US 20050120454A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0120454 A1

Cunningham (43) Pub. Date: Jun. 9, 2005

(54) KNEEPAD HAVING A SLING STRAP SYSTEM

(76) Inventor: Ian W. Cunningham, Matthews, NC (US)

Correspondence Address:
Dennis J. Williamson
Moore & Van Allen, PLLC
Post Office Box 13706
Research Triangle Park, NC 27709 (US)

(21) Appl. No.: 10/972,606

(22) Filed: Oct. 25, 2004

Related U.S. Application Data

(60) Provisional application No. 60/527,851, filed on Dec. 8, 2003.

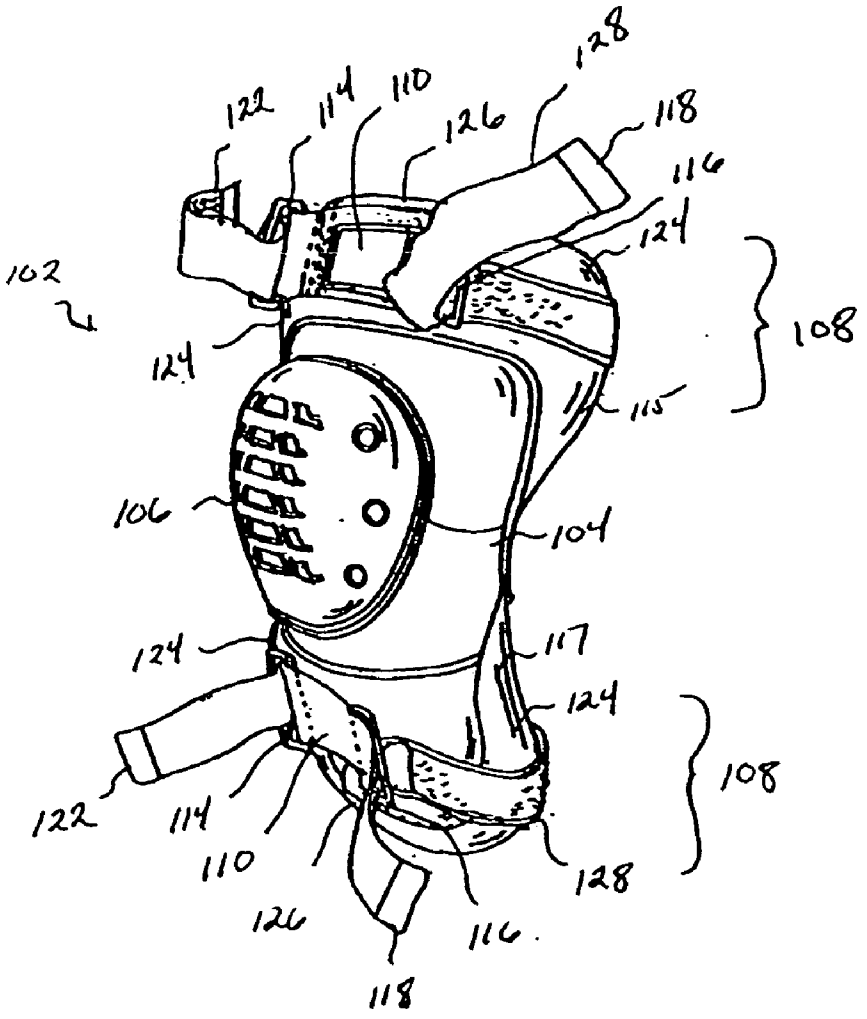
Publication Classification

(51) Int. Cl.[7] A41D 13/00

(52) U.S. Cl. 2/24

(57) ABSTRACT

A kneepad includes a base, a first and second mounting ring attached to the base, and an elongated strap removably attached to the first and second mounting rings. During use, the base is placed over a knee of user. The elongated strap is placed behind the knee of the user and a first end of the elongated strap is wrapped around the knee and inserted into the first mounting ring. A second end of the elongated strap is then wrapped around the knee and inserted into the second mounting ring. The first and second ends of the elongated strap are pulled through the first and second mounting rings to obtain a desired tension between the kneepad and the knee. Once the desired tension is obtained, the kneepad is secured to the knee.



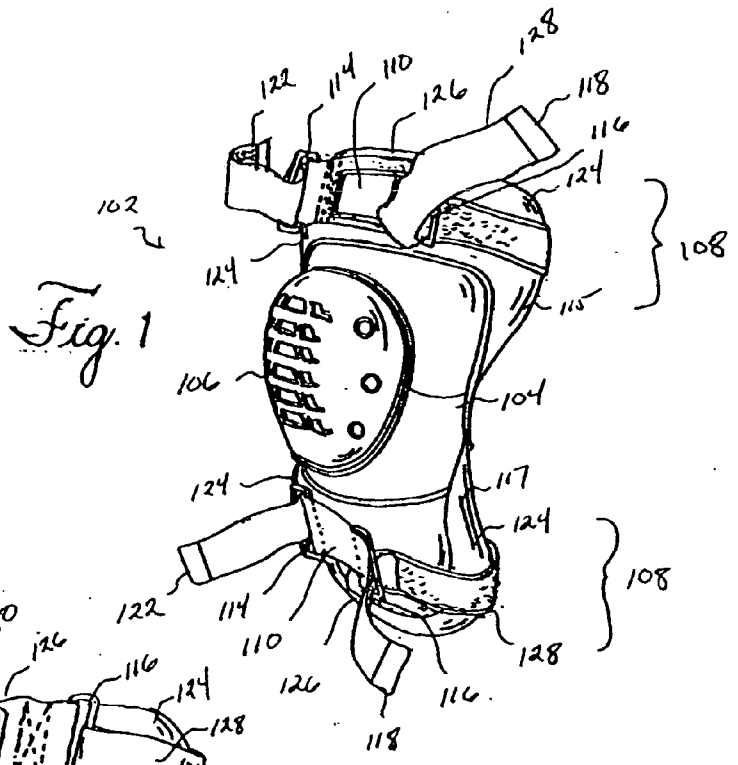

102
122
114
110
126
128
118
116
124
108
115
106
104
117
124
122
114
110
126
116
118

