

[54] **CONTAINER ADAPTED TO INCORPORATE ADJUSTABLE SHELVING OR THE LIKE**

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[58] Field of Search **312/351, 126, 193, 350, 306; 220/21, 22; 211/134, 126, 133**

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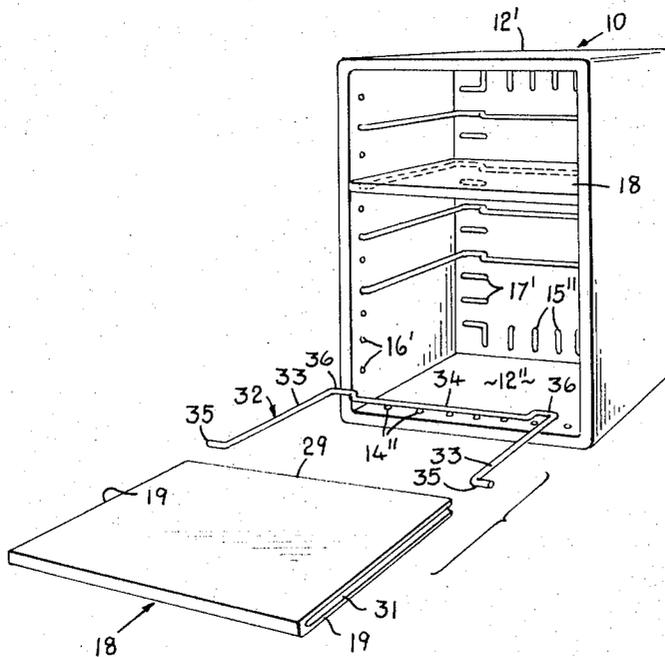
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[57] **ABSTRACT**

A container having a base wall and a plurality of upstanding side walls, each side wall being substantially parallel to an opposed side wall of the plurality thereof. The inner face of each

side wall is provided with a row of spaced holes, and a row of spaced slots is provided in the inner face of the base wall adjacent to each of the side walls, each hole being in alignment in a direction substantially at right angles to the plane of the side wall in which it is provided with one of the holes in the opposed side wall, and each slot being in alignment in a direction substantially at right angles to the plane of the side wall adjacent to which it is provided with one of the slots of the row of slots adjacent to the opposed side wall. Thus, there is a first series of holes and slots comprising the holes provided in a further pair of opposed side walls together with the slots formed in the base wall adjacent to these latter side walls, thereby permitting the container to be used with a shelf or divider structure adjustably mounted with portions thereof, or portions of an intermediate support on which the shelf or divider structure is in turn mounted, supportedly engaged with aligned holes and aligned slots of the first series thereof, or alternatively with a shelf or divider structure adjustably mounted with portions thereof, or portions of an intermediate support on which this shelf or divider structure is in turn mounted, supportedly engaged with the aligned holes and aligned slots of the other, or one of the other series thereof. In this manner, a shelf or divider structure can be adjustably mounted within the container in a first direction relative to the container, and a further shelf or divider structure can alternatively be adjustably mounted within the container in a different direction relative to the container, thereby considerably increasing the versatility and hence the usefulness of the container.

