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Schultz

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(45) **Date of Patent:** **Sep. 15, 2009**

(54) **SECURE STRAP SYSTEMS**

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patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

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(22) Filed: **Feb. 2, 2007**

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filed on Jun. 18, 2003, now abandoned, which is a
continuation-in-part of application No. 10/094,524,
filed on Mar. 7, 2002, now abandoned.

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7, 2001.

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A44B 18/00 (2006.01)
B65D 63/10 (2006.01)

(52) **U.S. Cl.** **24/306**; 24/442; 24/16 R

(58) **Field of Classification Search** 24/306,
24/442, 16 R
See application file for complete search history.

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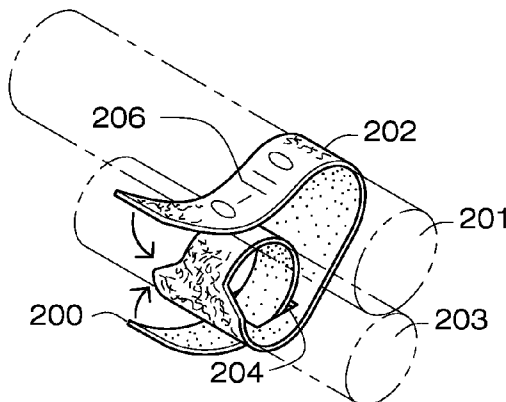
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Primary Examiner—Robert J Sandy
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Martin L. Stoneman; Michael D. Volk, Jr.

(57) **ABSTRACT**

A strap system for selectively and independently binding and/or releasing at least one sets of essentially longitudinal objects, such as wires, from one another. A continuous strip of such two-sided material may be stored on a reel and is designed so that a user may select a preferred length and configuration for a particular use by making a single cut of the material strip from the reel-strip end. Each system includes at least two attached straps which each independently of the other may be used to loopably bind objects. Apertures between the straps permit cinching of each strap.

16 Claims, 6 Drawing Sheets



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FIG. 1
PRIOR ART

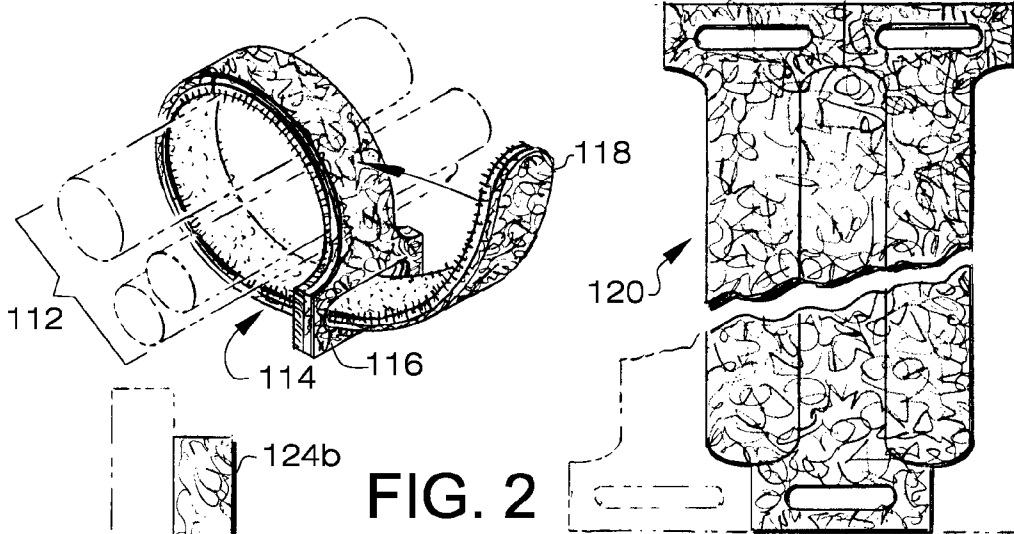


FIG. 2
PRIOR ART

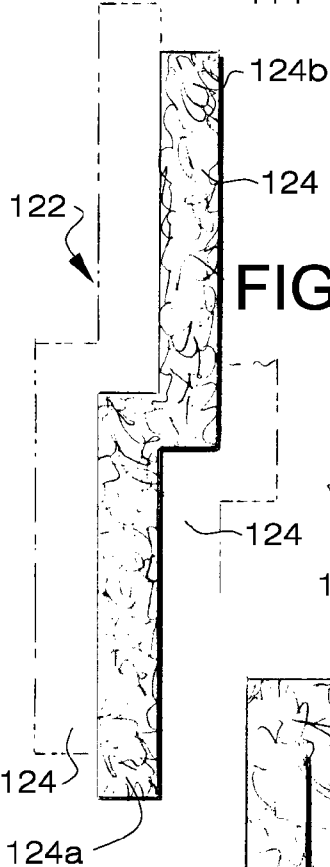


FIG. 3

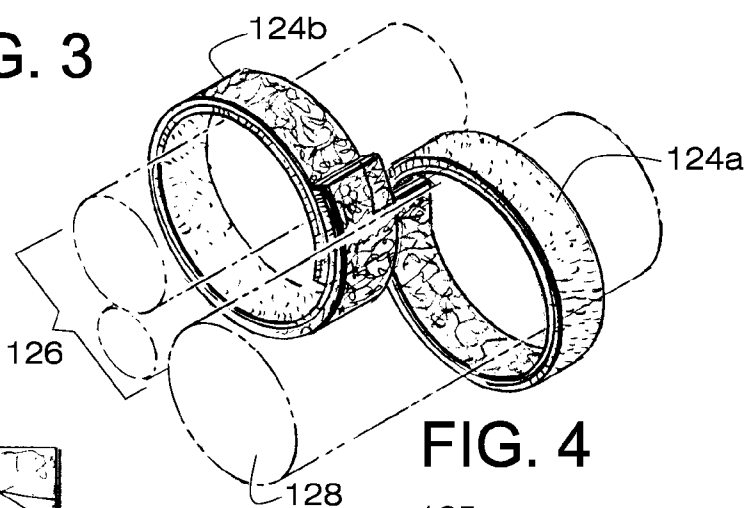


FIG. 4

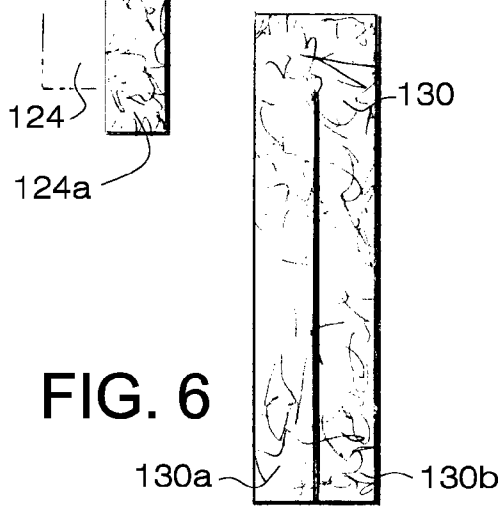


FIG. 6

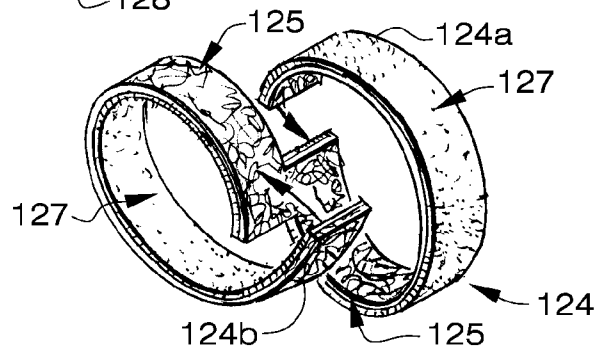


FIG. 5

FIG. 7

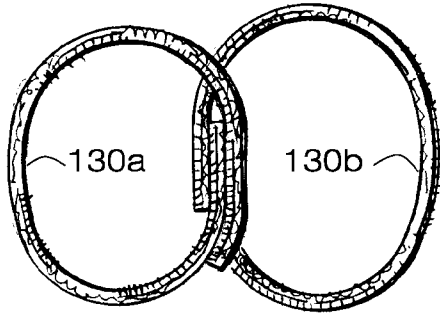


FIG. 8

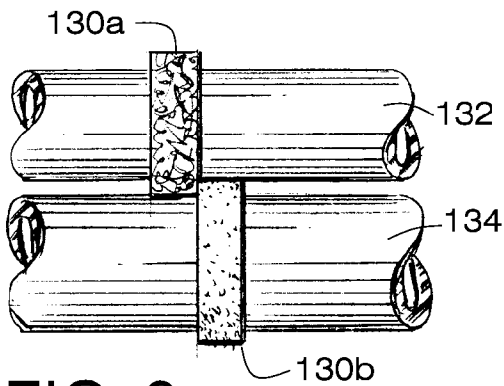
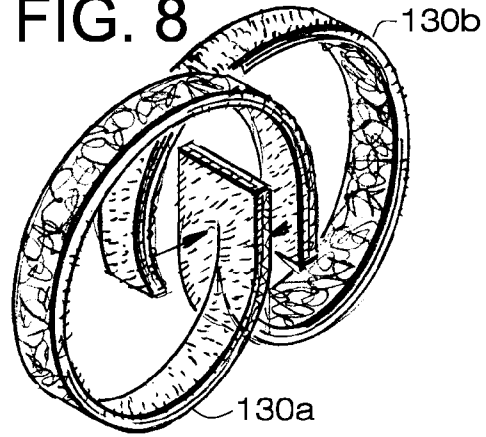


