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(54) **ADJUSTABLE CONTINUOUS SHELF MOUNTING SYSTEMS AND APPARATUSES RELATED THERETO**

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(51) **Int. Cl.**

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A47B 87/00	(2006.01)
A47B 57/34	(2006.01)
A47B 96/02	(2006.01)
A47B 96/06	(2006.01)
A47B 57/06	(2006.01)

(52) **U.S. Cl.**

CPC ***A47B 87/005*** (2013.01); ***A47B 57/34*** (2013.01); ***A47B 87/00*** (2013.01); ***A47B 96/02*** (2013.01); ***A47B 96/021*** (2013.01); ***A47B 96/06*** (2013.01); ***A47B 96/061*** (2013.01); *A47B 57/06* (2013.01)

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USPC 211/186, 187, 90.01–90.04, 134, 87.01, 211/103, 106.01; 108/108, 147.17, 107, 108/106; 248/220.42, 220.41, 220.21, 248/220.31

See application file for complete search history.

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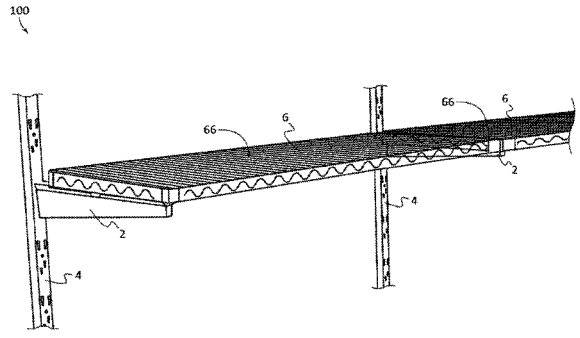
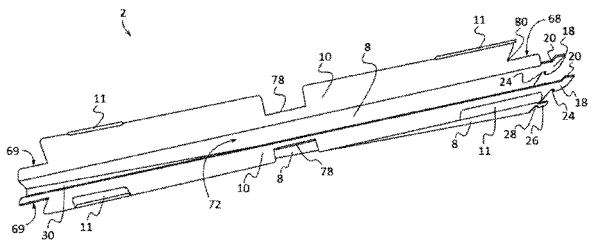
(57) **ABSTRACT**

In some embodiments an adjustable continuous shelf mounting system may comprise a wall standard comprising a plurality of upper slots and a plurality of lower slots. A support bracket comprising: a first support wing coupled to a first upper tongue configured to engage an upper slot of a wall standard and a first lower tongue configured to engage a lower slot of a wall standard; a second support wing coupled to a second upper tongue configured to engage an upper slot of a wall standard and a second lower tongue configured to engage a lower slot of a wall standard; and a shelf lip receiving valley formed between the first support wing and the second support wing. A shelf comprising a load bearing surface and a perimeter lip. The perimeter lip of the shelf is configured to be received in the shelf lip receiving valley of the support bracket.

19 Claims, 11 Drawing Sheets





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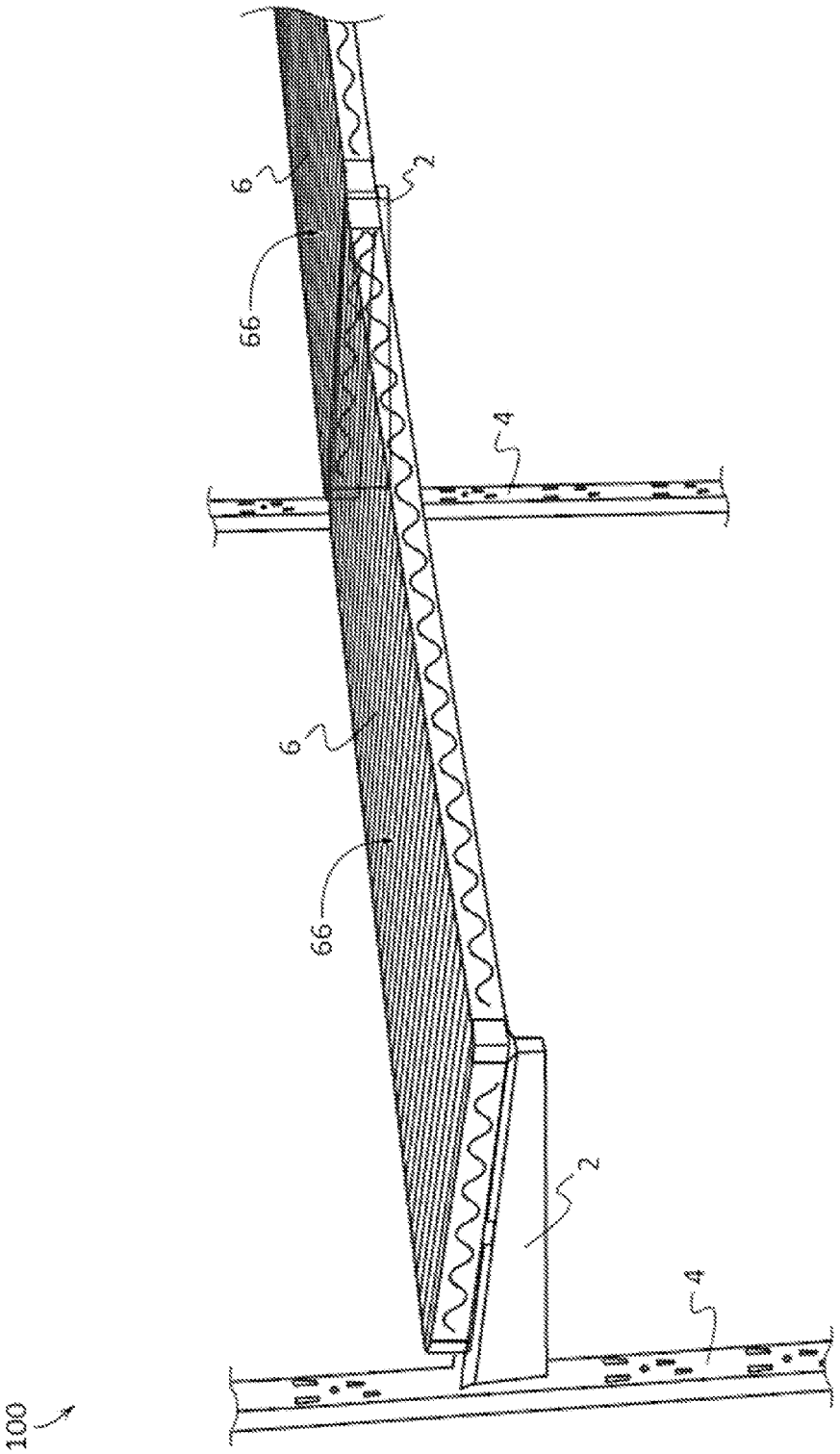

