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(51) INT CL:
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(56) Documents Cited:
US 5324244 A
US 20150057133 A1
US 20220232959 A1
US 20080120755 A1

(58) Field of Search:
INT CL **A63B**
Other: **SEARCH-PATENT**

(54) Title of the Invention: **Weightlifting wrist straps**
Abstract Title: **Weightlifting wrist strap with woven padding area**

(57) A weightlifting wrist strap is made from a length of material (12) having a first major surface and a second major surface. The length of material (12) includes a base weave (28) made up of first spun fibres extending in the lengthways direction of the length of material and second spun fibres woven in a second direction that is transverse to that lengthways direction. The first and second spun fibres each have a hardness and a tensile strength. Also a plurality of filaments (34, fig. 5) extend in the lengthways direction of the length of material (12) and have at least one of a filament hardness and filament tensile strength that exceeds the hardness and tensile strength of the first and second spun fibres. Padding made of third spun fibres (38) at least partially covers the first major surface and is situated to contact a wrist of the user when worn. The third spun fibres have a hardness that is less than the filament hardness.

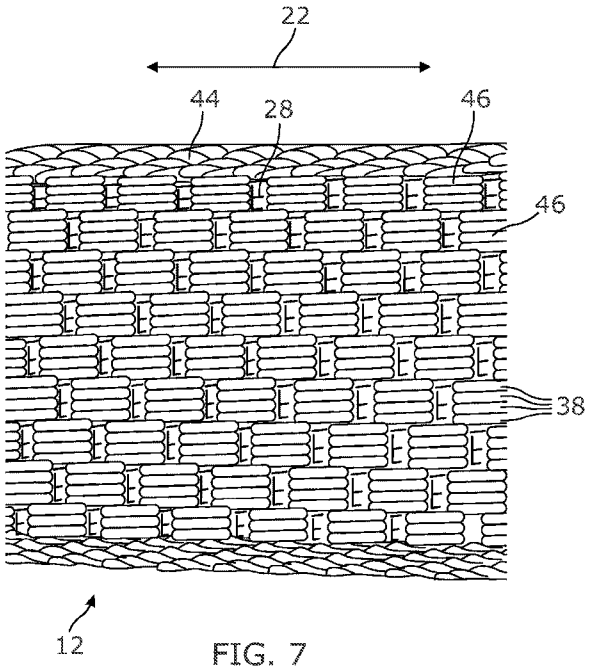

FIG. 7

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

