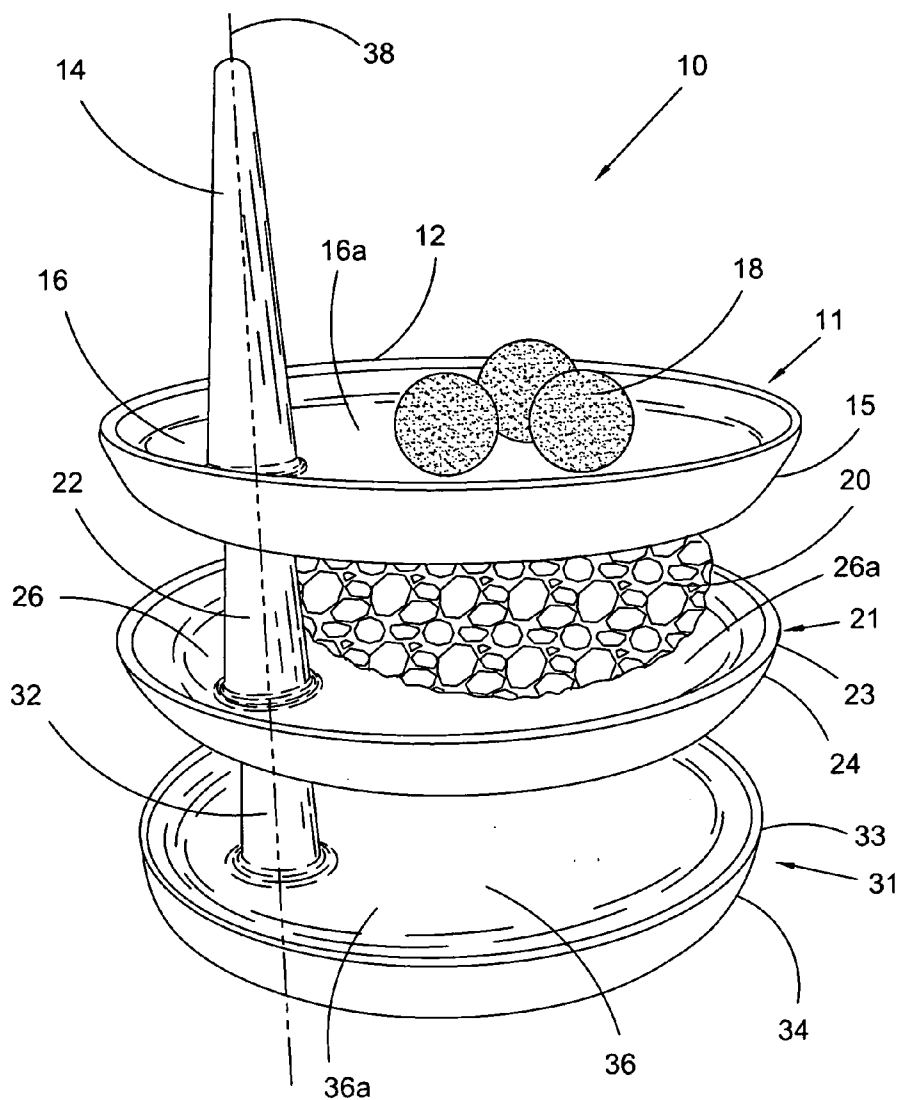




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Nip(10) **Pub. No.: US 2009/0178947 A1**(43) **Pub. Date: Jul. 16, 2009**(54) **STACKABLE STORAGE DEVICE****Publication Classification**(75) Inventor: **Jason Nip**, Toronto (CA)(51) **Int. Cl.**
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(52) **U.S. Cl.** **206/509; 206/557**Correspondence Address:
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WILLIAMSVILLE, NY 14221-5406 (US)(57) **ABSTRACT**

The present invention broadly comprises a stackable storage tray that includes a bottom having an upper surface and a lower surface and an edge extending around the perimeter of the bottom. The tray also possesses a hollow stacking post functionally attached to the bottom in a position that is offset from the center of the bottom as well as a receiving hole defined by the lower surface and extending into the hollow stacking post. The tray may be stacked to form a stacked storage device in which individual trays are rotatable by inserting the hollow stacking post of a lower stacked tray into a receiving hole of an upper tray. In preferred embodiments, the stacking post and receiving hole are tapered.

(73) Assignee: **Umbra LLC**, Buffalo, NY (US)(21) Appl. No.: **12/008,890**(22) Filed: **Jan. 15, 2008**

