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(54) Title: RELEASABLE VEST

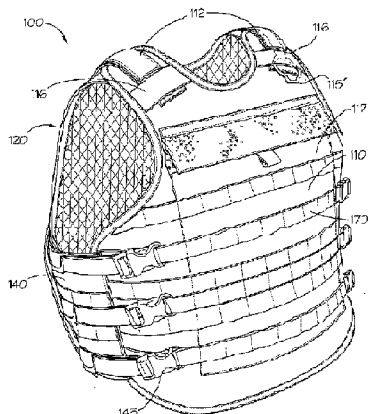


Fig. 1A

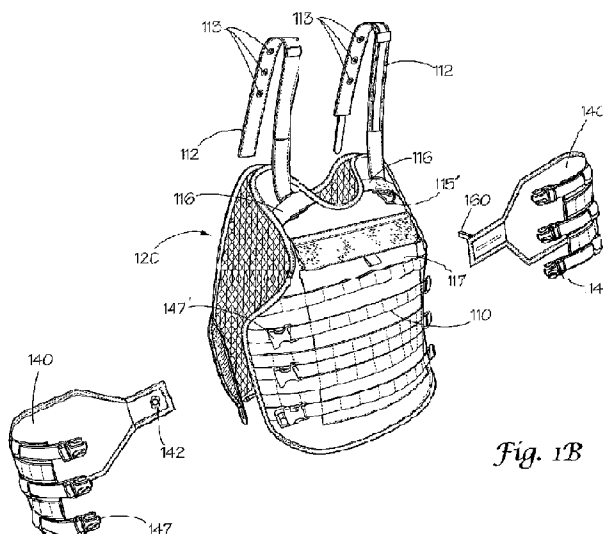


Fig. 1B

(57) Abstract: A releasable vest having a front panel; front shoulder strap elements that include at least one front shoulder strap attachment opening; a back panel; a first waist belt element that extends from the front panel and has at least one waist belt element attachment opening formed through the waist belt element; a second waist belt element that extends from the front panel and has at least one release loop attached thereto, wherein the at least one release loop is capable of being passed through the waist belt attachment opening of the first waist belt element and the at least one front shoulder strap attachment opening of the front shoulder strap elements; and a release lanyard that is capable of being passed through the release loop so as to releasably secure the first waist belt element and the at least one shoulder strap element to the release loop.



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BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] This invention relates generally to releasable vests or carriers. In
5 particular, the present invention relates to an improved releasable vest or carrier that is easier to operate by a user and has components that, upon release, are more likely to separate and fall away from the user than current releasable or cutaway vests.

2. Description of Related Art

10 [0003] Military and law enforcement personnel, particularly those attached to special operations unit, carry a large amount of specially designed and adapted gear on various vests or carriers. Because of the bulk and weight of certain tactical vests and body armor carriers, it is sometimes necessary or desirable to be able to quickly remove the vest or carrier, particularly in an emergency situation.

SUMMARY OF THE INVENTION

[0004] However, current releasable or cutaway vests typically include a multitude of components or panels that are connected via a plurality of release cords that are intricately woven between the components in order to keep the components
5 connected.

[0005] In order for the various components or panels of a known, assembled cutaway vest to be released, the wearer must pull one or more release cords a sufficient distance such that the release cord(s) becomes unwoven from the various components and releases each of the components. This is typically difficult as there
10 is a great deal of friction between the release cord(s) and the cutaway vest components. Furthermore, the release cord(s) typically has/have to be pulled a great distance in order to fully release the cutaway vest components.

[0006] The release cords typically comprise metal or plastic cords with a circular cross-section. While cords having a circular cross-section may be used, if a
15 load is placed on the vest in an area above the location of one of the cords, a pressure point can be formed, making the vest uncomfortable for the wearer.

[0007] In many of the current cutaway vests, even after the release cord(s) has/have been removed from the vest, the vest components remain firmly coupled to one another via various attachments, such as Velcro. Thus, the “released”
20 components still remain firmly coupled to one another and must still be forcibly, manually separated from one another before the cutaway vest can be removed from the user.

[0008] Therefore, the present invention relates generally to releasable vests or carriers that are easier to operate by a user and have components that, upon release,
25 are more likely to separate and fall away from the user than current cutaway vests.

[0009] In various exemplary, non-limiting embodiments, the releasable vest or carrier comprises at least some of a front panel, a back panel, and at least one waist belt element extending from or coupled to either the front panel or the back panel.

A flexible release lanyard is used in combination with a release loop, such that when various components of the releasable vest or carrier are assembled, the components can be maintained in an assembled relationship. When the flexible release lanyard is pulled a predetermined distance, select components of the releasable vest or carrier are released from the assembled relationship and can fall away from the user.

[0010] In various exemplary, non-limiting embodiments, an additional safety lanyard may be included. In these exemplary embodiments, at least some of the components of the releasable vest or carrier cannot be released from the assembled relationship until both the release lanyard and the additional safety lanyard are pulled a predetermined distance.

[0011] Accordingly, this invention provides a releasable vest of improved design.

[0012] This invention separately provides a vest, which is capable of allowing a user to more efficiently release, or “cut away”, the vest.

[0013] This invention separately provides a releasable vest, which, in certain exemplary embodiments, is capable of providing an increased level of security against accidental release.

[0014] These and other features and advantages of this invention are described in or are apparent from the following detailed description of the exemplary embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein like reference numerals refer to like parts throughout the several views, and wherein:

5 [0016] Fig. 1A shows a front perspective view of a first exemplary embodiment of a releasable vest according to this invention;

[0017] Fig. 1B shows an exploded front perspective view of a first exemplary embodiment of a releasable vest according to this invention;

10 [0018] Fig. 2 shows an exploded rear perspective view of a first exemplary embodiment of a releasable vest according to this invention.

[0019] Fig. 3A shows an interior view of the back panel of a first exemplary embodiment of a releasable vest according to this invention, wherein the access flap is in a closed position;

15 [0020] Fig. 3B shows an interior view of the back panel of a first exemplary embodiment of a releasable vest according to this invention, wherein the access flap is in an open position;

[0021] Fig. 4A shows an interior view of the back panel of a first exemplary embodiment of a releasable vest according to this invention, illustrating the releasable coupling of the waist belt elements according to this invention;

20 [0022] Fig. 4B shows an interior view of the back panel of a first exemplary embodiment of a releasable vest according to this invention, illustrating the releasable coupling of the shoulder strap elements according to this invention;

[0023] Fig. 5A illustrates a more detailed view of the slidably releasable coupling of the release loop to the waist belt elements according to this invention;

25 [0024] Fig. 5B illustrates a more detailed view of the slidably releasable coupling of the waist belt elements, shoulder strap elements, and release lanyard to the release loop according to this invention;

[0025] Fig. 6A illustrates a partially exploded view of the slidably releasable coupling according to this invention, utilizing a second exemplary embodiment of a release loop; and

[0026] Fig. 6B illustrates an assembled view of the slidably releasable coupling of the waist belt elements, shoulder strap elements, and release lanyard to the second
5 exemplary embodiment of a release loop according to this invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0027] For simplicity and clarification, the design factors and operating principles of the releasable vest of this invention are explained with reference to various exemplary embodiments of a releasable vest according to this invention.

5 The basic explanation of the design factors and operating principles of the releasable vest is applicable for the understanding, design, and operation of the releasable vest of this invention.

[0028] It should also be appreciated that, for simplicity and clarification, the embodiments of this invention will be described using the terms “front” and “back”.

10 However, it should be understood that these terms are merely used to aid in understanding of this invention are not to be construed as limiting the systems, methods, and apparatuses of this invention. Thus, it should be appreciated that the design factors and operating principles of the releasable vest described herein may be used in a “mirror image” releasable vest, where in the elements described as
15 being included in or on the front are included in or on the back. Alternatively certain of the elements that are described as being included in or on the back of the releasable vast may be included in or on the front of the vest, or vice versa.

