United States Patent

[11] **3,563,394**

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[54] **BIN ASSEMBLY HAVING DETACHABLE SUPPORT MEMBER**
12 Claims, 4 Drawing Figs.

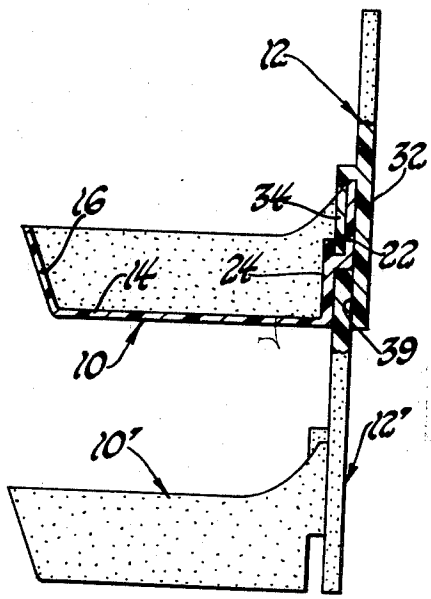
[52] **U.S. Cl.** **211/126,** 220/97, 248/223
[51] **Int. Cl.** **A47f 3/14,** B65d 21/00
[50] **Field of Search** ..... 211/126, 128, 133, 88, 87, 177, 90, 148, 134—35; 108/91, 92, 93; 312/128; 248/225, 223, (Peg Board Digest); 220/97B, 97C, 23.83, 23.6

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ABSTRACT: A storage bin of the type used to hold relatively small articles in batch quantities and having a detachable back support member which, in the attached condition, permits several similar bins to be stacked in a vertical array.



