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Inventor(s)	Milam; Christopher Paul et al.

Backstop for shelving unit

Abstract

A backstop configured to be implemented on a shelf. The backstop includes a bottom portion, a back portion in continuous communication with a back edge of the bottom portion, and a plurality of prongs disposed along a front edge of the bottom portion.

Inventors: Milam; Christopher Paul (Cave Springs, AR), March; Ronald Andrew (Bentonville, AR), Lopez-Arroyo; Nancy (Rogers, AR), Maloney; Justin Lee (Rogers, AR), Lafferty; Katie Marie (Bentonville, AR), Milam; Clancy Monroe (Cave Springs, AR)

Applicant: Walmart Apollo, LLC (Bentonville, AR)

Family ID: 1000008767373

Assignee: Walmart Apollo, LLC (Bentonville, AR)

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Primary Examiner: Novosad; Jennifer E.

Attorney, Agent or Firm: Foley IP Law, PLLC

Background/Summary

BACKGROUND

(1) Gondola shelving is widely used in retail and other environments for product placement, display, or storage. Standard shelving is implemented in these environments to create aisles or passageways, with two shelving units arranged back to back, forming an aisle or passageway on either side of the front portion of the shelving unit. Multiple shelves are provided with each unit, offering shelves at varying height intervals, and often additional storage at the top-most shelf.

SUMMARY

(2) The following presents a simplified summary of the disclosure in order to provide a basic understanding to the reader. This summary is not intended to identify key features or essential

features of the claimed subject matter nor is it intended to be used to limit the scope of the claimed subject matter. Its sole purpose is to present a selection of concepts disclosed herein in a simplified form as a prelude to the more detailed description that is presented later.

(3) According to a first aspect an apparatus configured to be implemented on a shelf is described. The backstop includes a bottom portion, a back portion in continuous communication with a back edge of the bottom portion, and a plurality of prongs disposed along a front edge of the bottom portion.

(4) According to a second aspect a backstop configured to be implemented on a shelf is described. The backstop includes a bottom portion, a back portion in continuous communication with a back edge of the bottom portion, and a plurality of prongs disposed along a front edge of the bottom portion.

(5) Many of the attendant features will be more readily appreciated as the same becomes better understood by reference to the following detailed description considered in connection with the accompanying drawings.

Description

DESCRIPTION OF THE DRAWINGS

(1) The present description will be better understood from the following detailed description read in light of the accompanying drawings, wherein:

(2) FIG. 1 is an isometric view of an exemplary backstop for a shelving unit according to an implementation;

(3) FIG. 2 is an isometric view of the exemplary backstop shown in FIG. 1 illustrating the backstop on a shelving unit according to an implementation;

(4) FIG. 3 is an illustrative view of the backstop shown in FIGS. 1 and 2 illustrating the backstop on a shelving unit having items thereon according to an implementation;

(5) FIG. 4 is an illustrative view of the exemplary backstop shown in FIG. 1 illustrating the backstop on a top-most shelf of a shelving unit according to an implementation;

(6) FIG. 5 is an illustrative view of the exemplary backstop shown in FIG. 1 illustrating the backstop on a shelf having a pegboard implemented behind the associated shelving unit according to an implementation;

(7) FIG. 6 is a front elevational view of the backstop shown in FIG. 1 according to an implementation;

(8) FIG. 7 is a back elevational view of the backstop shown in FIG. 1 according to an implementation;

(9) FIG. 8 is a side elevational view of the backstop shown in FIG. 1 according to an implementation;

(10) FIG. 9 is a side elevational view of the backstop shown in FIG. 1 according to an implementation;

(11) FIG. 10 is a top elevational view of the backstop shown in FIG. 1 according to an implementation; and

(12) FIG. 11 is a bottom elevational view of the backstop shown in FIG. 1 according to an implementation.

(13) Like reference numerals are used to designate like parts in the accompanying drawings.

DETAILED DESCRIPTION

(14) The detailed description provided below in connection with the appended drawings is intended as a description of the present examples and is not intended to represent the only forms in which the present examples are constructed or utilized. The description sets forth the functions of the examples and the sequence of operations for constructing and operating the examples. However,

the same or equivalent functions and sequences may be accomplished by different examples.