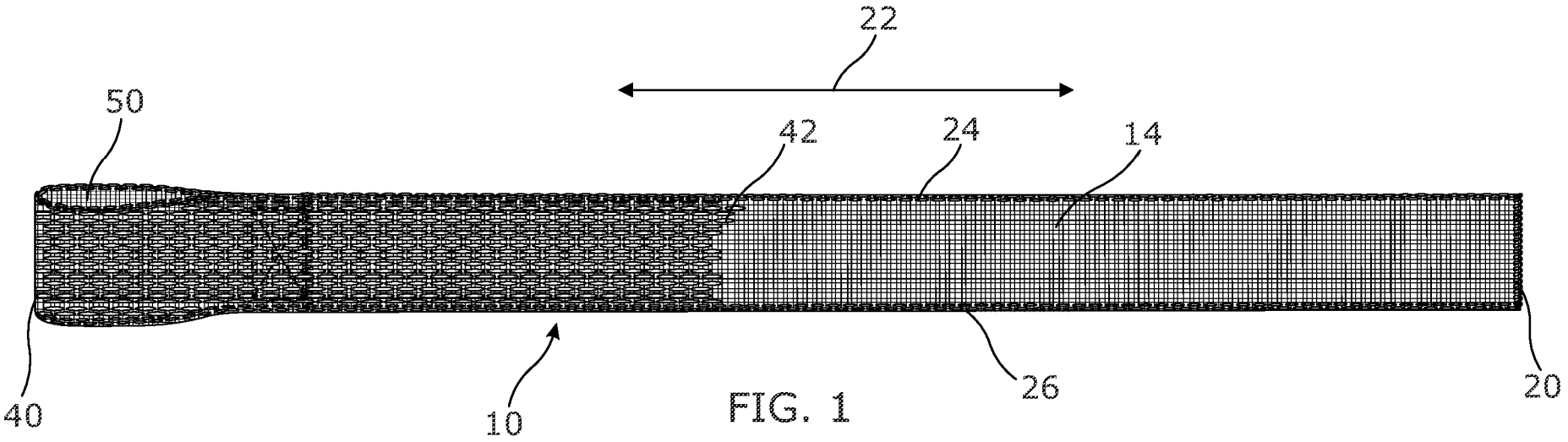

FIG. 1

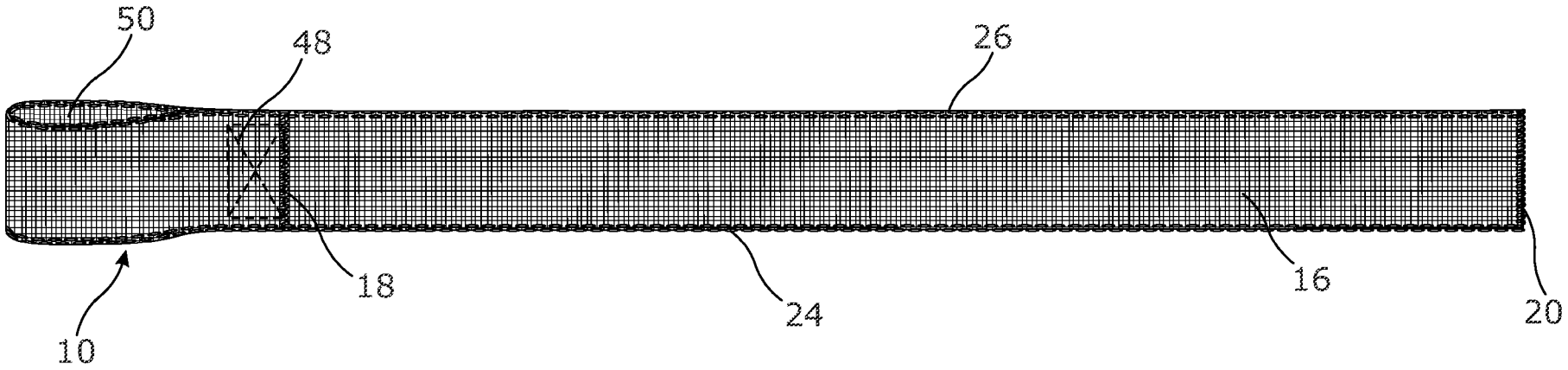

FIG. 2

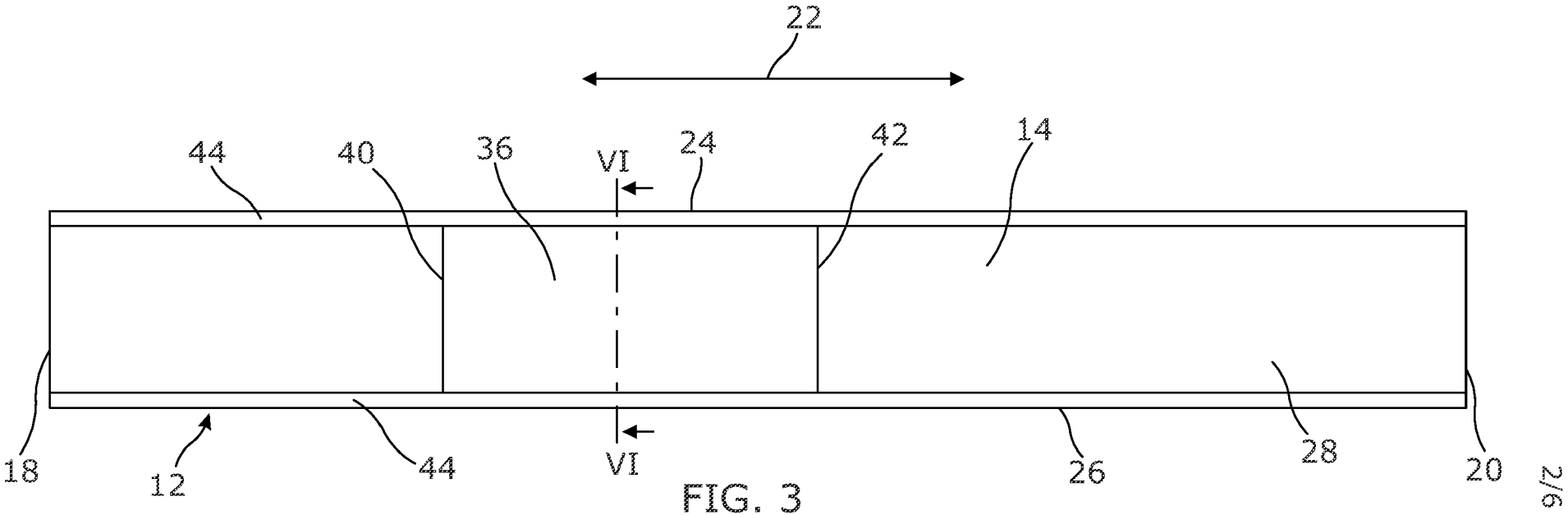

FIG. 3

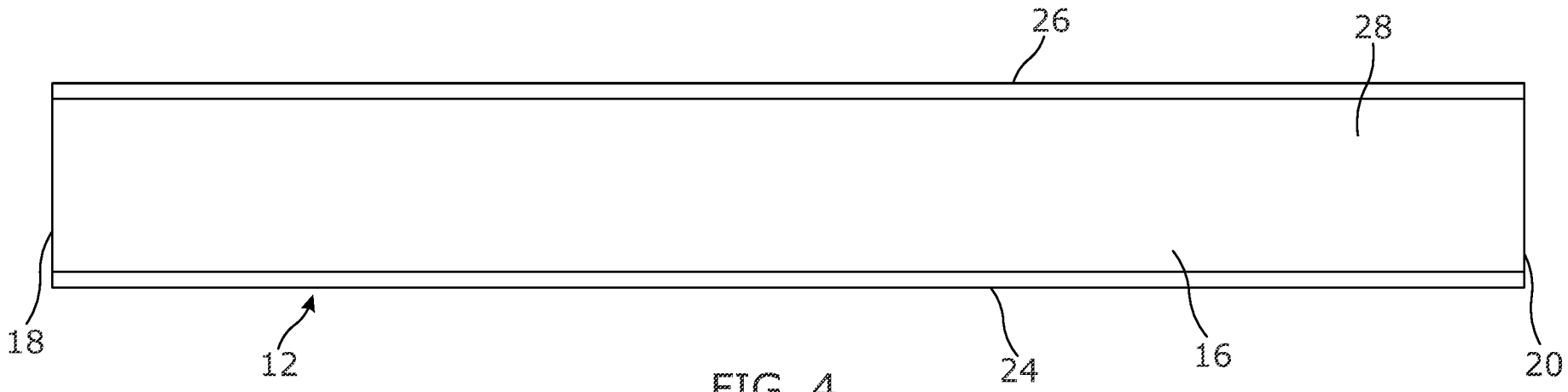

FIG. 4

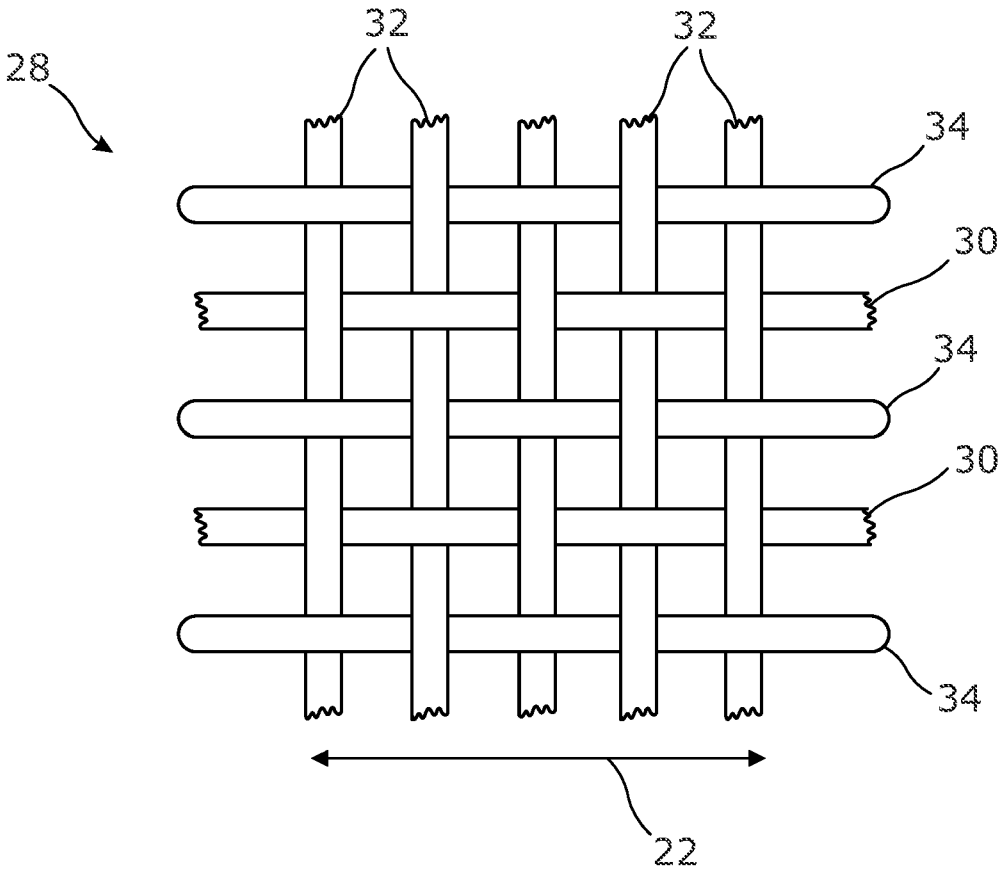

FIG. 5

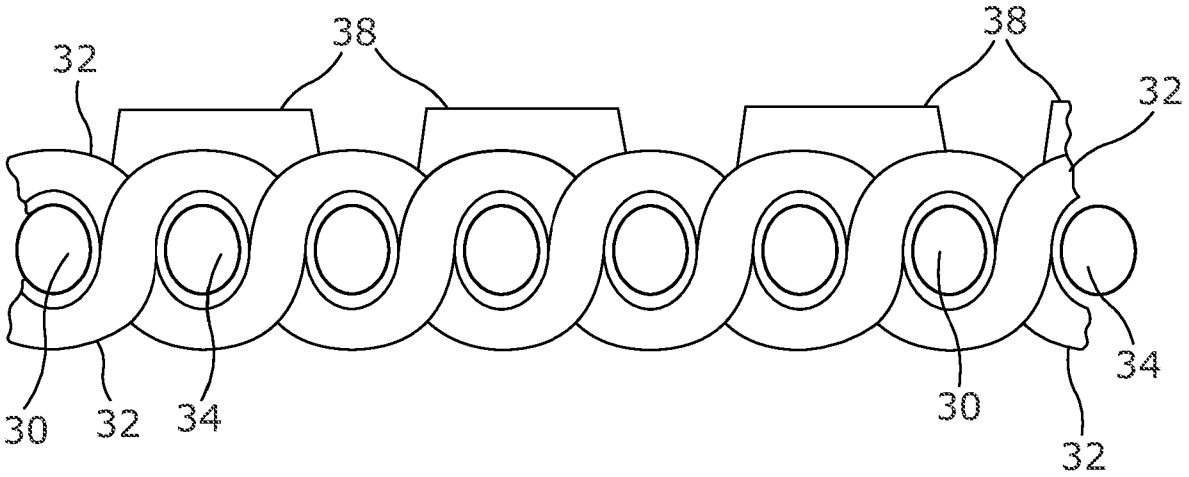

FIG. 6

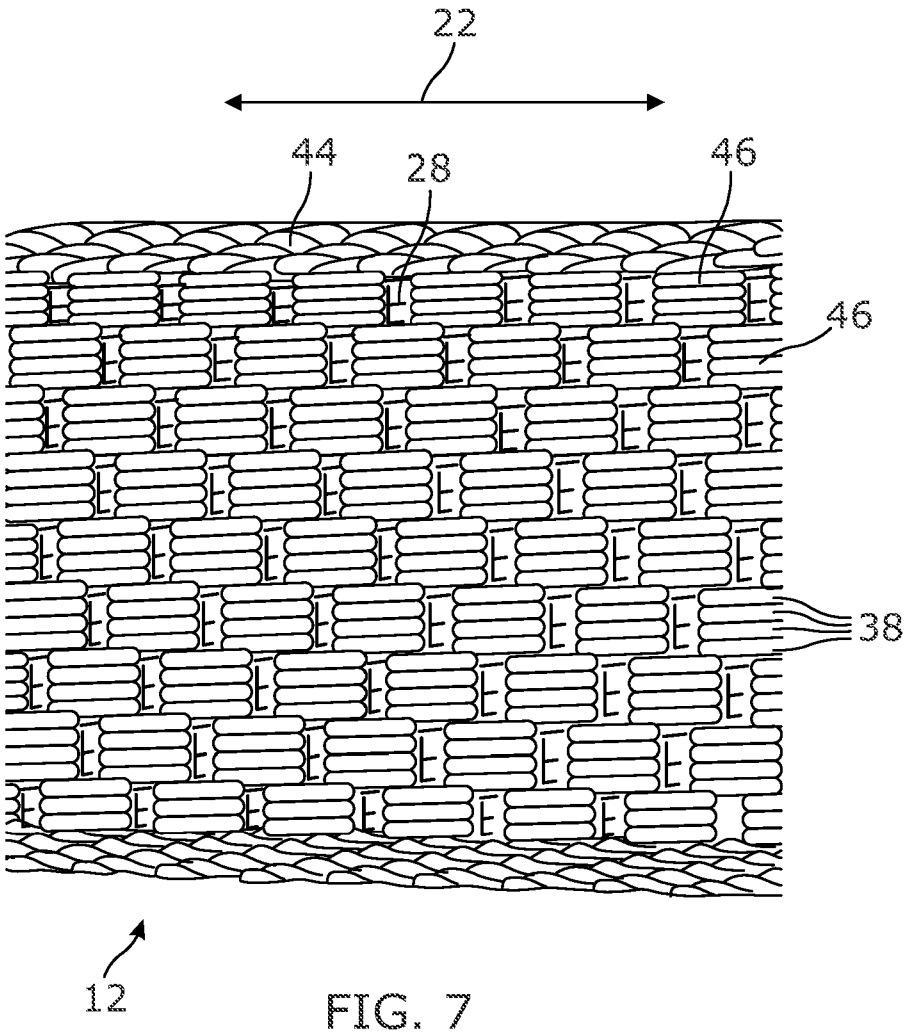

FIG. 7

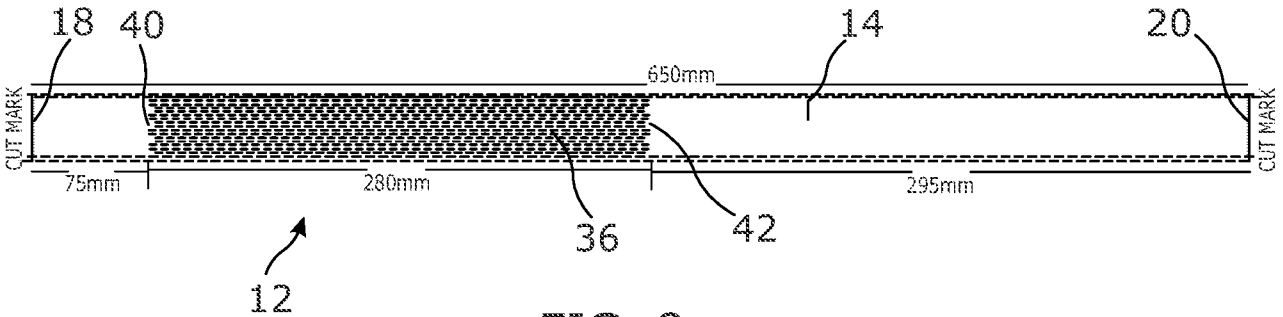

FIG. 8

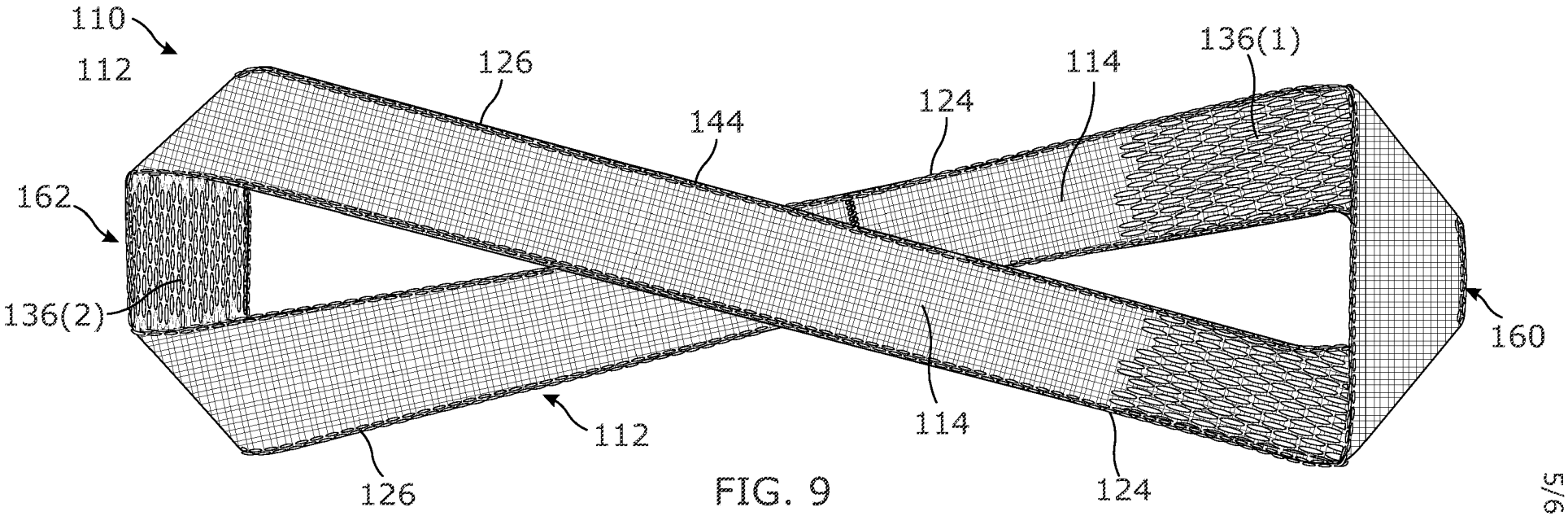
110
112
126
144
124
114
136(1)
162
136(2)
160
112
114
126
124

