SAFETY GARMENTS AND RELATED METHODS

Applicant: Udo W. Herberth, Munich (DE)
Inventor: Udo W. Herberth, Munich (DE)
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ABSTRACT

Safety garments according to particular embodiments include a body portion and an elongated safety tether. In various embodiments, the safety tether comprises an elongated tether portion that extends between a first end and a second end, a first connecting element disposed adjacent the first end, a second connecting element disposed adjacent the second end, and a shock absorption portion disposed along at least a portion of the elongated tether portion. In various embodiments, the connecting elements are configured to allow a user to selectively couple the connecting elements to corresponding connecting elements. In particular embodiments, the shock absorption portion is configured to allow the safety tether to extend to a length greater than a neutral length in response to a tensile force and is further configured to bias the shock absorption portion to the neutral length.
SAFETY GARMENTS AND RELATED METHODS

BACKGROUND

[0001] When traveling with more than one person, particularly children, people may desire to reduce the risk of becoming separated from other travelers. Tethering people together may be dangerous or lead to injuries to one or more of the tethered persons. Accordingly, there is a need for improved techniques and tools that address these issues.

SUMMARY OF VARIOUS EMBODIMENTS

[0002] A safety garment for selectively coupling a first user to a second user, according to particular embodiments, comprises a body portion and an elongated safety tether. In particular embodiments, the body portion comprises a first connecting element. In various embodiments, the safety tether has a first length when in a neutral state and comprises: (1) a first end region comprising a second connecting element; (2) a second end region comprising a third connecting element; (3) at least one elongated tether portion that extends between the first and second end regions and comprises a front and rear surface; and (4) a shock absorption portion disposed along at least a portion of the at least one elongated tether portion. In various embodiments, the first connecting element is configured to allow the first user to selectively couple the first connecting element to the second connecting element. In particular embodiments, the third connecting element is configured to allow the first user to selectively couple the second connecting element to a connecting element associated with a safety garment of the second user. In various embodiments, the shock absorption portion is configured to allow the safety tether to extend to a second length at least partially in response to a first particular tensile force on the safety tether. In particular embodiments, the shock absorption portion is configured to bias the safety tether toward the neutral state.

[0003] A safety tether for selectively coupling a first object to a second object, according to particular embodiments, has a first length in a neutral state and comprises: (1) a first end region comprising a first connecting element; (2) a second end region comprising a second connecting element; (3) at least one elongated tether portion that extends between the first and second end regions and comprises a front and rear surface; and (4) a shock absorption portion disposed along at least a portion of the at least one elongated tether portion. In various embodiments, the first connecting element is configured to allow the user to selectively couple the first connecting element to a third connecting element associated with the first object. In particular embodiments, the second connecting element is configured to allow the user to selectively couple the second connecting element to a fourth connecting element associated with the second object. In various embodiments, the shock absorption portion is configured to allow the safety tether to extend to a second length at least partially in response to a first particular tensile force on the safety tether. In particular embodiments, the shock absorption portion is configured to bias the safety tether toward the neutral state in which the safety tether has a length that is substantially the first length.

[0004] A method of selectively coupling a first person to a second person, according to various embodiments, comprises providing a safety tether, where the safety tether has a first length in a neutral state and comprises: (1) a first end region comprising a first connecting element; (2) a second end region comprising a second connecting element; (3) at least one elongated tether portion that extends between the first and second end regions and comprises a front and rear surface; and (4) a shock absorption portion disposed along at least a portion of the at least one elongated tether portion. In various embodiments, the first connecting element is configured to allow a user to selectively couple the first connecting element to a third connecting element associated with the first person. In particular embodiments, the second connecting element is configured to allow the first user to selectively couple the second connecting element to a fourth connecting element associated with the second person. In various embodiments, the shock absorption portion is configured to allow the safety tether to extend to a second length at least partially in response to a first particular tensile force on the safety tether. In particular embodiments, the shock absorption portion is configured to bias the safety tether toward the neutral state in which the safety tether has a length that is substantially the first length.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Having thus described various embodiments in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0006] FIG. 1 is a safety garment according to a particular embodiment.

[0007] FIG. 1A is a detail view of a connecting element of the safety garment of FIG. 1.

[0008] FIG. 2 is a safety garment according to another embodiment.

[0009] FIG. 3 is a safety garment according to yet another embodiment.

[0010] FIG. 4 is yet another embodiment of a safety garment.

[0011] FIG. 5 is safety connector according to a particular embodiment.

[0012] FIG. 6A is a connecting element according to a particular embodiment.

[0013] FIG. 6B is a connecting element according to another embodiment.

[0014] FIG. 6C is a connecting element according to yet another embodiment.

DETAILED DESCRIPTION OF VARIOUS EMBODIMENTS

[0015] Various embodiments will now be described more fully hereinafter with reference to the accompanying drawings. It should be understood that the invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Safety Garment

[0016] Vest Embodiment

[0017] FIG. 1 shows a first embodiment of a safety garment 10, which is embodied by a vest-like support region 12 to be worn by a person. As may be understood from this figure, the safety garment comprises the support region 12 and a safety tether 28. As shown in this figure, the support region 12 is substantially vest-shaped (e.g., comprises a vest) and defines first and second arm holes adjacent an upper portion of the...
support region 12 on opposing lateral portions of the support region 12. The support region further defines a cutaway 13 that runs from an upper central portion of the support region 12 down the front chest area of the support region 12 to the support region’s bottom portion. In various embodiments, the support region comprise one or more fasteners 16, 18 at the open section 13 of the chest and waist areas, which are configured to secure a substantially stable anchoring of the vest-like support region 12 on the torso of a person. In various embodiments, the one or more fasteners 16, 18 may include one or more hook and loop fasteners (e.g., Velcro fasteners). In other embodiments, the support region 12 may be closed or maintained about the torso of a person using any other suitable mechanism or fastener (e.g., a zipper, buttons, snaps, etc.).