FIG. 10

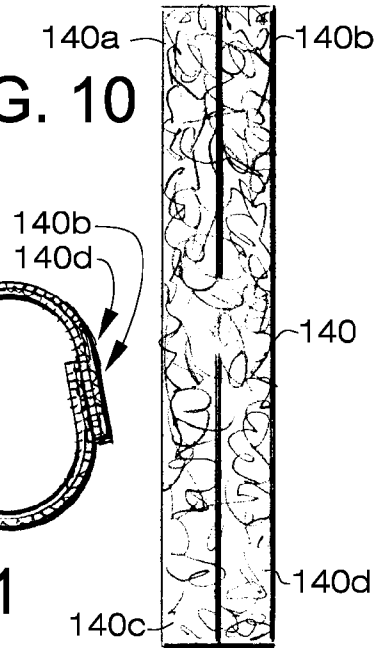


FIG. 9

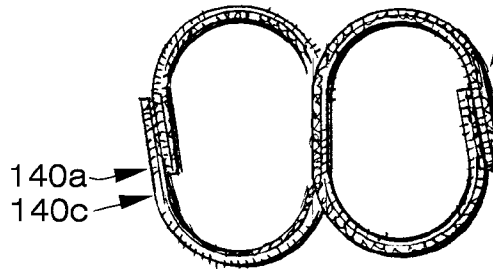


FIG. 11

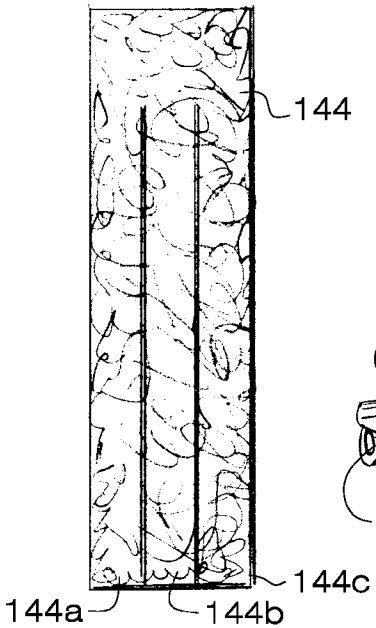


FIG. 12

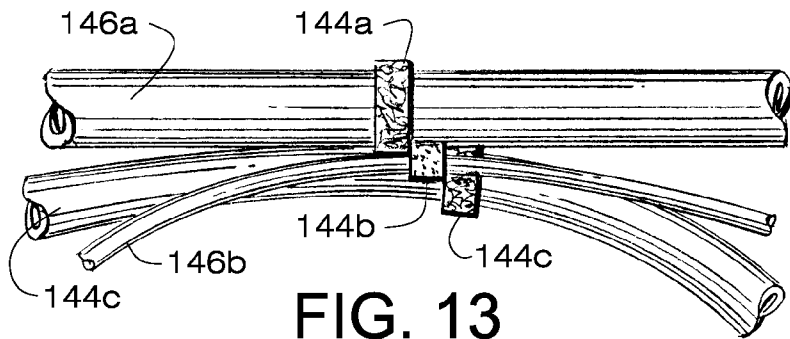


FIG. 13

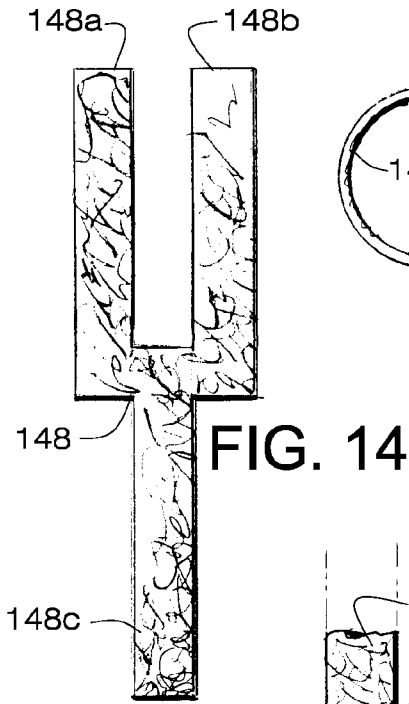


FIG. 14

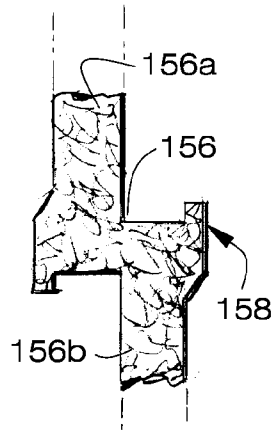


FIG. 18

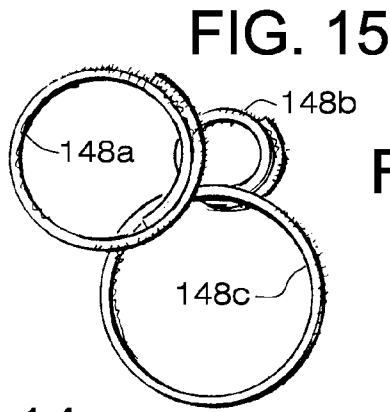


FIG. 15

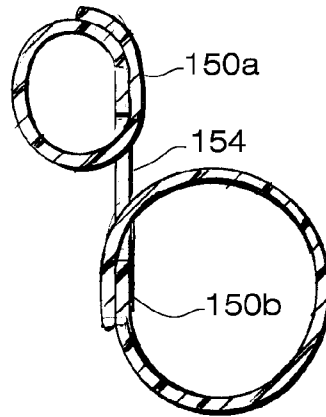


FIG. 17

FIG. 16

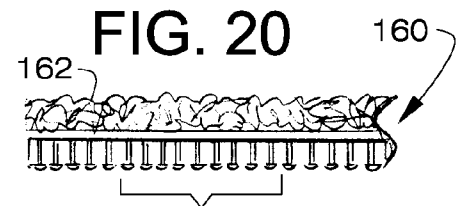
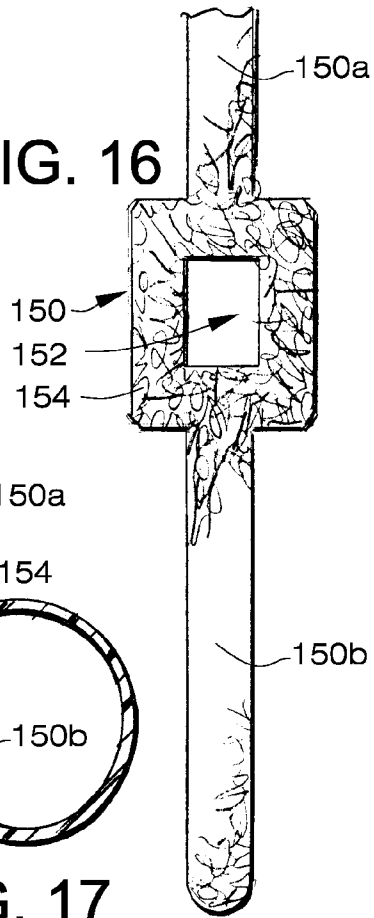


FIG. 20

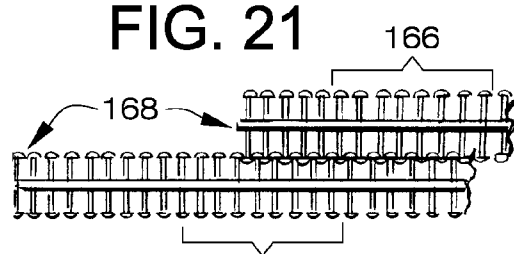


FIG. 21

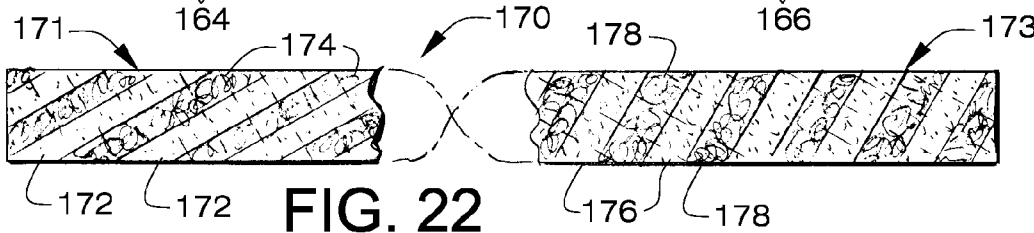
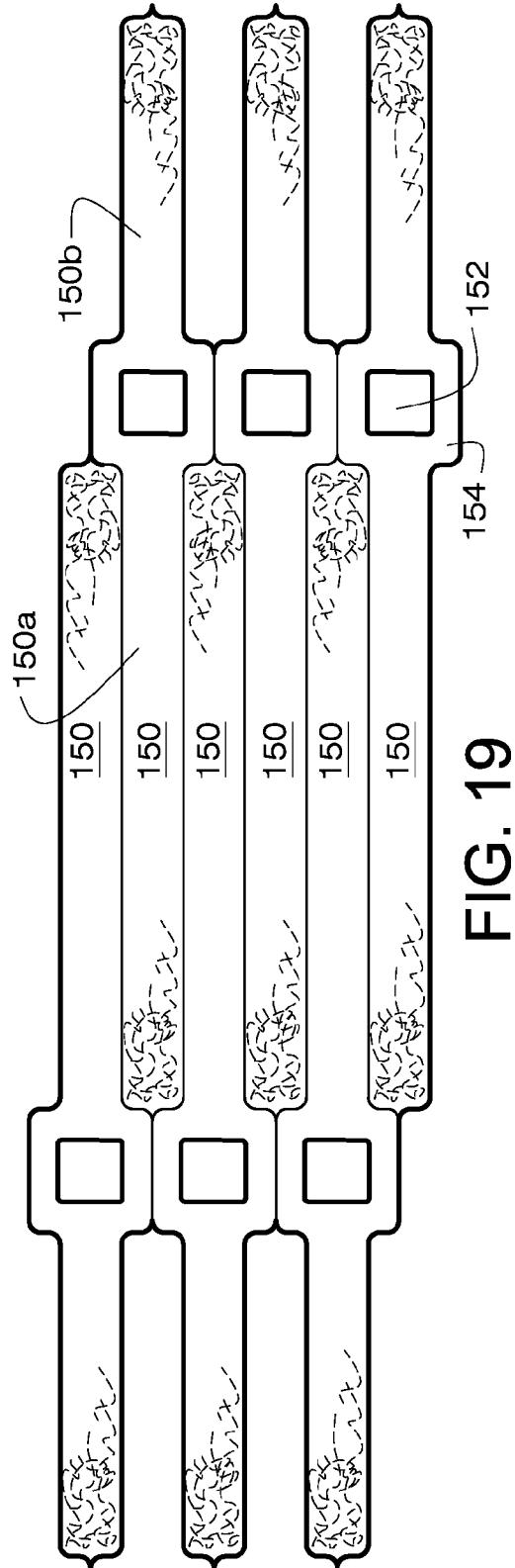
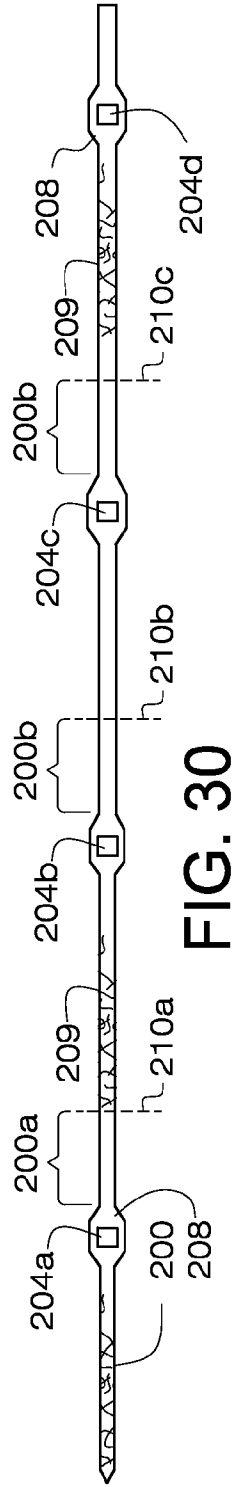
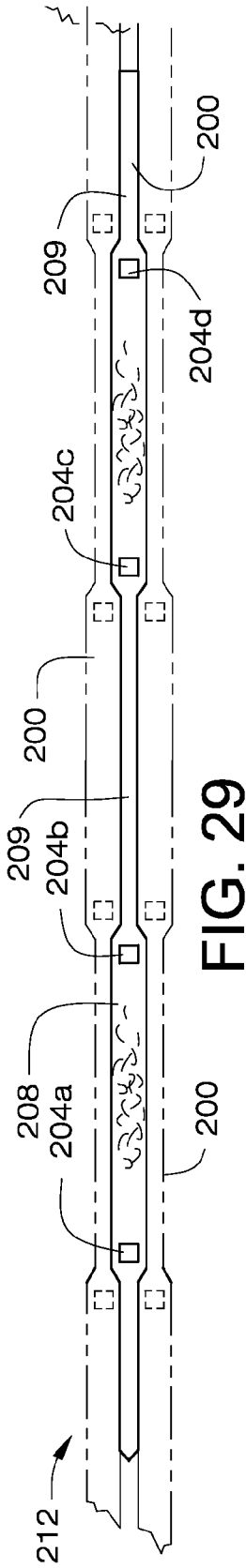
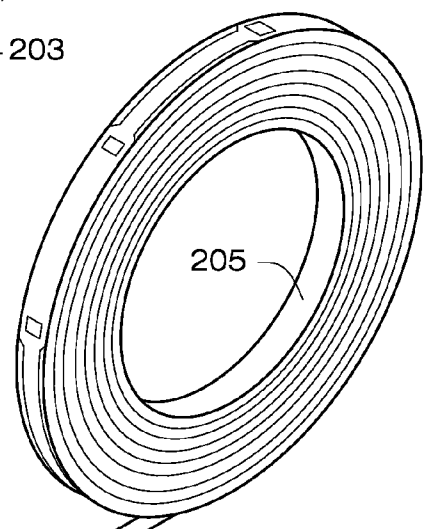
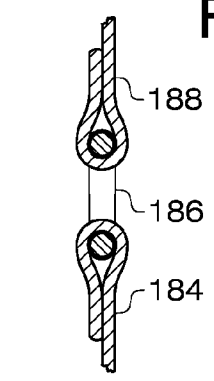
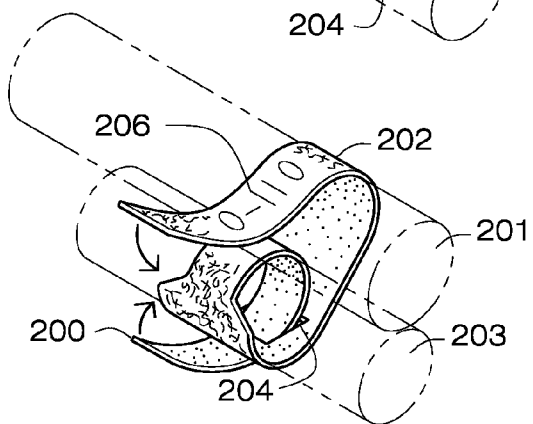
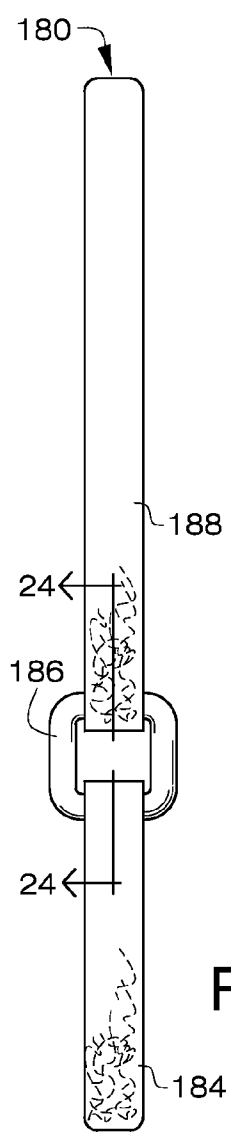
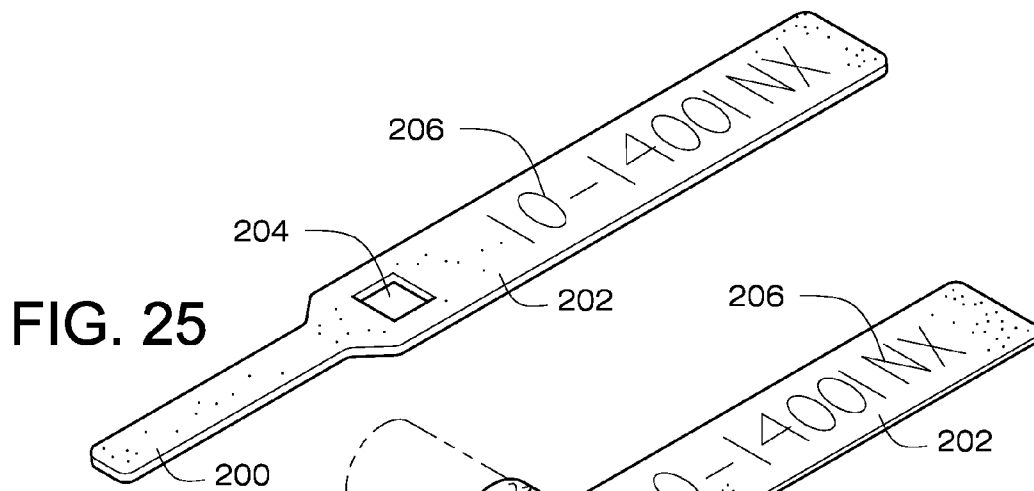