FIG. 9

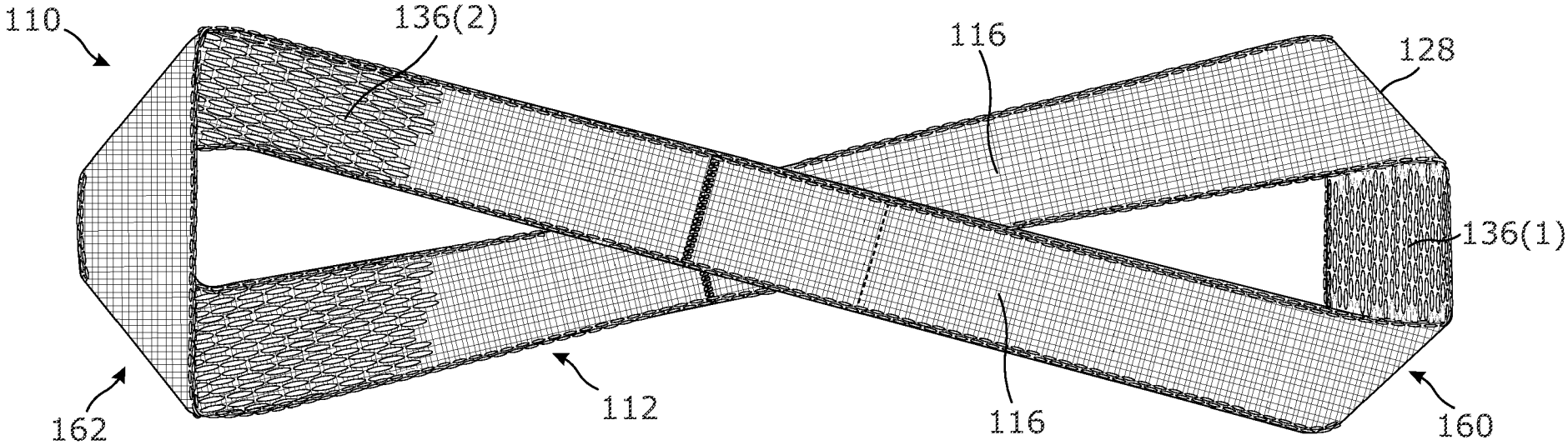
110
136(2)
116
128
136(1)
162
112
116
160

FIG. 10

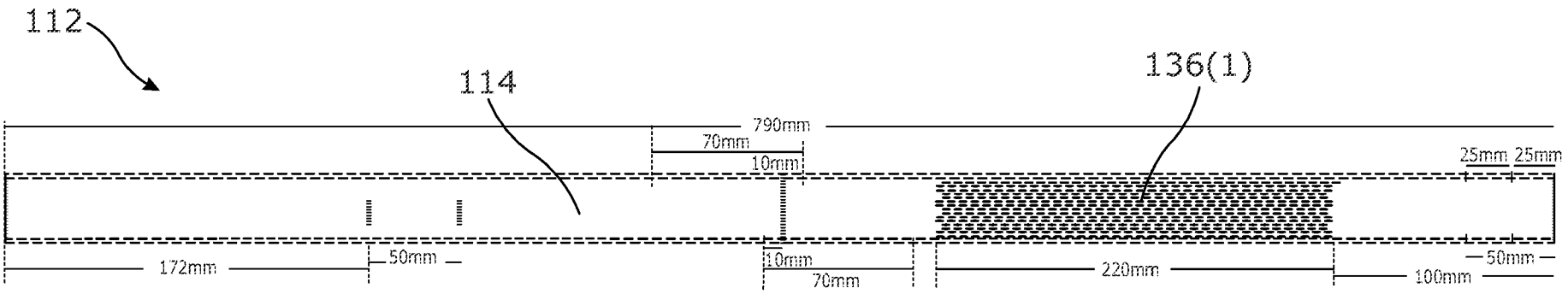
112
114
136(1)
790mm
70mm
10mm
25mm 25mm
172mm
50mm
10mm
70mm
220mm
100mm
50mm

FIG. 11

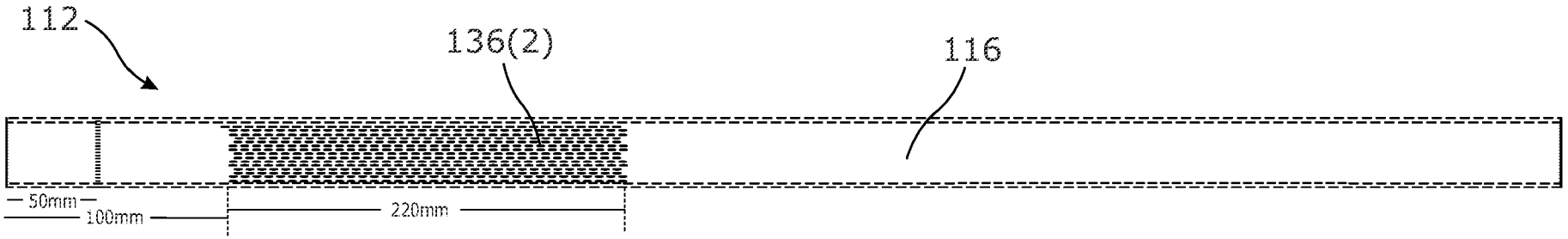
112
136(2)
116
50mm
100mm
220mm

FIG. 12

Weightlifting Wrist Straps

Field of the Invention

The invention relates to weightlifting wrist straps.

Background to the Invention

When powerlifters or weightlifters perform exercises with barbells and particularly, but not exclusively, heavy lifts, maintaining a firm grip on the bar can be a problem. At a very basic level, grip may be enhanced by applying gym chalk to the hands and having a roughened surface (knurling) at least over portions of the bar that will be gripped by the weightlifter. However, this does not begin to address the problem of maintaining grip when the lifter is lifting very heavy weights, perhaps at the limit of their lifting capability. Furthermore, gym chalk is a consumable and leaves a residue on the weightlifting equipment, floor and clothing.

It is known for the weightlifters to wear weightlifting wrist straps to improve their grip. A known weightlifting wrist strap comprises an elongate strip of material with a loop formed at one end. In use, the lifter inserts the free end of the weightlifting wrist strap through the loop to form a larger loop through which the hand is inserted. The free end of the strap is then pulled to tighten the strap with it positioned at the base of the wrist over the hand with the free end of the strap extending across the palm of the hand between the thumb and index finger. The lifter then positions their hands over the bar with the free end of the strap fed under then over the bar so that it is between the top of the bar and the hands. The lifter then grips the bar slightly forward of a lifting position and rotates their hands backwards (towards their body) to tighten the strap around the bar. This form of weightlifting wrist strap is commonly used and has provided an effective means of improving a weightlifter's grip on the bar during lifting exercises.