Fig. 1

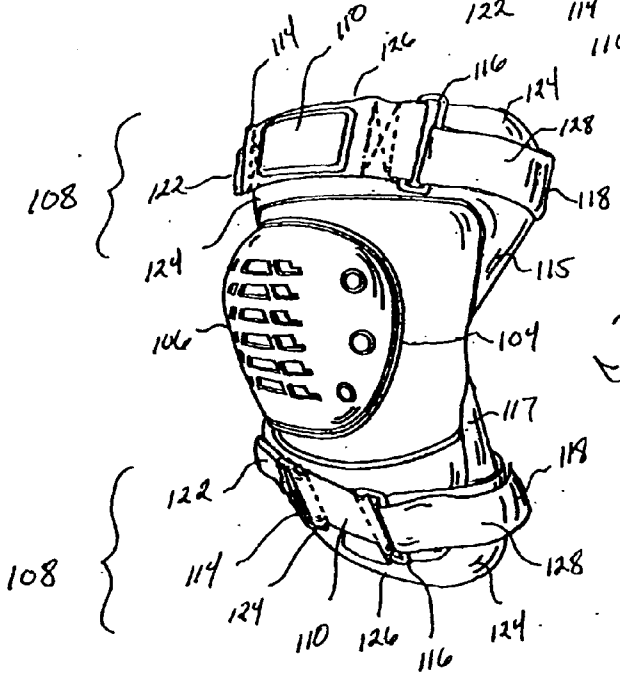

114
110
126
116
124
128
108
122
118
124
115
106
104
117
118
122
108
114
124
110
126
116
124

Fig. 2A

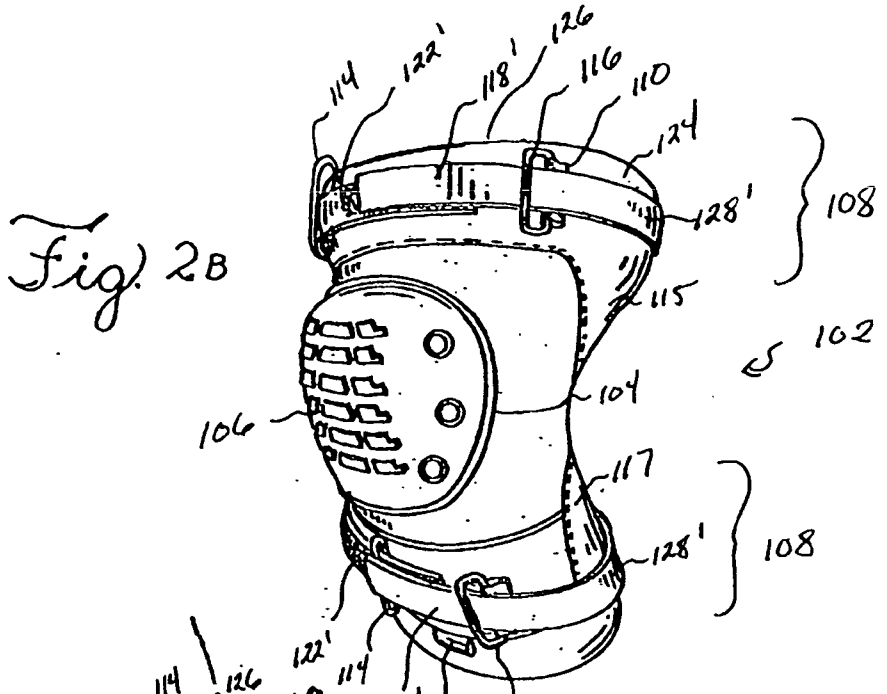

114
122'
118'
126
116
110
124
128'
108
115
102
104
106
117
108
128'
122'
114
118'
110
116

