A slidable pull-out tray for displaying merchandise in a very neat and attractive manner while making it very easy for the customers to remove a package from the display and very easy for the store proprietor to restock the merchandise. In one embodiment, the trays are self supported by cantilever brackets attached to a gondola bracket fixture. No shelves are required, thereby maximizing the total amount of goods that can be stocked within a given vertical height. In one embodiment, the floor of each tray is an open grid thereby greatly facilitating cleaning of the fixtures. Pusher paddle assemblies engage the open grid and slide along bars forming the grid.
DISPENSING SLIDABLE TRAY SYSTEMS
AND METHODS

[0001] This application claims the benefit of U.S. Provisional Application No. 60/836,206 filed Aug. 8, 2006, the entire contents of which is expressly incorporated herein by reference.

FIELD OF THE INVENTION

[0002] This invention relates generally to a dispensing slidable tray system and methods for holding and dispensing packaged goods in supermarkets and in general where ready access to shelved goods is desired.

SUMMARY OF THE INVENTION

[0003] Embodiments of the invention are illustrated and described for shelving and displaying purchased goods in supermarkets and other retail outlets. However, embodiments of the invention are useful whenever ease of access for loading or unloading of shelved goods is desirable. In one embodiment described, a cantilevered slidable pull-out tray is supported by upright members without the necessity to install any horizontal shelving. These embodiments facilitate quick construction of a display. In addition, these embodiments minimize the height of each tray, thereby maximizing the total amount of goods that can be shelved within a given vertical height. The additional space gained by use of this embodiment can, for example, be used to hold and display additional goods or used for other purposes such as advertising or describing the nature of the shelved goods.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 illustrates in perspective a retail display apparatus employing one embodiment of the slidable tray assemblies.

[0005] FIG. 2 is a detailed exploded view of one embodiment of the slidable tray assembly.

[0006] FIG. 3 illustrates in perspective one embodiment of the slidable tray assembly attached to the wall or gondola fixture in its closed configuration.

[0007] FIG. 4 illustrates in perspective the slidable tray assembly of FIG. 3 with the tray cantilevered from the wall or gondola fixture to its open product restocking configuration.

[0008] FIG. 5 illustrates one embodiment of the releasable locking mechanism in its locked position.

[0009] FIG. 6 illustrates the releasable locking mechanism of FIG. 5 in its unlocked position.

[0010] FIG. 7A illustrates the pusher paddle assembly with the spiral spring removed.

[0011] FIG. 7B illustrates the pusher paddle assembly with the spiral spring inserted.

[0012] FIG. 8A illustrates one embodiment of the cantilever mounting of the slidable tray assembly; this drawing illustrates the mechanism prior to mounting.

[0013] FIG. 8B illustrates the mounting apparatus after the slidable tray assembly has been cantilever mounted to the gondola fixture.

[0014] FIG. 9A illustrates two pusher paddle assemblies attached to the slidable tray: one assembly fully retracted, the other being extended.

[0015] FIG. 9B illustrates the attachment of the second pusher assembly of FIG. 9A to the open grid floor of the slidable tray.

[0016] FIG. 10A illustrates another movable embodiment of the dividers, wherein the dividers comprise a pair of flexible, parallel bars, in their attached configuration.

[0017] FIG. 10B further illustrates the movable divider embodiment of FIG. 10A, demonstrating how the user attaches the divider at an arbitrary location within the tray.

[0018] FIG. 11A illustrates an embodiment of the pusher assembly wherein the spring hole affixes the spring to the tray using a pin or rivet.

[0019] FIG. 11B illustrates another embodiment of the pusher assembly wherein the spring hole is removably attached to the tray.

[0020] FIG. 12 illustrates an embodiment of the tray employing the parallel bar dividers and a stopping member consisting of a flat panel rather than a metal bar.

[0021] FIG. 13A illustrates an embodiment of the handle facilitating the unlocking of the tray in the locked configuration.

[0022] FIG. 13B illustrates the handle of FIG. 13A in its unlocked configuration.

[0023] FIG. 14 illustrates an embodiment adapted for use within a self-contained refrigerated compartment.

[0024] FIG. 15 illustrates an embodiment adopted for use within a refrigerated locker.

