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(54) BELT LOOP CONNECTOR

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(56) References Cited

U.S. PATENT DOCUMENTS

533,373 A	1/1895	Presby		
695,629 A	3/1902	Shipley		
932,640 A	8/1909	Pfiffner		
1,897,261 A	2/1933	Killory		
1,958,643 A	5/1934	Silverman		
1,986,519 A	1/1935	Murray		
1,998,085 A	4/1935	Wilcox		
	(Con	(Continued)		

OTHER PUBLICATIONS

U.S. Non-Final Office Action for U.S. Appl. No. 17/815,162 mailed Mar. 13, 2024.

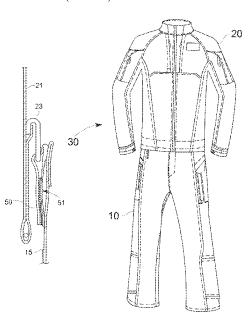
(Continued)

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(57) ABSTRACT

One embodiment provides a garment system comprising an upper body garment comprising an interior surface and a first set of connectors positioned on the interior surface. The system further comprises a lower body garment comprising a second set of connectors positioned on a surface of the lower body garment. The first set of connectors and the second set of connectors are vertically aligned when a wearer wears the upper body garment and the lower body garment at the same time, and each connector of the second set of connectors is configured to releasably engage and interconnect with a connector of the first set of connectors to attach the upper body garment to the lower body garment.

20 Claims, 9 Drawing Sheets



(2013.01)

US 12,389,965 B2 Page 2

(56)			Defenen	ces Cited	2007/0277283	A 1	12/2007	Borowski et al.	
(56)			Referen	ces Chea	2012/0117715			Weafer	
		TT C	DATENIT	DOCUMENTS	2012/011/713			Evans et al.	
		U.S.	PAIENI	DOCUMENTS	2012/0246805		10/2012		
_	104 407		1/1029	Vacalan	2013/0291277			Kirkwood	
	2,104,487			Kessler Richman	2014/0101814			Caulfield et al.	
	2,274,382		12/1942		2014/0101815			Caulfield et al.	
	3,418,659		2/1908		2014/0215690			Caulfield et al.	
	3,789,431 1,932,079			Bridgewater	2014/0304899			Almonte et al.	
	1.947.489			Greenwood	2015/0040285			Mobayyen	
	5,276,923			Cohen	2015/0101109			Herman	
	5,309,572		5/1994	Seamans	2016/0324238		11/2016	Tran	
	5.313.669			Rasdell et al.	2017/0196283	A1	7/2017	Hart	
	5,754,982		5/1998		2017/0280780	$\mathbf{A}1$	10/2017	Janes	
	5,223,352		5/2001	Watlington	2017/0325519	A1	11/2017	Willingham	
	5,698,031		3/2004		2018/0132537	A1	5/2018	Siegfried	
	7,047,567		5/2006		2019/0053558	A1	2/2019	Spencer	
	7,168,103			Aldridge et al.	2019/0223529	A1	7/2019	Park	
	7,438,619		10/2008	Staver et al.	2019/0246726	A1	8/2019	Oliva	
	3.011.019			Hassan	2022/0030996	$\mathbf{A}1$		Wenkman	
	3.813.266		8/2014		2022/0225711	A1		Wenkman	
	3.918.915			Caulfield et al.	2022/0248773		8/2022	Ambelang	
	0,015,864			Evans et al.	2023/0292864		9/2023	Horbatuck	
),827,791			Banta	2024/0032634	A1*	2/2024	Rodgers A41F 17/02	
	1.350.676		6/2022						
	/0000361		4/2001		OTHER PUBLICATIONS				
	/0014802			Benham	OTHER TOBLICATIONS				
					U.S. Notice of Allowance for U.S. Appl. No. 17/815,162 mailed				
	/0172431		9/2003	Allen	Apr. 30, 2024.				
	/0133963		7/2004	Jennings	Apr. 50, 2024.				
	/0010559		1/2006	Hamlet	* - '4 - 1 1				
2007	/0101477	Αl	5/2007	Grilliot et al.	* cited by exa	mıner			