FIG. 22





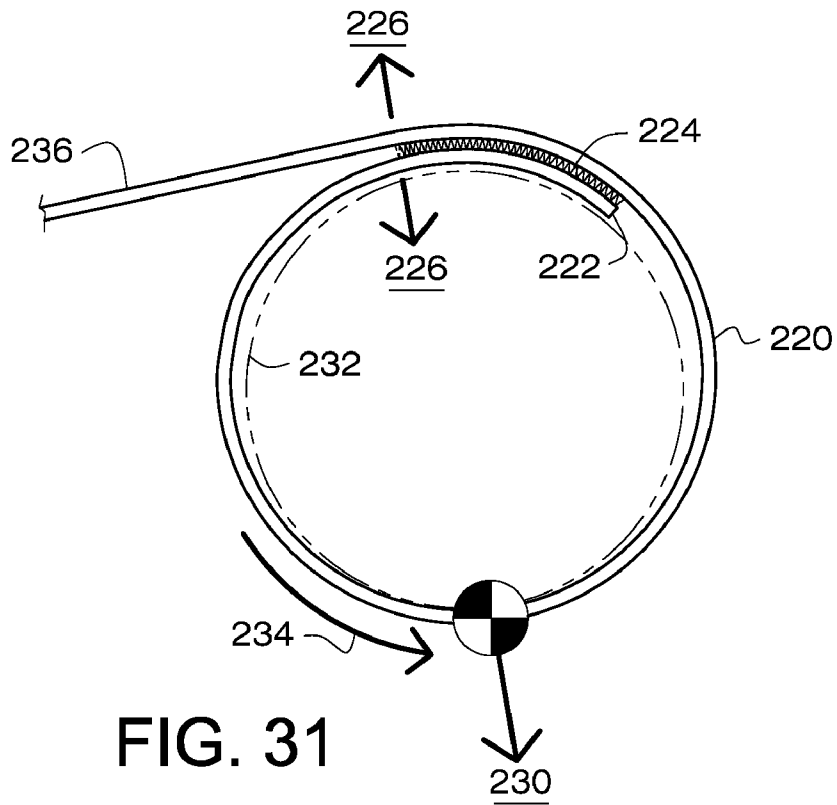


FIG. 31

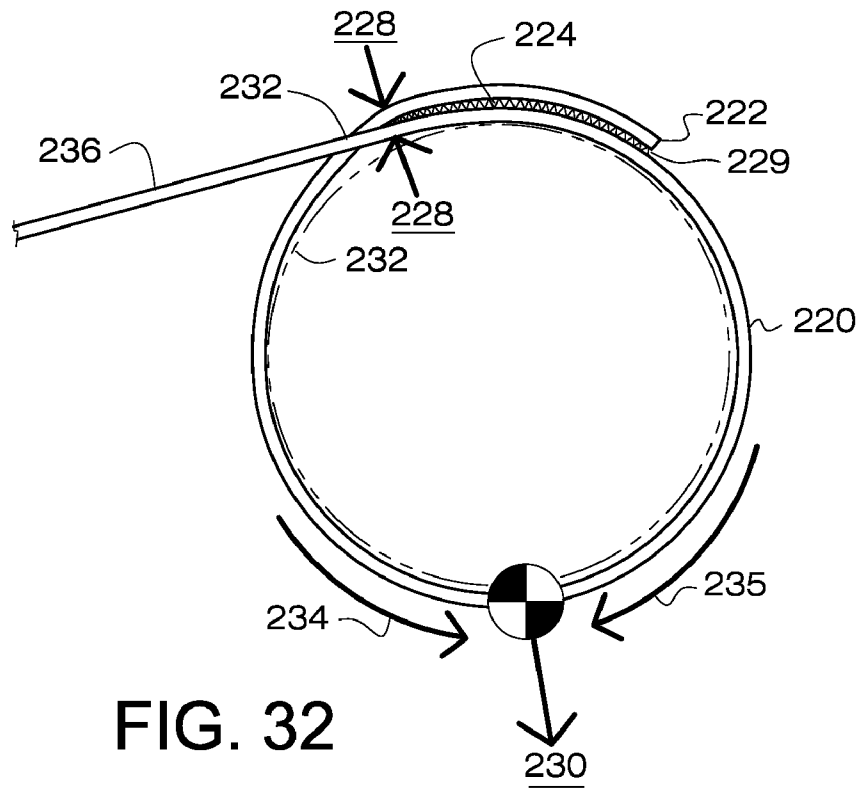


FIG. 32

SECURE STRAP SYSTEMS

CROSS-REFERENCE TO RELATED APPLICATIONS

The present application is a continuation-in-part of related application Ser. No. 10/465,162, filed Jun. 18, 2003, entitled "LOOPABLE, SECURE MULTIPLE-FASTENING-STRAP SYSTEMS", which is a continuation-in-part of related application Ser. No. 10/094,524, filed Mar. 7, 2002, entitled "FASTENING STRAP SYSTEM", which is related to and claims priority from prior provisional patent application Ser. No. 60/274,033, filed Mar. 7, 2001, entitled "FASTENING STRAP SYSTEM", the contents all of which are incorporated herein by this reference and are not admitted to be prior art with respect to the present invention by mention in this cross-reference section.

BACKGROUND

This invention relates to loopable and reloopable secure strap systems. More particularly, it relates to such strap systems, using hook-and-loop materials such as "Velcro™", as may be suited for the securing together of more than one bundle or set of elongated items such as cables, wires, pens, skis, pipe, tent poles, boards, angle iron, golf clubs, etc., and/or tying down such bundle(s) by securing such to an "anchor" such as a computer or table leg, etc. When addressing the fastening or securing of bundles of substantially elongated items such as cables, wires, pens, skis, pipe, tent poles, boards, angle iron, golf clubs, etc., a need exists to securely fasten all the items to each other in a bundle while still allowing for the selective release of certain members of the bundle. While generic tying or binding materials exist, such as string, tape, etc., these materials have many drawbacks related to tape glue residue, the thin material of the material causing cuts into the bound items, and a lack of selective fastening and/or release. Although some fastening systems exist that utilize hook and loop material, some problems remain. FIG. 1 and FIG. 2 show a prior art fastening strap.

Velcro™, Inc., makes a fastener material, which is a double-sided material with fastening hooks on one surface and fastening loops on the opposite surface, as shown in FIG. 2. This fastener material is marketed by Velcro Industries under the trade names GET-A-GRIP™ and ONE-WRAP™. The GET-A-GRIP™ straps provide a strap with an aperture at one end and with a pulling end at the other end that allows a user to pull on the free end of the strap and cinch a bundle prior to fastening the hook and loop surfaces together. An example of such a strap might be similar to the strap illustrated in FIGS. 1 and 2, which show respectively: a prior art fastening strap 114 with a pulling end 118 and aperture end 116, wrapped around a bundle 112; and a sheet 120 of double-sided fastening strap material apportioned for die cut manufacturing of the fastening straps.

There are however, undesirable limitations to this prior art. For example, the pulling end 118 of the GET-A-GRIP™ strap has the disadvantage of being extremely short, and thus it is practically incapable of bundling another object to a first object. Given a desire to integrally connect a first set of bundled objects A to a second set B of bundled objects, there is a need for a fastening strap system that permits tightly cinching the first set of objects to achieve a better total fit around all the bundled A and B sets of objects. Furthermore, it would be desirable to have a fastening strap system that can fasten both a set A and a set B (in a manner not conducive to "normal" loosening by "normal" forces) but then allow the

release of either set A or set B while leaving the remaining set fastened intact, which could then be immediately attachable to a third set C. In addition, it would be desirable to have a secure fastening strap system that could release either of two fastened sets, e.g., a cord bundle and its plug, independently at will. Further, it would be desirable to have an improved fastening strap system for securing two items or sets of items together which allows separation of either set immediately with a minimum of manipulation while also maintaining a relatively strong fastening grip when fastened.