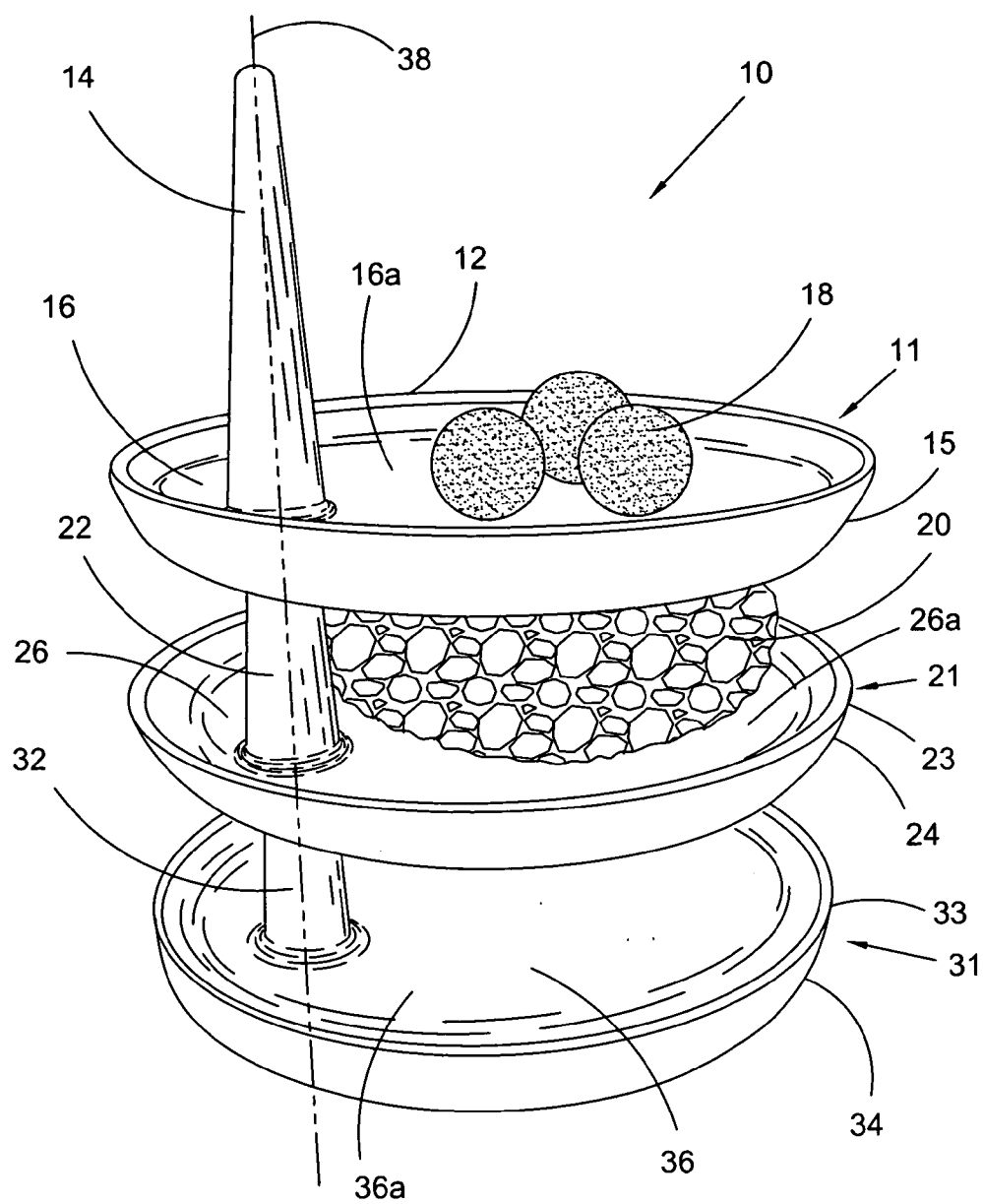


Fig. 1

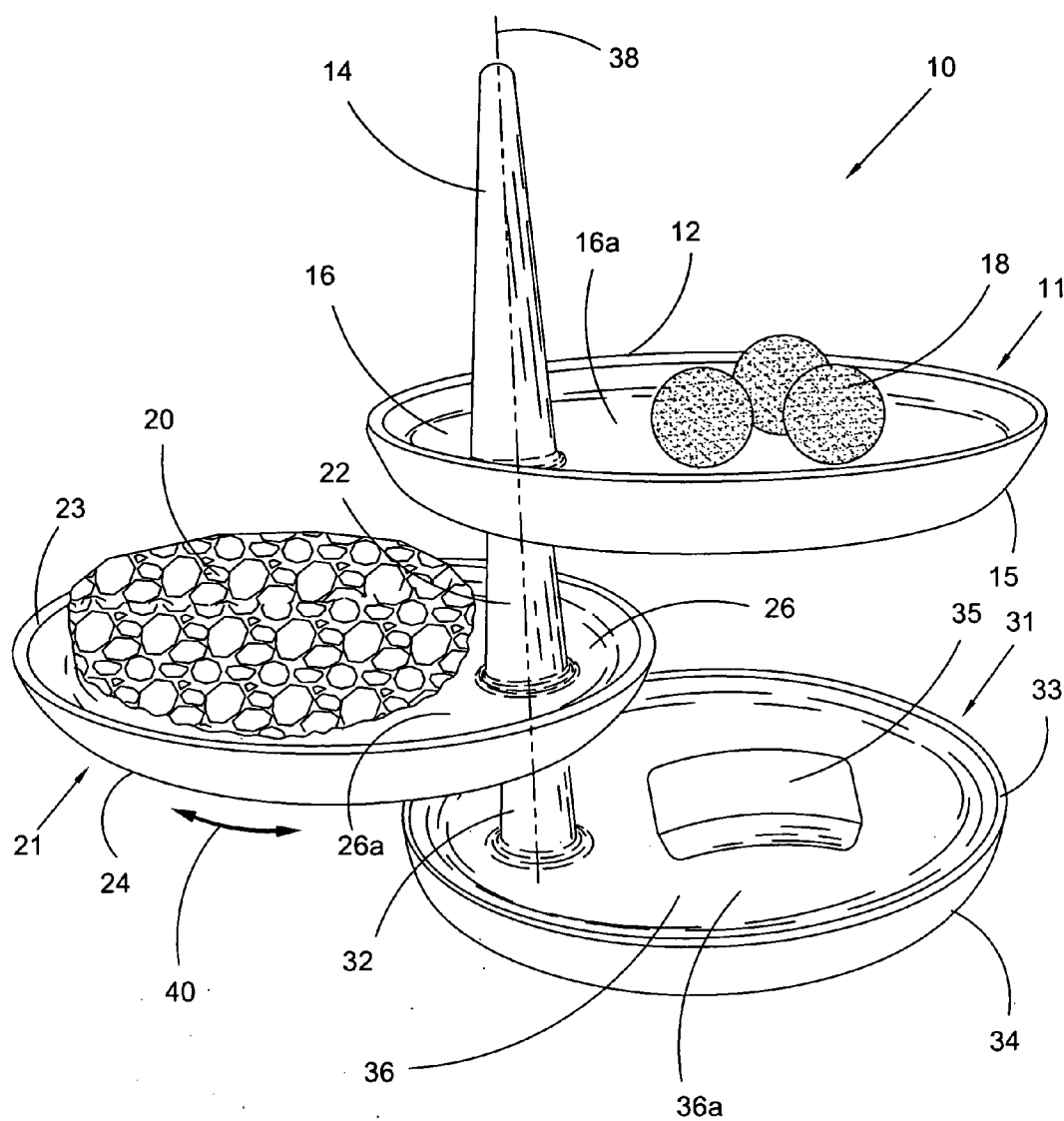


