

Jan. 24, 1961

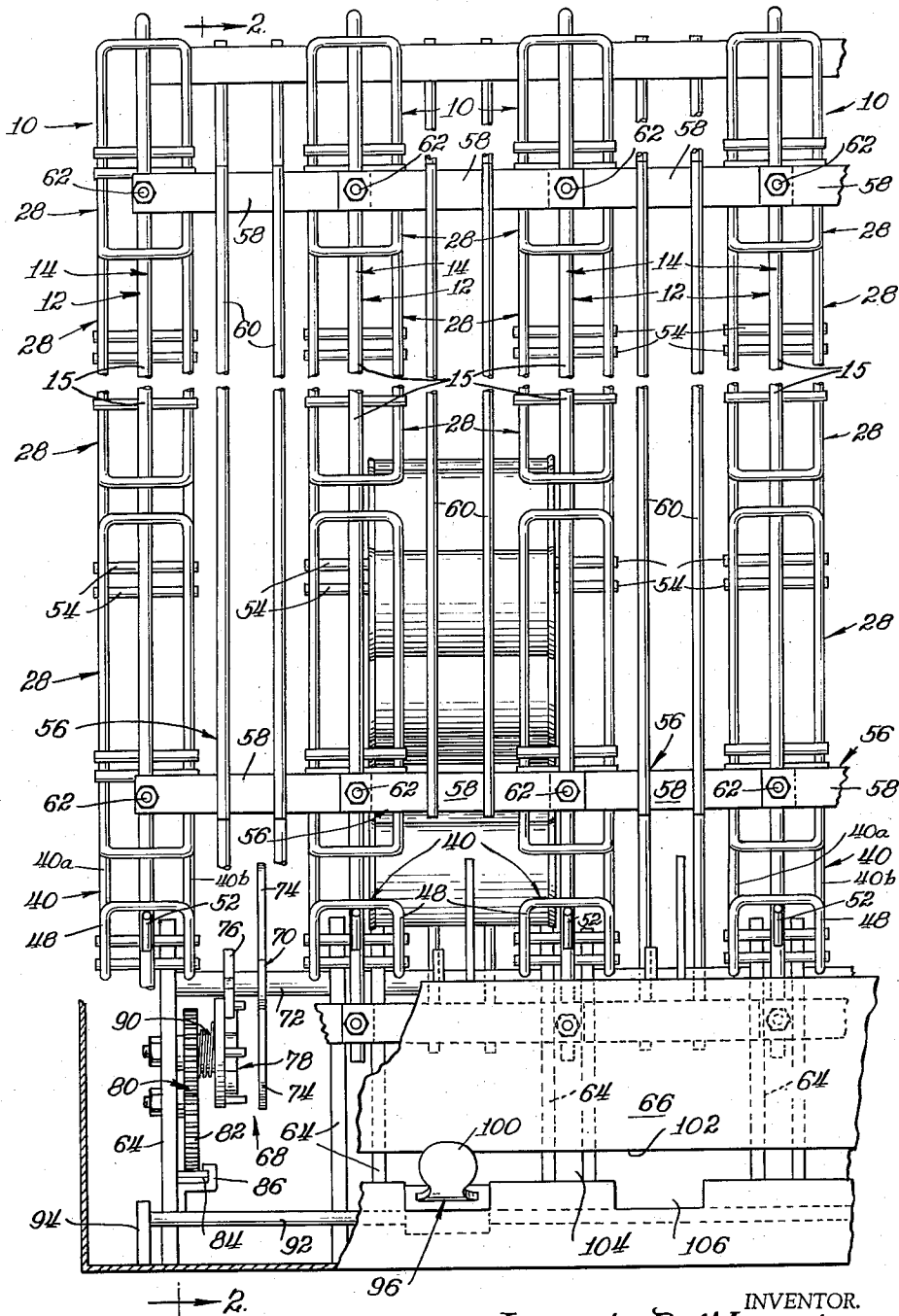
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AUTOMATIC DISPENSER FOR CANNED GOODS

