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(54) **GARMENT WITH A NON-LINEAR WAISTBAND**

(57) The invention provides a device capable of incorporating into or attachable to a garment to provide a non-linear waistband. The device includes a body (120) having a perimeter defined by an upper side (112) and a lower side (111) with respect to the garment when incorporated, the lower side having a greater length than the upper side, the body being shaped to define a middle portion (130) that bends upward to two distal ends (131,132). The garment has a non-linear waistband (210) such that a front section (211) is lower than a back section (214) and two side sections (212, 213). The two distal ends are arranged to hold the two side sections of the garment, and the middle portion is arranged to hold the front section of the garment. A tension force is applied by the two side sections to hold the back section in place when the wearer is bending forward.

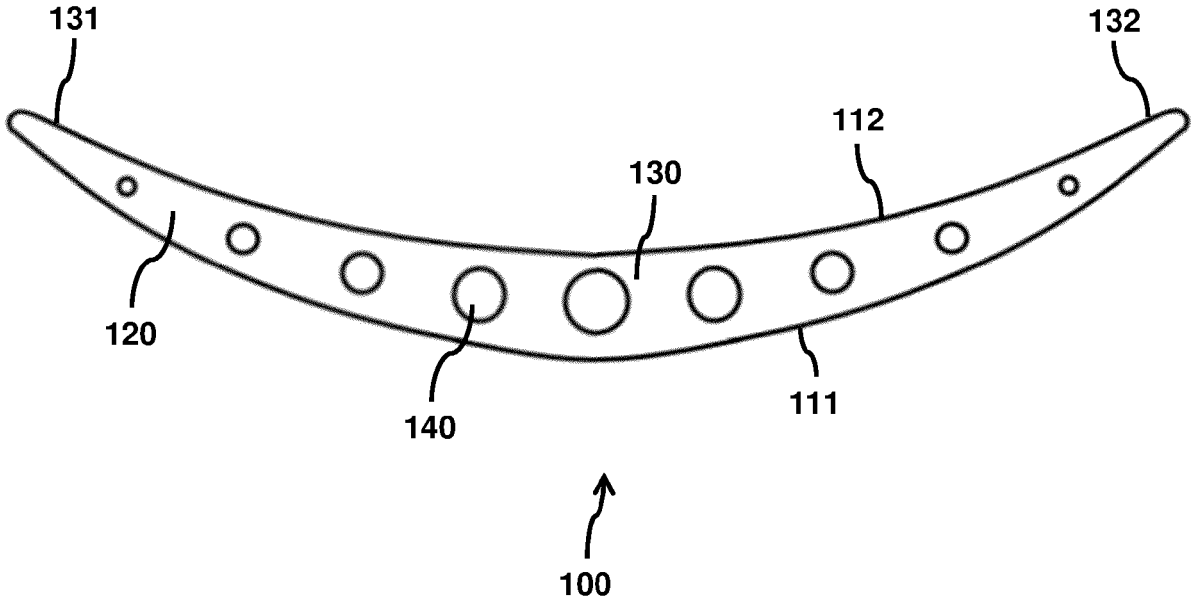

FIG. 1

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of the Hong Kong Short-term Patent Application No. 32022052866.7, filed on May 3, 2022, which is incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

[0002] The present invention generally relates to a garment with a non-linear waistband and a device for holding up the garment. In particular, the present invention relates to a device for holding the garment having a non-linear waistband in place on the wearer to avoid exposure of the buttock and the intergluteal cleft, especially when the upper body of the wearer is bent forward about the waist.

BACKGROUND OF THE INVENTION

[0003] The terms "plumber butt" or "plumber's crack" (American English) and "builder's bum" (British English) refer to the exposure of the buttock and the intergluteal cleft (or generally referred to as the "buttock cleavage"), particularly on occasions of bending over. The expression of "builder's bum" was first recorded in 1988, and the similar expression of "plumber's crack" was first used as early as 1992. The terms are based on the impression that work in these professions frequently involves bending over, in which it is possible to expose at least part of the buttock and the intergluteal cleft from behind.

[0004] Buttock cleavage may not necessarily be linked to the plumbers or builders, but may instead be a fashion trend. Wearing blue jeans, particularly those tight-fitting or low-rise jeans, may easily expose the buttock and the intergluteal cleft when crouching, sitting, bending over, or kneeling. This may be a fashion trend, particularly among teenagers. However, this may also be an accidental reveal.

