

Feb. 14, 1967

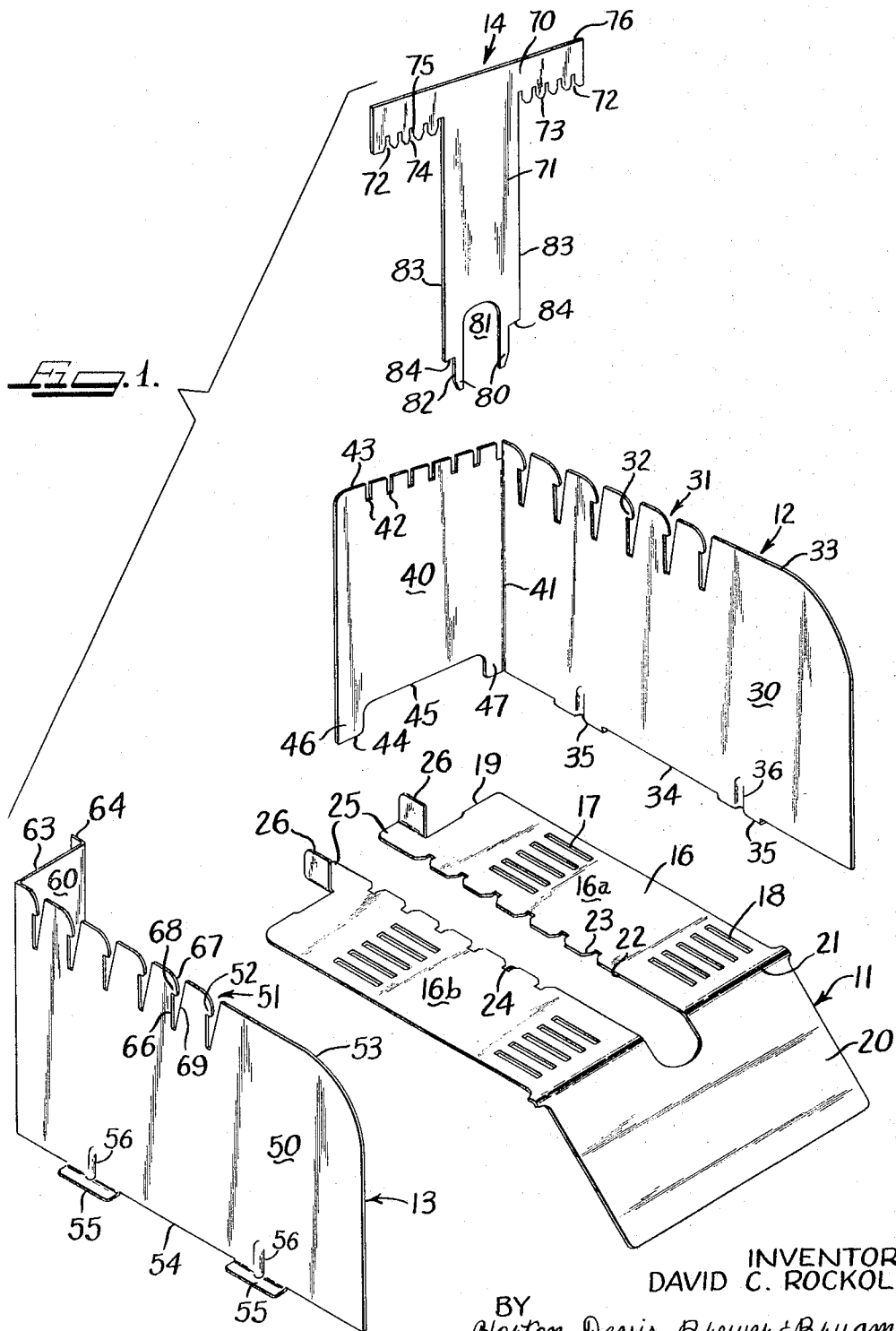
D. C. ROCKOLA

3,304,142

COMPARTMENT MEANS

Filed Oct. 21, 1965

4 Sheets-Sheet 1



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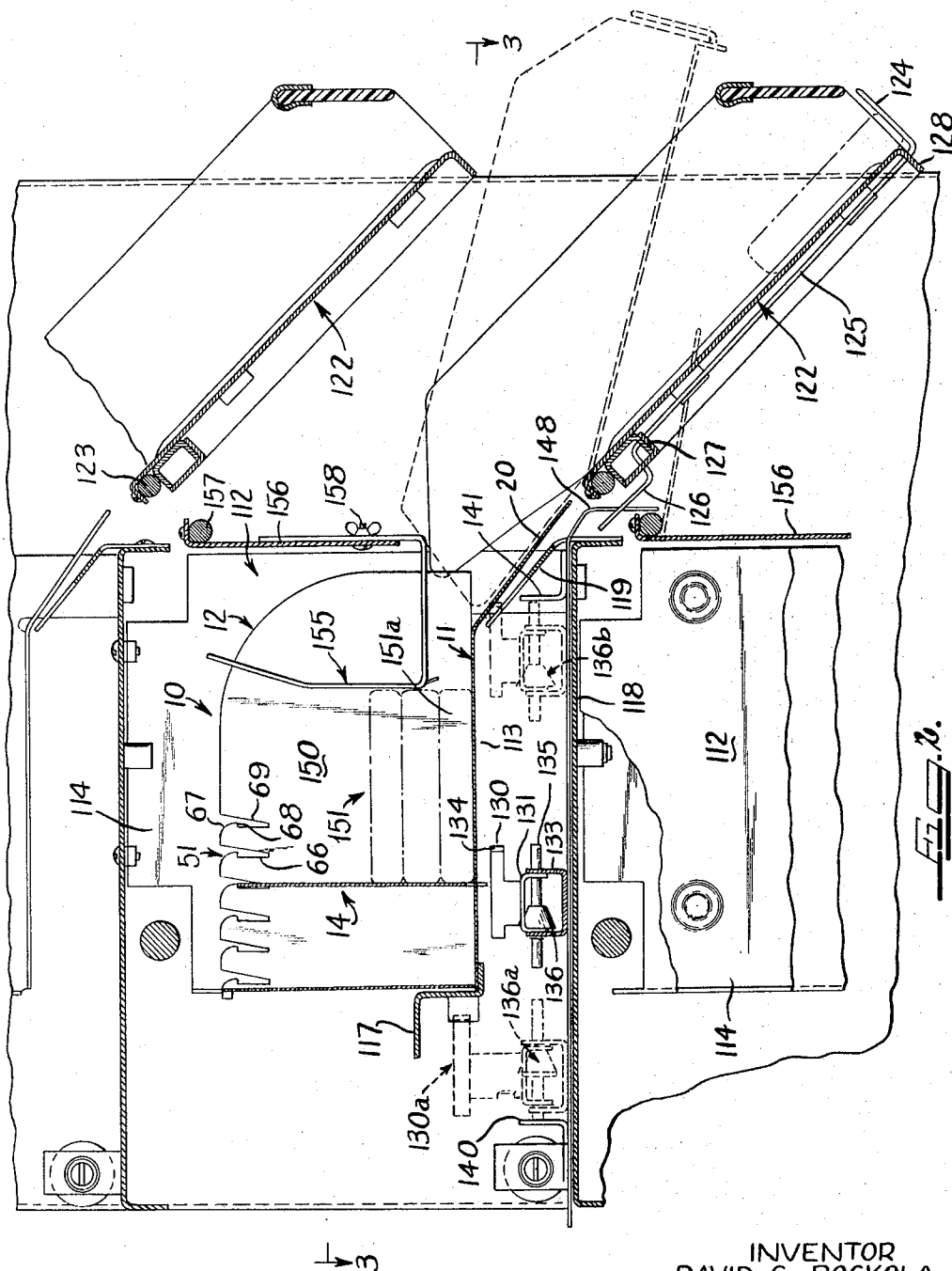
