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(54) **BAG SUPPORT FOR RECYCLING CENTER**

Publication Classification

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(57) **ABSTRACT**

A bag support is provided for supporting a pliable bag. The bag support includes a first bar extending along a first axis. The first bar includes multiple bag retainers axially spaced therealong. Each bag retainer supports the upper portions of corresponding bags. A second bar extends along a second axis generally parallel to the first axis and includes multiple bag retainers axially spaced therealong. Each bag retainer of the second bar supports the upper portions of corresponding bags. A support structure is operatively connected to the first and second bars for supporting the first and second bars.

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Related U.S. Application Data

(63) Continuation of application No. 12/025,298, filed on Feb. 4, 2008, now Pat. No. 7,624,915, Continuation of application No. 12/025,313, filed on Feb. 4, 2008.

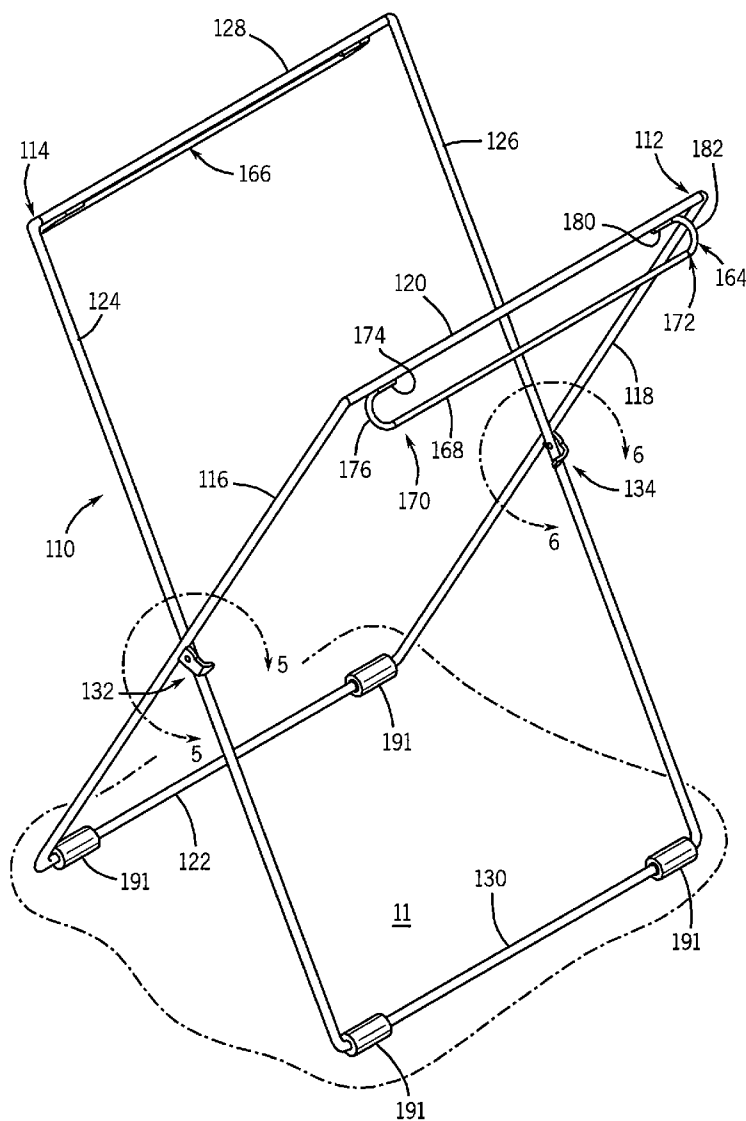
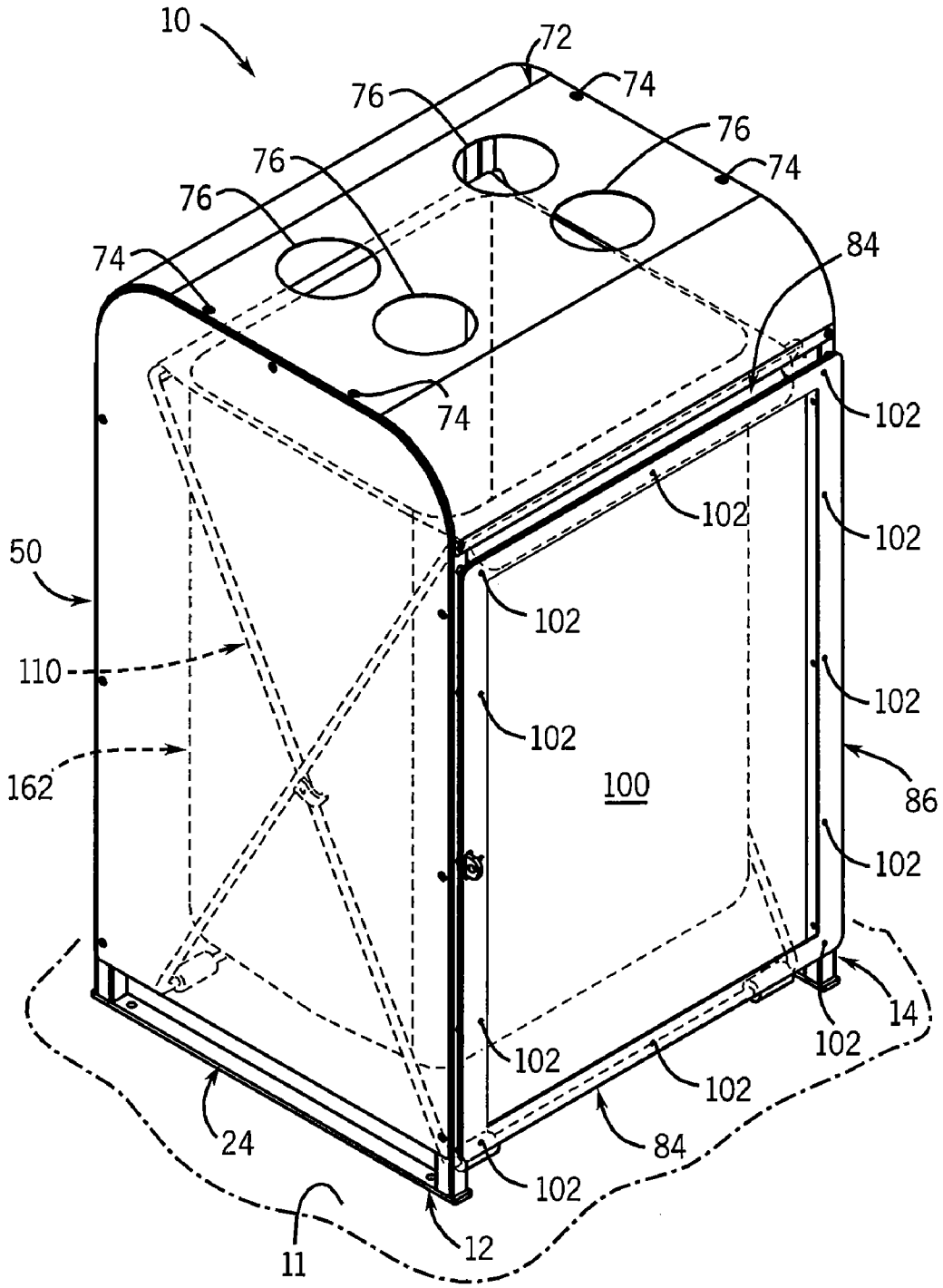


FIG. 1



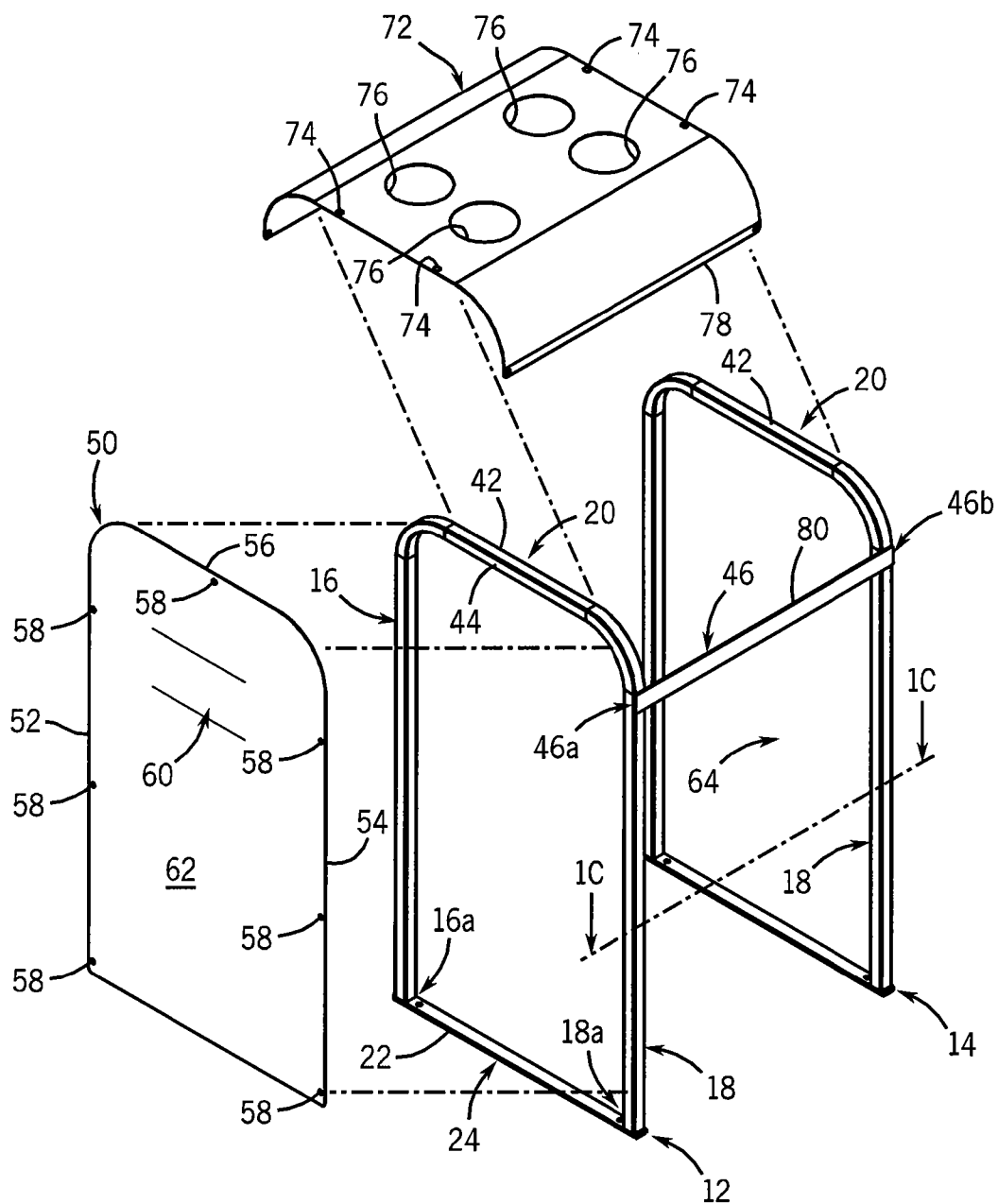


FIG. 1B

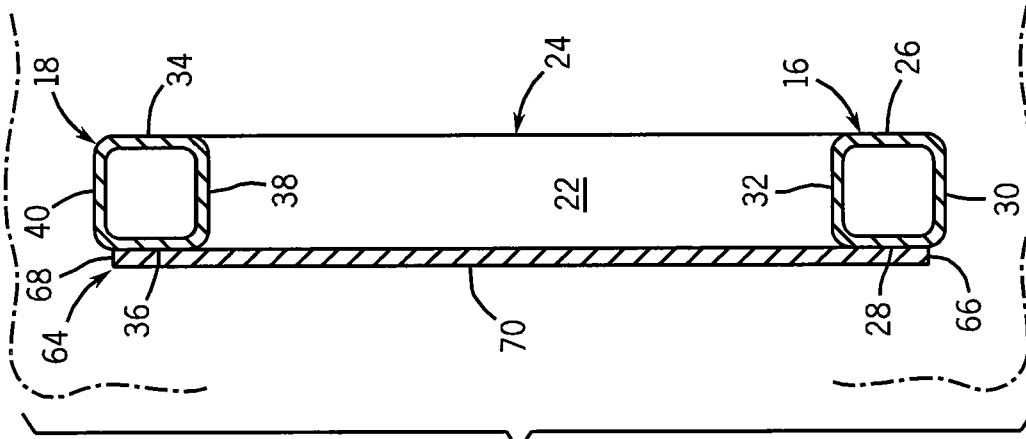
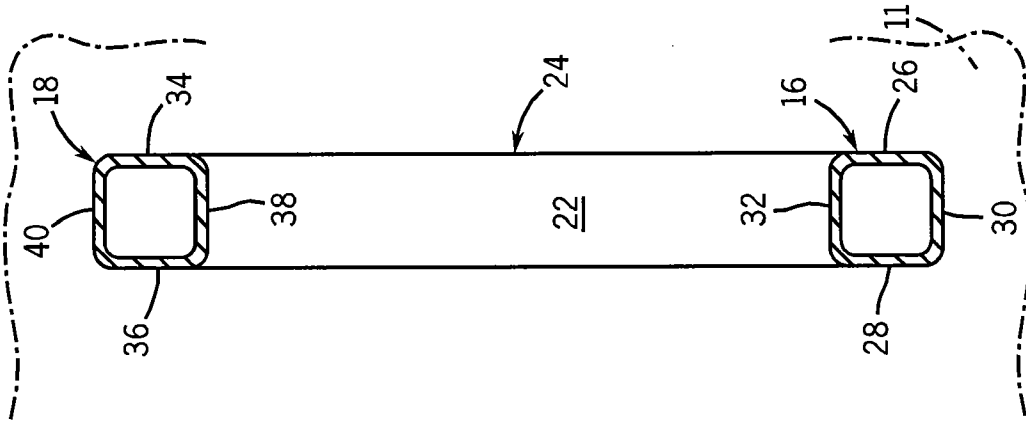