Filed Oct. 2, 1957

3 Sheets-Sheet 1



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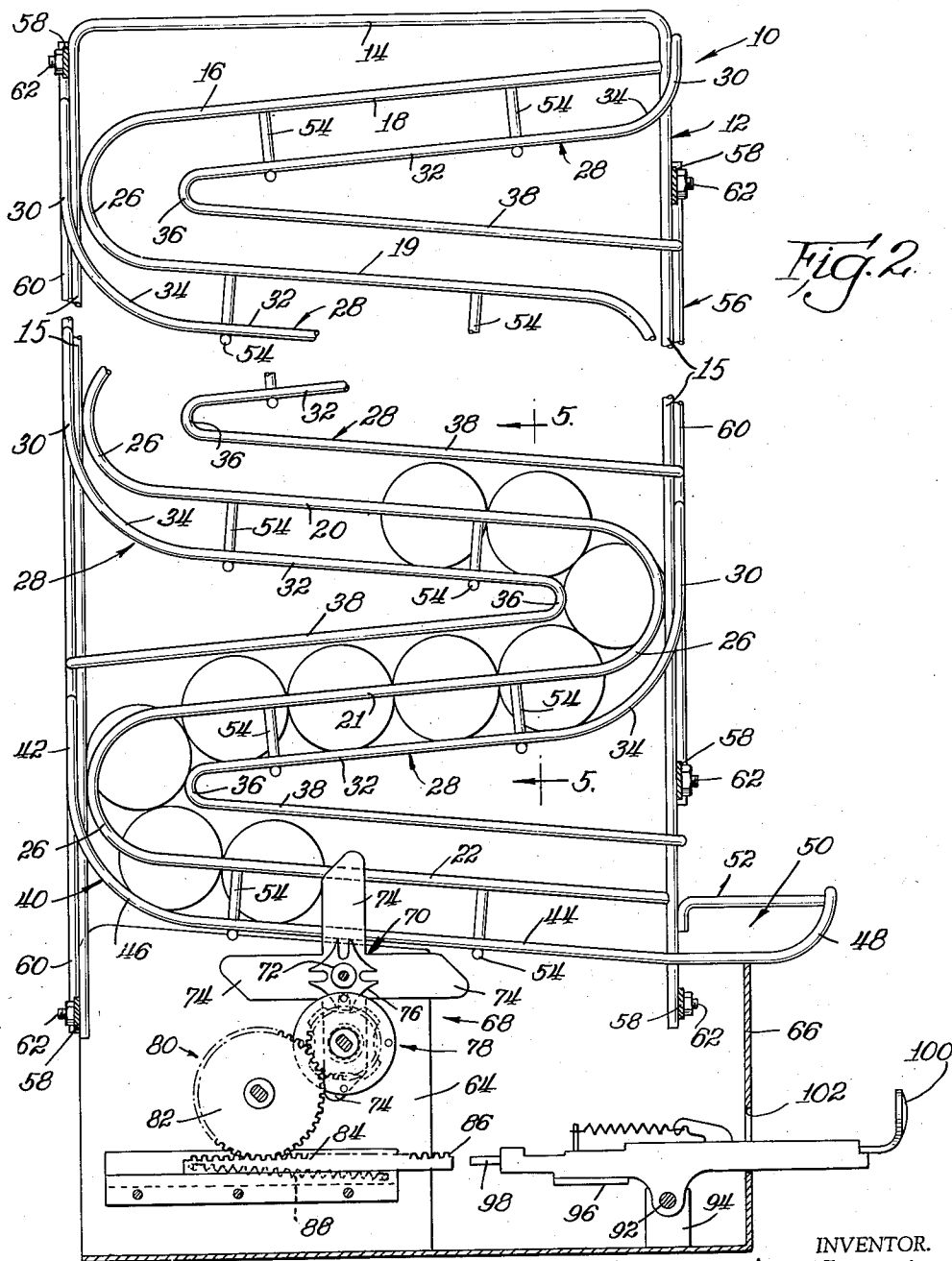
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3 Sheets-Sheet 2



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Fig. 3.