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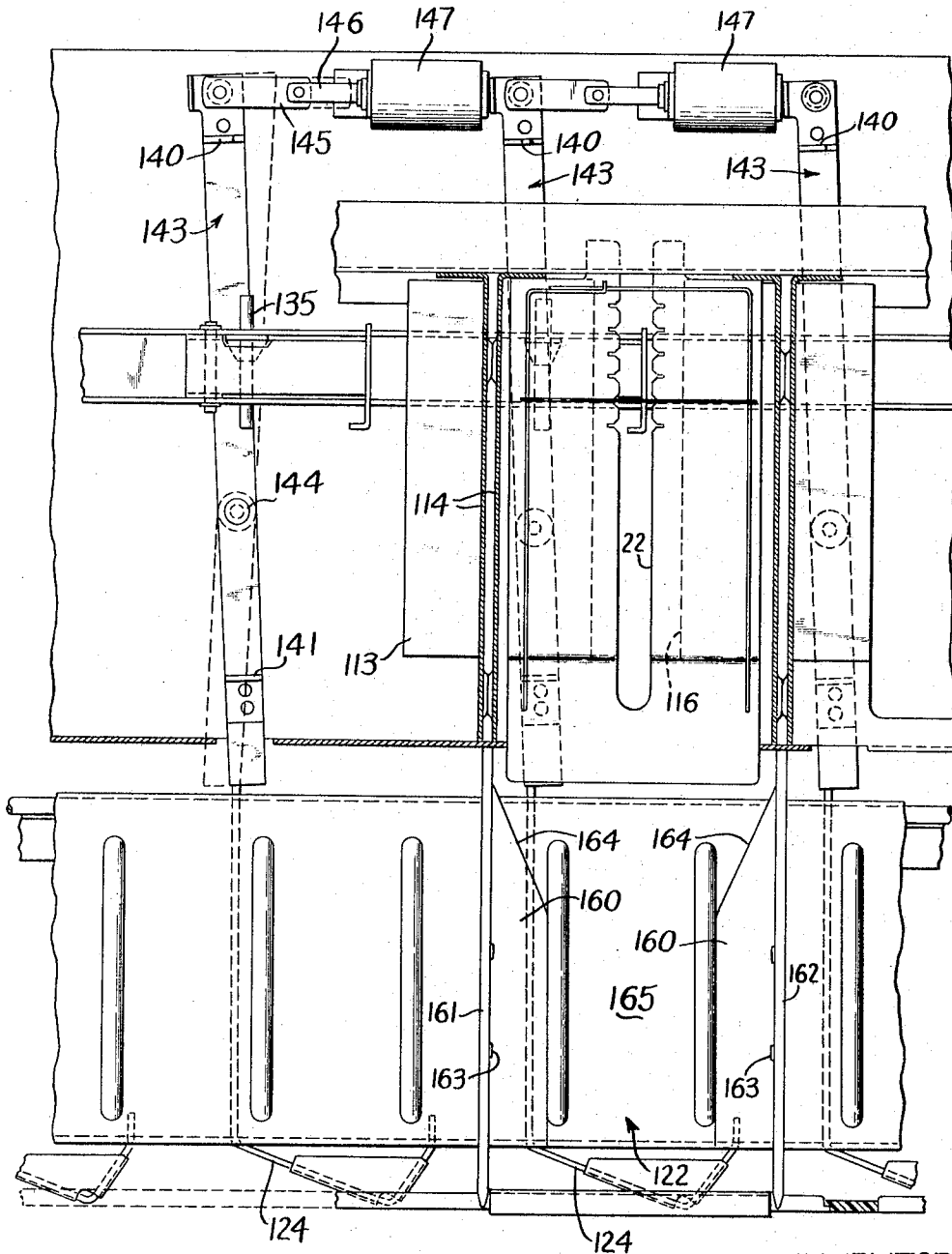
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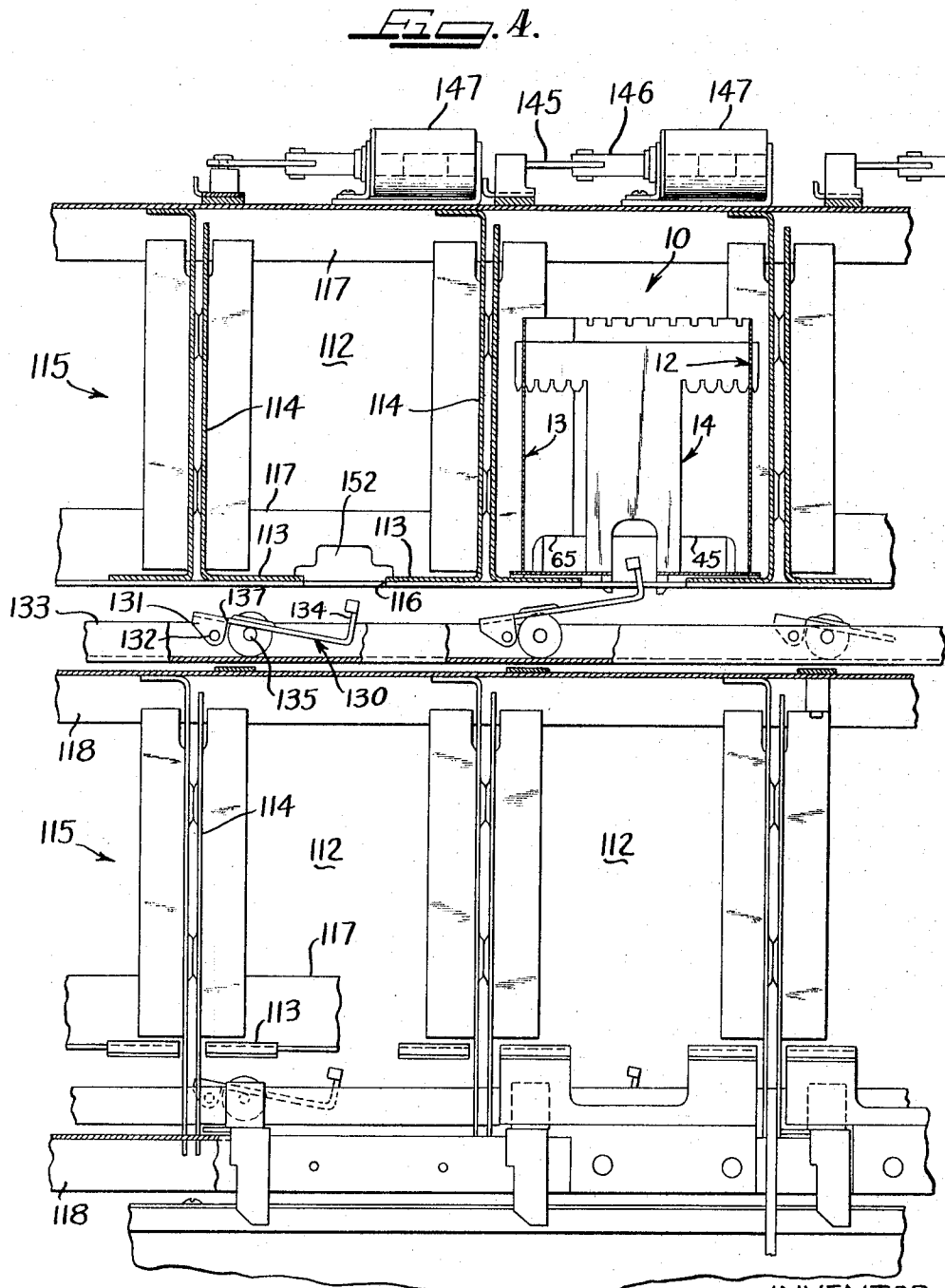
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4 Sheets-Sheet 4