[0029] Furthermore, it should be appreciated that, for simplicity and clarification, the embodiments of this invention will be shown and/or described with
20 reference to MOLLE and/or S.T.R.I.K.E. compatible webbing being included on various portions of the releasable vest. However, it should be appreciated that the inclusion and/or placement of any MOLLE and/or S.T.R.I.K.E. compatible webbing is not essential to the releasable vest of this invention. In various exemplary, non-limiting embodiments of this invention, the releasable vest may incorporate any type
25 of known or later developed system capable of allowing any number of exterior pouches, pockets, carriers, or the like to be permanently or releasably coupled or attached to the vest. Alternatively, the design factors and principles of this invention may be utilized in a vest that does not include any exterior pouches,

pockets, or carriers, but is used as, for example, a ballistic plate carrier, and ammunition carrier, or a floatation device.

[0030] It should also be appreciated that the terms “cutaway vest”, “releasable vest”, “vest”, and “carrier” are used for basic explanation and understanding of the operation of the systems, methods, and apparatuses of this invention. Therefore, the terms “cutaway vest”, “releasable vest”, “vest”, and “carrier” are not to be construed as limiting the systems, methods, apparatuses, and/or applications of this invention.

[0031] Turning now to the drawing figures, Figs. 1 through 5B show various features of a first exemplary embodiment of a releasable vest according to this invention. As shown in the drawing figures, the releasable vest 100 includes at least some of a front panel 110, front shoulder strap elements 112, a back panel 120, waist belt elements 140, a release loop 160, and a release lanyard 115.

[0032] The front panel 110 includes two front shoulder strap elements 112 that extend from an upper portion of the front panel 110. In various exemplary embodiments, the front shoulder strap elements 112 are formed as an integral part of the front panel 100. Alternatively, the front shoulder strap elements 112 may be releasably or removably coupled or attached to the front panel 110.

[0033] In various exemplary embodiments, each of the front shoulder strap elements 112 includes a plurality of front shoulder strap attachment openings 113. In various exemplary, non-limiting embodiments, the front shoulder strap attachment openings 113 comprise slits or openings formed through the material of the front shoulder strap elements 112. In certain exemplary embodiments, the attachment openings 113 are reinforced by, for example, stitching, a grommet, or other reinforced eyelet.

[0034] The front shoulder strap attachment openings 113 allow the release loop 160 to pass through the front shoulder strap elements 112 (as discussed below). In various exemplary embodiments, a single attachment opening 113 may be included on each front shoulder strap element 112. However, a plurality of attachment

openings 113 may be included to allow a user to select a single attachment opening 113 to pass the release loop 160 through, thereby providing a measure of adjustment to the effective length of the front shoulder strap elements 112 and the overall fit of the releasable vest 100.

5 **[0035]** In various exemplary embodiments, the front panel 110 may also comprise an additional layer of material, which provides an additional cushioning or air flow layer to the front panel 110.

10 **[0036]** The back panel 120 comprises at least a first layer 121 and a second layer 124, with a cavity formed between the first layer and the second layer. An upper portion of the second layer 124 is attached or coupled to the first layer 121 at an upper portion of the first layer 121. In various exemplary embodiments, as illustrated herein, a lower portion of the second layer 124 extends beyond a point where the second layer 124 is attached or coupled to the first layer 121 to form an access panel portion of the second layer 124.

15 **[0037]** In various exemplary embodiments, a grommet 125, or other panel coupling means, is positioned so as to provide additional coupling of the first layer 121 to the second layer 124. It should be appreciated that, in various exemplary embodiments, the grommet 125 may be replaced by other permanent or releasable panel coupling means, such as, for example, a stitch or stitched portion, one or more male/female snap-release buckles, one or more buttons, snaps, or other fastening, closure, or attachment means known to those skilled in the art.

25 **[0038]** The access panel portion of the second layer 124 is formed so as to be secured or releasably coupled to the first layer 121 by a releasable coupling means 126. In various exemplary embodiments, the releasable coupling means 126 may comprise a hook and loop fastener, such as Velcro. It should be appreciated that, in various exemplary embodiments the releasable coupling means 126 may comprise other releasable coupling means or releasable fasteners, such as, for example, male/female snap-release buckles, a ziplock fastening device, a zipper, buttons,

snaps, or other fastening, closure, or attachment means known by those skilled in the art.

[0039] In various exemplary embodiments, as illustrated herein, the access panel portion of the second layer 124 may be formed so as to extend beyond a lower
5 portion of the first layer 121 and be releasably coupled to a second side of the first layer 121 (a side of the back panel 120 that faces away from the body of a user wearing the releasable best 100). Alternatively, the access panel portion of the second layer 124 may be formed so as to be releasably coupled to a first side of the first layer 121 (a side of the back panel 120 that faces towards the body of a user
10 wearing the releasable best 100).

[0040] In various exemplary embodiments, the back panel 120 may also comprise an additional layer of material 122, which provides an additional cushioning or air flow layer to the back panel 120.

[0041] The back panel 120 comprises a cavity or tunnel formed between at least
15 a portion of the first layer 121 and the second layer 124. In this manner, at least a portion of the front shoulder strap elements 112 can be introduced into an interior of the back panel 120 formed between at least a portion of the first layer 121 and the second layer 124.

[0042] The waist belt elements 140 serve to couple the front panel 110 to the
20 back panel 120. As illustrated in the drawing figures, the waist belt elements 140 may be releasably or removably coupled or attached to the front panel 110, via waist belt attachment / adjustment elements 145.

[0043] Each of the waist belt attachment / adjustment elements 145 comprises a mating pair of coupling elements, a male coupling element 147 and a corresponding
25 female coupling element 147'. The male coupling element 147 and the female coupling element 147' may be releasably coupled.

[0044] The female coupling element 147' is releasably or permanently coupled or attached to the front panel 110, while the male coupling element 147 is releasably

or permanently coupled or attached to the waist belt element 140. In this manner, when the male coupling element 147 and the female coupling element 147' are coupled, the front panel 110 is coupled to the waist belt element 140.

[0045] In various exemplary embodiments, each of the male coupling elements 147 is secured to an extended web portion of the MOLLE and/or S.T.R.I.K.E. compatible accessory mounting portion 144 of the waist belt element 140 that forms a strap element 142.

[0046] As illustrated herein, an excess portion of the strap element 142 can be secured to the MOLLE and/or S.T.R.I.K.E. compatible accessory mounting 144 via a strap-securing element 143. In various exemplary embodiments, the strap securing element 143 comprises a length of hook-and-loop fastener, such as, for example, Velcro, which can be attached to an end of the strap element 142 perpendicular to a longitudinal axis of the strap element 142. The strap-securing element can then be woven through the webbing of the MOLLE and/or S.T.R.I.K.E. compatible accessory mounting 144 and overlapped upon itself to secure the end of the strap element 142 to the webbing.

[0047] As illustrated herein, each of the female coupling elements 147' is secured to a MOLLE and/or S.T.R.I.K.E. compatible accessory mounting portion 170 of the front panel 110. In various exemplary embodiments, the female coupling element 147' may be removably attachable to a MOLLE and/or S.T.R.I.K.E. compatible accessory mounting portion 170 of the front panel 110 through use of an attachment opening. If included, the attachment opening allows the female coupling element 147' to be removably secured to a portion of the webbing of the MOLLE and/or S.T.R.I.K.E. compatible accessory mounting portion 170, after the webbing has been secured to the front panel 110.

[0048] As illustrated herein, the waist belt elements 140 comprises a sufficient length of strap element 142 and includes appropriate hardware such that the effective length of the waist belt elements 140 relative to the front panel 110 may be

adjusted to provide an additional measure of adjustment to the overall fit of the releasable vest 100.

[0049] It should be appreciated that, although the waist belt elements 140 are shown as being secured to the front panel 110 via waist belt attachment / adjustment elements 145, the waist belt elements 140 may be removably or permanently attached to the front panel 110 via any known or later developed means for securing the waist belt elements 140 to the front panel 110. For example, the waist belt elements 140 may be secured to the front panel 110 via male/female snap-release buckles, Velcro or other hook-and-loop fasteners, buttons, rivets, snaps, or other known or later developed fastening means.

[0050] In various exemplary embodiments, not illustrated herein, the strap element 142 may be of a predetermined length and/or the waist belt elements 140 may be formed as an integral part to the front panel 110 and merely extend from the front panel 110. In these exemplary embodiments, at least a portion of the integral waist belt elements 140 and/or the strap element 142 may include a flexible or elastic portion to allow for a measure of expansion of the waist belt elements 140 so that the waist belt elements 140 can expand to make the releasable vest 100 easier for a user to don.

