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(54) **Elasticized cycling suit**

Elastischer Radleranzug

Combinaison élastique de cyclisme

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Description

Field of application

[0001] The present invention, in its more general aspect, concerns an elasticized cycling suit. In particular the invention refers to a bodysuit or shorts of varying lengths structured for cycling, at a competitive or recreational level.

Prior art

[0002] It is known that specialized cycling garments must remain perfectly tight fitting around the legs, both during pedaling as well as at rest, almost as if they were a second skin. In particular, they must not fold up on themselves or move or twist around the leg, during intense use. To satisfy these needs, elasticized fabrics are used, obtained from elastic spun yarn, according to weft - warp designs so as to confer the desired elasticity and tight fit to the body.

[0003] It is also known to make shorts in which there is a circumferential elastic strap, also called *leg grip,* which, in use, tightly holds on to the thigh or calf and works to stop the garment from moving around while pedaling. Said band is usually added to the outer edge of the material which creates the leg of the shorts, or is sewn inside of the shorts themselves (see US-A-2008/0032824).

[0004] The elastic strap, in more detail, is formed in the prior art as a closed ring, and when not stretched it has a smaller diameter than that of the average leg of a cyclist (correlated to the size), so as to tighten around the entire circumference of the thigh or calf, with a greater tension than that of the elasticized material of the rest of the garment (see US-A-6 817 037, US-A-5 819 322 and US-A-5 271 101).

[0005] Such a provision is very common, but it has some drawbacks. Firstly, the elastic strap tends to rather annoy the cyclist, especially after extended usage. This is due to the fact that the muscles swell up with fatigue, and in these conditions the elastic strap digs in excessively slowing down the circulation of the surface, causing an annoying feeling of constriction.

[0006] Another drawback is that the shorts are produced with sizes substantially correlated to the waistline, and not to the size of the muscle groups, and generally the elastic strap at the leg is rather tight, so as to avoid not being able to tighten around the thigh or the calf of a cyclist with a tendentially lean and thin physique. This is the reason why, however, cyclists with a larger muscle mass may find the elastic strap at the leg too tight, and therefore uncomfortable, even at rest. Basically, the fit is not optimal.

[0007] For these reasons, the prior art of cycling suits, including thigh length shorts or three quarter length suits provided with the described leg elastic strap or leg grip, does not adequately satisfy the aforementioned comfort needs nor a perfect tight fit whilst pedaling.

[0008] It must be emphasized that there is a strong need of professional cyclists, who look for the best performance, as well as of recreational or amateur cyclists that appreciate a garment with high technical performance, to improve the cycling garments of the type considered here.

Summary of the invention

[0009] The technical problem forming the basis of the present invention is to devise and provide a cycling suit able to guarantee comfort and a constant tight fit around the leg or around the calf, during use and in all the pedaling phases, even with long-term and/or intense use.

[0010] This problem is solved, according to the present invention, with a tight fit type elasticized cycling suit, comprising at least one leg opening, intended to be positioned around the thigh or calf of the user when used, **characterized in that** said at least one leg opening comprises an edge band with a differentiated elasticity compared to the garment, and extending for a portion of the circumferential edge of said opening. According to one aspect of the invention, said band with differentiated elasticity substantially extends for half of the circumferential edge of the leg opening. According to a further and preferred aspect of the invention, said band is located at the back edge of the leg opening of the garment.

[0011] In a preferred embodiment, said band with differentiated elasticity is obtained with one elastic strap fixed on to the edge that defines said leg opening, and extends for a portion of its circumferential edge. Preferably said elastic strap wraps around the back semi-circumference of the edge of the leg opening. In alternative embodiments the band with differentiated elasticity is obtained with a plurality of elastic straps, each one for a respective circumferential portion of the edge of the leg opening.

[0012] In more detail, and according to further aspects of the invention, the garment is a pair of thigh length short pants or a three quarter length suit or a bodysuit with leg portions each made from two parts respectively front and back joined along the inner and outer sides; said elastic strap is associated with the end of one of said parts, preferably the back part, substantially for its entire width. The length of the front and back parts of the leg of the garment can be made to match, for example with a hem on the part without elastic strap, as shall later be made clearer with the aid of an example.