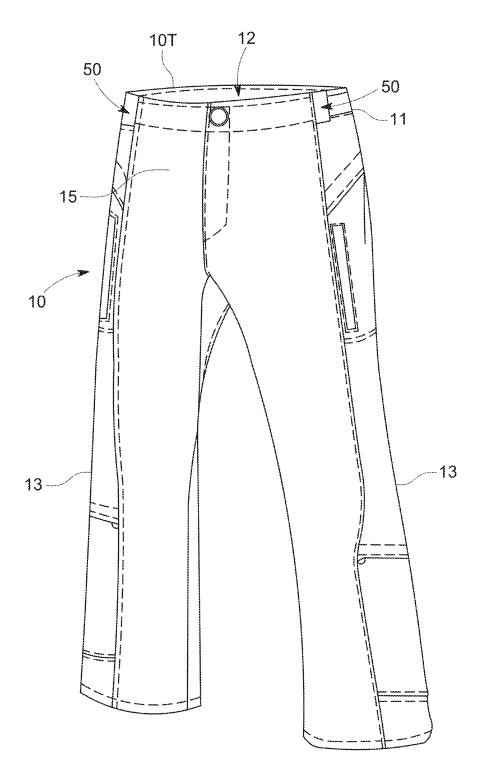
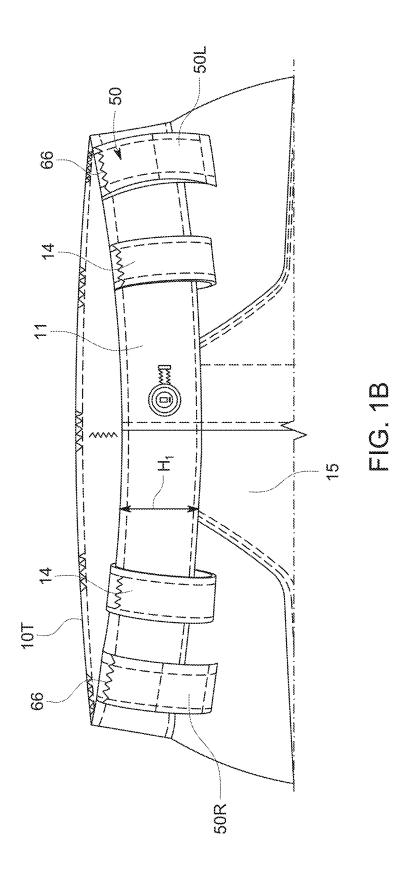
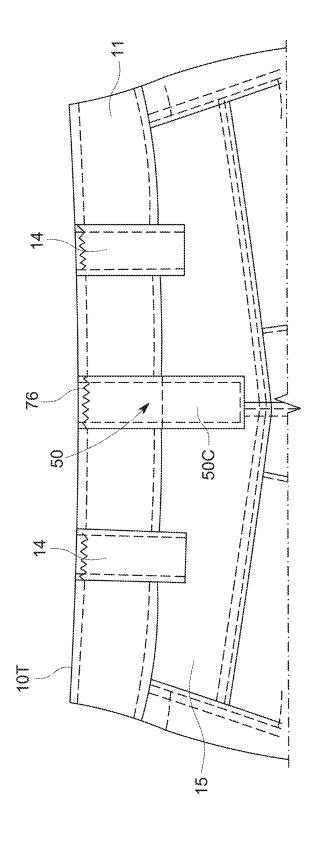


FIG. 1A





(C)

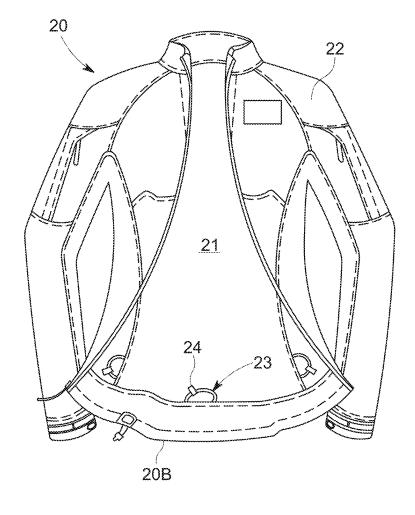
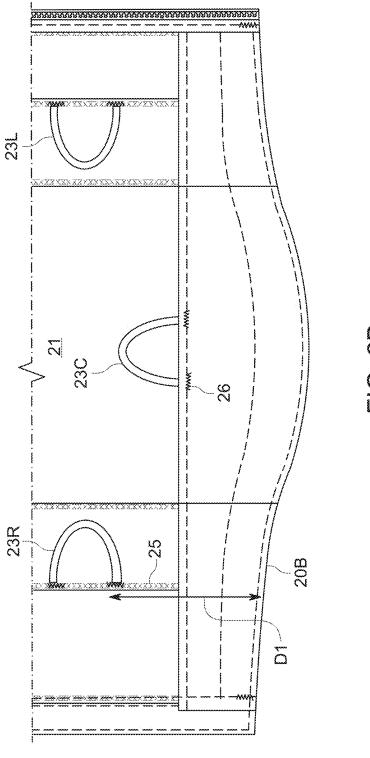
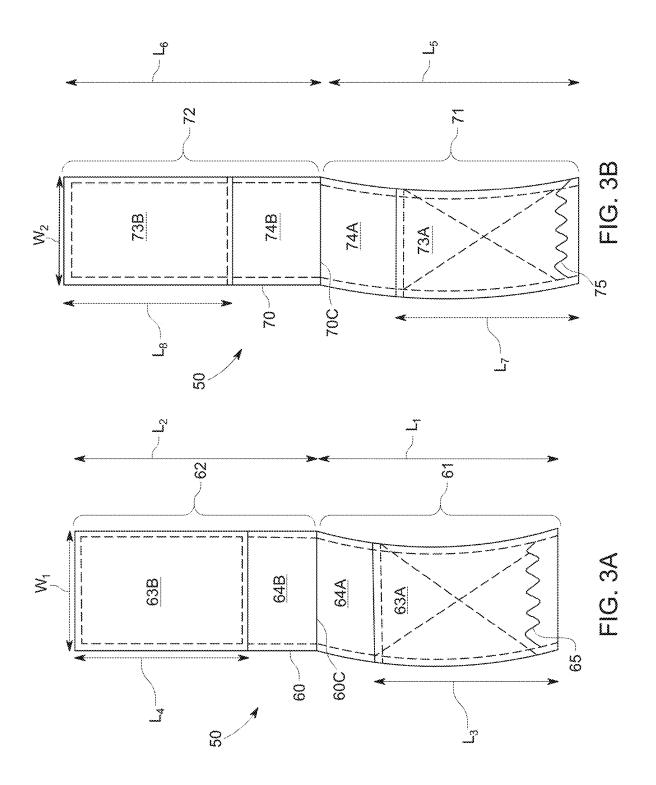
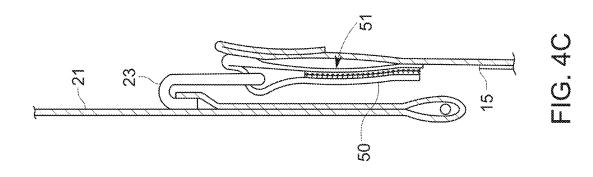