[0051] In various exemplary embodiments, one of the waist belt elements 140 includes the release loop 160 attached or coupled to one of the waist belt elements 140. In various exemplary embodiments, the release loop 160 comprises a loop made of a fabric, metallic, plastic, or composite material. In various exemplary embodiments, the release loop 160 is attached or coupled directly to one of the waist belt elements 140. Alternatively, as illustrated in Figs. 6A and 6B, a release loop 160' may be coupled to one of the waist belt elements 140 by being passed through and at least partially captured within a hole or slot formed in the waist belt element 140.

[0052] In various exemplary embodiments, the other of the waist belt elements 140 includes one or more waist belt attachment openings 142. In various exemplary, non-limiting embodiments, the waist belt attachment opening(s) 142 comprise slits or openings formed through the material of the waist belt elements 140. In certain exemplary embodiments, the waist belt attachment opening(s) 142 are reinforced by, for example, stitching, a grommet, or other reinforced eyelet.

[0053] The waist belt attachment opening(s) 142 allow the release loop 160 to pass through the waist belt element 140 (as discussed below). In various exemplary embodiments, a single attachment opening 142 may be included on each waist belt attachment opening 142. However, a plurality of waist belt attachment opening(s) 142 may be included to allow a user to select a single waist belt attachment opening 142 to pass the release loop 160 through, thereby providing a measure of adjustment to the effective length of the waist belt elements 140 and the overall fit of the releasable vest 100.

[0054] The release lanyard 115 comprises an elongate piece of material having a relatively thin profile. By utilizing a release lanyard 115 having a relatively thin profile, the possibility of the release lanyard 115 producing a pressure point on the user is greatly reduced. However, it should be appreciated that the release lanyard 115 may have a round or oval shaped profile. In various exemplary embodiments, the release lanyard 115 either comprises or is coated with a material having a relatively low coefficient of drag.

[0055] In various exemplary embodiments, the release lanyard 115 may comprise a single piece of material that extends from a pull handle 115' to a terminal end. Alternatively, the release lanyard 115 may comprise a variety of materials that are attached or coupled together to form the release lanyard 115. For example, the elongate body portion of the release lanyard 115 may be comprised of a different material from a pull handle 115'.

[0056] In various exemplary embodiments, a portion of the exterior of the front panel 110, the back panel 120, and/or the waist belt elements 140 includes MOLLE and/or S.T.R.I.K.E. compatible webbing. However, it should be appreciated that the inclusion of any such MOLLE and/or S.T.R.I.K.E. compatible webbing is a design choice based on the desired appearance and/or functionality of the releasable vest 100.

[0057] In various exemplary embodiments, the front panel 110, the back panel 120, and/or the waist belt elements 140 may include a pocket or plate carrier, such as, for example, a front pocket 117 and/or a back pocket 127. However, it should be appreciated that the inclusion of any such pocket or plate carrier is a design choice based on the desired appearance and/or functionality of the releasable vest 100.

[0058] If the back pocket 127 is included, the grommet 125 may serve as a drain hole for the back pocket 127. Additionally, if the front pocket 117 and/or additional waist belt elements 140 include one or more pockets, additional grommets, not shown, may be included to provide drainage for each of the pockets.

[0059] One optional method for assembling the elements of the releasable vest 100 includes first securing the waist belt elements 140 to the front panel 110, utilizing the waist belt attachment / adjustment elements 145.

[0060] Then, as illustrated in Figs. 4A and 5A, the access panel portion of the second layer 124 is lifted and the waist belt elements 140 are positioned atop the lower portion of the first layer 121, such that the release loop 160 of the first waist belt element 140 (identified as waist belt element 140') can be aligned with and passed through the appropriate waist belt attachment opening 142 of the remaining waist belt element 140 (identified as waist belt element 140).

[0061] As illustrated in Figs. 4B and 5B, when the release loop 160 has been passed through the aligned waist belt attachment opening 142, an end of a first front shoulder strap element 112 is introduced into an interior tunnel or cavity of the back panel 120 and passed through the tunnel or cavity of the back panel 120 such that

the release loop 160 can be aligned with and passed through an appropriate front shoulder strap attachment opening 113.

[0062] When an appropriate front shoulder strap attachment opening 113 has been aligned with the release loop 160, the release loop 160 is passed through the aligned front shoulder strap attachment opening 113.

[0063] Once the release loop 160 has been passed through a front shoulder strap attachment opening 113 of a first front shoulder strap element 112 (identified as first shoulder strap element 112), an end of a second front shoulder strap element 112 is passed through an interior tunnel or cavity of the back panel 120 and the release loop 160 is passed through an appropriately aligned front shoulder strap attachment opening 113 of the second front shoulder strap element 112 (identified as second shoulder strap element 112').

[0064] When the release loop 160 has been passed through the desired waist belt attachment opening 142 of the waist belt elements 140 and the desired front shoulder strap attachment openings 113 of the front shoulder strap elements 112, a portion of the release lanyard 115 is passed through the release loop 160 to secure the waist belt elements 140 and the front shoulder strap elements 112 together, as illustrated in Figs. 4B and 5B.

[0065] In various exemplary embodiments, the release lanyard 115 follows a path that parallels the path taken by one of the front shoulder strap elements 112. To maintain an appropriate position of the release lanyard 115, release lanyard guides, such as, for example, release lanyard guides 114, may be included on various portions of the front shoulder strap elements 112. Alternatively, similar release lanyard guides may be included in the interior of the back panel 120, attached or couple to either the first layer 121 or the second layer 124.

[0066] In various exemplary embodiments, the release lanyard 115 is of a sufficient length such that when the releasable lanyard 115 is passed through the release loop 160, the pull handle 115' is at least partially covered by a release

lanyard cover 116. The release lanyard cover 116 provides at least some measure of security that the release lanyard 115 is not accidentally pulled.

[0067] In various exemplary embodiments, at least a portion of the release lanyard 115 includes a frictional surface (not shown). The frictional surface, if included, can provide a certain amount of resistance to the release lanyard 115 being pulled from the releasable vest 100 and/or the release lanyard cover 116, when the releasable vest 100 is fully assembled.

[0068] It should be appreciated that the order in which the components of the releasable vest 100 are described as being assembled may be altered so that a user is able to achieve the best fit of the releasable vest 100. For example, as described in shown herein, the release loop 160 may be releasably coupled to the remaining waist belt element 140 before the release loop 160 is releasably coupled to the shoulder strap elements 112. Alternatively, the release loop 160 may first be releasably coupled to the shoulder strap elements 112 before the release loop 160 is releasably coupled to the remaining waist belt element 140.

[0069] When the waist belt elements 140 and the shoulder strap elements 112 have been releasably coupled, via the releasable lanyard 115, to the releasable loop 160, the access panel portion of the second layer 124 is closed and secured to the first layer 121, as optionally illustrated in Figs. 3A and 3B.

[0070] Because the assembled combination of the waist belt elements 140 and the shoulder strap elements 112 is relatively free-floating with respect to the back panel 120, the grommet 125, if included, may provide an upper limit for the assembled combination of the waist belt elements 140 and the shoulder strap elements 112, such that these elements may be held in a desired position relative to the back panel 120.

[0071] When the elements of the releasable vest 100 have been assembled, the assembled releasable vest 100 may be donned or removed by a user utilizing the waist belt attachment / adjustment elements 145. Alternatively, if the waist belt

elements 140 are formed integral to the front panel 110, an elastic portion of the waist belt elements 140 may provide sufficient flex to allow the releasable vest 100 to be donned or removed by the user.

[0072] If a wearer wishes to quickly remove the releasable vest 100, the releasable lanyard 115 need only be pulled a relatively short distance. When the pull handle 115' of the releasable lanyard 115 is pulled, the release lanyard 115 is slidably pulled from the release loop 160, and the waist belt elements 140 and front shoulder strap elements 112 are able to separate from the release loop 160, and the back panel 120. Thus, when the pull handle 115' is pulled, the elements of the releasable vest 100 are released and the vest can "fall away" from the body of the user.