Fig. 2B

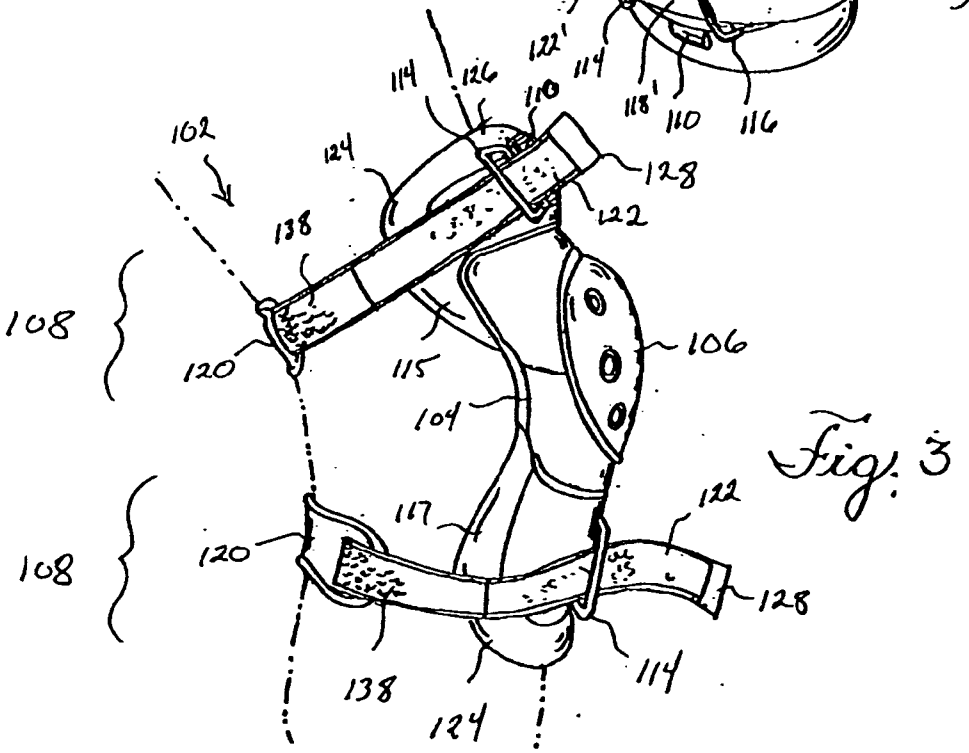

114
126
110
102
124
128
122
138
108
120
115
106
104
117
122
108
120
128
138
114
124

Fig. 3

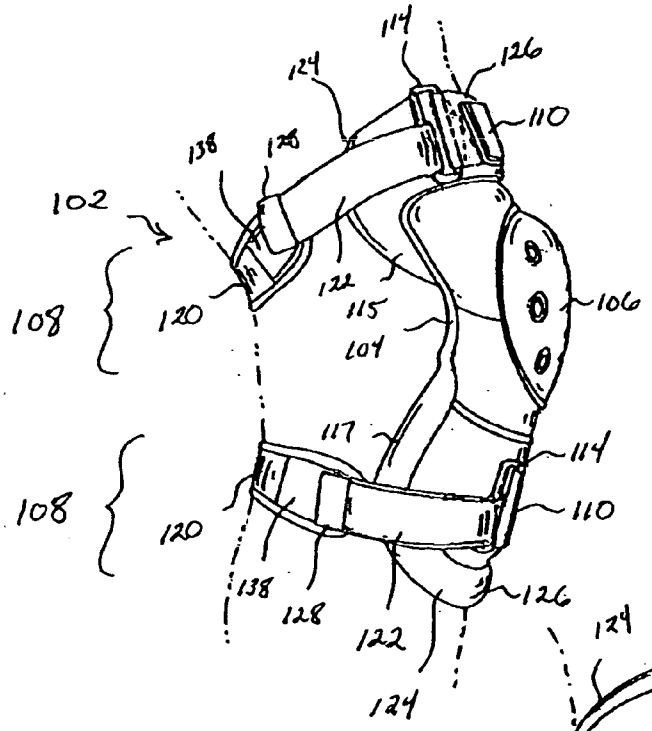

114
126
124
110
138
136
102
108
120
122
115
106
104
117
114
110
108
120
138
128
126
122
124

Fig. 4A

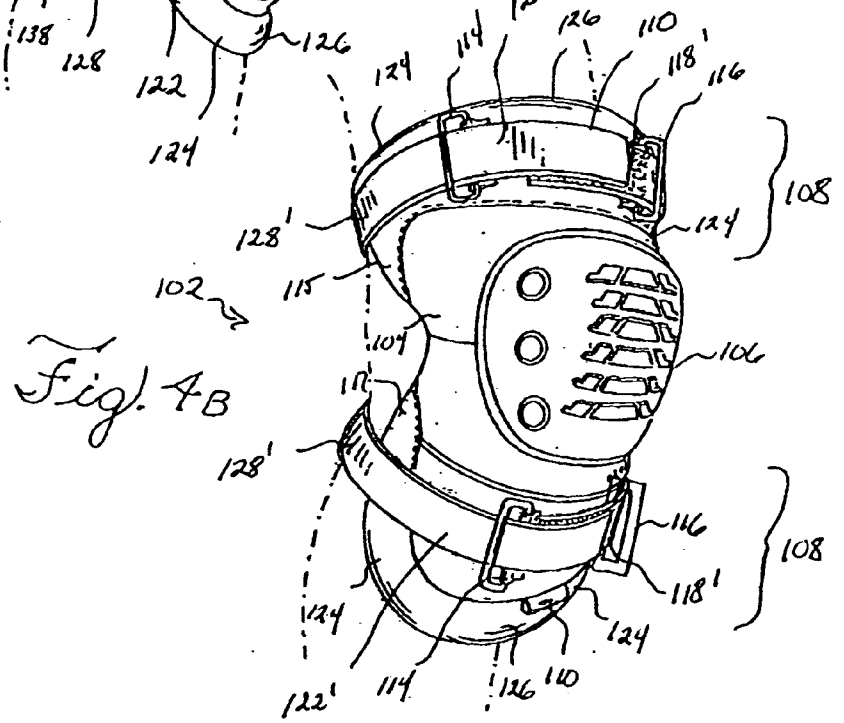

122'
126
110
114
124
118'
116
108
128'
124
102
115
104
106
117
128'
116
108
118'
124
124
122'
114
126
110

