Feb. 21, 1956 C. B. WYNN ET AL 2,735,579

PANTRY ELEVATOR SHELF

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Fig. 1.

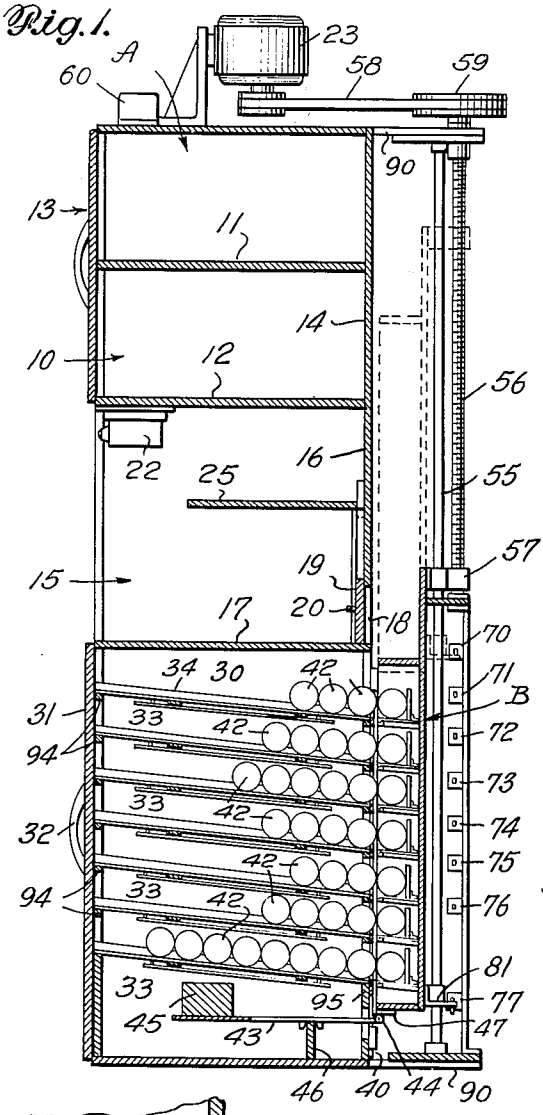


Fig. 2.

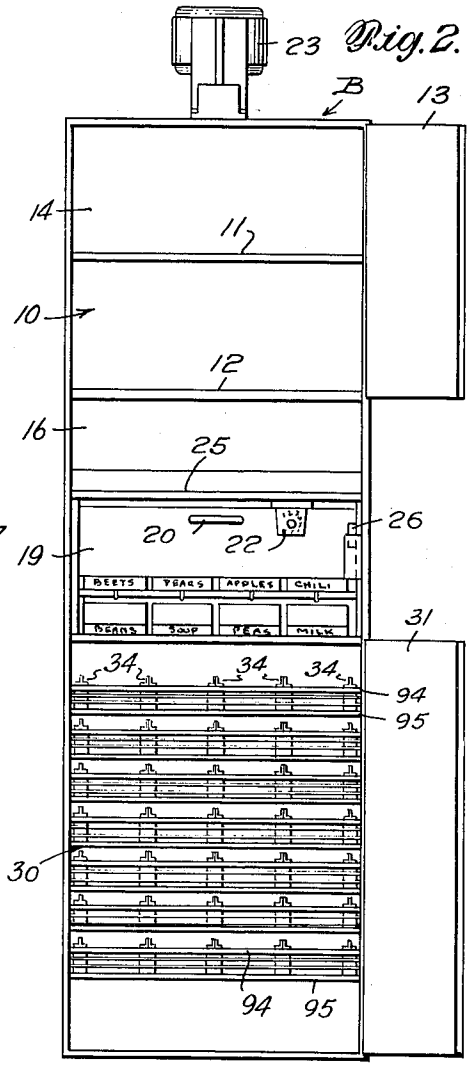


Fig. 3.