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3,304,142

COMPARTMENT MEANS

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7 Claims. (Cl. 312-205)

This invention relates generally to article storage and more particularly to improved means providing selectively variable compartmentation for holding articles of various sizes.

The need for dependable compartmentation means having selectively variable capacity to accommodate articles of differing sizes and shapes and which are capable of providing the cubic requirements of the article to be stored therein, has been long felt and unsatisfied. Such need prevails in many fields of use, all of which, however, have the common requirement for storing and/or handling various sized articles. One typical example, which readily comes to mind, is that of warehousing various sized articles of a fragile nature which, therefore, preferably are stored individually. In the normal storage facilities available for such purposes, known compartmentation means present bins and compartments of substantially identical size and shape, or alternately selected numbers of different sized compartments, all, however, of fixed dimensions. A widely diverse area of use for the present invention appears in the mechanical vending industry wherein machines are employed to vend articles of different size and shape. In this field of use, machines utilizing storage compartments for the articles to be vended, normally provide for articles of a uniform, fixed size and shape. Therefore such machines are accordingly designed for and restricted to vending like articles of a specified fixed size and shape. However, in both of the above indicated fields, it is economically desirable to achieve a variable size compartmentation means whereby storage space may be economically utilized according to the cubic requirements of the articles to be stored. Similarly it is desirable to be able to convert storage compartments of fixed size and shape to different dimensions.

Briefly, the present invention is directed to the provision of a unique compartmentation means or structure utilizing a minimum number of parts in simple combination with means for readily positioning and interlocking the parts in a variety of positions thereby to afford a multiplicity of storage enclosures having selectively variable size, shape and capacity. Generally speaking the improved compartment means of this invention comprises a bottom wall member, two combination side and rear wall members and an additional spacing and locking member adapted to interfittingly engage and lock the side and rear wall members to the bottom wall member and in selected positions of lateral spacing, defined by a plurality of spaced locating means associated with the bottom wall member. Further the spacing and locking member mentioned above, is also disposable in a variety of positions longitudinally of the compartment structure whereby the whole assembly operatively provides a multiplicity of compartments of selected cubic dimensions and having a generally open forward and upper wall so as to constitute an open front storage bin. Thus the bin so formed is selectively formed to receive articles of various sizes. This invention is further distinguished by a capability to be inserted in storage compartment means of fixed dimension whereby such storage facilities readily may be adapted to and provided with the selectability in size afforded by the present invention.

An important object of this invention is to provide a unique compartment means comprising a combination of

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wall forming elements or members readily disposable in a wide variety of positions to afford thereby interior storage compartments or enclosures of corresponding selected dimensions.

Another important object of this invention is to provide improved compartment means as aforesaid which is economical to manufacture and simple and dependable in operation.

A further object of this invention is to provide a new and improved storage compartment means which is adapted to be mounted in compartment storage means of fixed dimension whereby the latter may be adapted to multiple size compartmentation.

Having thus described the present invention, the best mode presently contemplated for carrying out its concepts and for enabling those persons skilled in the art to make and use the same, shall now be described in association with a preferred embodiment of its principles and teachings according to the illustrated structure set out in the accompanying drawings.

In the drawings:

FIGURE 1 is an exploded perspective view of the members which are combined to form compartment means according to this invention;

FIGURE 2 is a fragmentary sectional view in side elevation illustrating the assembled compartment structure of this invention associated with an article vending machine;

FIGURE 3 is a cross-sectional view taken substantially along vantage line 3-3 of FIGURE 2 and looking in the direction of the arrows thereon; and

FIGURE 4 is a view in front elevation of the fragmentary section of the vending machine set out in FIGURE 2.