[0005] Trousers, particularly blue jeans, are held in place on the wearer via the tension around the hips of the wearer. The tension is provided via the garment waistband. If the tension of the waistband is insufficient, the wearer can insert an adjustable belt through the belt loops and/or suspenders of the trousers to tighten and hold the trousers in place. Such tension travels a linear path around the wearer's body, and the height of the waistband on the front is the same as the height at the back. As low-rise jeans have a lower waistband that sits at or even below the hip bones, wearing low-rise jeans may have buttock cleavage easily when the upper body of the wearer is bent forward about the waist.

[0006] Apart from the above situation for wearing blue jeans, a similar issue is also observed in overweight and obese individuals. Some individuals may have a wider waistband in the front due to excess abdominal fat or a protruding abdomen. Some others may have exeptional muscle development as a result of a medical condition, such as scoliosis. Traditionally, overweight individuals must rely on suspenders to hold the front of their blue jeans up high enough to avoid the back from being embarrassingly low. In particular, the abdomens of the overweight individuals push the currently linear-flow waistband downward. Therefore, the buttock and the intergluteal cleft may be exposed easily when bending over. This also applicable to trousers with mid-rise or high-rise design, as the conventional linear waistband is too tight and uncomfortable to overweight and obese individuals.

[0007] Accordingly, there is a need in the art for a device that can be incorporated into or attached to the trousers for holding the trousers in place for avoiding the above problem of buttock cleavage. Furthermore, other desirable features and characteristics will become apparent from the subsequent detailed description and the appended claims, taken in conjunction with the accompanying drawings and this background of the disclosure.

SUMMARY OF THE INVENTION

[0008] Provided herein is a device capable of incorporating into or attachable to garment for providing a non-linear waistband. The non-linear waistband can enable a unique fashion style and/or avoid buttock cleavage when a wearer of the garment is bending forward. In particular, this can be used in low-rise jeans or used by overweight individuals for holding up the jeans from being too low.

[0009] An exemplary embodiment of the present invention provides a device capable of incorporating into or attachable to garment for avoiding buttock cleavage when a wearer of the garment is bending forward. The device includes a body having a perimeter defined by an upper side and a lower side with respect to the garment when incorporated thereto, the lower side having a greater length than the upper side, the body being shaped to define a middle portion that bends upward to two distal ends. The garment has a non-linear waistband such that a front section is lower than a back section and two side sections. The two distal ends are arranged to hold the two side sections of the garment, and the middle portion is arranged to hold the front section of the garment. A tension force is applied to the back section by the two side sections to hold the back section in place at a vertical position equivalent to the two side sections when the wearer is bending forward.

[0010] In accordance with a further aspect of the present disclosure, the body is in a crescent shape with a convex side and a concave side. Particularly, the convex side defines the lower side, the concave side defines the upper side, and the upper side has a greater radius of curvature than the lower side.

[0011] In accordance with an alternative aspect of the present disclosure, the body is in a V-shape, a parentheses shape, or a crescent shape, wherein the middle por-

tion tapers to the two distal ends, and the middle portion and the two distal ends are not formed along a straight line.

[0012] In accordance with a further aspect of the present disclosure, the body is formed from a material selected from the group consisting of a biodegradable material, a carbon fiber, a plastic, a metal, an acrylic, a nylon, a resin, a composite material, and any combination thereof.

[0013] In accordance with a further aspect of the present disclosure, the body further includes a connector selected from the group consisting of a hook, a clip, a pin, a strap, one or more brazier hooks, and any combination thereof. The body is detachable into two parts by loosening the connector for enabling a front zipper fly and/or a front button on the garment to open for facilitating putting on the garment and/or sanitary functions.

[0014] Another exemplary embodiment of the present invention provides a garment covering a lower body of a wearer. The garment is characterized in that exposure of the buttock and the intergluteal cleft is avoided when the wearer bends forward. The garment includes leg pieces, a non-linear waistband, and a supporting device. The leg pieces cover at least a part of the lower body of the wearer. The non-linear waistband has a front section, a back section, and two side sections, wherein the front section is lower than the back section and the two side sections. The supporting device is incorporated into or attached to the front section of the non-linear waistband to apply a tension force to the back section by holding the two side sections in place when the wearer is bending forward. The supporting device further includes a body having a perimeter defined by an upper side and a lower side with respect to the garment. The lower side has a greater length than the upper side. the body is shaped to define a middle portion that bends upward to two distal ends.