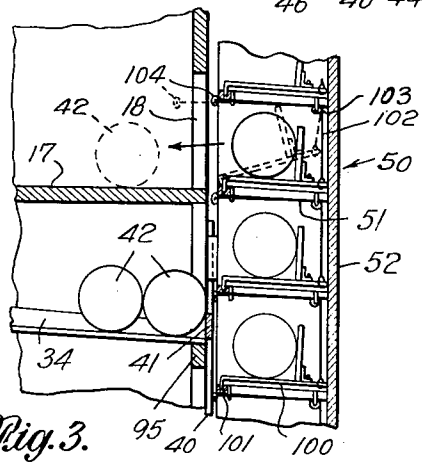
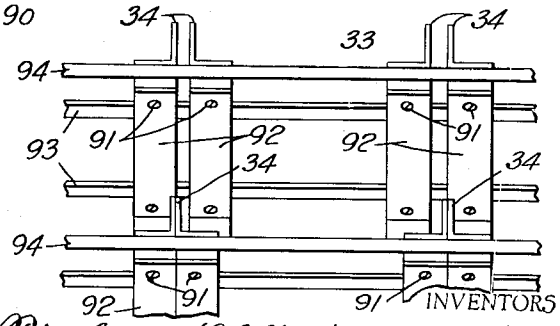


Fig. 4.



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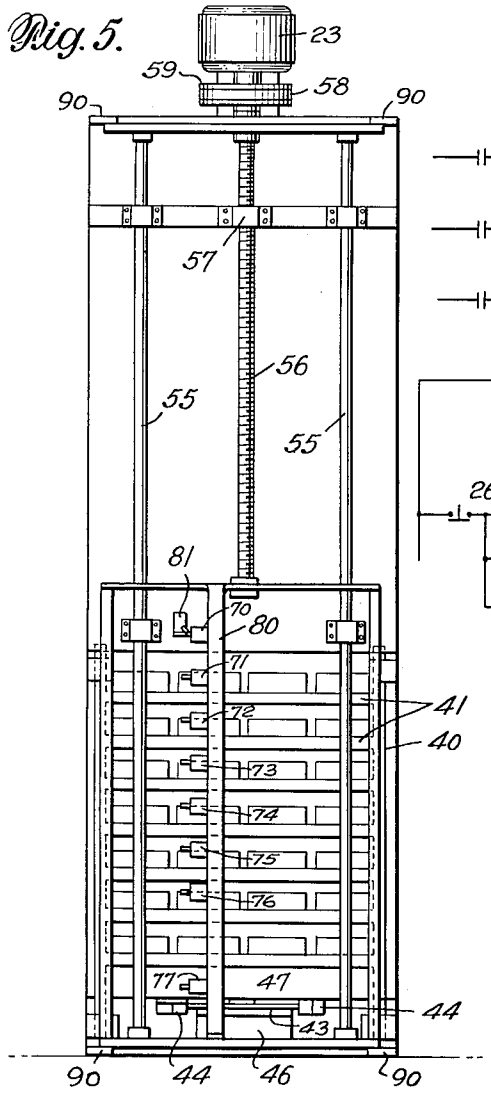
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PANTRY ELEVATOR SHELF

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Fig. 5.



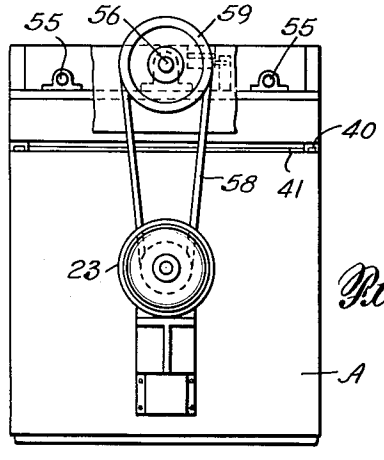


Fig. 6.