Fig. 4B

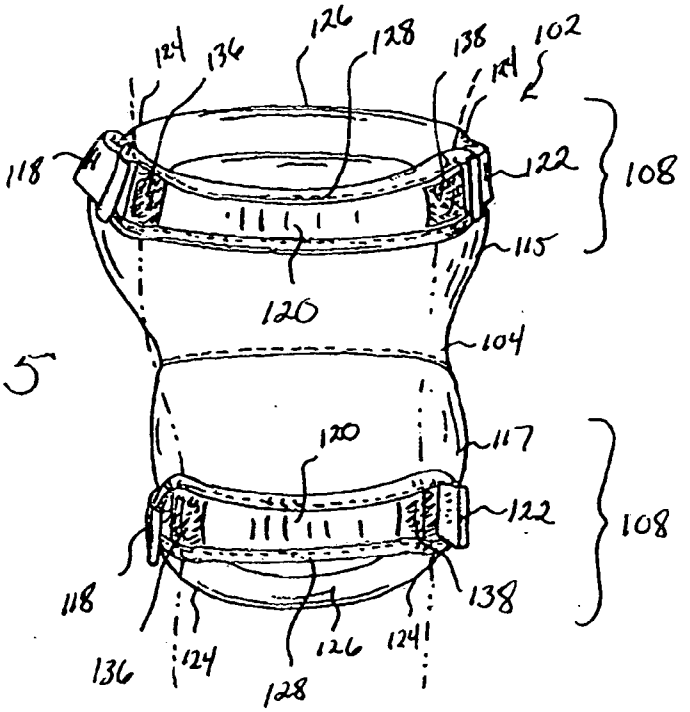

124
136
126
128
138
124
102
118
122
108
115
120
104
117
120
122
108
118
138
136
124
126
124
128

Fig. 5

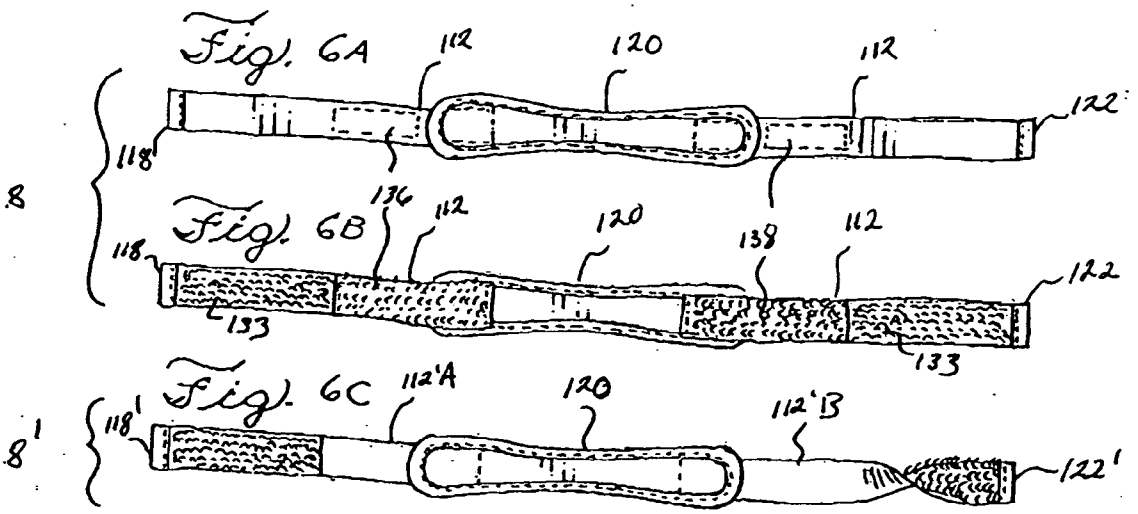


Fig. 6A
112
120
112
122
118
8
136
Fig. 6B
112
120
138
112
118
122
133
133
Fig. 6C
112'A
120
112'B
8'
118'
122'