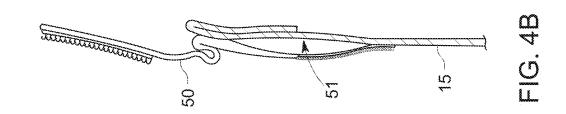
FIG. 2A

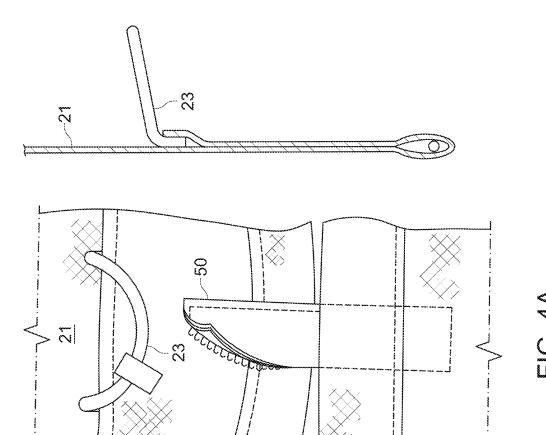






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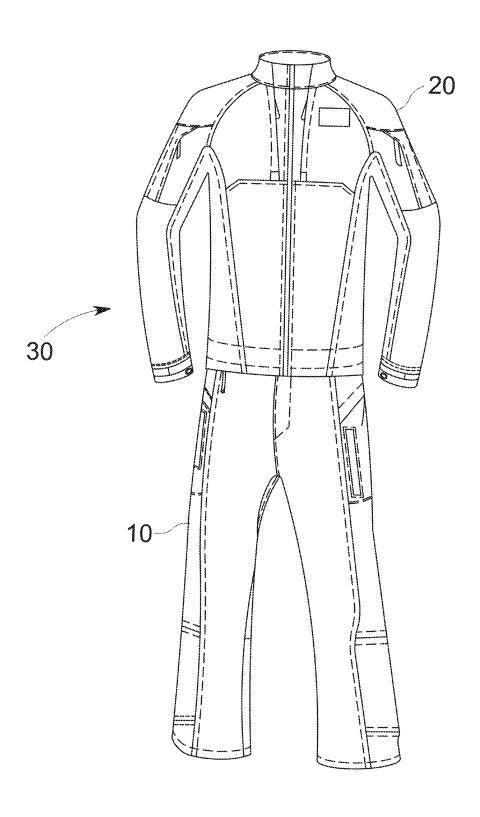
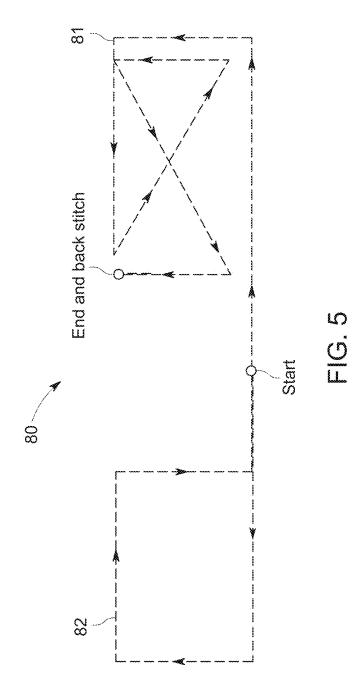


FIG. 4D



BELT LOOP CONNECTOR

TECHNICAL FIELD

One or more embodiments relate generally to garments, 5 and in particular, a belt loop for connecting garments.

BACKGROUND

Belt loops are a series of loops around a waist level of a lower body garment (e.g., pants) that hold a belt and help to hold up the body garment on the individual wearing the garment.

SUMMARY

One embodiment provides a garment system comprising an upper body garment comprising an interior surface and a first set of connectors positioned on the interior surface. The system further comprises a lower body garment comprising a second set of connectors positioned on a surface of the lower body garment. The first set of connectors and the second set of connectors are vertically aligned when a wearer wears the upper body garment and the lower body 25 garment at the same time, and each connector of the second set of connectors is configured to releasably engage and interconnect with a connector of the first set of connectors to attach the upper body garment to the lower body garment.

Another embodiment provides an article of clothing com- 30 prising an upper body garment and a lower body garment. The upper body garment comprises an interior surface and a first set of connectors positioned on the interior surface. The lower body garment comprises a second set of connectors positioned on a surface of the lower body garment. The 35 first set of connectors and the second set of connectors are vertically aligned when a wearer wears the upper body garment and the lower body garment at the same time, and each connector of the second set of connectors is configured to releasably engage and interconnect with a connector of 40 the first set of connectors to attach the upper body garment to the lower body garment.