Also, it would be desirable to have a self-fastening strap, made of a self-fastening material such as hook and loop material, which could be anchored with relative ease without having to unwind the entire strap or unbundle and unwind the entire strap, or which, with relatively less problems of tangling and prematurely self-fastening, could be easily accomplished by a single hand. Another desirable feature would be to have a self-fastening strap, made of a self-fastening material, such as hook and loop material, which could be released without having to unbundle and unwind the entire strap or which might be released easily from an anchored position with a single hand. It would also be desirable, among a long list of associated needs, to provide a better method of manufacture of fastening strap systems which include desired features and to provide better methods of dispensing, packaging, and use of such fastening strap systems.

OBJECTS OF THE INVENTION

It is a primary object and feature of this invention to fulfill the above-mentioned needs and the other needs apparent from the discussion of this specification. Another object and feature of the present invention is to provide a fastener strap system that can be used efficiently and effectively as an adjustable belt or strap without significant material design changes or functional limitations. It is another object and feature of the present invention to provide such a fastener strap system that provides for the selective and independent binding and release of multiple bundles of items from one another. It is another object and feature of the present invention to provide such a fastener strap system that is less likely to unintentionally come undone.

It is yet another object and feature of the present invention to provide such a fastener strap system that can be easily anchored. It is yet another object and feature of the present invention to provide such a fastener system that can be used to label the bundled object(s). Another object and feature of the present invention is to provide such a fastener strap system that can be tailored by a user to fit different applications. It is yet another object and feature of the present invention is to provide such a fastener system that is efficiently and inexpensively manufactured and efficient to use.

The foregoing and other objects, features, and advantages of the present invention will be apparent from the following, more particular, description of the embodiments of the invention, as illustrated in the accompanying drawings.

SUMMARY OF THE INVENTION

In accordance with a preferred embodiment hereof, this invention provides a fastening strap system, comprising: at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; at least one aperture comprising, at least one aperture width, and at least one aperture length; wherein such fastening strap

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system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface covering substantially all of such at least one first side, and at least one second side comprising at least one second fastening surface covering substantially all of such at least one second side adapted to be detachably fastenable to such at least one first fastening surface; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel and collinear; wherein such at least one aperture is located between such at least one first elongated strap portion and such at least one second elongated strap portion; and wherein such at least one aperture is structured and arranged to allow cinching such at least one first elongated strap portion.

In accordance with another preferred embodiment hereof, this invention provides a fastening strap system, comprising: at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; and at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; wherein such fastening strap system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface covering substantially all of such at least one first side, and at least one second side comprising at least one second fastening surface covering substantially all of such at least one second side adapted to be detachably fastenable to such at least one first fastening surface; wherein such second elongated strap portion is offset parallel from such first elongated strap portion a distance about equal to such at least one first strap width; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel. Moreover, it provides such a strap system wherein such at least one first fastening surface comprises at least one hook fastening surface; and such at least one second fastening surface comprises at least one loop fastening surface. Additionally, it provides such a strap system wherein no elongated strap portion is perpendicular to such at least one first elongated strap portion; and no elongated strap portion is perpendicular to such at least one second elongated strap portion. Also, it provides such a strap system further comprising at least one third elongated strap portion comprising, at least one third strap end portion, and at least one third strap width; wherein such third elongated strap portion is offset parallel from such second elongated strap portion a distance about equal to such at least one second strap width.

In accordance with another preferred embodiment hereof, this invention provides a strap system, comprising: at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; and at least one aperture comprising, at least one aperture width, and at least one aperture length; wherein such fastening strap system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface, and at least one second side comprising at least one second fastening surface adapted to be detachably fastenable to such at least one first fastening surface; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel and collinear; wherein such at least one aperture is located between such at least one first elongated strap

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portion and such at least one second elongated strap portion; and wherein such at least one aperture is structured and arranged to allow cinching such at least one first elongated strap portion; wherein such at least one first fastening surface comprises at least one hook fastening surface; and wherein such at least one second fastening surface comprises at least one loop fastening surface. In addition, it provides such a strap system wherein such at least one first strap end portion is shorter than such at least one second strap end portion. And, it provides such a strap system wherein such at least one aperture comprises a portion devoid of such flexible sheet material. Further, it provides such a strap system wherein such at least one first strap width is not substantially greater than such at least one aperture width. Even further, it provides such a strap system wherein: such at least one first strap width is less than such at least one second strap width; such at least one aperture width is less than such at least one second strap width; and such at least one aperture is located within such at least one second elongated strap portion. Moreover, it provides such a strap system wherein such at least one first strap width is about equal to such at least one second strap width. Additionally, it provides such a strap system further comprising a plurality of such at least one apertures. Also, it provides such a strap system wherein such at least one first elongated strap portion comprises at least one label. In addition, it provides such a strap system wherein such at least one second elongated strap portion comprises at least one label. And, it provides such a fastening strap system wherein such at least one first side is substantially lighter in color than such at least one second side. Further, it provides such a strap system further comprising at least two such at least one apertures. Even further, it provides such a fastening strap system wherein such at least one second strap width is the widest portion of such fastening strap system.

In accordance with another preferred embodiment hereof, this invention provides a fastening strap system, comprising: at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; and at least one aperture comprising, at least one aperture width, and at least one aperture length; wherein such fastening strap system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface, and at least one second side comprising at least one second fastening surface adapted to be detachably fastenable to such at least one first fastening surface; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel and collinear; wherein such at least one aperture is located between such at least one first elongated strap portion and such at least one second elongated strap portion; wherein such at least one aperture is structured and arranged to allow cinching such at least one first elongated strap portion; wherein such at least one first strap width is less than such at least one second strap width; wherein such at least one aperture width is less than such at least one second strap width; wherein such at least one aperture is located within such at least one second elongated strap portion; wherein such at least one second strap width is the widest portion of such fastening strap system; and wherein such at least one first strap end portion is shorter than such at least one second strap end portion. Moreover, it provides such a fastening strap system wherein such at least one first strap end portion is at most half the length of such at least one second strap end portion. Additionally, it provides such a fastening

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strap system wherein such at least one first elongated strap portion comprises at least one label. Also, it provides such a fastening strap system wherein such at least one first side is substantially lighter in color than such at least one second side.

In accordance with another preferred embodiment hereof, this invention provides a method of using a fastening strap system utilized to secure at least one first longitudinal element and at least one second longitudinal element, comprising the steps of: providing at least one a fastening strap system comprising at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; and at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; wherein such fastening strap system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface, and at least one second side comprising at least one second fastening surface adapted to be detachably fastenable to such at least one first fastening surface; wherein such second elongated strap portion is offset parallel from such first elongated strap portion a distance about equal to such at least one first strap width; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel; folding such at least one first elongated strap portion around the at least one first longitudinal element; folding such at least one second elongated strap portion around the at least one second longitudinal element; cinching such at least one first elongated strap portion; and cinching such at least one second elongated strap portion. In addition, it provides such a method, wherein such step of folding such at least one first elongated strap portion around the at least one first longitudinal element comprises the step looping such at least one first elongated strap portion clockwise around the at least one first longitudinal element; and such step of folding such at least one second elongated strap portion around the at least one second longitudinal element comprises the step of looping such at least one second elongated strap portion counter-clockwise around the at least one second longitudinal element.

In accordance with another preferred embodiment hereof, this invention provides a method of using a fastening strap system utilized to secure at least one first longitudinal element and at least one second longitudinal element, comprising the steps of: providing at least one a fastening strap system comprising at least one first elongated strap portion comprising, at least one first strap end portion, and at least one first strap width; and at least one second elongated strap portion comprising, at least one second strap end portion, and at least one second strap width; wherein such fastening strap system consists essentially of a unitary portion of flexible sheet material; wherein such unitary portion of flexible sheet material comprises, at least one first side comprising at least one first fastening surface, and at least one second side comprising at least one second fastening surface adapted to be detachably fastenable to such at least one first fastening surface; wherein such second elongated strap portion is offset parallel from such first elongated strap portion a distance about equal to such at least one first strap width; wherein all such at least one first elongated strap portions and all such at least one second elongated strap portions are parallel; creating at least one first loop around the at least one first longitudinal element comprising folding, in a clockwise direction, such at least one first elongated strap portion around the at least one first longitudinal element; and cinching such at least one first elongated strap portion; and creating at least one second loop around the

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at least one second longitudinal element, wherein such at least one second loop is offset from such at least one first loop by a distance about equal to such at least one first strap width, comprising folding, in a counterclockwise direction, such at least one second elongated strap portion around the at least one second longitudinal element; and cinching such at least one second elongated strap portion.

In accordance with a preferred embodiment hereof, this invention provides a fastening strap system, for selectively removably binding together at least two sets, each such set containing at least one substantially elongated item, comprising: at least two fastening strap elements attached together, each such fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion; and at least one cincher structured and arranged to permit cinching of at least one of such at least two attached fastening strap elements; wherein such at least one cincher comprises at least one aperture; wherein at least one of such at least two attached fastening strap elements is passable at least once through such at least one aperture; wherein at least one first and at least one second respective such fastening strap elements each respectively comprise at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side; wherein such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element when such at least one first surface portion of such at least one first respective fastening strap element comes in contact with such at least one second surface portion of such at least one first respective fastening strap element; wherein such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element when such at least one first surface portion of such at least one second respective fastening strap element comes in contact with such at least one second surface portion of such at least one second respective fastening strap element; wherein each such respective one of such at least two fastening strap elements is structured and arranged to removably loopably bind at least one such set; and wherein such fastening strap system is structured and arranged to permit at least each such respective one of such at least two fastening strap elements, when loopably binding such at least one set, to close with such at least one strap end portion of such each respective one of such at least two fastening strap elements in an exterior position relative to each such respective one of such at least two fastening strap elements.

Moreover, it provides such a fastening strap system wherein such fastening strap system is structured and arranged to permit each such respective one of such at least two fastening strap element to removably loopably bind such at least one set as an operation independent from a similar operation of each other such respective one of such at least two fastening strap elements. Additionally, it provides such a fastening strap system wherein a circumference of such at least one aperture comprises at least one straight transverse

edge. Also, it provides such a fastening strap system wherein such at least two attached fastening strap elements and such at least one aperture comprise one integral piece of fastener material. In addition, it provides such a fastening strap system wherein such at least one aperture comprises at least one buckle mechanically attached to at least two of such at least two fastening strap elements.

And, it provides such a fastening strap system wherein at least one of such at least two attached fastening strap elements is at most 90% the width of at least one other of such at least two attached fastening strap elements. Further, it provides such a fastening strap system wherein at least one of such at least two attached fastening strap elements is at most half the length of at least one other of such at least two attached fastening strap elements.

Even further, it provides such a fastening strap system wherein such at least two attached fastening strap elements comprise one integral piece of fastener material. Moreover, it provides such a fastening strap system wherein at least one of such at least two fastening strap elements comprises at least one label. Additionally, it provides such a fastening strap system wherein such at least one label is comprises a hook-and-loop material upon which indicia can be written.