FIG. 1C

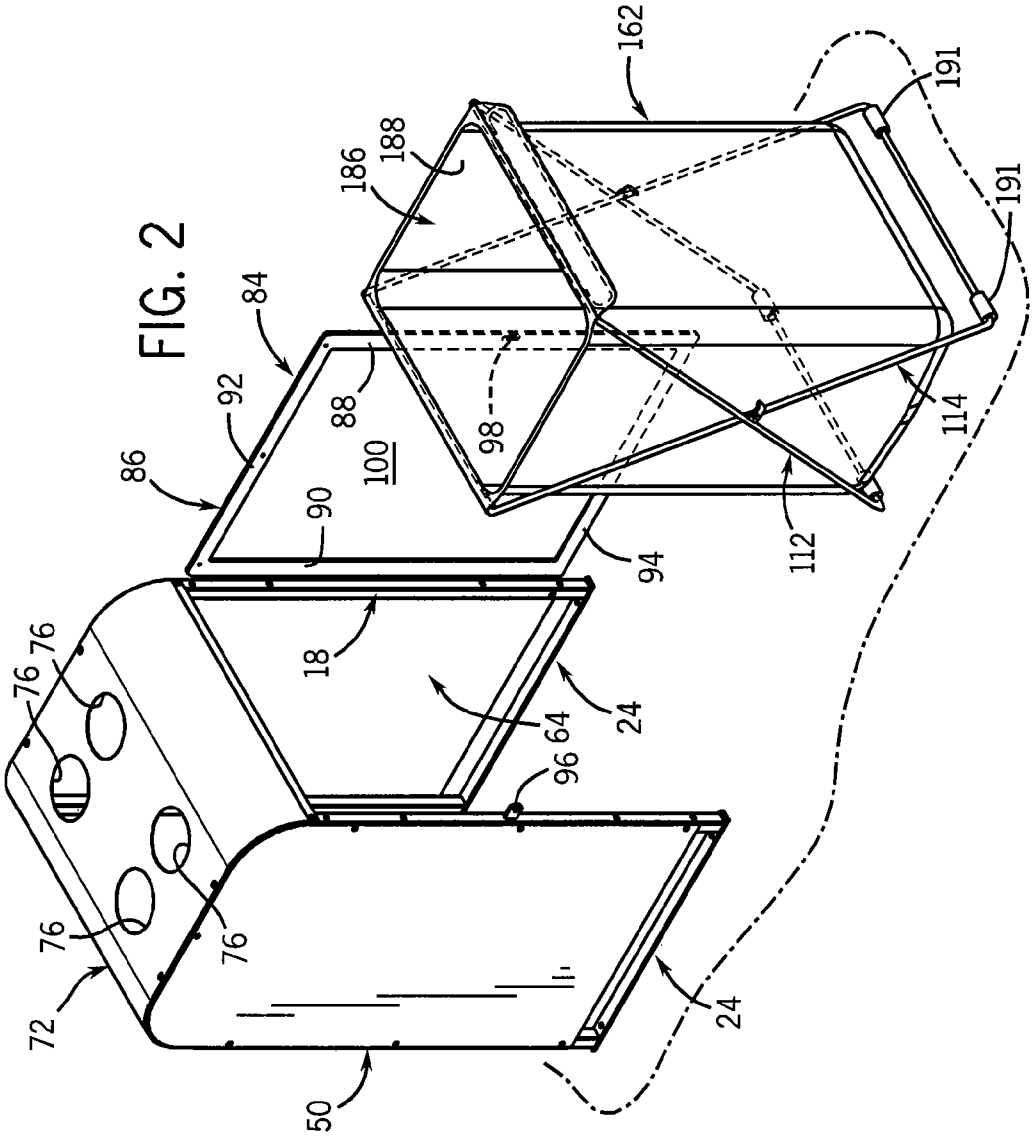
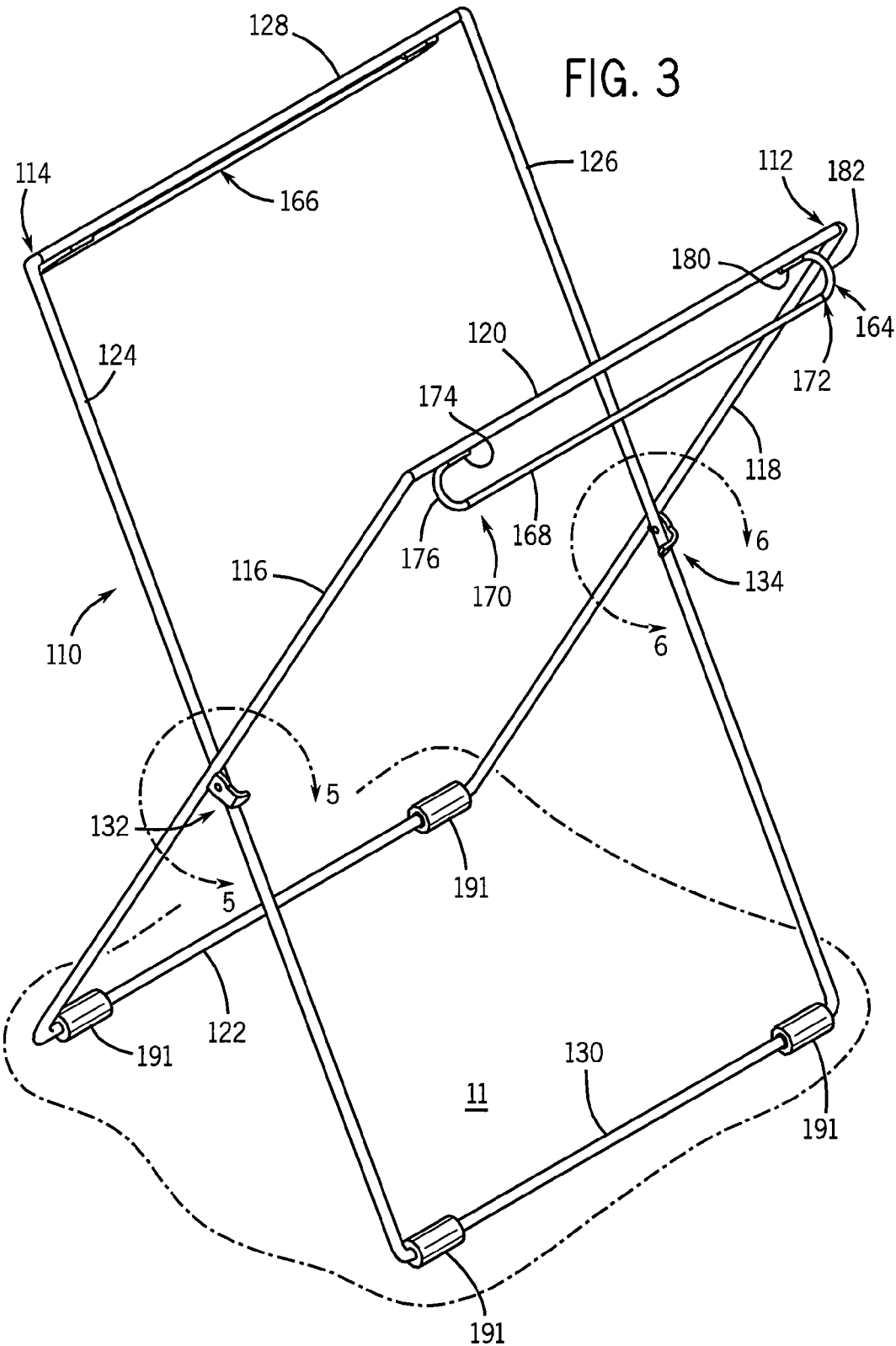