Fig. 2A

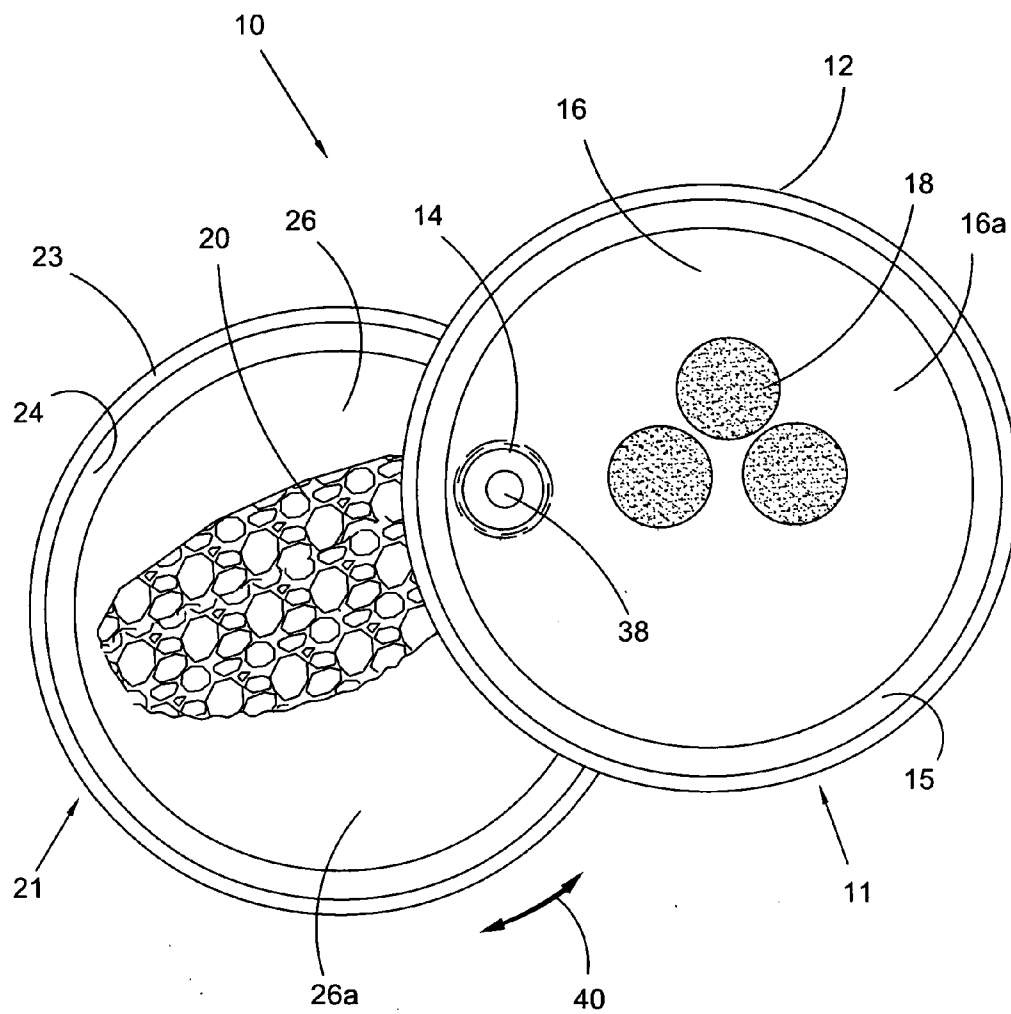


Fig. 2B