[0015] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter. Other aspects and advantages of the present invention are disclosed as illustrated by the embodiments hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The appended drawings contain figures to further illustrate and clarify the above and other aspects, advantages, and features of the present disclosure. It will be appreciated that these drawings depict only certain embodiments of the present invention and are not intended to limit its scope. It will also be appreciated that these drawings are illustrated for simplicity and clarity and have not necessarily been depicted to scale. The present invention will now be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

FIG. **1** is a supporting device capable of incorporating into or attachable to trousers for avoiding buttock cleavage in accordance with certain embodiments of the present disclosure.

FIG. **2** illustrates trousers including a non-linear waistband and the supporting device of FIG. **1** for avoiding buttock cleavage in accordance with certain embodiments of the present disclosure.

FIG. **3** is an alternative supporting device with a body in a V-shape.

FIG. **4** is an alternative supporting device with a body in a parentheses shape.

FIG. **5** is the supporting device of FIG. 1 with a body detachable into two parts in accordance with certain embodiments of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The following detailed description is merely exemplary in nature and is not intended to limit the disclosure or its application and/or uses. It should be appreciated that a vast number of variations exist. The detailed description will enable those ordinary skilled in the art to implement an exemplary embodiment of the present invention without undue experimentation, and it is understood that various changes or modifications may be made in the function and structure described in the exemplary embodiment without departing from the scope of the present invention as set forth in the appended claims.

[0018] The use of the terms "a" and "an" and "the" and "at least one" and similar referents in the context of describing the invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms "comprising," "having," "including," and "containing" are to be construed as open-ended terms (i.e., meaning "including, but not limited to,") unless otherwise noted. The use of any and all examples, or exemplary language (e.g., "such as") provided herein, is intended merely to illuminate the invention better and does not pose a limitation on the scope of the invention unless the claims expressly state otherwise.

[0019] The terms "up", "down", "left", "right", "front", "back", "side", and other words of position are based on the direction or position shown in the front view of the wearer in FIG. 2. When a direction is described, such direction shall include not only the described direction but also a direction inclined in the range of +/- 45 degrees relative to the described direction.

[0020] In light of the background and the problem stated therein, the present invention provides a garment with a non-linear waistband. More specifically, but without limitation, the present invention relates to a device for at-

taching the waistband across the abdomen along a non-linear path and holding the garment in place on the wearer to avoid an exposure of the buttock and the intergluteal cleft, especially when the garment is low-rise jeans and when the upper body of the wearer is bent forward about the waist. Furthermore, the present invention can also provide fashion designers with the ability to design the first-ever non-linear waistband fashions, which is applicable to garments with low-rise, mid-rise, or high-rise design.

[0021] The present invention is motivated by the need for trousers characterized in that an exposure of the buttock and the intergluteal cleft is avoided when the wearer bends forward. Throughout the specification and claims, the term "bend forward" refers to the bending of the upper body of the wearer with respect to the lower body. It is apparent that the movement of the wearer includes, but is not limited to, crouching, sitting, bending over, kneeling, and the like.

[0022] FIG. **1** conceptually illustrates a supporting device **100** (or referred to as "device") that can be incorporated into or attached to trousers or other garments for providing a non-linear waistband and/or avoiding buttock cleavage when a wearer of the trousers is bending forward. The supporting device **100** includes a body **120** having a perimeter defined by an upper side **112** and a lower side **111** with respect to the trousers when incorporated thereto. The lower side **111** has a greater length than the upper side **112.** The body **120** is shaped to define a middle portion **130** that bends upward to two distal ends **131, 132.** In accordance with the first embodiment, the body **120** has a crescent shape with a convex side and a concave side, wherein the convex side defines the lower side **111,** and the concave side defines the upper side **112.** The upper side **112** has a greater radius of curvature than the lower side **111.**

[0023] Particularly and preferably, the body **120** is rigid enough to manage horizontal stress without bending or stretching, yet flexible enough on the vertical plane to bend across the wearer's abdomen. For example, the body **120** is formed from a material selected from the group consisting of a biodegradable material, a carbon fiber, a plastic, a metal, an acrylic, a nylon, a resin, a composite material, and any combination thereof. Furthermore, one or more openings **140** may be provided in the body **120** for increasing the flexibility of the supporting device **100.**