FIG. 1

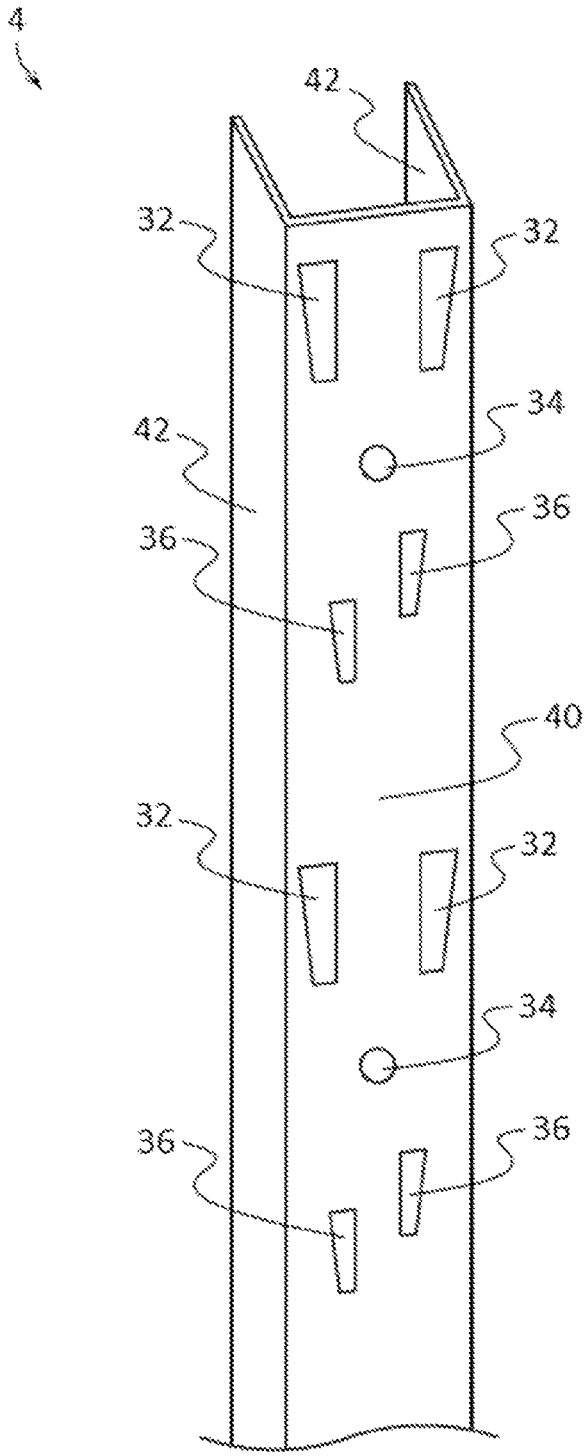

FIG. 2

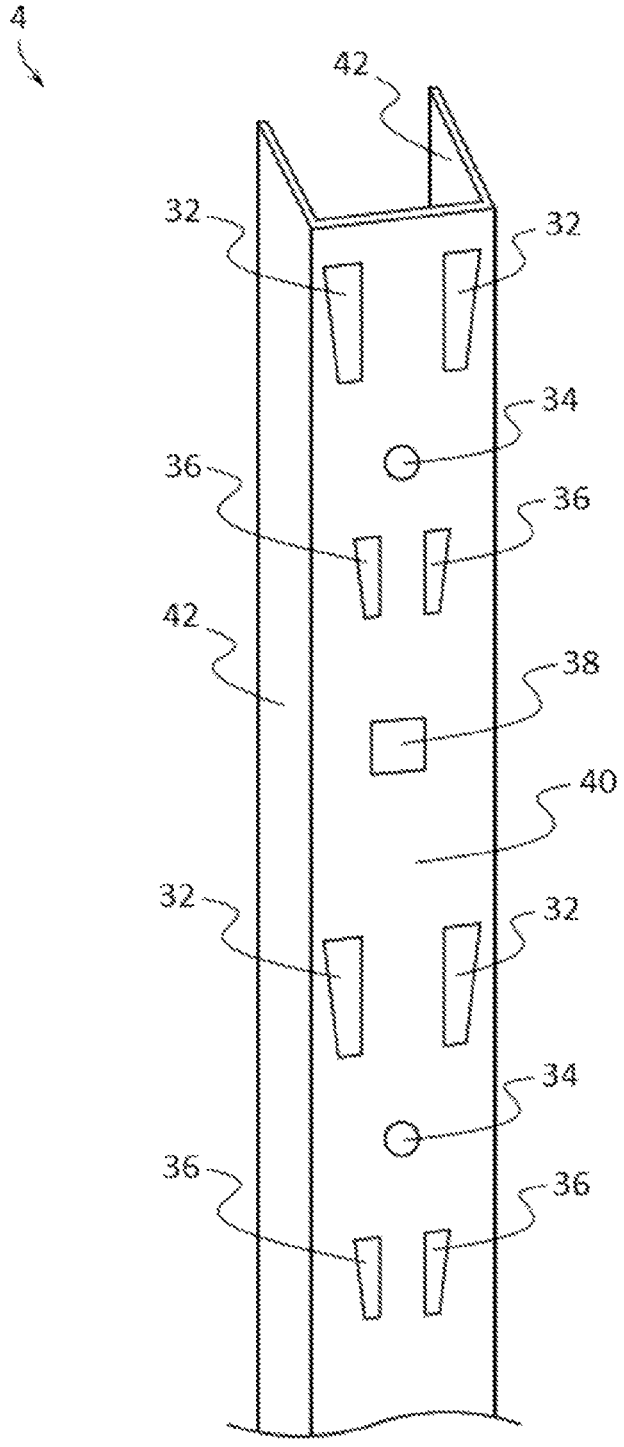

FIG. 3

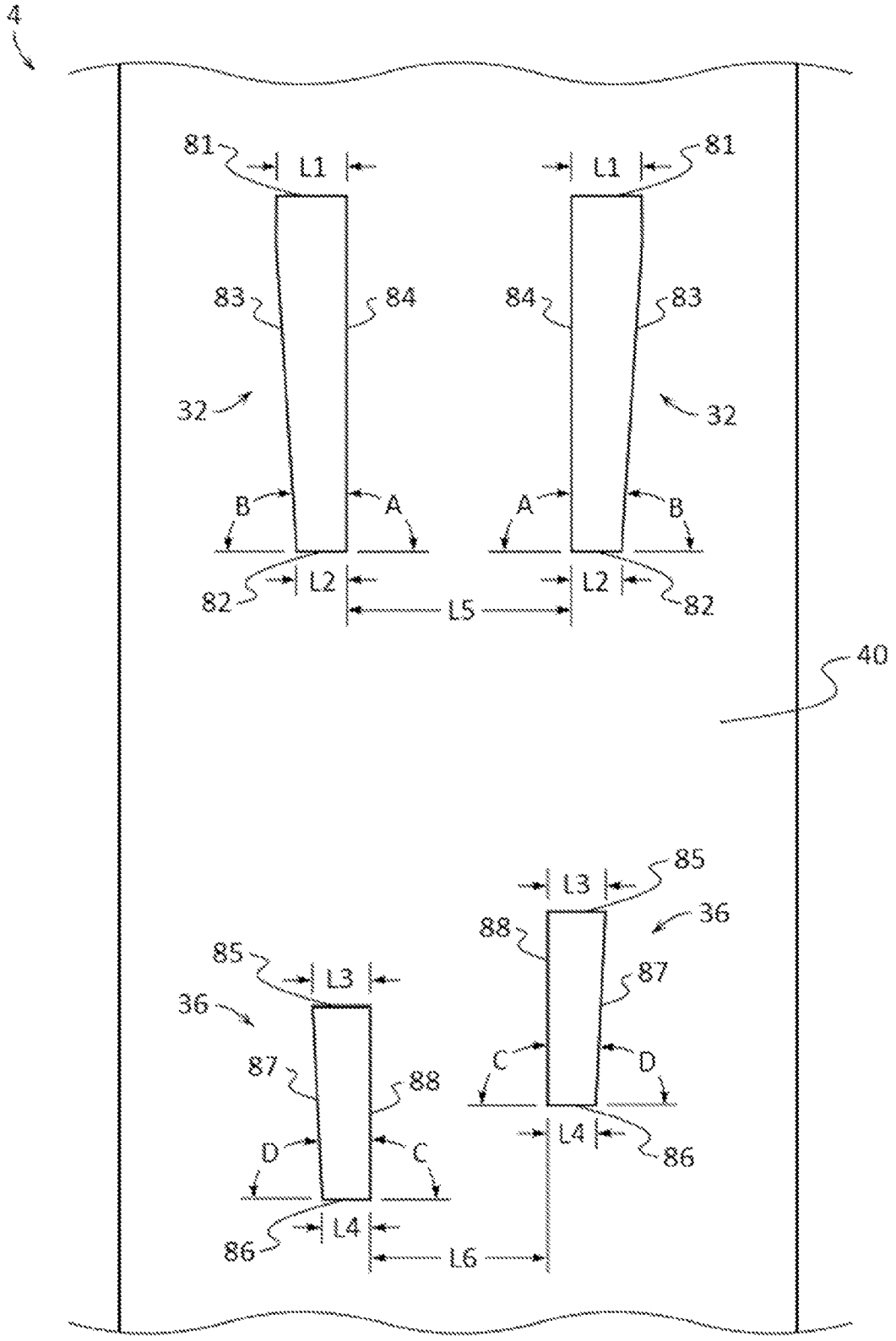

FIG. 4

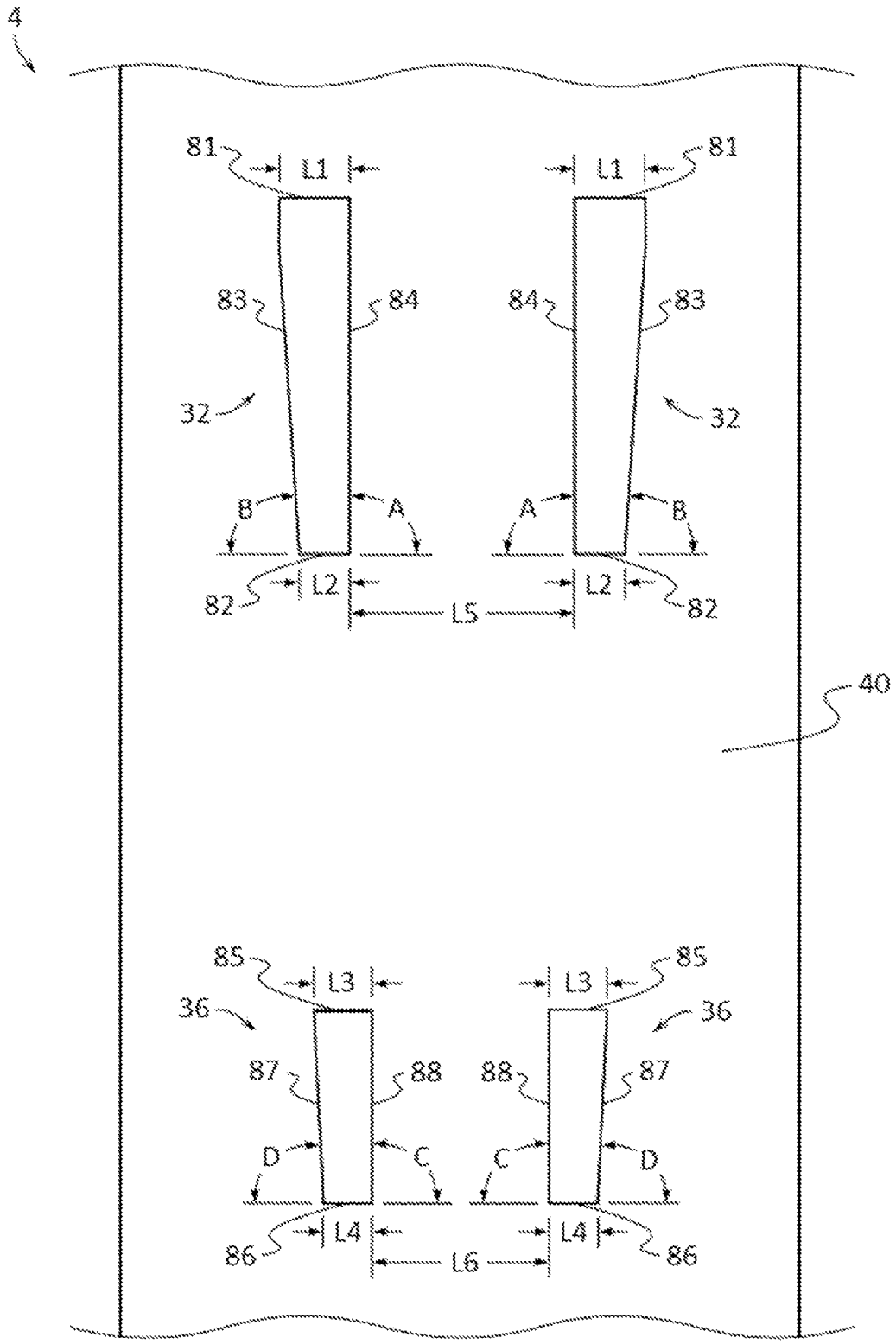
4
81
L1
L1
81
83
84
84
83
32
32
B
A
A
B
82
L2
L5
L2
82
40
85
L3
L3
85
36
36
87
88
88
87
D
C
C
D
86
L4
L6
L4
86