The embodiment of the present invention shown in the drawings and to be described hereinafter illustrates its use and adaptation to automatic vending machines for dispensing articles such as books, bar soap, cigarettes, and/or other articles of substantially rectangular configuration, in accordance with the teachings set out in United States Patent 3,055,545 issued September 25, 1962, and 3,158,246, issued November 24, 1964. Reference may be had to these patents for detailed and amplified descriptions of the various elements and arrangements of the vending machines described therein.

It will be understood that while the present invention as herein illustrated and to be described, is especially adapted for use in vending machines of the character set out in the aforesaid Letters Patent such adaptation and use of this invention merely illustrates its concept, principles and features, and is by no means to be regarded as restricting the same to vending machines.

Turning to FIGURES 1 and 2 of the drawings, the various elements which go to make up the improved combination of this invention are illustrated therein, as designated generally by numeral 10 (see FIGURE 2). In greater particular the various elements illustrated in FIGURE 1 are shown in an exploded perspective relationship to comprise a bottom wall member 11, a right-hand combination side and rear wall member 12, a similar left-hand combined side and rear wall member 13 and a spacing and locking member 14. Each of these members will now be described in detail.

The bottom wall member 11 generally comprises a rectangular shaped planar body portion 16 distinguished by two rows 17 and 18 of parallel elongated slotted openings, which rows are oriented along axes traversing the longitudinal axis or dimension of the body portion 16; row 17 being proximate the rearward edge 19 of the body portion and row 18 being nearer the opposite or leading end of such body portion. In the particular adaptation of the bottom wall member herein illustrated, which is

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intended for use in the automatic vending machine of the character set out in the aforesaid Patent 3,158,246, the bottom wall member also includes a discharge apron portion 20 which depends forwardly and angularly downwardly of the leading end of the body portion, i.e., the end adjacent the row of openings 18. Specifically, the apron portion 20 and the body portion 16 are integrally formed, with their respective planes of formation being merged at a single bend or fold line, designated 21 in FIGURE 1.

Body portion 16 of the bottom wall member is further distinguished by an elongated central slotted opening 22 which extends the full length thereof and partially into apron portion 20. Such opening is aligned symmetrically of the longitudinal axis of body portion 16 and therefore separates the same into two laterally spaced platform portions 16a and 16b of rectangular formation. Each of the rows of the slotted openings 17 and 18 contain ten openings, as shown, which are laterally spaced apart equal distances with the openings of row 17 being aligned longitudinally with corresponding openings in row 18. It will be understood that each of the platform portions 16a and 16b contains five openings of row 17 and five corresponding openings of row 18, with the openings of such two rows being disposed symmetrically of the general longitudinal central axis of the body portion 16.

Formed intermediate the ends of the body portion 16 and disposed along opposite lateral margins of elongated opening 22 therein are a plurality of spaced locking notches 23 and 24. Notches 23 invade platform portion 16a while the corresponding and oppositely aligned locking notches 24 extend into the platform portion 16b, the purpose and operation of which will appear from description to follow.

Each of the platform portions 16a and 16b is provided with an ear extension 25 lying in a common plane therewith and protruding outwardly of the rear edge 19 of the body portion 16. Each such ear extension 25 in turn is formed with an integrally joined and upstanding leg portion 26, disposed in a plane substantially at right angles or normal to the plane of formation for body portion 16. In the specific embodiment of the present invention illustrated the leg portions 26 are utilized to lock the bottom wall member 11 in a compartment division of an automatic vending machine, as will be described in greater detail hereinafter.

Referring next to the features of the right-hand side and rear wall member 12, as shown in FIG. 1, the same comprises a planar side wall portion 30 distinguished by a plurality, herein six in number, of detent openings 31, each with a locking detent portion 32. Such openings 31 are formed inwardly of the upper edge 33 of the wall portion 30 and each thereof is formed as a substantially wedge-shaped opening into which the locking detent portion 32 projects adjacent the outer open end thereof. The bottom edge 34 of the side wall portion 30 is further distinguished by a pair of locking tabs 35—35 comprising spaced, outwardly turned integral extensions thereof disposed substantially at right angles to the plane of formation for portion 30. Each of the locking tabs 35—35 is formed integrally with a central snugging rib 36 which is stamped or otherwise pressed outwardly of the plane of formation for side wall portion 30 in a somewhat semi-cylindrical formation so as to project outwardly of the outside face of side wall portion 30.

In addition to the side wall portion 30, the member 12 also includes a planar rear wall portion 40 extending substantially at right angles to the plane of side wall portion 30, the same being joined to the latter by fold line 41. Rear wall portion 40 is particularly distinguished by a plurality of laterally spaced rectangular notches 42—42 formed inwardly of its upper edge 43, disposed substantially along the length thereof. The spacing and disposition of the several notches 42—42 corresponds with the spacing between the slotted openings of the rows 17 and 18 formed in the bottom wall member 11. Thus in

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assembly the notches 42—42 align with two corresponding slotted openings of the rows 17 and 18 for reasons to appear in detail hereinafter. The opposite or lower edge 44 of rear wall portion 40 is cut away centrally to provide an elongated indentation 45 flanked at its lateral extremes by leg portions 46 and 47. Cut-away portion 45 accommodates the free passage of package ejector means associated with the particular vending machine of the type set out in the above referred to patents and appears in the present embodiment of this invention for that reason.

The left hand combination side and rear wall member 13, as shown in FIG. 1, includes a planar side wall portion 50 corresponding to and formed identically with side wall portion 30 of member 12. In this respect it will be understood that a plurality of wedge shaped openings 51, each equipped with a detent locking ear 52 are formed inwardly and spaced along the upper edge 53 of side wall portion 50. In a similar fashion, the lower edge 54 of wall portion 50 is equipped with a pair of spaced locking tabs 55—55 turned outwardly at right angles to the plane of wall portion 50 and each having a semi-cylindrical snugging rib 56 extending upwardly therefrom and comprising a stamped out formation of the side wall portion 50.

As with the wall member 12 previously described, the left hand wall member 13 is also equipped with a rear wall portion 60, which, however, is of lesser lateral extent than the corresponding rear wall portion 40 of member 12 and which is further distinguished from the latter by reason of the fact that the upper edge 63 thereof does not bear a plurality of recessed notches therein. Rear wall portion 60, however, does have a rearwardly or outwardly turned locking ear 64 adjacent upper edge 63 thereof which is adapted to enter and selectively interlock with the notches 42—42 of the rear wall portion 40 of wall member 12, thereby to interjoin the rear wall portions 60 and 40 of the two members 12 and 13 in assembly according to the selected spacing of the side wall portions 30 and 50. The lower edge of the rear wall portion 60 of member 13 is also cut away (see FIG. 4), as at 65, to provide a clearance indentation mating with the cut away 45 in rear wall portion 40 of member 12.