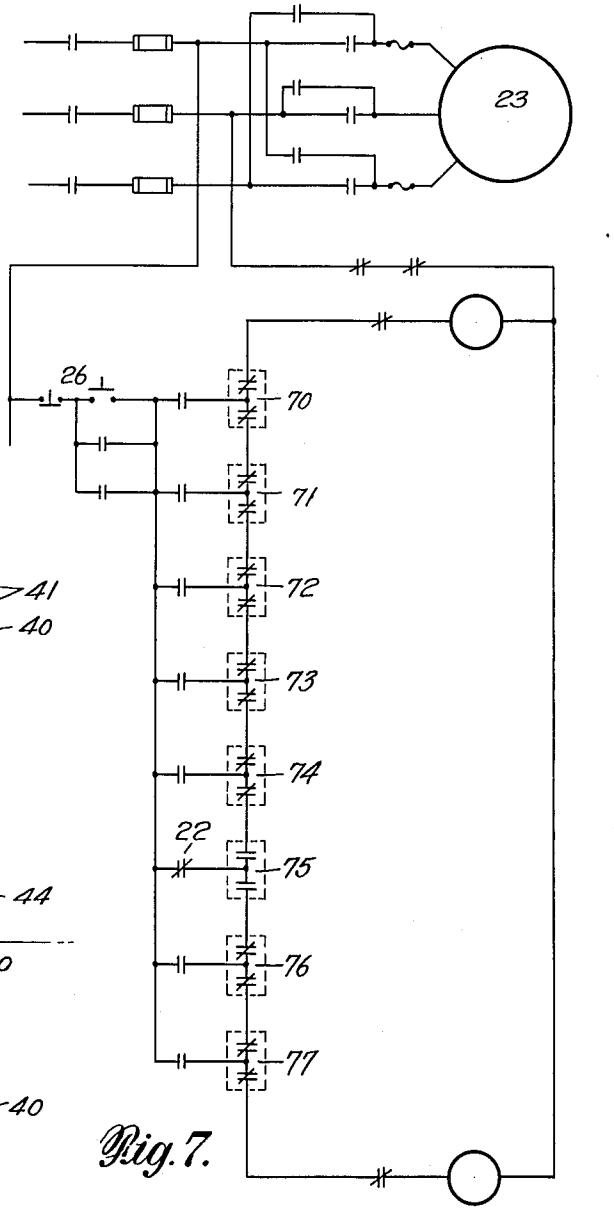


Fig. 7.

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PANTRY ELEVATOR SHELF

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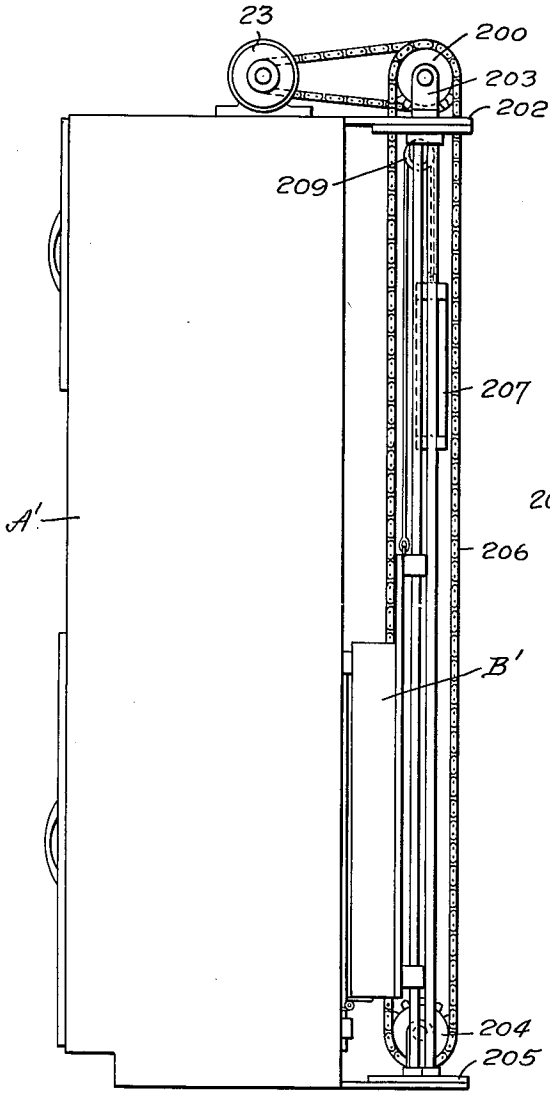


Fig. 8.