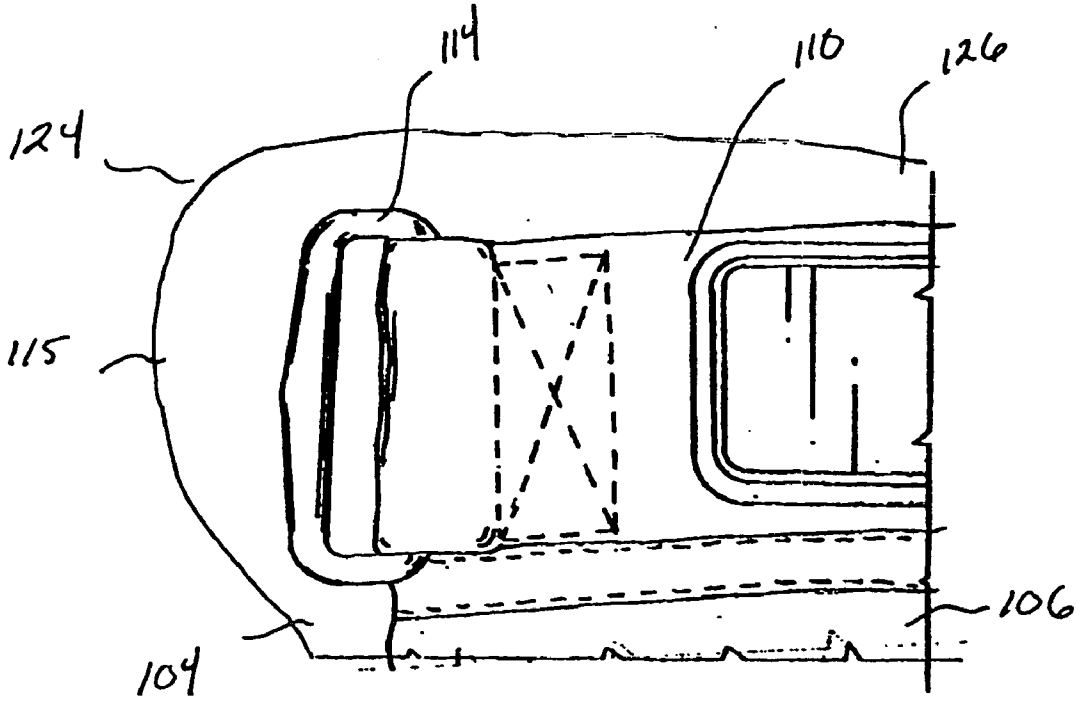

114
110
126
124
115
106
104

Fig. 7

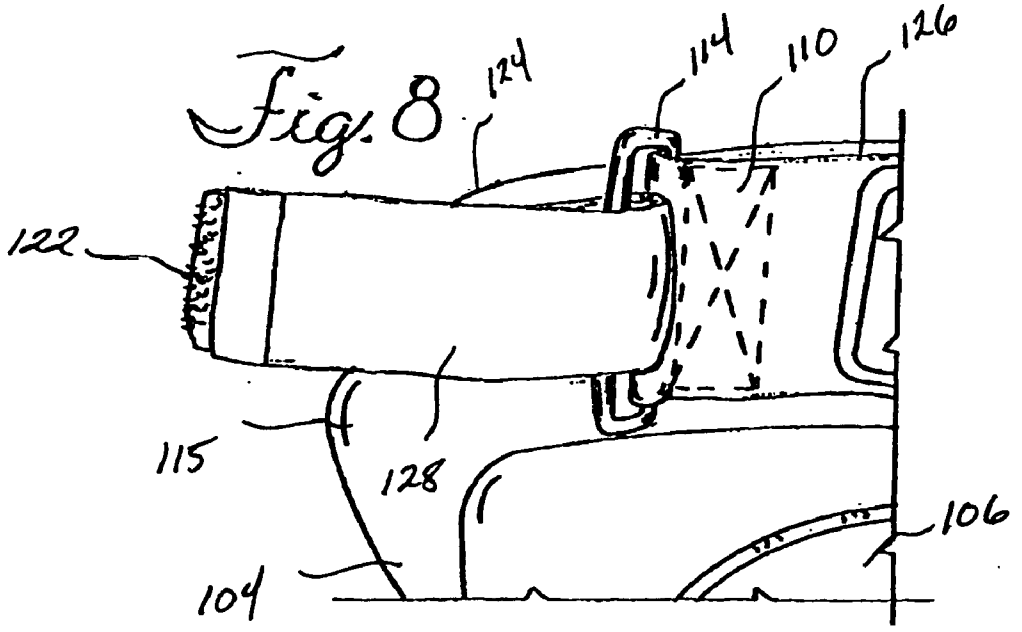


Fig. 8
124
114
110
126
122
115
128
106
104

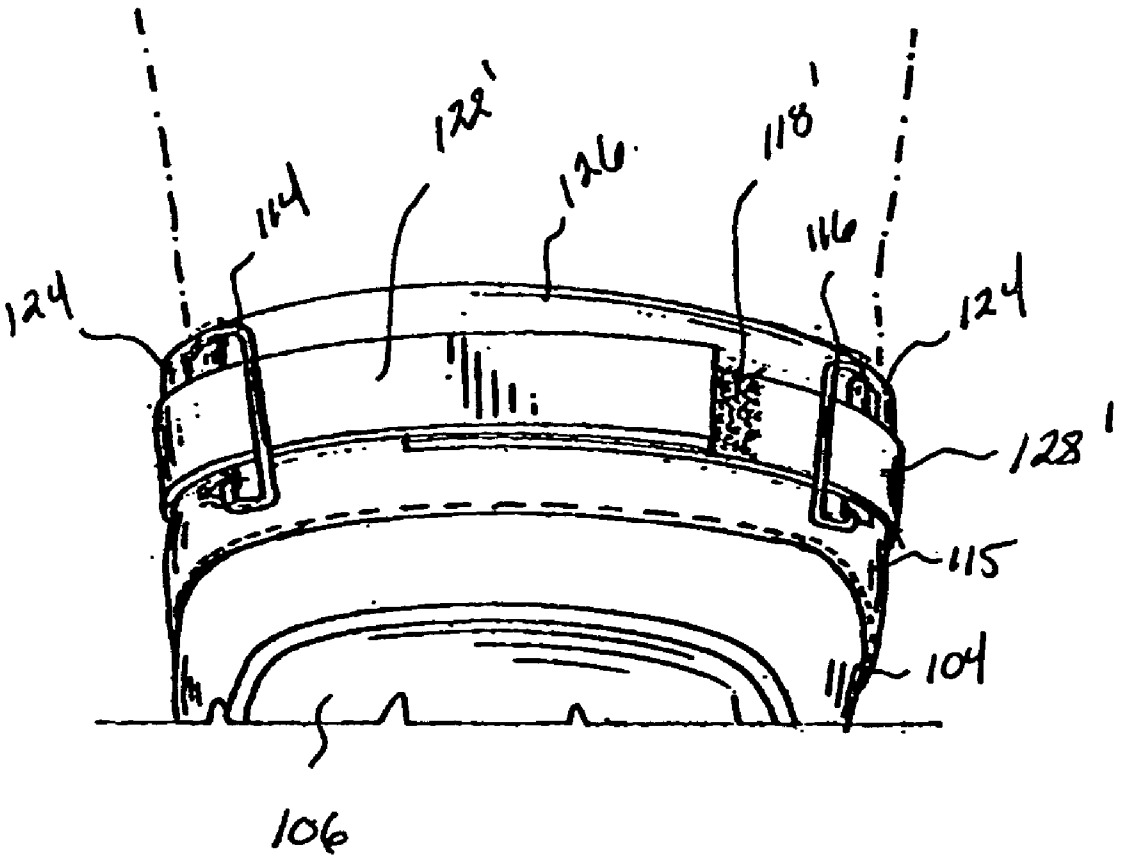


Fig. 9

KNEEPAD HAVING A SLING STRAP SYSTEM

RELATED APPLICATIONS

[0001] The present patent document claims the benefit of the filing date under 35 U.S.C. §119(e) of Provisional U.S. Patent Application Ser. No. 60/527,851, filed Dec. 8, 2003, the entire contents of which is hereby incorporated by reference.