DESCRIPTION OF THE REFERRED EMBODIMENTS

[0025] FIGS. 1, 3, 4 and 5 illustrate one embodiment of a supermarket display 20, having seven slidable merchandise trays 25a-g housed within cabinet 30. As shown, the series of pull-out, slidable trays 25a, 25b, 25c, 25d, 25e, 25f, and 25g provide platforms for holding and displaying, in this embodiment, a plurality of bags of coffee 35 in a supermarket. In the embodiment shown, the bags 35 have substantially identical dimensions. However it will be apparent that embodiments of the display can dispense myriad different items of different dimensions from trays 25.

[0026] FIG. 2 illustrates a single tray 25 in an exploded view. In this embodiment, tray 25 is constructed as an open rectangular frame 40 formed by joining rear piece 41, side pieces 42, 43 and front piece 44. Typically, these members are formed from sheet metal.

[0027] The bottom or floor of tray 25 is advantageously formed in the embodiment shown as an open grid 50 formed by a series of parallel bars. In the embodiment shown, the bars are wire rods 55 running from the front to the back of the tray and welded or otherwise attached at their respective ends to orthogonal rods 60, 61. The substantially open grid floor provided by the rods 55 materially lighten the weight of tray 25 and possess minimal surface area thereby greatly facilitating cleaning of the trays. However, it will be apparent that the tray floor may also be formed from one or more sheets of material. Grid 50 is supported at the front of tray 25 by a series of tabs 46 on other devices integral or attached to front piece 44. Grid 50 is supported at the rear of tray 25 by an L-shaped lip formed at the bottom of the rear piece 41. Grid 50 can be affixed to frame 40 by pins or rivets which retain grid 50 in frame 40. Other forms of attachment include spot welding the frame and grid together. Alternatively, the grid can freely rest within frame 40 so that the grid 50 can be lifted out for cleaning or replacement.
[0028] A series of wire rods 70 serve as rails above the floor of grid 50 to partition the tray 25 into a series of row compartments for the merchandise 35. In the embodiment shown, the rods 70 are supported by vertical supports above the grid 50. In this embodiment, each end of rod 70 is bent into an "L" configuration and the bottom of the "L" is welded or otherwise attached to the grid 50 to provide this vertical support.

[0029] A stop rod 80 is attached at the front of tray 25 and extends above the floor of grid 50 to prevent merchandise from sliding from the front end of the tray 25.

[0030] Each row compartment can advantageously include a spring biased pusher paddle assembly 100. As best shown in FIGS. 2, 3, 7A and 7B, each assembly 100 includes a pusher paddle 105 slidably mounted to a pair of the base rods 55 forming the bottom or floor of the row compartment in which the assembly is located. Pusher 105 is typically molded from plastic and includes a vertical paddle member 108 and a horizontal base 109. Opposing grooves 110a and 110b depend from base 109 and engage an adjacent pair of base rods 55.

[0031] The pusher paddle 105 is biased by a spring 115 to move the pusher paddle 105 to the front of the display. In the embodiment shown, spring 115 is a power or spiral spring. As shown in FIG. 9A, the rear of the pusher paddle 105 includes an open compartment 104, formed by a pair of outwardly extending triangular shaped walls 106, 107 integrally attached to the vertical paddle member 108 and horizontal base 109. Walls 106, 107 are spaced to maintain the spring 115 in a vertical position as shown but far enough apart to allow the spring 115 to be freely wound and unwound within compartment 104. The spiral spring 115 in the embodiment shown is simply laid into the open compartment 104 with the inner end of the spring unattached and the outer end of the spiral spring extended through a slot 111 formed through the vertical wall 108 of paddle member 105. The end of spiral spring 115 includes an opening 113 attached to the frame piece 44. In the embodiment of FIGS. 9A, 9B and 11A, the end opening 113 is riveted to piece 44 by rivet 114.

[0032] As shown in FIG. 9B, the pusher paddle assemblies 100 are easily and quickly mounted within respective rows by temporarily slightly deforming one or both of the adjacent pair of base rods 55a, 55b, then pushing down on the base 109 of the paddle assembly so that the grooves 110a and 110b are juxtaposed the respective base rods 55a and 55b. Upon their release, the pair of base rods 55a, 55b, return to their normal linear shape and reside within the grooves 110a and 110b.