12 Claims, 5 Drawing Figures



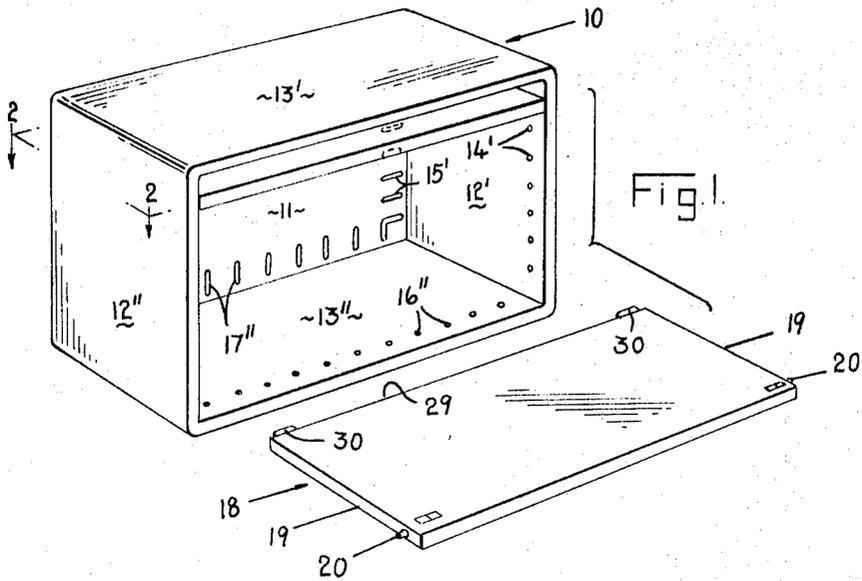


Fig. 1.

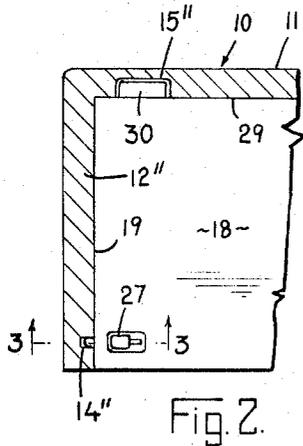


Fig. 2.

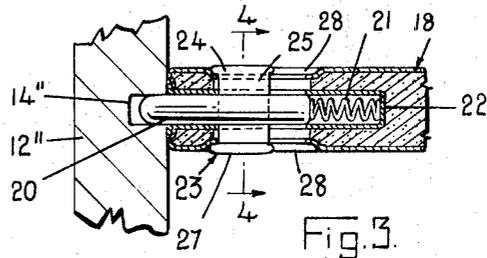


Fig. 3.

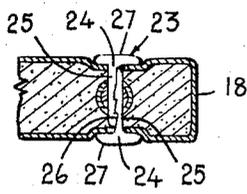


Fig. 4.

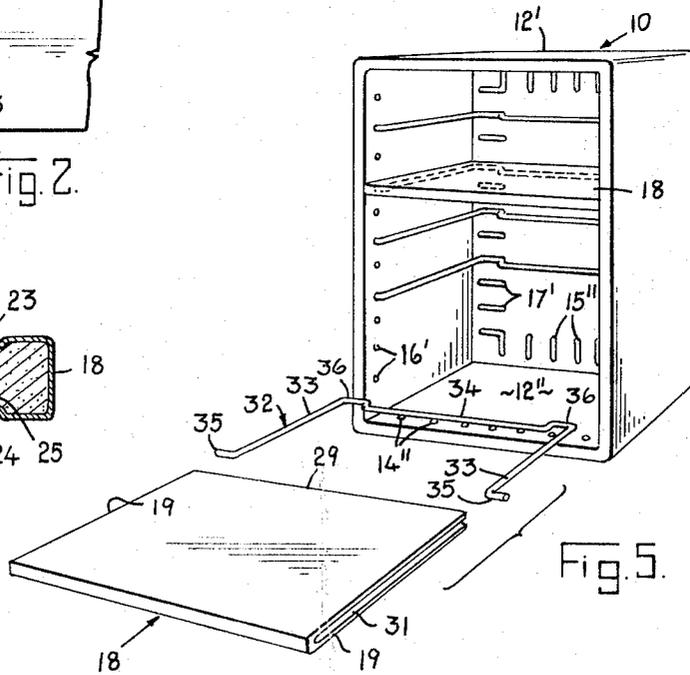


Fig. 5.