These and other features, aspects and advantages of the one or more embodiments will become understood with reference to the following description, appended claims and 45 accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

- one or more embodiments;
- FIG. 1B illustrates a front view of the waistband area of the lower body garment in FIG. 1A, in one or more embodiments:
- FIG. 1C illustrates a back view of the waistband area of 55 the lower body garment in FIG. 1A, in one or more embodi-
- FIG. 2A illustrates an example upper body garment, in one or more embodiments;
- FIG. 2B illustrates the bottom edge of the upper body 60 garment in FIG. 2A, in one or more embodiments;
- FIG. 3A illustrates an example connector of the lower body garment, wherein the connector is a side connector, in one or more embodiments;
- FIG. 3B illustrates an example connector of the lower 65 body garment, wherein the connector is a center connector, in one or more embodiments;

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- FIG. 4A illustrates a front view of an example connector of the lower body garment in an open position to engage and interconnect with an example connector of the upper body garment, in one or more embodiments;
- FIG. 4B illustrates a side view of the example connector of the lower body garment in the open position to engage and interconnect with the example connector of the upper body garment, in one or more embodiments;
- FIG. 4C illustrates the example connector of the lower body garment interconnected with the example connector of the upper body garment, in one or more embodiments;
- FIG. 4D illustrates the garments attached together to form a unitary and integrated protective covering, in one or more embodiments; and
- FIG. 5 illustrates an example pattern for stitching a hook and loop fastener to a connector, in one or more embodiment.

DETAILED DESCRIPTION

The following description is made for the purpose of illustrating the general principles of one or more embodiments and is not meant to limit the inventive concepts claimed herein. Further, particular features described herein can be used in combination with other described features in each of the various possible combinations and permutations. Unless otherwise specifically defined herein, all terms are to be given their broadest possible interpretation including meanings implied from the specification as well as meanings understood by those skilled in the art and/or as defined in dictionaries, treatises, etc.

One or more embodiments relate generally to garments, and in particular, a belt loop for connecting garments. One embodiment provides a garment system comprising an upper body garment comprising an interior surface and a first set of connectors positioned on the interior surface. The system further comprises a lower body garment comprising a second set of connectors positioned on a surface of the lower body garment. The first set of connectors and the second set of connectors are vertically aligned when a wearer wears the upper body garment and the lower body garment at the same time, and each connector of the second set of connectors is configured to releasably engage and interconnect with a connector of the first set of connectors to attach the upper body garment to the lower body garment.

Another embodiment provides an article of clothing comprising an upper body garment and a lower body garment. The upper body garment comprises an interior surface and a first set of connectors positioned on the interior surface. FIG. 1A illustrates an example lower body garment, in 50 The lower body garment comprises a second set of connectors positioned on a surface of the lower body garment. The first set of connectors and the second set of connectors are vertically aligned when a wearer wears the upper body garment and the lower body garment at the same time, and each connector of the second set of connectors is configured to releasably engage and interconnect with a connector of the first set of connectors to attach the upper body garment to the lower body garment.

FIG. 1A illustrates an example lower body garment 10, in one or more embodiments. The lower body garment 10 is intended to be worn by a wearer. The lower body garment 10 comprises, but is not limited to, pants, shorts, etc. The lower body garment 10 includes a waistband area 11 extending downwards from a top edge 10T of the lower body garment 10 for a distance of about H₁ (FIG. 1B). For example, in one embodiment, the distance H₁ of the waistband area 11 is about 2 inches.

The top edge 10T defines a waist opening 12. The lower body garment 10 further includes two garment legs 13 providing two leg openings. Specifically, each garment leg 13 includes a leg opening designed/shaped for receiving a lower limb of the wearer, wherein the garment leg 13 covers (i.e., partially covers or fully covers) the lower limb. The waist opening 12 is opposite of the leg openings.

As shown in FIG. 1A, the lower body garment 10 includes one or more connectors 50 that are spaced apart and encircle the waistband area 11. In one embodiment, the connectors 50 are located on an exterior surface 15 of the lower body garment 10. In another embodiment, the connectors 50 are located on an interior surface of the lower body garment 10. As described in detail later herein, each connector 50 is located within proximity of the top edge 10T to releasably engage and interconnect with a corresponding connector 23 (FIG. 2A) of an upper body garment 20 (FIG. 2A). The lower body garment 10 and the upper body garment 20 attach together to form a unitary and integrated protective 20 covering 30 (FIG. 4D) for the wearer that can protect the wearer from extreme weather and other hazardous conditions (e.g., flight suits worn by pilots, garments worn by firefighters, military personnel, industrial workers, etc.). For example, in one embodiment, the garments 10 and 20 are 25 made from a fabric that is flame resistant or flame retardant, thereby protecting the wearer from flash fires, explosions, and open flames.

The lower body garment 10 may include a plurality of optional belt loops 14 (FIG. 1B) that are spaced apart and 30 encircle the waistband area 11. Each belt loop 14 includes an opening designed/shaped for receiving a belt that encircles the waistband area 11. In one embodiment, the connectors 50 and the belt loops 14 are spaced apart along the waistband area 11. In another embodiment, the connectors 50 are 35 located on top of the belt loops 14, such that at least one belt loop 14 includes a corresponding connector 50 on top the belt loop 14 (i.e., attached to an exterior surface of the belt loop 14).