Weightlifting wrist straps of this type may be made of cotton. Cotton weightlifting wrist straps are comfortable to wear, but are relatively weak and prone to tearing and failing. Alternatively, such weightlifting wrist straps may be made of a synthetic fibre such as nylon or a combination of neoprene and cotton. Nylon weightlifting wrist straps are much stronger than cotton equivalents and are not prone to breakage. However, they can be uncomfortable to wear as the relatively hard nylon digs into the wrist and

may even cut the flesh. It is known to add thin pads to weightlifting wrist straps to reduce the discomfort they cause. However, this makes the strap feel bulky and many weightlifters do not like the presence of such padding.

Although this form of weightlifting wrist strap is widely used, it is not particularly easy for the lifter to attach to their wrists and the bar so that a certain amount of technique and grip strength is required in order to use these straps properly. A so-called figure eight weightlifting wrist strap has been developed that is considered easier to attach to the wrists and weightlifting bar. A figure eight weightlifting wrist strap comprises a length of material configured to provide two loops joined at their inner ends so as to resemble a figure eight. This form of weightlifting wrist strap is generally easier to use, but there are still problems with breakage if softer materials are used to make the strap or digging in and abrasion if a harder stronger material is used.

Summary of the Invention

The invention provides a weightlifting wrist strap as specified in claim 1.

Thus, embodiments of the invention provide a weightlifting wrist strap made of a length of material having a first major surface and a second major surface, said first and second major surfaces facing in opposite directions and having a first end and a second end that define a lengthways direction of said material and opposed edges extending between said first and second ends. The length of material comprises a base weave comprising a plurality of first threads extending in said lengthways direction and a plurality of second threads extending in a second direction that is transverse to said lengthways direction. The first and second threads each have a hardness and a tensile strength. The length of material further comprises a plurality of filaments that extend in said lengthways direction and have at least one of a filament hardness and filament tensile strength that exceeds the hardness and tensile strength of said first and second threads. The length of material still further comprises padding. The padding comprises a plurality of third threads at least partially covering said first major surface and having a hardness that is less than said filament hardness. The padding may comprise third threads disposed side-by-side to define a plurality of rows of pads extending in the lengthways direction of the length of material. In some embodiments, there may be third threads on the second major surface so that the length of material has two discrete

sections of padding, one on each side of the length of material. The two discrete sections of padding are preferably at longitudinally offset locations on the length of material with no overlap between them.

Brief Description of the Drawings

In the following disclosure, reference will be made to the drawings, in which:

Figure 1 is a plan view of a first side of a weightlifting wrist strap;

Figure 2 is a plan view of a second side of the weightlifting wrist strap of Figure 1;

Figure 3 is a plan view showing a first major surface of a length of material from which the weightlifting wrist strap of Figures 1 and 2 is made;

Figure 4 is a plan view showing a second major surface of the length of material shown in Figure 3;

Figure 5 is a schematic representation of a base weave of the length material of Figures 3 and 4;

Figure 6 is a schematic cross-sectional view on line VI – VI in Figure 3 around the centre line of the length of material;

Figure 7 shows modified padding for the weightlifting wrist strap of Figure 1;

Figure 8 is a plan view generally corresponding to Figure 3;

Figure 9 is a top plan view of another weightlifting wrist strap;

Figure 10 is a bottom plan view of the weightlifting wrist strap of Figure 9

Figure 11 is a plan view showing a first major surface of a length of material from which the weightlifting strap of Figures 9 and 10 can be made; and

Figure 12 is a plan view showing the second major surface of the length of material of Figure 11.

Detailed Description

Referring to Figures 1 to 4, a weightlifting wrist strap 10 comprises a length of material 12 having a first major surface 14 and a second major surface 16. The first and second major surfaces 14, 16 face in opposite directions and have a first end 18 and a second end 20 that define a lengthways direction 22 of the length of material 12 and opposed edges 24, 26 that extend between the first and second ends 18, 20. Thus, the first and second major surfaces 14, 16 are each bounded by the first and second ends 18, 20 and the edges 24, 26.

Referring to Figures 3 to 6, the length of material 12 comprises a base weave 28 that comprises first threading 30 comprising a plurality of threads extending in the lengthways direction 22 and second threading 32 comprising a plurality of threads woven in a second direction that is transverse to the lengthways direction 22. Typically, the first threading 30 will extend at least substantially perpendicular to the second threading 32. The length of material 12 further comprises a plurality of filaments 34 that extend in the lengthways direction 22 generally parallel to the threads of the first threading 30. The threads of the second threading 32 pass above then below adjacent threads of the first threading 30 and the filaments 34 as they extend across the width of the length of material 12. Although not essential, the threads of the first threading 30 and the filaments 34 may alternate across the width of the length of material 12.

Referring to Figures 1 and 3, the length of material 12 further comprises padding 36. The padding 36 comprises third threading 38 comprising a plurality of threads woven onto the base weave 28 so as to at least partially cover the first major surface 14. The threads of the third threading 38 may extend in the lengthways direction 22 of the length of material 12 so as to be disposed generally parallel to the threads of the first threading 32 and the filaments 34. Although not essential, the padding 36 may extend across the full width of the length of the material 12 and be disposed intermediate the first and second ends 18, 20 such that a first end 40 of the padding is disclosed closest the first end 18, but is spaced apart from the first end 18, and a second end 42 of the padding is disposed closest to the second end 20, but is spaced apart from the second end 20.

Although not essential, the third threading 38 may be woven onto the base weave 28 so as to protrude from the first major surface 14 of the length of material 12, but not from the second major surface 16. The padding 36 is positioned on the length of material 12 such that when the weightlifting wrist strap 10 is worn, the padding will lie against the weightlifter's hand and wrist.

As best seen in Figures 3 and 4, the length of material 12 may be provided with protective edging 44 extending along the edges 24, 26. The protective edging 44 may comprise fourth threading comprising a plurality of threads extending along the opposed edges 24, 26 of the length of material 12. The fourth threading may be woven into the base weave 28 such that it extends generally parallel to the threads of the first threading 30, filaments 34 and threads of the third threading 38. The fourth threading may be woven into the base weave 28 such that it protrudes from both major surfaces 14, 16 of the length of material 12.