[0024] As shown in FIG. **2,** the supporting device **100** is incorporated into the waistband of a garment at the time of manufacturing, which may be sewed or otherwise adhered or secured to the garment. In certain embodiments, the supporting device **100** may be inserted into a slot or belt loops at the front section of the garment. It is apparent that the supporting device **100** may also be incorporated into or attached to the garment by other means, such as stitching or magnetic force, without departing from the scope and spirit of the present disclosure. The garment is used to cover a lower body of a wearer. Preferably, the garment is trousers **200.** More preferably, the garment is blue jeans with a low-rise design. In certain alternative embodiments, the garment may be a skirt, shorts, or other types of clothing. The garment includes leg pieces **220,** which is a fabric portion, covering at least a part of the lower body of the wearer. Advantageously, the garment has a non-linear waistband **210** for avoiding an exposure of the buttock and the intergluteal cleft when the wearer bends forward, particularly for low-rise jeans. The non-linear waistband **210** has a front section **211,** a back section **214,** and two side sections **212, 213.** The front section **211** is lower than the back section **214** and the two side sections **212, 213.** Therefore, the waistband at the front is not following a straight line or a linear path across the abdomen. In certain embodiments, the non-linear waistband **210** of the present invention is also applicable to other garments with mid-rise or high-rise design. The wearer, particularly those overweight and obese individuals, would have the non-linear waistband **210** travelling across the wearer's abdomen along a non-linear path. Therefore, the non-linear waistband **210** can stay in place without incurring excessive stress and tension to the abdomen of the wearer. Other advantages of applying the non-linear waistband **210** of the present invention in a garment may include enabling unique stylistic designs with the first-ever non-linear waistband fashion. To enable such non-linear waistband **210,** the supporting device **100** as described above is needed.

[0025] The supporting device **100** is incorporated into or attached to the front section **211** of the non-linear waistband **210** to apply a tension force to the back section **214** when the wearer is bending forward. Particularly, the tension force is applied to the back section **214** by the two side sections **212, 213** to maintain the back section **214** in place at a vertical position equivalent to the two side sections **212, 213.** When the wearer bends over or kneels, the front section **211** and the back section **214** of the garment are not of the same height. The vertical position of the back section **214** is not affected by the body movement and is maintained substantially at the same level. This explains the concept of the present invention and the reasons why the exposure of the buttock and the intergluteal cleft will not occur.

[0026] The illustrated embodiments in FIG. **1** and FIG. **2** show a supporting device **100** having a body **120** in a crescent shape. It is apparent that the body **120** may be in other shapes without departing from the scope and spirit of the present invention. For example, as shown in FIG. **3,** the body of the supporting device **300** is in a V-shape. Similarly, as shown in FIG. **4,** the body of the supporting device **400** is in a parentheses shape. In all the above-described supporting devices **100, 200, 300,** the middle portion **130** tapers to the two distal ends **131, 132,** and the middle portion **130** and the two distal ends **131, 132** are not formed along a straight line.

[0027] Furthermore, the above-described supporting devices **100, 200, 300** are all provided as one single de-

vice that traverses the abdomen from hip to hip inside the waistband. Such configuration comes with the deficiency and difficulty for the garment to include a zipper fly or buttons at the front top side of the garment. In this regard, the garment may need to use a less-conventional approach. One or more zippers and/or buttons may be added to the garment at the back section **214,** the two side sections **212, 213,** or diagonally at the front section **211.** The wearer can open the zipper and/or buttons from the back or side for facilitating putting on the garment and/or sanitary functions. However, the design may be used primarily for women's garments.

[0028] Alternatively, as illustrated in FIG. **5,** a modification to the present invention is proposed to solve the above-stated issue. The supporting device **500** is provided as a two-piece device that can be detached into two parts **501, 502.** Such modification enables the use of a conventional zipper fly and/or buttons, and the supporting device **500** can be accommodated in men's garments. The supporting device **500** includes a connector **510** for attaching or detaching the two parts **501, 502.** The connector **510** may be selected from the group consisting of a hook, a clip, a pin, a strap, one or more brazier hooks, and any combination thereof. Such a two-piece device, when applied to the garment, allows the garment to have a zipper fly or buttons at the front top side of the garment. When the wearer properly puts on the garment, the two parts **501, 502** should be connected and attached to each other using the connector **510,** such that the supporting device **500** can apply a tension force to the back section **214.** On the other hand, the body is detached into two parts **501, 502** by loosening the connector **510** for allowing a front zipper fly and/or a front button on the garment to open for facilitating putting on the garment and/or sanitary functions.