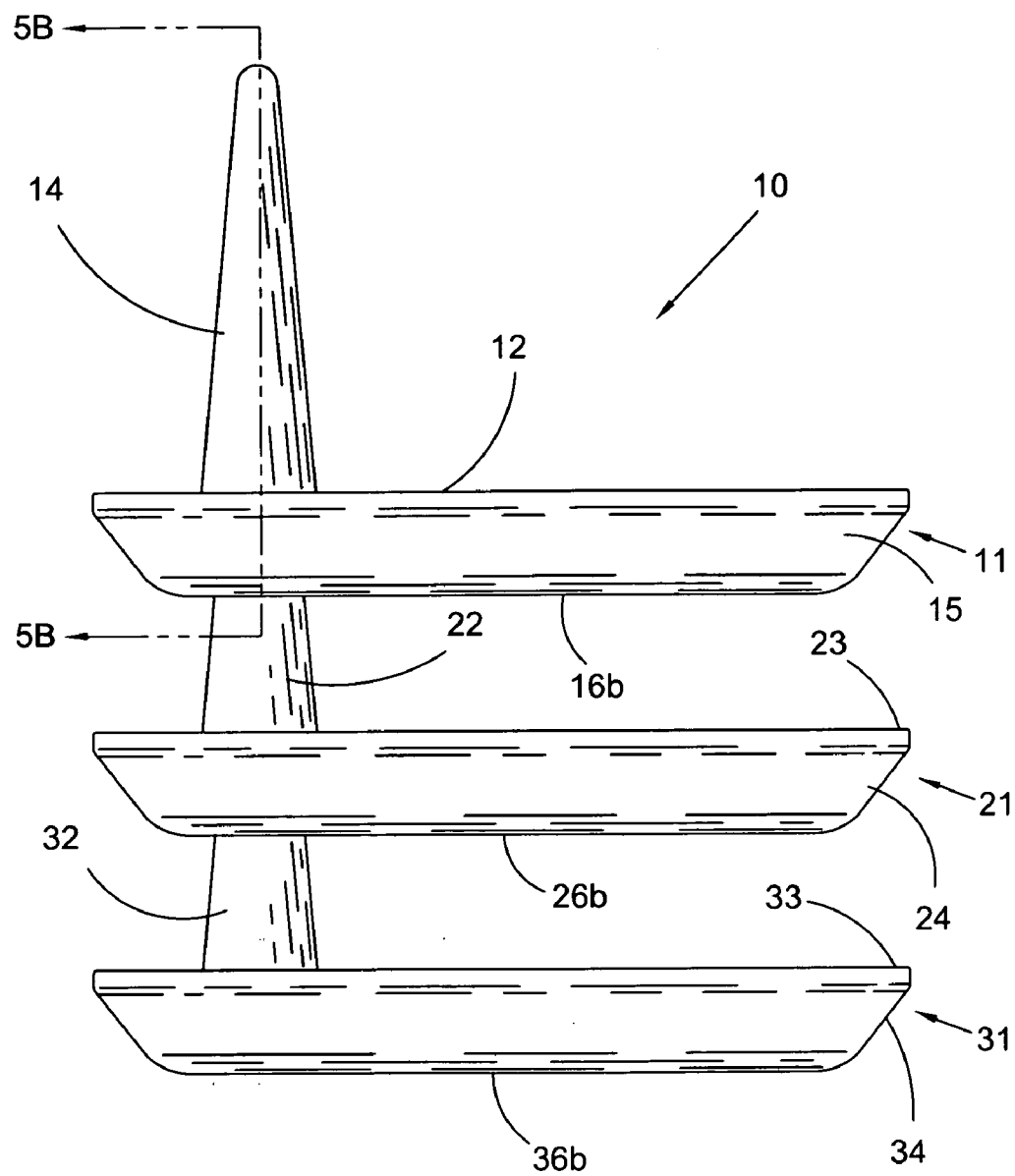


Fig. 3

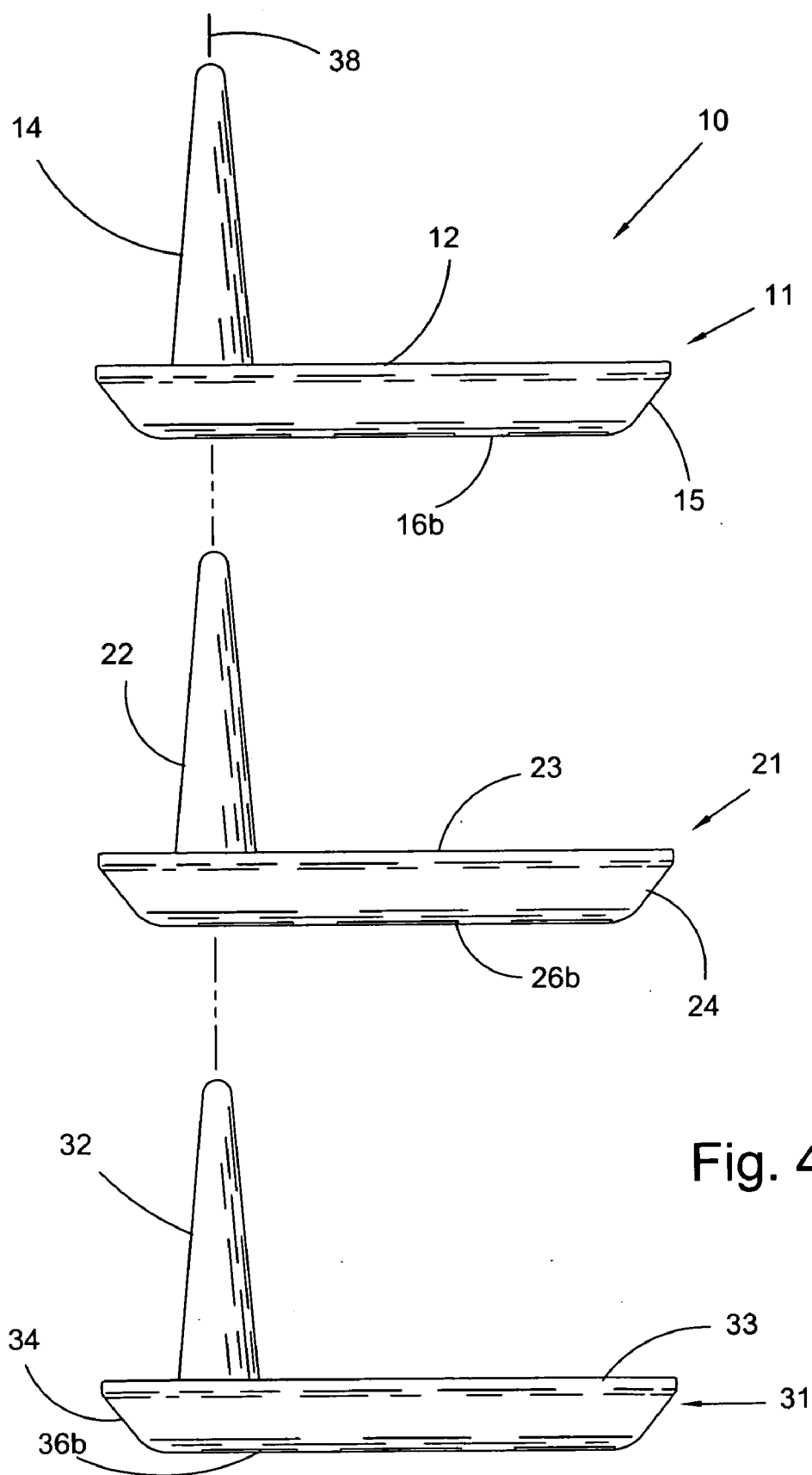