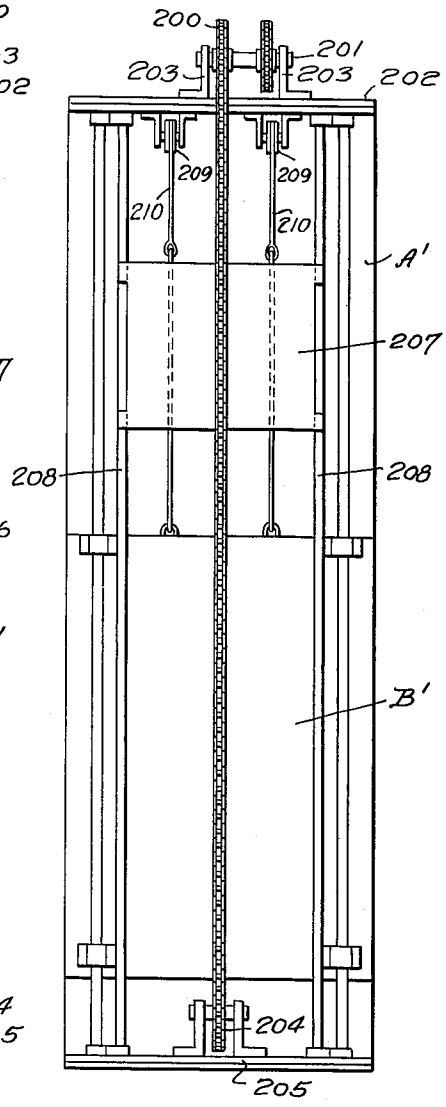
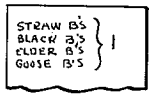


Fig. 9.



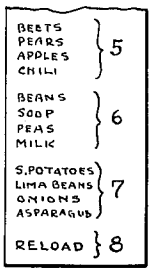


Fig. 7a.

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PANTRY ELEVATOR SHELF

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Application April 26, 1954, Serial No. 425,696

6 Claims. (Cl. 221—123)

The invention relates to kitchen or store servicing devices or cabinets, and more particularly to a pantry elevating shelf or device including a vertically reciprocable elevator cabinet member having a plurality of shelves, which elevator cabinet member is used in connection with a fixed cabinet member including supply shelves, a take-off shelf and storage shelves, the vertically reciprocable cabinet member being operable by means of an electric motor or the like, on the actuation of a selector switch, to bring a selected shelf containing canned goods or the like to a convenient take-off location. The reciprocable cabinet member may also be lowered at the will of the operator to a refilling position at which all the shelves may be automatically refilled by gravity action from supply shelves of the stationary cabinet.

The invention will be more readily understood by reference to the accompanying drawings and the following detailed description in which specific embodiments of the invention are set forth by way of illustration rather than by way of limitation.