[0073] Figs. 6A and 6B show a more detailed view of the slidably releasable coupling of a second exemplary embodiment of a release loop 160' to the waist belt elements according to this invention. As illustrated in Figs. 6A and 6B, the release loop 160' is not attached or coupled to one of the waist belt element 140 or the waist belt element 140'. Instead, the release loop 160' comprises a separate component. As illustrated, the release loop 160' may comprise a loop of material, such as, for example, 550 cord, that is tied in a knot proximate the ends of the material. The knot or other obstruction formed in the release loop 160' is of a sufficient size and shape so as to be kept from passing through the waist belt attachment openings 142.

[0074] In these exemplary embodiments, both the waist belt element 140 and the waist belt element 140' include one or more waist belt attachment opening(s) 142. During assembly, the appropriate waist belt attachment openings 142 and the appropriate front shoulder strap attachment openings 113 are aligned and the release loop 160' is passed through the aligned waist belt attachment openings 142 and front shoulder strap attachment opening 113. Once a portion of the release loop 160' has passed through the openings, sufficient that a portion of the release lanyard 115 may be passed through the release loop 160' to secure the waist belt elements 140 and

140' and the front shoulder strap elements 112 and 112' together, the release loop 160' is maintained in position via the release lanyard 115 and the knot or other obstruction formed in the release loop 160'.

[0075] In various exemplary embodiments, the releasable vest 100 may further
5 comprise a second, safety lanyard (not shown), which may also be slidably passed through the release loop 160. The safety lanyard operates similarly to the release lanyard 115. However, the safety lanyard, if utilized, requires that a second obstruction be removed from the release loop 160 before the elements of the releasable vest 100 are able to separate from the release loop 160.

10 [0076] In certain exemplary embodiments, the safety lanyard may comprise a loop of material or a ring, such as, for example, a locking or snap carabiner, that is slidably passed through the release loop 160 after the elements of the releasable vest 100 have been slidably releasably coupled to the release loop 160. In various exemplary embodiments, release of the safety lanyard may require access through
15 the access panel portion of the second layer 124.

[0077] It is possible that a safety lanyard be used in place of the release lanyard 115. In this manner, the releasable features and capabilities of the vest are overcome and the elements remain coupled until the safety lanyard is removed.

[0078] In various exemplary embodiments, instructions for assembling and/or
20 operating the releasable vest 100 may be included on the first layer 121 or on an inside layer or surface of the access panel portion of the second layer 124. In this manner, when the access panel portion of the second layer 124 is lifted so that a user is able to assemble the components of the releasable vest 100, instructions for the assembly and/or operation of the releasable vest 100 are provided. The instructions
25 may be provided in written, pictorial, diagram, or a combination of forms.

[0079] Alternatively, instructions for assembling and/or operating the releasable vest 100 may be included on the second layer 124 of the back panel 120. The instructions may be provided in written, pictographic, diagram, symbolic, or a

combination of forms and may, for example, include a pictorial outline of certain of the components illustrating the relationship of each of the components when assembled or illustrating how the components are to be assembled.

[0080] While optional instructions have been described as being included on the
5 inside layer or surface of the access panel portion of the second layer 124 or the first layer 121 of the back panel 120, the optional instructions may be included on any covered or exposed surface of any component of the releasable vest 100.

[0081] While this invention has been described in conjunction with the exemplary embodiments outlined above, it is evident that many alternatives,
10 modifications, and variations will be apparent to those skilled in the art. Such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed exemplary embodiments. It is to be understood that the phraseology of terminology employed herein is for the purpose of description and not of limitation. Accordingly, the foregoing description
15 of the exemplary embodiments of the invention, as set forth above, is intended to be illustrative, not limiting. Various changes, modifications, and/or adaptations may be made without departing from the spirit and scope of this invention.

WHAT IS CLAIMED IS:

- 1 1. A releasable vest, comprising:
 - 2 a front panel;
 - 3 front shoulder strap elements that extend from an upper portion of the
 - 4 front panel, wherein each of the front shoulder strap elements includes at least one
 - 5 front shoulder strap attachment opening formed through the material of the front
 - 6 shoulder strap element;
 - 7 a back panel comprising at least a first layer and a second layer,
 - 8 wherein an upper portion of the second layer is attached to an upper portion of the
 - 9 first layer such that a cavity is formed between at least a portion of the first layer and
 - 10 the second layer such that at least a portion of the front shoulder strap elements can
 - 11 be introduced into the cavity formed between at least a portion of the first layer and
 - 12 the second layer, and wherein a lower portion of the second layer extends beyond a
 - 13 point where the second layer is attached or coupled to the first layer to form an
 - 14 access panel portion of the second layer, wherein a releasable coupling means
 - 15 releasably couples the access panel portion of the second layer to the first layer, and
 - 16 wherein a panel coupling means further couples the first layer to the second layer;
 - 17 a first waist belt element that extends from a lower portion of the
 - 18 front panel, wherein the first waist belt element comprises at least one waist belt
 - 19 element attachment opening formed through the material of the waist belt element;
 - 20 a second waist belt element that extends from a lower portion of the
 - 21 front panel, wherein the second waist belt element comprises at least one release
 - 22 loop attached directly to the second waist belt element, wherein the at least one
 - 23 release loop is capable of being aligned with and passed through the waist belt
 - 24 attachment opening of the first waist belt element and the at least one front shoulder
 - 25 strap attachment opening of the front shoulder strap elements; and
 - 26 a release lanyard, wherein the release lanyard extends from a pull
 - 27 handle to a terminal end, and wherein the release lanyard is capable of being aligned

28 with and passed through the release loop so as to releasably secure the first waist
29 belt element and the at least one shoulder strap element to the release loop.

1 2. The releasable vest of claim 1, wherein the front shoulder strap
2 elements are formed as an integral part of the front panel.

1 3. The releasable vest of claim 1, wherein the front shoulder strap
2 elements are releasably attached to the front panel.

1 4. The releasable vest of claim 1, wherein the front shoulder strap
2 elements include an elastic portion to allow for a measure of expansion of the front
3 shoulder strap elements.

1 5. The releasable vest of claim 1, wherein each of the front shoulder
2 strap elements includes a plurality of front shoulder strap attachment openings.

1 6. The releasable vest of claim 1, wherein the front shoulder strap
2 attachment openings are reinforced by stitching, a grommet, or a reinforced eyelet.

1 7. The releasable vest of claim 1, wherein the panel coupling means
2 comprises a grommet, a stitch, a stitched portion, one or more male/female snap-
3 release buckles, one or more buttons, or one or more snaps.

1 8. The releasable vest of claim 1, wherein the access panel portion of
2 the second layer is releasably coupled to a first side of the first layer.

1 9. The releasable vest of claim 1, wherein the access panel portion of
2 the second layer extends beyond a lower portion of the first layer and is releasably
3 coupled to a second side of the first layer.

1 10. The releasable vest of claim 1, wherein the waist belt elements are
2 removably attached to the front panel.

1 11. The releasable vest of claim 1, wherein the waist belt element
2 attachment openings are reinforced by stitching, a grommet, or a reinforced eyelet.

1 12. The releasable vest of claim 1, wherein the waist belt elements are
2 releasably coupled, via waist belt attachment / adjustment elements, to MOLLE or
3 S.T.R.I.K.E. compatible accessory mounting portions formed on the front panel.

1 13. The releasable vest of claim 1, wherein the waist belt elements
2 include an elastic portion to allow for a measure of expansion of the waist belt
3 elements.

1 14. The releasable vest of claim 1, wherein each of the waist belt
2 elements includes a plurality of waist belt attachment openings.

1 15. The releasable vest of claim 1, wherein the waist belt elements are
2 formed integral to the front panel.

1 16. The releasable vest of claim 1, wherein the release loop comprises a
2 fabric, metallic, plastic, or composite material.

1 17. The releasable vest of claim 1, wherein a portion of the exterior of
2 the front panel, the back panel, and/or the waist belt elements includes MOLLE
3 and/or S.T.R.I.K.E. compatible webbing.

1 18. The releasable vest of claim 1, wherein the panel coupling means
2 provides an upper limit for an assembled combination of the waist belt elements and
3 the shoulder strap elements, such that these elements are held in a desired position
4 relative to the back panel.

