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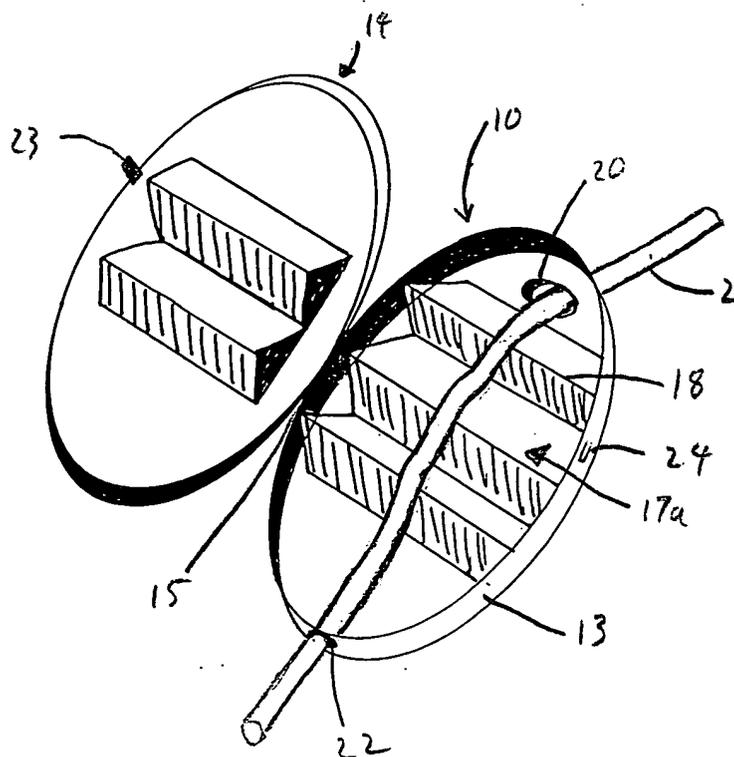
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(54) **A gripper device**

(57) A shoe-lace gripper (8) device is disclosed which is configured to grip a shoe-lace (2) through an eyelet (4) of the shoe (1). The gripper device comprises a pair of gripper elements (17a,17b) and means to lock (23,24), clamp

or urge the gripper element together in a gripping configuration so as to grip a length of the shoe-lace between two gripper elements. The gripper elements are configured to urge or deform part of the shoe-lace into a tortuous path, thereby securing the gripper device of the shoe-lace in a fixed position along the shoe-lace.

FIG 3



Description

[0001] THE PRESENT INVENTION relates to a gripper device and more particularly relates to a shoe-lace-gripper configured to grip a shoe-lace and prevent withdrawal of the shoe-lace through an eyelet of a shoe.

[0002] Most shoes make use of shoe-laces which are typically threaded through eyelets formed in the vamp region of the shoe. Pulling the free ends of the laces, once the shoe is on the foot of the wearer, draws the vamp part of the shoe upper tightly over the wearer's foot thus securing the shoe to the foot. The free ends of the laces are traditionally tied in a bow to ensure that the shoe remains secured to the foot.

[0003] However, it is becoming increasingly common for lace-up shoes such as training shoes to be worn with their laces left untied, in order to enable the shoes to be slipped on and off more easily. This leaves undesirable lengths of shoe-lace extending out of the final eyelets, which can be unsightly, cause the laces to become dirty and frayed, whilst also increasing the danger of wearer tripping. To prevent this from happening, people wearing shoes in this way often tuck these free ends of the laces inside the shoe and under the foot. However, this can result in discomfort for the wearer and there is still the danger of tripping or entanglement, if the laces should work free during walking or running.

[0004] A known solution to this problem is to tie a knot in each free end of the shoe-lace at a point adjacent the final eyelet through which the free ends protrude. The surplus free length of shoe-lace is then cut off and the shoes may then be slipped on and off without any danger of tripping or entanglement when worn. A problem with this solution, however, is that through wear and tear the knots in each free end can gradually tighten up causing the shape of the shoe to distort from the preferred original shape, resulting in a poor shoe fitting and hence performance.

[0005] It is therefore an object of this invention to provide a shoe-lace gripper device which seeks to address these problems.