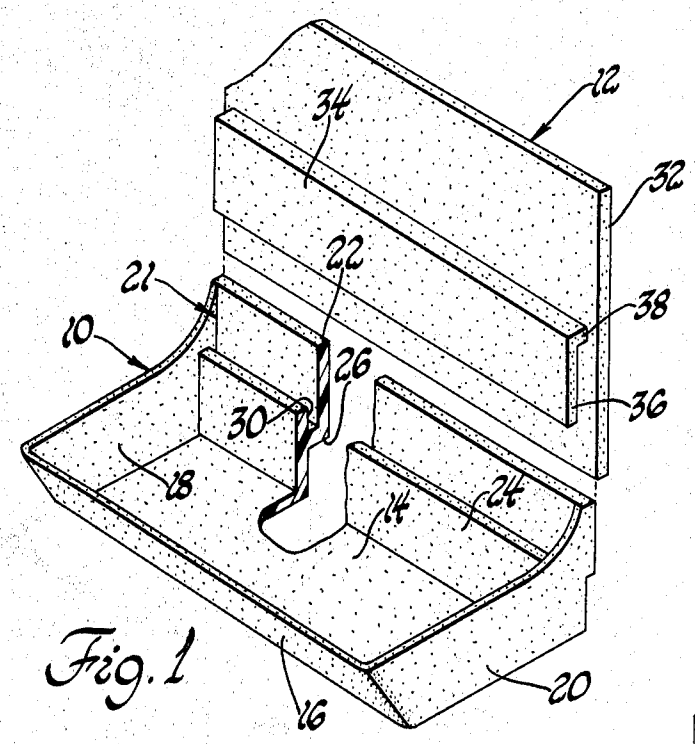


Fig. 1

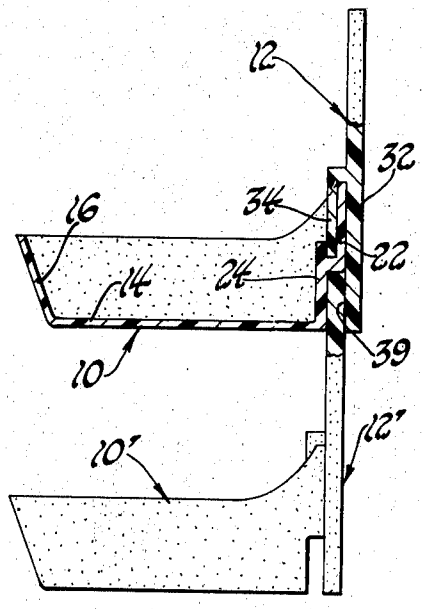


Fig. 2

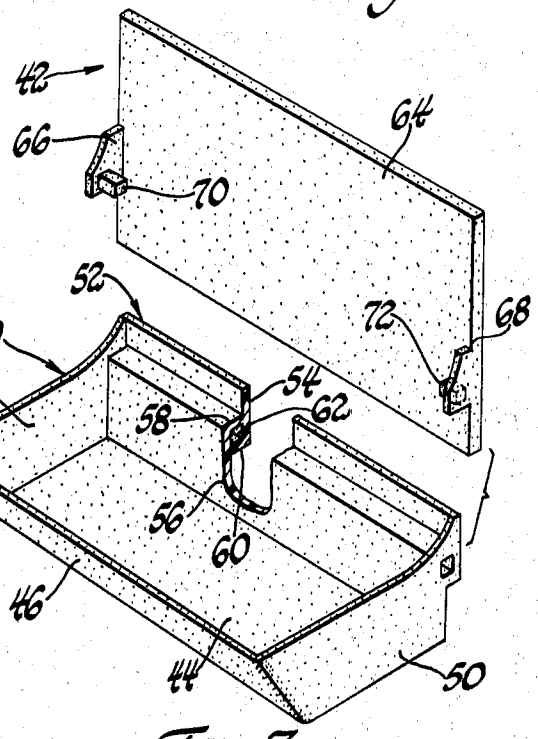


Fig. 3

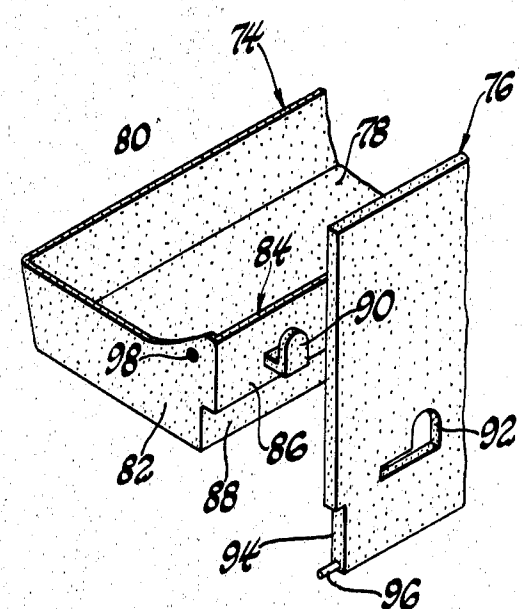


Fig. 4

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BIN ASSEMBLY HAVING DETACHABLE SUPPORT MEMBER

This invention relates to storage bins of the type which can be stacked in a vertical array and more specifically to such a storage bin wherein a back support member which permits such stacking is removable from the body of the bin.

A storage bin which can be stacked in a vertical array with other similar storage bins is disclosed in U.S. Pat. No. 3,207,321 granted to James E. Joyce on Sept. 21, 1965. As disclosed in the patent, a storage bin or other similar article is provided with an upstanding back support member which is spaced rearwardly from the rear wall of the bin to define a downwardly opening vertical slot extending laterally across the back of the bin. This slot is adapted to receive the upper portion of the back support member of a similar bin to permit two or more bins to be vertically stacked. In the aforementioned patent, the bins and back support members are part of an integral assembly. Therefore, the back support members which extend vertically above the bins cannot be removed.

In accordance with the present invention, a bin body portion and a back support member which permits two or more similar bins to be stacked vertically are formed as separate and detachable units. Accordingly, when the bins are to be used in a nonstacked manner, the upstanding back support member may be detached. In general, this is accomplished by constructing the rear wall of the bin and the upstanding back support member to define in the assembled state a downwardly opening vertical slot adapted to receive the upper portion of the back support member of a similar bin and back support member assembly.

In the specific form of the invention, the rear wall of the bin is constructed to have an upper vertical plane surface and an inwardly stepped lower vertical plane surface. In the assembled state, the forward surface of the back support member bears against the upper vertical plane surface of the rear bin wall and extends parallel to the inwardly stepped lower vertical plane surface to define therebetween the downwardly opening vertical slot which accepts the back support member of the next lower bin in the vertically stacked array.

In accordance with the invention, various uses may be made of the detachable back support member; for example, the detached back support member may form a lid covering the bin. In a specific form of the invention the back support member is provided with laterally extending pivot pins which are received by suitably disposed holes in the side walls of the bin to pivotally support the detached back support member over the bin as a lid or cover.

Further advantages of the invention will become apparent from a reading of the following specification describing illustrative embodiments of the invention. This specification is to be taken with the accompanying drawings of which:

FIG. 1 is a front isometric view, with parts broken away, of an illustrative embodiment of the invention;

FIG. 2 is a side view, partly in cross section of a stacked array of bins constructed in accordance with the FIG. 1 embodiment;

FIG. 3 is a front isometric view, with parts broken away, of another embodiment of the invention; and

FIG. 4 is a rear isometric partial view of yet another embodiment of the invention.