FIG. 3



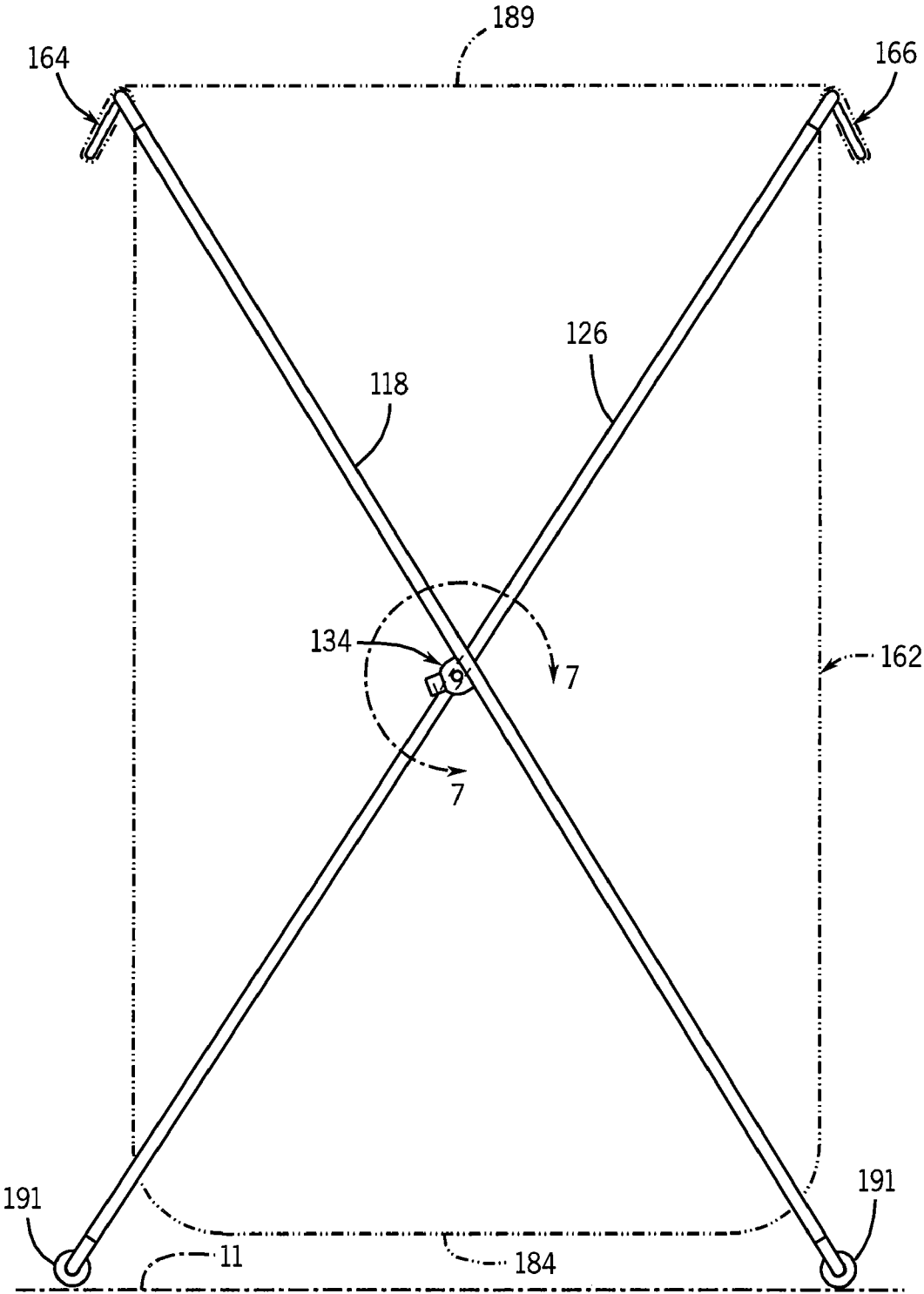


FIG. 4

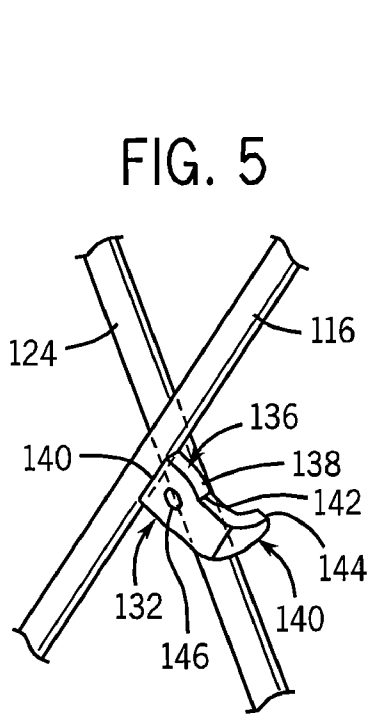


FIG. 5

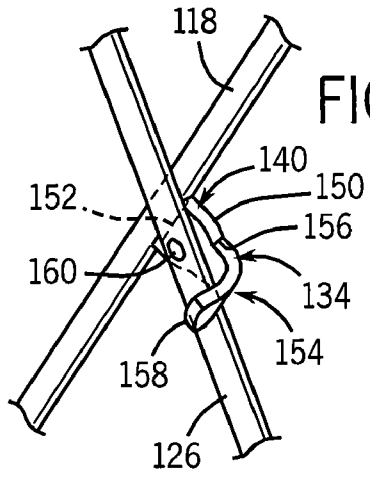


FIG. 6

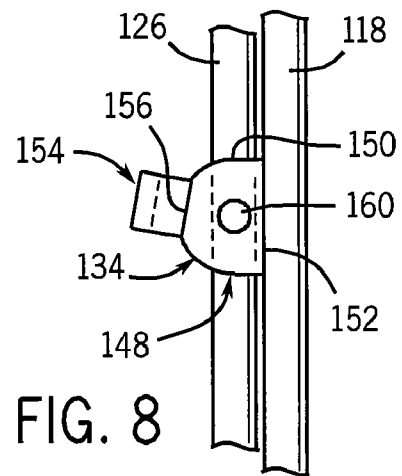


FIG. 8

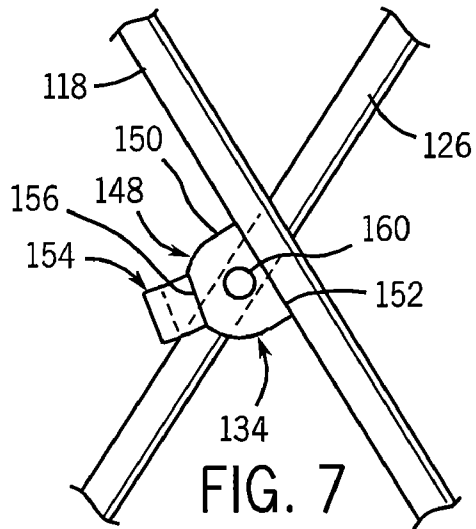


FIG. 7

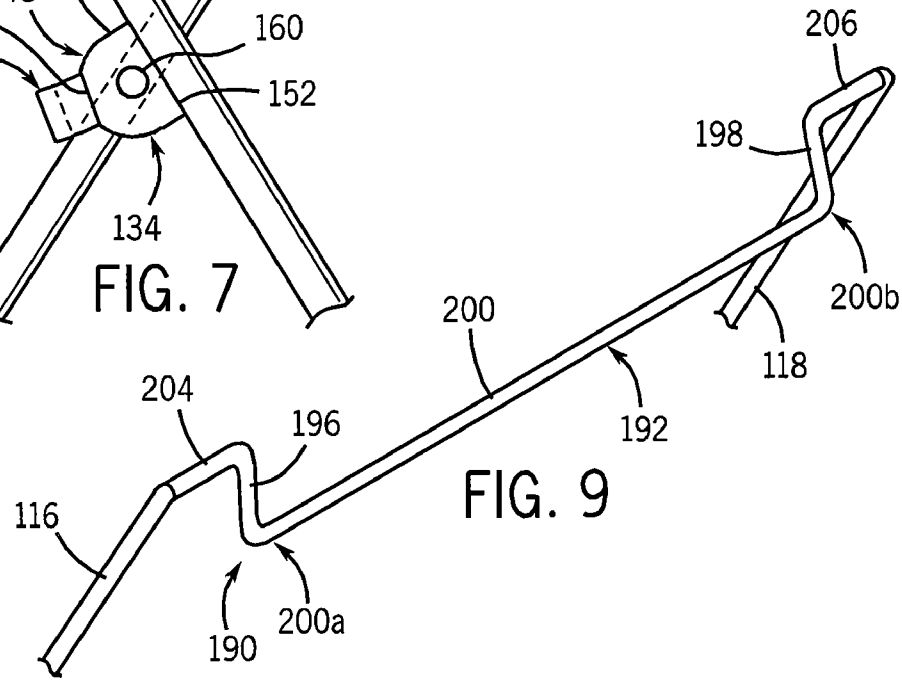


FIG. 9

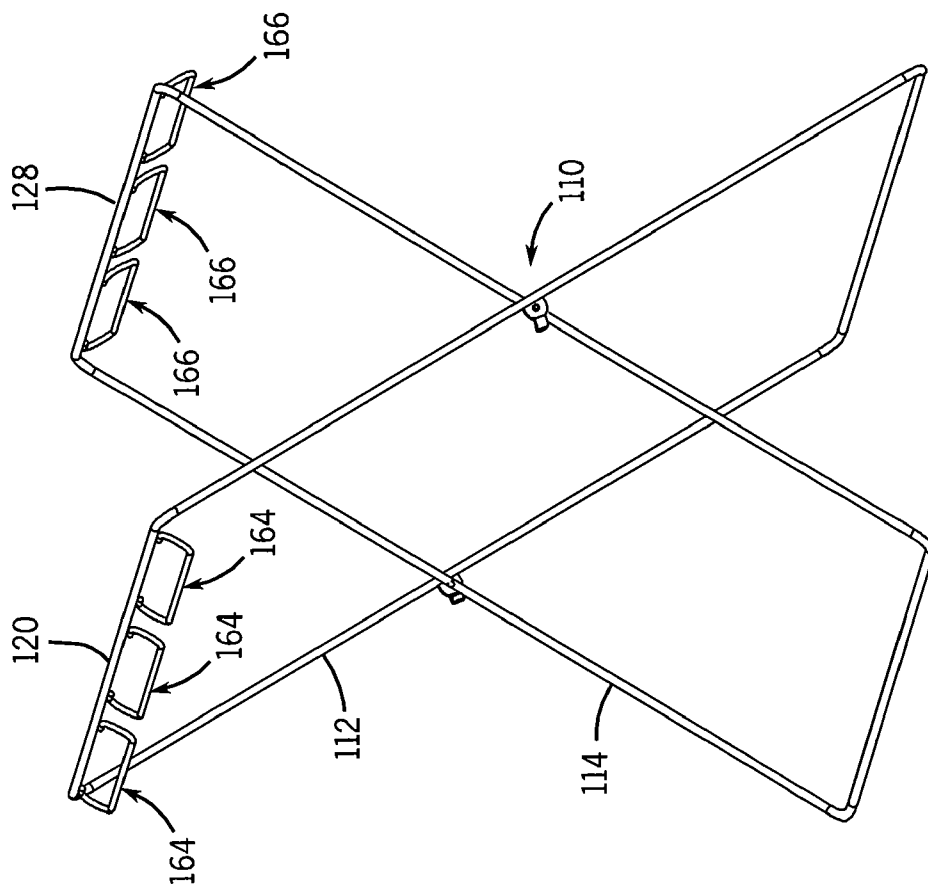


FIG. 10

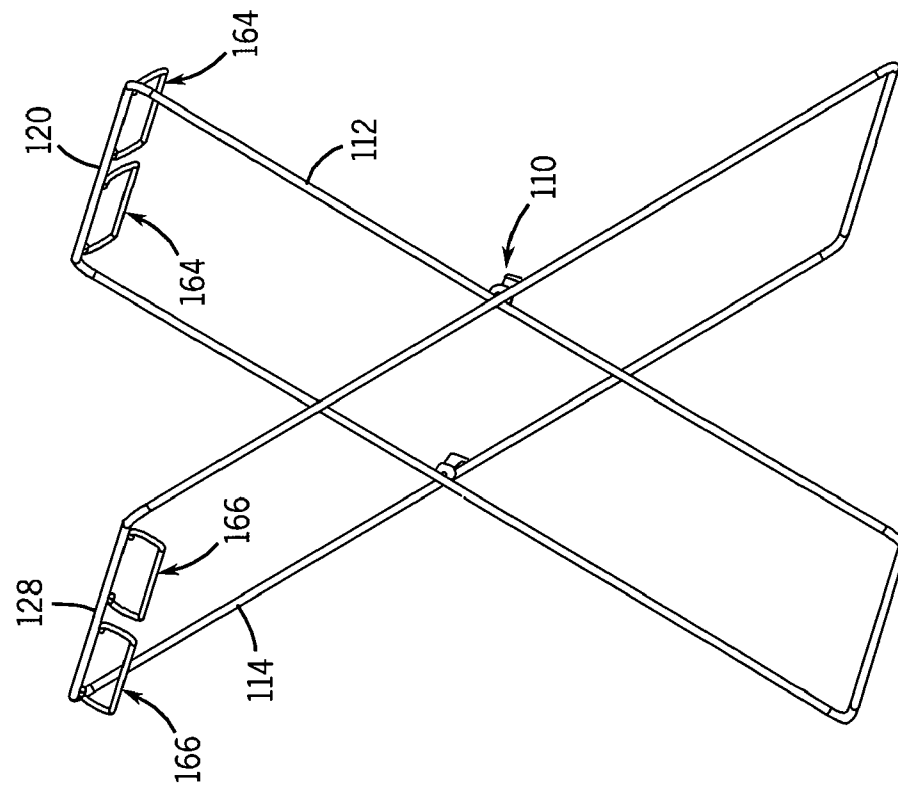
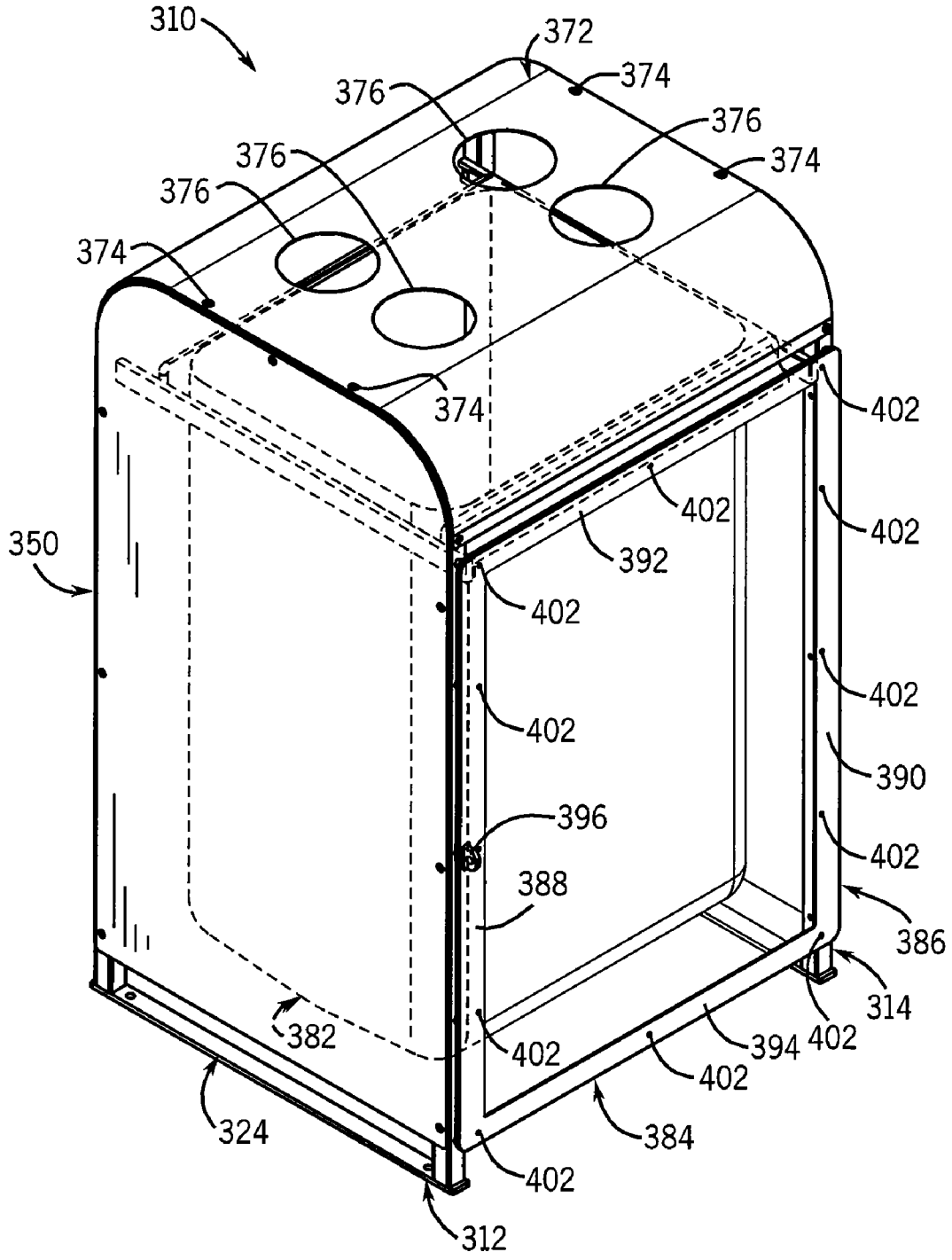