[0018] The support region 12, according to the embodiment in this figure, comprises a pocket 22 that is disposed adjacent (e.g., to) a front lateral portion 20 of the support region 12 (e.g., adjacent to where a wearer of the safety garment’s hip would be). In other embodiments, the pocket 22 may be disposed in any other suitable location on the support region 12. In particular embodiments, the pocket 22 comprises a substantially rectangular (e.g., rectangular) piece of material 24 that is attached (e.g., to) the support region 12 using any suitable technique (e.g., using sewing, fabric welding, etc.) around at least a portion of a perimeter of the piece of material 24 to define the pocket 22 and defines a pocket opening 26 along an upper portion of the pocket 22.

[0019] In various embodiments, in order to establish a signal effect the vest-like support region 12 may be embodied in an intense color, for example a fluorescent color, and may be equipped at various sections with a reflective material 14 in order to increase the visibility of a wearer even at night and/or in darkness. In other embodiments, the safety garment may include any other suitable material and may include battery powered lighting devices to make the vest-like support region 12 visible at night.

[0020] As shown in FIG. 1, the safety garment 10 further comprises the elongated tape-like safety tether 28 comprising a length of material having a first end region 30 comprising a first connecting element, a second end region 32 comprising a second connecting element 34, a front surface, and a rear surface that is attached (e.g., selectively attached) via its first end region 30 at a portion of the support region 12 substantially within (e.g., within) the pocket 22 (e.g., enclosed within the pocket). In particular embodiments, the safety tether 28 is substantially permanently (e.g., permanently) affixed to the support region 12 (e.g., using any suitable technique such as sewing or fabric welding). In various embodiments, the safety tether 28 is selectively attached to the safety garment via the first connecting element (e.g., by attaching the first connecting element to a corresponding connecting element at the support region 12). In various embodiments, the first connecting element 38 may include any suitable connecting element (e.g., a snap, button, hook and loop fastener, etc.).

[0021] In a particular embodiment, a hook and loop fastener connecting element may be provided as a first connecting element 38 at the first end region 30 of the safety tether 28. At the support region 12, for example at the interior of the piece of cloth 24, a respective hook and loop fastener element may be provided as corresponding connecting element so that the first end region 30 can be coupled via a hook and loop fastener connection to the support region 12 in a section located in the pocket 22.

[0022] In various embodiments, the second end region 32 of the safety tether 28 comprises a second connecting element 34, for example in the form of a hook and loop fastener element or any other suitable connecting element. In particular embodiments, a connection region 36 is provided at the support region 12, for example, disposed on an outer portion of the pocket 22, with a second corresponding connecting element 38 that at least substantially corresponds (e.g., operatively connects) with the second connecting element 34. In another embodiment, the safety tether 28 also comprises a coupling region 40, which may also comprise one or more connecting elements at a first and second tether portion 42, 44. In such embodiments, the coupling region 40 may include any suitable connecting elements for releasably coupling the safety tether 28 at the coupling region 40.

[0023] In the embodiment of the safety garment 10 shown in FIG. 1, the safety garment 10 comprises a single safety tether 28 disposed at a lower portion of the support region 12. In other embodiments, the safety garment 10 may include a plurality of safety tethers 28 (e.g., one safety tether 28 on each side of the safety garment 10), which may, for example allow a user wearing the safety garment to couple themselves to two or more persons (e.g., daisy chain) from a single safety garment 10.

[0024] A particular embodiment of the connection of the second end region 32 of the safety tether 28 to the support region 12 is shown enlarged in FIG. 1a. This figure shows how a second connecting element 34 may connect with the safety garment 12 of a second person. This figure also illustrates how a selectively attachable first connecting element on the first end portion 30 may attach to the safety garment 10 of a first user. Here, a detail of the support region 12 is shown which may be provided, for example, laterally behind the pocket 22 shown in FIG. 1 or, in embodiments without a pocket 22, on an outer portion or other suitable surface of the support region 12. In the embodiment shown in FIG. 1a, a flap-like cover element 35 is affixed about its upper end region to the support region 12 by a seam 37. In various embodiments, the flap-like cover element 35 may be affixed in any suitable manner (e.g., sewing, or fabric welding). At the interior of the cover element 35 facing the support region 12 and at the side of the support region 12 facing the cover element 35, the safety garment 10 further comprises a second counter connecting element 38 and/or 38', which may for example, be affixed by sewing.

[0025] In the embodiment shown in this figure, at the second end section 32 of the safety tether 28, located at both sides facing away from each other (e.g., on opposing sides of the safety connector’s second end section 32), a second connecting element 34 and/or 34' is respectively provided, for example by sewing. When a coupling of the second end region 32 is established at the connection region 36, two connections are made, namely on the one side via the second connecting element 34 and the second counter connecting element 38, and on the other side via the second connecting element 34' and the second counter connecting element 38' allocated thereto at the cover element 35 at the outside. In the embodiment shown in FIG. 1a, the connecting elements 34, 34' and the counter connecting elements 38, 38' comprise hook and
loop fastener elements. A different type of connection may also be used such as, for example, elements embodied like push-buttons, snaps, clips, etc.