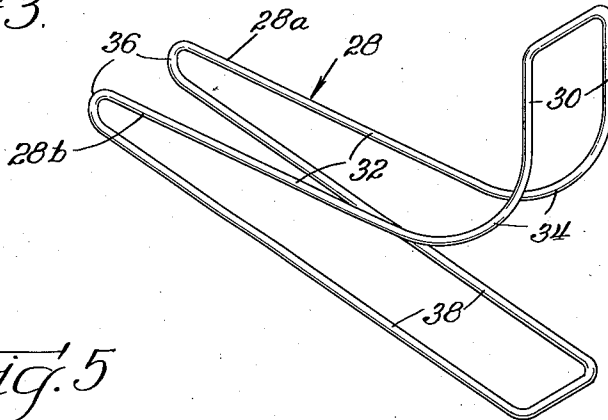
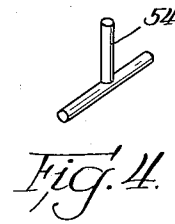
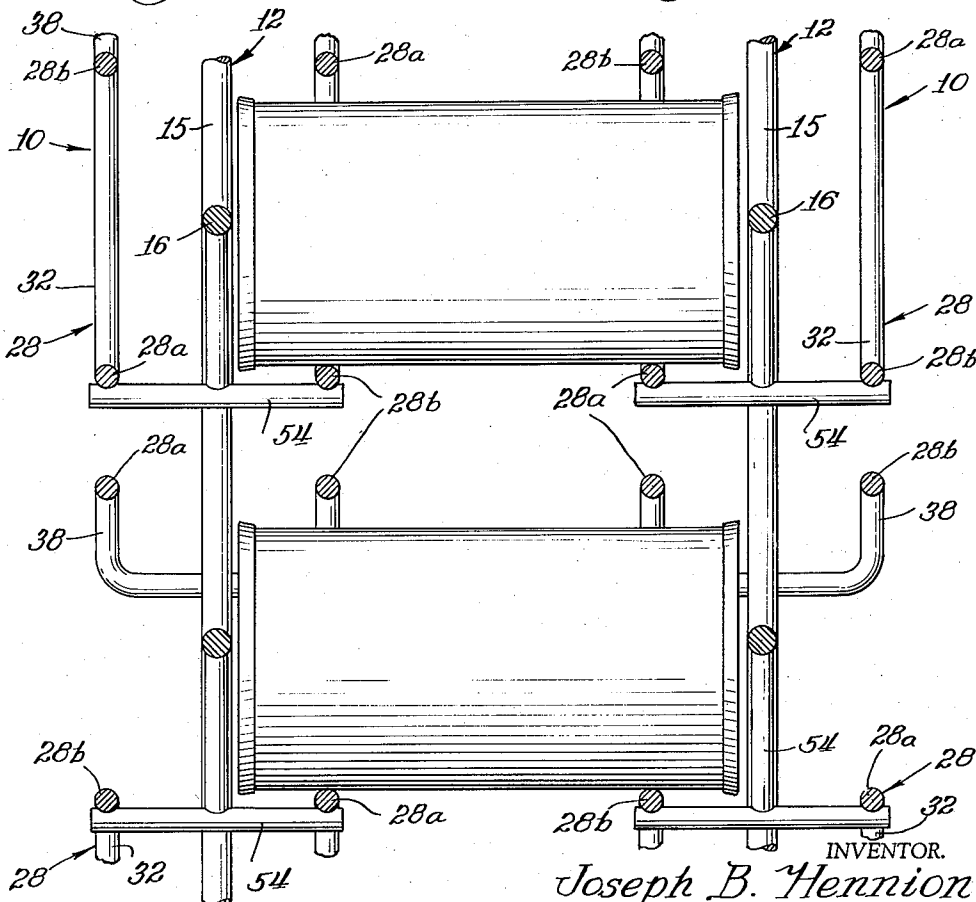


Fig. 5



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1

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AUTOMATIC DISPENSER FOR CANNED GOODS

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5 Claims. (Cl. 211—49)

The present invention relates to dispensers for canned goods and the like, and particularly, to an improved dispenser facilitating refrigerated or non-refrigerated storage and automatic dispensing one at a time of a large number of cans of the same or different contents, brands and/or sizes from a common dispenser.

In practice of the invention, I adopt as a general mode of operation the principles of the known storing and dispensing means comprising a vertically disposed serpentine rack for reception of cans in a horizontal position, whereby the cans are automatically fed to the lower end of the rack by gravity, and controlled blocking means adjacent the lower end of the rack for releasing a predetermined number of cans for movement to a delivery tray. Such means of this type as have heretofore been available in the art have generally satisfied the demand for devices for dispensing one by one a single canned commodity of a single size and brand. However, these devices lack the flexibility or adjustability required by modern merchandising methods according to which the purchaser is provided a selection of items, brands and/or sizes.

The object of the present invention is to provide an improved dispenser for canned goods satisfying the demands of modern merchandising methods and affording substantially complete flexibility in the storing and dispensing of a variety of canned goods, brands of goods and/or sizes of cans.