1 19. A releasable vest, comprising:

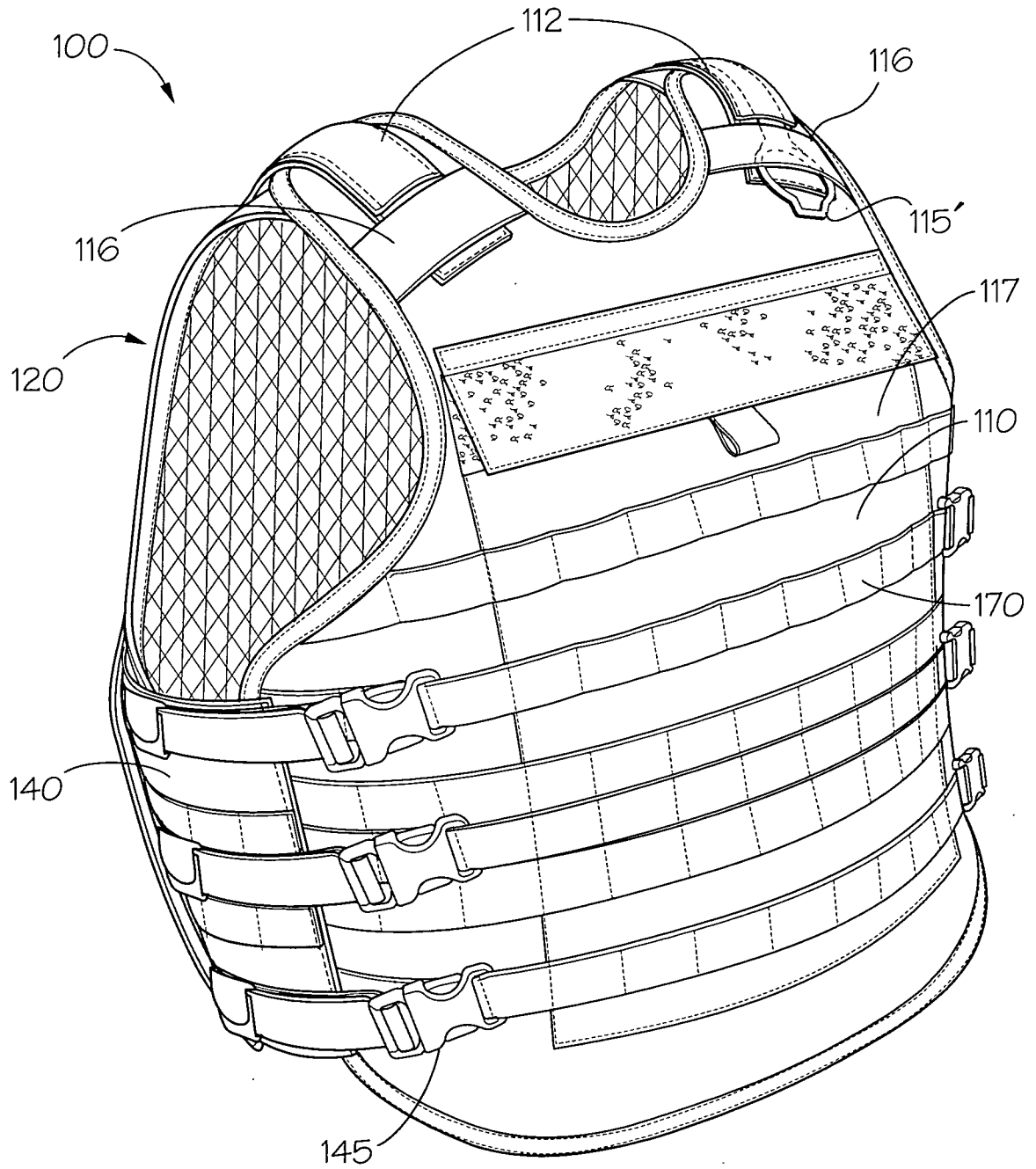
2 a front panel;

3 front shoulder strap elements that extend from an upper portion of the
4 front panel, wherein each of the front shoulder strap elements includes at least one
5 front shoulder strap attachment opening formed through the material of the front
6 shoulder strap element;

7 a back panel comprising at least a first layer and a second layer,
8 wherein an upper portion of the second layer is attached to an upper portion of the
9 first layer such that a cavity is formed between at least a portion of the first layer and
10 the second layer such that at least a portion of the front shoulder strap elements can
11 be introduced into the cavity formed between at least a portion of the first layer and
12 the second layer, and wherein a lower portion of the second layer extends beyond a
13 point where the second layer is attached or coupled to the first layer to form an

14 access panel portion of the second layer, wherein a releasable coupling means
15 releasably couples the access panel portion of the second layer to the first layer, and
16 wherein a panel coupling means further couples the first layer to the second layer;
17 waist belt elements that extend from a lower portion of the front
18 panel, wherein each waist belt element comprises at least one waist belt element
19 attachment opening formed through the material of the waist belt element;
20 a release loop comprising a portion of material that includes an
21 obstruction formed in the release loop of a sufficient size and shape so as to keep a
22 portion of the release loop from passing through the waist belt attachment openings,
23 wherein at least a portion of the release loop is capable of being aligned with and
24 passed through the at least one waist belt attachment opening of the waist belt
25 elements and the at least one front shoulder strap attachment opening of the front
26 shoulder strap elements; and
27 a release lanyard, wherein the release lanyard extends from a pull
28 handle to a terminal end, and wherein the release lanyard is capable of being aligned
29 with and passed through the release loop so as to releasably secure the first waist
30 belt element and the at least one shoulder strap element to the release loop.

1 20. The releasable vest of claim 19, wherein the obstruction is a knot
2 formed in a length of material.