FIG. 5

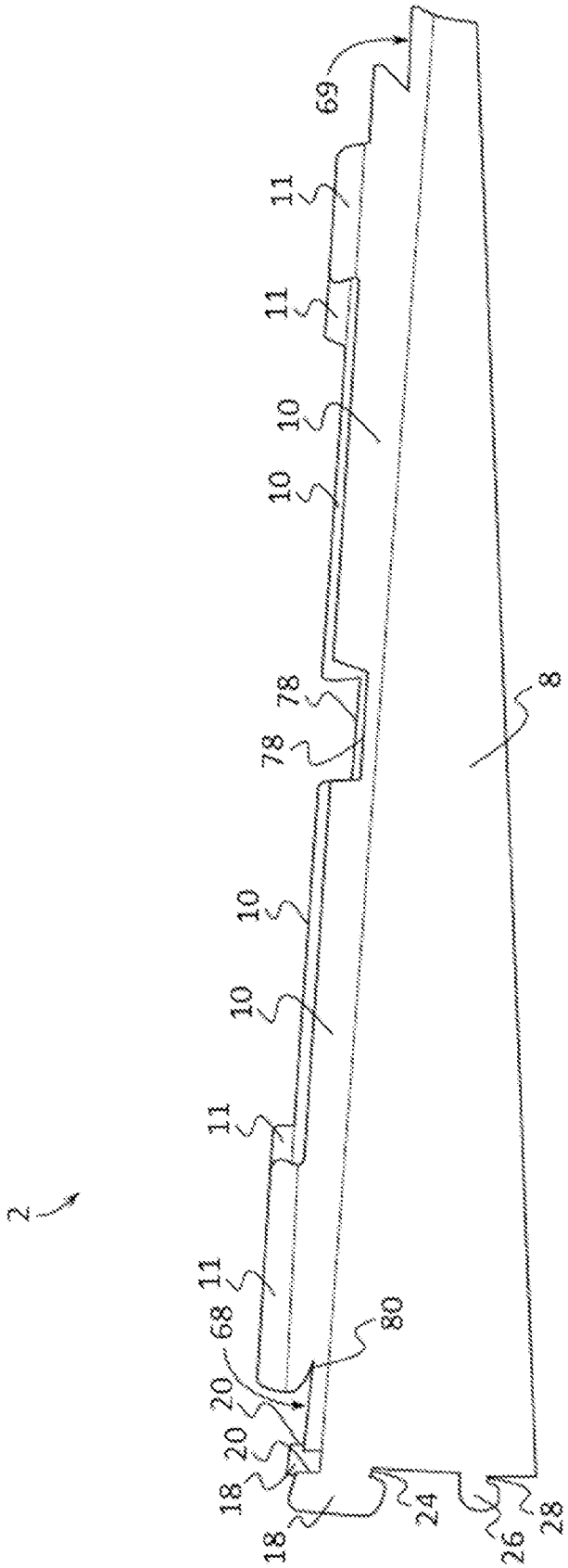

FIG. 6

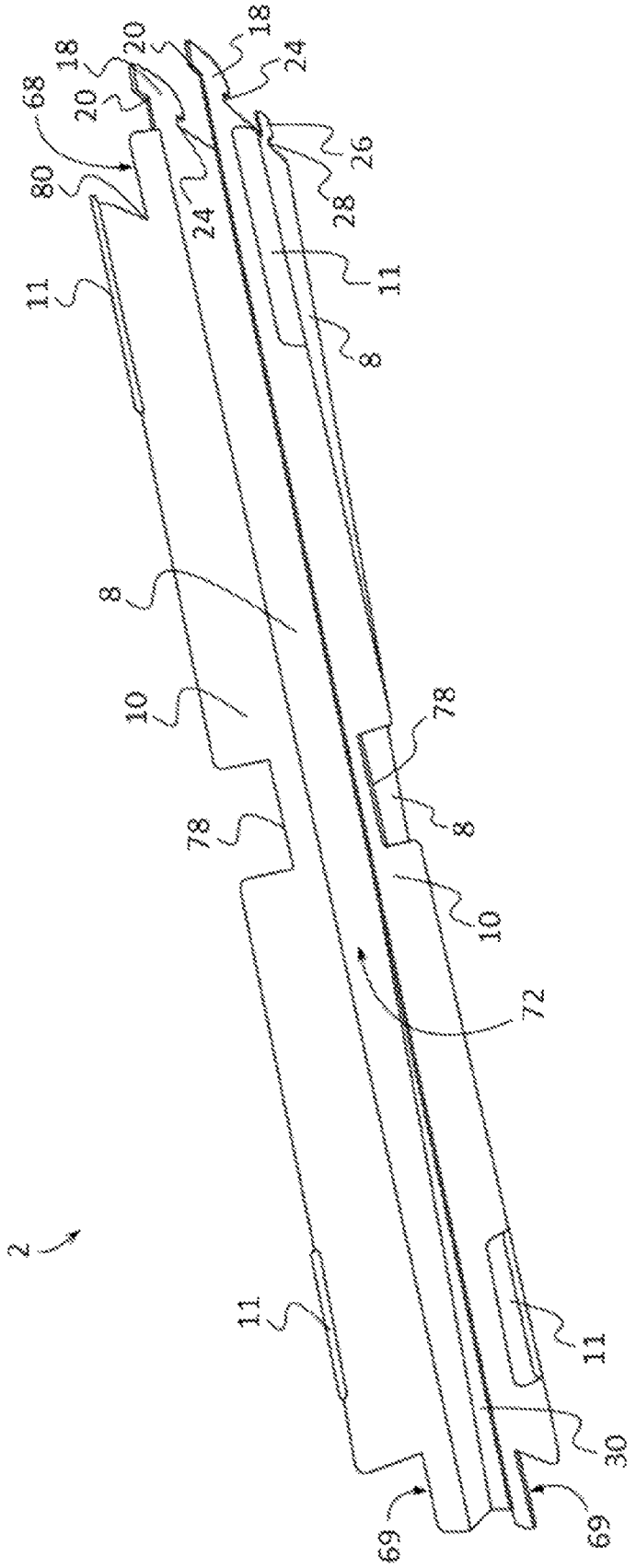

FIG. 7

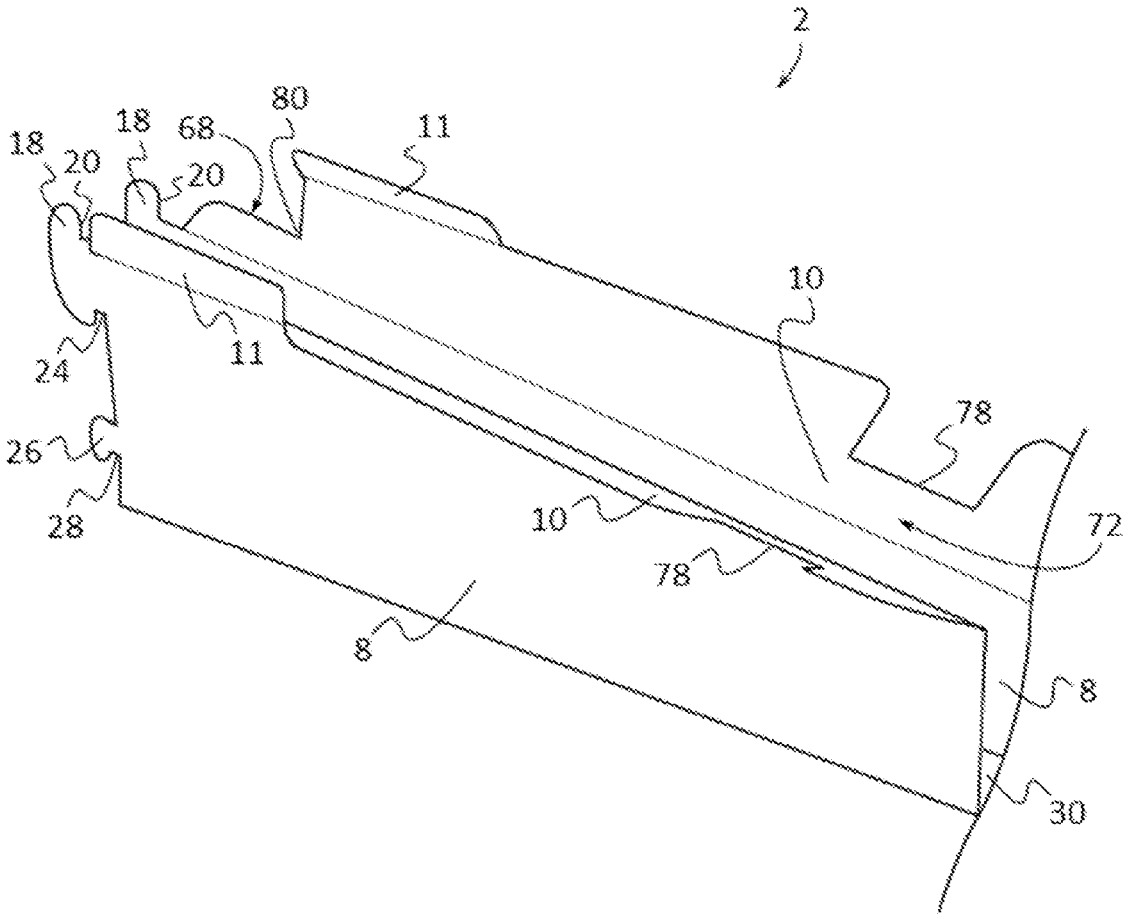

FIG. 8

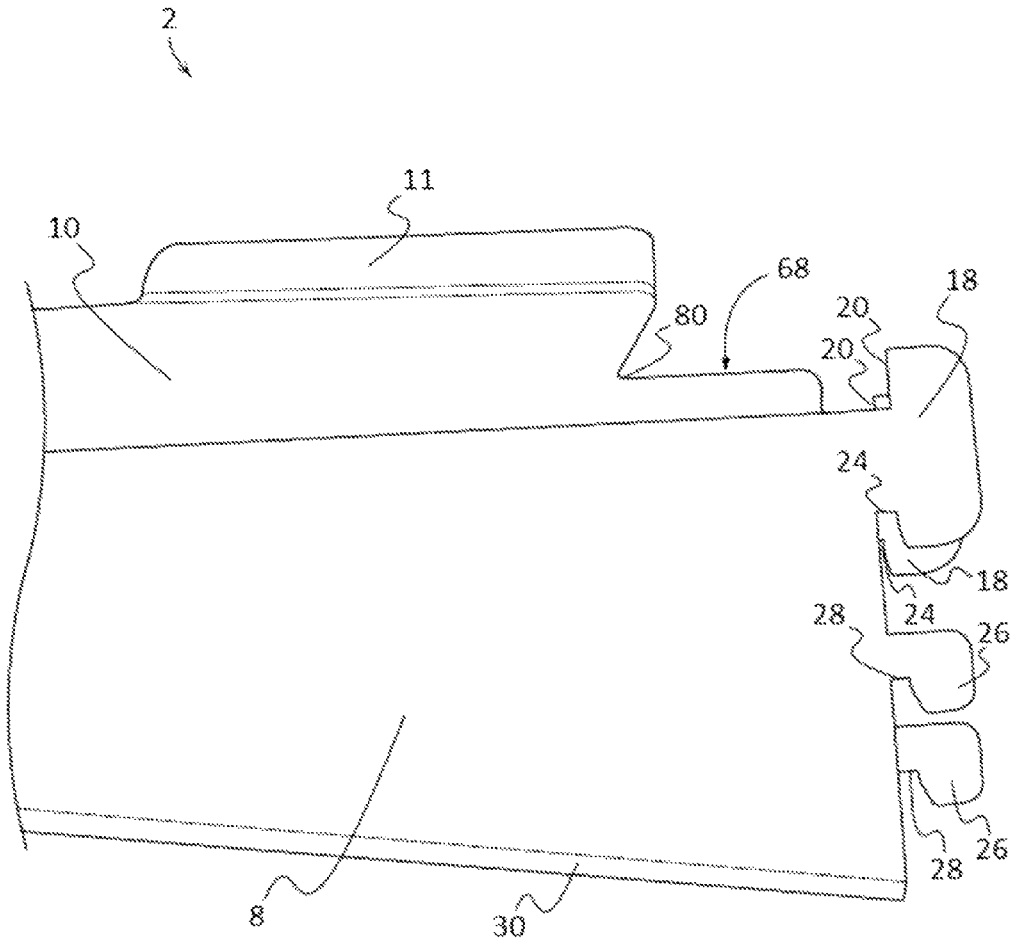

FIG. 9

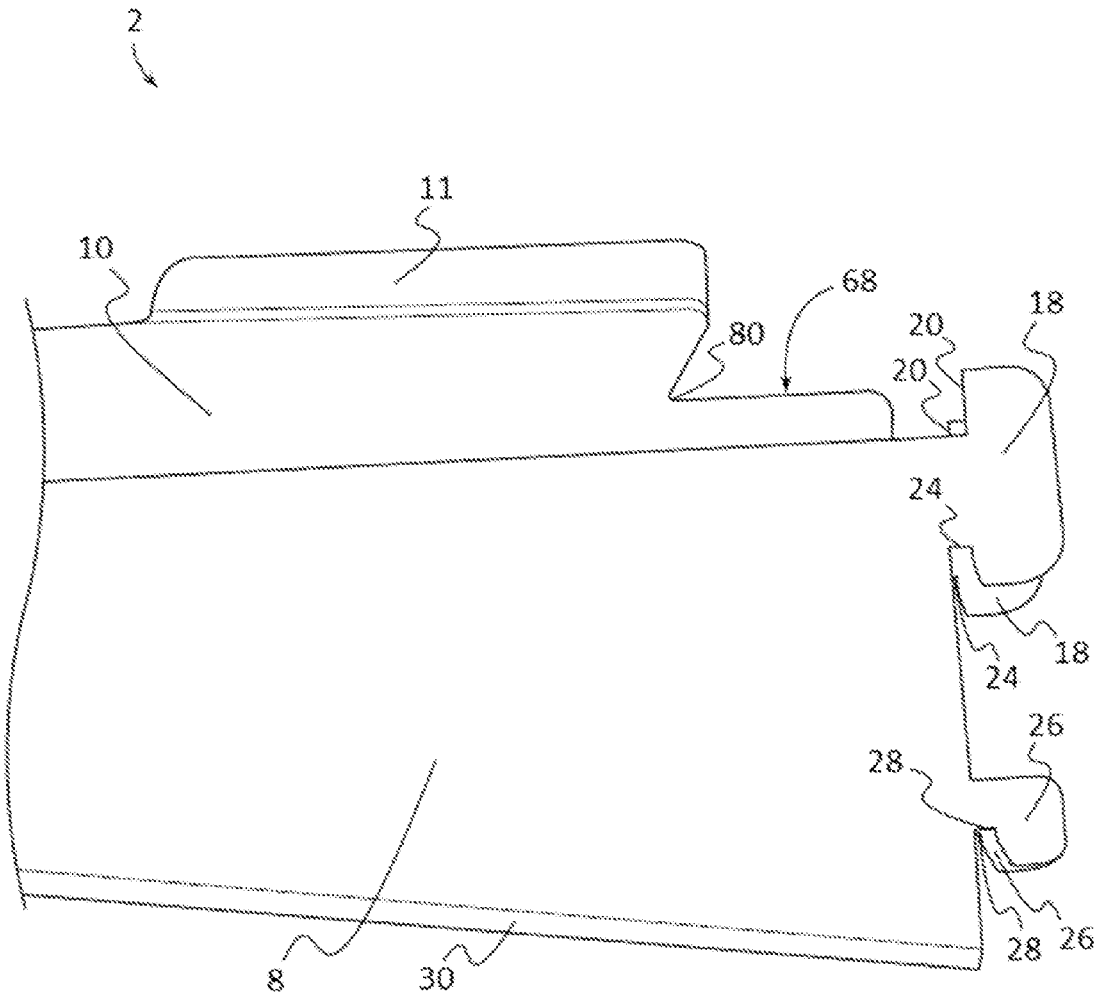

FIG. 10

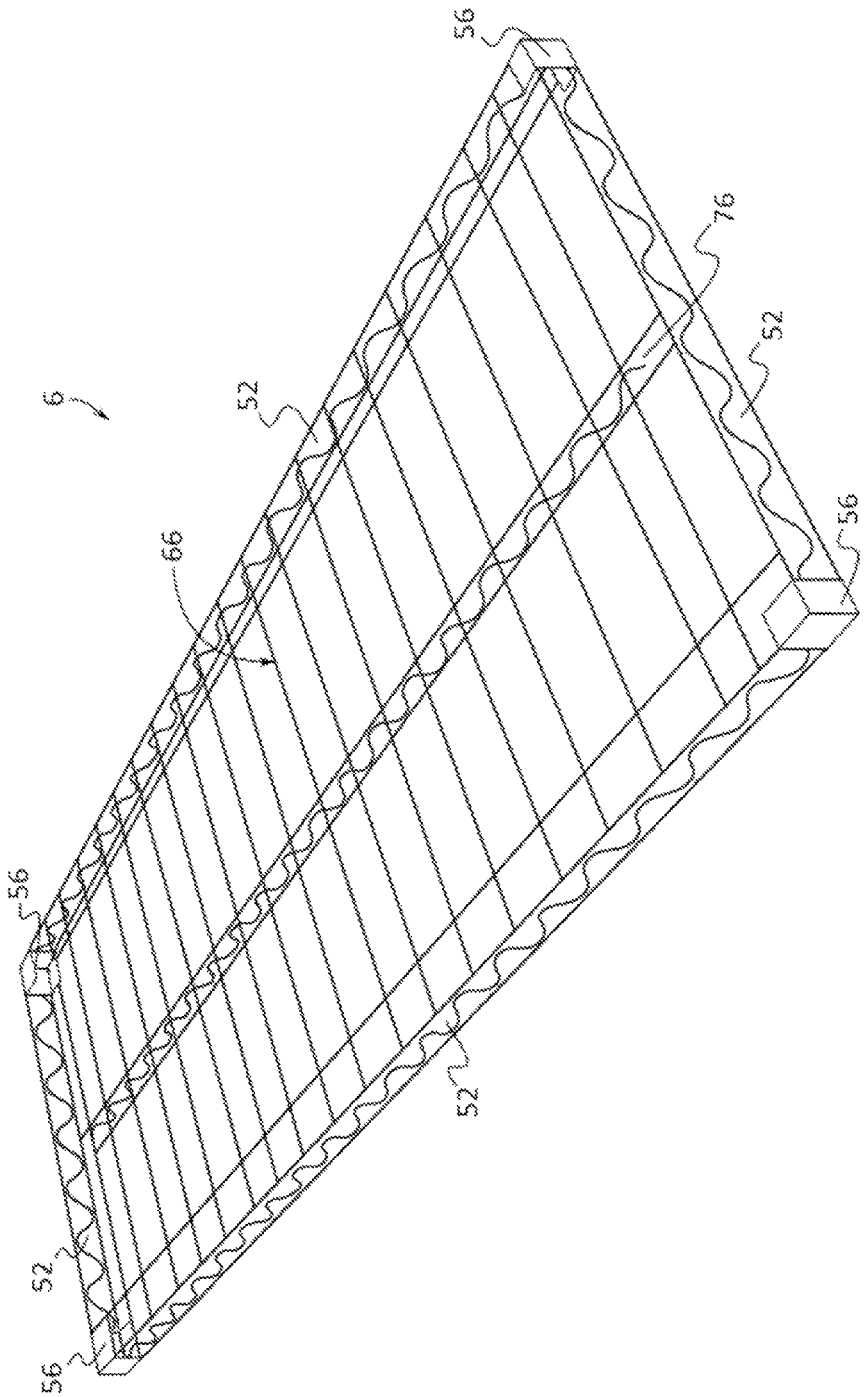

FIG. 11

ADJUSTABLE CONTINUOUS SHELF MOUNTING SYSTEMS AND APPARATUSES RELATED THERETO

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority to and the benefit of the filing date of U.S. Provisional Application No. 62/001,453, filed on May 21, 2014, entitled "ADJUSTABLE CONTINUOUS SHELF MOUNTING SYSTEMS AND APPARATUSES RELATED THERETO", which is hereby incorporated by reference in its entirety. Additionally, U.S. Provisional Application No. 62/100,091, filed on Jan. 6, 2015, entitled "ADJUSTABLE CONTINUOUS SHELF MOUNTING SYSTEMS AND APPARATUSES RELATED THERETO", is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

This patent specification relates to the field of storage shelving. More specifically, this patent specification relates to storage shelving systems for providing adjustable continuous shelving.

BACKGROUND

Storage organizers, shelving units, and other storage systems are known in the art. These storage systems may be attached to a wall for structural support, or they may even be free standing and secured to a vertical surface for stability. Storage systems that are attached to walls and other vertical surfaces require a wall standard that secures to a wall and a shelf bracket that secures to the wall standard which supports a shelf. At a minimum, one shelf bracket and one wall standard are required to support each end of a shelf. However, due to the narrow width of wall studs, only one wall standard may be mounted into a single wall stud. For this reason, while shelves may be positioned on the same level, they do not form a continuous shelving surface as each shelf is supported solely by their respective two or more brackets in different wall studs. In order to secure a series of shelves in a level plane, a large number of brackets are required which can be expensive and time consuming to assemble.

Storage systems in the art also suffer from a lack of structural rigidity due to the single plate design and structure of their shelf brackets. These brackets are typically made from a single piece of material that is prone to torsional stress and failure as the weight on the shelf bracket is increased which limits the maximum weight that these storage systems can accommodate. If an uneven amount of weight is positioned on either the left side or the right side of a bracket, the single plate design of the bracket is unable to withstand the resultant torsional stress and the bracket may fail.

Another drawback common to storage systems common in the art is that multiple fasteners are required to secure a shelf to two or more shelf brackets. These fasteners increase the amount of time and effort required to assemble and disassemble prior art shelving systems.

Therefore, a need exists for novel adjustable continuous shelf mounting systems and apparatuses. There also exists a need for novel shelf mounting systems and apparatuses that are able to mount shelves with a reduced number of shelf brackets and wall standards allowing a single wall stud to support the ends of two shelves. There is a further need for a novel shelf mounting systems and apparatuses comprising shelf brackets that resist bending and/or twisting when weight is applied to one side creating torsional stress on the bracket. Finally, there exists a need for novel shelf mounting systems and apparatuses that have shelves and shelving brackets that are able to secure and engage to each other without requiring separate fasteners thereby facilitating assembly and disassembly.