FIG. 11

FIG. 12



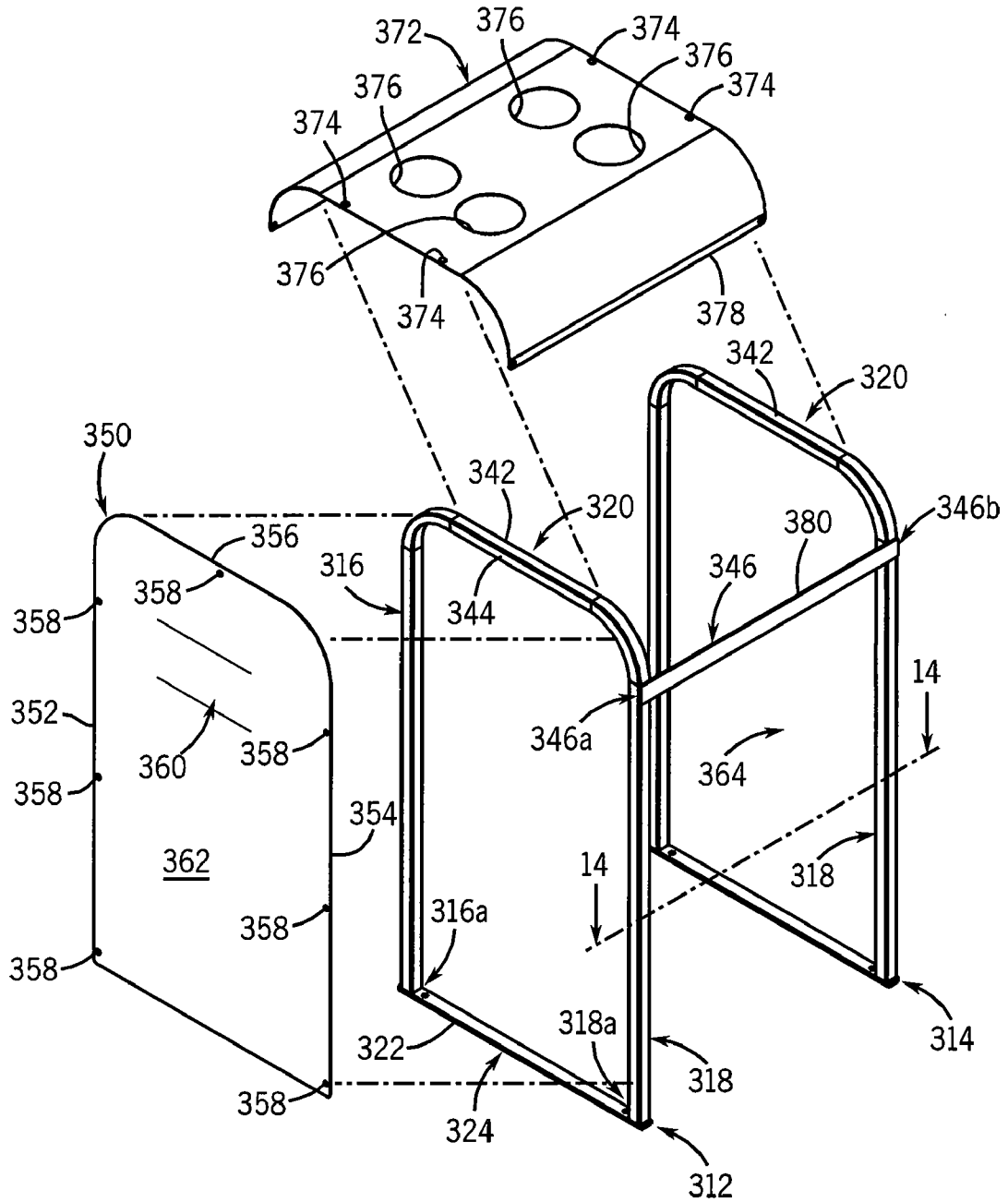


FIG. 13

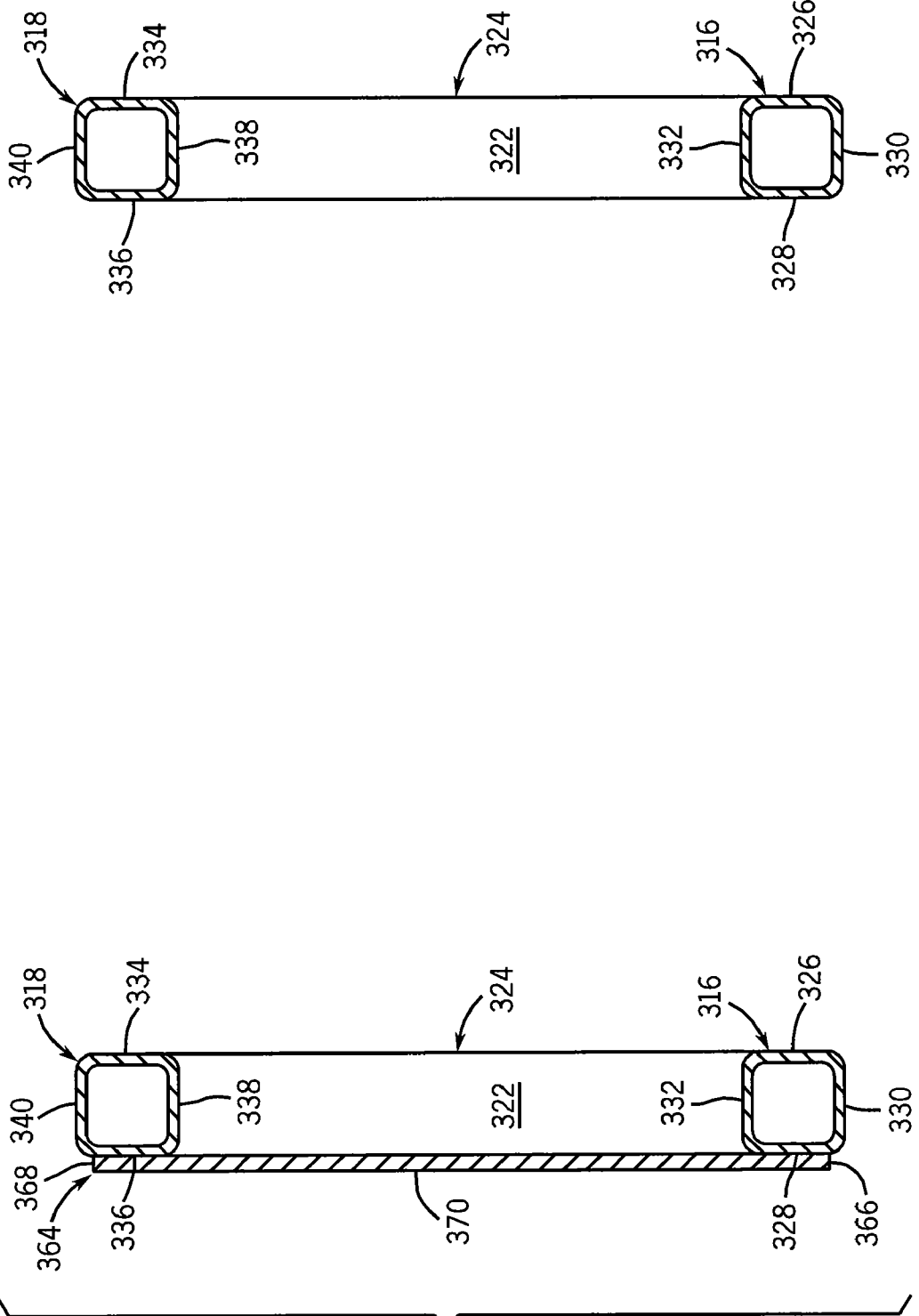
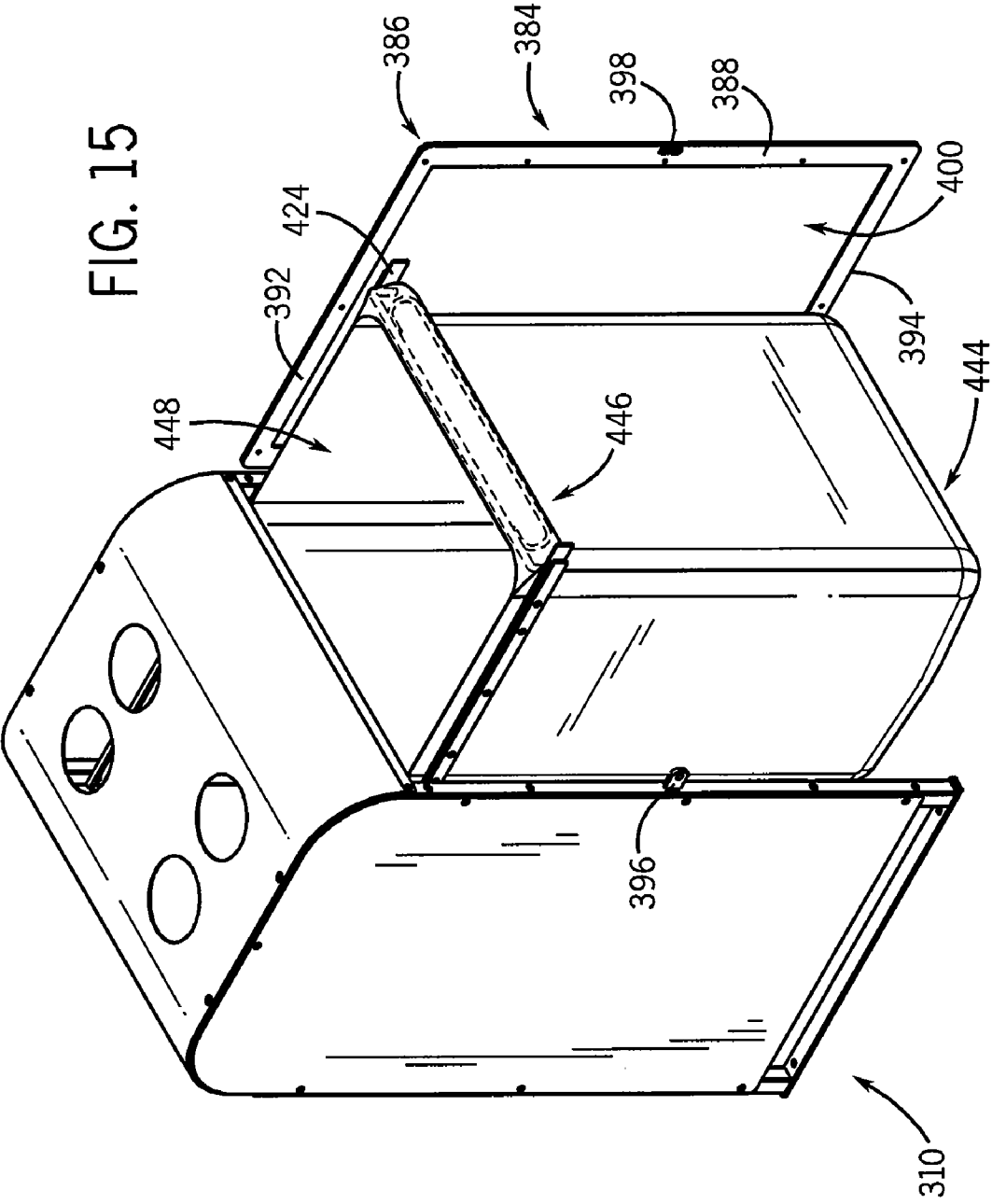