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CONTAINER ADAPTED TO INCORPORATE ADJUSTABLE SHELVING OR THE LIKE

This invention is concerned with improved containers, and more particularly with containers within which shelf or divider structures are intended to be adjustably mounted. Containers such as, for example, containers in the form of rectangular parallelepipeds each comprising a base wall of oblong rectangular form and four upstanding side walls projecting from the edges of the base wall, are extensively used for storage purposes. Thus, such a container may be used, either alone or in combination with a number of similar containers, as a bookcase, in which case the or each container is disposed with one of the opposed pairs of side walls substantially horizontal and with a shelf or shelves mounted within the container in a substantially horizontal plane or planes. While bookcases of this hitherto known form are, from many considerations, quite satisfactory, they suffer from the disadvantage in that it is not feasible for the orientation of the containers to be so varied as to permit each container to be disposed with the other pair of opposed side walls substantially horizontal and with a shelf or shelves again mounted within the container in a substantially horizontal plane or planes. Such variation in the orientation of the containers is frequently desirable in order, for example in commercial offices, to change the bookcase or each of the bookcases constituted by the containers from a relatively long but low bookcase to a relatively narrow but tall bookcase, thereby to facilitate modifications in storage arrangements or modifications which may be desirable as a result of periodic variations in the dimensions of books which it is desired to store in the bookcase.

Likewise, where the containers are each used as, for example, a file drawer in which case the base wall is in a substantially horizontal plane with the side walls substantially vertical and a divider or dividers mounted within the container in a substantially vertical plane or planes, it may be desired, in order to change the sizes of the files stored in the file drawer from, for example, files of letter size to files of legal size or vice versa, to replace the divider or dividers mounted within the file drawer in a first direction with a divider or dividers mounted within the container in a direction substantially at right angles thereto.

It is a primary object of the present invention to provide a container in which the above-described disadvantages of containers as hitherto used are overcome in a relatively simple and inexpensive manner.

In order that the invention may be more clearly understood and more readily carried into effect, the same will now, by way of example, be more fully described with reference to the accompanying drawing in which

FIG. 1 is an isometric and partially exploded view of a container according to a preferred embodiment of the invention, the container incorporating two shelves;

FIG. 2 is a sectional plan view, generally on the line 2—2 in FIG. 1, of one end of the container shown in FIG. 1;

FIG. 3 is a sectional view to an enlarged scale on the line 3—3 in FIG. 2;

FIG. 4 is a sectional view on the line 4—4 in FIG. 3; and

FIG. 5 is an isometric and partially exploded view similar to FIG. 1, but with the container so orientated that the pair of opposed side walls which are substantially vertical as shown in FIG. 1 are substantially horizontal, the container again incorporating two shelves.

Referring to all the views of the drawing, in which like reference numerals are used to denote like parts, 10 denotes generally a container which in the preferred embodiments of the invention illustrated in the drawing is in the form of a rectangular parallelepiped and comprises a base wall 11 of oblong rectangular form, two opposed substantially parallel side walls 12' and 12''; and a further two opposed substantially parallel side walls 13' and 13'', the upstanding side walls 12', 12'' and 13', 13'' projecting from the edges of the base wall 11.

The inner faces of the walls 11, 12', 12'', 13' and 13'' of the container 10 are provided with two series of opposed support elements constituted by holes. The holes of the first series thereof are constituted by rows of holes denoted by the reference numerals 14', 14'' and 15', 15'', and the holes of the second series thereof are constituted by rows of holes denoted by the reference numerals 16', 16'' and 17', 17'' the container 10 being of oblong rectangular form in the planes containing the opposed holes of each series thereof, i.e., in the plane containing the holes 14', 14'' and the plane containing the holes 15', 15'', and in the plane containing the holes 16', 16'', which is the same plane as that containing the holes 14', 14'', and the plane containing the holes 17', 17'' which is the same plane as that containing the holes 15', 15''.