BRIEF SUMMARY OF THE INVENTION

Adjustable continuous shelf mounting systems and apparatuses are provided. In some embodiments, an adjustable continuous shelving system may comprise: a wall standard comprising a plurality of upper slots and a plurality of lower slots in which the lower slots may be positioned below and proximate to the upper slots. The system may also include a support bracket comprising: a first support wing coupled to a first upper tongue configured to engage an upper slot of a wall standard and a first lower tongue configured to engage a lower slot of a wall standard; a second support wing coupled to a second upper tongue configured to engage an upper slot of a wall standard and a second lower tongue configured to engage a lower slot of a wall standard; and a shelf lip receiving valley formed between the first support wing and the second support wing. The system may further include a shelf comprising a load bearing surface and a perimeter lip coupled below the load bearing surface in which the perimeter lip of the shelf is configured to be received in the shelf lip receiving valley of the support bracket.

In further embodiments, the wall standard may comprise a set of slots configured to engage a bracket support to a wall standard, and a set of slots may comprise two upper slots and two lower slots. The two lower slots may be staggeredly offset relative to each other, and the first lower tongue and second lower tongue may be staggeredly offset allowing the first lower tongue to be inserted into one of the lower slots of the set and the second lower tongue to be inserted into the other of the lower slot of the set.

In still further embodiments, an upper slot may be defined by an upper slot top edge, an upper slot bottom edge, an upper slot distal elongate edge, and an upper slot medial elongate edge. The upper slot top edge may comprise a first length (L**1**) and an upper slot bottom edge may comprise a second length (L**2**). The L**1** of the upper slot top edge may be greater than L**2** of the upper slot bottom edge. The upper slot medial elongate edge may intersect with the upper slot bottom edge to form angle A, and angle A may be between 90 and 95 degrees. The upper slot distal elongate edge may intersect with the upper slot bottom edge to form angle B, and angle B is less than 90 degrees.

In still further embodiments, a lower slot may be defined by a lower slot top edge, a lower slot bottom edge, a lower slot distal elongate edge, and a lower slot medial elongate edge. The lower slot top edge may comprise a third length (L**3**) and a lower slot bottom edge may comprise a fourth length (L**4**). The L**3** of the lower slot top edge may be greater than L**4** of the lower slot bottom edge. The lower slot medial elongate edge may intersect with the lower slot bottom edge to form angle C, and angle C may be between 90 and 95 degrees. The lower slot distal elongate edge may intersect with the lower slot bottom edge to form angle D, and angle D may be less than 90 degrees.

BRIEF DESCRIPTION OF THE DRAWINGS

Some embodiments of the present invention are illustrated as an example and are not limited by the figures of the accom-

panying drawings, in which like references may indicate similar elements and in which:

