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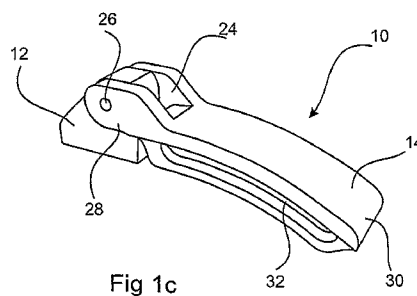
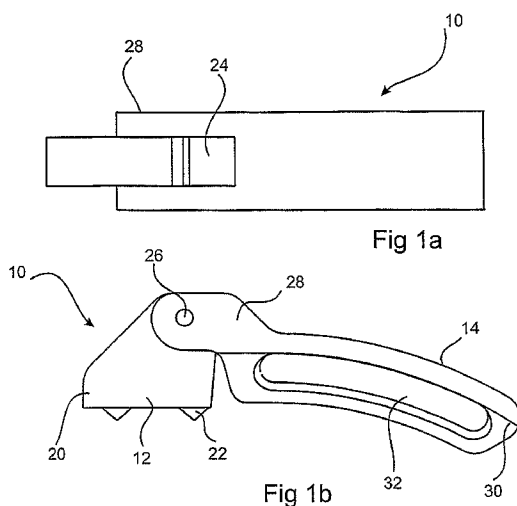
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(54) Title: SHOELACE TENSIONING DEVICE



(57) Abstract: In one arrangement there is provided a shoelace tensioning device (10). The shoelace tensioning device (10) comprises a base member (12) to be secured to the upper surface of a shoe (16) adjacent the laces (18). There is provided an arm member (14) pivotally attached to the base member (12). The arm member (14) has an aperture (24) in the form of a slot for holding of the laces (18) of the shoe (16). The arm member (14) is pivotable from a first condition to a second condition. In the second condition, the arm member (14) extends adjacent the upper surface of the shoe (16) away from the laces (18) such that tension is applied to the laces in the second condition.



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## “SHOELACE TENSIONING DEVICE”

### Field of the Invention

The present invention relates to a device for tensioning shoelaces.

Australian Provisional Application 2007905951 filed 31 October 2008 is  
5 hereby incorporated by reference for all purposes.

### Background to the Invention

In spite of the development of various other types of shoe closure  
arrangements, such as straps with hook and loop fasteners, shoe laces still  
remain the most common form of shoe closure. However there are many  
10 disadvantages associated with shoe laces, not least of which is the need to tie  
them up again every time they come loose or when the shoes have been  
previously removed from the feet and are being put back on. This may prove  
to be a difficult operation, particularly for individuals who do not have the  
requisite dexterity due to immaturity, old age, or disease (e.g. arthritis).

15 A further difficulty arises in connection with sports shoes, which typically have  
longer laces that must be tightly tensioned to provide full support for the  
wearer's feet when playing a sport. While playing sport the wearer's feet may  
swell, further increasing the tension on the shoe laces. Hence when the time  
for removal comes it can be extremely difficult to release the tension on the  
20 laces in order to remove the shoes from the feet.

The present invention was developed with a view to providing a shoelace  
tensioning device for tensioning in such a way that the shoe laces do not need  
to be loosened manually in order to release the tension, thereby making it  
easier to remove the shoe after use. However it will be understood that the  
25 device also has application to other types of shoe closure and is not limited in  
its application to a shoe closure with laces.

References to prior art in this specification are provided for illustrative purposes only and are not to be taken as an admission that such prior art is part of the common general knowledge in Australia or elsewhere.

### Summary of the Invention

5 According to one aspect of the present invention there is provided a shoelace tensioning device comprising:

a base member to be secured to the upper surface of a shoe adjacent the laces; and

an arm member pivotally attached to the base member, the arm member  
10 having an aperture for holding the laces of the shoe;

wherein the arm member is pivotable from a first condition to a second condition such that in the second condition, the arm member extends adjacent the upper surface of the shoe away from the laces such that tension is applied to the laces.

15 In a preferred embodiment, the arm member is curved such that in the second condition, the arm member rests generally against the upper surface of the shoe. Preferably the aperture in the arm member extends along the length of the arm member from a first end adjacent the base member to a second opposite end of the arm member.