BACKGROUND

[0002] Historically, to prevent knee injuries during physical activity that requires being in a kneeling position, a user would wear a protective kneepad over the front of their knee. Traditional protective kneepads normally include some type of rigid cap secured against the front of a knee by some type of strap that surrounds the knee and leg of the user.

[0003] These traditional protective kneepads, however, suffer from a number of deficiencies. For example, traditional kneepads are often designed to have a strap assembly that is permanently fixed to the protective kneepad. This design limits the life of the kneepad due to the fact the entire kneepad must be replaced once a portion of the strap assembly becomes worn or breaks. Additionally, this design creates problems in that a designer must design a strap assembly for the protective kneepad that can comfortably surround a number of different sized knees and legs for various users.

BRIEF SUMMARY

[0004] It is therefore desirable to have a strap assembly for a protective kneepad that can be easily adjusted to surround a number of different sized knees and legs for various users, and provides a way to replace a portion of the strap assembly should it become worn or break. The present invention is directed at correcting these deficiencies in the prior art.

[0005] In one aspect of the invention, a kneepad includes a base, a first and second mounting ring attached to the base, and an elongated strap removably attached to the first and second mounting rings. During use, the base is placed over a knee of user. The elongated strap is placed behind the knee of the user and a first end of the elongated strap is wrapped around the knee and inserted into the first mounting ring. A second end of the elongated strap is then wrapped around the knee and inserted into the second mounting ring. The first and second ends of the elongated strap are pulled through the first and second mounting rings to obtain a desired tension between the kneepad and the knee. Once the desired tension is obtained, the kneepad is secured to the knee.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] **FIG. 1** is a perspective view of a first embodiment of a kneepad having a sling strap system showing the ends of the sling strap system open in accordance with the present invention;

[0007] **FIG. 2A** is a perspective view of the kneepad of **FIG. 1** showing the ends of the sling strap system closed;

[0008] **FIG. 2B** is a perspective view of a second embodiment of a kneepad having a sling strap system showing the ends of the sling strap system closed;

[0009] **FIG. 3** is a side view of the kneepad of **FIG. 1** showing the ends of the sling strap system open;

[0010] **FIG. 4A** is a side view of the kneepad of **FIG. 1** showing the ends of the sling strap system closed;

[0011] **FIG. 4B** is a right perspective view of the kneepad of **FIG. 3** showing the ends of the sling strap system closed;

[0012] **FIG. 5** is a back view of the kneepad of **FIG. 1**;

[0013] **FIG. 6A** is a front view of a first embodiment of an elongated strap to be used with the sling strap system and kneepad of **FIG. 1**;

[0014] **FIG. 6B** is a rear view of the embodiment of the elongated strap of **FIG. 6A**;

[0015] **FIG. 6C** is a front view of a second embodiment of an elongated strap to be used with the sling strap system and the kneepad of **FIG. 2B**;

[0016] **FIG. 7** is a front view of an embodiment of a D-ring to be used with the sling strap system of **FIGS. 1-6**;

[0017] **FIG. 8** is a front view of the D-ring shown in **FIG. 7** in communication with the elongated strap of FIGS. **6A-B**; and

[0018] **FIG. 9** is a front view of the D-ring shown in **FIG. 7** in communication with the elongated strap of **FIG. 6C**.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

[0019] As shown in **FIG. 1**, a kneepad **102** to protect a knee of a user generally includes a flexible base **104**, a rigid cap **106**, and a strap assembly **108**. Preferably, the flexible base **104** is made of a padded fabric with an elastomeric or silicone interior.

[0020] The rigid cap **106** is preferably a rigid plastic such as PVC, but any rigid material could be used. In one embodiment, the rigid cap **106** may be permanently attached to the flexible base **104** by ways known in the art such as sewing the rigid cap **106** to the flexible base **104** or gluing the rigid cap **106** to the flexible base **104**. In other embodiments, the rigid cap **106** may be removably attached to the flexible base **104** by ways known in the art such that different sized rigid caps **106** or rigid caps **106** made of different materials could be used with the same kneepad **102**.

[0021] In general, a user places the flexible base **104** containing the rigid cap **106** over the knee such that the rigid cap **106** covers the front of the knee. Once the flexible base **104** and the rigid cap **106** are in a desired position, the user secures the kneepad **102** to the knee by wrapping the strap assembly **108** around the leg.

[0022] As shown in **FIGS. 1-5**, the kneepad **102** may contain at least one, but preferably two, sling strap systems **110** to secure the kneepad **102** to a leg of a user in position over the knee. The sling strap system **110** generally includes an elongated strap **128**, **128'**, a first mounting ring **114** attached to the flexible base **104**, and a second mounting ring **116** attached to the flexible base **104**. The mounting rings **114**, **116** may be any type of ring such as a D-ring or square-ring that is capable of mounting the ends of the elongated strap **128**, **128'**. A D-ring is a mounting ring that is flat on one side and curved on the opposite side. Preferably, the first and second mounting rings **114**, **116** are located

on an upper portion **115** of the flexible base **104** or a lower portion **117** of the flexible base **104**, but the mounting rings **114**, **116** may be located on any portion of the flexible base **104**.

[**0023**] As shown in FIGS. **6**A-C, the elongated strap **128**, **128'** of the sling strap system **110** generally includes two straps **112**, **112'** attached or sewn to a padded area **120** so as to define a first end **118** and a second end **122**. The padded area **120** is preferably made of a soft elastomeric material, but any material could be used that does not cause discomfort to a user during use of the kneepad **102**. Further, the padded area **120** is preferably ergonomically shaped to increase comfort to the user of the kneepad **102**.