FIG. **1** depicts a perspective view of an example of an adjustable continuous shelf mounting system according to various embodiments described herein.

FIG. **2** illustrates a perspective view of an example of wall standard according to various embodiments described herein.

FIG. **3** shows a perspective view of an alternative example of wall standard according to various embodiments described herein.

FIG. **4** depicts an enlarged partial perspective view of the example of a wall standard illustrated in FIG. **2** according to various embodiments described herein.

FIG. **5** illustrates an enlarged partial perspective view of the alternative example of wall standard shown in FIG. **3** according to various embodiments described herein.

FIG. **6** shows a side perspective view of an example of a support bracket according to various embodiments described herein.

FIG. **7** depicts a top perspective view of an example of a support bracket according to various embodiments described herein.

FIG. **8** illustrates a top partial perspective view of an example of a support bracket according to various embodiments described herein.

FIG. **9** shows a bottom partial perspective view of an example of a support bracket according to various embodiments described herein.

FIG. **10** depicts a bottom partial perspective view of an alternative example of a support bracket according to various embodiments described herein.

FIG. **11** illustrates a top perspective view of an example of a shelf according to various embodiments described herein.

DETAILED DESCRIPTION OF THE INVENTION

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well as the singular forms, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, steps, operations, elements, components, and/or groups thereof.

Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one having ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and the present disclosure and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

In describing the invention, it will be understood that a number of techniques and steps are disclosed. Each of these has individual benefit and each can also be used in conjunction with one or more, or in some cases all, of the other disclosed techniques. Accordingly, for the sake of clarity, this description will refrain from repeating every possible combination of the individual steps in an unnecessary fashion. Nevertheless, the specification and claims should be read with the understanding that such combinations are entirely within the scope of the invention and the claims.

For purposes of description herein, the terms "upper", "lower", "left", "rear", "right", "front", "vertical", "horizontal", and derivatives thereof shall relate to the invention as oriented in FIG. **1**. However, one will understand that the invention may assume various alternative orientations and step sequences, except where expressly specified to the contrary. Therefore, the specific devices and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

New adjustable continuous shelf mounting systems and apparatuses are discussed herein. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be evident, however, to one skilled in the art that the present invention may be practiced without these specific details.

The present disclosure is to be considered as an exemplification of the invention, and is not intended to limit the invention to the specific embodiments illustrated by the figures or description below.