A more specific object of the invention is the provision of improved sinuous or serpentine storage rack means comprising a plurality of spaced parallel frames each presenting aligned can supporting tracks on the opposite sides thereof, and means for assembling said frames at variable spacings to accommodate between adjacent frames cans of various heights, the said frames thereby storing a plurality of stacks of cans of the same or different contents, brands and/or sizes in parallel vertical stacks or columns, the said frames being readily adjustable relative to one another by said assembling means to satisfy the demand for flexibility of merchandising.

Another object of the invention is the provision of an improved frame for serpentine storage racks of the character described formed entirely of wire and including aligned wire tracks of serpentine form on opposite sides thereof which assure maximum storage capacity of cans in a minimum area yet facilitate circulation of air or refrigerated air over substantially the entire surface of each can. By virtue of the present invention, each frame is simplified to the greatest extent possible to assure that the aforesaid advantages are attained and to render the frame highly economical, and at the same time to afford complete structural rigidity and safety.

Other objects and advantages of the present invention will become apparent in the following detailed description of a preferred embodiment of the invention.

Now, in order to acquaint those skilled in the art with the manner of making and using the improved dispenser of the present invention, I shall describe, in connection with the accompanying drawings, a preferred embodiment

2

of the invention and a preferred manner of making the same.

In the drawings:

Figure 1 is a front elevation of the improved dispenser of my invention showing the same with its enclosing case removed;

Figure 2 is a vertical cross-section of the dispenser taken substantially on line 2—2 of Figure 1;

Figure 3 is a perspective view of one frame unit of the improved rack defining frames of the invention;

Figure 4 is a perspective view of a supporting member for the can carrying tracks of my improved rack; and

Figure 5 is a fragmentary vertical section of the rack taken substantially on line 5—5 of Figure 2.

Referring now to the drawings, I have shown my improved dispenser as comprising a plurality of spaced parallel wire frames 10 assembled to define therebetween a plurality of serpentine racks for storage of a large number of cans in parallel stacks. Each frame 10 is formed entirely of wire, suitably No. 3, No. 4 and/or No. 5 gage steel wire, and comprises a vertical median frame 12 consisting of an inverted U-shaped marginal wire 14 of any desired height having spaced apart vertical legs 15, and a wire 16 of serpentine shape disposed within and coplanar with the marginal wire. The transverse runs 18, 19, 20, 21 and 22 of the serpentine wire 16 are inclined downwardly in alternately opposite directions at a low slope and are spaced apart at their adjacent ends a distance slightly greater than the diameter of the largest diameter can to be stored in the respective rack. The said transverse runs are joined at their adjacent ends by curved portions 26 which abut against and are fixedly secured, suitably welded, to the vertical legs of the marginal wire 14, thereby to define a rigid median frame.

The median frame 12 supports a plurality of track units 28 each of which comprises a pair of wires 28a and 28b disposed to opposite sides of the median frame and joined together and to the median frame at their opposite ends. The wires of each track unit include a vertical upper portion 30, a first downwardly inclined portion 32, a curved portion 34 of large radius, i.e., approximately the radius of the largest can to be stored, joining the portions 30 and 32, a sharp reverse bend 36 at the lower end of the portion 32 and a second downwardly inclined portion 38. Each track unit is mounted on the median frame 12 in a position to have the first inclined portion 32 thereof parallel to one transverse run of the wire 16 to the lower side thereof, and the second inclined portion 38 thereof parallel to the next lower run of the wire 16 to the upper side thereof, the said inclined portions preferably being spaced equal distances from the said runs of the wire 16. The portions of the wire joining the opposite ends of each frame unit are suitably welded or otherwise secured to one outside vertical edge of the median frame and the length of each unit is such that the reverse bend 36 thereof is spaced from the opposite vertical edge of the frame a distance at least equal to the diameter of the largest can to be stored.

The track units 28 are mounted on the frame in alternate relation from opposite vertical edges of the median frame, thereby to define on each side of the frame a pair of generally serpentine tracks paralleling the serpentine wire 16 equal distances above and below the same, the two tracks being spaced apart a distance equal approximately to the diameter of the largest can to be stored.