In addition, it provides such a fastening strap system wherein such at least one of such at least two fastening strap elements is primarily white. In addition, it provides such a fastening strap system wherein such fastener strap is primarily off-white.

In accordance with another preferred embodiment hereof, this invention provides a continuous-strap system, for allowing a user to create at least one custom-sized fastening strap system for selectively removably binding together at least two sets, each such set containing at least one substantially elongated item, comprising: at least one continuous length of material structured and arranged to permit the user to cut off at least one user-selected portion of such at least one continuous length of material, wherein such at least one continuous length of material is structured and arranged so that the user may select to cut and separate at least two adjacent portions, wherein each of such two adjacent portions comprises at least two attached fastening strap elements, each such fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion; wherein at least one first and at least one second respective such fastening strap elements each respectively comprise at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side; wherein such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element when such at least one first surface portion of such at least one first respective fastening strap element comes in contact with such at least one second surface portion of such at least one first respective fastening strap element; wherein such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element when

such at least one first surface portion of such at least one second respective fastening strap element comes in contact with such at least one second surface portion of such at least one second respective fastening strap element; and wherein each such respective one of such at least two fastening strap elements is structured and arranged to removably loopably bind at least one such set.

And, it provides such a continuous-strap system wherein such fastening strap system is structured and arranged to permit at least each such respective at least one fastening strap element, when loopably binding such at least one object, to close with such at least one strap end portion of such each respective at least one fastening strap element in an exterior position relative to such respective at least one fastening strap element.

Further, it provides such a continuous-strap system wherein such continuous length of material comprises at least one aperture. Even further, it provides a continuous-strap system wherein such continuous length of material alternates between wider and thinner widths at regular intervals. Even further, it provides such a continuous-strap system wherein each alternating such wider width has a substantially longer length than each alternating such thinner width. Even further, it provides such a continuous-strap system wherein such continuous length of material comprises at least one aperture adjacent at least one end portion of each such alternating wider width.

In accordance with another preferred embodiment hereof, this invention provides a fastening strap system, for selectively removably binding together at least two sets, each such set containing at least one substantially elongated item, comprising: at least three fastening strap elements attached together, each such fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion; wherein each of such at least three attached fastening strap elements respectively comprises at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side; wherein such at least one first surface portion of each such respective one of such at least three attached fastening strap elements and such at least one second surface portion of each such respective one of such at least three attached fastening strap elements are structured and arranged to promote binding between such at least one first surface portion of each such respective one of such at least three attached fastening strap elements and such at least one second surface portion of each such respective one of such at least three attached fastening strap elements when such at least one first surface portion of each such respective one of such at least three attached fastening strap elements comes in contact with such at least one second surface portion of each such respective one of such at least three attached fastening strap elements; wherein each such respective one of such at least three attached fastening strap elements is structured and arranged to removably loopably bind at least one such set; and wherein such fastening strap system is structured and arranged to permit at least each such respective one of such at least three attached fastening strap elements, when loopably binding such at least one set, to close with such at least one strap end portion of such each respective one of such at least three attached fastening strap elements in an exterior position relative to each such respective one of such at least three attached fastening strap elements.

Even further, it provides such a fastening strap system wherein such at least three attached fastening strap elements comprise at least four attached fastening strap elements.

In accordance with another preferred embodiment hereof, this invention provides a fastening strap system, for selectively removably binding together at least two sets, each such set containing at least one substantially elongated item, comprising: at least two fastening strap elements attached together, each such fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion; wherein at least one first and at least one second respective such fastening strap elements each respectively comprise at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side; wherein such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one first respective fastening strap element and such at least one second surface portion of such at least one first respective fastening strap element when such at least one first respective fastening strap element comes in contact with such at least one second surface portion of such at least one first respective fastening strap element; wherein such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element are structured and arranged to promote binding between such at least one first surface portion of such at least one second respective fastening strap element and such at least one second surface portion of such at least one second respective fastening strap element when such at least one first surface portion of such at least one second respective fastening strap element comes in contact with such at least one second surface portion of such at least one second respective fastening strap element; wherein each such respective one of such at least two fastening strap elements is structured and arranged to removably loopably bind at least one such set; and wherein at least one of such at least two fastening strap elements comprises at least one label.

Even further, it provides such a fastening strap system wherein such at least one label comprises a hook-and-loop material upon which indicia can be written. Even further, it provides such a fastening strap system wherein at least one of such at least two fastening strap elements is primarily white. Even further, it provides such a fastening strap system wherein at least one of such at least two fastening strap elements is primarily off-white.

Even further, it provides such a fastening strap system wherein such fastening strap system is structured and arranged to permit at least each such respective one of such at least two fastening strap elements, when loopably binding such at least one set, to close with such at least one strap end portion of such each respective one of such at least two fastening strap elements in an exterior position relative to each such respective one of such at least two fastening strap elements.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a prior art strap wrapped around a bundle.

FIG. 2 shows a sheet of prior art strap material apportioned for die cut manufacturing.

FIG. 3 shows a plan view of an offset-relationship two-ended strap in an embodiment of the present invention, showing a single strap cut from a sheet of material used in embodiments of the present invention.

FIG. 4 shows a perspective view of the offset-relationship two-ended strap of FIG. 3, shown bundling two separate sets of items together in an embodiment of the present invention.

FIG. 5 shows another perspective view of the offset-relationship two-ended strap of FIG. 3 and FIG. 4.

FIG. 6 shows a plan view of an embodiment of the present invention, a parallel-relationship two-ended strap.

FIG. 7 shows a side view of the parallel-relationship two-ended strap of FIG. 6 with the two straps formed into loops.

FIG. 8 shows a perspective view of the parallel-relationship two-ended strap of FIGS. 6 and 7 in an embodiment of the present invention.

FIG. 9 shows a perspective view of the parallel-relationship two-ended strap of FIGS. 6-8, shown in use around two separate cylindrical items in an embodiment of the present invention.

FIG. 10 shows a plan view of an embodiment of the present invention, a parallel-relationship four-ended strap.

FIG. 11 shows a side view of the opposed-parallel-relationship four-ended strap of FIG. 10 with the four straps formed into loops.

FIG. 12 shows a plan view of an embodiment of the present invention, a parallel-relationship three-ended strap.

FIG. 13 shows a side view of the parallel-relationship three-ended strap of FIG. 12 with the three straps formed into loops surrounding three cylindrical tubular objects.

FIG. 14 shows a plan view of an embodiment of the present invention, a Y-configuration three-ended strap.

FIG. 15 shows a side view of the Y-configuration three-ended strap of FIG. 14 with the three straps formed into different size loops.

FIG. 16 shows a plan view of an embodiment of the present invention, an open-center-configuration two-ended strap.

FIG. 17 shows a side view of the open-center-configuration two-ended strap of FIG. 16 shown with two loops formed with the ends passing through the open-center.

FIG. 18 shows a plan view of another embodiment of the offset-relationship two-ended strap.

FIG. 19 (on sheet 5) shows a plan view of at least one open-center-configuration two-ended straps showing a preferred material saving economical layout of the open-center-configuration two-ended straps upon a sheet of material used in embodiments of the present invention.

FIG. 20 shows a close-up edge view of a hook and loop material as used in embodiments of the present invention.

FIG. 21 shows a close-up edge view of a hook and hook material as used in embodiments of the present invention.

FIG. 22 shows a plan view, showing both front and rear surfaces, of an alternating hook/loop material used in embodiments of the present invention.

FIG. 23 shows a plan view of an alternative embodiment of the present invention, an open-center-configuration two-ended strap.

FIG. 24 shows a side partial view of an alternative embodiment of the present invention, an open-center-configuration two-ended strap.

FIG. 25 shows a perspective view of an alternative embodiment of the present invention, a two-ended strap with a thinner shorter end and a wider longer end with a label.

FIG. 26 shows a perspective view of the fastener strap system of FIG. 25, anchored to an object with the small strap.

FIG. 27 shows a perspective view of the fastener strap system of FIG. 25, anchored to an object with the small strap and binding a second object with the larger strap.

FIG. 28 shows a perspective view of an alternative embodiment of the present invention, a reel of a continuous length of strap material with at least one aperture.

FIG. 29 shows a plan view of a portion of the continuous length of strap material shown in FIG. 28, along with indications of a method of efficiently manufacturing such from a sheet of material.

FIG. 30 shows a plan view of a portion of an alternative embodiment of the present invention, an alternative continuous length of strap material with at least one apertures.

FIG. 31 shows a loop binding arrangement.

FIG. 32 shows a preferred loop binding arrangement.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS AND THE BEST MODES OF PRACTICE

Preferred embodiments and best mode of the present invention are described below. In such discussion, reference will be made to hook and loop fasteners. It is noted that the present invention, in a described embodiment, provides a simple dispensing mechanism for dispensing straps of variable length determined by the end user, having been preferably provided the material, preferably pre-cut by a manufacturer (to provide such advantages).

FIG. 20 shows a close-up edge view of a hook and loop material 160 as used in embodiments of the present invention. Preferably, the hook and loop material 160 comprises loop material 162 and hook material 164. Preferably, hook and loop material may also be made, according to the present invention, as illustrated in FIG. 22.

FIG. 22 shows a plan view, showing both front and rear surfaces, of an alternating hook/loop material used in some embodiments of the present invention. Preferably, the hook and loop material 170 comprises, on a first side 171, diagonal bands of hook material 172 alternating with diagonal bands of loop material 174 (embodying herein, wherein said at least one first surface portion of said at least one first respective fastening strap element and said at least one second surface portion of said at least one first respective fastening strap element are structured and arranged to promote binding between said at least one first surface portion of said at least one first respective fastening strap element and said at least one second surface portion of said at least one first respective fastening strap element when said at least one first surface portion of said at least one first respective fastening strap element comes in contact with said at least one second surface portion of said at least one first respective fastening strap element). Preferably, the hook and loop material 170 further comprises, on a second side 173, diagonal bands of hook material 176 alternating with diagonal bands of loop material 178. Preferably, as shown, the relationship between the diagonal bands on the opposing sides 171 and 173 is such that the diagonal bands on the opposing sides are substantially perpendicular to each other.

Preferably, a third material comprises a hook and hook material as shown in FIG. 21. FIG. 21 shows a close-up edge view of a hook and hook material 168 as used in embodiments of the present invention. The hook and hook material 168 comprises rows of hooks 166 on one or, as shown, both sides of hook and hook material 168. Under appropriate circumstances, the hook and hook material may be preferable for the below described embodiments of the present invention. Those skilled in the art will appreciate the features of all three of the above described fastener materials and the desirability of their usage under appropriate circumstances. Thus, although the below discussion makes reference to hook and loop materials or fasteners, such usage is defined to comprise, under appropriate circumstances, any of the above three described fasteners.

FIG. 3 shows a plan view of an offset-relationship two-ended strap 124 (embodying herein a fastening strap system), according to a preferred embodiment of the present invention, which illustrates the offset-relationship two-ended strap 124 shown as having been cut from a single sheet 122 of material used in embodiments of the present invention, wherein the layout of the offset-relationship two-ended straps 124 upon the sheet 122 allows an efficient manufacture of at least one offset-relationship two-ended strap 124. Preferably, as shown, the configuration of the straps is such that successive offset-relationship two-ended straps 124 result from the placement and removal of adjacent offset-relationship two-ended straps 124. Thus, those of ordinary skill in the art will now appreciate that, under appropriate circumstances, considering issues such as ease in bundling, preventing unbundling, object accessibility, etc., other arrangements, such as each of the subsequent embodiments of the fastening straps further described below, not limited to FIG. 3, may be preferred. Preferably, each offset-relationship two-ended strap 124 comprises an end 124a (embodying herein at least one first fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion wherein such at least one first fastening strap element comprises at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side) and an end 124b (embodying herein at least one second fastening strap element comprising at least one first side, at least one second side, and at least one strap end portion wherein such at least one first fastening strap element comprises at least one first surface portion of such at least first side of such at least one strap end portion, and at least one second surface portion of at least one such second side), each with first side 300 and second side 302, having a parallel, offset, configuration.