[0026] Belt Embodiment

[0027] An alternative embodiment of the safety garment 10a is shown in FIG. 2. This embodiment includes features that are similar to the embodiment described with regard to FIG. 1. In the embodiment shown in this figure, the safety garment 10a comprises a belt-like support region 12a and a safety tether 28a. The support region, in this embodiment, is embodied like a belt and can be fastened, for example, about the hip area of a person. In this embodiment, the safety garment comprises two hook and loop fastener connections 16a, 18a disposed about a front portion of the safety garment 10a. In other embodiments, the safety garment 10a may include any other suitable fasteners for maintaining the safety garment 10a adjacent (e.g., to) a wearer’s waist.

[0028] In the embodiment shown in this figure, the safety tether 28a is substantially structurally similar to the safety tether 28 described above with regards to FIG. 1 and is fastened at its first end region 30a at the support region 12a in a releasable fashion. In various embodiments, the side of the end region 30a, facing the support region 12a, comprises a first connecting element 46a in the form of a hook and loop fastener element. The support region 12a comprises a first counter connecting element 48a in the form of a hook and loop fastener element. In this embodiment, the safety tether 28a may be releasably coupled to the support region 12a by severing the hook and loop fastener connection. In other embodiments, the safety tether 28a may be coupled to the support region 12a in any other suitable manner (e.g., permanently or releasably using snaps, hooks or other fasteners; etc.)

[0029] In the embodiment shown in FIG. 2, the safety tether 28a comprises a second connecting element 34a that is disposed adjacent (e.g., to) the safety tether’s second end region 32a. In various embodiments, the second connecting element 34a may include any suitable connecting element (e.g., such as a hook and loop fastener, snap, clip, button, etc.).

[0030] Shoulder Belt Embodiment

[0031] FIG. 3 shows yet another embodiment of a safety garment. In the embodiment shown in this figure, the safety garment 10b comprises a rope element 64b and a vest-like support region 12b comprising a chest region 54b, a back region 56b, and two shoulder belt regions 50b, 52b that extend between the chest region 54b and back region 56b. In particular embodiments, the chest region 54b comprises a pocket 22b, which may, for example be formed by sewing a piece of cloth 24b onto the support region 12b. In the embodiment shown in this figure, the pocket 22b defines an opening 26b at the pocket’s top. In various embodiments, the pocket 22b comprises two closure elements 58b, 60b (e.g., hook and loop fasteners, snaps, buttons, etc.) such that a relatively small opening 62b is defined between the closure elements 48b, 60b. In various embodiments, the small opening 62b is suitably sized such that the rope element 64b of the safety tether 28b can fit through the small opening 62b.

[0032] In various embodiments, the safety garment comprises an automatic roll-up mechanism 66b disposed within the pocket 22b, which may be configured to substantially automatically (e.g., automatically) retract the rope element 64b. In particular embodiments, the roll-up mechanism 66b is sized such that when the closure elements 58b, 60b are closed, the roll-up mechanism 66b cannot pass through the small opening 62b. In various embodiments, the roll-up mechanism 66b comprises the first connecting element 46b provided at the first end region 30b. The first counter connecting element 48b is essentially provided by the two closure elements 58b, 60b at the pocket 22b and/or at the support region 12b. When excessive force is applied on a pulled-out rope element 64b the roll-up mechanism 66b pushes through the small opening 62b and causes the closure elements 58b, 60b to open so that the size of the small opening 62b increases and the safety connector 28b can be released at its first end region 30b from the support region 12b.

[0033] In various embodiments, the safety connector’s second end region 32b comprises a second connecting element 34b (e.g., a hook and loop fastener or other suitable connecting element). In some embodiments, the connection region 36b comprises at the back 56b a second counter connecting element 38b (e.g., for receiving the second connecting element 34b of a second safety garment 10b). In particular embodiments, the safety connector 34b is substantially structurally similar to (e.g., structurally the same as) the safety connector 34 described above with respect to FIG. 1.

[0034] Shock Absorbing Safety Connector Embodiment

[0035] FIG. 4 shows a safety garment 10c according to yet another embodiment. As may be understood from this figure, this embodiment is substantially structurally similar to the embodiment shown in FIG. 1. In this embodiment, the safety tether 28c further comprises a shock absorption portion 68c that allows portion 68c to increase in length and return to its original size. As shown in FIG. 4, the shock absorption portion 68c extends between the safety connector’s first and second connecting portions 42c, 44c. In various embodiments, the shock absorption portion 68c comprises a length of material having a first end, a second end, a front surface, and a rear surface. In particular embodiments, the shock absorption portion 68c comprises a piece of elongated substantially rectangular (e.g., rectangular) material. In various embodiments, the material may include any suitable material that is sufficiently elastic to allow the shock absorption portion 68c to increase in length in response to a pulling force, and sufficiently springy to return to a neutral position upon cessation of the pulling force (e.g., a material such as spandex, elastene, etc.). In various embodiments, the safety tether 28c itself may at least partially comprise such an elastic material. In various embodiments, the shock absorption portion 68c may comprise any mechanism that is capable of stretching (e.g., increasing in length) in response to a pulling tensile force and returning to a neutral position upon cessation of the pulling force (e.g., such as any suitable spring or biasing mechanism).