The first threading 30 and second threading 32 may comprise threads in the form of spun fibres, preferably synthetic fibres such as nylon or polyester fibres. The first and second threading 30, 32 may be made of the same fibre material. The filaments 34 may comprise a synthetic filament material such as an aramid material. The filaments 34 are harder than the first and second threading 30, 32 and have a greater tensile strength. The filaments 34 may have a diameter not greater than 2.0 mm although, preferably, the filaments 34 have a diameter of no more than 1.0 mm. The provision of the filaments 34 in the base weave 28 increases the tensile strength of the length of material 12, which is accordingly less likely to tear or give way than the materials from which conventional weightlifting wrist straps are made, particularly those made of cotton.

The third threading 38 may comprise threads in the form of spun fibres, preferably synthetic fibres and the material from which the threads are made has a hardness that is less than that of the filaments 34. The padding 36 formed by the third threading 38 provides a protective surface that helps to protect the weightlifter's wrist during lifts when the load on a bar transfers to the weightlifter's wrist via the weightlifting wrist strap 10.

The third threading 38 may be made of the same material as the first and second threading 30, 32. Alternatively, and preferably, the third threading 38 may be made of a material that is softer than the material from which the first and second threading is formed. Also, it is not essential that the third threading 38 is made of a synthetic material. In some examples, the third threading 38 may be made of a natural fibre such as cotton. Since the threads of the third threading 38 are woven onto the base weave 28 to provide padding 36 and are not required as structural elements in the length of material 12, making them of a relatively soft material with relatively low tensile strength, particularly when compared to the tensile strength of the filaments 34 will not negatively affect the overall strength of the weightlifting wrist strap 10.

Although not essential, the fourth threading from which the protective edging 44 is formed may be made of the same material as the third threading 38. This has the advantage that like the padding 36, the protective edging 44 will protect the weightlifter's wrist against abrasion when the weightlifting wrist strap 10 is transferring a load from a bar to the weightlifter's wrist.

The threads of the third threading 38 may be thicker, or larger in diameter, than the threads of the first and second threading 30, 32 that form the base weave 28.

As shown in Figure 7, in some examples, multiple threads of the third threading 38 may be disposed in side-by-side relationship to form relatively wide pads 46. In the illustrated example, the pads 46 are formed by four threads disposed side-by-side. The pads 46 may be configured to define a plurality of rows of pads that extend in the lengthways direction 22 of the length of material 12. The rows of pads 46 may be configured such that the respective pads of each row are offset in the lengthways direction 22 with respect to the pads of the adjacent row or rows so as to define a chequer board pattern. The offset may be such that there is some overlap between the respective sets of pads 46 of the adjacent rows and in some examples, the overlapping pads may contact one another.

Referring to Figures 1 and 2, the weightlifting wrist strap 10 is formed by folding the length of material 12 over so that the first end 18 is disposed against the second major surface 16 and stitching the folded over end in place with stitching 48 to form a loop

50. Although not essential, in the example illustrated by Figures 1 and 2, the length of material 12 is folded over so that the first end 40 of the padding 36 is at one end of the weightlifting wrist strap 10, the other end being the second end 20 of the length of material 12.

The padding 36 may extend over at least substantially the entire area of the first major surface 14 and may additionally be provided over all of some of the second major surface 16. However, it is preferable that the padding is provided only on the area of the length of material 12 that will be in contact with a weightlifter's hand or wrist when the weightlifting wrist strap 10 is in use. Primarily, this is because it is only really needed in that area and having more extensive padding is a waste of material. Also, in use, the part of the weightlifting wrist strap 10 that is not wrapped around the weightlifter's hand or wrist will be mainly wrapped around the bar. Having padding 36 on parts of the weightlifting wrist strap 10 wrapped around the bar would give rise to two drawbacks:

(i) since the padding thickens the weightlifting wrist strap, there would be a considerably greater bulk wrapped around the bar for the weightlifter to grip when performing a lift; and

(ii) since the third threading that forms the padding is made of a relatively soft material, the padding will be susceptible to abrasion from the knurling on the bar.

Figure 8 shows another example of a length of material 12 from which a weightlifting wrist strap 10 may be formed. Figure 8 shows dimensions for the length of the length of material 12 and the padding 36 and shows the position of the padding within the length of material. It is to be understood that the dimensions are given purely by way of example and are not to be taken as limiting. In particular, it will be understood that the length between the second end 20 and the second end 42 of the padding 36 is not critical and may vary considerably. Typical weightlifting bars have a diameter in the range 25 to 32 mm and making the length of this portion of the length of material 12 significantly longer provides no additional functionality and wastes material as it is only necessary to be able to wrap this portion of the weightlifting wrist strap once or twice around the weightlifting bar. However, there are weightlifting bars for strongman events and grip training that have a diameter of around 50 to 75 mm and weightlifting

straps for use with weightlifting bars of this size may be made longer than indicated in Figure 8 in order to provide the same number of revolutions around the weightlifting bar. Extending the length of the padding 36 significantly should not be necessary and the spacing between the first end 18 and the first end of the padding 36 will depend on how far the first end of the length of material 12 folded over against the second major surface 16 to form the loop 50. By way of example, the length of the length of material 12 may vary between 550 and 850 mm, the padding may vary in length between 250 and 300mm and the spacing between the first end 18 and first end 40 of the padding 36 may be between 70 and 100 mm.

Figure 9 shows a weightlifting wrist strap 110 comprising a length of material 112 that is configured to form a figure eight. The length of material 112 may in most respects correspond to the length of material 12 and for ease of reference, like or similar features will be referenced using the same reference numerals incremented by 100 and may not be described again.

Like the length of material 12, the length of material 112 is formed of a base weave 128 that comprises first and second threading and there are filaments extending in the lengthways direction of the length of material to provide increased resistance to tearing and breakage. Padding 136(1), 136(2) comprising third threading is provided to protect the wrist of the weightlifter when the weightlifting wrist strap 110 is in use. As with the length of material 12, the length of material 112 may be provided with protective edging 144 by means of fourth threading extending along the opposed edges 124, 126 of the length of material 112.