[0013] In one preferred embodiment, a substantially rectangular shaped elastic strap has its upper long side fixed, for example sewn, to the edge of the back part of the respective leg opening of the garment, and the side edges, corresponding to the short sides, fixed along the inner side and along the outer side of the leg portion, at the joining point of said front and back parts. The front part is folded back on itself and sewn, forming a hem that matches the length of the leg at the front and back.

[0014] The fabric of the garment is preferably Lycra®, with a suitable elasticity value. Said band with differentiated elasticity, preferably obtained with the described elastic strap, has an elasticity such as to provide a greater tension, for the same deformation, than the rest of the garment, so as to "tighten" the leg end.

[0015] In equivalent applications of the invention, the garment is configured as short pants, in which the aforementioned leg opening, in use, is around the thigh of the cyclist, or as short three quarter type pants, in which the leg opening is at calf height. The invention is applied in the same way as an elasticized cycling garment commonly called "bodysuit" and integrally equipped with long or short sleeved vest and/or with suspenders.

[0016] In a further embodiment of the invention, the garment is represented by a so called leg guard, which is a garment with the purpose of covering a single leg of the cyclist, normally extending from the thigh to the calf or ankle. The described band with differentiated elasticity in this case, is provided at the upper end to stop the leg guard from sliding down.

[0017] The garment according to the invention obtains a good stability of positioning of the leg portion during pedaling, and at the same time avoids the annoying feeling of constriction at the thigh or at the calf, even during very intense use. Moreover it has a better fit, i.e. it adapts to the physical anatomy of the cyclist in a more versatile way than known ones; in particular a pair of short pants according to the invention, having a set size, is equally comfortable for cyclists having more or less muscle mass and therefore with different fitting needs.

[0018] In practice, the cyclist enjoys more freedom of movement and greater pedaling efficiency.

[0019] Further characteristics and advantages of the present invention shall become clear from the following description of a preferred embodiment, given for indicating and not limiting purposes with reference to the drawings attached.

Brief description of the drawings

[0020]

Figure 1 schematically represents a front view of a pair of shorts according to an embodiment of the invention.

Figure 2 represents a rear view of the pair of shorts in Fig. 1.

Fig. 3 represents a schematic section of an end leg portion of the pair of shorts in Figs. 1 and 2.

Fig. 4 represents a pair of three quarter length suit, made according to the invention.

Detailed description of a preferred embodiment

[0021] With reference to Figs. 1-3, a tight fitting elasticized cycling garment is shown, in the specific case a pair of shorts, wholly indicated with reference numeral 10.

[0022] Said shorts 10 are made from an elasticized fabric and comprise two leg portions 12 which in the example reach thigh length. Each leg portion 12 has a respective leg opening 14 equipped with an elastic edge band, generally indicated with reference numeral 16. Said band 16 extends for a portion of the circumferential edge of the opening 14 and has a differentiated elasticity compared to the rest of the shorts, so that, in use, it tightens around the thigh of the cyclist keeping the shorts tight fitting.

[0023] In the illustrated embodiment, said band 16 is obtained with an elastic strap 18 positioned at the back (Fig. 2) and that substantially extends around half of the edge of the opening 14 wrapping around its back semicircumference.

[0024] More in detail, and according to a preferred embodiment, each leg portion 12 of the garment 10 is made up of a front part 12a and of a back part 12b, joined together, for example sewn, along the inner side 20a and along the outer side 20b; the elastic strap 18 is associated with the end of the back part 12b and in undeformed conditions (at rest) extends for the entire width of said back part 12b, basically corresponding to half of the circumference of the opening 14. The elastic strap 18 preferably has a rectangular shape with its upper edge 18a sewn onto the back part of the leg 12b, and side edges 18c (short sides) sewn along the inner side 20a and along the outer side 20b, at the joining point of the aforementioned leg parts 12a and 12b.

[0025] The front leg part 12a, which in the example is the part without elastic strap, is longer than the back part 12b equipped with elastic strap 18. Such a difference in length substantially corresponds to the height of the elastic strap itself, so as to match the edge of the finished short pants, ensuring that the bottom edge of the front part 12a is at the same height as the bottom edge 18b of the elastic strap 18.

[0026] As an alternative, the front part 12a can have an even greater length, and to finish off the pair of shorts a strip of said front part 12a can be folded back on itself and sewn forming a hem and matching the elastic strap 18.