By virtue of the described structure, the tracks defined by the units 28 complement all the transverse runs of the serpentine wire 16 except to the upper side of the uppermost run, at which location no track is required, and except to the lower side of the lowermost run. In this later location, a delivery ramp 40 is provided, which is formed from wire generally in the same manner as

the track units 28. The two wires of the ramp 40, as indicated at 40a and 40b, include an upper vertical portion 42, a downwardly inclined portion 44, and a curved portion 46, corresponding generally to the portions 30, 32, and 34 of each track unit. The inclined portion 44, however, projects entirely across the median frame 12, from one edge thereof to and beyond the opposite edge. The extension of said portion beyond the median frame is longer than the diameter of the largest can to be stored, and terminates in an upwardly curved end portion 48, thereby to define stop means at the outer end of a delivery area or tray 50. To rigidify the delivery and stop area of the tracks, a horizontal strut 52 is extended between the portion of the wire joining the outer ends of the two tracks 40a and 40b and the marginal wire 14 in the plane of the median frame.

To support and rigidify the portions of the track on which cans will be supported, inverted T-shaped supports 54 are extended downwardly from each transverse run of the serpentine wire 16. The shank of each T is coplanar with the median frame 12 and is suitably welded to the lower surface of a transverse run of the wire 16 perpendicular thereto, as shown. The shank is slightly longer than the spacing between the wire 16 and the adjacent track portion 32 or 44, and the head of the T is of a length greater than the spacing between the tracks 28a and 28b, or 40a and 40b, on opposite sides of the median frame, whereby the head of the T projects beneath and supports the tracks from below, the tracks preferably being welded or otherwise fixed to the heads of the supports. The heads of the supports are thus disposed beneath the track defining portions of the wires 28a, 28b, 40a and 40b to accommodate without interference disposition of the flanges at the ends of a can within the space between the respective wire and the median frame.

The described construction of the wire frame 10 is extremely sturdy, economical, and practical, and affords an optimum serpentine track for storage of a large number of cans and for facilitating unrestricted movement of the cans to the bottom of the rack. In particular, the construction greatly facilitates fabrication of racks of any desired height in that the wire for the marginal member 14 is readily bent to any desired height, the serpentine wire 16 is readily formed of any desired height, or may conveniently be made up to any desired height by assembly of a plurality of units such as the member 16 illustrated in the drawing, and that the fabrication is otherwise characterized, simply, by assembly on the median frame, first, of the delivery ramp 40 and thereafter of any desired or necessary number of the track units 28.

In the preferred embodiment of the frames 10, I formed the marginal member 14 of No. 3 gage stainless steel wire, the serpentine member 16 of No. 4 gage stainless steel wire, and the track units and delivery ramp of No. 5 gage stainless steel wire. However, these are given simply by way of example of suitable materials of construction.

The frames 10 are assembled in coextensive parallel aligned relation for the purpose of forming can racks by means of horizontal tie means extending between the median frames 12 of adjacent ones of the frames 10. Specifically, to assure a fixed assembly of the frames in the aforesaid relationship, the tie means includes at least one tie unit 56 characterized by a pair of vertically spaced horizontal tie bars 58 and vertical retainers 60, preferably formed of wire, for fixing said bars relative to one another. At their outer ends, the bars 58 are apertured for reception of and mounting on studs 62 extending horizontally outward from the vertical edge of the marginal wire 14. Due to location of these studs in the same place on all frames, and locking the ties to the frame by nuts or the like, the unit 56 positively positions adjacent frames in coextensive parallel rela-

tion. A tie unit 56 may suitably be provided at both the front and rear of the rack, and/or simple tie bars similar to the bars 58 may be provided in addition to the tie unit or units. The adjacent tracks on adjacent frames thus define between adjacent median frames a serpentine storage and delivery rack for a stack of cans, the serpentine wire 16 constituting a partition between adjacent stacks to prevent interference between the cans in adjacent stacks. The tie means extend between adjacent frames across the entire rack assembly, thereby to afford a complete rigid assembly of frames defining a plurality of can storage racks in parallel relation to one another. The tie bars between adjacent frames may be of selective length to adjust the distance between adjacent median frames 12 to the height of the cans to be received therebetween, thereby to accommodate at the will of the user storage in adjacent stacks of cans of the same or different contents, brands and/or sizes. The described structure thereby assures the flexibility or adjustability of assembly required for effective merchandising.