(15) While various spatial and directional terms, such as “top,” “bottom,” “front,” “rear,” “upper,” “lower,” “vertical,” “upward,” and/or the like are used to describe implementations of the present application, it is understood that such terms are merely used with respect to the orientations shown in the drawings. The orientations can be inverted, rotated, or otherwise changed such that the spatial and directional terms apply differently, for example if the structure is flipped 180°; a top side becomes a bottom side; upward becomes downward; a left side becomes a right side; vice versa; and/or the like. Moreover, and for example, vertical may become horizontal when the structure is rotated 90°.

(16) Standard commercial shelving, often referred to as gondola shelving, is typically implemented with two shelving units arranged back to back, forming an aisle or passageway on either side of the front portion of the shelving unit. This back-to-back configuration leaves a space between the back of the two shelving units, by virtue of the dimensionality and configuration of the units and the components thereof. A pegboard is often installed in this space between the backside of two units, however there remains a gap between the back portion of the individual shelves of the unit and the pegboard. In some examples, this gap leaves a two inch (2”) space between the back of the shelf and the pegboard.

(17) This gap existing between the back of the shelf and the pegboard allows items or products to fall off of the back of the shelf and behind the shelving unit. Often, the product that falls into this gap is undetected and inaccessible. This results in a loss of inventory and revenue for the company. It also increases costs with time spent reconciling inventory discrepancies due to the products that have gone missing into the gap, leads to inaccurate inventory data, and other resource expenditures.

(18) Another issue with current shelving units and configurations arises when inventory is added, or re-stocked, at the front of the shelf. When a user (i.e., human associate, robot picker, and the like) adds items at the front of the shelf, the user often pushes the existing or remaining items on the shelf back to make additional room at the front to add more items. With the addition of new items pushing current items on the shelf towards the back, product that is too large to fall within the gap will push up against the pegboard, often causing damage to the pegboard, or displacing the pegboard from the correct position altogether. The damage to the pegboards further increases costs, requiring additional resources to replace the damaged pegboards.

(19) Aspects of the disclosure provide a backstop for a shelving unit that is configured to be implemented at the back of a shelf on a shelving unit, preventing inventory from falling off the back of the shelf and behind the shelving unit and further preventing inventory from coming into contact with the pegboard. The backstop is configured to sit flush atop the back of the shelf, with prongs that fit into existing cutout portions along the surface of the shelf in standard shelving. Additionally, as will be further described below, the backstop includes features to allow for fluid flow, such as airflow or water for example, through the fixture.

(20) Referring now to FIG. 1, according to an implementation, a backstop **100** includes a bottom portion **102** and a back portion **104** forming a ninety degree (90°) angle of the backstop **100**. In some examples, the bottom portion **102** and back portion **104** are formed from one continuous material, forming the angle through suitable means during manufacturing, and are not otherwise joined together by a separate component. In other words, in this example, the backstop is made from a single piece of material, which may be a piece of stamped metal bent or formed into the desired shape in some examples, and where the bottom portion and the back portion of the single piece of material are in continuous communication, but for optional apertures stamped into the metal. Other methods of forming backstop **100** from a single material may include press braking, flanging, die bending, point bending, gap pressing, ram bending, folding and edging, or any other suitable mean of conforming a piece of material into the depicted shape. In other examples, one or more materials may be used to form the backstop.

(21) The backstop **100** may be formed using any suitable material having some degree of rigidity

that provides relative resistance to force and deformation. In some examples, backstop **100** is formed using sheet steel. In other examples, backstop **100** may be formed of any other suitable material, such as, without limitation, durable hardwood, engineered wood, plywood, silicon, acrylic, plastic, plexiglass, or other forms of metal such as, without limitation, aluminum, copper, bronze, stainless steel, brass, titanium, and the like.