[0033] As the pusher paddle assembly is moved from the front of the tray 25 to the back, energy is built up as the spiral spring 115 is caused to be wound up within compartment 104. This energy causes pusher paddle 105 to be biased so that paddle 105 slides along base rods 55 to push the merchandise 35 forward in the tray 25. When the customer pulls out the forward-most merchandise item 35, the pusher assembly 100 causes the remaining merchandise 35 to be pushed forward in the tray, until the merchandise makes contact with the stop bar 80. This makes it both very convenient for the customers to access a package of merchandise and maintains an neat display of the packaged goods.

[0034] A significant feature of the supermarket display 20 is that it greatly facilitates re-stocking of merchandise as well as cleaning the merchandise trays and maintaining a visually neat and very attractive store display. Thus, as shown in FIG. 4, each of the trays 25a-25g can be unlocked and pulled forward for restocking and cleaning. Bags of goods 35 are loaded into each row from the front of the display by pushing the pusher paddle 105 to the back end of its row compartment. When bags of goods 35 are loaded into the row, the paddle member 105 is released and, as described above, the stored energy in spring 115 causes the spring to unwind and retract to engage the rear-most package 35 and push all of the bags to the front of the tray.

[0035] Another significant feature of the embodiment shown is that the trays 25 are cantilever mounted to a rear channel or wall member. As a result, the vertical position of a tray can be easily and quickly changed to accommodate packages 35 of different heights by simply temporarily removing a tray or series of trays and replacing them at different vertical positions.

[0036] An additional feature provided by the tray assembly is the elimination of the need for any fixed shelving so that a maximum number of pull-out trays 25 can be mounted in any given space. This added space may be used to add on or more additional trays 25 or used for advertising or product information.

[0037] Thus, referring particularly to FIGS. 3, 4, 8A and 8B, brackets 125a and 125b are cantilever mounted in slots 130 located in a vertical support column fixtures 135. This type of support is known in the art as a gondola fixture. The rear end of each bracket 125 is formed with a notched end 140 to engage the slot 130 in the vertical gondola fixture 135. Notched end 140 maintains the bracket at a right angle with respect to the gondola 135 and limits movement of the bracket 125 to enhance the rigidity of the slidable tray assembly. A spacer bar 136 is advantageously rigidly attached to brackets 125a and 125b to maintain both brackets in a common plane to prevent skewing of a tray 25.

[0038] Each tray 25 is advantageously mounted to the brackets 125 by a telescopic ball bearing drawer mechanism so that the tray 25 can be fully withdrawn from its cabinet 30 for restacking and cleaning. Multipart drawer slides for this purpose are well known in the art and typically include as shown in FIG. 2, a drawer slide member 150, an intermediate slide member 155, and a cabinet slide member 160.

[0039] FIGS. 3 and 4 illustrate the slidable tray 25 in its closed and open positions respectively. In FIG. 3 the dispensing tray 25 is pushed toward the gondola support 135 which is the normal dispensing position for the purchased goods 7. In FIG. 4, drawer member 150 progresses within intermediate slide member 155, which itself extends beyond the cabinet side member 160, to cantilever the tray 125 beyond the brackets 125.

[0040] Advantageously each tray includes a locking mechanism for locking the tray in its closed dispensing position and its open stockiing position. Referring to FIGS. 5, 6, 13A and 13B, a handle 175 slidably attached to the bottom of tray frame 40 releases the locking mechanism. Pulling forward on handle 175 exerts a force on attached wires 185 and 186 in the direction of arrow 180 in FIG. 6 and 13A. The ends of wire 186 are respectively attached to spring loaded stopping plugs 190, 191 respectively mounted to the end frame members 42, 43. Stopping plugs 190, 191 include spring biased cylindrical plungers 192 which extend through respective holes 195, 196 of end frame members 42, 43 and lock into slots 201 in the closed position of FIG. 3.
or slots 200 in the open position of FIG. 4. Pulling the release handle 175 causes the plungers to be retracted from a slot 200 or 201 to a position within the stopping plugs, thereby permitting tray 25 to slide between two locking positions provided by the respective slots 200, 201 in the brackets 125.