20 The term laces is to be given a broad interpretation so as to include laces having both ends fixed to the shoe. In one arrangement there is provided a shoe, two tensioning devices and two such laces. The arm member is preferably provided with a slot adjacent the first end wherein the upper end of the base member is received in the slot and a pivot pin extends across the slot  
25 and through a hole in the arm member to provide the pivotal movement of the arm member about the base member. Advantageously, the aperture in the arm member adjacent the base member is located in use below the pivot pin.

The base member is provided with a means for securing the base member to the upper surface of the shoe. The means for securing the base member may

comprise a threaded fastener received in a threaded aperture in a lower surface of the base member. The lower surface of the base member may be provided with one or more protrusions to engage with the upper surface of the shoe to prevent movement, in use, of the base member relative to the shoe.

- 5 Advantageously the shoelace tensioning device includes at least one element on the arm member adjacent the pivot adapted to push the laces away from below the pivot to ensure that the laces move are not caught in that position when moving the arm member from the second condition to the first condition. The at least one element may comprise two bevelled portions arranged to  
10 force the laces away from one another from a position below the pivot.

Throughout the specification, unless the context requires otherwise, the word “comprise” or variations such as “comprises” or “comprising”, will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers. Likewise the word  
15 “preferably” or variations such as “preferred”, will be understood to imply that a stated integer or group of integers is desirable but not essential to the working of the invention.

### **Brief Description of the Drawings**

The nature of the invention will be better understood from the following  
20 detailed description of several specific embodiments of the shoelace tensioning device, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1a is a top view of a shoelace tensioning device in accordance with an embodiment of the present invention;

25 Figure 1b is a side view of the shoelace tensioning device of Figure 1a;

Figure 1c is an upper perspective view of the shoelace tensioning device of Figure 1a;

Figure 2a is a view of the shoelace tensioning device of Figure 1 in a first position;

Figure 2b is a view of the shoelace tensioning device of Figure 1 in a second position in which tension is applied to the shoelaces;

Figure 3a is a view of a shoe, according to another embodiment of the present invention; and

5 Figure 3b is a view of a shoelace tension device suitable for use in the shoe shown in Figure 3b.

### Detailed Description of Preferred Embodiments

A preferred embodiment of a shoelace tensioning device 10 in accordance with the invention, as illustrated in Figures 1a to 2b, comprises a base  
10 member 12 and an arm member 14. The base member 12 is arranged to be secured to the upper surface of a shoe 16 adjacent the laces 18, as shown in Figure 2.

The base member 12 is secured to the upper surface of the shoe 16 by any suitable means. The base member 12 may be secured to the upper surface of  
15 the shoe 16 by way of a threaded fastener, such as a bolt or screw (not shown), passed through a hole in the upper surface of the shoe 16 and received in a threaded opening in the lower surface 20 of the base member 12. The lower surface 20 of the base member 12 may also be provided with one or more protrusions 22 to engage with the upper surface of the shoe 16 to  
20 prevent movement of the base member 12 relative to the upper surface of the shoe 16.

The arm member 14 is pivotally secured to the base member 12. The pivotal arrangement is such that the arm member 14 can pivot between a position in which it is located above the laces of the shoe 16 and a position in which it is  
25 located above the upper surface of the shoe 16 extending away from the laces (as shown in Figure 2b).

The arm member 14 includes a slot 24 at a first end 28 thereof which receives the upper end of the base member 14. A pin 26 is provided in the base member 14 extending across the slot 24. The pin 26 is received in the first end

28 of the arm member 14 to provide the pivoting action of the arm member 14 about the base member 12.

The arm member 14 is curved such that the curve generally corresponds to the curve in the upper surface of the shoe 16. The arm member 12, when in the second position, therefore rests generally against the upper surface of the shoe 16 along the length of the arm member 14. The arm member 14 also includes an aperture 32 extending along the length of the arm member 14 from adjacent the base member 12 to adjacent the second end 30. The aperture 32 is provided for receiving a portion of the shoe's laces, as can be seen Figure 2. The aperture 32 is arranged such that when the arm member 14 is in the second position as shown in Figure 2b, the position of the aperture 32 adjacent the first end 28 of the arm member 14 is below the pivot pin 26.