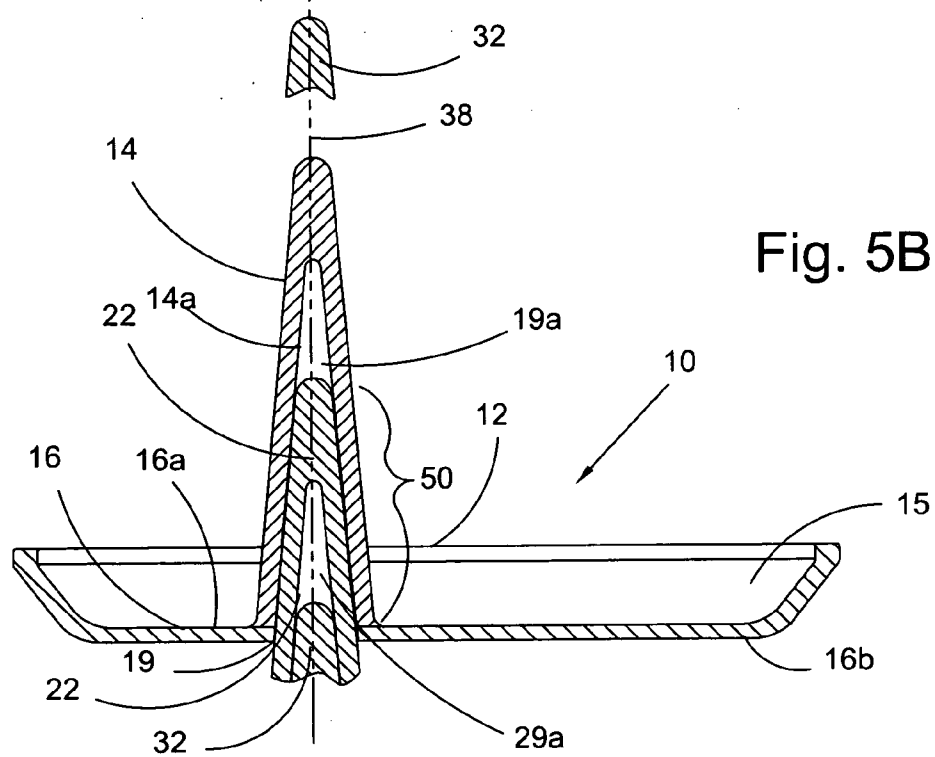
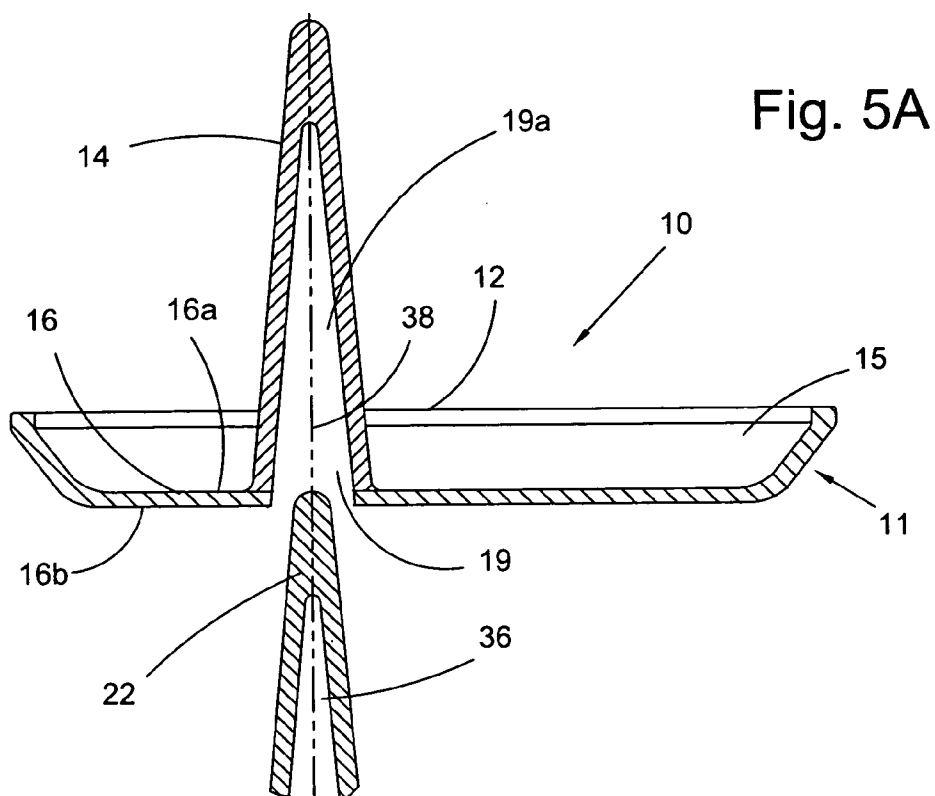