[0041] FIGS. 10A and 10B further illustrate the plunger 192 engaging slot 201 in the open position of tray 25. Springs within slots 190, 191 cause the plungers 192 to engage the slot 200 when the tray 25 is pulled out to the open stocking position shown in FIG. 4. The plungers 192 then locking the tray 25 in its open position. When the handle 175 is again pulled, the plungers 192 are withdrawn from slot 200, allowing the shelf 25 to be pushed back into its closed position shown in FIG. 3, wherein plungers 192 engage slot 201. It will be understood that additional locking positions for the tray relative to its cantilever shelf brackets 125 may be provided by adding additional slots between slots 200 and 201 in the brackets 125 to allow the locking plungers 192 of stopping plugs 190, 191 to lock the tray 25 in intermediate positions.

[0042] Another embodiment of the slidable merchandise tray 225 as shown in FIGS. 10A and 10B. In the embodiment, the tray partitions 270 are not permanently affixed to the tray. Instead they include a base clip member 275, 276 having grooves which removably engage respective rails 280, 281 attached at the front and rear of tray 25. As shown in FIG. 10B, partition 270 includes horizontal rods 300, 305. These rods 300, 305 when drawn together pull the base attachment members toward each other to disengage the grooves 275, 276 from rails 280, 281. The partitions 270 can then be removed to a new position to form a wider or narrower row compartment. As a result, each row of each tray 25 can be set up to hold rows of merchandise 35 of different width.

[0043] Another embodiment of the pusher paddle assembly 305 is shown in FIG. 11B. In this embodiment the front member 44 of frame 40 includes a series of upstanding tabs 350 into which the end opening 113 of spiral spring can be attached. Thus, whenever the width of shelf row is changed, the arrangement of the shelf row is changed as described above and shown in FIGS. 10A and 10B. The pusher paddle assembly is easily moved to the appropriate pair of rods 55 of grid 50 and end opening 113 inserted over the appropriate tab 350.

[0044] FIG. 12 illustrates another embodiment 400 of the slidable merchandise tray wherein front panel 405 is substituted for the stop rod 80 shown in the earlier embodiment of FIGS. 2-4. Panel 400 extends above the floor of the open grid 50 to engage the merchandise at the front of the tray rather than the above described stop rod 80 described above and shown in FIGS. 2, 3, and 4.

[0045] Further embodiments of the dispensing slidable tray system are illustrated in FIGS. 14 and 15. In these embodiments, the series of slidable merchandise trays 25 are housed within a refrigerated area. In FIG. 14, the case 500 shown by phantom lines can be a self-contained refrigerated unit. Merchandise in the form of milk cartons 505 is illustrated in the series of trays 25a-25g. But it will be apparent that a large number of different products can be accommodated such as, e.g., orange juice, cottage cheese, carbonated beverages and the like. Similarly, the refrigerated cabinet 500 can be a freezer compartment for displaying and dispensing cartons of ice cream or frozen fruits and vegetables.

[0046] Referring now to FIG. 15, the refrigerated area shown by phantom lines is a refrigerated locker 600 such as is typically used in supermarkets. In the conventional supermarket dairy department, the store employee must enter and work within the refrigerated locker to restock the dairy item from the back of the display. As a result, the stocking employees cannot work at room temperature while conducting the restocking but instead must work within an uncomfortable cold environment. In contrast, the slidable trays 25a-25g within the locker 600 are easily restocked outside of locker 600 by workers working comfortably at room temperature. Thus, in both the embodiments of FIGS. 14 and 15, the employee can do all of the restocking while the employee is standing at the front of the display and working in a room temperature environment.

[0047] The same virtues also apply for the embodiments of FIGS. 14 and 15 as in the early non-refrigerated displays, namely an attractive and neat display of merchandise that is easily and quickly restocked by pulling out a tray 25 beyond the refrigerated cabinet.

[0048] While the embodiments above have been described for in-store use in self service stores, it will be apparent that embodiments of the invention may be employed in many places such as hospitals, office and home, where easy installation and ready access and excellent visibility of shelved goods is desirable.

[0049] The above describes a present invention presents a description of the best mode contemplated for the slidable merchandise tray system and methods in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains to reproduce these systems and practice these methods. These systems and methods are, however, susceptible to modifications that are fully equivalent to the embodiments disclosed. On the contrary, these apparatuses, systems, and methods cover all modifications coming within the spirit and scope of the present invention.