It is very especially noted that, when using fasteners comprising VELCRO™-type material to form a loopable binding, the position of the strap end 222 plays an important role in the strength of the binding, and the likelihood of the binding unintentionally coming undone. When the strap end 222 is fastened inside the loop of the binding, as in FIG. 31, it is much more likely to unintentionally come undone, because a force 230 (such as gravity, etc.) working on the bound object will tend to pull apart the leading edge 226 of the bond 224 between the restrained portion 236 and the strap end 222. Such a force will tend to “unravel” the loop binding. Similarly an angular twisting force 234 will have a similar unraveling effect. Preferably, as shown in FIG. 32, an offset (or an aperture through the strap) allows strap end 222 to pass by (or through) the restrained portion 236 near location 231, permitting the loop binding to be closed with the strap end in the exterior position. when the strap end 222 is fastened to the outside of the loop, as shown in FIG. 32, the binding is much less likely to unintentionally come undone, because a force 230 working on the bound object will tend to press the strap end 222 against the restrained portion 236 of the fastening strap element 220, strengthening the leading edge 228 of the bond 224. Preferably, the restrained portion 236 is restrained by the other object(s) to which the fastening strap system is attached. Preferably, as shown in FIG. 32, a twisting force 235 does not unravel the trailing end 229 of the bond 224 since the termination of the strap end 222 is not restrained. It is therefore preferable for a loop binding to be arranged, as shown in FIG. 32, with the strap end 222 in an exterior position (embodying herein wherein said fastening strap system is structured and arranged to permit at least each said respective at least one fastening strap element, when loopably binding such at least one object, to close with said at least one strap

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end portion of said each respective at least one fastening strap element in an exterior position relative to said respective at least one fastening strap element).

Preferably, loop bindings close by forming a bond between first side **300** and second side **302**, as shown in FIG. **32** (embodying herein, wherein each said respective at least one fastening strap element is structured and arranged to removably loopably bind at least one such object). "Folding" first side **300** back upon another portion of first side **300** (even if the materials provide for such a bond) would result in an arrangement less preferable, since a force **230** acting on an enclosed object would work to pull apart the leading edge **226** of the bond **224**.

Preferably, the offset, or a passage through an aperture of the strap (as seen in later embodiments), allows each strap to operate independently from the other, and permits each strap to fasten with the strap end in an exterior position (examples are shown in FIG. **5**, FIG. **8**, and FIG. **17**). Without the offset (or passage), the two (or more) straps interfere with each other, preventing independent operation and proper closure with the strap end in an exterior position.

Referring to FIG. **4**, a perspective view of the offset-relationship two-ended strap **124** of FIG. **3**, such strap is shown bundling two separate sets of items together according to a preferred embodiment of the present invention. As shown, the offset relationship provides the feature of allowing the secure bundling of a first set **126** by end **124b** while also allowing the independent secure bundling of a second set **128** by end **124a**.

Referring to FIG. **5**, another perspective view of the offset-relationship two-ended strap of FIG. **3** and FIG. **4** is shown. The particular arrangement of the offset-relationship two-ended strap **124** has a feature of being particularly well suited for the bundling of objects where the wrapping motion used to place the two ends **124a** and **124b** around the objects being bundled is best done using opposite direction, or rotation wrapping movements, of the strap ends **124a** and **124b**. As further shown, strap **124** comprises two surfaces, a hook surface **127** and a loop surface **125**. Preferably, as shown, each end **124a** and **124b** will fasten upon itself when looped back such that either of the two surfaces, the hook surface **127** and the loop surface **125**, is placed over and then upon the other surface FIG. **6** shows a plan view of a parallel-relationship two-ended strap, according to a preferred embodiment of the present invention. Preferably, the parallel-relationship two-ended strap **130** possesses similar manufacturing features as previously mentioned. Preferably, the parallel-relationship two-ended strap **130** comprises two parallel ends **130a** and **130b**.

Referring to FIG. **7**, a side view of the parallel-relationship two-ended strap **130** of FIG. **6** with the two strap ends **130a** and **130b** formed into loops is shown; and referring to FIG. **8**, a perspective view of the parallel-relationship two-ended strap **130** of FIGS. **6** and **7** are shown. Preferably, the parallel-relationship two-ended strap **130** comprises two substantially similar ends **130a** and **130b** that may be looped back upon themselves to form two binding loops, as shown. Preferably, as previously discussed in reference to FIGS. **3-5**, the front and back surfaces of the parallel-relationship two-ended strap **130** comprise hook and loop fastener components. It can be seen that the design of the parallel-relationship two-ended strap **130** provides a feature of a different wrapping action of the two ends **130a** and **130b** than that previously discussed in reference to FIGS. **3** and **4**. Upon reading this specification, those of ordinary skill in the art will now recognize that, under appropriate circumstances, considering issues such as cost, flexibility, ease in bundling, preventing unbundling, object

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accessibility, etc., other arrangements, such as the offset-relationship two-ended strap **124**, non-two-ended straps, etc., may be preferred.

Referring to FIG. **9**, the parallel-relationship two-ended strap **130** is shown with the end **130a** wrapped around an object **132** and the end **130b** wrapped around an object **134**.

FIG. **10** shows a plan view of an opposed-parallel-relationship four-ended strap, according to a preferred embodiment of the present invention. Preferably, the opposed-parallel-relationship four-ended strap **140** comprises four ends **140a-d**, in two parallel and opposing sets (embodying herein, wherein said at least one attached fastening strap elements comprises at least four fastening strap elements). Preferably, the opposed-parallel-relationship four-ended strap **140** comprises hook and loop surfaces in the manner already discussed.

FIG. **11** shows a side view of the opposed-parallel-relationship four-ended strap **140** of FIG. **10** with the four strap ends **140a** through **140d** formed into loops. Those skilled in the art will recognize that, in appropriate circumstances, the opposed-parallel-relationship four-ended strap **140** features, in terms of flexibility of bundling, may be more favorable than those of the previous fastening straps.

Referring to FIG. **12**, a plan view of another preferred embodiment of the present invention, a parallel-relationship three-ended strap is shown. Preferably, the parallel-relationship three-ended strap **144** comprises three parallel ends **144a**, **144b**, and **144c** (embodying herein, wherein said at least one attached fastening strap elements comprises at least three fastening strap elements). Preferably, the parallel-relationship three-ended strap **144** possesses similar manufacturing features as previously mentioned. The parallel-relationship three-ended strap **144** comprises three substantially similar ends **144a**, **144b**, and **144c** that may be looped back upon themselves to form three binding loops. Preferably, as previously discussed, the front and back surfaces of the parallel-relationship three-ended strap **144** comprise hook and loop fastener components. Upon reading this specification, those of ordinary skill in the art will now recognize that, under appropriate circumstances, considering issues such as flexibility, ease in bundling, preventing unbundling, object accessibility, cost, etc., other arrangements, such as the use of a fastener with more than three ends, such as any other non-three-ended strap, etc., may suffice.

FIG. **13** shows a side view of the parallel-relationship three-ended strap **144** of FIG. **12**, with the three strap ends **144a**, **144b**, and **144c** formed into loops surrounding three cylindrical tubular objects **146a**, **146b**, and **146c**, respectively. As discussed in regard to the previous embodiments, a feature of embodiments of the present invention is the ability to provide for the selective and independent binding and release of multiple bundles of items from one another. Preferably, the parallel-relationship three-ended strap **144** is such a fastening strap (i.e., one that permits either a fastened set A and/or set B to be further fastened to yet a third set C without alteration of the remaining fastened sets). For example, with a set A ski poles and a set B skis, one might decide to keep either the ski poles or the skis bundled and then attach that remaining bundled set to a third set C such as a car roof rack. Preferably, the parallel-relationship three-ended strap **144** provides the feature of allowing the fastening of both a set A and a set B, but then further allows the release of either set A or set B while leaving the remaining set fastened intact, which set could then in turn be immediately attachable to a third set C.

Referring to FIG. **14**, a plan view of another preferred embodiment of the present invention, a Y-configuration three-

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ended strap is shown. The Y-configuration three-ended strap **148** comprises three ends **148a**, **148b**, and **148c** configured into a Y pattern as shown. The three ends **148a**, **148b**, and **148c** of the Y-configuration three-ended strap **148** may be looped back upon themselves to form three binding loops (as in FIG. 15). As previously discussed, the front and back surfaces of the parallel-relationship three-ended strap **148** comprise hook and loop fastener components. Those skilled in the art will now recognize that, in appropriate circumstances, the availability of three ends **148a**, **148b**, and **148c**, in a Y configuration, is a feature that may be preferred.

FIG. 15 shows a side view of the Y-configuration three-ended strap **148** of FIG. 14, with the three strap ends **148a**, **148b**, and **148c** formed into three different size loops. The independent and selectable formation of three fastening loops of adjustable sizing is a feature of this embodiment of the present invention, the Y-configuration three-ended strap **148**.

Referring to FIG. 16, a plan view is shown of a highly preferred embodiment of the present invention, an open-center-configuration two-ended strap. Preferably, the open-center-configuration two-ended strap **150** comprises substantially straight transverse edge, preferably substantially rectangular, preferably substantially square, as shown. Preferably, center portion **154** is structured to be a substantially rectangular, preferably substantially square, center aperture **152** or opening (embodying herein, wherein said at least one cincher comprises at least one aperture; and at least one of said at least one attached fastening strap elements is passable at least once through said at least one aperture). The open-center configuration two-ended strap **150**, also comprises two ends **150a** and **150b**, as shown (the entire end **150a** is like end **150b**). Preferably, as previously discussed, the front and back surfaces of the open-center-configuration two-ended strap **150** comprise hook and loop fastener components. Preferably, the two ends **150a** and **150b** are sized in cooperation with the center portion **154**, such that the two ends **150a** and **150b** may be passed through the center portion aperture **152** to form loops. Upon reading this specification, those of ordinary skill in the art will now recognize that, under appropriate circumstances, considering issues such as flexibility, ease in bundling, preventing unbundling, object accessibility, etc., other arrangements, such as passing the two ends **150a** and **150b**, one or more times, through the aperture **152** of center portion **154**, etc., may suffice. Preferably, this embodiment provides a feature of allowing an amount of flexibility between the two loops formed from the ends **150a** and **150b** while also permitting cinching (embodying herein at least one cincher structured and arranged to permit cinching of at least one of said at least one attached fastening strap elements) and securely binding the objects fastened with the loops formed by the ends **150a** and **150b**. Preferably, depending on the length of the ends **150a** and **150b**, they may be looped multiple times through the aperture **152** of center portion **154**, thus providing for additional binding strength, as each successive layer of the hook and loop material will successively fasten upon itself, as each loop is wound.

FIG. 19 (on sheet 5) shows a plan view of at least one open-center configuration two-ended strap **150** showing a preferred material-saving economical layout of the open-center configuration two-ended straps **150**, upon a sheet of material used in embodiments of the present invention (embodying herein, wherein said at least one attached fastening strap elements comprises one integral piece of fastener material). Preferably, this layout conserves fastener material and minimizes manufacturing costs, as only a single cut is needed between adjacent open-center configuration two-ended straps **150**.

