Abstract:
The expander collar is adapted so that when the collar is mounted on a bin the projecting portion flexes laterally away from the collar body and is adapted to flex back into place and be received in a slot on the bin when the collar body is flush with the adjacent surface of the bin. The collar effectively lengthens the sidewalls of the bin to increase the interior storage provided by the bin.
EXPANDER COLLAR FOR BINS

Field of the Invention

This invention relates generally to storage bins, and in particular bins that may be used for the storage of bottled wine.

Background of the Invention

Bins are commonly used for the storage of bottled food and beverage products as well as numerous other goods. In many wine manufacturing facilities in the wine industry today, after the wine is bottled, the bottles are stored in plastic bins in the facility. Common closures for bottles include natural or synthetic corks and screw caps. The use of screw caps for wine bottles is becoming increasingly popular over cork closures because screw caps provide improvements in preventing oxidation of the wine as compared to cork. The usage of screw caps also decreases the risk of contamination, and screw caps are easier to open than cork closures.

The preferred orientation for the storage of wine bottles is dependent on the type of closure used for the wine bottle. In order to prevent property changes of the wine, wine bottles with cork closures must be stored horizontally so that the cork remains wet and does not dry out. In contrast, wine bottles with screw cap closures are preferably stored vertically because metal caps will not degrade if they are dry and the hard metal of the caps poses a significant risk of breaking an adjacent bottle when stored horizontally.

The size of the majority of existing bins used in the wine industry are optimized to store wine bottles that are positioned in a horizontal manner within the bin. The height of the walls of existing bins are typically not high enough to efficiently accommodate wine bottles.
stored vertically and there is often a large amount of space that remains empty at the top of the bin because there is not enough clearance for an additional row of wine bottles.

Accordingly, it is desirable to have an expander collar which increases the height of a bin in order to increase the storage capacity of a bin when wine bottles are stored vertically within the bin or otherwise.

It is an object of the present invention to provide an expander collar that increases the storage capacity of a bin.

Yet another object of the present invention is to provide an expander collar that increases the height of a bin in order to provide optimal dimensions for efficiently storing wine bottles in a vertical manner.

It is another object of the present invention to provide an expander collar that easily attaches to a bin in a secure manner.

A further object of the present invention is to provide an expander collar that is efficient and cost effective to manufacture.

Summary of the Invention

The foregoing objects are met by the present invention directed to an improved expander collar for bins having a predetermined length, width, and height. The expander collar is dimensioned to have a length and width that is substantially identical to the length and width of the bin. The collar body has a height which is sufficient to increase the volume of the bin as desired. The expander collar also has snap fastening securement means for fixedly securing the collar to the bin.

The snap fastening securement comprises a plurality of tabs which each have a projecting portion that is dimensioned to extend from the collar body to the bin, and a
locking portion which is dimensioned to be received in the slot of the bin. The expander collar is adapted so that when the collar is mounted on a bin the projecting portion flexes laterally away from the collar body and is adapted to flex back into place and be received in a slot on the bin when the collar body is flush with the adjacent surface of the bin. This provides a secure fastening of the collar to the bin and the collar effectively lengthens the sidewalls of the bin to increase the interior storage provided by the bin. The expander collar also features corner gussets adapted to support feet from a bin so that a bin may be stacked on top of the collar.

The expander collar significantly increases the storage capacity of bins in a wine manufacturing facility and decreases the facility space needed to house the wine bottles.

The expander collar is preferably a one-piece, unitary construction which may be fabricated out of a thermoplastic material and made from conventional molding techniques or a like process.

Description of the Drawings

The above and other objects, features and advantages of the present invention will become apparent from the following description of a preferred but, nonetheless, illustrative embodiment of the invention, taken in conjunction with the accompanying drawings, wherein:

FIG. 1 provides a perspective view of the expander collar;

FIG. 2 provides a perspective view of the expander collar secured to a bin;

FIG. 3 provides an exploded perspective view of the expander collar secured to a bin and having a bin stacked on the expander collar;

FIG. 4a provides a sectional side view of the expander collar flexing as it is being mounted on a bin;
FIG. 4b provides a side sectional view of the expander collar mounted on a bin; and FIG. 5 provides a side sectional view of wine bottles stacked in a bin having a expander color mounted thereon.

Detailed Description of the Preferred Embodiments

With particular reference to the drawings, the present invention is directed to an expander collar 20 for bins 2 that are commonly used in the wine manufacturing industry. As shown in Fig. 2, the bins 2 have a rectilinear shape comprising a predetermined length, width, and height, and a rectilinear bottom 10. As an example, one known bin has a height of 775 mm, a length of 1220 mm, and a width of 1220 mm. The bin 2 also has rectilinear sidewalls 12 which feature a plurality of slots 14. The slots 14 are commonly near the top 16 of the bin but may be on other portions of the sidewalls as well. The bin 2 also has a plurality of feet 18.