[0036] In various embodiments, the shock absorption portion is configured to allow the safety tether 28c to extend from a first length (e.g., a length of the safety tether 28c when no force tensile force is being applied to the safety tether 28c) to a second length in response to a tensile force on the safety tether 28c. In particular embodiments, the second length is greater than the first length. In various embodiments, the shock absorption portion is configured to bias the safety tether 28c towards the neutral position in which the safety tether 28c has a length that is substantially the first length.

[0037] In particular embodiments, the shock absorption portion 68c may be disposed along any suitable portion of the safety tether 28c. For example the shock absorption portion 68c may be disposed adjacent (e.g., to) either end of the safety tether 28c or along any interior portion of the elongated safety tether 28c. In various embodiments, the safety tether 28c may
comprise a plurality of shock absorption portions 68c. In other embodiments, the safety tether 28c may consist essentially of a shock absorption portion 68c.

[0038] In a particular embodiment, the shock absorption portion 68c is disposed adjacent the safety connector's first end portion 30 and is substantially permanently attached at the support region 12. In various embodiments, the support region 12 defines one or more openings that are sized to substantially correspond to the elongated safety tether 28c such that the safety tether 28c may be strung through (e.g., by a user) the one or more openings in order to maintain the safety connector adjacent (e.g., to) the support region 12c.

[0039] Safety Connector Clip Embodiment

[0040] FIG. 5 shows a safety tether 28d according to yet another embodiment. As may be understood from this figure, the safety tether 28d in various embodiments comprises a connecting element 34d, a first connecting portion 42d, a shock absorption portion 68d, a second connecting portion 44d and a clip 70d.

[0041] Connecting Element

[0042] In various embodiments, the connecting element 34d includes any suitable connecting element 34d such as the connecting elements 34e, 34f, 34g shown in FIGS. 6A-6C, which are described more fully below.

[0043] First Connecting Element Embodiment

[0044] FIG. 6A shows a connecting element 34e according to a particular embodiment. As shown in this figure, the connecting element 34e comprises a first connecting portion 80e and a second connecting portion 90e. In the embodiment shown in this figure, the first connecting portion 80e comprises a substantially rectangular (e.g., rectangular) body 88e that defines a substantially rectangular (e.g., rectangular) first opening 86e on the body's front face 84e, a substantially circular (e.g., circular) second opening 85e on a side face of the body 88e, and a substantially rectangular (e.g., rectangular) cutaway 83e on the side face adjacent (e.g., to) a rear portion of the body 88e. In various embodiments, the second opening 85e may be non-circular in shape (e.g., a rectangular opening, a triangular opening, etc.). As shown in this figure, the substantially rectangular cutaway 83e defines two substantially co-facing rod support faces. The first connecting portion 80e further comprises a substantially cylindrical (e.g., cylindrical) rod 82e that is disposed within the substantially rectangular cutaway 83e, extends substantially perpendicularly (e.g., perpendicularly) from and between the two substantially co-facing rod support faces, and is configured to enable attachment of the first connecting portion 80e to the safety tether 28.

[0045] As shown in FIG. 6A, the second connecting portion 90e comprises a substantially rectangular (e.g., rectangular) body 98e that defines a substantially rectangular (e.g., rectangular) cutaway 93e on a side face of the body 98e. As shown in this figure the substantially rectangular cutaway 93e defines two substantially co-facing rod support faces. The second connecting portion 90e further comprises a substantially cylindrical (e.g., cylindrical) rod 92e that is disposed within the substantially rectangular cutaway 93e, extends substantially perpendicularly (e.g., perpendicularly) from and between the two substantially co-facing rod support faces, and is configured to enable attachment of the second connecting portion 90e to the safety tether 28.

[0046] In various embodiments, the second connecting portion 90e further comprises a substantially rhomboidal (e.g., rhomboidal) protrusion 96e that extends substantially perpendicularly (e.g., perpendicularly) from a front face 94e of the body. In other embodiments, the protrusion 96e may be any other suitable shape (e.g., a substantially triangular shape, a substantially rectangular shape, etc.). In the embodiment shown in this figure, the rhomboidal protrusion 96e has a substantially rectangular base having dimensions that substantially correspond (e.g., correspond) to the dimensions of the rectangular first opening 86e. In particular embodiments, the protrusion 96e comprises a substantially dome-shaped (e.g., dome-shaped) second protrusion 95e (e.g., a detent) that is disposed about the protrusion's outer face and extends from the protrusion 96e in a direction that is substantially perpendicular (e.g., perpendicular) from the direction in which the protrusion 96e extends from the front face 94e of the body 98e. In the embodiment shown in FIG. 6A, the dome shaped second protrusion 95e has a base diameter that is substantially similar to (e.g., the same as) the diameter of the first connecting portion's substantially circular second opening 85e. In other embodiments, the second protrusion 95e may have any suitable shape that at least generally corresponds to the shape of the second opening 85e (e.g., rectangular, etc.).