In the drawings:

Fig. 1 is a vertical sectional view showing a stationary storage cabinet and an elevating device including the vertically reciprocable cabinet member associated with the stationary cabinet and embodying our invention, the parts being shown in the loading position;

Fig. 2 is a front view showing the storage cabinet with its doors open to reveal the interior, the parts being shown in delivery position in relation to a take-off shelf;

Fig. 3 is a detail sectional view on a larger scale than Figs. 1 and 2 showing a part of the device illustrated in Fig. 1 and showing the delivery of a can or the like from a selected elevator shelf to a take-off shelf forming part of the stationary cabinet;

Fig. 4 is an enlarged detail view of a part of Fig. 2 showing adjustable dividing bars with which the shelves of the stationary cabinet are equipped;

Fig. 5 is a rear view of the device on the same scale as Figs. 1 and 2, with the take-off shelf in uppermost position;

Fig. 6 is a top view of the same;

Fig. 7 is a wiring diagram;

Fig. 7*a* is a view largely diagrammatic in character showing a chart for use with the device; and

Figs. 8 and 9 are, respectively, side and rear elevations of the cabinet showing a modified form of elevating mechanism for the vertically reciprocable shelved cabinet.

My improved cabinet comprises a stationary portion or cabinet member A which may include a plurality of upper storage shelves, a plurality of inclined lower shelves for supplying cans or the like to the shelves of a motor actuated elevator member generally designated B having a frame portion secured to the stationary cabinet portion so as to hold the two members A and B in the desired position relative to one another. The shelved cabinet portion of the elevator member is adapted to be moved in a vertical direction upwardly and downwardly

by means of the electric motor under the control of an operator to selected unloading positions where cans may be delivered to a take-off shelf carried by the stationary cabinet and located at a convenient elevation intermediate the lower supply portion of the stationary cabinet and the upper storage portion thereof. The elevator member B may also be moved to a lower supply position at which all the shelves of the elevator cabinet are automatically supplied with cans from the supply shelves of the stationary cabinet member A. Suitable gate means are provided for automatically opening the supply shelves to permit feeding cans to the elevator shelves when the elevator is in its lowermost position, and for automatically cutting off the supply of cans as soon as the elevator has moved from its lowermost position to a selected take-off position.

As shown the stationary cabinet A comprises an upper can storage compartment 10 equipped with a plurality of shelves herein indicated as two in number and designated 11 and 12, to which access may be had through a suitable front door or the like 13. The rear portion of the storage cabinet may be closed by a vertical wall 14 which extends downwardly beyond the storage compartment. Below the upper storage compartment 10 is a take-off compartment 15 located at a convenient height to permit cans delivered by the elevator cabinet B to be received and removed by the operator. The take-off compartment is open at its front while the rear is closed at its upper portion by a continuation 16 of the wall 14 which terminates short of the take-off shelf 17, leaving an opening 18 which may be closed by a sliding door 19 equipped with an operating handle 20. The door is slidable in guides and is adapted to remain in the position to which it is moved by manual operation.

At the front of the take-off cabinet 15 there may be provided a selector switch 22 controlling electric motor 23 which actuates the elevator member B, the switch 22 being herein shown as attached to the lower surface of the shelf 12, which shelf provides a partition between the upper storage compartment 10 and the take-off compartment 15. The selector switch 22 may be of any suitable character and is provided with an indicator dial having a selected number of positions herein shown as eight, which number is one greater than the number of shelves of the elevator member B, and suitable electrical and mechanical means are provided so that as the pointer of the selector switch is moved to any desired numbered position on the dial of the switch the elevator member B will be moved to a desired take-off position or to its lowermost or refill position. A suitable chart 24 may also be provided at the front of the take-off compartment and numbered to correspond with the nmbers on the selector switch dial with the exception of the last number on the dial. The numbering on the chart also includes reference to the class of goods on the various shelves of the elevator member B. A suitable chart is indicated diagrammatically in Fig. 7*a*.

If desired a half shelf 25 may be provided within the take-off compartment 15 to afford additional storage space, and a start and stop switch 26 may be provided at any suitable location, preferably at or near the front of the take-off compartment.

Below the take-off shelf 17 there is provided a refill compartment 30 to which access may be had by means of a suitable door 31 having a handle 32. Within the compartment 30 a plurality of refill shelves 33, 33 are provided, herein shown as seven in number and corresponding to the number of shelves of the elevator member B. The shelves 33 preferably incline downwardly from the front to the rear of the compartment and as shown each shelf 33 is subdivided into can holding portions by means of adjustable shelf divider bars 34 so

that cans of any desired size may be loaded within the refilling or supply shelves 33 of the stationary cabinet.