[0027] The section of Fig. 3 schematically shows the strap 18 that covers half of the edge circumference of a leg opening 14, and notably the back part, and highlights the side edges 18c sewn onto the inner sides 20a and outer sides 20b, at the sewing point between the front and back part 12a, 12b that make up the leg of the shorts. The thicknesses in Fig. 3 are amplified in order to make the representation clearer.

[0028] The shorts 10 are preferably made out of Lycra®, with a suitable elasticity value. The band 16 has an elasticity such as to tighten more, for the same defor-

mation, compared to the rest of the shorts 10, so as to make a holding area of the leg part 12 on the body of the cyclist. Preferably the tension of the band 16, for the same deformation, is around double than that generally given by the rest of the shorts 10.

[0029] The shorts 10 can be made in a variety of versions, for winter use, summer, etc... For example the illustrated shorts in the figures are equipped with suspenders 22, which obviously are not necessary for the purposes of the invention.

[0030] Fig. 4 shows another embodiment in which the garment 10 are three quarter type shorts, with leg portions 12 that go down to the calf, and equipped with the described band with differentiated elasticity 16, preferably made out of the elastic strap 18 that wraps around the back semi-circumference of the opening 14, in a similar way to what has previously been described and illustrated in Figs. 1-3. The other characteristics, including the section of Fig. 3, can be equivalent to those previously described.

[0031] In further embodiments, the garment 10 can be configured as a bodysuit equipped with a short or long sleeved vest. In another embodiment of the invention, the described band 16 is associated with a so called leg guard used to cover the leg of the cyclist.

Claims

1. Tight-fitting elasticized type cycling suit (10), comprising at least a leg opening (14) intended in use to be positioned around the thigh or leg of the user, said at least one leg opening (14) comprising an elastic rim band (16) having a differentiated elasticity compared to said suit (10), **characterized in that** said band (16) extends for a portion of the circumferential edge of said leg opening (14).

2. Suit according to claim 1, **characterized in that** said band (16) extends for half of the circumferential edge of said leg opening (14).

3. Suit according to claim 1 or 2, **characterized in that** said band (16) is located at the back on the edge of said leg opening (14).

4. Suit according to any of claims 1 to 3, **characterized in that** said band (16) has an elasticity such as to provide a greater tension, for the same amount of deformation, than the rest of the suit (10), so as to tighten the leg opening with which it is associated during use.

5. Suit according to any of the previous claims, **characterized in that** said elastic band (16) is obtained with at least an elastic strap (18) fixed to the edge of the suit that defines said leg opening (14), said elastic strap (18) extending for a portion of the edge of the circumference of the same opening.

6. Suit according to claim 5, **characterized in that** it comprises leg portions (12) each formed by a front part (12a) and by a back part (12b) joined along the inner and outer sides (20a, 20b), and with edges that form said leg opening (14), and in which said elastic strap (18) is applied to the edge of one from said front and back parts (12a, 12b), substantially for its entire width.

7. Suit according to claim 6, **characterized in that** said elastic strap (18) has a substantially rectangular shape, and has an upper edge (18a) fixed to the edge of the back part (12b) of the leg portion (12) of the suit, and side edges (18c) fixed along the inner side (20a) and along the outer side (20b) of said leg portion (12), at the joining point of said front and rear parts (12a, 12b).

8. Suit according to claim 7, **characterized in that** said front leg part (12a) is folded back on itself and sewn, forming a hem that matches the length of the elastic strap (18) applied to,the back leg part (12b).

9. Suit according to any of the previous claims, said suit being thigh length shorts, three quarter calf length shorts, a bodysuit or a leg guard.

Patentansprüche

1. Enganliegender, elastischer Radsport-Anzug (10), umfassend mindestens eine Beinöffnung (14), die während der Verwendung dafür vorgesehen ist, um den Oberschenkel oder das Bein des Verbrauchers herum positioniert zu sein, wobei mindestens eine Beinöffnung (14) eine elastische Randeinfassung (16) mit einer verglichen zum Anzug (10) unterschiedlichen Elastizität umfasst, **dadurch gekennzeichnet, dass** sich die Einfassung (16) über einen Teil der die Beinöffnung (14) umlaufenden Kante erstreckt.

2. Anzug gemäß Anspruch 1, **dadurch gekennzeichnet, dass** sich die Einfassung (16) über die Hälfte der die Beinöffnung (14) umlaufenden Kante erstreckt.