It is of particular importance to understand that the several slotted openings 31 with detent projections 32, formed in the side wall member 12 and the corresponding openings 51 with detent portion 52 in side wall member 13 are identical in formation, number and spacing and are disposed in registering alignment when the side wall members 12 and 13 are assembled on the bottom wall member 11. Since the slotted openings 31 and 51 are identical a detailed description of one will suffice for all and to that end reference will now be had to the left hand wall member 13 and the slotted openings 51 thereof.

As shown in FIGURE 1, each opening 51 is formed generally wedge shaped and is bounded by a linear rear edge 66 which is aligned parallel to the rear wall portion 60. The detent projection 52 extends inwardly of rear edge 66, to comprise a lobe formation having a curvilinear outer edge 67 defining one side of a guide throat at the upper end of the wedge shaped opening 51. Such curvilinear edge 67 terminates abruptly at its lower end at inset shoulder or edge 68 extending at right angles to edge 66. The opposite side of the wedge shaped opening 51, or that is, edge 69 thereof is sloped forwardly so as to diverge upwardly away from the rearward edge 66, with the divergent slope thereof being generally toward the forward or leading end of the side wall member 13 (see FIGURE 2).

From the above detailed description it will be understood that each of the openings 31 and 51 in the respective side wall members 12 and 13 are formed alike and are of a like disposition for registering alignment when such side wall members are interlocked with the bottom wall member 11. It is also to be noted that the spacing

interval and alignment of the openings 31 and 51 is such that the parallel upright rearward edges, corresponding to the edges 66 of openings 51, are aligned in substantially coplanar relation with the indentations 23 and 24 formed along opposite margins of the central elongated opening 22 of the bottom wall member 11.

In assembly the two combined side and rear wall members 12 and 13 are interlocked with the bottom wall member 11 by inserting the outwardly turned tab members 35 and 55 thereof respectively, through corresponding pairs of openings in the two rows 17 and 18 in the bottom wall member 11 which are selected according to the desired spacing and positioning of side wall portions 30 and 50. Members 12 and 13 are then swung to upright positions about members 35 and 55, respectively, which are thereby locked with their tab slotted openings in the bottom wall member. This serves to dispose the side wall portions 30 and 50 of members 12 and 13 parallel and in generally right angular upright relationship to the plane of bottom wall member's body portion 16. When so positioned the locking ear 64 on the rear wall portion 60 of left hand wall member 13 insertingly interfits within one of the notched openings 42—42 formed along the upper edge of rear wall portion 40 on member 12; stabilizing the upright positioning of the two members 12 and 13 on the bottom wall member 11. So long as the ear 64 remains in a selected slotted opening 42, movement of the members 12 and 13 arcuately about their connection with the underdisposed bottom wall member 11, or that is about axes defined by the engagement of the tab members 35 and 55 with the slotted openings of row 17 and 18, is prevented. In this regard it will be appreciated that the rib projections 36 and 56, adjacent tabs 35 and 55, bear against one edge of the engaged openings of row 17 and 18 to frictionally lock the wall members 12 and 13 in place.

Since there is no detent means positively holding the ear member 64 of wall member 13 in a selected one of the openings 42, stabilization of the wall members 12 and 13 in their upright positions on bottom wall member 11 is provided by means of the spacing and locking member 14 and its cooperating association with the three members 11, 12 and 13 as will now be described.

As will best be understood from examining FIGURE 1 of the drawings, member 14 comprises a substantially T-shaped planar element having an upper cross bar portion 70 and an upright stem portion 71, both of which are formed symmetrically of the longitudinal axis of member 14. Bar portion 70 is particularly distinguished by a plurality of notch indentations 72—72 formed inwardly of and extending therefore upwardly of its lower edge 73. It is especially noteworthy that the formation of the indentations 72 is substantially identical to the formation of the notch indentations 23 and 24 in the bottom wall member 11. That is to say, each indentation 72 comprises a substantially Y-shaped opening having a guiding throat portion 74, which leads into a generally rectangular bottom or base notch portion 75; portions 74 and 75 comprising contiguous portions of the generally designated opening 72. The base or bottom ends of opening portions 75 are aligned on a common plane which parallels the upper edge 76 of bar portion 70. In the particular embodiment herein illustrated, five openings 72—72 are disposed on either side of the major or longitudinal axis of member 14 and outwardly of the stem portion 71 thereof.

The stem portion 71 of member 14 is formed with a pair of spaced depending finger members 80—80 at its lower end which are laterally separated by an upwardly reaching U-shaped cutout opening 81, disposed symmetrically of the longitudinal axis for the stem portion 71. It will be noted that each of the finger portions 80—80 is formed with a sloping outer edge 82, which edges generally converge toward the longitudinal axis of stem portion 71. Such edges 82 also are located inwardly of and spaced from the opposite lateral margins 83—83 of stem

portion 71 by inset shoulder edges 84—84. In operation, the depending finger members 80—80 of member 14 are adapted to enter opposing and correspondingly aligned notches 23—24 in the bottom wall member, with the sloping edges 82 thereof serving to assist the inserted entry of the finger portions thereinto, under downward thrusting movement. Correspondingly, when the members 12 and 13 are mounted upright on the bottom wall member 11, as above described, the cross bar portion 70 of member 14 enters selected opposed wedge shaped openings 31 and 51 of the two members 12 and 13 respectively. In doing so, the cross bar 70 is cammed past the detent projections 32, 52 toward the sloping forward edge 69 by the curvilinear nose edge 67 of the detent means. After bar portion 70 passes the lower terminus of the curvilinear guide edge 67 it resiliently springs or snaps toward the rear edge 66 of the detent opening, lodging itself securely beneath the inset detent shoulder 68 locking itself with the side wall members 12 and 13 and bottom wall member 11.

It will be recognized that as the member 14 is lowered through the notched openings 23, 24 in the bottom wall member 11, the side wall portions 30 and 50 of members 12 and 13 are guided into the Y-shaped notches or openings 72 and enter the generally rectangular base portions 75 thereof, as the bar portion 70 of member 14 is snapped beneath the detent projections 32, 52. In this manner the lateral spacing of the wall members 12 and 13 is locked and statically stabilized by member 14.