The rear of the supply cabinet is adapted to be selectively opened or closed by means of a slidable gate 40 carrying a plurality of spaced shutter bars 41 corresponding in number to the number of the shelves 33. The gate 40 is slidable vertically within limits and is normally held in a raised position wherein the shutter bars 41 will prevent cans 42 from passing from the lower ends of the shelves 33 as indicated in Fig. 3. The shutter bars are indicated in their lowered position in Fig. 1, in which position cans are permitted to pass from the refill shelves onto the shelves of the elevator member B. Any suitable means may be employed for normally urging the gate to its raised position. As shown a lever 43 is pivotally connected at one end 44 to the lower end of the gate 40 while at the other end of the lever a weight 45 is provided. A suitable fulcrum 46 is located intermediate the ends of the lever 43. The gate 40 is moved to its forward position by contact of the lower portion of the elevator member B with a projection 47 carried by the gate 40.

As shown the elevator member B comprises a vertically movable cabinet portion 50 divided into compartments by means of shelves 51 corresponding in number to the shelves 33 of the refill compartment of the stationary cabinet member A and similarly inclined. The rear of the compartment 50 is indicated at 52 while the front is open to receive or discharge cans. As shown the movable cabinet member 50 is slidably mounted on a pair of fixed vertical posts 55, 55 constituting runways, and vertical movement is imparted to the cabinet by means of a rotatable screw 56 which coacts with a nut 57 secured to a horizontal frame portion of the elevator cabinet so that on rotation of the screw 56 through motor 23, belt 58 and pulley 59 the nut 57 and the cabinet 50 to which it is secured may be raised or lowered as desired. The motor 23 is controlled by means of a reversing switch 60 located adjacent the motor, by selector switch 22, by the starting switch 26, and by a series of eight limit switches designated 70, 71, 72, 73, 74, 75, 76 and 77 carried by fixed frame member or bar 80 (Fig. 5), which limit switches are adapted to be selectively engaged by means of a trip member or block 81 located off-center on the back of the movable cabinet member 50. Wiring connections between the various switches and the motor are indicated in the wiring diagram (Fig. 7).

As the drive shaft or screw 56 turns in one direction the cabinet or elevator shelf member 50 goes down, and as it is moved in the opposite direction the elevator shelf member 50 goes up. For instance, if selector switch 22 is dialed to No. 6 position and the starting button 26 depressed, the elevator shelf member or cabinet 50 will go up if the No. 6 shelf of the reciprocable cabinet is below the take-off shelf 17, or it goes down if the No. 6 shelf is above the take-off shelf 17. When the trip block 81 trips No. 6 limit switch (75) from either direction it stops the motor 23. Thus the elevator shelf member stops with its No. 6 shelf just a little above the level of the take-off shelf 17. It remains at this position until another number is dialed and the starting button 26 is depressed again. There are eight positions on the selector switch 22 and there are eight limit switches 70 to 77. Seven of the limit switches 70 to 76 are for stopping the various shelves at the take-off shelf. The bottom limit switch 77 is for stopping the elevator shelf at its refill position.

As shown the elevator shelf member 50 works behind and is attached to the stationary cabinet member A by means of four spacer bars 90 which keep the elevator shelf member 50 one inch from the stationary cabinet member A at all times. As the elevator shelf comes down the runways 55, about three-quarters of an inch before tripping the bottom limit switch 77, the bottom of the elevator shelf member contacts the foot or projection 47 which is attached to the gate 40, causing the shutter bars 41 carried thereby to move downwardly, while the weight 45 on lever 43 goes up. This frees the lower ends of the shelf divider bars 34, thereby allowing free passage of canned goods 42 from all seven refill shelves 33 of compartment 30 of the stationary cabinet member A into all seven shelves 51 on the elevator shelf member 50. As the elevator shelf member 50 goes up the weight 45 carried by lever 43 goes down, lifting the gate 40 and shutter bars 41 up, thereby closing off passage of canned goods from the refill compartment of the stationary cabinet member.