FIG. 14

FIG. 15



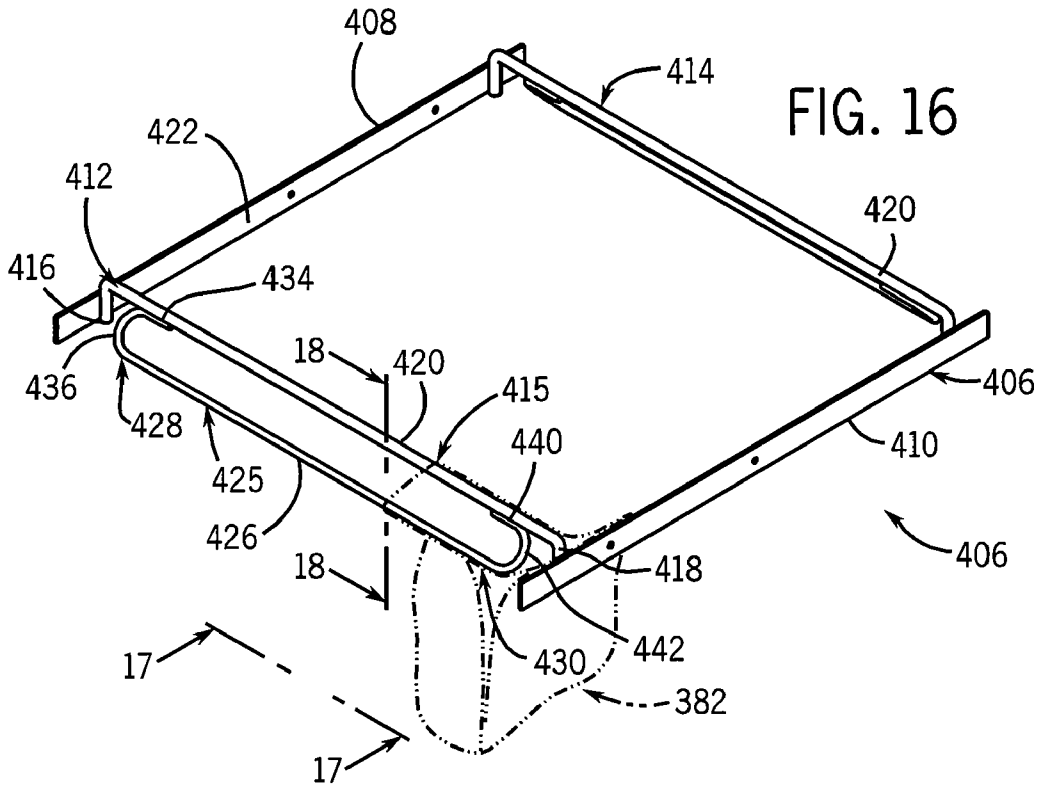


FIG. 16

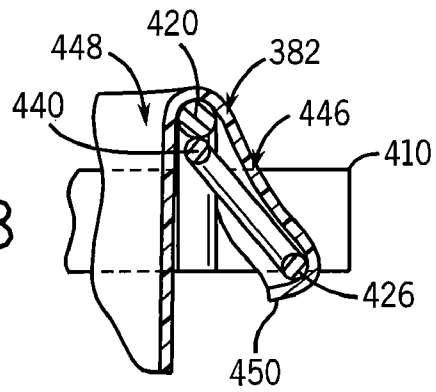


FIG. 18

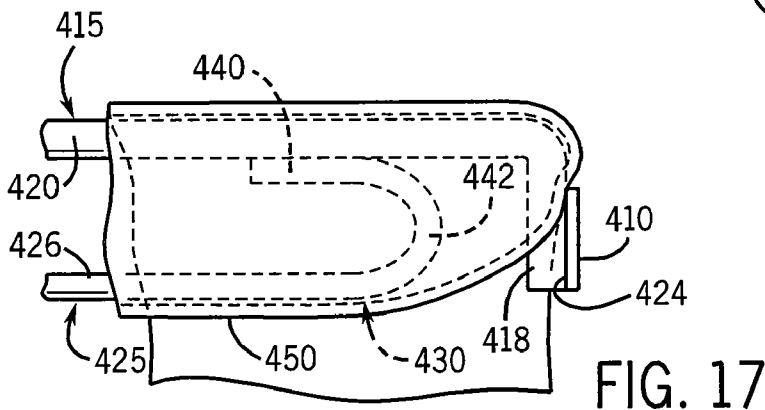
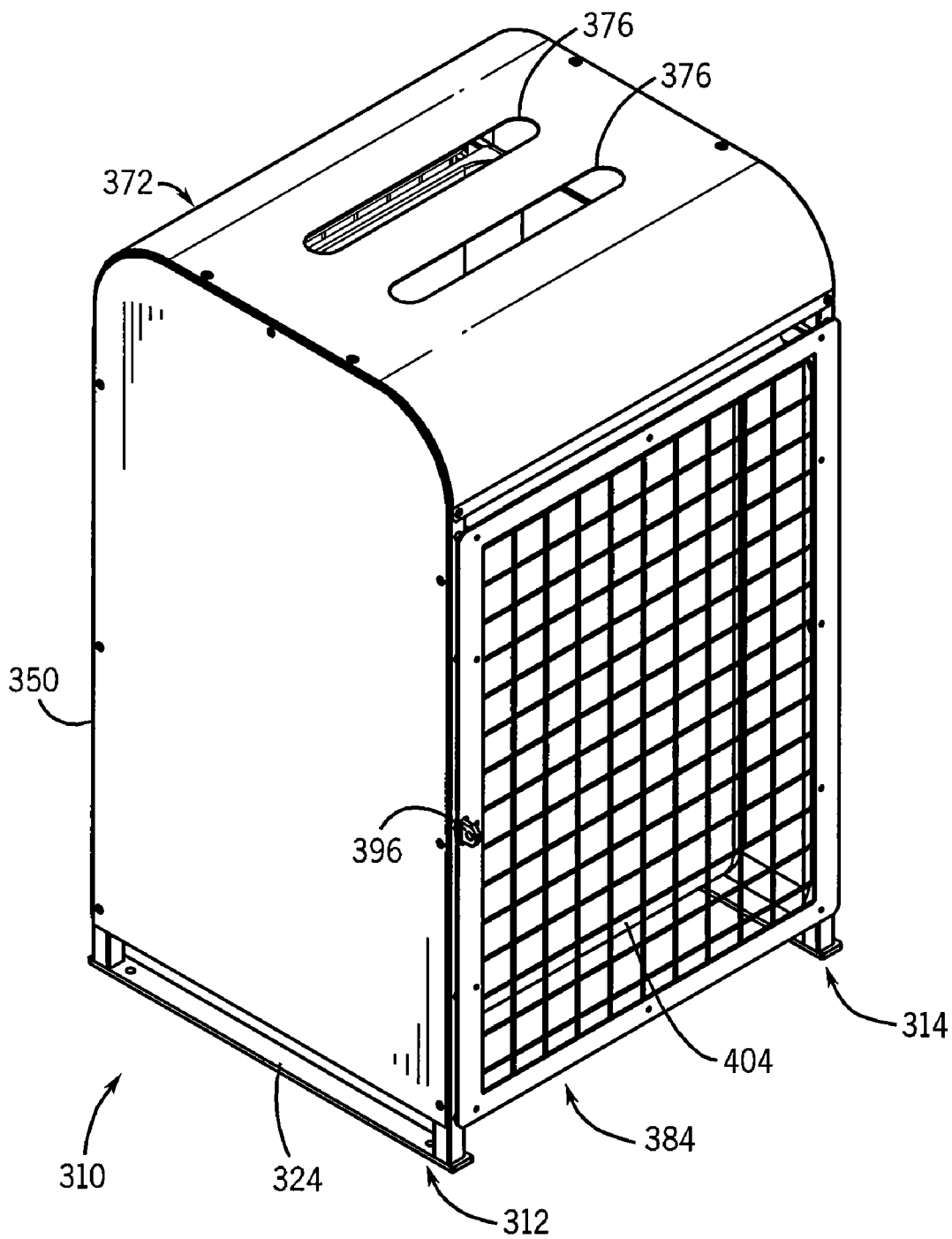
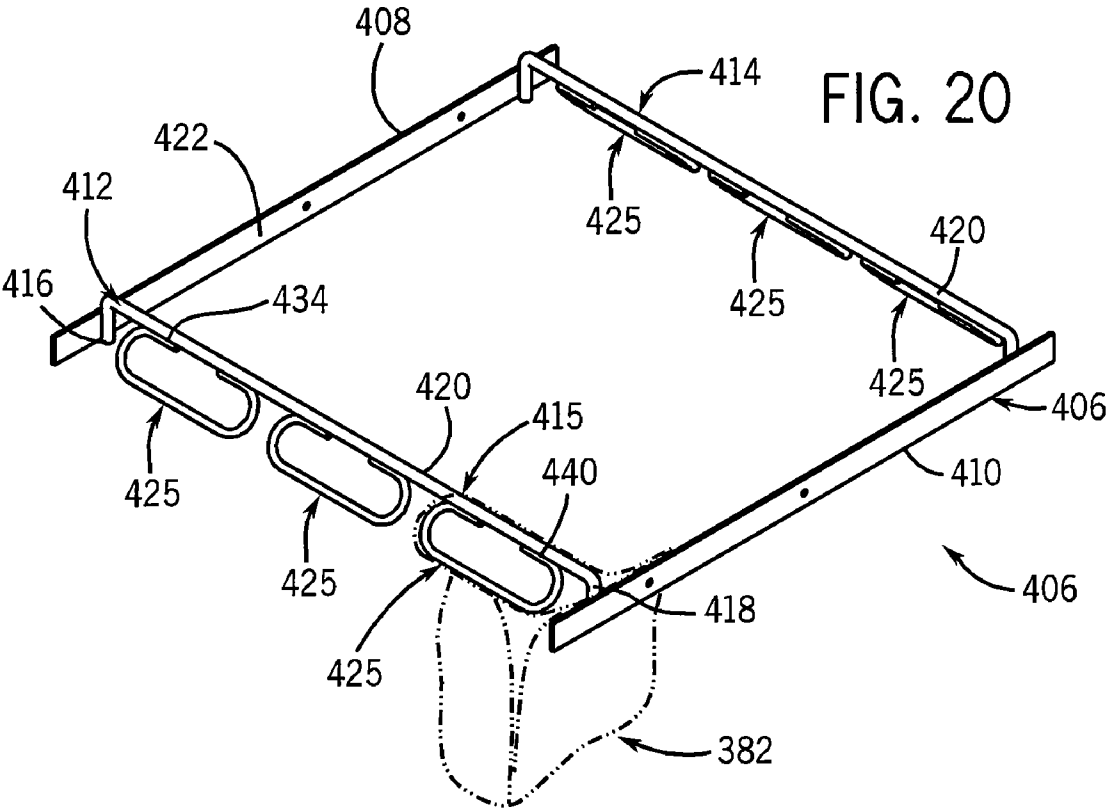


FIG. 17

FIG. 19





BAG SUPPORT FOR RECYCLING CENTER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of application Ser. No. 12/025,298 filed Feb. 4, 2008, and application Ser. No. 12/025,313 filed Feb. 4, 2008.

FIELD OF THE INVENTION

[0002] This invention relates generally to recycling centers, and in particular, to a bag support receivable within the interior of a modular recycling center for supporting a conventional plastic bag in an open position.