Fig. 4



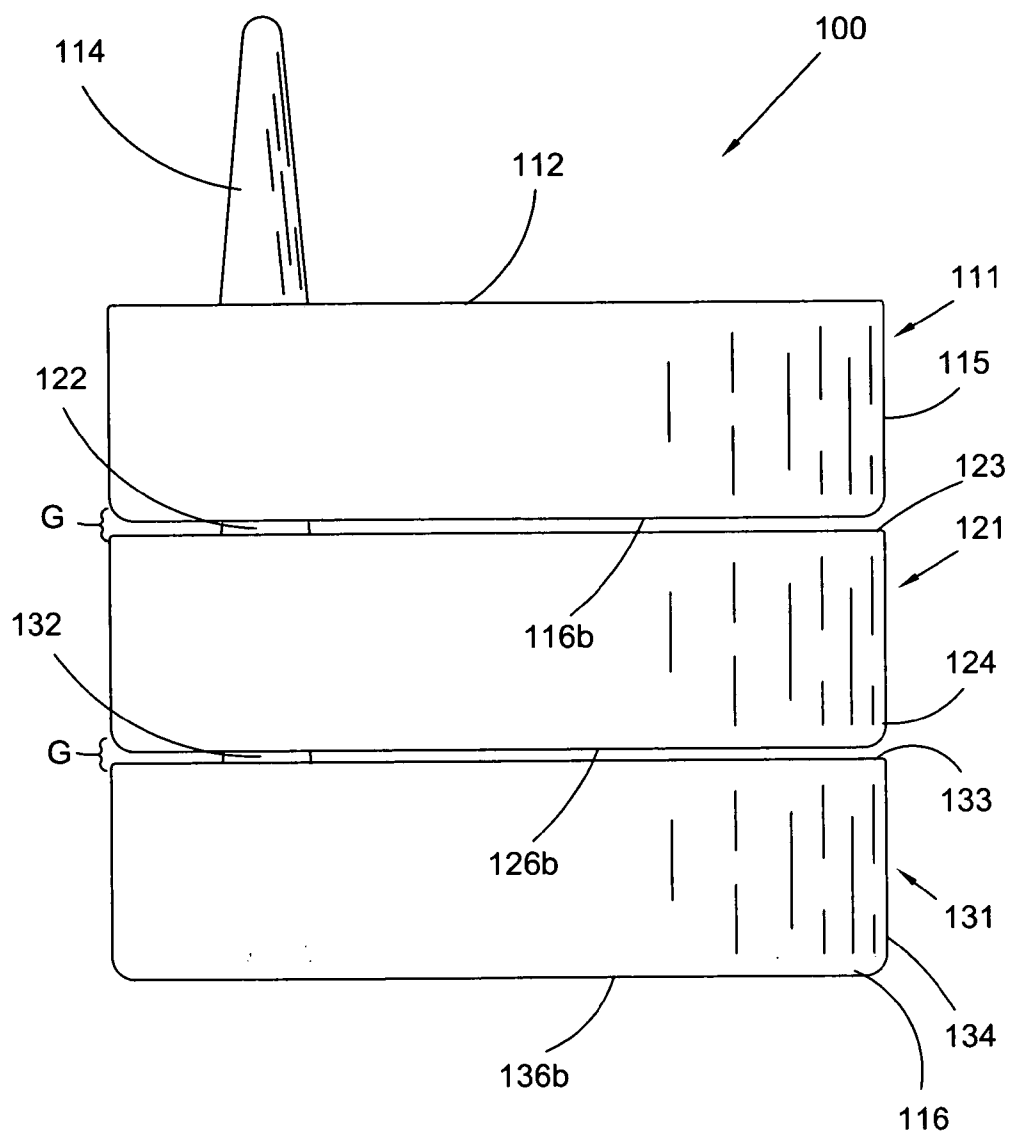


Fig. 6

STACKABLE STORAGE DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates generally to storage devices, particularly to stackable storage devices, and more particularly to stackable storage devices for loose items.

BACKGROUND OF THE INVENTION

[0002] Finding ways to store small items is a common and persistent problem in many settings found in every day life to include work environments, kitchens, and bathrooms. Although many types of storage devices are available, they often do not have one or more features that are often desirable or even necessary in order to achieve efficient storage of small items.

[0003] Ideally, storage devices should eliminate the clutter that is often present when quantities of different small items are stored together. In addition, because small items are often stored where there is only a small amount of available space, such as desks, kitchens, bathrooms, and work shops, storage devices should preferably occupy a minimum amount of space by making use of vertical space rather than horizontal space. Additionally, it is desired that the stored items be easily accessible, especially if they are accessed frequently. Moreover, most storage devices for loose items lack flexibility that would allow the user to adapt them to specific surroundings.

[0004] Therefore, there is a need in the field for a storage device for small items that occupies a minimum of volume of space, eliminates clutter, provides for easy access to the stored pieces, and is adaptable to individual user storage situations.

SUMMARY OF THE INVENTION

[0005] The present invention broadly comprises a stackable storage tray that includes a bottom having an upper surface and a lower surface and an edge extending around the perimeter of the bottom. The tray also possesses a center point on the bottom, a hollow stacking post functionally attached to the bottom in a position offset from the center, and a receiving hole defined by the lower surface and extending into the hollow stacking post.

[0006] The present invention also broadly comprises a stacked storage device comprising a plurality of trays, each of the trays comprising a bottom with the bottom possessing an upper surface and a lower surface with an edge extending around the perimeter of the flat bottom. Each of the plurality of trays also includes a center point on the bottom, a hollow stacking post functionally attached to the bottom in a position offset from the center, and a receiving hole defined by the lower surface and extending into the hollow stacking post. The trays are held in a stacked position by inserting the hollow stacking post of a lower tray in the stack into a receiving hole of an upper tray.

[0007] In one embodiment, the edge in the storage tray is formed into a lip. In an alternate embodiment, the edge is formed into a wall.