From the foregoing it will be recognized that the four members 11 through 14 serve to provide the user with a stable compartment structure which forms a selectively sized open front bin bounded by and between the opposing wall portions 30 and 50 of the side wall members 12 and 13, the member 14 and the bottom wall portion 16 of member 11. It will be understood that due to the multiplicity of slotted openings in the two rows 17 and 18, each of the wall members 12 and 13 is capable of being located in five individual positions laterally of the bottom wall portion 16. Thus with the particular arrangement illustrated, wall member 12 may be placed in five distinct positions across platform portion 16a and in a similar fashion wall member 13 may be disposed in five distinct positions across the lateral extent of platform portion 16b. The positional ramifications of the individual wall members 12 and 13 leads to 45 distinct positionings of the normally parallel disposed side wall portions 30 and 50 of the wall members 12 and 13 in the particular embodiment illustrated. Of course, fewer or greater numbers of slotted openings may be provided in rows 17 and 18 to accordingly vary the positional ramifications available for members 12 and 13, as desired. Coupled with the positional selectivity of side wall members 12 and 13 as above-described, are the six possible positions for positioning locking member 14 as determined by the six detent openings 32 and 52 in the respective wall members 12 and 13, in the illustrated embodiment. It will thus be appreciated that for each of the 45 positional conditions available in the placement or disposition of the side wall members 12 and 13, six variations in lengthwise dimension for the compartment space between wall portions 30 and 50 is available, depending on the positional placement of the locking member 14. Thus in the particular illustrated embodiment compartments of 6×45 or 270 distinct ramifications of size and position are available. This will give some idea of the range of versatility for compartment size and placement afforded by the unique combination of the present invention.

Having thus described the compartmentation means of this invention, its adaptation and utility in a particular environment will now be set forth, reference being had to the two above-referred to patents and the illustration of such adaptation as set out in drawing FIGURES 2 through 4 hereof.

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According to the teachings set out in the aforementioned Patent 3,158,346, the vending machine therein described and illustrated is adapted to vend books or similar items located in a plurality of individual shelf compartments supported within the machine's interior. Items to be vended are visible to the prospective purchaser through a transparent front wall of the machine's housing. The several article containing compartments are arranged in a plurality of horizontal tiers or rows arranged in superposed relation so as to provide a generally vertically oriented stack or bank of individual like-sized compartments, each capable of containing a plurality of books or similar items to be vended according to the customers selection.

In operation an individual interested in purchasing an item from the vending machine may view the same before purchase and more specifically may, in the case of books, examine the covers thereof since individual books ready for vending are held in inclined trays forwardly of the storage compartments for visual examination by the purchaser. The machine is provided with the usual selection mechanism whereby an individual automatically may select the desired item, deposit the appropriate value of coins therefor and initiate the vend cycle by depression of a pushbutton or similar operating means. During the vend cycle a book supported in an inclined tray forwardly of the storage compartment is released and discharged gravitationally to a delivery chute after which a replacement item is ejected from the storage compartment into the inclined presentation tray immediately in front of such compartment.

Since the above briefly described vending machine of Patent 3,158,246 includes a multiplicity of storage compartment means, all of a fixed dimension to accommodate the storage and vending therefrom of like sized articles, the present invention finds ready use and adaptation therein for converting the fixed size storage compartments to variable size compartments whereby such a vending machine may vend articles of various size and shape. As the adaption of the present invention to such a vending machine basically concerns only the storage compartment portions thereof, such structure is shown in FIGURES 2 through 4 herein, it being understood that for a full and detailed description of the various working elements and arrangements of the particular vending machine set out in said Patent 3,158,246, reference is hereby made thereto.

As illustrated in FIGURES 3 and 4 of the drawings, a book vending machine of the character above-described, includes an internal compartment structure for storing a plurality of books or similar items to be vended according to customer selection, comprising a plurality of individual storage shelf compartments 112. Each compartment 112 is defined by a pair of separated horizontally disposed bottom wall portions 113 and a pair of parallel spaced upright side wall members 114; the several compartments 112 being arranged in horizontally extending tiers 115 with the several tiers thereof being superimposed, as above-noted. Specifically adjacent compartments 112 are formed by arranging two of the side wall members 114 in back-to-back relationship and spot welding or otherwise rigidly interconnecting the same as shown best in FIGURE 4 of the drawings. It will be understood that the bottom wall portions 113 of each compartment extend laterally inward of the lower end of the side wall members 114 thereof and that such bottom wall portions are separated by a longitudinally extending opening 116 (see FIG. 4). The several shelf compartments 112, so formed by members 114 and 113, are secured to plural longitudinal support members 117 and 118 comprising a horizontal supporting framing network secured within the machine's housing. Inclined chute members 119 are also secured to the supports 118 adjacent the forward end of each compartment to form extensions of the bottom forming portions 113 thereof (see FIG. 2).

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Mounted forwardly of each compartment 112 as best shown in FIGURES 2 and 3, is an inclined delivery tray 122, adapted to receive and display books or other items to be vended. The several trays of each tier are secured adjacent their upper ends to a common horizontal rod 123 journaled at its ends in suitable means carried on the side plates of the machine housing (not illustrated). The several trays 122 are releasably held in their operating positions, shown in full lines in FIGURE 2, by appropriate locking latch means not illustrated but which operate to release the trays so that the same may be swung to their upper, dotted line position, indicated in FIGURE 2. This provides access to the compartments 112 for loading the same with items to be vended.

Each tray 122 is further equipped with a swingable retainer means 124 movable across the outer end of the tray to control passage of an item through the tray depending on whether the retainer is positioned interferingly across the open end of the tray or is swung upwardly out of the path of the item. Each retainer pivotally moves in response to rotation of wire actuator rod member 125 having a crank arm 126 at its inner end and suitably supported for rotation in downwardly turned ear portions 127 and 128 protruding from the underside of the tray 122.

Disposed beneath each of the shelf compartments 112 is a pusher member 130 comprising an inverted U-shaped section 131 at one end, pivotally fastened by means 132 to an elongated channel member 133 (see FIG. 4). The outer or unfastened end of each pusher member 130 is formed with an upwardly extending finger portion 134 which is adapted, upon appropriate actuation of the pusher member, to move upwardly behind a lowermost item stacked in a compartment 112 and push or discharge the same from the shelf compartment in response to movement of the pusher member from the rear to the front end of the compartment; the pusher member being in raised position and extending upwardly through the opening 116 during such evolution. The raised position for the pusher member above-referred to is indicated in dotted lines at 130a in FIGURE 2 of the drawings.