[**0024**] In a first embodiment of the elongated strap **128** shown in FIGS. **6**A-B, the free ends **118**, **122** of the straps **112** includes a surface of minute hooks **133** while the padded area **120** of the elongated strap **128** and a portion of the first and second straps **112** includes a first and second attachment area **136**, **138** having surfaces of uncut pile. The elongated strap **128** is designed such that when the free ends **118**, **122** of the straps **112** are folded back against the padded area **120**, the surface of minute hooks **133** will engage the surfaces of uncut pile **136**, **138**, thereby securing the free end of one of the straps **112** against the padded area **120** and securing the free end of the other strap **112** against the padded area **120**.

[**0025**] In a second embodiment of the elongated strap **128'** shown in **FIG. 6C**, a free end **118'** of one strap **112'**A and a free end **122'** of the other strap **112'**B make up a hook and loop fastening system, but any fastening system could be used. In the second embodiment, the free end **118'** of one of the straps **112'**A includes a surface of minute hooks on an outer side while the second end **122'** of the other strap **112'**B includes a surface of uncut pile on an inner side. The elongated strap **128'** is designed such that when the free end **118'** of one strap **112'**A is folded towards the free end **122'** of the other strap **112'**B, the surface of minute hooks will engage the surface of uncut pile and securely hold the free ends **118'**, **122'** together.

[**0026**] Preferably, the elongated strap **128**, **128'** is not permanently attached to the kneepad **102** so that the elongated strap **128**, **128'** may be removed from the kneepad **102** and replaced if a elongated strap breaks or wears out so that the entire kneepad **102** does not have to be replaced. Additionally, the elongated strap **128**, **128'** is preferably available in various lengths to accommodate the different leg sizes of different users.

[**0027**] During operation, as shown in **FIGS. 3-5**, a user places the flexible base **104** containing the rigid cap **106** over the front of his or her knee. The padded area **120** of the elongated strap **128**, **128'** is placed behind the knee of the user while a free end **122**, **122'** of one strap **112**, **112'** is wrapped around the leg of the user and inserted through the first mounting ring **114** on the flexible base **104**. As shown in **FIG. 1**, the same end **122**, **122'** is pulled through the first mounting ring **114** such that the end **122**, **122'** moves from an outside portion **124** of the kneepad **102** towards an inner portion **126** of the kneepad **102**.

[**0028**] **FIG. 7** illustrates an enlarged view of the first mounting ring **114** located on the flexible base **104** without any elongated straps from a sling strap assembly **110**. **FIG. 8** illustrates how, in the first embodiment of the sling strap system **110**, the free end **122** of one **112** strap of FIGS. **6**A-B is inserted through the first mounting ring **114** and folded back on the attachment area **138** to secure the same end to the first mounting ring **114**. **FIG. 9** illustrates how, in the second embodiment of the sling strap system **110**, the free end **122'** of one strap **112'**B of **FIG. 6C** is inserted through the first mounting ring **114** and the other free end **118'** of the strap **112'**A is inserted through the second mounting ring **116**. The free ends **118'**, **122'** of the straps **112'**A, **112'**B are then secured to each other to secure the elongated strap **128'** to the first and second mounting rings **114**, **116**.

[**0029**] Referring again to **FIGS. 3-5**, as with the free end **122**, **122'** of one strap **112**, **112'**B, the free ends **118**, **118'** of the other straps **112**, **112'**A are wrapped around the leg of the user and inserted through the second mounting ring **116** on the flexible base **104** such that the other ends **118**, **118'** move from the outside portion **124** of the kneepad **102** towards the inner portion **126** of the kneepad **102**.

[**0030**] The free ends **118**, **118'** of the straps **112**, **112'**A and the free ends **122**, **122'** of the other straps **112**, **112'**B are pulled through the first and second mounting rings **114**, **116** to force the kneepad against the leg of the user in position over the front of the knee of the user and to force the padded areas **120** of the elongated strap **128**, **128'** against the back of the knee. In a first embodiment of the sling strap system shown in **FIGS. 2A, 3**, and **4**A, once a desired tension is achieved between the kneepad **102** and the knee of the user, the first end **118** of one strap **112** is folded back and secured against the first attachment area **136** while the end **122** of the other strap **112** is folded back and secured against the second attachment area **138**, thereby securing one end of the kneepad **102** to the knee of the user. For kneepads containing more than one sling strap system **110**, this process is repeated for each elongated strap **128**.

[**0031**] In a second embodiment shown in **FIGS. 2B and 4B**, once the desired tension is achieved between the kneepad **102** and the knee of the user, the free ends **118'**, **122'** of the straps **112'**A, **112'**B are secured to each other in front of the kneepad **102**, thereby securing one end of the kneepad **102** to the knee of the user.

[**0032**] In other embodiments, in alternative to the mounting rings **114**, **116**, other mounting device/systems may be provided on the flexible base **104** and/or the elongated strap **128**, **128'** such as hook and loop fastening systems, snaps, fabric loops, buckles, or other means. For example, in embodiments using a snap, the free ends of the elongated strap could make up a snap fastener; a free end of the strap and a mounting area of the flexible base could make up a snap fastener; or a free end of a strap and a first attachment area of an elongated strap could make up a snap fastener. Similarly, in embodiments using a buckle, the free ends of the strap could make up a buckle; a free end of the strap and a mounting area of the flexible base could make up a buckle; or a free end of the strap and a first attachment area of the strap could make up a buckle.

[**0033**] It is therefore intended that the foregoing detailed description be regarded as illustrative rather than limiting, and that it be understood that it is the following claims, including all equivalents, that are intended to define the spirit and scope of this invention.

I claim:

1. A kneepad comprising:

a base;

a mounting system attached to said base; and

an elongated strap removably attached to said mounting system, said elongated strap securing said base to a leg of said user in position over said knee.