BACKGROUND AND SUMMARY OF THE INVENTION

[0003] As is known, the United States produces over 250 million tons of municipal solid waste each year. This number represents approximately 4.6 pounds of waste per person per day. A large portion of this waste is hauled away in garbage trucks and packed into sanitary landfills. As a result, landfilling has become the number disposing trash in the United States. However, most of the material disposed of in landfills is recyclable. Hence, in order to reduce the volume of waste disposed of in landfills, Americans have turned to recycling. It has been found that recycling benefits the environment at every stage in the life cycle of a consumer product, from the raw material used to make the product, to the final method of disposal. In order to encourage recycling, many public facilities have started to position recycling bins throughout their premises.

[0004] Typically, a recycling bin is defined by a housing having a plurality of openings or slots that provide access to the interior of the housing. A pliable bag is positioned within the interior of the housing to receive any recyclable material deposited in the openings or slots thereof. It can be appreciated that various types of bag holders have been developed to maintain the openings in the pliable bags in desired positions within the housings. By way of example, Mutert, U.S. Pat. No. 7,032,868 discloses a bag stand for supporting a bag during filling of the bag. More specifically, the bag stand includes first and second legs pivotable with respect to one another about a pivot axis. The first and second legs pivot between a first position wherein the first and second legs are substantially aligned with respect to each other for storage and a second position wherein the first and second legs are transverse with respect to each other in order to receive a bag. The upper portions of the first and second legs of the bag stand include excurvate portions adapted for receiving the upper edge of a bag and for a bag support receivable within the interior of a modular recycling center for supporting a conventional plastic bag in an open position.

[0005] While functional for their intended purpose, these prior bag supports have certain shortcomings. By way of example, the bag support disclosed in the '868 patent requires the upper edge of the bag to be weaved through various bends in the first and second legs in order to maintain the bag in position. It can be appreciated that it is often difficult for a user to properly interconnect the upper edge of the bag to the excurvate portions of the first and second legs. Hence, it is highly possible for the pliable bag to be disengaged from the bag stand during filling. If the pliable bag becomes disengaged from the bag stand, any recyclable material deposited

in the openings or slots in the housing of the recycle bin may fall outside of the bag, thereby causing a mess within housing.

[0006] Therefore, it is a primary object and feature of the present invention to provide a bag support receivable within the interior of a modular recycling center for supporting a conventional plastic bag in an open position during the filling of the bag.

[0007] It is a further object and feature of the present invention to provide a bag support receivable within the interior of a modular recycling center for supporting a conventional plastic bag in an open position that is simple to utilize and inexpensive to manufacture.

[0008] It is a still further object and feature of the present invention to provide a bag support that may be easily inserted into the interior of a modular recycling center.

[0009] In accordance with the present invention, a bag support is provided for supporting upper portions of bags. The bag support includes a cross bar extending along a first axis and a bag support bar extending along a second axis. The second axis is generally parallel to the first axis and the bag support bar includes multiple bag retainers axially spaced therealong. Each bag retainer supports the upper portions of corresponding bags. A support structure is operatively connected to the cross bar and the bag support bar for supporting the cross bar and the bag support bar.

[0010] Each of the multiple bag retainers has first and second ends. The first end of each of the multiple bag retainers is generally C-shaped and the second end of each of the multiple bag retainers is generally C-shaped. The cross bar may also include multiple bag retainers axially spaced therealong. Each bag retainer of the cross bar supports the upper portions of corresponding bags. Each of the multiple bag retainers of the cross bar has first and second ends. The first end of each of the multiple bag retainers of the cross bar is generally C-shaped and the second end of each of the multiple bag retainers of the cross bars is generally C-shaped.

[0011] The support structure includes first and second rails. The first and second rails have first and second opposite ends and are generally parallel to each other. The support structure includes a housing having first and second sidewalls and defining a recycle receiving chamber therein. The first rail is slidably mounted to the first sidewall. The first rail has a forward end and a rear end. The second rail is slidably mounted to the second sidewall. The second rail has a forward end and a rear end. The cross bar extends between the rear ends of the first and second rails. The bag support bar extends between the forward ends of the first and second rails. Each of the multiple bag retainers lies in a common plane.

[0012] In accordance with a further aspect of the present invention, a bag support is provided. The bag support includes a first bar extending along a first axis. The first bar includes multiple bag retainers axially spaced therealong. Each bag retainer supports the upper portions of corresponding bags. A second bar extends along a second axis generally parallel to the first axis and includes multiple bag retainers axially spaced therealong. Each bag retainer of the second bar supports the upper portions of corresponding bags. A support structure is operatively connected to the first and second bars for supporting the first and second bars.

[0013] Each of the multiple bag retainers of the first bar has first and second ends. The first end of each of the multiple bag retainers is generally C-shaped and the second end of each of the multiple bag retainers is generally C-shaped. Each of the multiple bag retainers of the second bar has first and second

ends. The first end of each of the multiple bag retainers of the cross bar is generally C-shaped and the second end of each of the multiple bag retainers of the cross bars is generally C-shaped. The support structure includes first and second rails. The first and second rails have first and second opposite ends and are generally parallel to each other.

[0014] The support structure includes a housing having first and second sidewalls defining a recycle receiving chamber therein. The first rail is slidably mounted to the first sidewall. The first rail has a forward end and a rear end. The second rail is slidably mounted to the second sidewall. The second rail has a forward end and a rear end. The first bar extends between the rear ends of the first and second rails. The second bar extends between the forward ends of the first and second rails. Each of the multiple bag retainers of the first bar lies in a first common plane and each of the multiple bag retainers of the second bar lies in a second common plane

[0015] In accordance with a still further aspect of the present invention, a bag support is provided. The bag support includes a support structure and a first bar operatively connected to the support structure. The first bar extends along a first axis. A second bar is operatively connected to the support structure and extends along a second axis generally parallel to the first axis. A first plurality of bag retainers extends from the first bar. Each of the first plurality of bag retainers has first and second ends. A second plurality of bag retainers extend from the second bar. Each of the second plurality of bag retainers has first and second ends.

[0016] The first ends of the first plurality of bag retainers are generally C-shaped and the second ends of the first plurality of bag retainers are generally C-shaped. Similarly, the first ends of the second plurality of bag retainers are generally C-shaped and the second ends of the second plurality of bag retainers are generally C-shaped. The first plurality of bag retainers lie in a first common plane and the second plurality of bag retainers lie in a second common plane.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The drawings furnished herewith illustrate a preferred construction of the present invention in which the above advantages and features are clearly disclosed as well as other which will be readily understood from the following description of the illustrated embodiment.

In the drawings:

[0018] FIG. 1 is an isometric view of a recycling center incorporating a bag support in accordance with the present invention;

[0019] FIG. 1B is an exploded view of a portion of the recycling center of FIG. 1;

[0020] FIG. 1C is a cross-sectional view of the recycling center of the present invention taken along line 1C-1C of FIG. 1B;

[0021] FIG. 2 is an isometric view of the recycling center of the present invention with the door of the recycling center in an open position;

[0022] FIG. 3 is an isometric view of the bag support the present invention;

[0023] FIG. 4 is a side elevational view of the bag support of FIG. 3;

[0024] FIG. 5 is a cross-sectional view of the bag support of the present invention taken along line 5-5 of FIG. 3;

[0025] FIG. 6 is a cross-sectional view of the bag support of the present invention taken along line 6-6 of FIG. 3;

[0026] FIG. 7 is a cross-sectional view of the bag support of the present invention taken along line 7-7 of FIG. 4;

[0027] FIG. 8 is a cross-sectional view of the bag support of the present invention, similar to FIG. 7, with the bag support in a folded configuration;

[0028] FIG. 9 is an isometric view of a portion of an alternate embodiment of a bag support in accordance with the present invention;

[0029] FIG. 10 is an isometric view of a portion of a second alternate embodiment of a bag support in accordance with the present invention;

[0030] FIG. 11 is an isometric view of a portion of a third alternate embodiment of a bag support in accordance with the present invention;

[0031] FIG. 12 is an isometric view of a recycling center incorporating a fourth alternate embodiment of a bag support/slide in accordance with the present invention;

[0032] FIG. 13 is an exploded view of a portion of the recycling center of FIG. 12;

[0033] FIG. 14 is a cross-sectional view of the recycling center taken along line 14-14 of FIG. 13;

[0034] FIG. 15 is an isometric view of the recycling center of FIG. 12 with the door of the recycling center in the open position;

[0035] FIG. 16 is an isometric view of a bag holding slide of the bag support of the present invention;

[0036] FIG. 17 is a cross-sectional view of the bag holding slide of the bag support of the present invention taken along line 4-4 of FIG. 3;

[0037] FIG. 18 is a cross-sectional view of the bag holding slide of the bag support of the present invention taken along line 5-5 of FIG. 3;

[0038] FIG. 19 is an isometric view of an alternate embodiment of a recycling center; and

[0039] FIG. 20 is an isometric view of a portion of a fifth alternate embodiment of a bag support in accordance with the present invention;

DETAILED DESCRIPTION OF THE DRAWINGS

[0040] A recycling center for receiving a bag support in accordance with the present invention is generally designated by the reference numeral 10. As hereinafter described, it is intended for the recycle center 10 to be supported on a supporting surface 11 and to house a bag or the like for receiving recyclable materials therein. Recycle center 10 includes first and second generally U-shaped frame members 12 and 14, respectfully. It is noted that first and second frame members 12 and 14 are identical in structure. As such, the description hereinafter of first frame member 12 is understood to describe second frame member 14 as if fully described herein.

[0041] First frame member 12 is generally U-shaped and has a generally square cross section. As best seen in FIGS. 1B and 1C, first frame member 12 is defined by first and second spaced legs 16 and 18, respectfully. Upper ends of first and second legs 16 and 18, respectfully, of first frame member 12 are interconnected by upper cross leg 20. First and second legs 16 and 18 terminate at generally flat lower ends 16a and 18a, respectfully. Lower ends 16a and 18a of first and second legs 16 and 18, respectfully, of first frame member 12 are positioned on and interconnected to upper surface 22 of generally flat lower frame member 24.

[0042] First leg 16 of first frame member 12 includes a generally parallel inner and outer faces 26 and 28, respectively, interconnected by generally parallel sides 30 and 32,

respectfully. Second leg 18 of first frame member 12 also includes inner and outer faces 34 and 36, respectively. Outer face 36 of second leg 18 of first frame member 12 lies in a common plane with outer face 28 of first leg 16 of first frame member 12. Inner and outer faces 34 and 36, respectively, of second leg 18 of first frame member 12 are interconnected by first and second generally parallel, spaced sides 38 and 40, respectively. Sides 30 and 40 of first and second legs 16 and 18, respectively, of first frame member 12 are interconnected by upper surface 42 of upper cross leg 20. Outer faces 28 and 36 of first and second legs 16 and 18, respectively, of first frame member 12 are interconnected by generally flat outer face 44 of cross leg 20.

[0043] First and second frame members 12 and 14, respectively, are interconnected by forward cross frame support 46. Forward cross frame support 46 includes a first end 46a affixed to side 40 of second leg 18 of first frame member 12 and a second end 46b affixed to side 40 of second leg 18 of second frame member 14. It is further contemplated to interconnect first legs 16 of first and second frame members 12 and 14, respectively, to add strength and rigidity to recycle center 10.

[0044] First panel 50 is interconnected to outer faces 28 and 36 of first and second legs 16 and 18, respectively, of first frame member 12 and to outer face 44 of upper cross leg 20 of first frame member 12. First panel 50 includes a first edge 52 aligned with side 30 of first leg 16 of first frame member 12; a second edge 54 aligned with side 40 of second leg 18 of first frame member 12; and upper edge 56 aligned with upper face 42 of upper cross leg 20 of first frame member 12. It is contemplated to interconnect first panel 50 to first frame member 20 with a plurality of spaced fasteners 58 such as rivets, screws, bolts or the like. It is further contemplated to provide indicia 16 on outer surface 62 of first panel 50 so as to allow a user to identify recycle center 10, as desired.

[0045] Second panel 64 is attached to outer faces 28 and 36 of first and second legs 16 and 18, respectively, of second frame member 14 and to outer face 44 of upper cross leg 20 of second frame member 18 by a plurality of spaced fasteners 58. Edge 66 of second panel 64 is aligned with outer face 30 of first leg 16 of second frame member 18; edge 68 of panel 64 is aligned with side 40 of second leg 18 of second frame member 14; and the upper edge of panel 64 is aligned with upper face 42 of upper cross leg 20 of second frame member 14. Outer surface 70 of second panel 64 may include indicia (not shown) to allow a user to identify recycle center 10, as desired.