Means for raising and lowering the pusher members 130, as above-indicated, comprise pin means 135 reciprocally mounted across the channel member 133 at a location adjacent the pivotal connection means 132. A cone shaped cam member 136 is fixed to each pin means 135 and is adapted to move reciprocally with such pin means relative to the channel member 133. Cam means 136 is adapted to engage an arm portion 137 of the pusher member extending between section 131 and portion 134 thereof, as shown best in FIGURE 4 of the drawings. Movement of the cam members relative to the channel member 133 in one direction causes the arm portion 137 of the pusher member engaged thereby to move along the tapered face of the cam and thus pivotally elevate the pusher about its point of pivotal connection 132. Accordingly, movement of the cam means 136 to its forward position as indicated at 136a in FIGURE 2 of the drawings, raises the pusher member 130 to its actuated position 130a, as shown. Return of the cam member to its rearward position, as indicated in dotted lines at 136b in FIG. 2, conversely causes the pusher member to gravitationally fall or recede to its lowered position as illustrated thereat.

Means for moving the pins 135 and therefore the cam 136 relative to the channel member 133 is best shown in FIGURES 2 and 3 of the drawing. Such means comprises a first movable stop member 140 located behind a shelf compartment 112. When the stop member 140 is moved to its dotted line position, as shown in the upper part of FIGURE 3, of the drawings, an associated pin 135 will abut the same as the channel member 133 carrying the pin 135 is moved toward the rear of the machine housing. Continued rearward movement of the channel member 133 toward the stop 140 will cause the desired

movement of the pin relative to channel member 133 to raise the associated pusher 130 in response to axial advancement of the cam means 136 toward and beneath the arm portion 137 thereof as above explained. In this condition the pusher 130 will be in its actuated position 130a as shown in dotted lines in FIGURE 2 of the drawings.

Movement of the channel member 133 in an opposite direction toward the front of the machine housing eventually causes the pin means 135 to abut a second movable stop member 141 (see FIG. 2). Upon this occurrence the pin member 135 is pushed rearwardly in response to continued forward motion of the channel member 133, reversing movement of the cam means 136 to lower the pusher means 130 as indicated at 136b in FIGURE 2.

The two stop members 140 and 141 each project upwardly of a longitudinal bar 143 (see FIG. 3) which is pivotally connected to the machine frame, as by pivot means 144, located intermediate the ends of the bar 143. The rearward end of each bar 143 is connected by link means 145 to the outer end of a core member 146 of electrical solenoid means 147. Selected energization of any one of the solenoid means 147 in accordance with the operation of selector means associated with the vending machines causes the associated bar member 143 to be pulled toward the solenoid, thereby positioning the stop members 140 and 141 on that particular bar, in positions to abut the pin means 135.

At the outer end of each of the bar members 143, forwardly of the related shelf compartment 112, is a downwardly extending finger portion 148 (see FIG. 2) which is adapted to engage the crank arm portion 126 of the adjacently associated wire operator 125 having a retainer means 124. Thus as each of the bars 143 is pivotally moved in response to energization of its related solenoid means 147, the forward end of such bar serves to pivotally actuate and raise the related retainer means 124, permitting release of an item from the inclined tray associated therewith. In this manner items in a tray, ready for dispensing, are gravitationally discharged to the delivery chute of the machine in response to the purchaser's selected operation of the vending machine as above-noted. It is to be noted that returning or lowering movement of the retainer means 124 is brought about by return spring means connectively associated with the operator rod 125 therefor, as described in the above-referred to Patent 3,158,246, but not illustrated herein.

In order to actuate the channel members 133 to bring about the above-described reciprocating activity of the cam carrying pins 135, a suitable mechanism, not illustrated herein, but of the order described in the aforementioned Patent 3,158,246 is provided. To this end each of the tiers of compartments 115 is equipped with one channel member 133 which extends across the machine and is connected with a suitable motor driven linkage system adapted to simultaneously reciprocate all of such channel members 133, during each vend cycle. Each of the channel members 133 is supported on a carriage means provided with supporting wheels movable along tracks aligned transversely to the longitudinal axes of channel members 133. Thus on selected energization of the driving mechanism the several channel members are simultaneously reciprocated under the several shelf compartments 112 to effect the selected raising of the pusher means 130 as above-described. For a more detailed account of the exact means contemplated in Patent 3,158,246 for activating the several channel members, the reader is referred to such patent.

Having thus described the basic portions of a vending machine, especially of the order set out in the aforementioned Patent 3,158,246 the adaptation of the present invention to alter the compartmentation system of such machine to one in which the individual compartments thereof are selectively variable in size and position, will

now be described. As shown best in FIGURE 2 of the drawings, a compartment means or assembly 10 of this invention is located, as therein illustrated, in a shelf compartment 112 of the vending machine as above-described. To this end the several members 11-14 of the assembly as illustrated in FIGURE 1 of the drawings, are first assembled in the manner previously described according to the desired size and position of an item carrying bin or compartment, designated generally at 150 in FIGURE 2. It will be recalled that such compartment or bin is defined between the opposing faces of the side wall portion 30 and 50, the upper face of the bottom wall portion 16 and the forward face of the locking member 14. Thus items 151 may be stacked vertically in the compartment space 150 to rest on top of the upper face of the form portions 16a and 16b of compartment means 10 according to this invention. Once assembled, the compartment means 10 may be readily inserted into the shelf compartment 112 of the vending machine with the bottom wall member 16 superposing the previously described bottom wall portions 113 thereof so as to dispose the central slotted opening 22 coaxially over the central opening 116 provided between the bottom portions 113 of the shelf compartment 112. In order to keep the assembled compartment means 10 in the shelf compartment 112, the extending leg portions 26 of the ear members 25 provided at the rearward end 19 of the bottom wall member 11 are inserted through and engaged with support member 117 adjacent a pusher passageway opening or clearance space 152, cut therein, as shown in FIGURE 4 of the drawings. The forward apron portion 20 of the bottom wall member 16 correspondingly overcovers the chute member 119 at the forward end of the shelf compartment 112 to guide chute items discharged from the compartment means 10 into the display tray means 122 for display and eventual dispensing.

When thus assembled and disposed within the shelf compartment 112 of the vending machine, the assembly 10 of this invention (see FIGURE 3), is aligned properly for the admission of the upstanding finger portion 134 of the pusher means 130 through and along the central slotted opening 22 in its bottom wall member. Thus the lowermost item 151a in bin space 15, as shown in FIGURE 2 of the drawings, may be engaged by the pusher means when the latter is properly raised and actuated for discharge into the display tray means 122 in a manner heretofore related.