[0008] In a preferred embodiment, the stacking post of a lower tray and the receiving hole of an upper tray are each tapered to allow for easy insertion of the stacking post of the lower tray into the receiving hole of the upper storage tray to form a stable stack.

[0009] One object of the invention is to allow for easy access to the individual items stored on each tray.

[0010] A second object of the invention is to provide a storage device that occupies a small volume of space in relation to its overall storage capacity.

[0011] A third object of the invention is to supply a storage device that possesses a flexible structure adaptable to different storage requirements and environments.

[0012] An additional object of the invention is to provide a device in which different types of items can be stored separately.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0013] The nature and mode of the operation of the present invention will now be more fully described in the following detailed description of the invention taken with the accompanying drawing Figures, in which:

[0014] FIG. 1 is a side perspective view of the stackable storage device of the present invention in which trays are aligned vertically;

[0015] FIG. 2A is a side perspective view of the stackable storage device of the present invention showing a tray in the middle of the stack as rotated away from the aligned position seen in FIG. 1;

[0016] FIG. 2B is a top view showing an individual tray rotated out of the aligned stacked tray arrangement;

[0017] FIG. 3 is a side view of the plurality of stacked trays in the aligned arrangement seen in FIG. 1;

[0018] FIG. 4 is a side view of three separated individual trays vertically aligned with each other in preparation for stacking;

[0019] FIG. 5A is a cross section of the separated trays seen in FIG. 4;

[0020] FIG. 5B is a cross section taken along line 5B-5B in FIG. 3 showing the three stacking posts inserted into each other to form the stacked tray arrangement seen in FIG. 3; and,

[0021] FIG. 6 is a side view of an alternate embodiment of the stackable storage device of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0022] At the outset, it should be appreciated that like drawing numbers on different drawing views identify identical structural elements of the invention.

[0023] While the present invention is described with respect to what is presently considered to be the preferred embodiments, it is understood that the invention is not limited to the disclosed embodiments. The present invention is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

[0024] Adverting to the drawings, FIG. 1 is a side perspective view of the stackable storage device 10 ("storage device 10") of the present invention. Tray 11 is seen holding item 18, for example a bath salt, and includes a bottom 16 having an upper surface 16a and a lower surface 16b (not seen in FIG. 1). Tray 11 also includes an edge 12 that is formed from the outer perimeter of tray 11. In the embodiment shown, edge 12 is formed into a lip 15 that extends around the perimeter. It will be recognized by those having skill in the art that edge 12 need not be formed into a lip and it is not necessary that the lip extend around the entire perimeter of tray 11. Stacking post 14 ("post 14") is seen extending from and is functionally

attached to bottom 16 and is positioned in a location offset from the center of bottom 16. By “functionally attached” is meant that post 14 is fixed to bottom surface 16 in such a way that it functions as a component part of tray 11. As explained in more detail below, functional attachment may be by threaded attachment, adhesives, or by fabricating post 14 as integral with bottom 16. Post 14 is at least partially hollow. In a preferred embodiment, post 14 is tapered to allow it to fit into receiving hole 19 (not seen in FIG. 1) as will be described below.

[0025] Trays 21 and 31 are also seen in FIG. 1 aligned under tray 11. Tray 21 is seen holding a different item than tray 11, in this case a scrubbing or washing sponge 20. Tray 21 includes bottom 26 having upper surface 26a, edge 23, lip 24, and stacking post 22. Tray 31 includes bottom 36 having upper surface 36a, edge 33, lip 34, and stacking post 32. Stacking posts 14, 22, and 32 are seen sharing common axis 38. Although FIG. 1 depicts each of trays 11, 21, and 31 as having identical shape and size, it will be recognized that one or more of the trays may have a different shape or size as long as an offset hollow or partially hollow stacking post is present extending from the upper surface of the tray bottom as well as a receiving hole that is defined by the lower surface.

[0026] FIG. 2A is a side perspective view of storage device 10 showing middle tray 21 rotated away from the aligned position seen in FIG. 1. As seen in FIGS. 5A and 5B discussed below, the stacking post of a tray having a low or middle position in the stack can be inserted into the receiving hole of the upper tray in the stack. As shown by arrow 40, the tray, tray 21 in FIG. 2A, can then be rotated about the contact point between stacking post 22 and the upper receiving hole. As indicated by arrow 40, tray 21 can be rotated either clockwise or counter clockwise about the contact area created between inserted stacking post 22 and the upper receiving hole. Due to the offset position of stacking post 22, tray 21 is moved out of alignment with upper tray 11. The offset position also allows for a greater degree of open surface area of bottom 26 allowing storage of larger items that otherwise would not fit within the confines of tray 21. These advantages are also seen in all of the trays of the stack that have an offset stacking post. It should be noted that any of the stacked trays may be rotated about their individual contact areas. It is readily seen that the ability to rotate each of trays 11, 21, and 31 allows the user to arrange the stacked trays to make the items held by each tray accessible to the user when access is desired, while still providing the ability to occupy a minimum amount of space or volume when desired by moving the trays into the aligned arrangement depicted in FIG. 1. FIG. 2A also shows lower tray 31 holding soap bar 35. FIG. 2B is a top view showing tray 21 rotated around axis 38 out of the aligned stacked tray arrangement.

[0027] FIG. 3 is a side view of a plurality of stacked trays in the aligned arrangement seen in FIG. 1. Although the embodiment seen in FIG. 3 shows trays 11, 21, and 31 as having substantially the same size and shape, it will be recognized that it is not mandatory that the trays in a particular stack have the same size and shape as long as the stacking posts can be inserted into an upper receiving hole. Also seen are bottom surfaces 16b, 26b, and 36b of trays 11, 21, and 31, respectively. In addition, although the figures depict a stack as comprising three trays, it will be recognized that a stack may include more or less than three trays. It will also be recognized that trays may be used as individual unstacked units.