(22) As depicted in FIG. **1**, the back portion **104** is substantially solid, having apertures, or openings, disposed at intervals along the juncture of the back portion **104** and the bottom portion **102** of the backstop **100**. In some examples, apertures **106a-106e** are elliptical or substantially elongated and elliptical in form. In other examples, these apertures may form other shapes or geometric dimension. These apertures **106a-106e** allow for fluid flow through the backstop **100**. In some examples, the fluid flow is airflow. In other examples, the fluid flow is water or other fluids implemented as needed for fire suppression, allowing fluid flow throughout the backstop and the shelving unit fixture as a whole.

(23) The bottom portion **102** further optionally includes apertures **108a-108d**, which are openings that allow for fluid flow similar to apertures **106a-106e**. Apertures **108a-108d** are disposed along bottom portion **102**, which sits flush against the shelf when implemented on a shelving unit. Standard shelves have a plurality of cut-out apertures, or openings, along the surface of the shelf. Often, these cut-outs are diamond shaped, and are distributed along the back of the shelf in one or more set patterns and spacing configurations. These patterns and spacing configurations are known in the industry by one of skill in the art. Apertures **108a-108d** will overlap with one or more of the cut-out openings of a shelf, allowing further fluid flow through backstop **100** and through the shelf when implemented. In some examples, apertures **108a-108d** are elliptical or substantially elongated and elliptical in form. In other examples, these apertures may form other shapes or geometric dimension.

(24) Bottom portion **102** further includes prongs **110a-110i**, disposed in intervals along the front edge of bottom portion **102**. Prongs **110a-110i** are disposed in intervals that match at least one interval spacing pattern or configuration of cut-out apertures in shelf surfaces of standard shelving, such that the prongs readily fit into at least some of the cut-out openings of a shelf to removably secure the backstop **100** to the shelf. The prongs provide sufficient support to secure the backstop to the shelf utilizing the pattern of apertures in the shelf surface, and provide sufficient resistance to maintain the position and integrity of the backstop when secured to the shelf in this manner, even if reasonable force is applied against the backstop when implemented.

(25) Bottom portion **102** also optionally includes fastening aperture **112** and fastening aperture **114**, which in some examples are openings provided to enable compatibility with other existing systems or other apparatus that may also be implemented within or on shelving systems, such as Pusher track systems for example. In these examples, fastening apertures **112** and fastening aperture **114** allow another system or another apparatus to be fastened through the backstop **100** and onto the shelf, such that implementation of backstop **100** does not preclude implementation of other compatible systems. In other examples, fastening aperture **112** and fastening aperture **114** are openings provided as an additional feature to further secure backstop **100** to a shelf with the addition of a fastener. A fastener is disposed through fastening aperture **112** and fastening aperture **114** and through corresponding apertures in a shelf to secure the backstop **100** to a shelf in these other examples. A fastener may be any suitable fastening means, such as, without limitation, a screw, a bolt, a pin, or any other suitable fastener.

(26) Although a specific number of apertures and prongs are depicted in a particular interval spacing in the illustrative example of FIG. **1**, nothing in FIG. **1** should be construed as limiting the number or spacing of the apertures or prongs. Any number of apertures and/or prongs may be contemplated by this disclosure, in any interval spacing. Furthermore, the illustrative height depicted for back portion **104** is not intended to limit the relative height of the back portion in relation to the bottom portion or in relation to a shelving unit. Any suitable height may be

contemplated by this disclosure.

(27) Referring now to FIG. 2, instances of the backstop **100** described in FIG. 1 are depicted as implemented on shelves of a shelving unit. Backstop **202** is implemented on shelf **204** and backstop **206** is implemented on shelf **208**. Shelf **204** and shelf **208** have a plurality of openings disposed along the back surface of the shelf in an illustrative example. The pattern and spacing of the openings depicted on the shelf surfaces are not intended to be construed as limiting and are provided for illustrative purposes only. As illustrated here, shelf **204** and shelf **208** are configured in a side by side manner with attachment to vertical elements. FIG. 2 is an example of shelves that may be disposed at varying heights along the vertical plane of a shelving unit.

(28) Referring now to FIG. 3, instances of the backstop **100** described in FIG. 1 and backstop **202** and **206** in FIG. 2 are depicted as implemented with inventory, or items, upon the shelves. This illustrative example depicts the space **300** between the two back-to-back shelving units and the prevention provided by the backstops for inventory on the shelves to be pushed off, or otherwise fall off the back of the shelves and into the space between the units.