The present invention will now be described by example and through referencing the appended figures representing preferred and alternative embodiments. FIG. **1** illustrates an example of an adjustable continuous shelf mounting system ("the system") **100** according to various embodiments. In this example, the system **100** comprises two support bracket apparatuses ("support brackets") **2**, two wall standard apparatuses ("wall standards") **4**, and two shelf apparatuses ("shelves") **6**. In other embodiments, the system **100** may comprise any number of support brackets **2**, wall standards **4**, and shelves **6**. The wall standards **4** are configured to be attached to a wall or other vertical surface with one or more fasteners such as nails, screws, bolts, anchors, adhesives, or any other type of suitable fastener. One or more support brackets **2** may engage and be secured to a wall standard **4**. By engaging two or more support brackets **2** in a level plane to two or more wall standards **4**, one or more shelves **6** may be placed on two or more support brackets **2** and be secured in a level orientation. In some embodiments, each support bracket **2** may be configured to support two shelves **6** allowing for shelves **6** to be placed adjacent to each other to form a continuous shelf surface. In further embodiments, a continuous shelf surface may be formed and supported by a number of support brackets **2** and wall standards **4** that each number one more than the number of shelves **6** they support. For example, three shelves **6** may be supported by four support brackets **2** and four wall standards **4**, while seven shelves **6** may be supported by eight support brackets **2** and eight wall standards **4** with the shelves **6** aligned in the same plane to form a continuous shelving surface. In still further embodiments, a wall standard **4** may support two or more support brackets **2** and two or more shelves **6**, allowing the wall standard to support two or more load bearing surfaces **66** of two or more shelves **6** to form a continuous shelving surface.

FIG. **2** illustrates a perspective view of an example of wall standard **4** according to various embodiments described herein. In this embodiment, the wall standard **4** comprises a wall standard face **40** joined to two wall standard side supports **42**. Wall standard side supports **42** may be configured to contact a wall or other surface and maintain a space between the wall and the wall standard face **40**. In further embodi-

ments, a wall standard **4** may comprise a wall standard face **40** joined to two or more wall standard side supports **42**.

The wall standard face **40** comprises a plurality of slots or apertures which may be repeatedly positioned in sets along portions of the wall standard face **40**. Each set of slots may be configured to engage with a support bracket **2**. A set of slots configured to engage a support bracket **2** (FIGS. **1**, and **6-10**) may comprise two upper slots **32** and two lower slots **36**. Multiple sets of two upper slots **32** and two lower slots **36** may be positioned along the wall standard face **40** with each configured to engage a support bracket **2**. In some embodiments, the two lower slots **36** of a set of slots may be staggeredly offset from each other as shown in FIGS. **2** and **4**. In other embodiments, the two upper slots **32** of a set of slots may be staggeredly offset from each other. Additionally, one or more mounting screw apertures **34** and/or mounting bolt shank apertures **38** may be positioned along the wall standard face **40** which may be configured to receive screw type, bolt type, or any other type of fastener suitable for attaching a wall standard **4** to a wall.

Turning now to FIG. **3**, a perspective view of an alternative example of wall standard **4** according to various embodiments is shown. In this embodiment, the wall standard **4** comprises a wall standard face **40** joined to two wall standard side supports **42** with a plurality of slots or apertures which may be repeatedly positioned in sets along portions of the wall standard face **40** and which are configured to engage with a support bracket **2**. A set of slots configured to engage a support bracket **2** (FIGS. **1**, and **6-10**) may comprise two upper slots **32** and two lower slots **36**. Multiple sets of two upper slots **32** and a lower slot **36** may be positioned along the wall standard face **40** each configured to engage a support bracket **2** (FIG. **1**). In some embodiments, the two lower slots **36** of a set of slots may be positioned so as to generally mirror each other as shown in FIGS. **3** and **5**. Additionally, one or more mounting screw apertures **34** and/or mounting bolt shank apertures **38** may be positioned along the wall standard face **40** which are configured to receive screw type, bolt type, or any other type of fastener suitable for attaching a wall standard **4** to a wall.

Referring now to FIGS. **4** and **5**, the wall standard face **40** comprises a plurality of slots or apertures which may be repeatedly positioned in sets along portions of the wall standard face **40**. Each set of slots may be configured to engage with a support bracket **2**. A set of slots configured to engage a support bracket **2** may comprise two upper slots **32** and two lower slots **36**. The upper slots **32** may be larger than the lower slots **36**. In some embodiments, the upper slots **32** may mirror each other in dimensions and positioning and the lower slots **36** may mirror each other in dimensions but also be staggeredly offset relative to each other in positioning so that one of the lower slots **36** is closer to the upper slot **32** on a first bracket side support **8** than the other lower slot **36** is to the upper slot **32** on the second bracket side support **8** as illustrated in FIGS. **2** and **4**. In other embodiments, the upper slots **32** may mirror each other in dimensions and positioning and the lower slots **36** may also mirror each other in dimensions and positioning so that both of the lower slots **36** are substantially equidistant from the upper slots **32** as illustrated in FIGS. **3** and **5**.

An upper slot **32** may be defined by an upper slot top edge **81**, an upper slot bottom edge **82**, an upper slot distal elongate edge **83**, and an upper slot medial elongate edge **84**. Both the upper slot distal elongate edge **83** and the upper slot medial elongate edge **84** may be greater in length than the upper slot top edge **81** and the upper slot bottom edge **82**. The upper slot medial elongate edge **84** may be generally positioned closer the longitudinal center of the wall standard front face **40** than the upper slot distal elongate edge **83**. An upper slot top edge **81** may comprise a first length (L**1**) and an upper slot bottom edge **82** may comprise a second length (L**2**). In some embodiments, the L**1** of the upper slot top edge **81** may be greater than the L**2** of the upper slot bottom edge **82**. In other embodiments, the L**2** of the upper slot bottom edge **82** may be greater than the L**1** of the upper slot top edge **81**.

The upper slot medial elongate edge **84** may intersect with the upper slot bottom edge **82** to form angle A. In some embodiments, angle A may be a substantially right angle of between 89 to 91 degrees. In other embodiments, angle A may be between 90 and 95 degrees. The upper slot distal elongate edge **83** may also intersect with the upper slot bottom edge **82** to form angle B. In some embodiments, angle B may be a substantially right angle of between 89 to 91 degrees. In other embodiments, angle B may be less than 90 degrees. In further embodiments, angle B may be between 88 and 89 degrees. In still further embodiments, angle A may be approximately 90 degrees and angle B may be approximately 88.5 degrees.

A lower slot **36** may be defined by a lower slot top edge **85**, a lower slot bottom edge **86**, a lower slot distal elongate edge **87**, and a lower slot medial elongate edge **88**. Both the lower slot distal elongate edge **87** and the lower slot medial elongate edge **88** may be greater in length than the lower slot top edge **85** and the lower slot bottom edge **86**. The lower slot medial elongate edge **88** may be generally positioned closer the longitudinal center of the wall standard front face **40** than the lower slot distal elongate edge **87**. A lower slot top edge **85** may comprise a third length (L**3**) and a lower slot bottom edge **86** may comprise a fourth length (L**4**). In some embodiments, L**3** of the lower slot top edge **85** may be greater than L**4** of the lower slot bottom edge **86**. In other embodiments, L**4** of the lower slot bottom edge **86** may be greater than L**3** of the lower slot top edge **85**.

The lower slot medial elongate edge **88** may intersect with the lower slot bottom edge **86** to form angle C. In some embodiments, angle C may be a substantially right angle of between 89 to 91 degrees. In other embodiments, angle C may be between 90 and 95 degrees. The lower slot distal elongate edge **87** may also intersect with the lower slot bottom edge **86** to form angle D. In some embodiments, angle D may be a substantially right angle of between 89 to 91 degrees. In other embodiments, angle D may be less than 90 degrees. In further embodiments, angle D may be between 88 and 89 degrees. In still further embodiments, angle C may be approximately 90 degrees and angle D may be approximately 88.5 degrees.

In some embodiments, the lower slots **36** may be staggeredly offset relative to each other in positioning so that one of the lower slots **36** is closer to the upper slot **32** on a first bracket side support **8** than the other lower slot **36** is to the upper slot **32** on the second bracket side support **8** as illustrated in FIGS. **2** and **4**. In some embodiments, a lower slot **36** may be staggered from the other lower slot **36** a distance of approximately 1% to 800% the length of the lower slot medial elongate edge **88** of the lower slot **36**. In further embodiments, a lower slot **36** may be staggered from the other lower slot **36** a distance of approximately 25% to 75% the length of the lower slot medial elongate edge **88** of the lower slot **36**.

In some embodiments, the upper slots **32** may be spaced apart from each other a distance that is greater than the distance the lower slots **36** are spaced apart from each other. The two upper slots **32** may be separated from each other by a fifth distance (L**5**) which may be measured as the distance between the upper slot medial elongate edge **84** of a first upper slot **32** and the upper slot medial elongate edge **84** of a second upper slot **32** as shown in FIGS. **5** and **6**. The two

lower slots **36** may be separated from each other by a sixth distance (L**6**) which may be measured as the distance between the lower slot medial elongate edge **88** of a first lower slot **36** and the lower slot medial elongate edge **88** of a second lower slot **36** as shown in FIGS. **5** and **6**. In some embodiments, L**5** of the upper slots **32** may be greater than the L**6** of the lower slots **32**. In further embodiments, L**5** of the upper slots **32** may be between 1% and 300% greater than the L**6** of the lower slots **32**. In other embodiments, L**5** of the upper slots **32** may be approximately the same as the L**6** of the lower slots **32**. In still other embodiments, L**6** of the lower slots **32** may be greater than the L**5** of the upper slots **32**.

A wall standard **4** may be made from durable materials such as hard plastics, metal alloys, wood, hard rubbers, carbon fiber, fiber glass, resins, polymers or any other suitable materials including combinations of materials. Additionally, one or more elements may be made from or comprise durable and slightly flexible materials such as soft plastics, silicone, soft rubbers, or any other suitable materials including combinations of materials. In some embodiments, a wall standard face **40** may be joined to two wall standard side supports **42** by being integrally molded or formed together, chemically bonded, heat bonded, or otherwise joined.