As previously set forth the shelves 33 in the refill compartment of the stationary cabinet member are made up with divider bars 34 which are adjustable by means of loosening screws 91 that extend through the divider bar 34 and through a shelf divider clamp strap 92 (Fig. 4). Between the divider bar and divider clamp strap are two shelf divider clamp bars 93. Thus, the divider bar can be adjusted from left to right or vice versa to take care of the various sized cans. The front end of each divider bar 34 rests on a front shelf bar 94 and the rear end of the divider bar rests on the rear shelf bar 95. The rear shelf bar is set lower than the front bar so that there is a decline from front to rear. Thus, when cans are placed in front, they roll to the rear automatically through the force of gravity. Thus, when the elevator shelf comes down and presses the gate 40 and shutter bars 41 down any item (whether it be one or all) missing in the elevator shelf member 50 is automatically replaced from the refill compartment of stationary cabinet member A.

The shelves in the elevator shelf member 50 are also made with a slight slope from front to rear to hold cans in while in transit. On each shelf 51 in the elevator shelf member 50 is a group of can receivers 100. Each can receiver is a flat thin piece of metal with an adjustable back and bent over in front so as to fit in the crevice formed between the shelf and a label holder 101. Fastened to the back of the can receiver 100 is a pull string 102 which passes through a small pulley 103 and is attached to a pull hook 104. The can receivers 100 are so placed in the elevator shelf that when the elevator shelf is in refill position the cans roll from the stationary shelf directly onto them. As a result any can can be removed by pulling the pull hook 104 without disturbing any other can.

Our invention is designed and built to conserve pantry shelf space and may be provided with shelves every five inches apart so as to bring all items within the elevator within reach of the operator from one take-off shelf. The device is so simple to operate that even a child who can read can operate it. To operate, first find the name of the desired canned goods on the item lister chart 24 and ascertain its shelf number, then set the selector switch 22 to the shelf number desired, press start switch and the elevator shelf member 50 automatically comes up to the take-off shelf 17. Then open the slide door 19 and remove the can 42 by pulling the pull hook located over the can wanted. This does away with the old fashioned method of having to scramble around among cans until the one wanted is found.

Another advantage is on shopping day. The housewife merely has to glance into the stationary cabinet to know the items which need to be replaced. There is never any lack of knowledge as to what is on hand.

It is still an added advantage to people who are heavy set, pregnant, or crippled so that stooping works a hardship, as the take-off shelf is about regular cabinet level.

By using the elevator shelf there is never any doubt but that the oldest cans purchased are used first.

Not only are there many serviceable advantages, but it is an added attraction in the kitchen. The take-off shelf 17 being about the same level as a regular cabinet it can easily be installed as part of the cabinet.

The elevator shelf or cabinet can also be used in grocery stores. It will differ only in its size and the number of stations. Instead of one take-off shelf **17** there will be unloading shelves with sloping runways away from the elevator shelf. The elevator shelf will have to have shutters on it to hold items in its until it reaches the unloading position, and there the shutters will automatically come down and allow the items from the elevator shelf to roll into the unloading shelves. The refill cabinet will be the same as the aforementioned. A time delay at each position will be necessary for the items to pass into or off the elevator shelf. A light or buzzer can be used on the refill cabinet to warn the operator that replacements of items in the cabinet are necessary. A group of these elevator shelves can be operated from one large motor through the medium of a shaft with power takeoffs for each unit. A group of these elevator shelves will insure a constant supply of all items to the customers. Since the operator services the shelves from an aisle in the rear of the elevator shelf there will not be the confusion seen in the present system used wherein the clerks truck in the replacements and have them cluttering up the aisles until they are able to get to them.