(29) Referring now to FIG. 4, an instance of the backstop **100** described in FIG. 1 is depicted as implemented on a top-most shelf **400** with inventory, or items, upon the top-most shelf. The top-most shelf of a unit is often referred to as a topstock area. The backstop **100** is configured to be implemented on any shelf of a shelving unit, including the top-most shelf.

(30) Referring now to FIG. 5, an instance of the backstop **100** described in FIG. 1 is depicted as implemented on an intermediate shelf with a pegboard **502** implemented in the space behind the shelving unit. The backstop **100** when implemented on shelf **504** prevents item **506** from coming into contact with pegboard **502**.

(31) FIG. 6 is a front elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(32) FIG. 7 is a back elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(33) FIG. 8 is a side elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(34) FIG. 9 is a side elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(35) FIG. 10 is a top elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(36) FIG. 11 is a bottom elevational view of the backstop **100** shown in FIG. 1 according to an implementation.

(37) Although a relative length of each backstop is shown herein, each backstop length may vary between any number of different lengths. Although a relative height of each backstop is shown herein, each backstop height may vary between any number of different heights and/or relative proportions to the bottom portion. In some examples, the backstop may be sized for a standard four foot gondola shelf, while in other examples the backstop may be sized for a three foot shelf or any other suitable size. In addition or alternative to the prongs and/or the apertures depicted herein, any other arrangement, geometry, structure, means, and/or the like may be used.

(38) The following clauses describe further aspects:

(39) A1. An apparatus comprising: a bottom portion; a back portion in continuous communication with a back edge of the bottom portion; and a plurality of prongs disposed along a front edge of the bottom portion.

(40) A2. The apparatus of any preceding clause, wherein the plurality of prongs are disposed at intervals along the front edge, and wherein the plurality of prongs are configured to fit within apertures disposed along a surface of a shelf.

(41) A3. The apparatus of any preceding clause, wherein the back portion is disposed at a 90° angle relative to the bottom portion.

(42) A4. The apparatus of any preceding clause, further comprising: one or more apertures disposed along a juncture between the back portion and the bottom portion.

(43) A5. The apparatus of any preceding clause, further comprising: one or more elliptical apertures disposed along a juncture between the back portion and the bottom portion.

(44) A6. The apparatus of any preceding clause, further comprising: a first fastening aperture disposed at a first end of the bottom portion relative to a length of the bottom portion; and a second fastening aperture disposed at a second end of the bottom portion relative to the length of the bottom portion, the first fastening aperture and the second fastening aperture configured for receiving a fastener to secure the apparatus to a shelving structure.

(45) As used herein, a structure, limitation, or element that is “configured to” perform a task or operation is particularly structurally formed, constructed, or adapted in a manner corresponding to the task or operation. For purposes of clarity and the avoidance of doubt, an object that is merely capable of being modified to perform the task or operation is not “configured to” perform the task or operation as used herein.

(46) Any range or value given herein can be extended or altered without losing the effect sought, as will be apparent to the skilled person.

(47) Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

(48) It will be understood that the benefits and advantages described above can relate to one implementation or can relate to several implementations. The implementations are not limited to those that solve any or all of the stated problems or those that have any or all of the stated benefits and advantages. It will further be understood that reference to ‘an’ item refers to one or more of those items.

(49) The order of execution or performance of the operations in examples of the present application illustrated and described herein is not essential, unless otherwise specified. That is, the operations can be performed in any order, unless otherwise specified, and examples of the application can include additional or fewer operations than those disclosed herein. For example, it is contemplated that executing or performing a particular operation before, contemporaneously with, or after another operation (e.g., different steps, etc.) is within the scope of aspects and implementations of the application.