In use, one or more of the shoelace tensioning devices 10 are provided on the upper surface of the shoe 16 adjacent the laces 18. In the example shown in Figure 2, two shoelace tensioning devices 10 are provided. Each of the tensioning devices 10 receives a portion of the lace 18 in the aperture 32. Figure 2a shows the arm members 14 in a first position in which the laces 18 are not under tension. The arm members 14 are then moved to the position shown in Figure 2b in which the arm members 14 rest generally against the upper surface of the shoe 16. This movement tensions the shoe laces 18. As the position of the laces 18 in the aperture 32 is lower than the pivot pin 26, the arm member 14 will remain in this state. Tension can be released from the laces 18 by the opposite movement of the arm member 14.

Referring now to Figure 3a there is shown a shoe 40 according to a further preferred embodiment of the present invention. The shoe 40 is similar to the shoe 16 in that there are provided two tensioning devices 42 and two laces 46. In the shoe 40, anchoring points 44 for securing the ends of the laces 46 are in relatively close proximity. When the tensioning devices 42 are moved from a closed to an open condition to release the laces 46, this causes laces 46 to wrap around the heads 48 of the tensioning devices 42 as shown in

Figure 3. This means that the wearer must to jiggle the laces 46 to remove them from wrapping around the heads 48.

Referring to Figure 3b, there is shown a particularly advantageous shoe tensioning device 50 according to a further embodiment of the present invention. The tensioning device 50 includes two elements 52 on the head 5 portion 48. The elements 52 advantageously operate to automatically force the laces 46 apart on moving the arm of the tensioning device 50 to the open condition. Consequently the wearer does not have to jiggle the laces 46 to remove them wrapping around the heads 48.

10 In this particular arrangement the elements 52 comprise bevelled tabs. The bevelled tabs are shaped, in use, to push the laces 46 away from head 48 adjacent pivot point 54 to ensure that the laces 48 move from below the pivot point 54 to above the pivot point 54 when moving the arm member to place the tensioning device 50 in the open condition.

15 The action of pushing the laces 46 is achieved by the tabs 52 being shaped to cleave the laces 46 away from the head 48 of the tensioning device 50. In this manner the laces are not caught below the pivot point 54.