FIG. 1B illustrates a front view of the waistband area 11 40 of the lower body garment 10 in FIG. 1A, in one or more embodiments. FIG. 1C illustrates a back view of the waistband area 11 of the lower body garment 10 in FIG. 1A, in one or more embodiments. As shown in FIG. 1B, in one embodiment, the connectors 50 include, on a front side of 45 the waistband area 11, a first side connector 50R and a second side connector 50L located to the right and to the left, respectively, of a center of the waistband area 11. As shown in FIG. 1C, in one embodiment, the connectors 50 further include, on a rear side of the waistband area 11, a center 50 connector 50C located at about the center of the waistband area 11.

In one embodiment, each connector 50 comprises a retaining member.

FIG. 2A illustrates an example upper body garment 20, in 55 one or more embodiments. The upper body garment 20 is intended to be worn by a wearer. The upper body garment comprises, but is not limited to, a jacket, a coat, a shirt (e.g., a combat shirt), etc.

The upper body garment 20 includes an interior surface 60 21 and an opposite exterior surface 22. The interior surface 21 includes one or more connectors 23 that are spaced apart and spaced from a bottom edge 20B of the upper body garment 20. As described in detail later herein, each connector 23 is located within proximity of the bottom edge 20B 65 to releasably engage and interconnect with a corresponding connector 50 (FIGS. 1A-1C) of the lower body garment 10.

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In one embodiment, each connector 23 includes an optional tab member 24 that allows the wearer of the upper body garment 20 to more easily locate the connector 23 and pull on the tab member 24 when attaching the connecter 23 to a corresponding connector 50 of the lower body garment 10

FIG. 2B illustrates the bottom edge 20B of the upper body garment 20 in FIG. 2A, in one or more embodiments. As shown in FIG. 2B, in one embodiment, the connectors 23 include a first side connector 23R located to a right of a center of the interior surface 21, a second side connector 23L located to a left of the center of the interior surface 21, and a center connector 23C located at about the center of the interior surface 21. In one embodiment, the connectors 23 are spaced from the bottom edge 20B a distance DI of about 0.5 inches to about 12 inches. For example, in one embodiment, the connectors 23 are spaced about 4 inches from the bottom edge 20B.

As shown in FIG. 2B, in one embodiment, each connector 23 comprises a half loop member. Each connector 23 may be made from a cord, such as an elastic cord or a shock cord, with two ends. The ends of each connector 23 are spaced apart and permanently attached to a seam 25 of the interior surface 21 via bartacks 26 (i.e., the ends are bartacked). In sewing, a bartack is a stitch or a series of stitches used to reinforce parts of a garment that may be subject to stress or additional wear (e.g., belt loops, pocket corners, etc.). For example, in one embodiment, the ends of the connectors 23R and 23L are spaced apart by a distance of about 1.75 inches, and the ends of the connector 23C are spaced apart by a distance of about 3 inches. In one embodiment, a length of each bartack 26 is about 0.25 inches.

As stated above, each connector 23 of the upper body garment 20 corresponds to a particular connector 50 of the lower body garment 10 that the connector 23 releasably engages and interconnects with. With reference to FIGS. 1B and 2B, the first side connector 23R of the upper body garment 20 corresponds to the first side connector 50R of the lower body garment 10, such that the connectors 23R and 50R releasably engage and interconnect with each other to secure a right portion of the upper body garment 20 to the lower body garment 10. With reference to FIGS. 1B and 2B, the second side connector 23L of the upper body garment 20 corresponds to the second side connector 50L of the lower body garment 10, such that the connectors 23L and 50L releasably engage and interconnect with each other to secure a left portion of the upper body garment 20 to the lower body garment 10. With reference to FIGS. 1C and 2B, the center connector 23C of the upper body garment 20 corresponds to the center connector 50C of the lower body garment 10, such that the connectors 23C and 50C releasably engage and interconnect with each other to secure a center portion of the upper body garment 20 to the lower body garment 10. The connectors 23R, 23L, and 23C are in vertical alignment with the connectors 50R, 50L, and 50C when the garments 10 and 20 are donned by the wearer.

In another embodiment, the structure of the connectors 50 of the lower body garment 10 and the connectors 23 of the upper body garment 20 are reversed, such that the connectors 50 comprise half loop members and the connectors 23 comprise retaining members instead. In yet another embodiment, the connectors 50 of the lower body garment 10 comprise a first combination of half loop members and retaining members, and the connectors 23 of the upper body garment 20 comprise a second combination of half loop members and retaining members complementary to the first combination (i.e., each half loop member of one garment

releasably engages and interconnects with a corresponding retaining member of another garment).

FIG. 3A illustrates an example connector 50 of the lower body garment 10, wherein the connector 50 is a side connector 50R or 50L, in one or more embodiments. In one embodiment, each side connector 50R, 50L comprises a one-piece retaining member 60. The retaining member 60 is foldable at about a center 60C into two ends/segments of about equal length. Specifically, the retaining member 60 includes a belt loop end 61 adjacent to the waistband area 11, and a flap end 62 that is opposite of the belt loop end 61. The belt loop end 61 and the flap end 62 form one continuous piece.