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Referring to FIGS. 23 and 24, an alternate embodiment of the present invention, an alternative open-center-configuration two-ended strap is shown, respectively, from the top and from the side. Preferably, the alternative open-center-configuration two-ended strap **182** comprises a center buckle **186** to which is coupled to two fastening strap ends **184** and **188** (embodying herein, wherein said at least one aperture comprises at least one buckle mechanically attached to at least two said fastening strap elements). Preferably, the two fastening strap ends **184** and **188** are sized in cooperation with the center buckle **186** such that the two fastening strap ends **184** and **188** may be passed through the center buckle **186** to form loops. Upon reading this specification, those of ordinary skill in the art will now appreciate that, considering issues such as flexibility, ease in bundling, preventing unbundling, object accessibility, etc., other arrangements, such as passing the two fastening strap ends **184** and **188**, one or more times, through the center buckle **186**, etc., may suffice. For example, this embodiment provides a feature of allowing an amount of flexibility between the two loops formed from the two fastening strap ends **184** and **188** while also securely binding the objects fastened with the loops formed by the two fastening strap ends **184** and **188**. The flexibility is due to the length and configuration of the center buckle **186**. Preferably, depending on the length of the two fastening strap ends **184** and **188**, they may be looped multiple times through the center buckle **186**, thus providing for additional binding strength as each successive layer of the hook and loop material will successively fasten upon itself as each loop is wound.

FIG. 25 shows an alternate embodiment of the present invention, an alternative two-ended strap comprising a relatively shorter and narrower anchor strap **200** and a relatively longer wider main strap **202**. In this alternate embodiment, aperture **204** is preferably sized to allow anchor strap **200** to pass through aperture **204** at least once. Preferably, anchor strap **200** provides for convenient anchoring of the strap system to an object without the excessive bulk or hassle of threading a larger strap through an aperture. Preferably, anchor strap **200** is at least 90% narrower than the width of main strap **202** (as shown, see FIG. 25). Preferably, anchor strap **200** is, at most, half the length of main strap **202**. Preferably, anchor strap **200** is bound to one object, while main strap **202** is bound to several objects. Preferably, this strap system provides smaller anchor strap **200**, which allows the strap system to be quickly and conveniently anchored without excessive threading. Preferably, this strap system provides a longer-and-wider main strap **202** to bundle numerous and/or larger, bulkier objects. Upon reading this specification, those of ordinary skill in the art will now appreciate that, under appropriate circumstances, considering issues such as flexibility, ease in bundling, preventing unbundling, object accessibility, etc., other arrangements, such as pulling main strap **202** through aperture **204**, even if main strap is wider than aperture **204**, by folding/bending main strap **202**, etc., may suffice. Preferably, main strap **202** also comprises a label **206** (embodying herein, wherein at least one said fastener strap element comprises at least one label). Preferably, main strap **202** (for example) comprises a material that is conducive to being written upon so that the strap system may be labeled by a user. Preferably, a portion of the material comprises a light color, preferably white, preferably off-white, so that there will be contrast (providing better legibility) to the dark ink which is typically used for writing. Preferably, label **206** is located on one side of the strap being written on (e.g., main strap **202**). Alternatively, label **206** is preferred to be located on both sides of the strap. Preferably,

label **206** is located on a user-selected side of the strap, depending on whether user wants label to show or not, when the strap is being used.

FIG. **27** shows a strap system with a label **206** on the outside being used to loopably bind two objects together. If label **206** were only on the other side of the strap, the label could remain concealed until the main strap **202** is unbound, which may be desirable for certain applications, such as for aesthetic reasons.

FIG. **28** shows a perspective view of a reel **205** of continuous strap material, with at least one aperture **204** which can be cut to a length desired by a user (embodying herein a continuous-strap system). FIG. **29** and FIG. **30** show, in plan view, portions of two alternate preferred embodiments of such continuous strap material. Preferably, the reel **205** of continuous strap material provides the user with flexibility by allowing a user to select the optimal length of the straps for each particular application. Preferably, the continuous length of strap material **205** alternates between wide cross section **208** and narrow cross section **209** (corresponding to the widths of the anchor strap **200** and the main strap **202** that are formed when the material is cut from reel **205**) at regular intervals, as shown. Preferably, apertures **204** are located at regular intervals within the wide cross section **208** of the material, as shown. Preferably, each alternating wide portion is longer (preferably at least twice as long) than each alternating thinner portion. Preferably, a user cuts a length of the continuous strap either somewhere in the middle of one of the thinner sections or at an end of one of the thinner sections, thereby creating an anchor strap **200** on at least one end, which can be used as described above. For example, referring to FIG. **30**, a user could cut the material at location **210a**, **210b**, or **210c**, etc., thereby creating anchor strap **200a**, **200b**, or **200c**, etc., respectively, (preferably for use with aperture **204a**, **204b**, or **204c**, respectively). The prior art strap, as shown in FIG. **1** and FIG. **2**, only comes in a fixed length, which is unlikely to be the optimal length for any particular application by a user (imagine Scotch™ tape only being available in precut two-inch strips). Preferably, the apertures **204** in the continuous strap **205** of the embodiment of the present invention, allow a user to select the strap length by cutting the appropriate portion off the reel. It should be noted that cutting an excessively long strap of the prior art (with only one aperture) down to size would result in a wasted portion of strap (without an aperture), a result avoided by the present invention. It should also be noted that considerable manufacturing cost may be saved using the configuration of FIG. **25**, for the reel, in that a relatively infrequent die cut will be able to make the aperture and the thin section. This arrangement embodies herein the continuous-strap system wherein such continuous length of material comprises an aperture adjacent to at least one end portion of each such alternating wider width.

FIG. **29** also shows how an alternating wide cross section **208** and narrow cross section **209** can be patterned to form a preferred material-saving economical layout from a sheet of material **212**, to reduce manufacturing costs. This layout preserves fastener material and minimizes manufacturing costs.

It is noted that the present invention, in a described embodiment, provides a simple dispensing mechanism for dispensing straps of variable length determined by the end user, having been preferably provided the material, preferably precut by a manufacturer (to provide such advantages). Preferably, the strip is composed of a hook and loop material or similarly constructed reversible fastener material, with fasteners on each side capable of mating with the other. Preferably, this material would be provided in a standard self-

fastened coiled manner for storage or a dispenser. Preferably, the strips may be manufactured using sheet material with dies that create straps with at least one aperture or perforated apertures per wide strap segment interconnected by a more narrow linking segment. Preferably, a single strap with at least two ends and two apertures with substantial spacing in between the apertures may be cut along the length of the strip in between two apertures to create at least two new straps with two free ends.

Preferably, for this preferred embodiment of the present invention, the strips have multiple apertures. Preferably, the strips have perforated apertures. Preferably, the apertures are distributed per wide segments interconnected by a narrower linking segment. Preferably, varying the position of the cut will allow the user to tailor the sizing of the straps to the user's needs while achieving economical material-saving advantages. Significant variations of length, shape, design, economy and function may be achieved by a single easily-performed cut of the material by a standard cutting instrument. Preferably, this may include a pair of scissors, knife or cutting blade. The straps may have substantially similar strengths and would preferably not be weakened by perforations.

Preferably, the strips are die cut. Preferably, the strips are rotary cut from sheets of the reversible material. The straps may be formed in single arrays from a single sheet of strap material. The straps may be formed in adjacent arrays from a single sheet of strap material. Preferably, the straps may be formed in a nested pattern, for economical manufacturing. Preferably, the straps may be formed from an interlocking pattern, for economical manufacturing. Preferably, the material is provided in a roll. Preferably, the roll is part of a dispenser. Preferably, the dispenser utilizes a cutting mechanism.

Preferably, the material is provided in a coiled roll. Preferably, the material is provided in a coiled roll of a single strap, preferably with multiple apertures. Preferably, the roll may be unwound to a desired length and the strap may be cut between apertures to form a new strap of a desired length. The strap formed would in such cases have the strap anchoring, bundling and fastening advantages described above, including those given by having two independently operable arms.

For example, if the user had a six-foot strap of a uniform maximal width rolled in a coil with five apertures equally spaced at 12 inches apart, the user could choose to cut the material 18 inches from a first end to create a second two-armed strap that would have one end about six inches long and the other end about 12 inches long. The remaining roll would be a first strap with four apertures and of a total length of 4.5 feet. The user could then cut 9 inches from the shortened tip of the first roll to create a third double-armed strap that had arm dimensions of 3 inches and 6 inches. The shortened first strap would now be 3.75 feet in length. The large first strap might, for example, organize a garden hose system; the second strap might, for example, organize a laptop power cord; and the small third strap might, for example, organize wires in an electrical panel.

From the foregoing discussion, it is seen that, if a user wanted to fasten two objects, or sets of objects, together using the prior art fasteners, it would be necessary that the first set of objects be bundled first (set A), followed by the second set of objects (set B). Consequently, a drawback in the prior art is that, when using a single strap fastener (such as the GET-A-GRIP™ strap), the set A objects cannot be cinched together well, as the fastened end of the GET-A-GRIP™ strap is under the loop of the GET-A-GRIP™ strap and the fingers tugging on the pulling end interfere with the fastening action of one

layer on another. Thus, a bundled set of objects might not be bound as tightly as desired. Furthermore, the bundled set might become loose, slip, become repositioned, or even become undone. It is seen that the present invention provides a fastening strap system that permits tightly cinching the first set of objects to achieve a better total fit around all the bundled A and B sets of objects without this tendency to become undone.

It is further seen that, in the prior art, after the set A objects have been cinched together, with the set B objects then bundled to the set A objects, if a user only wanted to release the set A objects, the user would still be required to first release the set B objects from the fastening strap. Only then could the set A objects be released from the fastening strap. For example, assume that set A is a pair of ski poles and set B is a pair of skis. If a user bundled the ski poles together with a large fastening strap of the prior art, such as the configuration of the Get-A-Grip™ strap, the poles of set A would be in the center portion of the spiral wrapped GET-A-GRIP™ strap. Next, the skis of set B would be bound within the outer wraps of the spiral wrapped GET-A-GRIP™ strap. Now assume further that the user wants to free only the ski poles to loan to a friend. In this case, the user would first have to release the set B skis on the outer portion of the spiral wrapped bundle. This would be inconvenient and time consuming and leaves the second set B of the skis unbundled such that the skis might fall on the ground thus causing harm to someone's toes or causing the skis to be damaged by the impact on a non-snowy surface. Or, for example, the user might decide that the user wants to keep either the set B skis or the set A ski poles bundled by themselves and then attach that remaining bundled set to a third set C such as a car roof rack. It therefore would be desirable, as provided herein by the embodiments of the present invention, to have a fastening strap system that can fasten both a set A and a set B but then allow the release of either set A or set B while leaving the remaining set fastened intact, which could then be immediately attachable to a third set C.

Yet another example: A prior art hook and loop product for power cords has the plug end of a power cord secured through slits in the fastening strap, but only if the plug is properly dimensioned. If the plug is too large, the plug may not fit through the slits. If the plug is too small, then the plug will not be secured. Only if the plug is dimensioned correctly may the plug be secured through the slits of the strap and the remainder of the strap then used to bundle the remainder of the power cord. If the cord and plug are separately bundled, the same kinds of problems, as mentioned for the ski example using prior art devices, occur. This kind of problem is solved by the embodiments of this invention by providing a secure fastening strap that may release either of two fastened sets, i.e. the plug and the cord bundle, independently at will.