Each hole 14' or 15' of the first series is in alignment in a first direction, which is substantially parallel to the planes containing the side walls 13' and 13'' and hence substantially at right angles to the planes containing the side walls 12' and 12'' of container 10, this first direction being a substantially horizontal direction with reference to FIG. 1 and a substantially vertical direction with reference to FIG. 5, with one of the holes 14'' or 15'', respectively, of the first series of holes. Similarly, each hole 16' or 17' of the second series of holes is in alignment in a second direction which is substantially parallel to the planes containing the side walls 12' and 12'' of the container 10 and hence substantially at right angles to the planes containing the side walls 13' and 13'' of the container 10, this second direction being a substantially vertical direction with reference to FIG. 1 and a substantially horizontal direction with reference to FIG. 5, with one of the holes 16'' or 17'', respectively, of the second series of holes, the rows of holes constituted by the holes 14', 14'', 16' and 16'' being disposed substantially parallel to the plane containing the base wall 11.

The holes 15', 15'' and 17', 17'' are each, in the preferred embodiments of the invention illustrated in the drawing, in the form of a slot the length of which is substantially at right angles to the plane containing the appropriate side wall 12', 12'' 13' or 13'', respectively, adjacent to which the slot 15', 15'', 17' or 17'' is provided.

While in the preferred embodiments of the invention illustrated in the drawing, the container 10 is in the form of a rectangular parallelepiped and the direction in which each hole 16' or 17'' of the second series of holes is in alignment with one of the holes 16'' or 17'', respectively, of this second series is substantially at right angles to the direction in which each hole 14' or 15'' of the first series of holes is in alignment with one of the holes 14'' or 15'', respectively, of this first series, it is to be understood that in alternative embodiments (not shown) of the invention the container 10 may be in a form other than that of a rectangular parallelepiped, in which case said directions may not be at right angles to one another, and although they will be other than parallel to one another, and there may indeed be more than two series of opposed holes.

18 denotes each of a plurality of shelves which are adapted to be adjustably mounted within the container 10, each shelf 18, with reference to the embodiment of the invention shown in FIGS. 1 to 4, of the drawing, being in the form of a metal casing within which a core of foamed polyurethane is disposed, and having opposed side edges 19 from which projecting pins 20 are presented. The pins 20 are resiliently urged apart, by means of compression springs 21, into operative supported engagement with predetermined aligned ones of the holes 14' and 14'' in the inner faces of the side walls 12' and 12'' of the container 10.

Each pin 20 is disposed within a fixed hollow tube 22 the inner end of which is closed, with the compression spring 21 disposed between this closed end of the tube 22 and the adjacent end of the pin 20. The tube 22 and the pin 20 are diametrically slotted with the slotting extending to the upper and lower faces of the shelf 18 and with an actuation member 23 being disposed therethrough from the upper to the lower faces of the shelf 18, the length of this slotting in the pin 20

being such that the member 23 is a snug fit therein, while the length of the slotting in the tube 22 and in the shelf 18 is sufficient to permit the pin 20 to move under the influence of the spring 21 from a position in which it does not project beyond the side edge 19 of the shelf 18 to a position in which it does so project into operative supported engagement with an appropriate hole 14' or 14'', and vice versa, movement of the pin 20 against the influence of the spring 21 being conveniently achieved by manual actuation of the member 23.

Each actuation member 23 comprises two opposed elements 24 each of which is substantially T-shaped in cross section with the limb portions 25 thereof being adjustably interconnected, in the manner shown in FIG. 4, by the interengagement of sawtooth ribbing 26 presented by these limb portions 25, this interengagement of the ribbing 26 being achieved by forcing the elements 24 towards one another whereby to cause the ribbing 26 presented by the limb portion 25 of one of the elements 24 progressively to snap over the ribbing 26 presented by the limb portion 25 of the other of the elements 24. The web portions 27 of the elements 24 are preferably disposed within elongated recesses 28 formed in the upper and lower faces of the shelf 18 so that these portions 27 are substantially flush with the remaining portions of the upper and lower faces of the shelf 18, thereby to improve the appearance of the shelf and to prevent books or the like operatively stored on the shelf 18 from inadvertently engaging these portions 27.