One or more portions of the retaining member **60** are directly and permanently attached to the lower body garment **10**. For example, in one embodiment, the center **60**C of the retaining member **60** is directly and permanently attached to the exterior surface **15** of the lower body garment **10** via a bartack **66** (FIG. **1B**) (i.e., the retaining member **60** is 20 bartacked) sewn at about the center **60**C. In one embodiment, the bartack **66** is located about 0.125 inches from the top edge **10**T of the lower body garment **10**.

As another example, in one embodiment, a portion of the belt loop end 61 is directly and permanently attached to the 25 lower body garment 10. For example, in one embodiment, a bottom edge of the belt loop end 61 is directly and permanently attached to the exterior surface 15 of the lower body garment 10 via a bartack 65 (i.e., the belt loop end 61 is bartacked) sewn at about the bottom edge. In one embodiment, a length of the bartack 65 is about 0.875 inches.

A portion of the belt loop end 61 that is in between the bartacks 65 and 66 form an opening 51 (FIGS. 4B-4C) designed/shaped for receiving a belt that encircles the waistband area 11.

The retaining member 60 includes a fastener. In one embodiment, the fastener is a hook and loop fastener (e.g., VELCRO® hook and loop). Specifically, the belt loop end 61 includes a loop fastening material 63A of the fastener, and the flap end 62 includes a hook fastening material 63B 40 of the fastener. In one embodiment, the belt loop end 61 includes an area 64A within proximity of the center 60C that does not include the loop fastening material 63A, and the flap end 62 includes an area 64B within proximity of the center **60**C that does not include the hook fastening material 63B. In one embodiment, the areas 64A and 64B are lined with webbing. Without any fastening materials 63A and 63B, the areas 64A and 64B provide more vertical room for receiving and securing a connector 23, and make it more likely for the fastening materials 63A and 63B to vertically 50 align. Further, there is less surface area for dirt and other debris to get caught in the fastening materials 63A and 63B, thereby causing less wear and tear to the hook and loop fastener over time.

In another embodiment, the locations of the hook fasten- 55 ing material 63B and the loop fastening material 63A are reversed, such that the belt loop end 61 includes the hook fastening material 63B and the flap end 62 includes the loop fastening material 63A instead.

The flap end **62** is a flap that is releasably attached to the 60 lower body garment **10** via the fastener. For example, in one embodiment, aligning and pressing the flap end **62** on top of and against the belt loop end **61** causes the hook fastening material **63B** to engage and fasten to the loop fastening material **63A**. In FIG. **3A**, the flap end **62** is in an open 65 position, i.e., the hook fastening material **63B** is not engaged and fastened to the loop fastening material **63A**.

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In one embodiment, a length of the retaining member 60 is about 6.125 inches. In one embodiment, the length includes a length $\rm L_1$ from a bottom edge of the belt loop end 61 to the center 60C, and another length $\rm L_2$ from a top edge of the flap end 62 to the center 60C. In one embodiment, the lengths Ly and $\rm L_2$ are substantially similar. For example, in one embodiment, each of the lengths L; and $\rm L_2$ is about 2.5 inches.

In one embodiment, a length L_3 of the loop fastening material 63A is substantially similar to a length L_4 of the hook fastening material 63B, such that the surface areas of the materials 63A, 63B are similarly sized for better grip. For example, in one embodiment, each of the lengths L_3 and L_4 is about 1.5 inches.

In one embodiment, a width W_1 of the retaining member **60** is about 1 inch.

In another embodiment, the fastener is another type of fastener such as, but not limited to, a snapfit connector (e.g., a cantilever snap, an annular snap, a trap, a dart, etc.), a push-pull connector, a buckle, a retaining ring, a snap, a cantilever spring fastener, a crush rib fastener, a carabiner, etc.

FIG. 3B illustrates an example connector 50 of the lower body garment 10, wherein the connector 50 is a center connector 50C, in one or more embodiments. In one embodiment, the center connector 50C comprises a one-piece retaining member 70. The retaining member 70 is foldable at about a center 70C into two ends of about equal length. Specifically, the retaining member 70 includes a belt loop end 71 adjacent to the waistband area 11, and a flap end 72 that is opposite of the belt loop end 71. The belt loop end 71 and the flap end 72 form one continuous piece.

One or more portions of the retaining member 70 are directly and permanently attached to the lower body garment 10. For example, in one embodiment, the center 70C of the retaining member 70 is directly and permanently attached to the exterior surface 15 of the lower body garment 10 via a bartack 76 (FIG. 1C) (i.e., the retaining member 70 is bartacked) sewn at about the center 70C. In one embodiment, the bartack 76 is located about 0.125 inches from the top edge 10T of the lower body garment 10.

As another example, in one embodiment, a portion of the belt loop end 71 is directly and permanently attached to the lower body garment 10. For example, in one embodiment, a bottom edge of the belt loop end 71 is directly and permanently attached to the exterior surface 15 of the lower body garment 10 via a bartack 75 (i.e., the belt loop end 71 is bartacked) sewn at about the bottom edge. In one embodiment, a length of the bartack 75 is about 0.875 inches.

A portion of the belt loop end 71 that is in between the bartacks 75 and 76 form an opening 51 (FIGS. 4B-4C) designed/shaped for receiving a belt that encircles the waistband area 11.