[0047] As may be understood from this figure, the first and second connecting portions 80e, 90e are configured to allow a user (e.g., a wearer of the safety garment 10) to releasably couple the first and second connecting portions 80e, 90e together. In order to couple the first and second connecting portions 80e, 90e, the user at least fully inserts the substantially rhomboidal protrusion 96e into the first opening 86e such that the second protrusion 95e is at least partially disposed (e.g., fully disposed) within the second opening 85e. As the user begins to insert the substantially rhomboidal protrusion 96e into the first opening 86e, the dome-shaped second protrusion 95e contacts the inside surface of the first connecting portion’s front face 84e and begins to apply a force on the first connecting portion 80e in a direction perpendicular to the face of the rhomboidal protrusion 96e from which the second protrusion 95e extends. As the user continues to insert the substantially rhomboidal protrusion 96e into the first opening 86e, the force applied by the second protrusion 95e causes the side face of the first connecting portion 80e defining the second opening 85e to bend outward from its neutral position, allowing the rhomboidal protrusion 96e and the second protrusion 95e to slide into the first opening 86e. As the first and second connecting portions 80e, 90e are in a coupled state (e.g., the second protrusion 95e is seated in the second opening 85e).

[0048] In the coupled state: (1) the first connecting portion’s front face 84e at least substantially contacts the second connecting portion’s front face 94e; (2) the second protrusion 95e is at least partially disposed (e.g., fully disposed) within the second opening 85e; and (3) the side face of the first connecting portion 80e defining the second opening 85e is back in its neutral position. As will be understood by one skilled in the art, when the first and second connecting portions 80e, 90e are in the coupled state, the second protrusion is configured to maintain the first and second connecting portions 80e, 90e in the coupled state. In various embodiments, the connecting element 34e may comprise a plurality of openings and corresponding protrusions on either or both of the first and second connecting portions 80e, 90e to facilitate maintenance of the coupled state.

[0049] In particular embodiments, a sufficient force pulling the first and second connecting portions 80e, 90e apart from one another may be sufficient to cause the first and second
connecting portions 80e, 90e to become decoupled. As the separating force is applied, the second protrusion begins to apply a perpendicular force on the inside surface of the side face of the first connecting portion 80e defining the second opening 85e causing it to bend away from its neutral position a sufficient distance to allow the rhomboid protrusion 96e and the second protrusion 95e to slide out of the first opening 86e. Thus, the amount of force necessary to decouple the second connecting portions 80e, 90e may depend on one or more of the material used to form the second connecting portion 80e, 90e and the thickness of the walls of the connecting portion 80e.

[0050] Second Connecting Element Embodiment

[0051] FIG. 63 shows a connecting element 34g according to another embodiment. As shown in this figure, the connecting element 34g comprises a first connecting portion 80g and a second connecting portion 90g. In the embodiment shown in this figure, the first connecting portion 80g comprises a substantially rectangular (e.g., rectangular) body 88g that defines a substantially rectangular (e.g., rectangular) cutaway 83g on a side face of the body. As shown in this figure, the substantially rectangular cutaway 83g defines two substantially co-facing (e.g., co-facing) rod support faces. The first connecting portion 80g further comprises a substantially cylindrical (e.g., cylindrical) rod 82g that is disposed within the substantially rectangular cutaway 83g and extends between the two substantially co-facing rod support faces. A substantially rectangular (e.g., rectangular) first magnet 85g is disposed adjacent the body’s front face 84g. In various embodiments, the magnet 85g is coupled to the body 88g by a fastener (e.g., glue, a rivet or a screw) or the magnet 85g may be integrally formed with the body 88g. In other embodiments, the first connecting portion may include any other suitable first magnet 85g (e.g., a magnet having any other suitable shape), or any suitable material that is at least partially magnetic.

[0052] As shown in FIG. 63, the second connecting portion 90g comprises a substantially rectangular (e.g., rectangular) body 98g that defines a substantially rectangular (e.g., rectangular) cutaway 93g on a side face of the body. As shown in this figure, the substantially rectangular cutaway 93g defines two substantially co-facing rod support faces. The second connecting portion 90g further comprises a substantially cylindrical (e.g., cylindrical) rod 92g that is disposed within the substantially rectangular cutaway 93g and extends substantially perpendicularly (e.g., perpendicularly) from and between the two substantially co-facing rod support faces, and is configured to enable attachment of the second connecting portion 90g to the safety tether 28f. In the embodiment shown in this figure, the second connecting portion 90g comprises a second magnet 95g disposed within an opening 96g defined on a front face 94g of the second portion. In various embodiments, the opening has dimensions that substantially correspond to the dimensions of the first magnet 85g. In particular embodiments, the outer face of the first magnet 85g has a polarity that is substantially opposite the polarity of the outer face of the second magnet 95g.

[0053] As may be understood from FIG. 63, when the first and second connecting portions 80g, 90g are in a coupled state: (1) the first connecting portion’s front face 84g at least substantially contacts (e.g., substantially mates with) the second connecting portion’s front face 94g; (2) the first magnet 85g is substantially adjacent to the second magnet 95g; and (3) the first magnet 95g is at least partially disposed (e.g., fully disposed) within the opening 96g defined on the second portion’s front face 94g. As will be understood by one skilled in the art, a sufficient opposing force on the first and second connecting portions 80g, 90g will be sufficient to cause the first and second magnets 85g, 95g (e.g., and therefore the first and second connecting portions 80g, 90g) to decouple from one another.

[0054] Third Connecting Element Embodiment

[0055] FIG. 6C shows a connecting element 34g according to a third embodiment. As shown in this figure, the connecting element 34g is a hook and loop fastener element comprising a hook and loop fastener hook element 85g and a hook and loop fastener loop element 95g. As will be understood by one skilled in the art, the connecting element 34g is configured to allow a user to releasably couple and decouple the hook and loop fastener hook element 85g and the hook and loop fastener loop element 95g by pressing the elements together or pulling them apart with sufficient force respectively.