At the bottom thereof, the racks are supported on vertically disposed plates or walls 64 of the same number as the frames 10. The walls 64 are disposed adjacent and parallel to the median frame 12 of respective ones of the frames 10, and extend from the rearward edge of the frame to approximately the mid point thereof. Adjacent the forward edge of each frame, the delivery rack means 48 thereof is supported by a transverse partition 66 suitably comprising part of the enclosure or cabinet for the dispenser. Each of the walls 64 mounts a blocking means 68 for the can rack defined between the frame resting on said wall and the next adjacent frame. Each blocking means comprises a star wheel 70 fixed to a shaft 72 rotatably supported on the respective wall 64, the wheel including a plurality of spokes or stop members 74 which extend progressively one at a time into the lower run of the serpentine rack defined by the two adjacent frames. The shaft 72 also carries the Geneva gear 76 of a generally conventional Geneva escapement 78 mounted on the respective wall 64. The escapement normally retains the star wheel 70 in fixed position with one of the spokes thereof blocking the serpentine track. The escapement is adapted to be driven through a gear train 80, also mounted on wall 64, to permit the escape of a predetermined number of cans from the rack upon each actuation thereof. In the embodiment illustrated, the cans are released one by one by the escapement, but it is obvious that two or three cans could be released at one time, if that were desired.

The gear train 80 includes a large diameter circular gear 82 and a reciprocable toothed rack 84 for driving the gear, which rack includes a projection 86 facing toward the front of the dispenser and preferably normally extending forwardly beyond the front edge of the wall 64. The rack 84 is intended to be moved toward the rear of the dispenser to actuate the blocking means, and a tension spring 88 is provided to return the same to its normal position, the escapement mechanism 78 including a clutch 90 accommodating reverse movement of the gear train while retaining the star wheel 70 in the position to which last moved.

To effect actuation of the respective blocking means, a single actuator or selector is provided for a plurality of racks, whereby the customer is alerted to the selection to be made, thereby reducing confusion, mitigating errors in selection, and avoiding duplication or multiplication of expensive components of the dispenser. To this end, I mount a rod 92 horizontally across the front of the dispenser inside the partition 66 and adjacent the bottom of the racks, the rod being supported at its opposite ends by suitable stanchions 94. On this rod, I pivotally and slidably mount a selector-actuator 96 which in the embodiment illustrated comprises a coin controlled slide of a well known type. The selector-

5

actuator 96 includes a slide bar 98 which is extended through the partition 66 and which terminates in a thumb plate 100 for manual actuation, the device being so mounted that when the slide bar is in a horizontal position, the inner end thereof is disposed in the same horizontal plane as the projection 86 on the actuator rack 84. The selector-actuator 96 is thus slidable longitudinally of the rod 92 transversely of the racks to accommodate selective association of the same with any one of the several blocking means 68. When the selector-actuator is aligned with one of the blocking means 68, the slide bar 98 thereof is aligned with the projection 86 on the respective actuator rack 84, so that upon inward movement of the slide bar the respective blocking means 68 is actuated to dispense one or any predetermined number of cans from the stack of cans with which associated.

To guide the selector-actuator 96 into accurate alignment with a selected one of the blocking means, and to prevent inadvertent actuation of the wrong blocking means or more than one of the blocking means, I provide detent or guide means in the form preferably of a guide slot 102 in the partition 66 through which the slide bar 98 extends. The slot 102 includes a horizontal portion 104 which is disposed above the plane of the actuator racks 84 and a plurality of notches 106 in the lower margin of the portion 104 which are aligned respectively with the rack 84 of the several blocking means. To move the slide bar 98, it is thus necessary to pivot the outer end thereof upwardly to dispose the same in the horizontal portion 104 of the slot 102, thereby moving the inner end of the slide below the actuator racks 84 to prevent inadvertent actuation of the blocking means. The portions of the partition 66 between the notches 106 prevent other than the described movement. Each of the notches 106 is aligned vertically with a stack of cans, which are preferably visible through a window in the enclosure or cabinet (not shown) of the dispenser, thereby to facilitate selection of the proper article by the purchaser. When the selector-actuator has been moved to and positioned in the selected notch, the slide bar thereof may be pushed inwardly, with or without deposit therein of the proper coin or coins depending upon the location and intended nature of the dispenser, to actuate the aligned blocking means and release into the delivery tray 50 above the notch the predetermined number of cans for which the escapement is set.

This selective dispensing assembly is specifically claimed in my co-pending divisional application, Serial No. 755,257, filed August 15, 1958.

Upon each actuation of an escapement, the spoke or arm 74 thereof then upright moves toward the front of the dispenser thereupon permitting corresponding movement of the stack of cans. At the same time, the next trailing spoke moves upward between two of the cans, the spokes preferably having inclined cam surfaces at their outer ends to facilitate such action, thereby to take over the blocking function while the first spoke moves downwardly below the delivery ramp 40 to permit one or a predetermined number of cans to roll into the delivery tray 50. The can storing racks are open at their upper ends for filling thereof with cans, and the described dispensing apparatus dispenses the cans in the order in which they were placed in the racks thereby insuring against excessively long storage of a given can as so frequently occurs in display or merchandise on shelves.