[0029] It will be appreciated that the garment described hereinabove may be any garment having a waistband, such as a pair of trousers, a skirt, a skort, or a backless dress, and may have a low-rise, mid-rise, or high-rise design.

[0030] While exemplary embodiments have been presented in the foregoing detailed description of the invention, it should be appreciated that a vast number of variations exist. It should further be appreciated that the exemplary embodiments are only examples, and are not intended to limit the scope, applicability, operation, or configuration of the invention in any way. Rather, the foregoing detailed description will provide those skilled in the art with a convenient road map for implementing an exemplary embodiment of the invention, it being understood that various changes may be made in the function and arrangement of steps and method of operation described in the exemplary embodiment without departing from the scope of the invention as set forth in the appended claims.

Claims

1. A device capable of incorporating into or attachable to a garment for avoiding buttock cleavage when a wearer of the garment is bending forward, the device comprising:
a body (120) having a perimeter defined by an upper side (112) and a lower side (111) with respect to the garment when incorporated thereto, the lower side (111) having a greater length than the upper side (112), the body (120) being shaped to define a middle portion (130) that bends upward to two distal ends (131), (132), wherein:

the garment has a non-linear waistband (210) such that a front section (211) is lower than a back section (214) and two side sections (212), (213); and
the two distal ends (131), (132) are arranged to hold the two side sections (212), (213), and the middle portion (130) is arranged to hold the front section (211), thereby a tension force is applied to the back section (214) by the two side sections (212), (213) to maintain the back section (214) in place at a vertical position equivalent to the two side sections (212), (213) when the wearer is bending forward.

2. The device of claim 1, wherein the body (120) is in a crescent shape with a convex side and a concave side, wherein the convex side defines the lower side (111), the concave side defines the upper side (112), and the upper side (112) has a greater radius of curvature than the lower side (111).

3. The device of claim 1, wherein the body (120) is in a V-shape, a parentheses shape, or a crescent shape, wherein the middle portion (130) tapers to the two distal ends (131), (132), and the middle portion (130) and the two distal ends (131), (132) are not formed along a straight line.

4. The device of claim 1, wherein the body (120) is formed from a material selected from the group consisting of a biodegradable material, a carbon fiber, a plastic, a metal, an acrylic, a nylon, a resin, a composite material, and any combination thereof.

5. The device of claim 1, wherein:

the body (120) further comprises a connector (510) selected from the group consisting of a hook, a clip, a pin, a strap, one or more brazier hooks, and any combination thereof; and
the body (120) is detachable into two parts (501), (502) by loosening the connector (510) for enabling a front zipper fly and/or a front button on the garment to open for facilitating putting on the

garment and/or sanitary functions.

6. A garment, comprising:

a fabric portion covering at least a part of a lower body of a wearer; and
a non-linear waistband (210) having a front section (211), a back section (214), and two side sections (212), (213), wherein the front section (211) is lower than the back section (214) and the two side sections (212), (213), such that the non-linear waistband (210) travels across the wearer's abdomen along a non-linear path; and
a supporting device (100) incorporated into or attached to the front section (211) of the non-linear waistband (210) to apply a tension force to the back section (214) by holding the two side sections (212), (213) in place, wherein the supporting device (100) further comprises:

a body (120) having a perimeter defined by an upper side (112) and a lower side (111) with respect to the garment;
the lower side (111) has a greater length than the upper side (112); and
the body (120) is shaped to define a middle portion (130) that bends upward to two distal ends (131), (132).

7. The garment of claim 6, wherein the body (120) is in a crescent shape with a convex side and a concave side, wherein the convex side defines the lower side (111), the concave side defines the upper side (112), and the upper side (112) has a greater radius of curvature than the lower side (111).

8. The garment of claim 6, wherein the body (120) is in a V-shape, a parentheses shape, or a crescent shape, wherein the middle portion (130) tapers to the two distal ends (131), (132), and the middle portion (130) and the two distal ends (131), (132) are not formed along a straight line.

9. The garment of claim 6, wherein the body (120) is formed from a material selected from the group consisting of a biodegradable material, a carbon fiber, a plastic, a metal, an acrylic, a nylon, a resin, a composite material, and any combination thereof.

10. The garment of claim 6, wherein:

the body (120) further comprises a connector (510) selected from the group consisting of a hook, a clip, a pin, a strap, one or more brazier hooks, and any combination thereof; and
the body (120) is detachable into two parts (501), (502) by loosening the connector (510) for enabling a front zipper fly and/or a front button on the trousers to open for facilitating putting on the trousers and/or sanitary functions.