[0056] First Connecting Portion

[0057] Referring again to FIG. 5, in various embodiments, the safety tether 28f includes a first tether portion 42f comprising a length of material having a first end, a second end, a front surface, and a rear surface. In particular embodiments, the first tether portion 42f comprises a piece of elongated substantially rectangular material. In various embodiments, the material may include any suitable material that is substantially flexible to allow the safety tether 28f to hang substantially freely while having sufficient tensile strength such that the first tether portion 42f maintains substantially the same length (e.g., the same length) when pulled (e.g., such as a cloth or a suitable woven fabric). In other embodiments, the first tether portion may include any other suitable tether portion (e.g., such as a rope, chain, etc.). In particular embodiments, the safety tether’s first end is attached (e.g., to) the connecting element 34d.

[0058] Shock Absorption Portion

[0059] In particular embodiments, the safety tether 28f comprises a shock absorption portion 68d that extends between the safety tether’s first and second tether portions 42d, 44d. In various embodiments, the shock absorption portion 68d comprises a length of material having a first end, a second end, a front surface, and a rear surface. In particular embodiments, the shock absorption portion 68d comprises a piece of elongated substantially rectangular (e.g., rectangular) material. In particular embodiments, the material is any suitable material that is sufficiently stretchy to allow the shock absorption portion to increase in length in response to a pulling force, and sufficiently springy to return to a neutral position upon cessation of the pulling force (e.g., a material such as spandex, elastane, etc.).

[0060] In various embodiments, the shock absorption portion is configured to allow the safety tether 28f to extend from a first length (e.g., a length of the safety tether 28f when no force tensile force is being applied to the safety tether 28f) to a second length in response to a tensile force. In particular embodiments, the second length is greater than the first length. In various embodiments, the shock absorption portion is configured to bias the safety tether 28f towards the neutral position in which the safety tether 28f has a length that is substantially the first length.

[0061] Second Connecting Portion

[0062] In various embodiments, the safety tether 28f includes a second tether portion 44d comprising a length of material having a first end, a second end, a front surface, and a rear surface. In particular embodiments, the second tether
portion 44d comprises a piece of elongated substantially rectangular material. In various embodiments, the material may include any suitable material that is substantially flexible to allow the safety tether 28d to hang substantially freely while having sufficient tensile strength such that the second tether portion 44d maintains substantially the same length (e.g., the same length) when pulled (e.g., such as a cloth or a suitable woven fabric). In other embodiments, the second tether portion 44d may include any other suitable tether portion (e.g., such as a rope, chain, etc.). In particular embodiments, the shock absorption portion’s second end is attached (e.g., to) the second tether portion’s first end and the clip 70d is attached (e.g., to) the second tether portion’s second end.

[0063] Clip

In particular embodiments, the safety tether 28d includes a clip 70d adjacent the second tether portion’s second end. In various embodiments, the clip 70d includes any suitable clip for allowing a user to selectively attach the safety tether 28d to any suitable object or person (e.g., a shopping cart, etc.). In the embodiment shown in this figure, the clip 70d is embodied as a carabiner comprising a loop (e.g., comprised of three pieces 72d, 74d, 76d) and a spring gate 78d. In the embodiment shown in this figure, the spring gate 78d is configured to rotate about an axis 80d and comprises a biasing mechanism (e.g., a spring) for biasing the spring gate to the neutral position shown in FIG. 5.

[0065] Safety Garment and Safety Connector Illustrative Uses

In various embodiments, when the safety tether 28 is not being used for coupling two or more persons, it may be accepted in the pocket 22 in a rolled up or folded fashion (e.g., in order to store the safety tether 28). As a particular example, if a connection between individual persons of a group shall be implemented (e.g., to form a daisy chained group of kindergarteners), the safety tether 28 may be pulled out of the pocket 22 and connected via the safety tether’s second connecting element 34 provided at its second end region 32 to the connection region 36 and/or the second counter connecting element 38 thereof provided at the support region 12 of a second safety garment 10 (e.g., a safety garment 10 worn by another person). This person may for example be positioned in front, behind, or next to the person wearing the safety garment 10 (e.g., such as the safety garment 10 shown in FIG. 1). In various embodiments, it may be possible to form a continuous group of persons (e.g., a continuous group of coupled persons), which may, for example, move in public in this form such that the risk that individual persons may become separated from the other connected persons is reduced (e.g., eliminated).

[0067] In particular embodiments, the safety garment’s second end region 32 may be releasable when attached to the safety garment 10 of another person. In such embodiments, in situations in which two or more persons are coupled to one another, if one person trips for example, the pulling force on the safety tether 28 may be sufficient to cause the second connecting element 34 to be released from the connecting element of the safety garment 10 of the other person. If the second connecting element 34 cannot release from the second safety garment 10 due to an obstruction (e.g., due to being caught on one of the safety garment wearers, etc.), the pulling force on the safety tether 28 may cause the first end region 30 to sever its connection to the support region 12. In particular embodiments, the force required for releasing the first end region 30 from the support region 12 may be greater than the force required for releasing the second end region 32 from the allocated and/or here coupled connection region 36 of the other safety garment 10.