Turning now to FIGS. **6-8** an example of a support bracket **2** according to various embodiments described herein. In this embodiment, the support bracket **2** comprises a support wing **10** coupled to an upper tongue **18** configured to engage an upper slot **32** of a wall standard **4** and a lower tongue **26** configured to engage a lower slot **36** of a wall standard **4**. In further embodiments, a support bracket **2** may comprise a first support wing **10** coupled to a first upper tongue **18** configured to engage an upper slot **32** of a wall standard **4** and a first lower tongue **26** configured to engage a first lower slot **36** of a wall standard **4**; a second support wing **10** coupled to a second upper tongue **18** configured to engage an upper slot **32** of a wall standard **4** and a second lower tongue **26** configured to engage a second lower slot **36** of a wall standard **4**; and a shelf lip receiving valley **72** formed between the first support wing **10** and the second support wing **10**.

In some embodiments, a support bracket **2** may comprise a bracket side support **8** which may be configured to couple a support wing **10** to an upper tongue **18** and to a lower tongue **26**. In further embodiments, a support bracket **2** may comprise a first bracket side support **8** which may be configured to couple a first support wing **10** to a first upper tongue **18** and to a first lower tongue **26**, and the support bracket **2** may also comprise a second bracket side support **8** which may be configured to couple a second support wing **10** to a second upper tongue **18** and to a second lower tongue **26**. The first support wing **10** and second support wing **10** may then be coupled together with a support bracket base **30** which may extend the length of the support bracket **2**. The first support wing **10** and second support wing **10** may be angled away from each other to form a shelf lip receiving valley **72**. The shelf lip receiving valley **72** may be configured to receive a portion of the perimeter lip **52** (FIG. **9**) from a first shelf **6** (FIG. **1**) and a portion of the perimeter lip **52** from a second shelf **6** allowing a support bracket **2** comprising two support wings **10** to receive two adjacent shelves **6** to form continuous shelving surface as shown in FIG. **1**. In some embodiments, a first support wing **10** and second support wing **10** may be angled away from each other to form a shelf lip receiving valley **72** with a width that is greater than the combined width of a perimeter lip **52** from a first shelf **6** and a perimeter lip **52** from a second shelf **6**.

In some embodiments, a support wing **10** may include a rear shelf retaining groove **80** positioned proximate to an upper tongue **18**. A rear shelf retaining groove **80** may comprise a rear shelf support surface **68** which extends into the support wing **10** so that the support wing **10** is positioned above the rear shelf support surface **68** to form a rear shelf retaining groove **80**. The rear shelf support surface **68** may be configured to receive portions of a shelf **6** (FIGS. **1** and **9**) such as portions of the perimeter lip **52** (FIG. **9**) and/or corner gusset **56** (FIG. **9**) thereby allowing the rear shelf support surface **68** to support a corner of a shelf **6**. Once resting on the rear shelf support surface **68**, the shelf **6** may be prevented from inadvertently sliding forward (away from the wall standard **4**) and off of a support bracket **2** by the contact between the rear shelf retaining groove **80** with portions of the perimeter lip **52** and/or corner gusset **56** of the shelf **6**.

A support wing **10** may further include a front shelf support surface **69** positioned a distance away from the rear shelf support surface **68** a distance that is generally similar to the distance between two opposing sides of a shelf **6** (FIGS. **1** and **9**). The front shelf support surface **69** may be configured to receive portions of a shelf **6** (FIGS. **1** and **9**) such as portions of the perimeter lip **52** (FIG. **9**) and/or corner gusset **56** (FIG. **9**) thereby allowing the front shelf support surface **69** to support a corner of a shelf **6**. Once a support bracket **2** is engaged to a wall standard **4**, a rear shelf support surface **68** and a front shelf support surface **69** may each contact and support portions of the perimeter lip **52** and/or a corner gusset **56** of the shelf **6** thereby supporting one side of the shelf **6** in a generally level manner.

In some embodiments, a support wing **10** may comprise an optional truss relief groove **78**. One or more optional truss relief grooves **78** may be positioned on a support wing **10** and may be configured to receive portions of a shelf **6** (FIGS. **1** and **9**) such as an optional truss support **76** (FIG. **9**) to allow a shelf **6** comprising an optional truss support **76** to be supported in a generally level orientation by one or more support brackets **2**.

A support bracket **2** may be secured to a wall standard **4** (FIGS. **1-5**) by inserting the two lower tongues **26** and two upper tongues **18** into a set of two lower slots **36** and two upper slots **32**, respectively, on a wall standard **4** allowing the two lower tongues **26** and two upper tongues **18** to enter the space between the wall and the wall standard face **40** (FIGS. **2-5**). An upper tongue **18** may comprise an upper tongue groove **24** and an upper tongue safety catch **20**. An upper tongue safety catch **20** may extend up from the upper tongue **18**. The upper tongue safety catch **20** may be configured to catch onto the upper slot top edge **81** of an upper slot **32** to prevent the upper tongue **18** from being inserted or removed from an upper slot **32** unless the end of the support bracket **2** opposite to the upper tongue **18** is tilted or lifted above the upper tongue **18**. An upper tongue groove **24** may extend into the upper tongue **18** towards the upper tongue safety catch **20**. The upper tongue groove **24** may be configured to catch onto and be supported by the upper slot bottom edge **82** of an upper slot **32** to prevent the upper tongue **18** from being removed from an upper slot **32** unless the upper tongue **18** is lifted to disengage the upper slot bottom edge **82** from resting in the upper tongue groove **24**.

A lower tongue **26** may comprise a lower tongue groove **28** which may extend into the lower tongue **26** towards the upper tongue **18**. In some embodiments, the upper tongues **32** may be larger than the lower tongues **36**. The lower tongue groove **28** may be configured to catch onto and be supported by the lower slot bottom edge **86** of a lower slot **36** to prevent the lower tongue **26** from being removed from a lower slot **36** unless the lower tongue **26** is lifted to disengage the lower slot bottom edge **86** from resting in the lower tongue groove **28**.

The lower tongue grooves **26** and upper tongue grooves **24** may each engage onto a lower slot bottom edge **86** and onto an upper slot bottom edge **82**, respectively, to engage a support bracket **2** to a wall standard **4** by the action of gravity and weight positioned onto the support bracket **2**.

By positioning the upper tongues **18** towards the top of the support bracket **2** proximate to a support wing **10** and the lower tongues **26** towards the bottom of the support bracket **2** below the upper tongues **18**, when inserted into upper slots **32** and lower slots **36**, respectively, on a wall standard **4**, a very strong torsional force resisting connection is created. In some embodiments, the upper slots **32** and a lower slot **36** precisely match the shape of the upper tongues **18** and lower tongue **26** on a support bracket **2** thereby increasing the strength of the torsional force resisting connection.

To remove a support bracket **2** from a wall standard **4**, the support bracket **2** may be lifted until the lower tongue grooves **26** and upper tongue grooves **24** may each disengage from a lower slot bottom edge **86** of the lower slots **36** and from an upper slot bottom edge **82** of the upper slots **32**, respectively, allowing the lower tongues **26** and upper tongues **18** to be pulled out and away from the wall standard **4**. Optionally, one or more upper tongue safety catches **20** may be configured to provide an interfering surface that will not allow the support bracket **2** to accidently become disengaged from the wall standard **4** when bumped or jostled so that the end of the support bracket **2** opposite to the upper tongue **18** must tilted or lifted above the upper tongue **18** in addition to lifting the lower tongue grooves **26** and upper tongue grooves **24** away from the lower slot bottom edges **86** and upper slot bottom edges **82**, respectively, before the support bracket **2** can be disengaged from a wall standard **4**.

As shown in FIGS. **6-10**, a support wing **10** may comprise one or more support wing safety catch tabs **11**. In some embodiments, a support wing safety catch tab **11** may be positioned on a support wing **10** proximate to a rear shelf supporting surface **68** and a second support wing safety catch tab **11** may be positioned on the support wing **10** proximate to a front shelf supporting surface **69**. A support wing safety catch tab **11** may extend above the support wing **10** allowing the support wing safety catch tab **11** to catch onto a portion of a shelf **6** (FIGS. **1** and **11**) to prevent the shelf **6** from inadvertently sliding sideways off of a support bracket **2**. A support wing safety catch tab **11** may be configured to extend above the rear shelf supporting surface **68** and front shelf supporting surface **69** so that the support wing safety catch tab **11** may catch onto the perimeter lip **52** (FIG. **11**) or other element of a shelf **6** to catch the shelf **6** from completely separating from the support bracket **2** as the shelf **6** moves sideways off of the support bracket **2**. In a similar manner, the rear shelf supporting surface **68** and front shelf supporting surface **69** may catch onto a corner gusset **56** (FIG. **11**) and/or perimeter lip **52** of a shelf **6** to catch the shelf **6** from completely separating from the support bracket **2** as the shelf **6** moves forwards or backwards off of the support bracket **2**.

FIG. **9** depicts a bottom partial perspective view of an example of a support bracket **2** according to various embodiments described herein. In some embodiments, the lower tongues **26** may be configured to be in a staggeredly offset position on the bracket side supports **8** relative to each other so that one lower tongue **26** is relatively closer to an upper tongue **18** compared to the other lower tongue **26**. This example of a support bracket **2** comprising staggered lower tongues **26** may be configured to be used with the example of a wall standard **4** comprising staggered lower slots **36** as shown in FIGS. **2** and **4**. In some embodiments, a lower tongue **26** may be staggered from the other lower tongue **26** a distance of approximately 1% to 800% the length of the lower slot medial elongate edge **88** of the lower slot **36**. In further embodiments, a lower tongue **26** may be staggered from the other lower tongue **26** a distance of approximately 25% to 75% the length of the lower slot medial elongate edge **88** of the lower slot **36**.

FIG. **10** illustrates a bottom partial perspective view of an alternative example of a support bracket **2** according to various embodiments described herein. In some embodiments, the lower tongues **26** may be configured to generally mirror each other in position relative to each other on the bracket side supports **8** so that each lower tongue **26** is relatively the same distance to the upper tongue **18** on both bracket side supports **8**. This example of a support bracket **2** comprising two lower tongues **26** which generally mirror each other in positioning on each bracket side support **8** may be configured to be used with the example of a wall standard **4** comprising mirrored lower slots **36** as shown in FIGS. **3** and **5**.