The edge 29 of each shelf 18 presents spaced projections 30 which are operatively engageable with predetermined aligned ones of the holes 15' and 15'' in the inner face of the base wall 11 of the container 10, the projections 30 together with the pins 20 thus constituting projecting support elements which are complementary to the support elements constituted by the holes 14', 14'' and 15', 15'', respectively, and which are cooperable with predetermined aligned ones of the support elements constituted by the holes 14', 14'' and 15', 15'', respectively, thereby positively to mount the shelf 18 within the container 10 irrespective of the orientation of the container 10.

Thus, with the container 10 disposed in the manner illustrated in FIG. 1, one or more shelves 18 may be adjustably mounted within the container 10 in a horizontal plane or planes for the purpose, where the container 10 is intended to be used as, for example, a bookcase, of supporting books. Each shelf 18 is mounted in this manner within the container 10 by moving the pins 20 against the influence of the associated compression springs 21 to positions in which the pins 20 do not project beyond the side edges 19 of the shelf 18, this movement of the pins 20 being conveniently achieved by manual actuation of the members 23 in the appropriate directions. The shelf 18 is then disposed within the container 10 with the projections 30 in engagement with predetermined aligned ones of the holes 15', 15'' whereupon the members 23 are released thereby to permit the pins 20 to move under the influence of the compression springs 21 into engagement with predetermined aligned ones of the holes 14', 14''. Removal of the shelf 18 from the container 10 is performed, as will be understood, by again moving the pins 20 against the influence of the springs 21 to positions in which the pins 20 do not project beyond the side edges 19 of the shelf 18, the pins 20 thereby being withdrawn from engagement with said predetermined aligned ones of the holes 14', 14'' and the shelf 18 then being withdrawn from the container 10 during which the projections 30 are disengaged from said predetermined aligned ones of the holes 15', 15''.

In order to increase the versatility and hence the usefulness of the bookcase, the shelf or shelves 18 may be removed and the orientation of the container 10 changed from that shown in FIG. 1 to that shown in FIG. 5 in which the side walls 12' and 12'' of the container 10 are substantially horizontally disposed. A shelf or shelves corresponding to the shelves 18 but of appropriately reduced width may then be adjustably mounted within the container 10 in a horizontal plane or planes thereby to provide a bookcase which is relatively narrow but tall in comparison with the bookcase shown in FIG. 1.

With reference to the embodiment of the invention shown in FIG. 5, the manner of operatively mounting the shelves 18 within the container 10 differs from the manner in which the shelves 18 are operatively mounted within the container 10 in the embodiment shown in FIGS. 1 to 4, although it is to be understood that the shelf or shelves 18 may be mounted within the container 10 when the container 10 is orientated in the manner shown in FIG. 5 in the same manner as that hereinbefore described with reference to FIGS. 1 to 4, or alternatively that the shelf or shelves 18 may be mounted within the container 10 when the container is orientated in the manner shown in FIG. 1 in the same manner as that hereinafter described with reference to FIG. 5.

In the embodiment shown in FIG. 5 the opposed side edges 19 of each shelf 18 are formed with grooves 31, the edge 29 of each shelf 18 likewise being formed with a groove (not shown). A substantially U-shaped, resiliently deformable support rod 32 is adjustably mounted within the container 10, the rod 32 comprising opposed substantially parallel limb portions 33 and a web portion 34 interconnecting the limb portions 33. The ends 35 of the limb portions 33 remote from the web portion 34 are outwardly directed and are disposed in operative supported engagement with predetermined aligned ones of the holes 16' and 16'', the web portion 34 presenting projections 36 which are directed opposite to the direction in which the limb portions 33 project from the web portion 34 and which are disposed in operative supported engagement with predetermined aligned ones of the holes 17' and 17''. The shelf 18 is, in turn, mounted in supported operative engagement with the support rod 32 with the limb portions 33 of the rod 32 disposed within the grooves 31 and with the part of the web portion 34 of the rod 32 between the projections 36 disposed within the groove formed in the edge 29 of the shelf 18.