2. The kneepad of claim 1, wherein said mounting system comprises:

a first mounting ring attached to said base, said first mounting accepting a first end of said elongated strap;

a second mounting ring attached to said base, said second mounting ring accepting a second end of said elongated strap; and

wherein said first and second ends of said elongated strap are attached to each other in front of said base.

3. The kneepad of claim 2, further comprising a rigid cap attached to said base.

4. The kneepad of claim 3, wherein said first and second mounting rings each are D-rings.

5. The kneepad of claim 3, wherein said first and second mounting rings each have a square shape.

6. The kneepad of claim 2, wherein said first end of said elongated strap comprises a surface of minute hooks and said second end of said elongated strap comprises a surface of uncut pile, said surface of minute hooks operable to secure to said surface of uncut pile.

7. The kneepad of claim 2, wherein said first end of said elongated strap has a first snap section defined thereon and said second end of said elongated strap has a second snap section defined thereon, said first snap section operable to secure to said second snap section.

8. The kneepad of claim 2, wherein said first end of said elongated strap has a buckle defined thereon and said second end of said elongated strap has at least one hole defined thereon, said second end of said elongated strap operable to secure to said first end of said elongated strap at said buckle.

9. The kneepad of claim 2, further comprising:

a second elongated strap removably received by said mounting system, said second elongated strap secures said base and said rigid cap to said leg of said user in position over said knee;

wherein said mounting system further comprises:

a third mounting ring attached to said base, said third mounting ring accepts a first end of said second elongated strap;

a fourth mounting ring attached to said base, said fourth mounting ring accepts a second end of said second elongated strap; and

wherein said first and second ends of said second elongated strap are attached to each other in front of said base.

10. The kneepad of claim 1 wherein said mounting system comprises:

a first mounting ring attached to said base; and

a second mounting ring attached to said base;

wherein a first end of said elongated strap passes through said first mounting ring and is folded back and secured to a first attachment section of said first elongated strap; and

wherein a second end of said elongated strap passes through said second mounting ring and is folded back and secured to a second attachment section of said first elongated strap.

11. The kneepad of claim 10, wherein said first end of said elongated strap comprises a first surface of minute hooks and said first attachment section comprises a surface of uncut pile, said first surface of minute hooks operable to secure to said first surface of uncut pile, and said second end of said elongated strap comprises a second surface of minute hooks and said second attachment are comprises a surface of uncut pile, said second surface of minute hooks operable to secure to said second surface of uncut pile.

12. The kneepad of claim 10, wherein said first end of said elongated strap has a first snap section defined thereon and said first attachment section of said elongated strap has a second snap section defined thereon, and said second end of said elongated strap has a first snap section defined thereon and said second attachment section of said elongated strap has a second snap section defined thereon.

13. The kneepad of claim 10, wherein said first end of said elongated strap has at least one hole defined thereon and said first attachment section of said elongated strap has a buckle defined thereon, and said second end of said elongated strap has at least one hole defined thereon and said second attachment section of said elongated strap has a buckle defined thereon.

14. The kneepad of claim 2, wherein said elongated strap is not permanently attached to said base.

15. The kneepad of claim 1, wherein a first end of said elongated strap comprises a first snap section and said mounting system comprises a second snap section, said first snap section operable to secure to said second snap section.

16. The kneepad of claim 1, wherein said mounting system has a buckle defined thereon and a first end of said elongated strap has at least one hold defined thereon, said first end of said elongated strap operable to secure to said buckle.

17. A method for securing a protective kneepad to a knee of a user comprising:

providing a kneepad comprising:

a base;

a first mounting ring attached to said base;

a second mounting ring attached to said base;

an elongated strap removably attached to said first and second mounting rings, said elongated strap securing said base to a leg of said user in position over said knee;

placing said base over said knee of said user;

placing said elongated strap behind said knee of said user;

wrapping a first end of said elongated strap around said knee and inserting said first end into said first mounting ring;

wrapping a second end of said first elongated strap around said knee and inserting said second end into said second mounting ring;

pulling said first and second ends of said first elongated strap through said first and second mounting rings to obtain a desired tension between said kneepad and said knee;

securing said kneepad against said knee.

18. The method of claim 17, wherein the step of securing said kneepad against said knee comprises:

securing said first and second ends of said first elongated strap to each other to secure said kneepad against said knee.

19. The method of claim 17, wherein the step of securing said kneepad against said knee comprises:

folding back said first end of said first elongated strap to secure said first end to said first elongated strap; and

folding back said second end of said first elongated strap to secure said second end to said first elongated strap to secure said kneepad against said knee.

20. The method of claim 17, further comprising:

wherein said kneepad further comprises:

a third mounting ring attached to said base;

a fourth mounting ring attached to said base; and

a second elongated strap removably attached to said third and fourth mounting rings, said second elongated strap securing said base to said leg of said user in position over said knee

placing said second elongated strap behind said knee of said user;

wrapping a first end of said second elongated strap around said knee and inserting said first end into said third mounting ring;

wrapping a second end of said second elongated strap around said knee and inserting said second end into said fourth mounting ring;

pulling said first and second ends of said second elongated strap through said third and fourth mounting rings to obtain a desired tension between said kneepad and said knee;

securing said kneepad against said knee.

21. The method of claim 20, wherein the step of securing said kneepad against said knee comprises:

securing said first and second ends of said second elongated strap to each other to secure said kneepad against said knee.

22. The method of claim 20, wherein the step of securing said kneepad against said knee comprises:

folding back said first end of said second elongated strap to secure said first end to said second elongated strap; and

folding back said second end of said second elongated strap to secure said second end to said second elongated strap to secure said kneepad against said knee.

* * * * *