[0068] In particular embodiments, it may be possible for a first coupled person to exert a force on the safety tether 28 that is insufficient to decouple any of the connecting elements maintaining the connection between the first coupled person and a second coupled person but is sufficient to exert a force on the second coupled person (e.g., because the first coupled person is moving more quickly than the second coupled person, the first coupled person falls behind the second coupled person, the first coupled person changes direction, etc.). In such embodiments, the safety tether’s shock absorption portion 64 may be configured to enable the safety tether 28 to increase in length to at least partially absorb the force exerted by the first coupled person such that the second coupled person can continue traveling substantially unperturbed (e.g., substantially without feeling the force exerted by the first coupled person on the safety tether 28). In such embodiments, the shock absorption portion 64 may be configured to bias the safety tether 28 back to its neutral length, which may cause the safety tether 28 to return to its neutral length upon cessation of the pulling force.

[0069] In various embodiments the force required to decouple any of the connecting elements is greater than the force required to stretch the safety tether 28 (e.g., stretch the shock absorption portion 64 of the safety tether 28) to a substantially fully extended length (e.g., to the maximum length to which the safety tether is capable of extending). In other embodiments, the force required to decouple any of the connecting elements may be less than the force required to stretch the safety tether 28 to a substantially fully extended length, but greater than a force required to at least partially stretch the safety tether 28 to a length greater than the length of the safety tether 28 in a neutral state (e.g., a state in which the safety tether 28 is not experiencing a tensile force).

Alternative Embodiments

In various embodiments, the safety garment may include additional features to those described above or different combinations of any features described above. Exemplary alternative embodiments are described below.

[0071] Life Vest

In various embodiments, a safety garment may be embodied as a life vest that includes a safety tether for selectively coupling one or more wearers of the life vest together. In such embodiments, the support region may comprise one or more selectively inflatable bladders that are configured to maintain a volume of air. In particular embodiments, the one or more bladders may be configured to maintain a sufficient volume of air to allow a wearer of the safety garment to float. In various embodiments in which the safety garment is embodied as a life vest, the safety tether may be substantially permanently attachable to the safety garment (e.g., or coupled with sufficient strength to prevent two coupled persons who are floating from becoming disconnected).

[0073] Alarm

In various embodiments, the safety garment 10 may be configured to include an alarm that signals when the safety tether 28 detaches at coupling region 40. For example, the safety tether 28 may include electrical leads that are embedded in the safety tether 28 and that are attached to a battery operated alarm unit that is coupled to the safety garment 10. In various embodiments, the coupling region 40 may act as a
switch that is in a closed position when the coupling region is intact (e.g., tether portion 42 is attached to tether portion 44). In this configuration, the alarm is not triggered. However, when sufficient force is exerted on the safety tether 28 to cause the coupling region 40 to detach, the switch may be in the open position causing the alarm to sound. Placement of the alarm on the safety vest 10 allows the wearer of the vest to be easily tracked by the sound of the alarm. In various other embodiments, the alarm may be located on the either of tether portions 42, 44.

Other Suitable Safety Garment Embodiments

In various embodiments, a safety garment may comprise any suitable garment or wearable object. For example, a safety garment may include a bracelet, a shirt, a pair of pants, a jacket, a sweatshirt, a pair of gloves, a sleeve, a backpack or other satchel, etc.

CONCLUSION

Many modifications and other embodiments of the invention will come to mind to one skilled in the art to which this invention pertains having the benefits of the teachings presented in the foregoing descriptions and the associated drawings. For example, as will be understood by one skilled in the relevant field in life of this disclosure, the invention may take form in a variety of different mechanical and operational configurations. As a particular example, when a hook and loop fastener element is described, it should be understood that it may include a hook and loop fastener hook element, a hook and loop fastener loop element, or any other suitable combination of hook and loop elements or hook and loop fastener elements. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended exemplary concepts. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for the purposes of limitation.

What is claimed is:

1. A safety garment for releasably coupling a first user to a second user comprising:
   a body portion comprising a first connecting element;
   an elongated safety tether having a first length when said safety tether is in a neutral state, said safety tether comprising:
   a first end region that is operatively coupled to the body portion;
   a second end region that is configured to be operatively coupled to the second user;
   at least one elongated tether portion that extends intermediate said first and second end regions;
   a shock absorption portion disposed intermediate said first and second end regions and operatively coupled to said at least one elongated tether portion; and
   a releasable connector that is disposed intermediate the first and second end regions, wherein said releasable connector comprises a first and a second connecting portion, wherein:
   said releasable connector is configured to releasably couple said first person and said second person via said safety tether;
   said shock absorption portion is configured to allow said safety tether to extend to a second length at least partially in response to a first particular tensile force on said safety tether; and
   said shock absorption portion is configured to bias said safety tether toward said neutral state.

2. The safety garment of claim 1, wherein:
   said first connecting portion comprises a hook and loop fastener hook element; and
   said second connecting portion comprises a hook and loop fastener loop element.

3. The safety garment of claim 1, wherein said first connecting portion comprises a substantially rectangular body that defines:
   a substantially rectangular first opening on a front face of said body, said first opening having sides that are substantially parallel to corresponding sides of said body; and
   a second opening formed through a side of said body, wherein said substantially rectangular body is configured to couple to said safety tether.

4. The safety garment of claim 3, wherein said second connecting portion comprises a substantially rectangular body that comprises:
   a first flange that extends in a direction substantially perpendicular to a front face of said body; and
   a substantially dome-shaped detent that extends from a side face of said flange in a direction substantially perpendicular to a face of said body, wherein said detent is configured to be releasably received in said second opening of said first connecting portion.