The entire dispensing device is disposed within a decorative cabinet (not shown) which, as above noted, will have windows or the like therein for display of each stack of cans and openings in the top thereof to facilitate loading of the racks. The delivery trays may suitably be covered by a removable door or the like, or may be provided with a closure flap adjacent thereto in refrigerated dispensers. Anti-tamper means may also be carried by the selector-actuator to prevent access to the

6

blocking means with which the selector is not aligned, or the cabinet and selector may include complementary surface portions serving the same function.

Relative to the storage of items that must be refrigerated, such as frozen canned goods, it is to be observed that the rack means provided according to the present invention, being formed entirely of wire, expose substantially the entire surface area of each can to the flow of refrigerated air. The end flanges of the cans in the stack engage one another, thereby defining an air space between the cylindrical surfaces of adjacent cans so that complete circulation of air is afforded. Due to these factors, the adjacent runs of the serpentine racks can be disposed closely adjacent one another to afford maximum storage capacity in a minimum space. Also, since each can is supported on the tracks only at two points of engagement, frictional resistance to movement is exceedingly small so that the downward inclination of the tracks need be little more than a low slope relative to horizontal, thereby further assuring maximum storage in a minimum space.

In view of the foregoing, it is to be appreciated that the objects of the invention are attained in full in a practical, convenient, and economical manner. The invention provides an improved storage rack means characterized by economical wire frames especially adapted for adjustable mounting to afford the flexibility required by modern merchandising methods. The frames accurately guide the cans from both ends and from above and below, yet each can normally engages the rack means at only two points. The invention also provides improved dispensing means characterized by a single selector for a plurality of goods of the same or different kinds, brands, and/or sizes, which means mitigates error or confusion in selection and renders the dispenser highly economical.

While I have described and shown what I regard to be the preferred embodiment of my invention, it is apparent that various changes, rearrangements and modifications may be made therein, without departing from the scope of the invention, as defined by the appended claims.

I claim:

1. A storage and dispensing rack for canned goods comprising a plurality of spaced apart parallel wire frames each comprising a planar vertical median frame including a marginal wire having spaced apart vertical legs, and a continuous serpentine shaped wire having transverse runs extending between and inclined downwardly in alternate and opposite directions from said vertical legs and secured thereto at the portions of said runs adjacent said vertical legs of said marginal wire, and a plurality of track units formed of wire secured to said vertical legs of said marginal wire to extend inwardly of the latter between the portions of said serpentine shaped wire secured to said vertical legs of said marginal wire and having tracks at each side of said marginal wire generally paralleling said serpentine shaped wire above and below said runs of the same, whereby said tracks on adjacent sides of two of said wire frames define serpentine racks for supporting the opposite ends of cans and said serpentine shaped wires of said two wire frames serve to prevent lateral movement of cans off of said tracks.

2. A storage and dispensing rack for canned goods comprising a plurality of spaced apart parallel wire frames each comprising a planar vertical median frame including a marginal wire having spaced apart vertical legs, and a continuous serpentine shaped wire having transverse runs extending between and inclined downwardly in alternate and opposite directions from said vertical legs and secured thereto at the portions of said runs adjacent said vertical legs of said marginal wire in co-planar relation therewith, and a plurality of track units each comprising a pair of spaced parallel horizontally aligned wires having a vertical upper portion, a

first downwardly inclined portion, a curved portion of large radius joining said portions, a relatively sharp reverse bend at the lower end of said first inclined portion and a second inclined portion inclined downwardly from said reverse bend in the direction opposite said first inclined portion and terminating vertically beneath said upper vertical portion, said track units being disposed with the two wires thereof at opposite sides of said marginal wire with the upper portions of adjacent units engaging opposite vertical legs of said marginal wire and with the upper and lower ones of said inclined portions spaced downwardly and upwardly from and generally paralleling, respectively, adjacent runs of said serpentine shaped wire, said vertical upper portion and the lower terminal end of each track unit being fixed to the adjacent vertical leg of said marginal wire and said reverse bend thereof being spaced from the opposite vertical leg of said marginal wire a distance at least equal to the spacing of the second inclined portion of one track unit and the first inclined portion of the next lower track unit, whereby said track units on adjacent sides of two wire frames define serpentine racks for supporting the opposite ends of cans and said serpentine shaped wires of said two wire frames serve to prevent lateral movement of cans off of said track units.