3. Anzug gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** sich die Einfassung (16) auf der Rückseite der die Beinöffnung (14) umlaufenden Kante befindet.

4. Anzug gemäß einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Einfassung (16) eine Elastizität aufweist, um eine größere Spannung, für dasselbe Ausmaß an Verformung, als beim

restlichen Anzug (10) bereitzustellen, um die Beinöffnung, mit dem sie während der Verwendung assoziiert ist, zu straffen.

5. Anzug gemäß einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die elastische Einfassung (16) mit mindestens einem elastischen Band (18) ausgestattet ist, das an der Kante des Anzugs, die die Beinöffnung (14) definiert, befestigt ist, wobei sich das elastische Band (18) über einen Teil des Kantenumfangs derselben Beinöffnung erstreckt.

6. Anzug gemäß Anspruch 5, **dadurch gekennzeichnet, dass** er Schenkelabschnitte (12), die jeweils aus einem vorderen Teil (12a) und aus einem hinteren Teil (12b) gebildet sind, umfasst und entlang der inneren und äußeren Seiten (20a, 20b) miteinander verbunden sind, und Kanten aufweisen, die die Beinöffnung bilden und in denen das elastische Band (18) im Wesentlichen über seine gesamte Breite an der Kante einer der vorderen und hinteren Teile (12a, 12b) befestigt ist.

7. Anzug gemäß Anspruch 6, **dadurch gekennzeichnet, dass** das elastische Band (18) eine im Wesentlichen rechteckige Form und eine obere Kante (18a) hat, die an der Kante des hinteren Teils (12b) des Schenkelabschnitts (12) des Anzugs befestigt ist, und Seitenkanten (18c), die entlang der inneren Seite (20a) und entlang der äußeren Seite (20b) des Schenkelabschnitts (12), am Verbindungspunkt der Vorder- und Rückenteile (12a, 12b) befestigt sind.

8. Anzug gemäß Anspruch 7, **dadurch gekennzeichnet, dass** der vordere Schenkelteil (12a) in sich selbst zurückgeschlagen und vernäht ist und dabei einen Saum bildet, der zur Länge des elastischen Bands (18), das auf dem hinteren Schenkelteil (12b) angebracht ist, passt.

9. Anzug gemäß einem der vorangegangenen Ansprüche, wobei der Anzug eine Short bis zum Oberschenkel, eine Dreiviertelhose bis zur Wade, ein Ganzkörperanzug oder ein Beinschutz ist.

Revendications

1. Combinaison de cyclisme de type élastique bien ajustée (10), contenant au moins une ouverture pour la jambe (14) destinée en utilisation à être positionnée autour de la cuisse ou de la jambe de l'utilisateur, ladite au moins une ouverture pour la jambe (14) comportant une bande de pourtour élastique (16) ayant une élasticité différenciée comparativement à ladite combinaison (10), **caractérisée en ce que** ladite bande (16) s'étend sur une partie du bord circonférentiel de ladite ouverture pour la jambe (14).

2. Combinaison selon la revendication 1, **caractérisée en ce que** ladite bande (16) s'étend sur la moitié du bord circonférentiel de ladite ouverture pour la jambe (14).

3. Combinaison selon la revendication 1 ou 2, **caractérisée en ce que** ladite bande (16) est positionnée à l'arrière sur le bord de ladite ouverture pour la jambe (14).

4. Combinaison selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** ladite bande (16) a une élasticité de manière à fournir une tension plus élevée, pour la même quantité de déformation, que le reste de la combinaison (10), afin de resserrer l'ouverture pour la jambe avec laquelle elle est associée pendant l'utilisation.

5. Combinaison selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ladite bande élastique (16) est obtenue à l'aide d'au moins une lanière élastique (18) fixée au bord de la combinaison qui définit ladite ouverture pour la jambe (14), ladite lanière élastique (18) s'étendant sur une partie du bord de la circonférence de la même ouverture.

6. Combinaison selon la revendication 5, **caractérisée en ce qu'**elle comporte des parties de jambe (12) chacune étant formée d'une partie avant (12a) et d'une partie arrière (12b) jointes le long des côtés intérieur et extérieur (20a, 20b), et avec des bords qui forment ladite ouverture pour la jambe (14), et dans laquelle ladite lanière élastique (18) est appliquée au bord de l'une desdites parties avant et arrière (12a, 12b), sensiblement sur sa largeur entière.