[0046] Recycle center 10 may also include an optional rear panel (not shown) interconnected to first legs 16 of first and second frame members 12 and 14, respectively. In addition, recycle center 10 includes an upper panel 72 positioned on and interconnected to upper faces 42 of upper cross legs 20 of first and second frame members 12 and 14, respectively, by a plurality of fasteners 74 such as screws, bolts, and/or rivets. A plurality of apertures 76 extend through upper panel 72, for reasons hereinafter described. With upper panel 72 positioned on first and second frame members 12 and 14, respectively, forward edge 78 of upper panel 76 is adjacent upper edge 80 of forward cross support 46. As hereinafter described, upper panel 72 and first and second side panels 50 and 64, respectively, define a chamber for receiving a conventional bag 162 therein.

[0047] As best seen in FIGS. 1 and 2, Recycle center 10 further includes door 84 to provide access to the chamber

therein. Door 84 includes a generally rectangular frame 86 having first and second side elements 88 and 90, respectively, interconnected by upper and lower frame elements 92 and 94, respectively. Side frame element 90 of frame 86 is interconnected to side 90 of second leg 18 of second frame member 14 by one or more hinges so as to allow door 84 to pivot between a closed position, FIG. 1, and an open position, FIG. 2. In order to maintain door 84 in a closed position, locking eye 96 may project from side 40 of second leg 18 of first frame element 12. Locking eye 96 is aligned with a corresponding slot 98 in side frame element 88 of frame 86 of door 84 such that with door 84 in the closed position, locking eye 96 projects through slot 98 in frame 86 of door 84. A locking bar of a conventional pad lock may be inserted through the eye of locking eye 96 to retain door 84 in its closed position. Panel 100 may be positioned within the opening defined by frame 86 and interconnected to frame 86 and retained therein by a plurality of fasteners 102. It is intended for panel 100 to be transparent in order to allow the quick and easy inspection of the chamber defined by the interior of recycle center 10.

[0048] Referring to FIGS. 3-8, a bag support in accordance with the present invention is generally designated by the reference numeral 110. Bag support 110 includes first and second generally rectangular wire frames 112 and 114, respectively. As hereinafter described, second wire frame 114 is pivotably connected to first wire frame 112 and passes through the interior thereof. First wire frame 112 is defined by first and second side frame members 116 and 118, respectively, interconnected by upper and lower frame members 120 and 122, respectively. First and second side frame members 116 and 118, respectively, are generally parallel to each other. Upper and lower frame members 120 and 122, respectively, are generally parallel to each other and perpendicular to first and second side frame members 116 and 118, respectively.

[0049] Second wire frame 114 is defined by first and second side frame members 124 and 126, respectively, interconnected by upper and lower frame members 128 and 130, respectively. First and second side frame members 124 and 126, respectively, are generally parallel to each other. Upper and lower frame members 128 and 130, respectively, are generally parallel to each other and perpendicular to first and second side frame members 124 and 126, respectively.

[0050] First and second generally rectangular wire frames 112 and 114, respectively, are pivotably connected by first and second pivots 132 and 134, respectively. First pivot 132 is defined by base 136 having outer periphery 138. First side 140 of outer periphery 138 of base 136 is generally flat and bonded to first side frame member 116 such that base 136 extends from first side frame member 116 in a first direction. Stop 140 projects from second, opposite side 142 of base 136. Stop 140 includes an arm portion 144 extending along an axis generally perpendicular to the first direction toward second side frame member 118 of first wire frame 112. Pivot pin 146 extend through base 136 of first pivot 132 and into first side frame member 124 of second wire frame 114 so as to pivotably connect first side frame member 124 of second wire frame 114 to first pivot 132, and hence, to first side frame member 116 of first wire frame 112.

[0051] Second pivot 134 is defined by base 148 having outer periphery 150. First side 152 of outer periphery 150 of base 148 is generally flat and bonded to second side frame member 118 such that base 148 extends from second side frame member 118 in the first direction. Stop 154 projects from second, opposite side 156 of base 148. Stop 154 includes

an arm portion **158** extending along an axis generally perpendicular to the first direction toward first side frame member **116** of first wire frame **112**. It is intended for the arm portions **144** and **158** of first and second pivots **132** and **134**, respectively, to lie on a common axis. Pivot pin **160** extends through base **148** of second pivot **134** and into second side frame member **126** of second wire frame **114** so as to pivotably connect second side frame member **126** of second wire frame **114** to second pivot **134**, and hence, to second side frame member **118** of first wire frame **112**. It is intended for pivot pins **146** and **160** to lie on a common pivot axis.

[0052] As described, first and second frames **112** and **114**, respectively, are pivotable between an unfolded configuration, FIG. 3, for supporting a bag during filling and a folded configuration, FIG. 8, wherein the first and second frames **112** and **114**, respectively, lie in generally parallel planes for storage and transport of the bag support **110**. With bag support **110** in its unfolded configuration, first and second side frame members **124** and **126**, respectively, of second frame **114** engage corresponding stops **140** and **154** extending from first and second side frame members **116** and **118**, respectively, of first frame **112** such that stops **140** and **154** retain first and second frames **112** and **114**, respectively, in their unfolded configuration, FIG. 3, and prevent second frame **114** from continuing to pivot with respect to first frame **112** on pivot pins **146** and **160**.

[0053] Bag **162** is retained on bag support **110** by first and second bag mounts **164** and **166**, respectively, operatively connected to upper frame members **120** and **128** of first and second frames **112** and **114**, respectively. It is noted that first and second bag mounts **164** and **166**, respectively, are identical in structure. As such, the description hereinafter of first bag mount **164** is understood to describe second bag mount **166**, as if fully described herein.

[0054] First bag mount **164** includes bar **168** extending along a longitudinal axis and having first and second opposite ends **170** and **172**, respectively. Bar **168** is generally parallel to and positioned below and laterally spaced from upper frame member **120** of first frame **112**. First bag mount **164** includes a first mounting portion **174** that is generally parallel to bar **168** and is interconnected to upper frame member **120** of first frame **112**. First mounting portion **174** is interconnected to bar **168** by a generally arcuate, concave portion **176**. First bag mount **164** further includes a second mounting portion **180** generally parallel to central bar **168** and interconnected to upper frame member **120** of first frame **112**. Second mounting portion **180** of first bag mount **164** is interconnected to bar **168** by a generally arcuate, concave portion **182**. Bar **164**, concave portions **176** and **182** and first and second mounting portions **174** and **180**, respectively, of first bag mount **164** lie in a common plane and at an acute angle to supporting surface **11** with first and second frames **112** and **114**, respectively, in their unfolded configuration, FIG. 3.

[0055] In operation, bag **162**, preferably transparent, is provided. As is conventional, bag **162** includes a closed bottom end **184** and an opposite open end **186**. Open end **186** of bag **162** includes opening **188** defined by upper peripheral edge **189**. A first portion of the upper edge **189** of bag **162** is pulled over upper frame member **120** of first frame **112** and is wrapped around first bag mount **164** such that concave portions **176** and **182** of first bag mount **164** retains bag **162** thereon. A second portion of the upper edge **189** of bag **162** is pulled over upper frame member **120** of second frame **114** and is wrapped around second bag mount **166** such that con-

cave portions **176** and **182** of second bag mount **166** retain bag **162** thereon. With bag **162** mounted on bag support **110**, as heretofore described, opening **188** in bag **162** is directed upwardly between upper frame members **120** of first and second frames **114** and **116**, respectively. Thereafter, bag support **110** is inserted into the chamber defined by recycle center **10** such that opening **188** in bag **162** is axially aligned with openings **76** through upper panel **72** of recycle center **10**. As such, any items to be recycled that are deposited in opening **76** in upper panel **72** of recycle center **10** will be received within bag **162** through opening **188** therein. It can be appreciated that a plurality of rollers **191** may be rotatably mounted to lower frame members **122** and **130** of first and second frames **112** and **114**, respectively, to facilitate the movement of bag support **110** into and out of the chamber defined by recycle center **10**.

[0056] Referring to FIG. 9, it is contemplated to replace upper frame members **120** and **128** of first and second frames **112** and **114**, respectively, as well as, first and second bag mounts **164** and **166**, respectively, by an alternate bag mount, generally designated by the reference numeral **190**. Bag mount **190** is defined by a generally U-shaped member **192** having first and second legs **196** and **198**, respectively, interconnected by an elongated rod **200**. Ends **200a** and **200b** of rod **200** are spaced from corresponding first and second side frame members **116** and **118**, respectively, of first frame **112** or corresponding first and second side frame members **124** and **126**, respectively, of second frame **114**. The terminal end of first leg **196** of each bag mount **190** is interconnected to a corresponding first side frame member **116** and **124** of first and second frames **112** and **114**, respectively, by connection rod **204**. The terminal end of second leg **198** of each bag mount **190** is interconnected to a corresponding second side frame member **118** and **126** of first and second frames **112** and **114**, respectively, by connection rod **206**. U-shaped members **192**, connection rods **204** and connection rods **206** lie in a common plane and at an acute angle to supporting surface **11** with first and second frames **112** and **114**, respectively, in their unfolded configuration, FIG. 3.

[0057] In operation, a first portion of the upper edge **189** of bag **162** is pulled over connection rods **204** and **206** of first frame **112** and is wrapped around bag mount **190** such that legs **196** and **198** of U-shaped member **192** retain bag **162** thereon. A second portion of the upper edge **189** of bag **162** is pulled over connection rods **204** and **206** of second frame **114** and is wrapped around bag mount **190** such that legs **196** and **198** of U-shaped member **192** retain bag **162** thereon. With bag **162** mounted on bag support **110**, as heretofore described, opening **188** in bag **162** is directed upwardly between upper bag mounts **190** of first and second frames **114** and **116**, respectively. Thereafter, bag support **110** is inserted into the chamber defined by recycle center **10** such that opening **188** in bag **162** is axially aligned with openings **76** through upper panel **72** of recycle center **10**.

[0058] Referring to FIGS. 10-11, it is contemplated to provide a plurality of first bag mounts **164** on upper frame member **120** of first frame **112** and an equal number of second bag mounts **166** on upper frame member **128** of second frame **114**. By way of example, a pair of axially spaced first bag mounts **164** may be mounted upper frame member **120** of first frame **112** and an equal number of second bag mounts **166** on upper frame member **128** of second frame **114**, FIG. 10. As a result, a pair of bags **162** may be supported on bag support **110** as heretofore described. Similarly, referring to FIG. 11, three

axially spaced first bag mounts 164 may be provided upper frame member 120 of first frame 112 and an equal number of second bag mounts 166 may be provided on upper frame member 128 of second frame 114. As a result, three bags 162 may be supported on bag support 110 as heretofore described. It can be appreciated that additional bag mounts may be provided on upper frame members 120 and 128 of first and second frames 112 and 114, respectively, without deviating from the scope of the present invention.

[0059] Referring to FIG. 12, a recycling center incorporating an alternate bag support/slide in accordance with the present invention is generally designated by the reference numeral 310. As hereinafter described, it is intended for the recycling center 310 to be supported on a supporting surface 311 and to house a bag or the like for receiving recyclable materials therein. Recycling center 310 includes first and second generally U-shaped frame members 312 and 314, respectfully. It is noted that first and second frame members 312 and 314 are identical in structure. As such, the description hereinafter of first frame member 312 is understood to describe second frame member 314 as if fully described herein.

[0060] First frame member 312 is generally U-shaped and has a generally square cross section. As best seen in FIGS. 13 and 14, first frame member 312 is defined by first and second spaced legs 316 and 318, respectfully. Upper ends of first and second legs 316 and 318, respectfully, of first frame member 312 are interconnected by upper cross leg 320. First and second legs 316 and 318 terminate at generally flat lower ends 316a and 318a, respectfully. Lower ends 316a and 318a of first and second legs 316 and 318, respectfully, of first frame member 312 are positioned on and interconnected to upper surface 322 of generally flat lower frame member 324.

[0061] First leg 316 of first frame member 312 includes a generally parallel inner and outer faces 326 and 328, respectively, interconnected by generally parallel sides 330 and 332, respectfully. Second leg 318 of first frame member 312 also includes inner and outer faces 334 and 336, respectfully. Outer face 336 of second leg 318 of first frame member 312 lies in a common plane with outer face 328 of first leg 316 of first frame member 312. Inner and outer faces 334 and 336, respectively, of second leg 318 of first frame member 312 are interconnected by first and second generally parallel, spaced sides 338 and 340, respectfully. Sides 330 and 340 of first and second legs 316 and 318, respectfully, of first frame member 312 are interconnected by upper surface 342 of upper cross leg 320. Outer faces 328 and 336 of first and second legs 316 and 318, respectively, of first frame member 312 are interconnected by generally flat outer face 344 of cross leg 320.

