against the tension spring 41. The first thing that happens is that the side of pin 67 comes to bear against the cam 44 on the sliding bar 39. Because the cam 44 bears against the side of the pin 67 rather than against its end, the pin 67 constitutes a rigid connection with the collar 65, and as the bar 39 is further advanced to the left, the collar 65 and hence, the pivot 62, are forced to rotate in a clockwise manner to permit the pin 67 to pass over the top of the cam projection 44. Since the lever 63 must rotate with the pivot 62, it does so, and its end 64 in the notch 60 of the vertical sliding bar 55, forces said vertical sliding bar downwardly against the spring 58. By this time, the position shown in Fig. 9 has been achieved, where it will be noted, the end of the vertical sliding bar 55 is withdrawn from its notch 72, while the dog 48 has come up into abutment with the opposite end of the particular projection 71. Further movement of the sliding bar 39 to the left will now result in the rotation of the cover member 11 in the channel 10, by reason of the engagement of the dog 48 with the end of a projection 71. The cover 11 is thus subjected to a tangentially applied thrust.

The instant after the end of pin 67 passes over the crest of cam 44, the force of cam 44 becomes applied to the end of pin 67 instead of its side, and the pin 67 slides in its collar 66, permitting the lever 63 to return towards its initial position under the influence of spring 58, which is stronger than spring 69.

Leftward movement of the sliding bar 39 is finally stopped by the limited movement of the coin slide 33. At a position just short of the extreme leftward position, the elements will have arranged themselves in the manner shown in Fig. 10. Here, it will be seen that, since the pin 67 has now passed entirely over the camming projection 44, there is no longer any obstruction provided for the return upward movement of the vertical sliding bar 55 under the action of the leaf spring 58. Accordingly, said bar moves upward until its upper end abuts the sloping face 74 of the particular projection 71 in consideration. With a very slight additional move leftward of the sliding bar 39 from the Fig. 10 position to its farthest leftward position, it will be seen that the vertical sliding bar 55, now riding on the sloping face 74 of a projection 71, will drop into a next notch 72. When the upper end of the vertical sliding bar 55 drops into said notch 72, further rotational movement of the cover 11 is impossible until the sequence of events is repeated, and even at the instant that said bar 55 is ready to drop into a notch 72, the cover 11 cannot be manually rotated further for, by the time the bar 55 has reached the position shown in Fig. 10, the sloping face 74 of the projection 71 being passed will have permitted the bar 55 to rise too high to jump to the next sloping face 74 of the next projection 71.

The effect of the rotation of the cover 11 by the manipulation of the coin slide 63 is to move the bottle cover 28 over a presumably filled can 24, that is, a can 24 which has a refrigerated bottle 26 therein. The size of the projections 71 is such that for each such rotation of the cover 11, one of the cans 24 is thus uncovered, the successive cans uncovered being alternately in the inner row and outer row of cans. A user of the device may then manually open the small cover 28, insert his hand through one of the openings 30, and remove the bottle. It will be seen that the space between the top of the can 24 and the cover 11 is insufficient to permit the hand of the user to remove a bottle from any can 24 except the one that is directly underneath one of the openings 30 in the cover 11.

After the bottle has thus been removed, the user ordinarily releases the handle of the coin slide 33. Thereupon, the tension spring 41 draws the sliding bar 39 back to its initial or Fig. 2 position, at the same time pushing the coin slide 33 back to its extended position. On the return movement, indicated in Fig. 11, the dog 48 pivots on its pivot 47, and slides ineffectually along the forward edge 73 of the next projection 71, ultimately to be positioned in the next notch 72 in the manner shown in Figures 2 and 9. Dur-

ing the return movement, the lower end of pin 67 comes into abutment with the sloping face 45 of the cam projection 44. The sloping face lifts the pin 67 in the collar 66 against the action of the leaf spring 69. The leaf spring 69 in thus permitting a sliding of the pin 67 in the collar 66 makes it unnecessary for the pivot 65 to rotate, and thus, there is no tendency for the lever 63 to be rotated downwardly, leaving the vertically sliding bar 55 in position in its notch 72, and thereby locking the cover 11 against movement. The distinction between the forward movement of the camming projection 44 and the return movment is important. During the forward movement, the camming projection 44 bears sidewardly on the pin 67, and said pin 67 is thereby not permitted to slide in its collar 66, and the pivot 62 is accordingly rotated. On the return movement, however, the cam is so designed that its force is applied almost entirely toward moving the pin 67 in its collar 66, and rotative movement of the pivot 62 is therefore not necessary but is definitely avoided.

The operation as thus described may be repeated indefinitely until the dispensing box is emptied of its entire contents of bottles.

The shape of the box, and its construction, contribute to make it light enough that it may be loaded, for example, at a central distribution station and then delivered to a multiplicity of dispensing locations, such as stores, filling stations, and the like. One box is ordinarily arranged to hold a day's supply of bottles. On the next delivery, accordingly, the central distribution station or the like may take up an emptied or partially emptied dispensing device and leave in its place a refrigerated, full dispensing device. In this event, only the central station or the like would possess the key to the lock 22, and thus it would be impossible for anyone to reach the bottles inside of the device without presenting the necessary coins thereto.

In previous devices of this character, it has frequently been the case that a dispensing device included a movable rack on which were mounted the several bottles or like containers. Then, upon the presentation of coins, the rack as a whole was so moved that successive bottles were brought to position available through a single discharge opening. In the present device, in distinction, the single discharge opening (for example, the small lid 28) is selectively moved over the relatively stationary bottle containers. This is a highly advantageous provision, because it means that the moving parts of the device, which are controlled or motivated by the coin control mechanism, can be made extremely light in weight. The provision of the bearings and the like, for the relatively heavy bottle carriages of the prior art, is thereby eliminated.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. In a device for dispensing refrigerated bottled goods, a heat-insulated enclosing means, means in said enclosing means defining a plurality of separate vertical bottle-receiving compartments, said bottle compartments being disposed in circular arrangement, said means also defining an ice-receiving compartment at the center of the circle of said bottle-receiving compartment, said enclosing means being provided on its top with a circular opening, a ring of channel-shaped cross section received in said opening, a heat-insulated circular cover mounted in and revolving in said ring and positioned above the said bottle compartment, lock means removably securing said ring in position on said enclosing means, said cover having a discharge opening therein adapted to pass bottles to be dispensed, and to be positioned above said compartment, successively one at a time, upon rotation of said cover with respect to said enclosing means, and escapement means for rotating said cover with respect to said enclosing means, said escapement means being available for manipulation from the exterior of said enclosing means.

2. A device as set forth in claim 1, in which a gasket of resilient material is provided between the said ring and the said cover, to prevent the leakage of fluid therebetween.

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