Referring to FIG. 1, an assembly constructed in accordance with the present invention is shown to comprise a bin **10** and a detachable back support member **12** both of which may be suitably formed by molding an organic polymeric material. Bin **10** includes a generally flat horizontal bottom **14** integrally connected to a generally upstanding, forwardly angled front wall **16**, a pair of sidewalls **18** and **20**, and a generally upstanding rear wall **21** having an upper vertical portion **22** and an inwardly stepped lower vertical portion **24**. The upper and lower vertical portions **22** and **24**, respectively, are joined by the sidewalls **18** and **20** and also by a horizontal rib **26**. The rib **26** is contiguous with the bottom edge of upper portion **22** but joins lower portion **24** at a vertically intermediate point to define an upwardly opening vertical slot **30** which extends laterally between the sidewalls **18** and **20**.

Back support member **12** includes a generally flat rectangular portion **32** and a flange **34** which extends horizontally across the rectangular portion **32**. Flange **34** includes a vertical portion **36** which is spaced outwardly from the rectangular portion **32** by a horizontal spacer **38**.

In the assembled state, back support member **12** is joined with bin **10** by inserting the flange **34** into the slot **30** between the upper and lower vertical portions **22** and **24**, respectively, until the flange **34** bottoms against the rib **26**. When so assembled, the forward face of the rectangular portion **32** of the back support member **12** bears against the rear plane surface of upper portion **22** of rear wall **21**, and extends vertically downwardly therefrom. Portion **32** is thus parallel to but rearwardly spaced from the lower portion **24** to define a downwardly opening vertical slot **39**.

As shown in FIG. **2**, the slot **39** is adapted to receive therein the upper edge of the back support member **12'** of a similar bin **10'**. Accordingly, the bins **10** and **10'** together with the back support members **12** and **12'** may be assembled in a vertically stacked array wherein the member **12'** provides support for the uppermost bin **10**. Obviously, additional bins may be added to the stacked array. The bins **10** and **10'** are vertically spaced by the back support member **12'** to provide convenient access to both bins **10** and **10'**.

FIG. **3** shows an alternative embodiment including a bin **40** and a detachable back support member **42**. The configuration of bin **40** is generally similar to that of bin **10** of FIG. **1**. In FIG. **3** bin **40** comprises a generally flat horizontal bottom **44**, and upstanding and forwardly angled front wall **46**, a pair of sidewalls **48** and **50**, and generally upstanding rear wall **52**. Rear wall **52** includes an upper vertical wall portion **54** and an inwardly stepped lower wall portion **56**. The upper and lower wall portions **54** and **56**, respectively, are integrally joined by a pair of horizontal ribs **58** and **60** to define an opening **62** which extends laterally between sidewalls **48** and **50**. In the integrally molded construction of FIG. **3**, sidewalls **48** and **50** also join the wall portion **54** and **56** for greater rigidity.

Referring again to FIG. **3**, the back support member **42** comprises an upstanding rectangular portion **64** of greater vertical dimension than the rear wall **52** of bin **40**. In addition, back support member **42** includes a pair of forwardly directed resilient flanges **66** and **68** disposed on opposite lateral ends of the back support member **42** and carrying laterally inwardly directed pins **70** and **72**, respectively.

When bin **40** and back support member **42** are to be assembled, the flanges **66** and **68** are flexed outwardly to permit them to embrace the sidewalls **48** and **50**, respectively, such that the pins **70** and **72** extend laterally into the opening **62**. The opening **62** and the pins **70** and **72** are made of similar cross-sectional configurations to provide a snug mating relationship therebetween. So assembled, the front surface of rectangular portion **64** bears against the rear surface of upper wall portion **54** and also extends parallel to but rearwardly spaced from the lower vertical wall portion **56** to define a slot which is adapted to receive the upper portion of the back support member of a similar assembly. Accordingly, in the assembled state, bin **40** and back support member **42** may be stacked with similar combinations in a manner corresponding to that shown in FIG. **2**. So stacked, the flanges **66** and **62** also embrace the sidewalls of the next uppermost bin in the stacked array to provide lateral support for the uppermost bin.

FIG. **4** shows another embodiment including a bin **74** and a detachable back support member **76**. In FIG. **4** the bin **74** is generally similar to bins **10** and **40** and includes a bottom **78**, front wall **80**, sidewalls **82**, and a rear wall **84** having upper and lower portions **86** and **88**, respectively. The lower portion **88** is inwardly or forwardly stepped from upper portion **88**. The upper plane surface **86** is provided with at least two rearwardly directed keys **90** having upturned semicircular terminal portions. Back support member **76** is provided with a pair of apertures **92** having a semicircular portion for receiv-

ing the corresponding portions of keys 90 and a keyway of rectangular cross section adapted to surround the horizontal portion of key 90.