Mounting of each shelf 18 within the container 10 is with reference to FIG. 5, performed by resiliently urging the limb portions 33 of the associated support rod 32 towards one another whereby to permit the rod 32 to be disposed within the container 10 with the projections 36 in engagement with predetermined aligned ones of the holes 17', 17'', the limb portions 33 then being released to permit the ends 35 of the limb portions 33 to enter predetermined aligned ones of the holes 16', 16''. Thereafter the shelf 18 is disposed with the limb portions 33 of the rod 32 in slidable engagement with the grooves 31 provided in the side edges 19 of the shelf 18, and the shelf 18 is slidably moved relative to the rod 32 until the part of the web portion 34 of the rod 32 between the projections 36 is engaged within the groove formed in the edge 29 of the shelf 18. As will be understood, removal of the shelf 18 from within the container 10 is achieved by performing the above-described operations in reverse, and in the reverse sequence.

While in the preferred embodiments of the invention illustrated in the drawing, the first series of holes comprises the holes 14', 14'' and 15', 15'' and the second series of holes comprises the holes 16', 16'' and 17', 17'', it is to be understood that in alternative embodiments (not shown) of the invention, the first series of holes may comprise merely the holes 15' and 15'' and the second series of holes may comprise merely the holes 17' and 17'', while in further alternative embodiments (not shown) of the invention the first series of holes may comprise merely the holes 14' and 14'' and the second series of holes may comprise merely the holes 16' and 16''.

Finally, while in the invention as hereinbefore described with reference to the accompanying drawing the members 18 are constituted by shelf structures, it is to be understood that these members may constitute divider structures in which case the members 18 are in substantially vertical planes. By way of example, the container 10 may serve as a file drawer with the base wall 11 substantially horizontal and with all the side walls 12', 12'' and 13', 13'' substantially vertical, the divider structures being used to divide the interior of the container 10 in one direction and further divider structures, corresponding to

the aforementioned divider structures but of appropriately different width, being alternatively used to divide the interior of the container 10 in a different direction which, with reference to the form of the container 10 as illustrated in the accompanying drawing, is at right angles to the first-mentioned direction.

I claim:

- 1. A container comprising a base wall and a plurality of upstanding side walls projecting from the base wall, the inner faces of the walls of the container being provided with at least two series of opposed holes, the first series of opposed holes comprising holes provided in the inner face of the base wall adjacent to two opposed ones of the side walls of the container with each hole of the first series being in alignment in a first direction with another of the holes of the first series, and the second series of opposed holes comprising holes provided in the inner face of the base wall adjacent to a further two opposed ones of the side walls of the container with each hole of the second series being in alignment in a second direction which is other than parallel to said first direction with another of the holes of the second series.
- 2. A container according to claim 1, wherein said second direction is substantially at right angles to said first direction.
- 3. A container according to claim 2, wherein the container is in the form of a rectangular parallelepiped which is of oblong rectangular form in the plane containing the opposed holes of each series thereof, said first direction in which each hole of the first series is in alignment with another of the holes of the first series being substantially parallel to the planes containing two opposed ones of the walls of the container, and said second direction in which each hole of the second series is in alignment with another of the holes of the second series being substantially parallel to the planes containing the remaining two opposed ones of the walls of the container.
- 4. A container according to claim 1, wherein the first series of opposed holes further comprises holes provided in the inner faces of said two opposed ones of the side walls of the container, and the second series of opposed holes further comprises holes provided in the inner faces of said further two opposed ones of the side walls of the container.
- 5. A container according to claim 4, wherein a shelf or divider structure is adjustably mounted within the container, the shelf or divider structure having opposed edges presenting projecting pins which are resiliently urged apart into supported engagement with predetermined aligned ones of the holes in the inner faces of two opposed ones of the side walls of the container, and the shelf or divider structure having a further edge which presents projections engageable with predetermined aligned ones of the holes in the inner face of the base wall of the container.
- 6. A container according to claim 5, wherein an actuation member is connected to each pin for facilitating movement of said pin against the resilient urging thereof, each actuation member being substantially flush with the faces of the shelf or divider structure.
- 7. A container according to claim 4, wherein a substantially U-shaped, resiliently deformable support rod is adjustably mounted within the container, the rod comprising opposed substantially parallel limb portions and a web portion interconnecting the limb portions, the ends of the limb portions remote from the web portion being outwardly directed and being disposed in supported engagement with predetermined aligned ones of the holes in the inner faces of two opposed ones of the side walls of the container, the web portion presenting projections which are directed opposite to the direction in which the limb portions project from the web portion and which are in supported engagement with predetermined aligned ones of the holes in the inner face of the base wall of the container, and a shelf or divider structure being mounted within the container with opposed edges of the structure adjacent to said two opposed ones of the side walls of the container being grooved and accommodating the limb por-