*Fig. 1A*

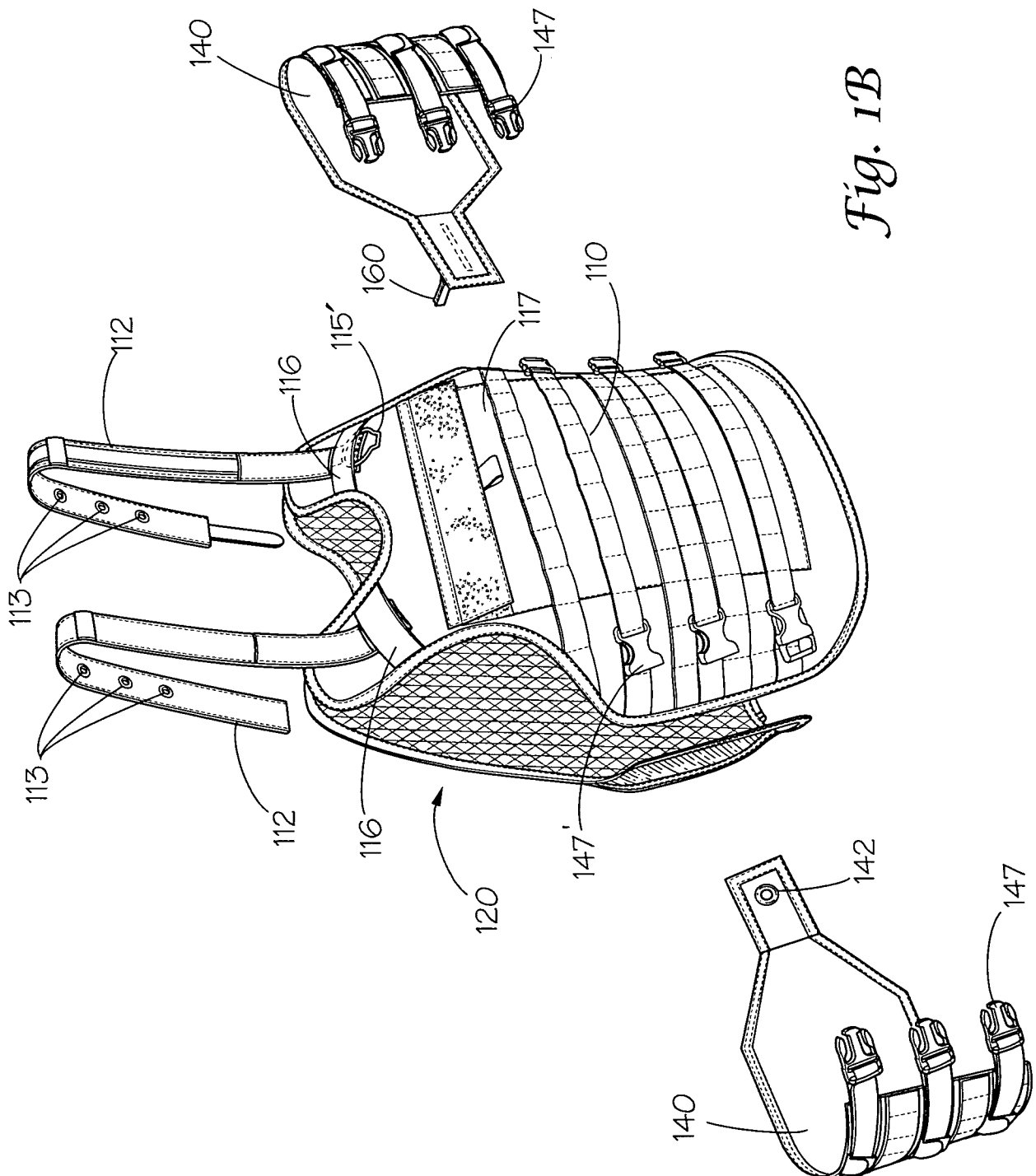


Fig. 1B

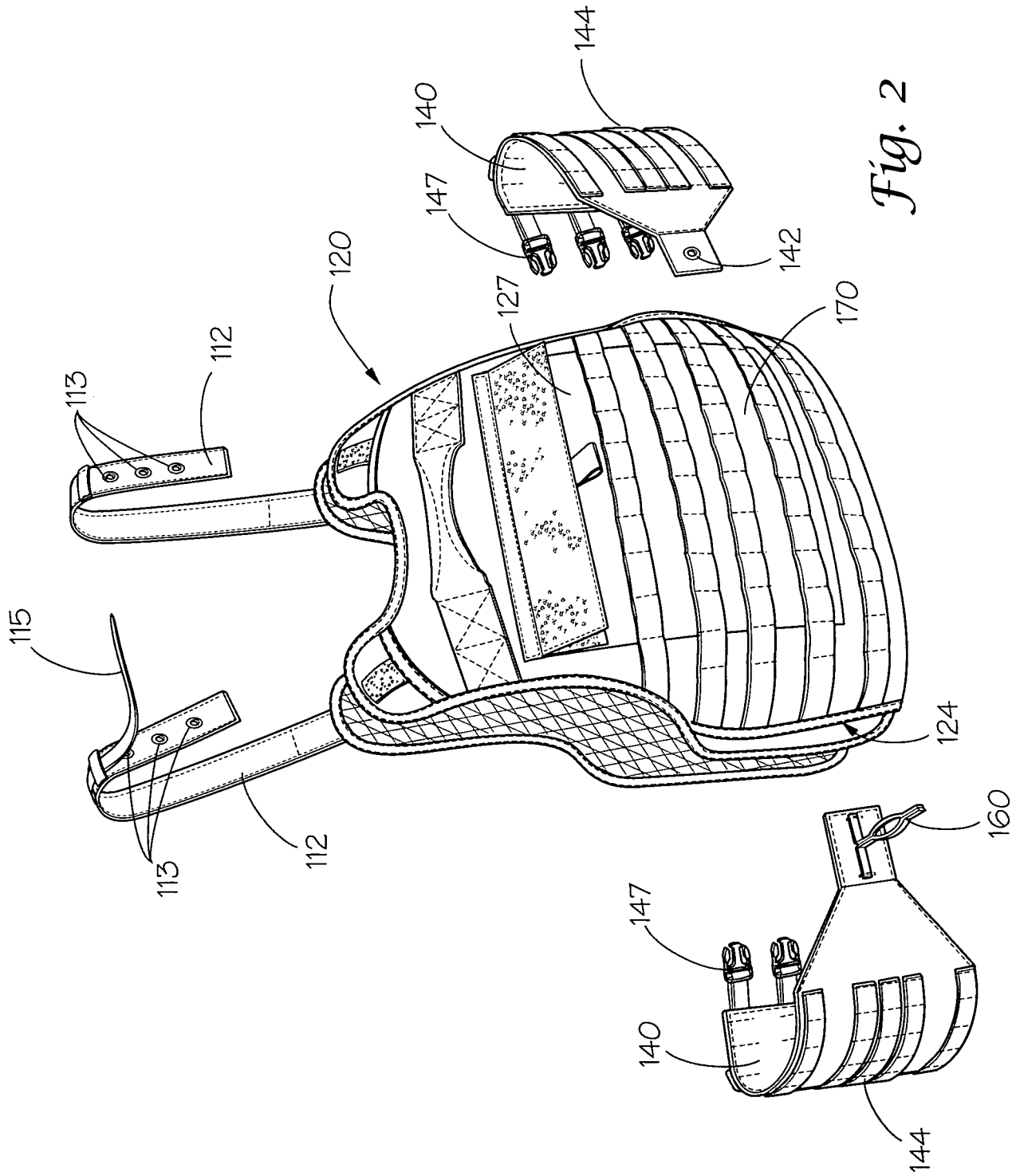


Fig. 3A

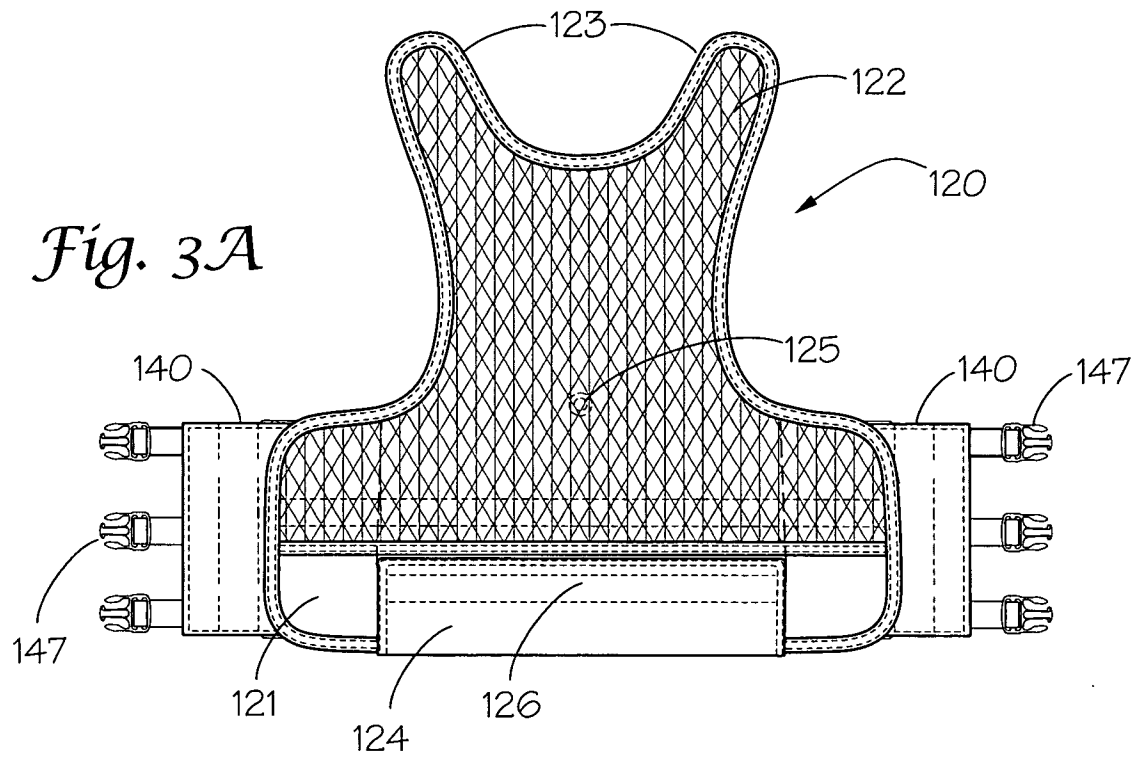


Fig. 3B

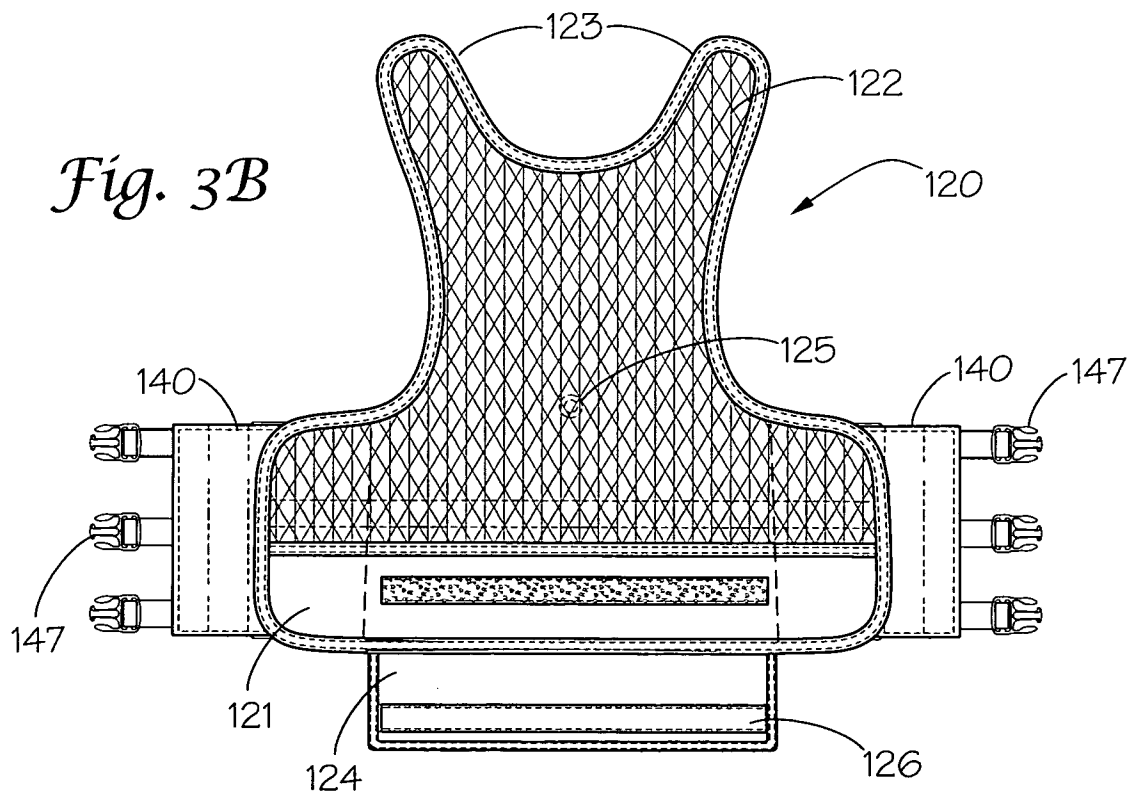


Fig. 4A

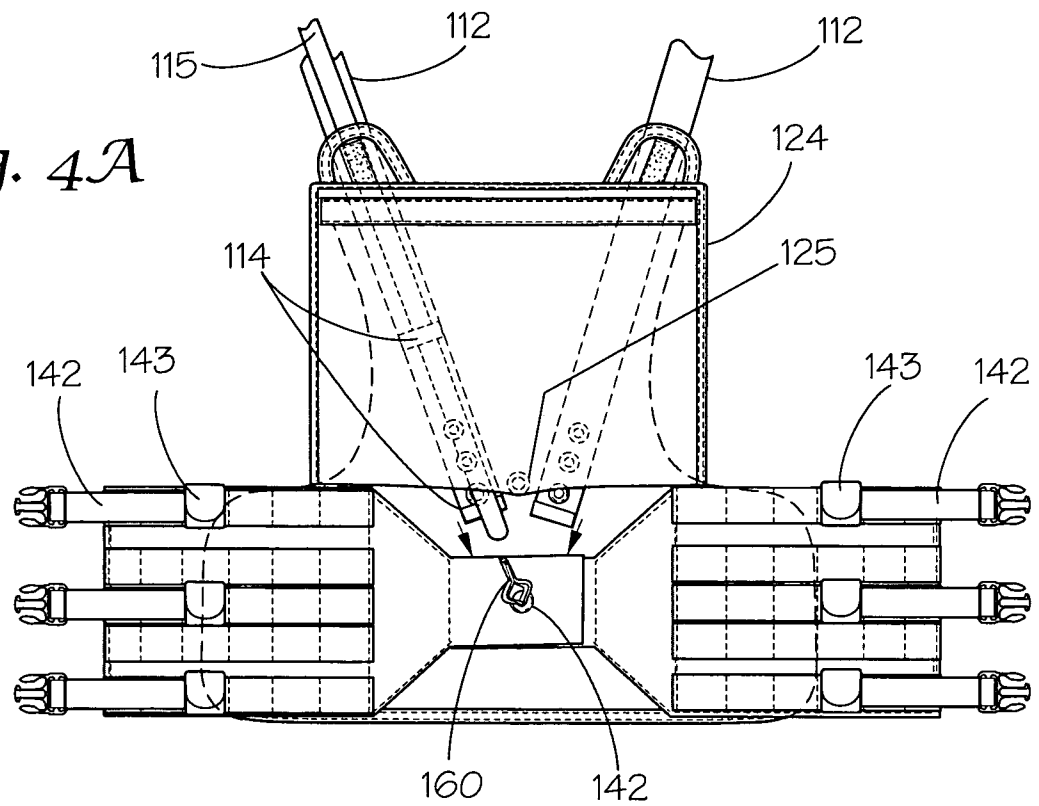


Fig. 4B

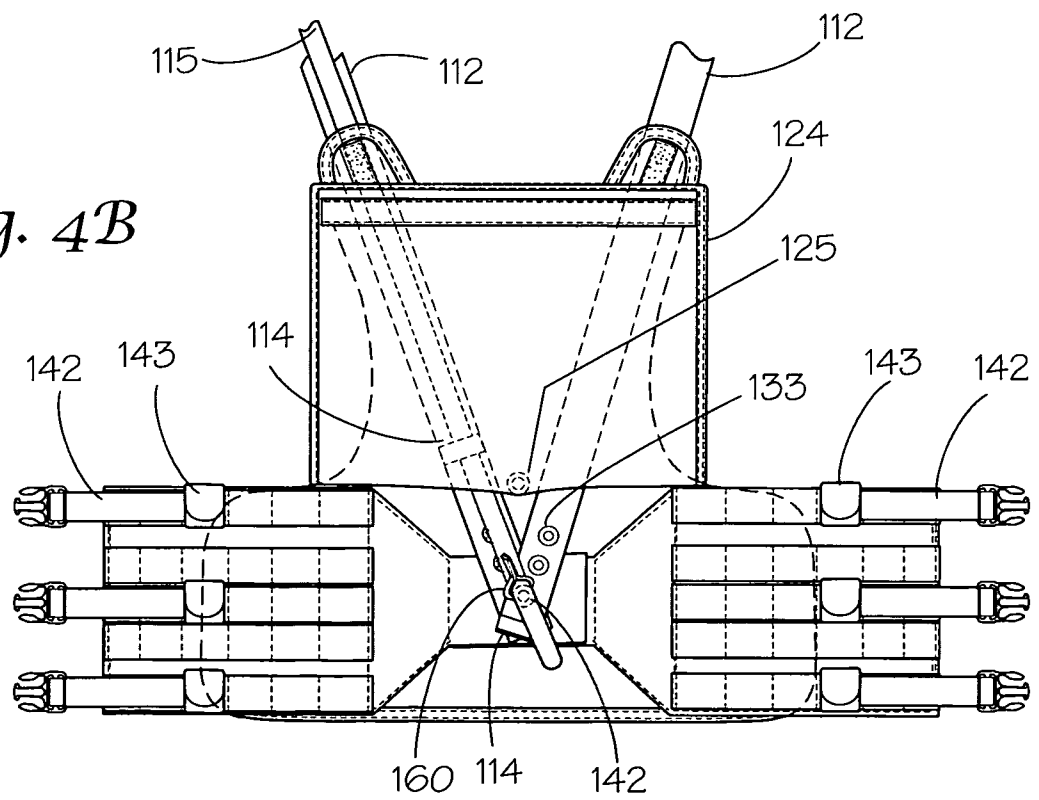


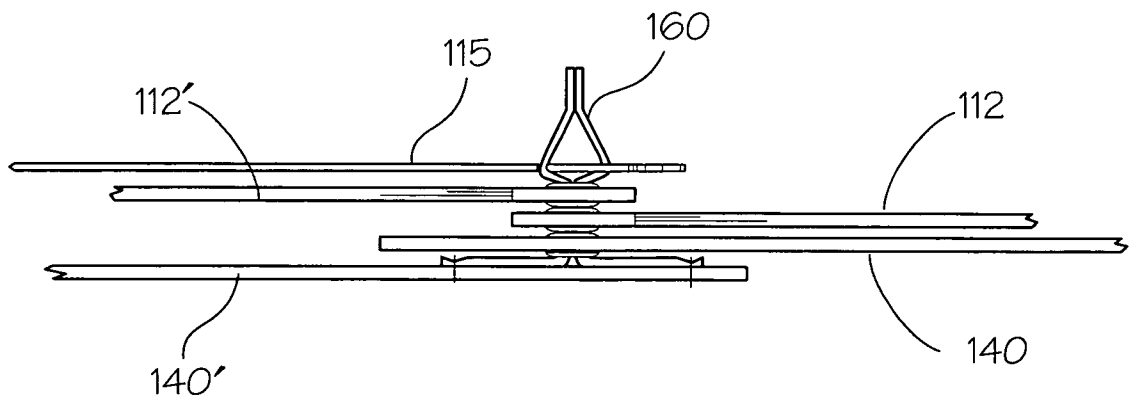
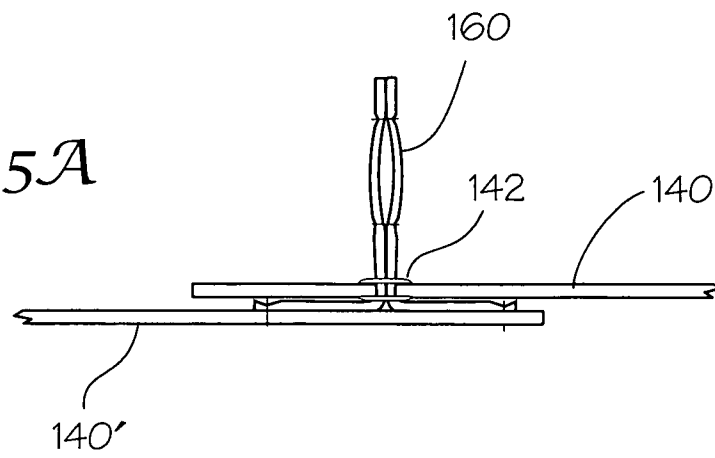
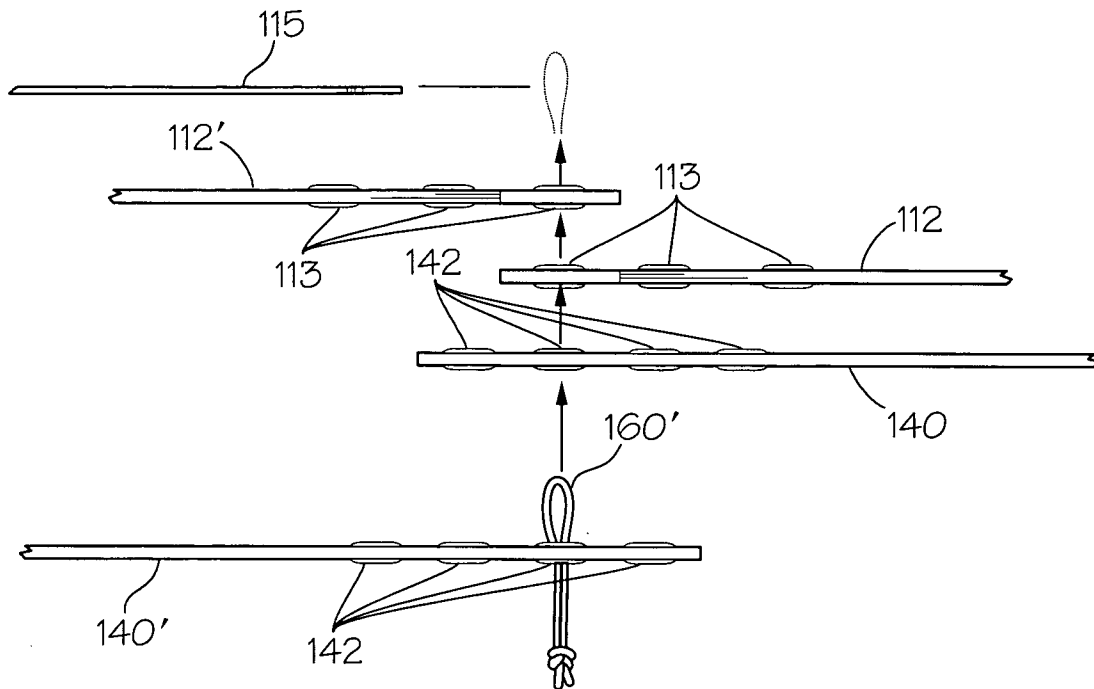
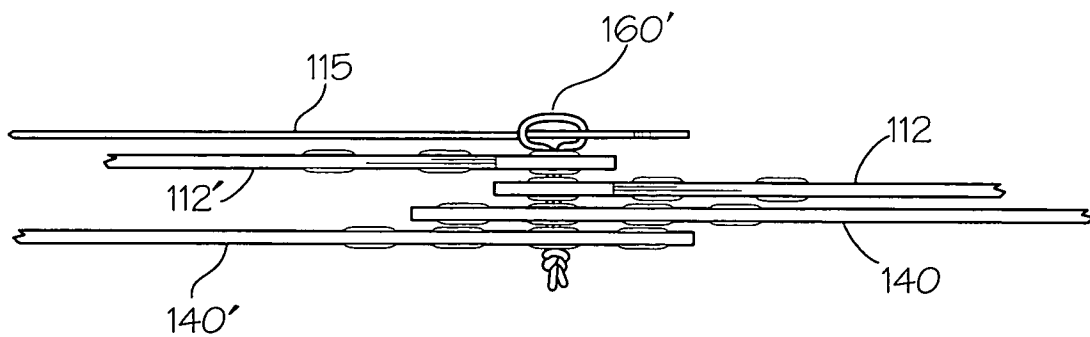
Fig. 5A*Fig. 5B*

Fig. 6A*Fig. 6B*

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/09284

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A41B 13/00 (2008.04)

USPC - 2/49.5

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): A41B 13/00 (2008.04)