The retaining member 70 includes a fastener. In one embodiment, the fastener is a hook and loop fastener (e.g., VELCRO® hook and loop). Specifically, the belt loop end 71 includes a loop fastening material 73A of the fastener, and the flap end 72 includes a hook fastening material 73B of the fastener. In one embodiment, the belt loop end 71 includes an area 74A within proximity of the center 70C that does not include the loop fastening material 73A, and the flap end 72 includes an area 74B within proximity of the center 70C that does not include the hook fastening material 73B. In one embodiment, the areas 74A and 74B are lined with webbing. Without any fastening materials 73A and 73B, the areas 74A and 74B provide more vertical room for receiving and securing a connector 23, and make it more

likely for the fastening materials 73A and 73B to vertically align. Further, there is less surface area for dirt and other debris to get caught in the fastening materials 73A and 73B, thereby causing less wear and tear to the hook and loop fastener over time.

In another embodiment, the locations of the hook fastening material 73B and the loop fastening material 73A are reversed, such that the belt loop end 71 includes the hook fastening material 73B and the flap end 72 includes the loop fastening material 73A instead.

The flap end 72 is a flap that is releasably attached to the lower body garment 10 via the fastener. For example, in one embodiment, aligning and pressing the flap end 72 on top of and against the belt loop end 71 causes the hook fastening material 73B to engage and fasten to the loop fastening material 73A. In FIG. 3B, the flap end 72 is in an open position, i.e., the hook fastening material 73B is not engaged and fastened to the loop fastening material 73A.

In one embodiment, a length of the retaining member 70 is about 8.125 inches. In one embodiment, the length 20 includes a length L_5 from a bottom edge of the belt loop end 71 to the center 70C, and another length L_6 from a top edge of the flap end 72 to the center 70C. In one embodiment, the lengths L_5 and L_6 are substantially similar. For example, in one embodiment, each of the lengths L_5 and L_6 is about 3.5 25 inches.

In one embodiment, a length L_7 of the loop fastening material 73A is substantially similar to a length L_8 of the hook fastening material 73B, such that the surface areas of the materials 73A, 73B are similarly sized for better grip. ³⁰ For example, in one embodiment, each of the lengths L_7 and L_8 is about 2.25 inches.

In one embodiment, a width W_2 of the retaining member 70 is about 1 inch.

In another embodiment, the fastener is another type of 35 fastener such as, but not limited to, a snapfit connector (e.g., a cantilever snap, an annular snap, a trap, a dart, etc.), a push-pull connector, a buckle, a retaining ring, a snap, a cantilever spring fastener, a crush rib fastener, a carabiner, etc.

FIG. 4A illustrates a front view of an example connector 50 of the lower body garment 10 in an open position to engage and interconnect with an example connector 23 of the upper body garment 20, in one or more embodiments. FIG. 4B illustrates a side view of the example connector 50 45 in the open position to engage and interconnect with the example connector 23, in one or more embodiments. FIG. 4C illustrates the example connector 50 interconnected with the example connector 23, in one or more embodiments. FIG. 4D illustrates the garments 10 and 20 attached together 50 to form a unitary and integrated protective covering 30, in one or more embodiments. Once a wearer wears both the lower body garment 10 and the upper body garment 20, the garments 10 and 20 can be attached together by engaging and interconnecting each connector 50 of the lower body 55 garment 10 with a corresponding connector 23 of the upper body garment 20. For example, connectors 50R, 50L, and **50**C of the lower body garment **10** are interconnected with connectors 23R, 23L, and 23C of the upper body garment 20, respectively.

To attach a connector 50 with a corresponding connector 23, a fastener (e.g., hook and loop fasteners shown in FIGS. 3A-3B) of the connector 50 is released, causing a flap end (e.g., flap ends 62 and 72 shown in FIGS. 3A-3B) of the connector 50 to pivot upwards into an open position. When 65 the flap end is in the open position, the wearer can pull on the connector 23 located on the interior surface 21 of the

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upper body garment 20 and bring the connector 23 in close proximity to the flap end. The wearer places the flap end within the connector 23 (e.g., the flap end is placed through an opening formed by the half loop member of the connector 23). Once the flap end has engaged the connector 23, the flap end can be pivoted in a down wards direction into a closed position, as shown in FIG. 4C. When in the closed position, the fastener engages (e.g., hook fastening materials 63B, 73B and loop fastening materials 63A, 73A shown in FIGS. 3A-3B engage) causing a secure attachment between the connectors 50 and 23.

Once the upper body garment 20 is attached to the lower body garment 10, the upper body garment 20 is prevented from being forced up and separating from the lower body garment 10 and exposing the wearer.

FIG. 5 illustrates an example pattern 80 for stitching a hook and loop fastener to a connector 50, in one or more embodiments. Loop fastening material (e.g., 63A, 73A in FIGS. 3A-3B) of the fastener is sewn to a belt loop end (e.g., 61, 71 in FIGS. 3A-3B) of the connector 50 along a path 81 that forms an X for extra reinforcement. Hook fastening material (e.g., 63B, 73B in FIGS. 3A-3B) of the fastener is sewn to a flap end (e.g., 62, 72 in FIGS. 3A-3B) of the connector 50 along a path 82 that forms a square/rectangle. In one embodiment, a bottom edge of the belt loop end and a top edge of the flap end are turned under and caught in the stitching for reinforcement. Stitching is visible on an exterior of the flap end to provide a wearer with a visual aid for aligning the hook fastening material to the loop fastening material.