(50) The term “comprising” is used in this specification to mean including the feature(s) or act(s) followed thereafter, without excluding the presence of one or more additional features or acts. The terms “comprising,” “including,” and “having” are intended to be inclusive and mean that there can be additional elements other than the listed elements. In other words, the use of “including,” “comprising,” “having,” “containing,” “involving,” and variations thereof, is meant to encompass the items listed thereafter and additional items. Accordingly, and for example, unless explicitly stated to the contrary, implementations “comprising” or “having” an element or a plurality of elements having a particular property can include additional elements not having that property. Further, references to “one implementation” or “an implementation” are not intended to be interpreted as excluding the existence of additional implementations that also incorporate the recited features. The term “exemplary” is intended to mean “an example of”.

(51) When introducing elements of aspects of the application or the examples thereof, the articles “a,” “an,” “the,” and “said” are intended to mean that there are one or more of the elements. In other words, the indefinite articles “a,” “an,” “the,” and “said” as used in the specification and in the claims, unless clearly indicated to the contrary, should be understood to mean “at least one.” Accordingly, and for example, as used herein, an element or step recited in the singular and preceded by the word “a” or “an” should be understood as not necessarily excluding the plural of the elements or steps.

(52) The phrase “one or more of the following: A, B, and C” means “at least one of A and/or at least one of B and/or at least one of C.” The phrase “and/or”, as used in the specification and in the claims, should be understood to mean “either or both” of the elements so conjoined, i.e., elements that are conjunctively present in some cases and disjunctively present in other cases. Multiple elements listed with “and/or” should be construed in the same fashion, i.e., “one or more” of the elements so conjoined. Other elements may optionally be present other than the elements specifically identified by the “and/or” clause, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, a reference to “A and/or B”, when used in conjunction with open-ended language such as “comprising” can refer, in one implementation, to A only (optionally including elements other than B); in another implementation, to B only (optionally including elements other than A); in yet another implementation, to both A and B (optionally including other elements); etc.

(53) As used in the specification and in the claims, “or” should be understood to have the same meaning as “and/or” as defined above. For example, when separating items in a list, “or” or “and/or” shall be interpreted as being inclusive, i.e., the inclusion of at least one, but also including more than one, of a number or list of elements, and, optionally, additional unlisted items. Only terms clearly indicated to the contrary, such as “only one of or “exactly one of,” or, when used in the claims, “consisting of,” will refer to the inclusion of exactly one element of a number or list of elements. In general, the term “or” as used shall only be interpreted as indicating exclusive alternatives (i.e., “one or the other but not both”) when preceded by terms of exclusivity, such as “either” “one of” “only one of” or “exactly one of.” “Consisting essentially of,” when used in the claims, shall have its ordinary meaning as used in the field of patent law.

(54) As used in the specification and in the claims, the phrase “at least one,” in reference to a list of one or more elements, should be understood to mean at least one element selected from any one or more of the elements in the list of elements, but not necessarily including at least one of each and every element specifically listed within the list of elements and not excluding any combinations of elements in the list of elements. This definition also allows that elements may optionally be present other than the elements specifically identified within the list of elements to which the phrase “at least one” refers, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, “at least one of A and B” (or, equivalently, “at least one of A or B,” or, equivalently “at least one of A and/or B”) can refer, in one implementation, to at least one, optionally including more than one, A, with no B present (and optionally including elements other than B); in another implementation, to at least one, optionally including more than one, B, with no A present (and optionally including elements other than A); in yet another implementation, to at least one, optionally including more than one, A, and at least one, optionally including more than one, B (and optionally including other elements); etc.

(55) Use of ordinal terms such as “first,” “second,” “third,” etc., in the claims to modify a claim element does not by itself connote any priority, precedence, or order of one claim element over another or the temporal order in which acts of a method are performed. Ordinal terms are used merely as labels to distinguish one claim element having a certain name from another element having a same name (but for use of the ordinal term), to distinguish the claim elements.