11. A garment covering a lower body of a wearer, **characterized in that** an exposure of the buttock and the intergluteal cleft is avoided when the wearer bends forward, the garment comprising:

leg pieces (220) covering at least a part of the lower body of the wearer;
a non-linear waistband (210) having a front section (211), a back section (214), and two side sections (212), (213), wherein the front section (211) is lower than the back section (214) and the two side sections (212), (213); and
a supporting device (100) incorporated into or attached to the front section (211) of the non-linear waistband (210) to apply a tension force to the back section (214) by holding the two side sections (212), (213) in place when the wearer is bending forward, wherein the supporting device (100) further comprises:

a body (120) having a perimeter defined by an upper side (112) and a lower side (111) with respect to the garment;
the lower side (111) has a greater length than the upper side (112); and
the body (120) is shaped to define a middle portion (130) that bends upward to two distal ends (131), (132).

12. The garment of claim 11, wherein the body (120) is in a crescent shape with a convex side and a concave side, wherein the convex side defines the lower side (111), the concave side defines the upper side (112), and the upper side (112) has a greater radius of curvature than the lower side (111).

13. The garment of claim 11, wherein the body (120) is in a V-shape, a parentheses shape, or a crescent shape, wherein the middle portion (130) tapers to the two distal ends (131), (132), and the middle portion (130) and the two distal ends (131), (132) are not formed along a straight line.

14. The garment of claim 11, wherein the body (120) is formed from a material selected from the group consisting of a biodegradable material, a carbon fiber, a plastic, a metal, an acrylic, a nylon, a resin, a composite material, and any combination thereof.

15. The garment of claim 11, wherein:

the body (120) further comprises a connector (510) selected from the group consisting of a hook, a clip, a pin, a strap, one or more brazier hooks, and any combination thereof; and

the body (120) is detachable into two parts (501), (502) by loosening the connector (510) for allowing a front zipper fly and/or a front button on the garment to open for facilitating putting on the garment and/or sanitary functions.