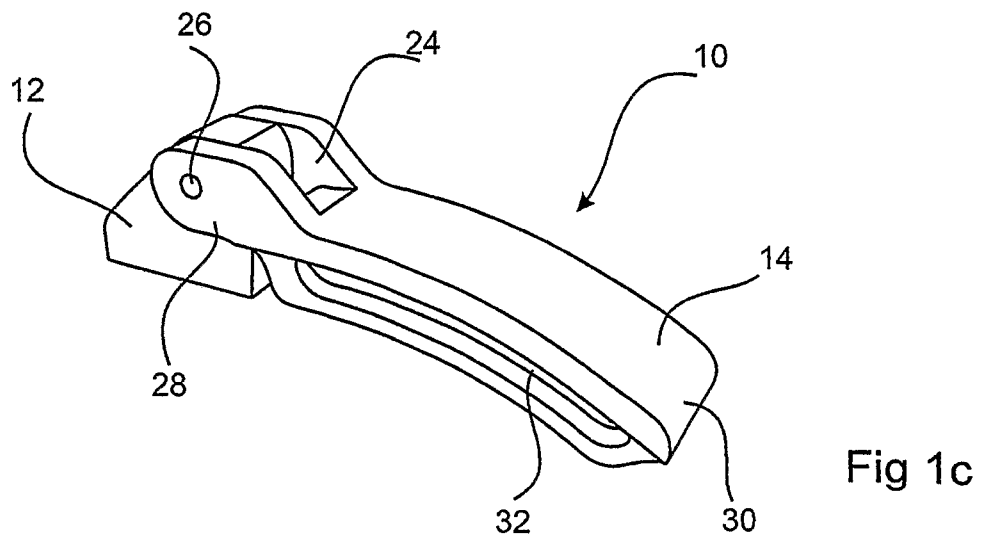
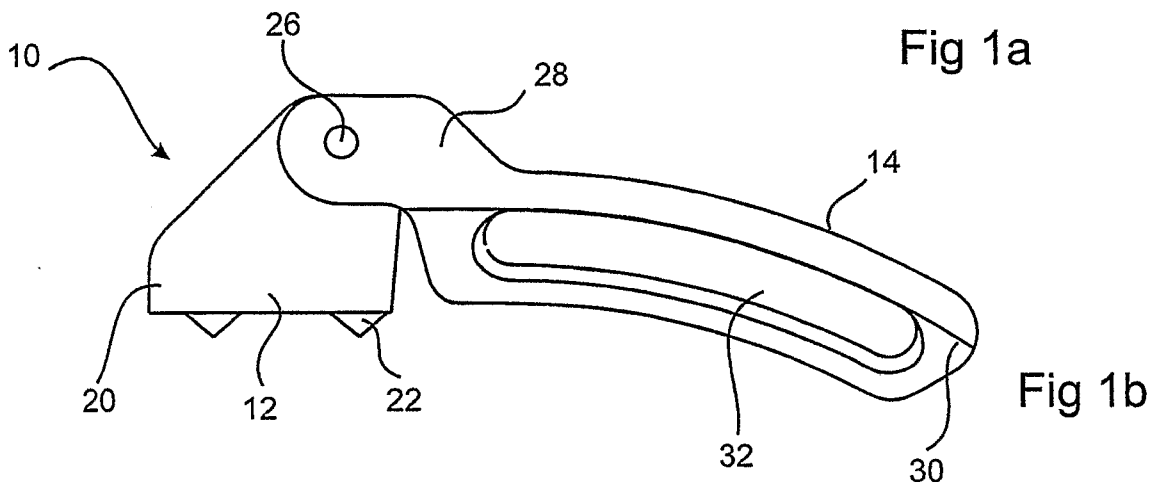
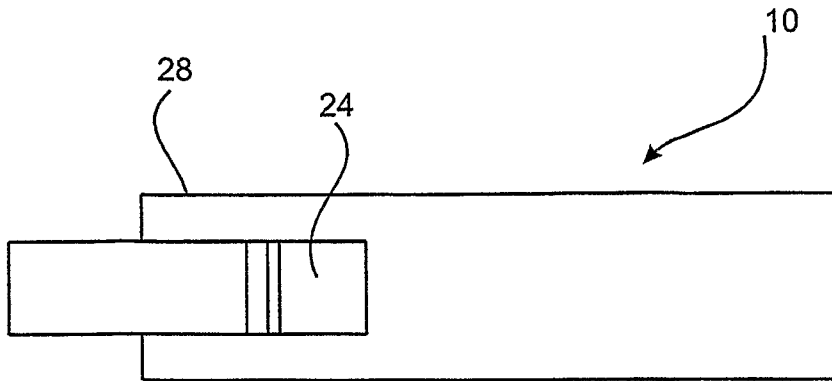
It will be readily apparent to persons skilled in the relevant arts that various modifications and improvements may be made to the foregoing embodiments, 20 in addition to those already described, without departing from the basic inventive concepts of the present invention. Therefore, it will be appreciated that the scope of the invention is not limited to the specific embodiments described.

## Claims

1. A shoelace tensioning device comprising:
  - 5 a base member to be secured to the upper surface of a shoe adjacent the laces; and  
an arm member pivotally attached to the base member, the arm member having an aperture for holding the laces of the shoe;  
wherein the arm member is pivotable from a first condition to a second condition  
10 such that in the second condition, the arm member extends adjacent the upper surface of the shoe away from the laces such that tension is applied to the laces.
2. A shoelace tensioning device as claimed in claim 1 wherein pivoting the arm member from the first condition to the second condition causes the  
15 aperture to pull the laces away from the shoe thereby applying tension to the laces in the second position.
3. A shoelace tensioning device as claimed in claim 1 or 2 wherein in the second condition the aperture tensions the laces from a location below the location at which the arm member is pivotally attached to the shoe.
- 20 4. A shoelace tensioning device as claimed in any one of claims 1 to 3 wherein applying tension to the laces, when in the second condition, causes the arm member to be urged further away from the first condition.
5. A shoelace tensioning device as claimed in any one of claims 1 to 4  
25 wherein the arm member is curved such that in the second condition, the arm member follows the general contour of the upper surface of the shoe.
6. A shoelace tensioning device as claimed in claim 5 wherein the arm member rests generally against the upper surface of the shoe when in the second condition.