The expander collar 20 of the present invention comprises a collar body 22. The collar body 22 preferably is dimensioned to have a length and width that is substantially identical to the length and width of the bin. The collar body 22 also has a height 28 which is sufficient to increase the volume of the bin 2 as desired. The expander collar 20 also has snap fastening securement means 30 for fixedly securing the collar 20 to the bin 2. The snap fastening securement means 30 preferably comprises a plurality of tabs 32 which each have a projecting portion 34 that is dimensioned to extend from the collar body 22 to the bin 2. In the embodiment shown in Fig. 1, the snap fastening securement means 30 comprises two tabs 32 spaced apart from each other on each side of the collar body 22 for a total of eight tabs.

In Figs. 1-5 the projecting portions 34 are perpendicular to the collar body 22 and extend downwardly below the collar body. The projecting portion 34 comprises a generally
rectangular shaped arm. The snap fastening securement means 30 also includes a locking portion 36 which is dimensioned to be received in the slot 14 of the bin. In the embodiment shown in Figs. 1, 4a and 4b, the locking portion 36 comprises a rectangular notch having a rectilinear front face 38 which slopes upwardly approximately 30° and has a planar top 40. As shown in Fig. 4a, the locking portion 36 is adapted so that when the collar 20 is mounted on a bin 2, the sloping front face 38 contacts the bin sidewalls 12 and causes the projecting portion 34 to flex laterally away from the collar body 22. The projecting portion preferably extends a length below the collar body 22 which is equal to the distance that the receiving slot 14 is below the top of the bin so that there is no gap between the bottom of the collar 22a and the top of the bin 3 when the collar 20 is mounted on the bin 2. In this embodiment, the collar 20 is adapted to be securely fastened to the bin 2 by the user moving together the collar body 22 and the bin 2 so that the collar body and the sidewall 12 of the bin form a continuous rectilinear surface. As shown in Fig. 4b, when the collar body 22 and the bin 2 are moved together, the locking portion 36 reaches the slots 14 on the bin and the projecting portion 34 is quickly flexed back to its initial position in order to fixedly secure the collar to the bin. When the expander collar 20 is mounted on the bin 2, the height of the collar body effectively lengthens the sidewalls 12 of the bin when secured to the bin to increase the interior storage provided by the bin 2. The locking portion 36 forms a male member and the slot 14 forms a female member which matingly receives the locking portion in order to restrict the collar’s 20 vertical and horizontal movement and securely fasten the collar 20 to the bin 2.

The expander collar 20 preferably has a height 28 that is sufficient to provide optimal storage capacity for wine bottles that are stored vertically within the bin. In one embodiment, the collar body 22 has a height of 60 mm, a length of 1220 mm, and a width of 1220 mm. The collar body 22 has a pair of tabs 32 spaced apart approximately 448 mm on each side of the collar body. The tabs 32 each have a projecting portion 34 which extends a length of 65
mm from the collar body. However, the dimensions of the expander collar 20 may be altered as necessary to fit a particular bin of a predetermined size. Additionally, while the bins 2 are disclosed specifically for storage of bottled wine, the expander collar 20 is particularly useful for increasing the volume of bins which hold a wide variety of other goods that are bottled with screw caps, including but not limited to, olive oil and pisco.

The expander collar 20 also features corner gussets 42 adapted to support feet 18 from a bin so that a bin 2 may be stacked on top of the collar 20 installed on another bin. As shown in Fig. 3, the stackability of the bins having collars further adds to the convenience and effectiveness of the collar’s improvement of the storage capabilities of the bin.

The expander collar 20 significantly increases the storage capacity of bins in a wine manufacturing facility. For instance, in the example shown in Table 1, the use of an expander collar on a bin results in an increase of 210 wine bottles with screw caps stored in a vertical manner per bin. The use of the expander collars 20 provided the wine manufacturing facility in Table 1 with an increased storage capacity of over 300,000 bottles when screw top bottles comprise approximately 48.3% of the wine bottles at the facility. The use of collars on the bins also results in a significant reduction in the space needed to house the wine bottles.

**TABLE 1**

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total Number of Bins</td>
<td>2,958</td>
</tr>
<tr>
<td>Total Number of Bins For Screw Cap Wine Bottles</td>
<td>1,429</td>
</tr>
<tr>
<td>Current Capacity for Bins For Storing Screw Cap Wine Bottles</td>
<td>1,429 x 300=428,700</td>
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<tr>
<td>Capacity for Bins Having Expander Collar For Storing Screw Cap Wine Bottles</td>
<td>1,429 x 510= 728,790</td>
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The collar 20 is adapted to be easily removed by the user by moving the locking portion 36 of each tab 32 away from the slot 14 and flexing the projecting portion 34 laterally away from the collar body 22 to unlock the snap fastening securement means 30. Once the snap fastening securement means 30 are unlocked, the collar 20 is no longer secured to the bin 2 and can be easily removed from the bin 2 by the user. Accordingly, the collar 20 is adapted to allow the user to easily attach or remove the collar 20 as necessary so that the bin 2 can be used for different purposes such as for storage of screw cap bottles vertically or storage of cork bottles horizontally.