What is claimed is:

1. A retail store display apparatus for: maintaining an attractive display of packaged merchandise, facilitating restocking of merchandise and, minimizing shelving height for maximizing the amount of merchandise displayed in a given space by eliminating stationary horizontal shelving comprising a plurality of stacked cantilever mounted slidable trays within said given space, each tray partitioned into a series of parallel rows for respectively holding several rows of packaged merchandise, a merchandise pusher assembly in each of said parallel rows comprising a pusher paddle spring-biased to move toward the front of said tray and adapted to be placed behind the merchandise located in said row so that the packaged merchandise is urged toward the front of said display, and a releasable locking mechanism for each of said slidable trays for normally holding said trays in either a closed, retracted locked position for display and customer withdrawal of selected merchandise or in an unlocked position wherein said tray is slid outward beyond the front of said display exposing substantially the entire tray for facilitating restocking of said tray from the front of said display apparatus.
2. A retail store display apparatus for maintaining an attractive display of packaged merchandise, facilitating restocking of merchandise and, minimizing shelving height for maximizing the amount of merchandise displayed in a given space by eliminating stationary horizontal shelving comprising
a plurality of stacked cantilever mounted slidable trays within said given space, each tray partitioned into a series of parallel rows for respectively holding several rows of packaged merchandise, and
a merchandise pusher assembly in each of said parallel rows comprising a pusher paddle spring-biased to move toward the front of said tray and adapted to be placed behind the merchandise located in said row so that the packaged merchandise is urged toward the front of said display

3. The merchandise display and dispensing apparatus of claim 2, wherein said slidable trays provide substantially an open grid platform for supporting said merchandise.

4. The merchandise display and dispensing apparatus of claim 3, wherein said open platform comprises a plurality of parallel bars.

5. The merchandise display and dispensing apparatus of claim 4, wherein said bars comprise parallel wire rods.

6. The merchandise display and dispensing apparatus of claim 2, wherein said tray is partitioned by a plurality of row separators comprising horizontal wire bars attached to said tray by vertical supports.

7. The merchandise display and dispensing apparatus of claim 6, wherein said vertical supports are permanently attached to said tray.

8. The merchandise display and dispensing apparatus of claim 6, wherein said vertical supports terminate in clips which removably engage said tray.

9. The merchandise display and dispensing apparatus of claim 8, wherein said clips include grooves and wherein said tray has a front rail at the front of said tray and a rear rail at the rear of said tray, said front and rear rails respectively movably engaging said grooves in said clips.

10. The merchandise display and dispensing apparatus of claim 6, wherein said row separators are easily removed and re-positioned on said tray by temporarily deforming said horizontal-wire bars to move the ends of said vertical supports closer together to thereby disengage the grooves in said clips from said respective front and rear rails.

11. The merchandise display and dispensing apparatus of claim 2, wherein a spiral spring biases said pusher paddles toward the front of said tray.

12. The merchandise display and dispensing apparatus of claim 11, wherein said merchandise pusher paddle includes an open compartment for retaining said spiral spring.

13. The merchandise display and dispensing apparatus of claim 11, wherein the inner end of said spiral spring is unattached and the outer end of said spiral spring extends from said open compartment through an opening in said pusher paddle and attached to the front of said tray.

14. The merchandise display and dispensing apparatus of claim 13, wherein said outer end of said spiral spring is fixedly attached to said tray.

15. The merchandise display and dispensing apparatus of claim 13, wherein said outer end of said spiral spring is removably attached to said tray.

16. The mechanical display and dispensing apparatus of claim 15, wherein a series of spiral spring attachment devices are located along the front of said tray.

17. The mechanical display and dispensing apparatus of claim 16, wherein said attachment devices are protruding tabs adapted to engage an opening formed in the outer end of said spiral spring.

18. The mechanical display and dispensing apparatus of claim 4, wherein said merchandise pusher assembly slides along a pair of said parallel bars.

19. The mechanical display and dispensing apparatus of claim 18, wherein said pusher paddle includes a pair of depending grooves which respectively engage said pair of parallel bars.