tions of the rod, and with a further edge of the structure adjacent to said base wall of the container being grooved and accommodating the web portion of the rod between the projections presented thereby.

- 8. A container in the form of a rectangular parallelepiped, the container comprising a base wall of oblong rectangular form and four upstanding side walls which project from the edges of the base wall, a row of spaced holes, which row is disposed substantially parallel to the plane containing the base wall, being provided in the inner face of each of the side walls with each hole being in alignment, in a direction substantially at right angles to the plane containing the side wall in which it is provided, with one of the holes in the opposed side wall, and a row of spaced slots being provided in the inner face of the base wall adjacent, and parallel, to each of the side walls with each slot, the length of which is substantially at right angles to the plane containing the side wall adjacent to which it is provided, being in alignment, in a direction substantially at right angles to the plane containing said side wall with one of the slots of the row thereof adjacent and parallel to the opposed side wall.
- 9. A container according to claim 1, wherein a shelf or divider structure is adjustably mounted within the container, the shelf or divider structure presenting projecting support elements which are engageable with predetermined aligned ones of the holes of one of said series thereof.
- 10. In combination, a container, at least one shelf or divider structure and at least one further shelf or divider structure, the inner faces of the walls of the container being provided with at least two series of opposed holes, each hole of the first series being in alignment in a first direction with another of the holes of the first series, each hole of the second series being in alignment in a second direction which is other than parallel to said first direction with another of the holes of the second series, the first-mentioned shelf or divider structure presenting projecting support elements cooperable with predetermined aligned ones of the holes of the first series positively to mount said first-mentioned shelf or divider structure within the container irrespective of the operative orientation of the container, and said further shelf or divider structure presenting projecting support elements cooperable with predetermined aligned ones of the holes of the second series positively to mount said further shelf or divider structure within the container irrespective of the operative orientation of the container.
- 11. In combination, a container, at least one shelf or divider structure and at least one further shelf or divider structure, the inner faces of the walls of the container being provided with at least two series of opposed support elements, each support element of the first series being in alignment in a first direction with another of the support elements of the first series, each support element of the second series being in alignment in a second direction which is other than parallel to said first direction with another of the support elements of the second series, the first-mentioned shelf or divider structure presenting support elements which are complementary to the support elements of the first series thereof and which are cooperable with predetermined aligned ones of the support elements of the first series positively to mount said first-mentioned shelf or divider structure within the container irrespective of the operative orientation of the container, and said further shelf or divider structure presenting support elements which are complementary to the support elements of the second series thereof and which are cooperable with predetermined aligned ones of the support elements of the second series positively to mount said further shelf or divider structure within the container irrespective of the operative orientation of the container.
- 12. A combination according to claim 10, wherein the main faces of said first-mentioned shelf or divider structure and the main faces of said further shelf or divider structure are each substantially flush.

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