References in the claims to an element in the singular is not intended to mean "one and only" unless explicitly so stated, but rather "one or more." All structural and functional equivalents to the elements of the above-described exemplary embodiment that are currently known or later come to be known to those of ordinary skill in the art are intended to be encompassed by the present claims. No claim element herein is to be construed under the provisions of 35 U.S.C. section 112, sixth paragraph, unless the element is expressly recited using the phrase "means for" or "step for."

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

The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the embodiments has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the embodiments in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention.

Though the embodiments have been described with reference to certain versions thereof; however, other versions are possible. Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred versions contained herein.

What is claimed is:

- 1. A garment system comprising:
- a first piece of body garment comprising a first type of connector; and
- a second piece of body garment comprising a second type of connector configured to releasably engage and interconnect with the first type of connector to attach the first piece of body garment to the second piece of body garment:
- wherein the second type of connector includes a one-piece 10 continuous member foldable at about a center to define a pair of opposite segments;
- wherein a first segment of the pair includes a first area with a first type of fastening material and a second area without the first type of fastening material;
- wherein a second segment of the pair includes a third area with a second type of fastening material and a fourth area without the second type of fastening material; and
- wherein a size of the first area with the first type of fastening material is substantially similar to a size of 20 the third area with the second type of fastening material, such that, when the second type of connector engages and interconnects with the first type of connector, the second area without the first type of fastening material and the fourth area without the second type of fastening material provide space for receiving and retaining the first type of connector, and the first area with the first type of fastening material engages and fastens to an entirety of the third area with the second type of fastening material.
- 2. The garment system of claim 1, wherein the first piece of body garment and the second piece of body garment comprise an upper body garment and a lower body garment, respectively, and the first type of connector and the second type of connector are vertically aligned when a wearer wears 35 the upper body garment and the lower body garment at the same time.
- 3. The garment system of claim 1, wherein the first type of connector is arranged on an interior surface of the first piece of body garment.
- **4.** The garment system of claim **1**, wherein the second type of connector is arranged on a surface of the second piece of body garment.
- 5. The garment system of claim 1, wherein the first type of connector comprises a half loop member.
- **6.** The garment system of claim **1**, wherein the first segment of the pair forms a belt loop for receiving a belt, and the second segment of the pair forms a flap for retaining the first type of connector to the second piece of body garment when the second type of connector engages and interconnects with the first type of connector.
- 7. The garment system of claim 6, wherein the belt loop is directly and permanently attached to the second piece of body garment, and the flap is removably attached to the second piece of body garment.
- 8. The garment system of claim 1, wherein a size of the first segment of the pair is substantially similar to a size of the second segment of the pair.
- **9**. The garment system of claim **1**, wherein first type of fastening material and the second type of fastening material 60 are different types of fastening material.
- 10. The garment system of claim 1, wherein first type of fastening material and the second type of fastening material together form a hook and loop fastener.
- 11. The garment system of claim 1, wherein the first piece 65 of body garment and the second piece of body garment

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comprise at least one additional first type of connector and at least one additional second type of connector, respectively.

- 12. An article of clothing comprising:
- a first body garment comprising a first connector; and
- a second body garment comprising a second connector configured to releasably engage and interconnect with the first connector to attach the first body garment to the second body garment;
- wherein the second connector includes a one-piece continuous member foldable at about a center to define a pair of opposite segments;
- wherein a first segment of the pair includes a first area with a first fastening material and a second area without the first fastening material;
- wherein a second segment of the pair includes a third area with a second fastening material and a fourth area without the second fastening material; and
- wherein a size of the first area with the first fastening material is substantially similar to a size of the third area with the second fastening material, such that, when the second connector engages and interconnects with the first connector, the second area without the first fastening material and the fourth area without the second fastening material provide space for receiving and retaining the first connector, and the first area with the first fastening material engages and fastens to an entirety of the third area with the second fastening material.
- 13. The article of clothing of claim 12, wherein the first body garment and the second body garment comprise an upper body garment and a lower body garment, respectively, and the first connector and the second connector are vertically aligned when a wearer wears the upper body garment and the lower body garment at the same time.
- 14. The article of clothing of claim 12, wherein the first 40 connector is arranged on an interior surface of the first body garment.
 - 15. The article of clothing of claim 12, wherein the second connector is arranged on a surface of the second body garment.
 - **16**. The article of clothing of claim **12**, wherein the first connector comprises a half loop member.
 - 17. The article of clothing of claim 12, wherein the first segment of the pair forms a belt loop for receiving a belt, and the second segment of the pair forms a flap for retaining the first connector to the second body garment when the second connector engages and interconnects with the first connector.
- 18. The article of clothing of claim 17, the wherein belt loop is directly and permanently attached to the second body garment, and the flap is removably attached to the second body garment.
 - 19. The article of clothing of claim 12, wherein first fastening material and the second fastening material are different types of fastening material.
 - 20. The article of clothing of claim 12, wherein the first body garment and the second body garment comprise at least one additional first connector and at least one additional second connector, respectively.

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