FIG. **11** shows a top perspective view of an example of a shelf according to various embodiments described herein. A shelf **6** may comprise a load bearing surface **66** and a perimeter lip **52** coupled the load bearing surface **66**. In some embodiments, the shelf **6** and the perimeter lip **52** may comprise four sides with a corner gusset **56** positioned in each corner of the perimeter lip **52**. In further embodiments, a shelf **6** may comprise a wire frame structure which may allow the load bearing surface **66** and/or perimeter lip **52** to be permeable to air, water, small objects, and the like. In other embodiments, the load bearing surface **66** and/or perimeter lip **52** may comprise a generally solid structure which may be formed by sheets of metal, wood, plastic, or any other suitable material.

In some embodiments, a perimeter lip **52** may extend away from and surround the perimeter of the bottom of the load bearing surface **66** of the shelf **6**. The perimeter lip **52** may also be configured to engage to a rear shelf support surface **68** (FIGS. **6-10**) and/or front shelf support surface **69** (FIGS. **6-7**) of a support bracket **2** (FIGS. **1**, **6-10**). In further embodiments, a shelf **6** may be supported by the contact of the perimeter lip **52** with both a rear shelf support surface **68** and a front shelf support surface **69** of a first support bracket **2** and also by the contact of the perimeter lip **52** with both a rear shelf support surface **68** and a front shelf support surface **69** of a second support bracket **2**.

A shelf may optionally comprise one or more corner gussets **56**. A corner gusset **56** may structurally reinforce an angular corner of the perimeter lip **52** and/or structurally reinforce the coupling of the perimeter lip **52** to the load bearing surface **66** thereby augmenting the weight bearing capacity of the shelf **6**. In some embodiments, a corner gusset **56** may comprise a generally planar shape which may be configured to contact a rear shelf support surface **68** (FIGS. **6-10**) or a front shelf support surface **69** (FIGS. **6-7**) of a support bracket **2** (FIGS. **1**, **6-10**). In further embodiments, a shelf **6** may comprise four corner gussets **56** with a corner gusset **56** positioned in one or more of the angular corners of the perimeter lip **52**. In still further embodiments, the perimeter lip **52** of the shelf **6** may be configured to slidably engage with the shelf lip receiving valley **72** (FIGS. **7** and **8**) of a support bracket **2** (FIGS. **1**, **6-10**). In further embodiments, the slidable engagement movement may be limited by the contact of the perimeter lip **52** and/or a corner gusset **56** with a rear shelf support surface **68** or front shelf support surface **69** of a support bracket **2**.

In some embodiments, a shelf **6** may comprise one or more optional truss supports **76**. An optional truss support **76** may be coupled to or positioned adjacent to the perimeter lip **52**

and may be configured to contact portions of the load bearing surface **66** to provide structural support and rigidity to the shelf **6**. In some embodiments, an optional truss support **76** may be positioned on a shelf **6** so as to be received by an optional truss relief groove **78** on a bracket support **2**. In some embodiments, an optional truss support **76** may comprise a wire frame structure which may allow a truss support **76** to be permeable to air, water, small objects, and the like.

While some materials have been provided, in other embodiments, the elements that comprise apparatuses of the system **100** such as the support bracket apparatus **2**, the wall standard apparatus **4**, and the shelf apparatus **6** may be made from durable materials such as aluminum, steel, other metals and metal alloys, wood, hard rubbers, hard plastics, fiber reinforced plastics, carbon fiber, fiber glass, resins, polymers or any other suitable materials including combinations of materials. Additionally, one or more elements of the apparatuses may be made from or comprise durable and slightly flexible materials such as soft plastics, silicone, soft rubbers, or any other suitable materials including combinations of materials. In some embodiments, one or more of the elements that comprise the apparatuses of the system **100** may be coupled or connected together with heat bonding, chemical bonding, adhesives, clasp type fasteners, clip type fasteners, rivet type fasteners, threaded type fasteners, other types of fasteners, or any other suitable joining method. In other embodiments, one or more of the elements that comprise the apparatuses may be coupled or removably connected by being press fit or snap fit together, by one or more fasteners such as hook and loop type or Velcro® fasteners, magnetic type fasteners, threaded type fasteners, sealable tongue and groove fasteners, snap fasteners, clip type fasteners, clasp type fasteners, ratchet type fasteners, a push-to-lock type connection method, a turn-to-lock type connection method, slide-to-lock type connection method or any other suitable temporary connection method as one reasonably skilled in the art could envision to serve the same function. In further embodiments, one or more of the elements that comprise the apparatuses may be coupled by being one of connected to and integrally formed with another element of an apparatus of the system **100**.

Although the present invention has been illustrated and described herein with reference to preferred embodiments and specific examples thereof, it will be readily apparent to those of ordinary skill in the art that other embodiments and examples may perform similar functions and/or achieve like results. All such equivalent embodiments and examples are within the spirit and scope of the present invention, are contemplated thereby, and are intended to be covered by the following claims.

What is claimed is:

1. An adjustable continuous shelf mounting system, the system comprising:

a shelf having a length and a width, the shelf comprising a load bearing surface and a perimeter lip coupled below the load bearing surface;

a wall standard comprising a plurality of upper slots and a lower slot with said lower slots positioned below and proximate to said upper slots;

a support bracket having a length that corresponds to the width of the shelf, the support bracket comprising

at least one lower tongue configured to be inserted into a corresponding lower slot of the wall standard;

a first side wall having a first upper tongue extending from a rear of the first side wall, wherein the first upper tongue is configured to be inserted in a corresponding upper slot of the wall standard, wherein a first support wing protrudes upwardly and diagonally from an upper edge of the first side wall along substantially the entire length of the support bracket;

a second side wall having a second upper tongue extending from a rear of the second side wall, wherein the second upper tongue is configured to be inserted in a corresponding upper slot of the wall standard, wherein a second support wing protrudes upwardly and diagonally from an upper edge of the second side wall along substantially the entire length of the support bracket; wherein the second side wall is generally parallel to the first side wall; and

a shelf lip receiving recess formed in the support bracket;

wherein the load boring surface, wherein the load bearing surface of the shelf is configured to rest upon the support wings and the perimeter lip of the shelf is configured to be received in the shelf lip receiving recesses of the support bracket.

2. The system of claim **1**, wherein a shelf lip receiving valley defined between the shelf lip receiving recesses of the support bracket, the shelf lip receiving valley is configured to receive a perimeter lip from the shelf and a perimeter lip from a second shelf.

3. The system of claim **1**, wherein the first support wing includes a first support wing safety catch tab extending away form the first support wing, and wherein the second support wing includes a second support wing safety catch tab extending away from the second support wing.

4. The system of claim **3**, wherein the first support wing safety catch tab is configured to prevent the shelf from sliding sideways off of the support bracket and the second support wing safety catch tab is configured to prevent a second shelf from sliding sideways off of the support bracket.

5. The system of claim **1**, wherein the perimeter lip extends around and below a perimeter of the load bearing surface.

6. The system of claim **5**, wherein the perimeter lip comprises four sides and four corners with a corner gusset positioned in each of the four corners.

7. The system of claim **2**, wherein the first and second support wings each comprise a rear shelf support surface.

8. The system of claim **7**, wherein the rear shelf support surfaces are configured to support a first corner gusset and the shelf lip receiving valley is configured to support a second corner gusset.

9. The system of claim **1**, wherein the wall standard comprises a set of slots configured to mount the support bracket support to the wall standard, and wherein the set of slots comprises two upper slots and two lower slots.

10. The system of claim **9**, wherein the two lower slots of the set of slots are staggeredly offset relative to each other, and wherein the at least one lower tongue includes a first lower tongue and a second lower tongue of the support bracket are staggeredly offset allowing the first lower tongue to be inserted into one of the lower slots of the set and the second lower tongue to be inserted into the other of the lower slot of the set.

11. The system of claim **1**, wherein a corresponding upper slot is defined by an upper slot top edge, an upper slot bottom edge, an upper slot distal elongate edge, and an upper slot medial elongate edge.

12. The system of claim **11**, wherein the upper slot top edge comprises a first length (L**1**) and an upper slot bottom edge comprises a second length (L**2**), and wherein L**1** of the upper slot top edge is greater than L**2** of the upper slot bottom edge.

13. The system of claim 11, wherein the upper slot medial elongate edge intersects with the upper slot bottom edge to form angle A, and wherein angle A is between 90 and 95 degrees.

14. The system of claim 11, wherein the upper slot distal elongate edge intersects with the upper slot bottom edge to form angle B, and wherein angle B is less than 90 degrees.

15. The system of claim 1, wherein a corresponding lower slot is defined by a lower slot top edge, a lower slot bottom edge, a lower slot distal elongate edge, and a lower slot medial elongate edge.

16. The system of claim 15, wherein the lower slot top edge comprises a third length (L3) and a lower slot bottom edge comprises a fourth length (L4), and wherein L3 of the lower slot top edge is greater than L4 of the lower slot bottom edge.

17. The system of claim 15, wherein the lower slot medial elongate edge intersects with the lower slot bottom edge to form angle C, and wherein angle C is between 90 and 95 degrees.

18. The system of claim 15, wherein the lower slot distal elongate edge intersects with the lower slot bottom edge to form angle D, and wherein angle D is less than 90 degrees.

19. The system of claim 1, wherein a first and a second upper slot are separated by a fifth distance (L5) and a first and a second lower slot are separated by a sixth distance (L6), and wherein the L5 of the upper slots is greater than the L6 of the lower slots.

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