The principal difference between the length of material 12 and the length of material 112 is that two areas of padding 136(1), 136(2) provided. First padding 136(1) is provided on the first major surface 114 at a position intermediate the ends of the length of material 112. Second padding 136(2) is provided on the second major surface 116 of the length of material 112, also intermediate the ends of the length of material. The first and second padding 136(1), 136(2) are spaced apart in the lengthways direction of the length of material 112. The positioning of the first and second padding 136(1), 136(2) is such that when the figure eight weightlifting strap 110 is formed, the first padding 136(1) is disposed at the outer end of a first loop 160 of weightlifting wrist

strap 110 and the second padding 136(2) is disposed at the outer end of a second loop 162 of the weightlifting wrist strap so that when the weightlifting wrist strap is worn, the weightlifter's wrists should be engaged by the padding rather than the base weave 128, thereby providing protection against abrasion and digging in.

While in the example illustrated by Figures 8 and 9 the first and second padding 136(1), 136(2) are disposed on opposite sides of the length of material 112, this is not essential. For some configurations of figure eight weightlifting strap, it may be appropriate to have the first and second padding on the same side of the length of material.

Figures 11 and 12 show an example of a length of material 112 from which a weightlifting wrist strap 110 may be formed. The dimensions for the length of the length of material 112 and the padding 136(1), 136(2) are shown, as is the position of the padding within the length of material. It is to be understood that the dimensions are given purely by way of example and are not to be taken as limiting. It is also to be understood that it is contemplated that the weightlifting wrist strap 110 may be sized and, for example, constructed in small, medium and large sizes. The dimensions indicated in Figures 11 and 12 may apply to a length of material for a medium size weightlifting wrist strap 110.

Although not essential, the length of material 12, 112 may be formed using a jacquard loom, which effectively embroiders padding and optional protective edging onto the base weave as it is woven. Once woven, the strips that form the lengths of material 12, 112 may be separated from the woven material using an ultrasonic cutter.

In preferred embodiments, the diameter of spun fibres is not greater than 1.0 to 2.0 mm. However, this limitation is not essential. The spun fibres may be compressed or 'fluffy'. While spun fibres that are compressed may have a diameter not greater than 1.0 to 2.0 mm, a fluffy fibre will more likely have a diameter greater than 1.0 to 2.0 mm. Where fluffy spun fibres are used, it is preferred that the fibres are not greater than 5.0 mm in diameter.

Claims

1. A weightlifting wrist strap comprising a length of material having a first major surface and a second major surface, said first and second major surfaces facing in opposite directions and having a first end and a second end that define a lengthways direction of said material and opposed edges extending between said first and second ends,

wherein said length of material comprises a base weave comprising first threading extending in said lengthways direction and second threading woven in a second direction that is transverse to said lengthways direction, said first and second threading each having a hardness and a tensile strength,

a plurality of filaments that extend in said lengthways direction and have at least one of a filament hardness and filament tensile strength that exceeds the hardness and tensile strength of said first and second threading, and

padding, comprising first padding comprising third threading at least partially covering said first major surface and having a hardness that is less than said filament hardness.

2. A weightlifting wrist strap as claimed in claim 1, wherein said first padding protrudes from said first major surface but does not protrude from said second major surface.

3. A weightlifting wrist strap as claimed in claim 1 or 2, wherein said third threading extends in said lengthways direction.

4. A weightlifting wrist strap as claimed in claim 1, 2 or 3, further comprising protective edging extending along said opposed edges, said protective edging comprising fourth threading extending along said opposed edges so as to at least partially cover said base weave at said opposed at said edges.

5. A weightlifting wrist strap as claimed in claim 4, wherein said fourth threading has a hardness that is less than said filament hardness.

6. A weightlifting wrist strap as claimed in claim 4 or 5, wherein said third threading and said fourth threading are made from the same material.

7. A weightlifting wrist strip as claimed in claim 4, 5 or 6, wherein said fourth threading protrudes from said first major surface and said second major surface.

8. A weightlifting wrist strap as claimed in any one of the preceding claims, wherein said filaments have a diameter not greater than 2.0 mm.

9. A weightlifting wrist strap as claimed in any one of the preceding claims, wherein said filaments comprise aramid filaments.

10. A weightlifting wrist strap as claimed in any one of the preceding claims, wherein said first threading comprises threads having a first diameter, said second threading comprises threads having a second diameter and said third threading comprises threads having a third diameter that is greater than said first and second diameters.

11. A weightlifting wrist strap as claimed in any one of the preceding claims, wherein said third threading is configured such that said first padding comprises a plurality of pads disposed on said first major surface, each said pad comprising a plurality of threads disposed side-by-side.

12. A weightlifting wrist strap as claimed in claim 11, wherein said pads are configured to define a plurality of rows of pads that extend in said lengthways direction.

13. A weightlifting wrist strap as claimed in claim 12, wherein said rows of pads are configured such that the respective pads of each said row are offset in said lengthways direction with respect to the pads of the adjacent row or rows.

14. A weightlifting wrist strap as claimed in any one of the preceding claims, wherein said padding comprises second padding comprising further third threading at least partially covering said second major surface, said first padding and second padding being spaced apart in said lengthways direction of said length of material.

15. A weightlifting wrist strap as claimed in claim 14, wherein said length of material is configured to form a figure eight shape defining a first loop and a second loop and said first padding is disposed at an outer end of said first loop and said second padding is disposed at an outer end of said second loop.

Intellectual Property Office

Application No:	GB2312016.5	**Examiner:**	Mr Steven Davies
Claims searched:	1-15	**Date of search:**	25 January 2024

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	US 2015/0057133 A1 (Nguyen)
A	-	US 5324244 A (Miller et al)
A	-	US 2022/0232959 A1 (Aughney)
A	-	US 2008/0120755 A1 (Ingram et al)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A63B

The following online and other databases have been used in the preparation of this search report

SEARCH-PATENT

International Classification:

Subclass	Subgroup	Valid From
A63B	0021/00	01/01/2006