USPC: 2/49.5

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

IPC(8): A41B 13/00 (2008.04) - see search terms below

USPC: 2/49.5, 124, 119; 89/36.05 - see search terms below

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

PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO(Engineering); GoogleScholar

Search Terms: Quick, release, vest, lanyard, cut, away, body, armor, harness, break, load, apparel, strap, grommet, elastic, MOLLE, STRIKE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2007/0107109 A1 (JOHNSON) 17 May 2007 (17.05.2007), entire document especially Fig 1, 2, 4, 6, 8, 9, para [0021], [0023], [0027], [0029]	1-3, 5-9, 11, 14, 16, and 18 ----- 4, 10, 12-13, 15, 17, and 19-20
Y	US 5,617,582 A (BURWELL) 08 April 1997 (08.04.1997), Fig 1, col 3, ln 8-10	4
Y	US 6,185,738 B1 (SIDEBOTTOM) 13 February 2001 (13.02.2001), Fig 2, 3, col 6, ln 22-23	10 and 13
Y	US 2007/0079416 A1 (CARLSON) 12 April 2007 (12.04.2007), Fig 28, para [0002]-[0003]	12 and 17
Y	US 3,452,362 A (KOROLICK et al.) 01 July 1969 (01.07.1969), Fig 1, col 4, ln 18-19	15 and 19-20
Y	US 3,095,587 A (WHALEN) 02 July 1963 (02.07.1963), Fig 2, col 2, ln 2	20

☐ Further documents are listed in the continuation of Box C.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 October 2008 (17.10.2008)

Date of mailing of the international search report

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