3. A storage and dispensing rack for canned goods comprising a plurality of spaced apart parallel wire frames each comprising a planar vertical median frame including a marginal wire having spaced apart vertical legs, and a continuous serpentine shaped wire having transverse runs extending between and inclined downwardly in alternate and opposite directions from said vertical legs and secured thereto at the portions of said runs adjacent said vertical legs of said marginal wire in co-planar relation therewith, and a plurality of track units each comprising a pair of spaced parallel horizontally aligned wires having a vertical upper portion, a first downwardly inclined portion, a curved portion joining said portions, a sharp reverse bend at the lower end of said first inclined portion and a second inclined portion inclined downwardly from said reverse bend and terminating vertically beneath said upper portion, said track units being disposed with the two wires thereof at opposite sides of said marginal wire with the upper portions of adjacent units engaging opposite vertical legs of said marginal wire and with the upper and lower ones of said inclined portions spaced downwardly and upwardly from and generally paralleling, respectively, adjacent runs of said serpentine shaped wire, said upper portion and the lower terminal end of each track unit being fixed to the adjacent vertical leg of said marginal wire and the said reverse bend thereof being spaced from the opposite vertical leg of said marginal wire a distance at least equal to the spacing between the second inclined portion of one track unit and the first inclined portion of the next lower track unit, a delivery ramp comprising spaced parallel horizontally aligned wires including a vertical upper portion, a curved portion and an inclined portion corresponding generally to and mounted in the same manner as said vertical upper portion, curved portion and said first inclined portion of each track unit, said inclined portion of said ramp paralleling the lower run of said serpentine shaped wire to the lower side thereof and projecting beyond the opposite vertical leg of said marginal wire and terminating in an upwardly extending stop portion, and a plurality of inverted T-shaped supports projecting downwardly from each run of said serpentine shaped wire, the heads of said supports engaging and supporting the first inclined portion of the two wires of each track unit and the inclined portion of the two wires of said ramp, whereby said track units and the ramps

on adjacent sides of two wire frames define serpentine racks for supporting the opposite ends of cans and said serpentine shaped wires of said two wire frames serve to prevent lateral movement of cans off of said track units and said ramps.

4. A storage and dispensing rack for canned goods comprising a plurality of spaced apart parallel wire frames each comprising a planar vertical median frame including a marginal wire having spaced apart vertical legs, and a continuous serpentine shaped wire having transverse runs extending between and inclined downwardly in alternate and opposite directions from said vertical legs and secured thereto at the portions of said runs adjacent said vertical legs of said marginal wire, and track means formed of wire secured to said vertical legs of said marginal wire and having tracks at each side of said marginal wire generally paralleling said serpentine shaped wire above and below said runs of the same, and means supporting said wire frames with the said tracks thereof aligned and substantially co-extensive, said means including transverse bars extending between and detachably connected to the said vertical legs of the marginal wires of adjacent wire frames, whereby a serpentine rack for reception of cans in a horizontal position is defined between each pair of adjacent wire frames, said bars being of selective length to accommodate cans of various heights.

5. A storage and dispensing rack for canned goods comprising a plurality of spaced apart parallel wire frames each comprising a planar vertical median frame including a marginal wire having spaced apart vertical legs, and a continuous serpentine shaped wire having transverse runs extending between and inclined downwardly in alternate and opposite directions from said vertical legs and secured thereto at the portions of said runs adjacent said vertical legs of said marginal wire, and track means formed of wire secured to said vertical legs of said marginal wire and having tracks at each side of said marginal wire generally paralleling said serpentine shaped wire above and below the runs of the same, a plurality of studs secured to the vertical legs of said marginal wire including at least two studs on one vertical leg thereof, and transverse ties extensible between corresponding studs on vertical legs of adjacent wire frames, said ties including a rigid tie unit comprising a pair of spaced parallel rigid transverse bars, and means fixing said bars relative to one another, said bars each being attachable to corresponding ones of said two studs on adjacent wire frames securely to retain said wire frames in spaced parallel horizontally aligned co-extensive relation, whereby the wire tracks on adjacent sides of two wire frames comprise serpentine racks for supporting the opposite ends of cans and the said serpentine shaped wires of said two frames serve to prevent lateral movement of cans off of said tracks.

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