7. Combinaison selon la revendication 6, **caractérisée en ce que** la lanière élastique (18) a une forme sensiblement rectangulaire, et a un bord supérieur (18a) fixée au bord de la partie arrière (12b) de la partie de jambe (12) de la combinaison, et des bords latéraux (18c) fixés le long du côté intérieur (20a) et le long du côté extérieur (20b) de ladite partie de jambe (12), au niveau du point de jonction desdites parties avant et arrière (12a, 12b).

8. Combinaison selon la revendication 7, **caractérisée en ce que** ladite partie de jambe avant (12a) est repliée sur elle-même et cousue, formant un ourlet qui s'adapte à la longueur de la lanière élastique (18) appliquée à la partie de jambe arrière (12b).

9. Combinaison selon l'une quelconque des revendications précédentes, ladite combinaison étant un cuissard à longueur de cuisse, un cuissard trois-

quart, un maillot ou une jambière.

Fig. 2

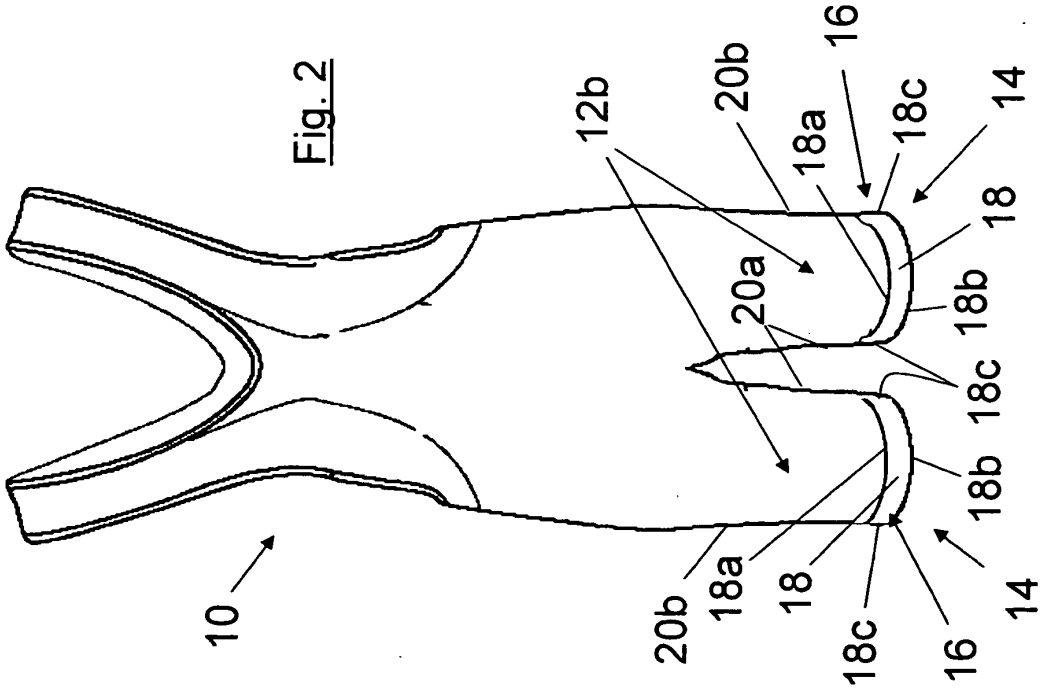
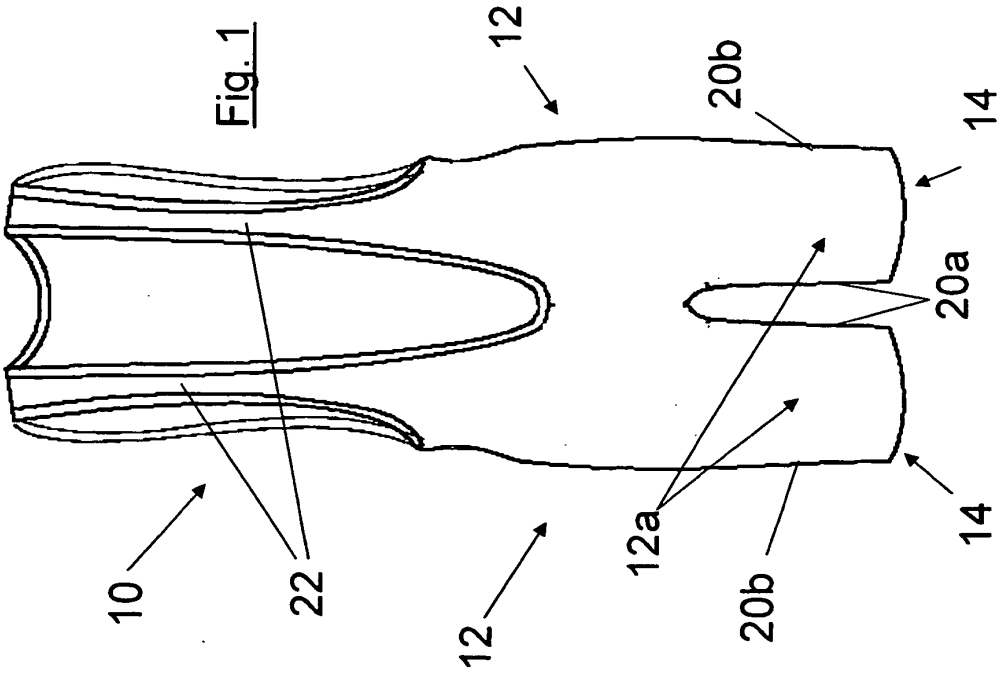