As another example, a pen and a pencil may be wrapped with a strip of ONE-WRAP™ material by winding one end of the strip around a free and easily manipulated pencil and then twirling the pencil around in consecutive spirals and then repeating the procedure to secure the other end of the strip around a pen. However, this procedure will not work if the user wants to secure the pencil to a desk drawer handle, because the desk would not twirl so easily. Also, if a handbag were secured to a desk drawer handle, the weight of the handbag might easily cause the spiraled material to become unwound as the force pulling the layers of materials apart is aligned in the same general direction as would normally occur to separate the fastening material layers, as discussed elsewhere herein. This invention, as shown and described, provides a fastening strap system for securing two items or sets of

items together that allows separation of either set immediately with a minimum of manipulation while also maintaining a relatively strong fastening grip when fastened.

Some of the functional deficiencies of the prior art are that the strap must often be entirely unwound in order to attach the strap; one cannot, for example, keep one end of the strap coiled in a compact stored configuration and have only a small portion of only one end of the strap unwrapped and exposed to perform the anchoring function. This drawback becomes particularly important as the length of the strap increases. For example, as the length of the reversible fastening strap material increases there is more surface area and weight. The material tends to twist and turn and stick to itself more easily as there is more surface area and more chance the material is much more likely to fasten to itself prematurely and undesirably making it tangled and difficult to manage. This makes the threading process of the free end of a hook and loop strap and particularly a relatively long strap much more difficult, frustrating and time consuming. Also, another clear disadvantage of the prior art is that when using a relatively long strap, it will nearly always require two hands. For example, if the strap length is 36 inches (and therefore longer than the span of a hand between a thumb and two other gripping fingers), and a person was going to anchor the strap on an object, such as a ski pole, and then bundle skis, the person would need to secure the head region of a strap with one hand, stretch and straighten out the remaining entire length of the strap with a second hand, and then use the first hand to thread the tip through the aperture of the head region. Meanwhile, the person is trying to make sure the strap material does not twist and turn on itself, to tangle, fasten and interfere with this process. The present invention provides a self-fastening strap made of a self-fastening material, such as hook and loop material, that can be anchored with relative ease without having to unwind the entire strap or unbundle and unwind the entire strap, or with relatively less problems of tangling and prematurely self-fastening.

It is also noted that the present invention provides a self-fastening strap made of a self-fastening material, such as hook and loop material, that can be released without having to unwind the entire strap, or unbundle and unwind the entire strap, or that might be released easily from an anchored position with a single hand.

It is further noted that the present invention allows a user the choice to immediately fasten and selectively release only one of a multiple number, two or more, separate objects from the hook and loop fastening strap bundle. It provides for the selective and independent binding and release of multiple bundles of items from one another.

It is also noted that, while one might choose a material such as the self-fastening Dual Lock™ material made by 3M™ or other similar one-sided self-fastening materials, this material is expensive, requires a press fit to activate the fastening and poorly adapts to apparel objects. [FIG. 21 shows an embodiment of the present invention using a "hook and hook" material like the above-mentioned one-sided self-fastening materials, but made by applicant as a two-sided material, with all the advantages set out hereinafter.] Furthermore, the goals are the fastening of two objects together while being able to immediately unfasten them. In addition, because the 3M™ material is only one-sided, a strap of such material cannot be merely folded back on itself at both ends to secure and fasten two objects together.

Also, depending on the density of the gripping appendages that are on the fastening side of the material, the surface might not fasten to itself. Thus, it is preferable to have a second side that has a second surface with different properties than the

first surface, such as a second density of the gripping appendages or a different type of gripping appendage that allows the selection of a stronger or weaker fastening. Also, the mentioned 3M™ strap material does not have the soft pile of the hook surface of a hook and loop material strap. Under appropriate circumstances, it is preferable to have a strap with at least one self-fastening surface that has the ability to self engage and fasten a first set, while also having another surface with properties that might include immediate engagement on contact with the first surface, soft pile, or self-engagement with the same or different properties of the first.

In particular, a disadvantage of a single-sided self-fastening strap is that it does not permit a coiled bundling capability, as a coil of the single-sided self-fastening material does not attach to itself. Coiled bundling capability as provided by the present invention is desirable as sequential coiling of fastening surfaces adds increased fastening strength to subsequent wraps of double-sided fastening material.

In another usage example of a preferred double-sided strap, given a set of medical tubes, it would be desirable to have a double-sided fastening strap of self-fastening material such that, in a hospital environment, an IV (intravenous) tube could be connected to an IV pole, as is standard in hospitals for holding bags or bottles of IV fluid and their connections. In such an application of a double-sided strap, the material would preferably be wound around the IV pole in a substantially linearly aligned coil and be stored there in a neat arrangement. Also, when necessary, the coiled double-sided fastening strap would preferably be partially unwound and folded around or coiled around additional IV tubing. Additionally, when necessary, the additional IV tubing would preferably then be released from the fastening grip of the double-sided fastening strap of the present invention, or released from the IV pole, while maintaining the original IV tubing connected to the IV pole. Furthermore, the low particulate composition of the double-sided (non hook and loop) strap of the present invention would benefit clean room and surgical environments over some high particulate hook and loop materials.

Although applicant has described applicant's preferred embodiments of this invention, it will be understood that the broadest scope of this invention includes modifications such as diverse shapes, sizes, and materials. Such scope is limited only by the below claims as read in connection with the above specification. Further, many other advantages of applicant's invention will be apparent to those skilled in the art from the above descriptions and the below claims.

What is claimed is:

1. A fastening strap system relating to securing at least two elements to be secured, comprising:

- a) at least one first elongated strap portion each comprising,
 - i) at least one first strap end portion,
 - ii) at least one first strap width, and
 - iii) at least one first strap length;
- b) at least one second elongated strap portion each comprising,
 - i) at least one second strap end portion,
 - ii) at least one second strap width, and
 - iii) at least one second strap length;
- c) at least one aperture comprising,
 - i) at least one aperture width, and
 - ii) at least one aperture length;
- d) wherein said fastening strap system consists essentially of a unitary portion of flexible sheet material;
- e) wherein said unitary portion of flexible sheet material comprises,

- i) a first side having its entire first-side surface substantially comprising at least one first fastening surface, and
 - ii) a second side having its entire second-side surface substantially comprising at least one second fastening surface adapted to be detachably fastenable to said at least one first fastening surface;
- f) wherein all said at least one first elongated strap portions and all said at least one second elongated strap portions are parallel and collinear;
 - g) wherein said at least one aperture is located between said at least one first strap end portion of said at least one first elongated strap portion and said at least one second strap end portion of said at least one second elongated strap portion; and
 - h) wherein said at least one aperture width is sized so as to be able to receive said at least one first elongated strap portion without requiring twisting along at least one longitudinal axis of said at least one first strap length of said at least one first elongated strap portion;
 - i) wherein said second strap width without bending or folding along said at least one second strap length of said at least one second elongated strap portion, prevents insertion of said at least one second elongated strap portion into said at least one aperture;
 - j) wherein said at least one first fastening surface comprises at least one hook fastening surface;
 - k) wherein said at least one second fastening surface comprises at least one complementary fastening surface;
 - l) wherein said fastening system is structured and arranged to form at least one first fastening loop, such first fastening loop formed by encirclement of said at least one first elongated strap portion around at least one first element to be secured, insertion of at least said first strap end portion of said at least one first elongated strap portion into and through said at least one aperture, and cinching of said at least one first elongated strap portion to secure the at least one first element to be secured, wherein such at least one first fastening loop is secured by connection of said at least one first fastening surface with said at least one second fastening surface, wherein such fastening is finely adjustable; and
 - m) wherein said fastening system is further structured and arranged to form at least one second fastening loop formed by encirclement of said at least one second elongated strap portion around at least one second element to be secured wherein such at least one second fastening loop is secured by connection of said at least one first fastening surface with said at least one second fastening surface, wherein such fastening is finely adjustable.
2. The strap system according to claim 1 wherein said at least one first strap length is different than said at least one second strap length.
3. The strap system according to claim 1 wherein said at least one aperture comprises a portion devoid of said flexible sheet material.
4. The strap system according to claim 1 wherein said at least one first strap width is not substantially greater than said at least one aperture width.
5. The strap system according to claim 4 wherein:
- a) said at least one first strap width is less than said at least one second strap width;
 - b) said at least one aperture width is less than said at least one second strap width; and
 - c) wherein said at least one second elongated strap portion contains said at least one aperture.

- 6. The strap system according to claim 1 wherein said at least one first elongated strap portion comprises at least one label.
- 7. The strap system according to claim 1 wherein said at least one second elongated strap portion comprises at least one label.
- 8. The strap system according to claim 1 wherein said first side is different in color than said second side.
- 9. The strap system according to claim 5 wherein said at least one second strap width is the widest portion of said fastening strap system.
- 10. A fastening strap system, comprising:
 - a) at least one first elongated strap portion comprising,
 - i) at least one first strap end portion,
 - ii) at least one first strap width, and
 - iii) at least one first strap length;
 - b) at least one second elongated strap portion comprising,
 - i) at least one second strap end portion, and
 - ii) at least one second strap width; and
 - c) at least one aperture comprising,
 - i) at least one aperture width, and
 - ii) at least one aperture length;
 - d) wherein said fastening strap system consists essentially of a unitary portion of flexible sheet material;
 - e) wherein said unitary portion of flexible sheet material comprises,
 - i) at least one first side having its entire first-side surface substantially comprising at least one first fastening surface, and
 - ii) at least one second side having its entire second-side surface substantially comprising at least one second fastening surface adapted to be detachably fastenable to said at least one first fastening surface;
 - f) wherein all said at least one first elongated strap portions and all said at least one second elongated strap portions are parallel and collinear;
 - g) wherein said at least one aperture is located between said at least one first strap end portion and said at least one second strap end portion;
 - h) wherein said at least one aperture is structured and arranged to allow cinching said at least one first elongated strap portion around at least one first element to be secured by insertion of said at least one first elongated strap portion into and through said at least one aperture, thereby forming at least one first fastening loop, such at least one first fastening loop fastened by connection of

- said at least one first fastening surface with said at least one second fastening surface;
- i) wherein, when cinching, said at least one first elongated strap portion is finely adjustable about said at least one first strap length;
- j) wherein said at least one first strap width is less than said at least one second strap width;
- k) wherein said at least one second strap width, without bending or folding along said at least one second strap length of said at least one second elongated strap portion, prevents insertion of said at least one second elongated strap portion into said at least one aperture;
- l) wherein said at least one elongated strap portion contains said at least one aperture;
- m) wherein said at least one second strap width is the widest portion of said fastening strap system; and
- n) wherein said at least one first strap end portion is shorter than said at least one second strap end portion; and
- o) wherein said at least one second elongated strap portion is structured and arranged to be cinched around at least one second element to be secured by encircling said at least one second elongated strap portion around the at least one second element to be secured, thereby forming at least one second fastening loop, such at least one second fastening loop fastened by connection of said at least one first fastening surface with said at least one second fastening surface, wherein such fastening is finely adjustable.
- 11. The system according to claim 1 wherein said at least one aperture comprises at least one transverse slit.
- 12. The strap system according to claim 1 comprising at least two of said at least one aperture.
- 13. The strap system according to claim 8 wherein said second side is lighter in color than said first side.
- 14. The strap system according to claim 8 wherein said second side comprises said at least one loop fastening surface and said at least one second side is lighter in color than said first side.
- 15. The system according, to claim 1 wherein said at least one second fastening surface comprises at least one complementary hook fastening surface.
- 16. The system according to claim 1 wherein said at least one second fastening surface comprises at least one loop fastening surface.

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