5. The safety garment of claim 4, wherein said detent and one or more walls defining said second opening are configured to cooperate to maintain said first and said second connecting portions in a substantially coupled relationship.

6. The safety garment of claim 1, wherein:
   when said first connecting portion is coupled to said second connecting portion, said first and second connecting portions are configured to decouple at least partially in response to a second particular force, wherein said second particular force causes said detent to release from said second opening.

7. The safety garment of claim 6, wherein said second particular force is greater than said first particular tensile force.

8. The safety garment of claim 1, wherein:
   said body portion comprises a third connecting portion; said safety tether first end region comprises a fourth connection portion wherein:
   said third and fourth connecting portions are releasably coupled to one another.

9. The safety garment of claim 1, wherein:
   said second user is wearing a second safety garment;
   said safety tether second region is operatively coupled to said second safety garment in order to daisy chain said first and said second user.

10. The safety garment of claim 1, wherein said safety garment is selected from a group consisting of:
    (1) a vest;
    (2) a belt;
    (3) a shirt; and
    (4) a life vest.

11. The safety garment of claim 1, wherein said first connecting portion comprises a first magnet, and said second connecting portion comprises a second magnet, wherein:
    said first and second magnets are configured to cooperate to maintain said first and second connecting portions in a releasably coupled relationship; and
said first and second connecting portions are configured to release at least partially in response to a sufficient pulling force.

12. A safety tether for releasably coupling a first object to a second object, comprises:
   a first end region comprising a first connector;
   a second end region comprising a second connector;
   at least one elongated tether portion that extends intermediate said first and second end regions;
   a shock absorption portion disposed intermediate said first and second end regions and operatively coupled to said at least one elongated tether portion; and
   a releasable connector that is disposed intermediate the first and second end regions, wherein said releasable connector comprises a third and a fourth connector, wherein:
   said safety tether has a first length;
   said first connector is configured to allow a user to couple said first end region to said first object;
   said second connector is configured to allow a user to couple said second end region to said second object;
   said third and fourth connectors are releasably connected to allow said first object to decouple from said second object at least partially in response to a first tensile force on said safety tether;
   said shock absorption portion is configured to enable said safety tether to extend to a second length at least partially in response to a second tensile force on said safety tether, wherein said second tensile force is less than said first tensile force; and
   said shock absorption portion is configured to bias said safety tether toward a neutral position in which said safety tether has a length that is substantially said first length.

13. The safety tether of claim 12, wherein:
   said first object is a first safety garment worn by a first person; and
   said second object is a second safety garment worn by a second person.

14. The safety tether of claim 12, wherein said shock absorption portion comprises a material that is sufficiently stretchable to enable said shock absorption portion to increase in length from a neutral length at least partially in response to said second tensile force and sufficiently resilient to return said shock absorption portion into said neutral length when said second tensile force is removed from said safety tether.

15. The safety garment of claim 12, wherein said third connector comprises a substantially rectangular body that defines:
   a substantially rectangular first opening on a front face of said body, said first opening having sides that are substantially parallel to corresponding sides of said body; and
   a second opening formed through a side of said body, wherein said substantially rectangular body is configured to couple to said safety tether.

16. The safety garment of claim 15, wherein said fourth connector comprises a substantially rectangular body that comprises:
   a first flange that extends in a direction substantially perpendicular to a front face of said body; and
   a substantially dome-shaped detent that extends from a side face of said flange in a direction substantially perpendicular to a face of said body, wherein said detent is configured to be releasably received in said second opening of said first connecting portion.

17. The safety tether of claim 16, wherein:
   said flange is substantially rhomboidal in shape
   said detent is substantially semi-spherical;
   said second opening is substantially circular; and
   a first diameter of said detent is substantially equal to a second diameter of said second opening.

18. A method of releasably coupling a first person to a second person, said method comprising:
   providing a safety tether for selectively coupling said first person to said second person, wherein said safety tether has a first length and comprises:
   a first end region that is configured to be operatively coupled to said first person;
   a second end region that is configured to be operatively coupled to said second person;
   at least one elongated tether portion that extends intermediate said first and second end regions;
   a shock absorption portion disposed intermediate said first and second end regions and operatively coupled to said at least one elongated tether portion; and
   a releasable connector that is disposed intermediate the first and second end regions, wherein said releasable connector comprises a first and a second connecting portion, wherein:
   said releasable connector is configured to releasably couple said first person and said second person via said safety tether;
   said shock absorption portion is configured to allow said safety tether to extend to a second length at least partially in response to a first particular tensile force on said safety tether; and
   said shock absorption portion is configured to bias said safety tether toward said neutral state.

19. The method of claim 18 wherein:
   said first connecting portion comprises a hook and loop fastener hook element; and
   said second connecting portion comprises a hook and loop fastener loop element.

20. The method of claim 18, wherein:
   said first connecting portion comprises a substantially rectangular body that defines:
   a substantially rectangular first opening on a front face of said body, said first opening having sides that are substantially parallel to corresponding sides of said body; and
   a second opening formed through a side of said body, wherein said substantially rectangular body is configured to couple to said safety tether; and
   said second connecting portion comprises a substantially rectangular body that comprises:
   a first flange that extends in a direction substantially perpendicular to a front face of said body; and
   a substantially dome-shaped detent that extends from a side face of said flange in a direction substantially perpendicular to a face of said body, wherein said detent is configured to be releasably received in said second opening of said first connecting portion.

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