7. A shoelace tensioning device as claimed in any one of claims 1 to 6 wherein the aperture in the arm member extends along the length of the arm member from a first end adjacent the base member to a second opposite end of the arm member.
- 5 8. A shoelace tensioning device as claimed in claim 7 wherein the arm member is provided with a slot adjacent the first end wherein the upper end of the base member is received in the slot and a pivot pin extends across the slot and through a hole in the arm member to provide the pivotal movement of the arm member about the base member.
- 10 9. A shoelace tensioning device as claimed in claim 8 wherein the aperture in the arm member adjacent the base member is located, in use, below the pivot pin.
10. A shoelace tensioning device as claimed in any one of claims 1 to 9  
15 member to the upper surface of the shoe.
11. A shoelace tensioning device as claimed in claim 10 wherein the means for securing the base member comprises a threaded fastener received in a threaded aperture in a lower surface of the base member.
12. A shoelace tensioning device as claimed in any one of claims 1 to 11  
20 including at least one element on the arm member, adjacent the pivot, adapted to push the laces away from below the pivot to ensure that the laces are not caught in that position, when moving the arm member from the second condition to the first condition.
13. A shoelace tensioning device substantially as herein described with  
25 reference to the accompanying drawings.



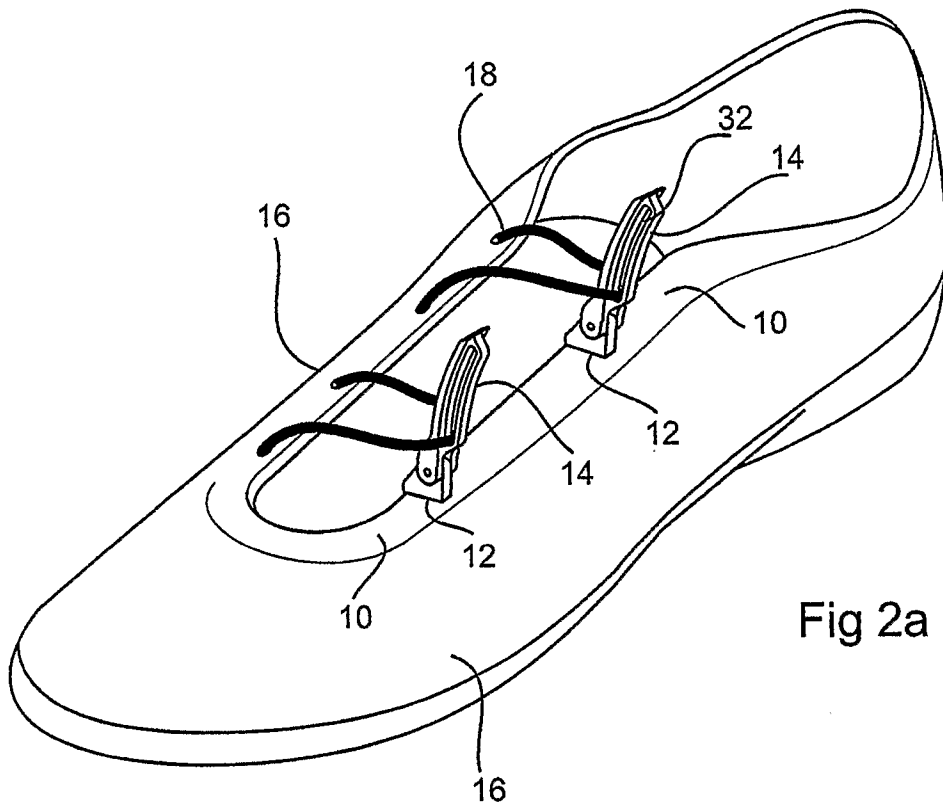


Fig 2a

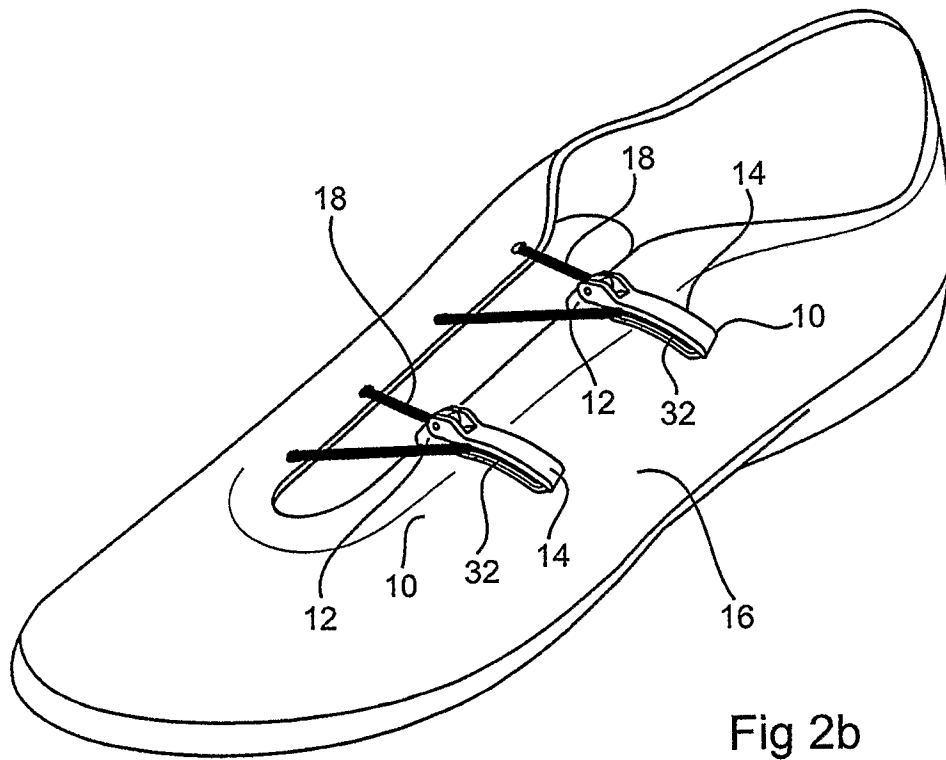


Fig 2b

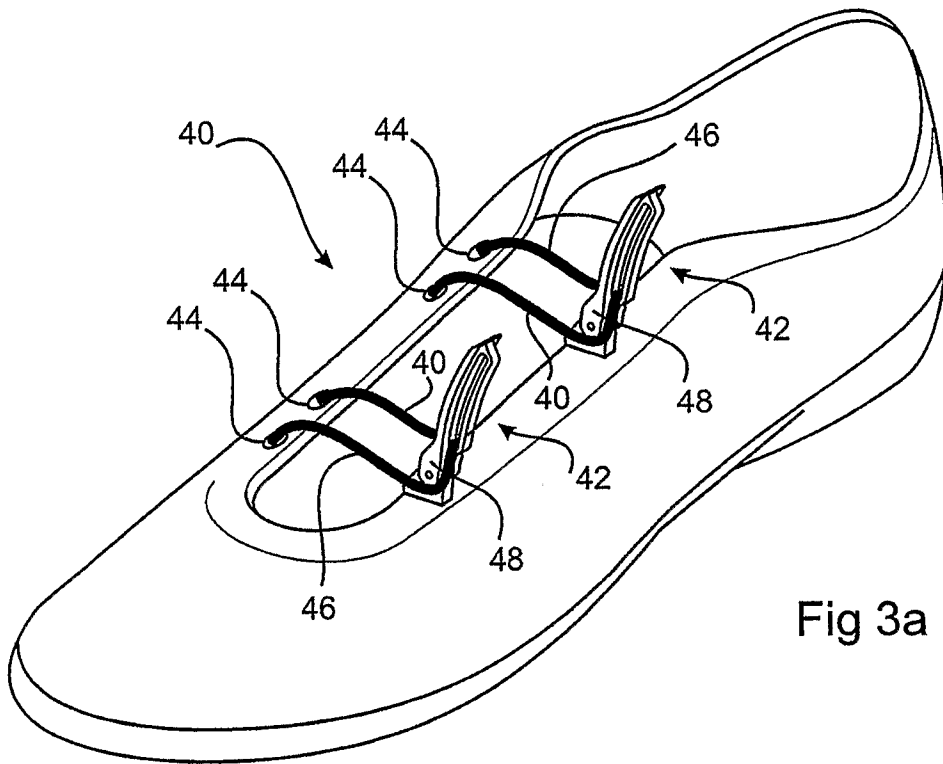


Fig 3a

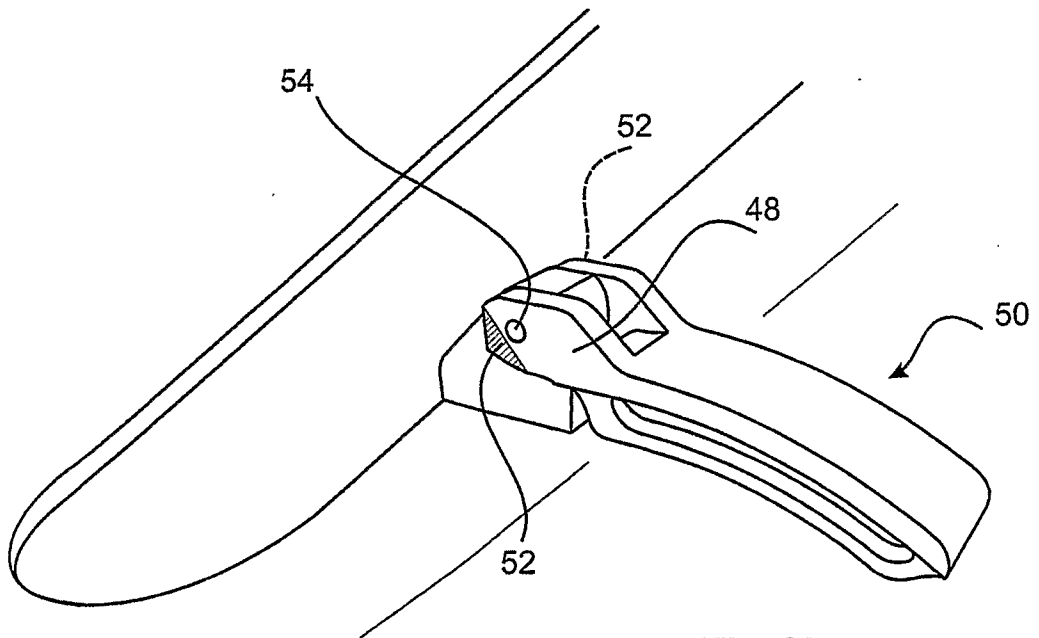


Fig 3b

# INTERNATIONAL SEARCH REPORT

International application No.

**PCT/AU2008/001606**

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl.

*A43C 1/00* (2006.01)      *A43C 7/04* (2006.01)      *A43C 11/20* (2006.01)  
*A43B 5/04* (2006.01)      *A43C 7/08* (2006.01)      *A43C 11/24* (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC; IPC Marks A43C1/, 7/, 9, 11 A43B 5/ +keywords (lace, loop, strap, tension, tighten, loose, secure, toggle, lever, pivot, clip, snap, buckle)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5129130 A (LECOUTURIER) 14 July 1992 Figures 1-5	1-11 12
A	DE 10239927 A (GUDO AG) 4 September 2003	1-12
A	US 4253217 A (MARZOCCHI) 3 March 1981	1-12

Further documents are listed in the continuation of Box C

See patent family annex

* Special categories of cited documents:		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search  
18 November 2008

Date of mailing of the international search report  
**29 NOV 2008**

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2008/001606

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: **13**  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
Claim 13 does not meet the criteria of PCT Rule 6.2(a)
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

information on patent family members

International application No.

PCT/AU2008/001606

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5129130	NONE					
DE	10239927	NONE					
US	4253217	DE	2921441	FR	2427071	JP	54161433
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.							
END OF ANNEX							