[0028] FIG. 4 is a side view of separated individual trays 11, 21, and 31 aligned with each other in preparation for stacking. Stacking posts 14, 22, and 32 are aligned longitudinally along axis 38. As will be discussed below, receiving holes defined by respective bottom surfaces 16b, 26b, and 36b are also aligned along axis 38.

[0029] FIG. 5A is a cross section of the aligned trays shown in FIG. 4. It can be seen that each of stacking posts 14, 22, and 32 are aligned along axis 38. Bottom surface 16b is clearly seen as defining receiving hole 19 in tray 11. The empty tapered inner volume 19a of stacking post 14 is seen as an extension of receiving hole 19 to form a space shaped and sized to receive stacking post 22 from lower tray 21. Similarly, hollow stacking post 22 encloses a space 29a formed from a receiving hole in tray 21 shaped to receive stacking post 32 (shown as a fragment) from lower tray 31.

[0030] It will be readily understood that each tray is rotated about the area of contact between the lower stacking post and the inner walls of the stacking post of the upper tray. In a preferred embodiment, the walls of each stacking post taper at substantially the same angle to allow for the lower stacking post to be inserted far enough into the upper inner volume to give sufficient stability to the connection between two separate trays. For example, as seen in FIG. 5B, contact surface 50 forms a substantial portion of the total surface area of inner wall 14a of stacking post 14. By limiting the force with which lower stacking post 22 is inserted into an upper receiving area 19a, large contact surface 50 has a surface area large enough to prevent the wobbling of a stacked tray while still allowing it to be rotated easily about contact surface 50.

[0031] Stacking posts may be formed as an integral component of a tray. Alternatively, hollow stacking posts may be fixedly attached to the bottom of a tray over a receiving hole using suitable adhesives. In addition, hollow stacking posts may be threadably attached to the bottom of a tray by threading into a receiving hole to form a continuous cavity.

[0032] Preferably, trays 11, 21, and 31 are fabricated from plastics that provide a smooth surface to enable easy rotation. Suitable plastics include, but are not limited to, polyethylene (PET), acrylics, polyvinylchloride (PVC), polypropylene (PP), and melamine. Aside from forming a smooth surface, various plastics may be used to create different appearances that can be coordinated with various decors and color schemes. For example, PET and acrylics may be clear, PVC and PP may be translucent, and melamine may be opaque. Methods of producing the components of storage device 10 are well known to those of ordinary skill in the art.

[0033] FIG. 6 is a side view of an alternate embodiment of storage device 10. Storage device 100 includes trays 111, 121, and 131. It can be seen that tapered stacking posts 114, 122, and 132 are aligned in a manner similar to the embodiment discussed above to supply the same rotational capability to each tray. In this embodiment, the edges of each tray are formed into wider walls 115, 124, and 134 that extend almost to the bottom surface of the upper tray creating a smaller gap G than seen with embodiments having lips or narrower walls. This embodiment provides excellent storage capability for small loose items such as change, rings, earrings, push tacks, and paperclips that are often stored as individual pieces as the higher walls 115, 124, and 134 and narrow gap G retain the loose pieces without spilling when the trays are rotated and/or when the whole device 100 is moved.

[0034] Thus it is seen that the objects of the invention are efficiently obtained, although changes and modifications to

the invention should be readily apparent to those having ordinary skill in the art, which changes would not depart from the spirit and scope of the invention as claimed.

What is claimed is:

1. A stackable storage tray comprising:
a bottom, said bottom including an upper surface and a lower surface;
an edge extending around the perimeter of said bottom;
a center point on the bottom;
a hollow stacking post functionally attached to said bottom in a position offset from said center point; and,
a receiving hole defined by said lower surface and extending into said hollow stacking post.
2. The stackable tray as recited in claim 1 wherein said hollow stacking post is tapered.
3. The stackable tray as recited in claim 1 wherein said receiving hole is tapered.
4. The stackable tray as recited in claim 1 wherein said hollow stacking post is integral with said bottom.
5. The stackable tray as recited in claim 1 wherein said hollow stacking post is threadably attached to said bottom.
6. The stackable tray as recited in claim 1 wherein said hollow stacking post is fixedly attached to said bottom over said receiving hole to form a continuous cavity.
7. The stackable tray as recited in claim 1 wherein said edge is formed into a lip.
8. The stackable tray as recited in claim 1 wherein said edge is formed into a wall.
9. A stacked storage device comprising a plurality of trays, each of said trays comprising:
a bottom, said bottom including an upper surface and a lower surface;

an edge extending around the perimeter of said bottom;
a center point on the bottom;
a hollow stacking post offset from said center point; and,
a receiving hole defined by said lower surface and extending into said hollow stacking post;

wherein said trays are rotatably supported in a stacked position by inserting said hollow stacking post of a lower stacked tray into a receiving hole of an upper stacked tray.

10. The stacked storage device as recited in claim 9 wherein at least one of said hollow stacking posts is tapered.

11. The stacked storage device as recited in claim 9 wherein at least one of said receiving holes is tapered.

12. The stacked storage device as recited in claim 9 wherein each of said hollow stacking posts is integral with said bottom.

13. The stacked storage device as recited in claim 9 wherein each of said hollow stacking posts is threadably attached to said bottom.

14. The stacked storage device as recited in claim 9 wherein each of said hollow stacking posts is attached to said bottom over said receiving hole to form a continuous cavity.

15. The stacked storage device as recited in claim 9 wherein at least one of said edges is formed into a lip.

16. The stacked storage device as recited in claim 9 wherein at least one of said edges is formed into a wall.

17. The stacked storage device as recited in claim 9 wherein said receiving hole of at least one of said upper trays rotates around said stacking post of said lower tray.

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