When attaching the back support member 76 to bin 74 the keys 90 are inserted through the apertures 92 and the back support member 76 is urged laterally relative to the keys 90 to force the keys into the rectangular portions of the apertures 92 thus locking the back support member 76 to the bin 74. In the assembled state the forward surface of back support member 76 bears against the upper vertical wall portion 86 and is parallel to but rearwardly spaced from the lower wall portion 88 to define a slot adapted to receive the upper edge of a back support member of a similar bin assembly. Accordingly, the embodiment shown in FIG. 4 also permits of the vertically stacked array shown in FIG. 2.

As a further feature of the FIG. 4 embodiment, the back support member 76, when detachable from the bin 74, may also be used as a lid or cover for the bin when desired. To this end the normally vertical edges of back support member 76 shown in FIG. 4 are provided with inwardly recessed portions 94 toward the lower extremity thereof such that the lateral dimension of back support member 76 between the recesses 94 fits between the sidewalls 82 of the bin 74. Each of the recessed portions 94 carries a laterally outwardly directed pivot pin 96. The sidewalls 82 of the bin 74 are provided with apertures 98 to accept the pins 96 in pivotal engagement therewith. Accordingly, the back support member 12 when used as a lid or cover may be raised or lowered when desired. The pins 96 and the sidewalls 82 may be resilient to permit the pins to be installed in and removed from the holes 98. The embodiments of FIG. 1 and 3 may also be modified to include the pivotal lid of FIG. 4.

It is to be understood that the foregoing description of the various embodiments illustrated herein is exemplary rather than definitive in nature and various modifications to the embodiments shown herein may be made without departing from the spirit and scope of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

I claim:

1. A bin assembly for holding articles comprising: a generally horizontal bottom, an upstanding rear wall being rearwardly recessed at a lower portion thereof, a generally planar back support member having a greater vertical dimension than the rear wall, and means for readily removably attaching the back support member to the bin, the back support and the bin in the attached state lying juxtaposed in parallel relationship and defining a vertical slot between the lower portion of the rear wall and the back support member to receive the back support member of a similar bin assembly to thereby maintain the bin assemblies in a vertically stacked array.

2. A bin assembly as defined in claim 1 wherein said bin is integrally formed of an organic polymeric material.

3. A bin assembly for holding articles comprising: a generally flat horizontal bottom, a rear wall having an upper vertical portion and a lower vertical portion stepped inwardly of the upper vertical portion, a generally planar back support member having a greater vertical dimension than the rear wall, and means for readily removably attaching the back support member to the bin in engaging relation with the upper vertical portion of the rear wall, the back support member and the bin in the attached state forming a downwardly opening vertical slot between the back support member and the lower wall portion to receive the back support member of a similar bin assembly thereby to maintain the bin assemblies in a vertically stacked array.

4. A bin assembly as defined in claim 3 wherein the bin is integrally formed of an organic polymeric material.

5. A bin assembly as defined in claim 3 wherein the attaching means includes a vertically downwardly directed flange disposed on and outwardly spaced form the forward face of the back support member, and means in the bin defining an upwardly opening vertical slot to receive the flange therein.

6. A bin assembly as defined in claim 5 wherein the means in the bin defining the upwardly opening slot includes a horizontal rib extending between the upper and lower vertical portions of the rear wall.

7. A bin assembly as defined in claim 3 wherein the bin includes sidewalls, the attaching means includes a pair of forwardly directed flanges disposed on opposite lateral ends of the back support member and carrying laterally inwardly directed pins, and an opening extending between the sidewalls for receiving the pins therein.

8. A bin assembly as defined in claim 7 wherein at least the flanges disposed on the back support member are formed of a resilient material.

9. A bin assembly as defined in claim 8 wherein the pins and the opening are noncircular in cross section.

10. A bin assembly as defined in claim 3 wherein the attaching means includes at least one key attached to the rearward face of the upper vertical portion of the rear wall and having an upturned end and at least one hole in the back support member to receive the key into lockable engagement therewith.

11. A bin assembly as defined in claim 10 wherein the back support means includes a pair of laterally outwardly directed pins secured thereto adjacent a normally horizontal edge, and the bin includes sidewalls and a hole formed in each of the sidewalls for receiving the pins in pivotal engagement therewith whereby the back support member may be employed as a pivotal lid for the bin.

12. A bin assembly as defined in claim 11 wherein at least the back support member and said sidewalls are formed of a resilient material.