Since it is contemplated that the compartmentation means 10 of this invention will specifically accommodate items 151 of size materially different from the normal dimension and sizes of books or like items intended for storage in the shelf compartments 112 of the book vending machine described above, a substantially U-shaped stop member 155 is adjustably suspended on a pivotal plate means 156 supported on a horizontal rod member 157 located across the front of the vending machine shelf compartment 112 of each tier thereof. The assembly of the members 155 with the swinging plates 156 provides a swingable stop gate at the forward end of each of the compartment bin 150 of means 10, which is adjustable vertically by means of wing nut and bolt means 158 to insure the passage therebeneath of only the lower item 151a in the stack of items. It will be appreciated that such vertical adjustability readily accommodates packages having variation in vertical dimension and it is further contemplated that accommodation of variation in longitudinal dimension of the items 151 may be similarly accommodated by providing different sized stop members 155 according to the dictates of the encountered package size.

Similarly since the items 151 to be stored and vended from the compartment means 10 of this invention, are generally smaller than the books or similar items intended to be vended from the fixed dimension shelf compartments 112 previously described, the inclined trays 122

preferably are likewise adapted to the smaller sized items. Consequently, as shown in FIGURE 3 of the drawings, adaptor members 160, in the form of guide rails, are affixed to the opposite side walls 161 and 162 of the tray means 122, as by pop rivets 163 or similar fastening devices. Such guide rails 160, 160 or similar means preferably comprise a guide throat portion defined between divergent wall portions 164, 164 thereof and also generally serve to define a tray spacing 165 therebetween which is of a lateral dimension corresponding to the lateral dimension of the item 151 loaded in the tray means in order to prevent such items from cocking or jamming in the tray means.

From the foregoing it is believed that those familiar with the art will readily understand and appreciate the many advantages afforded by the present invention, and especially the adaptation of the present invention to a multiple compartment vending machine or the like whereby the normally fixed dimensional compartments thereof may be accommodated to selectively variable or multiple size compartmentation. Further it is to be understood that while the present invention has herein been described in association with a preferred embodiment, the same is obviously susceptible to numerous changes, modifications and substitutions of equivalents without departing from the inventive spirit and scope thereof. Consequently, it is intended that the present invention be unlimited by the foregoing description and the illustrated embodiment appearing in the accompanying drawings except as may appear in the following appended claims.

I claim:

1. Compartment means comprising a substantially planar bottom wall portion, a pair of planar side wall portions, means detachably connecting each said side wall portion to said bottom portion at plural selected mounting locations on the latter, said side wall portions being disposed in parallel spaced relation when both are operatively mounted on said bottom portion, the spacing and positioning of said side wall portions being determined by their selected mounting locations, plural detent means formed in said side wall and bottom portions, and a locking member mounted transversely between said side wall portions and forming a rear wall portion for the compartment means, said locking member having means detachably interlocking with said detent means thereby to positively interlock said bottom rear and side wall portions in all selected mounting locations of the latter.

2. The combination as set forth in claim 1 wherein said detent means comprises plural aligned sets of openings formed at spaced locations along the length of said bottom and side wall portions whereby said locking member is selectively mountable at a plurality of locations to alter the length of said compartment means.

3. Compartment means comprising a bottom wall member having a substantially planar body portion, a pair of combined side and rear wall members, each having a planar side wall portion and a planar rear wall portion related transversely thereto, means for removably mounting each said combined wall member on said bottom wall member at plural selected positions and in such a manner that when both said combined wall members are mounted on said bottom wall member, said side wall portions thereof are disposed in parallel spaced relation and the said rear wall portions thereof overlap; the spacing between and the positioning of said side wall portions being determined by the selected mounting positions of said combined wall members; detent means on said bottom wall member and each of said combined wall members, and a locking member mounted between said side wall portions and having means lockingly cooperating with said detent means thereby to interlock said bottom and combined wall members in each of the selected positions of the latter.

4. The combination as set forth in claim 3 wherein there are a plurality of spaced detent means on said side

wall and body portions which are cooperatively aligned in sets at spaced locations intermediate corresponding ends of said wall members whereby said locking member is selectively disposable in plural locations and is interlockingly operable with said side wall and body portions in each of said locations therefor so as to selectively vary the length of an open compartment spacing bounded by said body portion, said side wall portions and said locking member.

5. In an automatic vending machine and the like having a plurality of like article storage compartments of fixed dimensions, improved variable dimension compartment means comprising: a bottom wall member having a substantially planar body portion, a pair of side and rear wall members having planar side wall portions adapted to be mounted on said body portion, means for removably attaching each of said side and rear wall members to said bottom wall member at a plurality of spaced locations across the width of said body portion whereby said side wall portions are adapted to be mounted in parallel spaced relation and the spacing therebetween selectively varied, a locking member adapted to be mounted between said side wall portions and defining with the latter and the said body portion a storage bin open at its upper and front sides, means for selectively locating said locking member at a plurality of mounting positions along said side wall and body portions to accordingly vary the length of said bin, and means for interlocking said locking member with each of said side wall portions and said body portion at each of its mounting positions so as to statically stabilize said side and rear wall members on said bottom wall member and maintain the selected interpositioning thereof.

6. For use with a storage bin of fixed dimension and size and having side, rear and bottom walls, improved variable size compartment means comprising: a bottom wall member adapted to overlie the bottom wall of the storage bin, a pair of wall members having planar side wall portions adapted to be mounted on said bottom wall member in parallel spaced relation, means for detachably connecting each of said pair of wall members to said bottom wall member at a plurality of spaced mounting locations across the lateral dimension of said bottom wall member whereby the positioning of said wall portions thereof and the spacing therebetween is selectively variable according to the selected mounting locations of each member of said pair of wall members, and an interlocking member mounted between said side wall portions and having means detachably connected to each of said side wall portions and said body portion to positively interlock said bottom wall member and said pair of wall members in statically stable assembly, said bottom wall member and said pair of wall members defining with said interlocking member a storage compartment open at the forward and upper sides thereof.

7. The combination as set forth in claim 6 wherein said interlocking member is connectable to each said side wall portion and said body portion at selected spaced positions along the length thereof whereby said storage compartment is selectively variable in dimension and capacity according to the mounted positioning of said wall and interlocking members.

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