10
20b
18a
18
18c
16
14
18b
18c
20a
12b
20b
18a
16
18c
14
18
18b

Fig. 1


10
22
12
12a
20b
14
20a
20b
14
12

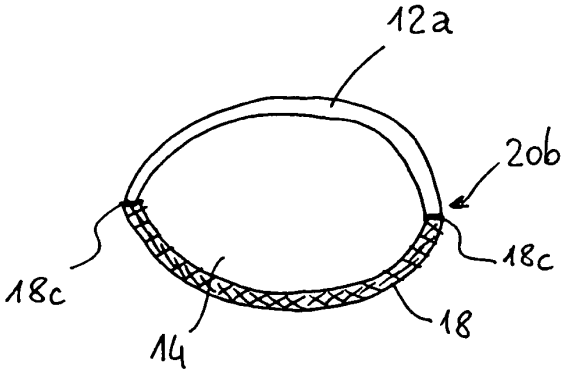


FIG. 3

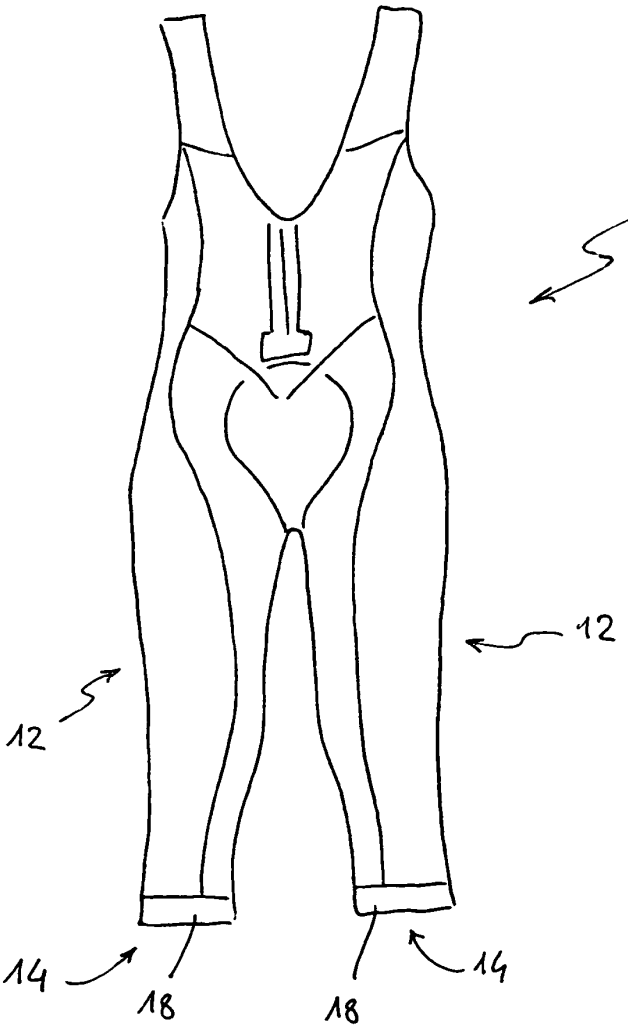


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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