[0062] First and second frame members 312 and 314, respectfully, are interconnected by forward cross frame support 346. Forward cross frame support 346 includes a first end 346a affixed to side 340 of second leg 318 of first frame member 312 and a second end 346b affixed to side 340 of second leg 318 of second frame member 314. It is further contemplated to interconnect first legs 316 of first and second frame members 312 and 314, respectfully, to add strength and rigidity to recycling center 310.

[0063] First panel 350 is interconnected to outer faces 328 and 336 of first and second legs 316 and 318, respectively, of first frame member 312 and to outer face 344 of upper cross leg 320 of first frame member 312. First panel 350 includes a first edge 352 aligned with side 330 of first leg 316 of first frame member 312; a second edge 354 aligned with side 340

of second leg 318 of first frame member 312; and upper edge 356 aligned with upper face 342 of upper cross leg 320 of first frame member 312. It is contemplated to interconnect first panel 350 to first frame member 320 with a plurality of spaced fasteners 358 such as rivets, screws, bolts or the like. It is further contemplated to provide indicia 316 on outer surface 362 of first panel 350 so as to allow a user to identify recycling center 310, as desired.

[0064] Second panel 364 is attached to outer faces 328 and 336 of first and second legs 316 and 318, respectively, of second frame member 314 and to outer face 344 of upper cross leg 320 of second frame member 318 by a plurality of spaced fasteners 358. Edge 366 of second panel 364 is aligned with outer face 330 of first leg 316 of second frame member 318; edge 368 of panel 364 is aligned with side 340 of second leg 318 of second frame member 314; and the upper edge of panel 364 is aligned with upper face 342 of upper cross leg 320 of second frame member 314. Outer surface 370 of second panel 364 may include indicia (not shown) to allow a user to identify recycling center 310, as desired.

[0065] Recycling center 310 may also include an optional rear panel (not shown) interconnected to first legs 316 of first and second frame members 312 and 314, respectively. In addition, recycling center 310 includes an upper panel 372 positioned on and interconnected to upper faces 342 of upper cross legs 320 of first and second frame members 312 and 314, respectively, by a plurality of fasteners 374 such as screws, bolts, and/or rivets. A plurality of apertures 376 extend through upper panel 372, for reasons hereinafter described. With upper panel 372 positioned on first and second frame members 312 and 314, respectively, forward edge 378 of upper panel 376 is adjacent upper edge 380 of forward cross support 346. As hereinafter described, upper panel 372 and first and second side panels 350 and 364, respectively, define a chamber for receiving a conventional bag 382 therein.

[0066] Recycling center 310 further includes door 384 to provide access to the chamber therein. Door 384 includes a generally rectangular frame 386 having first and second side elements 388 and 390, respectively, interconnected by upper and lower frame elements 392 and 394, respectively. Side frame element 390 of frame 386 is interconnected to side 340 of second leg 318 of second frame member 314 by one or more hinges so as to allow door 384 to pivot between a closed position, FIG. 12, and an open position, FIG. 15. In order to maintain door 384 in a closed position, locking eye 396 may project from side 340 of second leg 318 of first frame element 312. Locking eye 396 is aligned with a corresponding slot 398 in side frame element 388 of frame 386 of door 384 such that with door 384 in the closed position, locking eye 396 projects through slot 398 in frame 386 of door 384. A locking bar of a conventional pad lock may be inserted through the eye of locking eye 396 to retain door 384 in its closed position.

[0067] Panel 400 may be positioned within the opening defined by frame 386 and interconnected to frame 386 and retained therein by a plurality of fasteners 402. It is intended for panel 400 to be transparent in order to allow the quick and easy inspection of the chamber defined by the interior of recycling center 310. Alternatively, as best seen in FIG. 19, it is contemplated to provide wire mesh 404 within the interior of frame 386 of door 384 so as to allow easy inspection of the interior of recycling center 310.

[0068] Referring to FIGS. 15-18, bag 382 is supported by bag slide 406. Bag slide 406 includes first and second side

rails **408** and **410**, respectively. First side rail **408** is telescopically and slidably received within a support bracket (not shown) mounted to inner faces **326** and **334** of first and second legs **316** and **318**, respectively, of first frame member **312** adjacent the upper ends of first and second legs **316** and **318**, respectively. Second side rail **410** is telescopically and slidably received within a support bracket (not shown) mounted to inner faces **326** and **334** of first and second legs **316** and **318**, respectively, of second frame member **318** adjacent the upper ends of first and second legs **316** and **318**, respectively. First and second slide rails **408** and **410**, respectively, and hence bag slide **406**, is movable between a retracted position, FIG. **12**, wherein bag slide **406** is received entirely within the interior of the chamber defined by recycling center **310** and an extended position, FIG. **15**, wherein bag slide **106** projects from the chamber within recycling center **310**.

[0069] First and second side rails **408** and **410**, respectively, are interconnected by a forward bag support **412** and a rear bag support **414**. It is noted that forward and rear bag supports **412** and **414**, respectively, are identical in structure. As such, the description hereinafter of forward bag support **412** is understood to describe rear bag support **414** as if fully described herein.

[0070] Forward bag support **412** includes a generally U-shaped member **415** having first and second legs **416** and **418**, respectively, interconnected by an elongated rod **420** that spaces first and second side rails **408** and **410**, respectfully. First leg **416** of member **415** is affixed to inner surface **422** of first side rail **408**. Second leg **418** of member **415** is interconnected to inner surface **424** of second side rail **410**. Forward bag support **412** further includes a bag retainer **425**. Bag retainer **425** includes bar **426** extending along a longitudinal axis and having first and second opposite ends **428** and **430**, respectively. Bar **426** is generally parallel to and positioned below and laterally spaced from rod **420**. Bag retainer **425** includes a first mounting portion **434** that is generally parallel to bar **426** and is interconnected to rod **420**. First mounting portion **434** is interconnected to bar **426** by a generally arcuate, concave portion **436**. Bag retainer **425** further includes a second mounting portion **440** generally parallel to central bar **432** and interconnected to rod **420**. Second mounting portion **440** of bag retainer **425** is interconnected to bar **426** by a generally arcuate, concave portion **442**. Bar **426**, concave portions **436** and **442** and first and second mounting portions **434** and **440**, respectively, of bag retainer **425** lie in a common plane and at an acute angle to supporting surface **311**.

[0071] In operation, bag **382**, preferably transparent, is provided. As is conventional, bag **396** includes a closed bottom end **444** and an opposite open end **446**. Open end **446** of bag **382** includes opening **448** defined by upper peripheral edge **450**. A first portion of the upper edge **450** of bag **382** is pulled over rod **420** of forward bag support **412** and is wrapped around bag retainer **425** of forward bag support **412** such that concave portions **436** and **442** of bag retainer **425** retains bag **382** thereon. A second portion of the upper edge **450** of bag **382** is pulled over rod **420** of rear bag support **414** and is wrapped around bag retainer **425** of rear bag support **414** such that concave portions **436** and **442** of bag retainer **425** retains bag **382** thereon. With bag **382** mounted on forward bag support **412** and rear bag support **414**, opening **448** in bag **382** is directed upwardly between first and second side rails **408** and **410**, respectively, of bag slide **406**. Thereafter, bag slide **406** is slid towards its retracted position such that opening **448** in bag **382** is axially aligned with openings **376** through upper

panel **372** of recycling center **310**. As such, any items to be recycled that are deposited in opening **376** in upper panel **372** of recycling center **310** will be received within bag **382** through opening **448** therein.

[0072] It can be appreciated due to the modular nature of the present design, multiple recycling centers may be positioned adjacent one another and interconnected. Further, it can be appreciated that the openings **376** in upper panel **372** of recycling center **310** may have any desired configuration. By way of example, referring to FIG. **19**, openings **376** in upper panel **372** of recycling center **310** may take the form of elongated slots adapted for receiving sheets of paper there-through. Referring to FIG. **20**, it is contemplated for forward bag support **412** and rear bag support **414** to include multiple bag retainers **425** axially spaced along rods **420** thereof so as to allow multiple bags to be mounted on bag slide **406**. Finally, it can be appreciated that first and second side panels **350** and **364** may be fabricated from a solid material, a mesh material or a transparent material. It can be appreciated that by fabricating first and second side panels **350** and **364** from a transparent or mesh material will allow for the simple and easy inspection of the interior of recycling center **310**.

[0073] Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

1. A bag support for supporting upper portions of bags, comprising:

- a cross bar extending along a first axis;
- a bag support bar extending along a second axis generally parallel to the first axis and including multiple bag retainers axially spaced therealong, each bag retainer supporting upper portions of corresponding bags; and
- a support structure operatively connected to the cross bar and the bag support bar for supporting the cross bar and the bag support bar.

2. The bag support of claim **1** wherein each of the multiple bag retainers has first and second ends, the first end of each of the multiple bag retainers is generally C-shaped and wherein the second end of each of the multiple bag retainers is generally C-shaped.

3. The bag support of claim **1** wherein the cross bar includes multiple bag retainers axially spaced therealong, each bag retainer of the cross bar supporting upper portions of corresponding bags.

4. The bag support of claim **3** wherein each of the multiple bag retainers of the cross bar has first and second ends, the first end of each of the multiple bag retainers of the cross bar is generally C-shaped and wherein the second end of each of the multiple bag retainers of the cross bars is generally C-shaped.

5. The bag support of claim **1** wherein the support structure includes first and second rails, the first and second rails having first and second opposite ends and being generally parallel to each other.

6. The bag support of claim **5** wherein:

- the support structure includes a housing including first and second sidewalls and defining a recycle receiving chamber therein;
- the first rail is slidably mounted to the first sidewall, the first rail having a forward end and a rear end; and
- the second rail is slidably mounted to the second sidewall, the second rail having a forward end and a rear end.

- 7. The bag support of claim 5 wherein:
the cross bar extends between the rear ends of the first and second rails; and
the bag support bar extends between the forward ends of the first and second rails.
- 8. The bag support of claim 1 wherein each of the multiple bag retainers lies in a common plane.
- 9. A bag support, comprising:
a first bar extending along a first axis and including multiple bag retainers axially spaced therealong, each bag retainer supporting upper portions of corresponding bags;
a second bar supported extending along a second axis generally parallel to the first axis and including multiple bag retainers axially spaced therealong, each bag retainer of the second bar supporting upper portions of corresponding bags; and
a support structure operatively connected to the first and second bars for supporting the first and second bars.
- 10. The bag support of claim 9 wherein each of the multiple bag retainers of the first bar has first and second ends, the first end of each of the multiple bag retainers is generally C-shaped and wherein the second end of each of the multiple bag retainers is generally C-shaped.
- 11. The bag support of claim 10 wherein each of the multiple bag retainers of the second bar has first and second ends, the first end of each of the multiple bag retainers of the cross bar is generally C-shaped and wherein the second end of each of the multiple bag retainers of the cross bars is generally C-shaped.
- 12. The bag support of claim 9 wherein the support structure includes first and second rails, the first and second rails having first and second opposite ends and being generally parallel to each other.
- 13. The bag support of claim 12 wherein:
the support structure includes a housing including first and second sidewalls defining a recycle receiving chamber therein;

- the first rail is slidably mounted to the first sidewall, the first rail having a forward end and a rear end; and
the second rail is slidably mounted to the second sidewall, the second rail having a forward end and a rear end.
- 14. The bag support of claim 12 wherein:
the first bar extends between the rear ends of the first and second rails; and
the second bar extends between the forward ends of the first and second rails.
- 15. The bag support of claim 9 wherein each of the multiple bag retainers of the first bar lies in a first common plane and wherein each of the multiple bag retainers of the second bar lies in a second common plane.
- 16. A bag support, comprising:
a support structure;
a first bar operatively connected to the support structure and extending along a first axis;
a second bar operatively connected to the support structure and extending along a second axis generally parallel to the first axis;
a first plurality of bag retainers extending from the first bar, each of the first plurality of bag retainers having first and second ends; and
a second plurality of bag retainers extending from the second bar, each of the second plurality of bag retainers having first and second ends.
- 17. The bag support of claim 16 wherein the first ends of the first plurality of bag retainers are generally C-shaped and the second ends of the first plurality of bag retainers are generally C-shaped.
- 18. The bag support of claim 17 wherein the first ends of the second plurality of bag retainers are generally C-shaped and the second ends of the second plurality of bag retainers are generally C-shaped.
- 19. The bag support of claim 15 wherein the first plurality of bag retainers lie in a first common plane.
- 20. The bag support of claim 15 wherein the second plurality of bag retainers lie in a second common plane.

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