The expander collar 20 is preferably fabricated out of a thermoplastic material and is made from conventional molding techniques or a like process so that the expander collar 20 is formed in one integral, unitary piece. Examples of suitable thermoplastic materials that may be utilized include acrylic, acrylonitrile-butadiene-styrene (ABS), polypropylene, and polystyrene.

While the invention has been shown and described with reference to certain preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.
What is claimed is:

1. A one-piece, thermoplastic, molded expander collar for increasing the volume of a bin having a predetermined length, width, and height, said bin having a rectilinear bottom, rectilinear sidewalls having a plurality of slots, and feet, said expander collar comprising:
   
a collar body having a length and width that is substantially identical to the length and width of the bin;

   snap fastening means for securing the collar to said first bin comprising a plurality of tabs each having a projecting portion which is dimensioned to extend from said collar body to said first bin and a locking portion which is dimensioned to extend from said projecting portion to a slot on said bin and dimensioned to be received in said slot;

   wherein said projecting portion of the tabs has sufficient flexibility to permit the tabs to be laterally displaced when the expander collar is initially mounted on a bin and to return to its initial position when the projection is received in the slot on the bin;

   wherein the collar body has a height that is sufficient to increase the volume of the bins for providing increased capacity.

   corner gussets adapted to receive feet of a bin to allow the bin to be stacked on top of said expander collar.

2. The expander collar of claim 1 wherein said collar body has a height that is sufficient to allow a plurality of wine bottles to be stored vertically in the bin in a highly efficient manner.
1. A one-piece, thermoplastic, molded expander collar for increasing the volume of a first bin having a predetermined length, width, and height, said first bin having a rectilinear bottom, rectilinear sidewalls having a plurality of slots, and feet, said expander collar comprising:

   a collar body having a length and width that is substantially identical to the length and width of the first bin;

   snap fastening means for securing the collar to said first bin comprising a plurality of tabs each having a projecting portion which is dimensioned to extend from said collar body to said first bin and a locking portion which is dimensioned to extend from said projecting portion to a slot on said first bin and dimensioned to be received in said slot;

   wherein said projecting portion of the tabs has sufficient flexibility to permit the tabs to be laterally displaced when the expander collar is initially mounted on the first bin and to return to its initial position when the locking portion is received in the slot on the first bin;

   wherein the collar body has a height that is sufficient to increase the volume of the first bin for providing increased storage capacity

   corner gussets which are dimensioned to receive feet of a second bin to allow the second bin to be securely stacked on top of said expander collar.

2. The expander collar of claim 1 wherein said collar body has a height that increases storage capacity of the first bin in an amount which allows a plurality of wine bottles to be stored vertically in the bin in a highly efficient manner and minimizes the amount of empty space inside the first bin when the wine bottles are stored in the first bin to full capacity.
3. The expander collar of claim 1 wherein said projecting portion of the snap fastening means is positioned adjacent to an exterior portion of the first bin when the locking portion is received in the slot on the first bin.

4. The expander collar of claim 1 wherein said corner gussets are positioned below a top of the expander collar body wherein a wall is formed around an outer perimeter of the corner gussets to prevent the feet of the second bin from being displaced.
# INTERNATIONAL SEARCH REPORT

**International application No.**
PCT/US2012/065270

## A. CLASSIFICATION OF SUBJECT MATTER

### IPC(8) - B65D 6/24 (2013.01)

USPC - 220/4.03

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

- IPC(8) - B65D 6/24 (2013.01)
- USPC - 206/427, 5 11; 217/12, 13; 220/1.5, 4.03, 4.33, 4.34

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

- CPC - B65D 1/243 (2013.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patents

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td>X</td>
<td>US 4,998,967 A (BOX) 12 March 1991 (12.03.1991) entire document</td>
<td>1, 2</td>
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<tr>
<td>A</td>
<td>US 4,723,679 A (SINCHOK et al) 09 February 1988 (09.02.1988) entire document</td>
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<td>A</td>
<td>US 7,886,926 B2 (ORGELDINGER) 15 February 2011 (15.02.2011) entire document</td>
<td>1, 2</td>
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<tr>
<td>A</td>
<td>US 4,974,737 A (MILLER) 04 December 1990 (04.12.1990) entire document</td>
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Further documents are listed in the continuation of Box C.

* Special categories of cited documents:
  - "A" document defining the general state of the art which is not considered to be of particular relevance
  - "E" earlier application or patent but published on or after the international filing date
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  - "O" document referring to an oral disclosure, use, exhibition or other means
  - "P" document published prior to the international filing date but later than the priority date claimed
  - "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  - "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  - "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
  - "&" document member of the same patent family

**Date of the actual completion of the international search**
11 January 2013

**Date of mailing of the international search report**
05 FEB 2013

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