The pantry elevator shelf can be constructed to fit any space, either large or small as the case may be.

Though a preferred embodiment of the invention has been described for the purpose of illustration it will be obvious that numerous modifications and variations may be resorted to without departing from the invention in its broadest aspects. For example, various methods of transferring power from the motor **25** to the drive shaft **56** could be employed. One such method would be to use a small sprocket in place of a motor pulley, a large sprocket in place of a drive pulley, and a chain in place of a belt. Another alternate would be to use a small gear in place of a motor pulley and a large gear in place of a shaft pulley, and placed so that gears mesh together, or any combinations of the above could be used.

In the modification of Figs. 8 and 9 a substitute for the drive shaft **56** is shown in the form of a sprocket **200** mounted on a shaft **201** attached to a horizontal frame member or plate **202** by means of pillow block bearings **203** and a sprocket **204** attached to a lower frame member or plate **205** in the same manner, with a chain **206** connected to the top of an elevator shelf member B′ riding over sprocket **200** on top plate **202** and over sprocket **204** on lower plate **205** and attached to the bottom of the elevator shelf. If this construction is used a counterbalance weight **207** may be used in conjunction with the elevator shelf member B′ so that it could be made to stop at the various positions, such weight **207** being equal to the weight of the elevator shelf and having its own runways **208**. The weight **207** is connected to the top of the elevator shelf by means of a pair of ropes, cables, chains, or other flexible connections **210** which pass from the weight **207** over pulleys **209** attached to the top plate **202** and passing down and connecting with elevator shelf member B′.

The invention has been described in detail for the purpose of illustration but it will be obvious that numerous modifications and variations may be resorted to without departing from the spirit of the invention within the scope of the appended claims.

We claim:

1. A kitchen or store cabinet, comprising a stationary cabinet member having a refill compartment provided with a plurality of stationary refill shelves located at different levels, a stationary take-off shelf located above the refill compartment, and an elevator member having a cabinet portion equipped with spaced shelves corresponding with the shelves of the refill chamber, motor means for bringing the elevator member to selected positions to present a selected shelf to the take-off shelf, and for lowering the elevator member to a refill position with its shelves adjacent the refill shelves of the stationary cabinet, and means for automatically stopping the motor when a predetermined elevator shelf has reached the take-off level or when the elevator has reached the refill position.

2. A cabinet as defined in claim 1, wherein the shelves of the refill compartment are provided with spaced adjustable divider bars to accommodate between them cans of selected sizes.

3. A cabinet as set forth in claim 1, wherein the lower ends of the refill compartment are normally closed by a slidable gate having shutter bars corresponding in number with the number of shelves in the compartment, and means carried by the elevator for raising the gate and the shutter bars carried thereby to open position when the elevator is lowered to the refill position.

4. A kitchen or store cabinet, comprising an elevator member having a plurality of shelves on different levels arranged to support cans thereon, a stationary take-off shelf located at a convenient elevation for the operator, motor means for selectively bringing a predetermined elevator shelf to the level of the take-off shelf, and means for automatically stopping the motor means when a predetermined elevator shelf has reached the take-off level, each shelf having a plurality of tiltable can receivers, and means comprising a pull chain for tilting each can receiver to discharge a can therefrom.

5. A kitchen or store cabinet, comprising an elevator member having a plurality of shelves on different levels arranged to support cans or the like thereon, a stationary take-off shelf located at a convenient elevation for the operator, a storage chamber located at a refill position, motor means for selectively bringing a predetermined elevator shelf to the level of the take-off shelf or for moving the elevator to the refill position, and means for refilling the shelves of the elevator member from the storage chamber at the refill position.

6. A kitchen cabinet as set forth in claim 5, wherein each shelf of the elevator member is provided with a plurality of tiltable can receivers, each can receiver having an adjustable back, and means for tilting each can receiver to discharge a can therefrom.

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