20. The mechanical display and dispensing apparatus of claim 19, wherein said pair of parallel bars are engaged in said grooves by temporarily deforming said pair of bars to expand the space between said bars to allow said paddle grooves to be pushed into a position juxtaposed said respective bars.

21. The mechanical display and dispensing apparatus of claim 2, comprising a pair of cantilever support arms having a rearward notch adapted to engage a gondola fixture, said support arms respectively attached to opposite ends of a slidable tray by a telescopic slide having an inner member attached to said tray, an outer member attached to said support arm and an intermediate member.

22. The mechanical display and dispensing apparatus of claim 2, comprising a pair of cantilever support arms releasably attached to a gondola fixture and slidably attached to one of said trays.

23. The mechanical display and dispensing apparatus of claim 22, wherein said slidable trays include a releasable locking mechanism comprising spring biased plungers adapted to engage slots in said cantilever support arms and a lever mounted to the bottom of said tray coupled to said plungers for pulling said plungers out of said slots to allow the tray to slide to an open re-stocking position.

24. The merchandise and dispensing apparatus of claim 2, wherein said apparatus is located in a refrigerated space for enabling dairy products and the like to be easily loaded and restocked at the front of said apparatus by a person standing in a room at ambient temperature rather than restocking at the rear by a person standing in said refrigerated space.

25. A shelving and display device comprising:
a plurality of rigid, slidable tray assemblies, each assembly capable of being locked at multiple locations between a fully extended and fully closed position, each tray assembly comprising:
a platform,
a stopping member preventing merchandise from progressing beyond the length of the platform,
a series of dividers placed on the platform and spaced apart from one another at various widths so as to form a plurality of various width rows, said dividers thereby preventing movement of merchandise between rows,
a plurality of pusher assemblies for each row of merchandise, each assembly comprising:
a pusher paddle,
a spring attached to a pusher paddle and to the tray assembly, stressed so as to urge merchandise to the front of the row,
a tray stopping assembly comprising:
a handle capable of engaging or disengaging the locking members,
a locking members preventing movement of the tray assembly in the engaged position,
a cabinet bearing dimensions of length and width substantially similar to the tray, capable of vertically housing multiple tray assemblies, comprising:
a plurality of pairs of longitudinal frames, each pair supporting a tray assembly, each frame capable of interacting with the locking member of the tray assembly.

26. The shelving and display device of claim 25, wherein the divider comprises two parallel bars, one above the other, wherein when the lower bar is compressed toward the upper bar, the divider contracts, permitting the divider to be removed and inserted at any point along the length of the tray.

27. A tray for displaying and dispensing goods having a movable divider member for partitioning said tray into rows, said divider member having respective slotted retainers at opposite ends, respective rails at the front and back of said tray engaged by said slotted retainers, said divider member movable from one position to another by temporarily deforming said member to draw said slotted retainers closer together to allow said retainers to be withdrawn from said rails and moved to another position in said tray.

28. A merchandise pusher assembly for a tray for displaying and dispensing goods comprising:
a base in said tray for supporting said merchandise, said base comprising an open grid formed by a plurality of parallel bars,
a pusher assembly for moving said goods toward the front of said tray for maintaining said goods in an attractive and neat display, said pusher having a vertically extending paddle and pair of depending grooves adapted to engage and slide along a pair of said parallel bars.

29. A method for beautifying the display of packaged merchandise in a retail store while enhancing the amount of merchandise that can be displayed within a given space and greatly facilitating the restocking of merchandise comprising:
providing a platform constructed of parallel bars, said bars facilitating the removal of detritus from the platform, said platform being capable of supporting rows of said merchandise, housed within a cabinet;
loading said merchandise in each row while the platform is outside the cabinet;
returning the platform to its position within the cabinet;
removing a single item of merchandise for purchase and having the remaining merchandise in that row progress along the platform towards the front of the display.

30. A method for easily and quickly cleaning and restocking a display of packaged merchandise in a retail store comprising:
providing a platform constructed of parallel bars, said bars facilitating the removal of detritus from the platform, said platform being capable of supporting rows of said merchandise, housed within a cabinet;
cantilevering said platform to a position outside the cabinet;
cleaning each bar along each row;
loading said merchandise in each row while the platform is outside the cabinet;
returning the platform to its position within the cabinet.

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