(56) Having described aspects of the application in detail, it will be apparent that modifications and variations are possible without departing from the scope of aspects of the application as defined in the appended claims. As various changes could be made in the above constructions, products, and methods without departing from the scope of aspects of the application, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

(57) It is to be understood that the above description is intended to be illustrative, and not restrictive. For example, the above-described implementations (and/or aspects thereof) can be used in combination with each other. In addition, many modifications can be made to adapt a particular

situation or material to the teachings of the various implementations of the application without departing from their scope. While the dimensions and types of materials described herein are intended to define the parameters of the various implementations of the application, the implementations are by no means limiting and are example implementations. Many other implementations will be apparent to those of ordinary skill in the art upon reviewing the above description. The scope of the various implementations of the application should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms “including” and “in which” are used as the plain-English equivalents of the respective terms “comprising” and “wherein.” Moreover, the terms “first,” “second,” and “third,” etc. are used merely as labels, and are not intended to impose numerical requirements on their objects. Further, the limitations of the following claims are not written in means-plus-function format and are not intended to be interpreted based on 35 U.S.C. § 112 (f), unless and until such claim limitations expressly use the phrase “means for” followed by a statement of function void of further structure.

(58) This written description uses examples to disclose the various implementations of the application, including the best mode, and also to enable any person of ordinary skill in the art to practice the various implementations of the application, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the various implementations of the application is defined by the claims, and can include other examples that occur to those persons of ordinary skill in the art. Such other examples are intended to be within the scope of the claims if the examples have structural elements that do not differ from the literal language of the claims, or if the examples include equivalent structural elements with insubstantial differences from the literal language of the claims.

Claims

1. A shelving system comprising: a backstop adapted to be attached to a shelf; a bottom portion of the backstop comprising a first fastening aperture disposed at a first end of the bottom portion relative to a length of the bottom portion and a second fastening aperture disposed at a second end of the bottom portion relative to the length of the bottom portion, the first fastening aperture and the second fastening aperture each configured for receiving a fastener to secure the backstop to the shelf; a back portion of the backstop in continuous communication with a back edge of the bottom portion and forming a 90° angle relative to the bottom portion at a juncture between the back portion and the bottom portion; a plurality of apertures disposed at intervals along the juncture in communication with the back portion and the bottom portion; and a plurality of prongs disposed at intervals along a front edge of the bottom portion and configured to fit within apertures disposed along a surface of the shelf.
2. The shelving system of claim 1, wherein the plurality of apertures disposed along the juncture are substantially elliptical.
3. The shelving system of claim 1, wherein the bottom portion further comprises: one or more bottom apertures disposed along the length of the bottom portion.
4. The shelving system of claim 1, further comprising: the first fastening aperture and the second fastening aperture configured for receiving a first fastener and a second fastener, respectively, to secure another system or apparatus to be fastened through the backstop and onto the shelf, wherein implementation of the backstop does not preclude implementation of other compatible systems.
5. The shelving system of claim 1, wherein the backstop is formed from a single piece of material.
6. The shelving system of claim 1, wherein the back portion is substantially solid.
7. A backstop for a shelf, the backstop comprising: a bottom portion comprising a first fastening aperture disposed at a first end of the bottom portion of the backstop relative to a length of the bottom portion and a second fastening aperture disposed at a second end of the bottom portion

relative to the length of the bottom portion, the first fastening aperture and the second fastening aperture each configured for receiving a fastener to secure the backstop to the shelf; a back portion in continuous communication with a back edge of the bottom portion of the backstop forming a 90° angle relative to the bottom portion at a juncture between the back portion of the backstop and the bottom portion; a plurality of apertures disposed at intervals along the juncture in communication with the back portion and the bottom portion; and a plurality of prongs disposed at intervals along a front edge of the bottom portion and configured to fit within apertures disposed along a surface of the shelf.

8. The backstop of claim 7, wherein the plurality of apertures disposed along the juncture are substantially elliptical.

9. The backstop of claim 7, wherein the bottom portion further comprises: one or more bottom apertures disposed along the length of the bottom portion.

10. The backstop of claim 7, further comprising: the first fastening aperture and the second fastening aperture configured for receiving a first fastener and a second fastener, respectively, to secure another system or apparatus to be fastened through the backstop and onto the shelf, wherein implementation of the backstop does not preclude implementation of other compatible systems.

11. The backstop of claim 7, wherein the bottom portion and the back portion of the backstop comprise a single piece of material.

12. The backstop of claim 7, wherein the back portion is substantially solid.