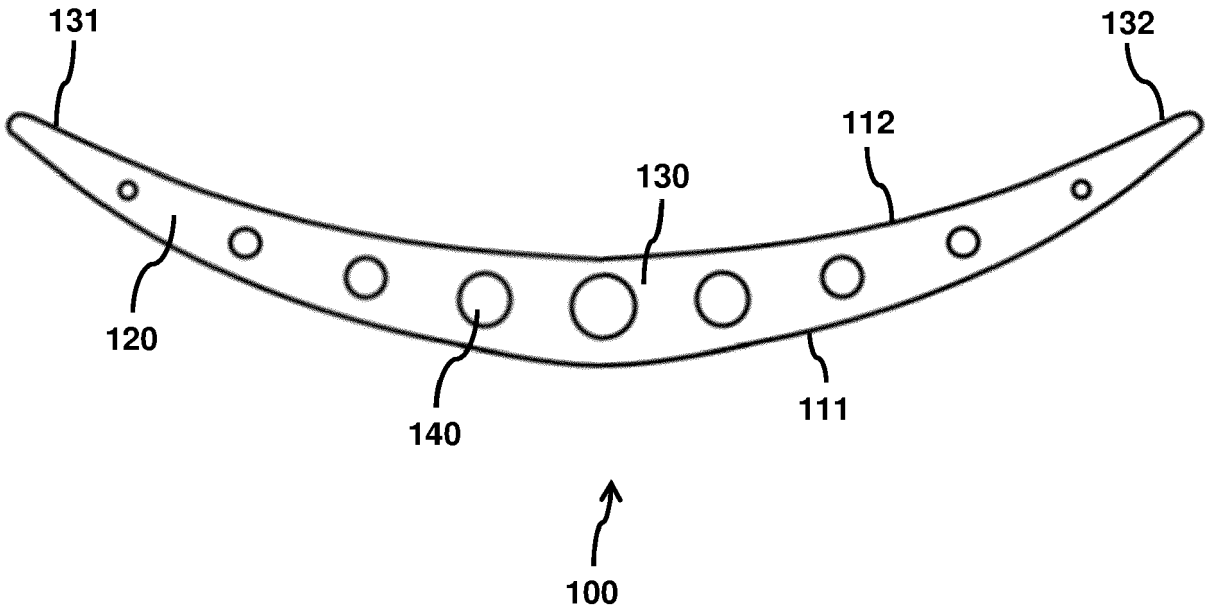

FIG. 1

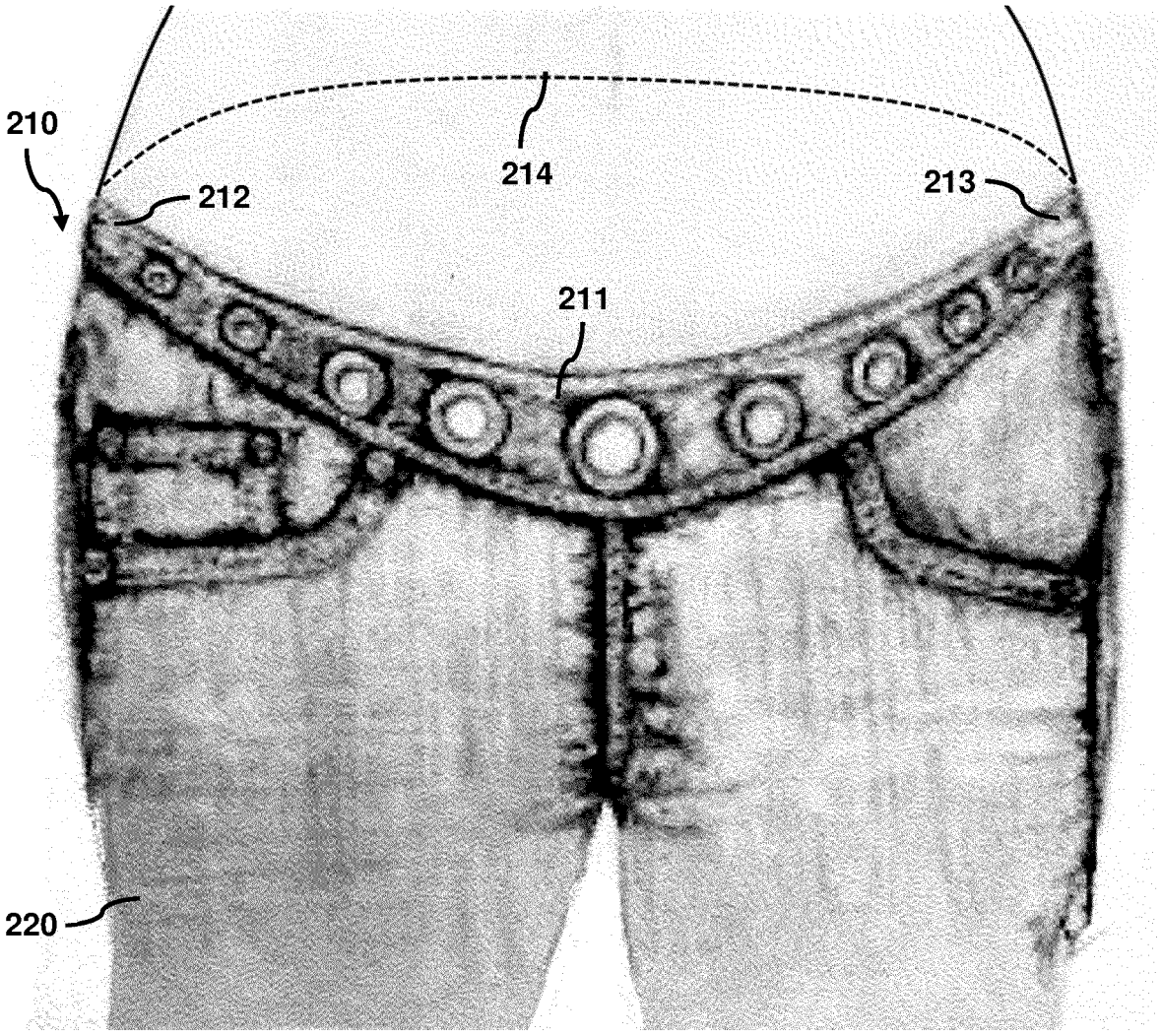

FIG. 2

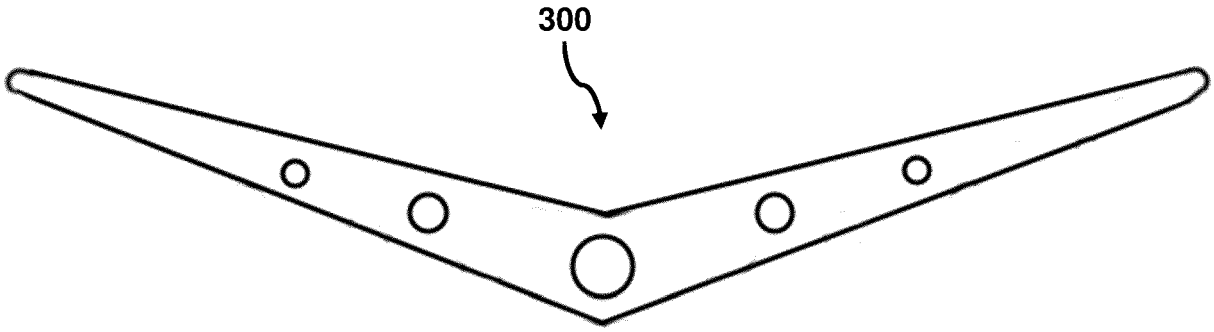

FIG. 3

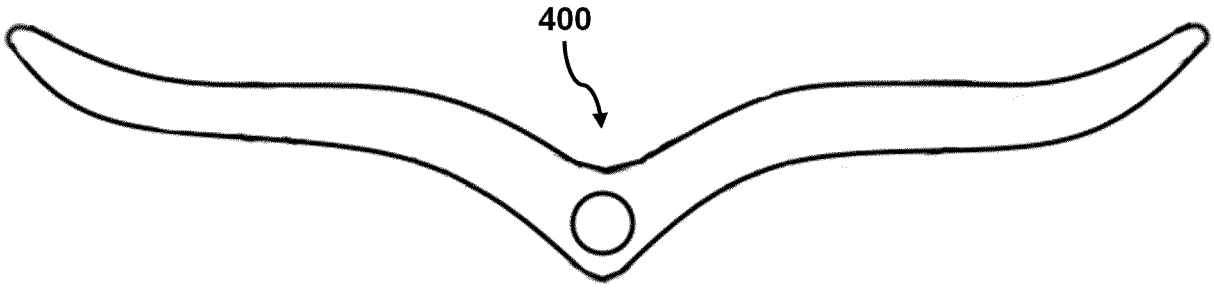

FIG. 4

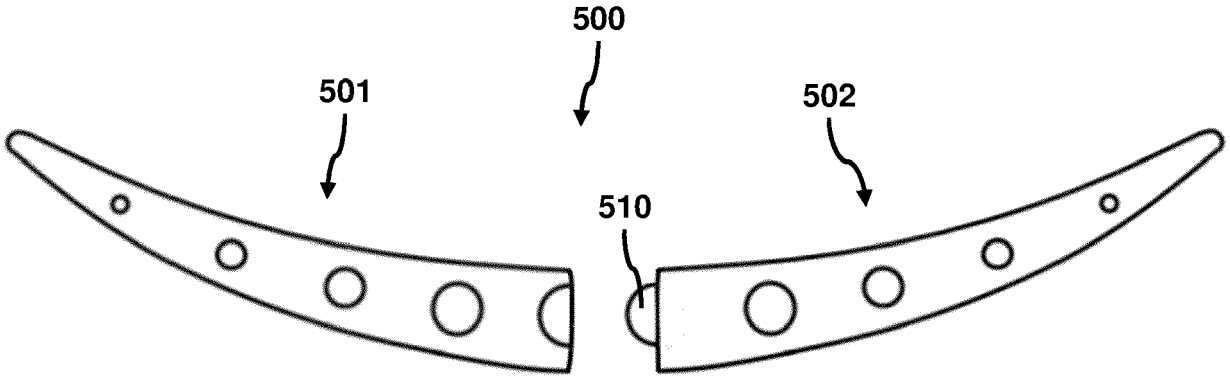

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 16 5602

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	KR 102 103 111 B1 (GIM SANG DEOK [KR]) 21 April 2020 (2020-04-21)	1-4,6-9, 11-14	INV. A41F9/00
A	* paragraphs [0040], [0041]; figures 1a,1b,3 *	5,10,15	A41D1/06
X	US 2021/298396 A1 (LAZIC NATASA [CA] ET AL) 30 September 2021 (2021-09-30)	1-4,6-9, 11-14	
A	* paragraph [0022]; figure 8 *	5,10,15	
A	EP 2 666 377 B1 (FREDDY SPA [IT]) 27 August 2014 (2014-08-27) * abstract; figures 3,4B *	5,10,15	

TECHNICAL FIELDS SEARCHED (IPC)

A41F
A41D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	26 July 2023	da Silva, José

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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