[0006] Accordingly, the present invention provides a shoe-lace gripper configured to grip a shoe-lace and prevent withdrawal of the shoe-lace through an eyelet of a shoe, the shoe-lace gripper comprising: a pair of gripper elements; and means to lock, clamp or urge the gripper elements together in a gripping configuration so as to grip a length of the shoe-lace between the two gripper elements; the gripper elements being configured to urge or deform at least part of said length of the shoe-lace into a serpentine tortuous path when said gripper elements adopt said gripping configuration, thereby securing the shoe-lace gripper to the shoe-lace in a fixed position along the shoe-lace; wherein at least part of the shoe-lace gripper is sized so as to be larger than the eyelet of the shoe. A first of said gripper elements is provided with a plurality of gripping formations, and the second of said gripper elements is provided with at least

one corresponding gripping formation arranged for interdigitation with the gripping formations of the first element when the elements adopt said gripping configuration, so as to define said serpentine tortuous path.

[0007] Conveniently, each of said gripping formations takes the form of a ridge or serration upstanding from the respective gripper element.

[0008] Advantageously, said gripper elements are hingedly mounted to one another for movement between an open configuration in which a shoe-lace can be inserted between the two gripper elements, and said gripping configuration.

[0009] Preferably, said two gripper elements are releasably lockable in said gripping configuration.

[0010] Conveniently, said shoe-lace-gripper is moulded from plastics material.

[0011] Advantageously, said gripper elements are interconnected by a living hinge.

[0012] Preferably, one of said gripper elements is provided with a pair of apertures to allow the passage of the shoe-lace therethrough.

[0013] Conveniently, said shoe-lace-gripper is provided in combination with a shoe-lace.

[0014] Advantageously, said shoe-lace-gripper is provided in combination with a shoe having a shoe-lace.

[0015] In order that the invention may be more readily understood and so that further features thereof may be appreciated, an embodiment thereof will now be described, by way of example with reference to the accompanying drawings, in which :

Figure 1 is a perspective view of a training shoe, illustrating the free ends of the shoe-lace extending out of the final eyelets;

Figure 2 is a perspective view of a shoe-lace-gripper, in accordance with the present invention, illustrated in an open configuration ready to receive a shoe-lace;

Figure 3 is a perspective generally corresponding to Figure 2 illustrating a length of shoe-lace threaded therethrough;

Figure 4 is a perspective view of the shoe-lace-gripper of Figures 1 and 2, illustrated in a closed configuration gripping a length of shoe-lace;

Figure 5 is a cross-section through the shoe-lace-gripper illustrated in Figure 4, taken along A-A;

Figure 6 is a perspective view of the shoe-lace-gripper illustrated in position gripping a length of shoe-lace on a shoe.

[0016] Referring now to Figure 1, a shoe 1 is illustrated, taking the form of a generally conventional training shoe. The present invention will be described with par-

ticalar reference to this training shoe, but it should be appreciated that the present invention is equally suited for use with other types of shoes, providing they have a shoe-lace.

[0017] The shoe 1 is provided with a shoe-lace 2. The upper 3 of the shoe is provided with two opposed rows of eyelets 4 in the vamp region 5 of the upper 3, the rows of eyelets 4 running along either side of the tongue 6 which is located below the free edges of the upper 3. The shoe-lace 2 is threaded in a conventional manner, through the eyelets 4, from one row to the other, in an alternate manner, until each free end of the shoe-lace 2 exits a final eyelet 7 at the end of each row of eyelets 4 in the region of the shoe opening. Tension applied to both free ends of the shoe-lace 2 draws the two rows of eyelets 4 together over the tongue 6, thus tightening the vamp region 5 of the shoe 1 around the wearer's foot (not illustrated). This increases the length of free shoe-lace extending from each final eyelet 7.

[0018] In order that the free ends of the shoe-lace 2 are not drawn back through the final eyelets 7, thereby loosening the vamp region from around the wearer's foot, it is proposed to provide a pair of shoe-lace-grippers 8, as illustrated in Figure 6, in order to grip each free end of the lace 2 exiting from the final eyelet 7, on each side of the shoe. The body of each shoe-lace-gripper 8 is larger than the internal dimensions of the final eyelet hole 7, and therefore prevents the free end of the shoe-lace 2 being drawn through the final eyelet 7. As there is now no longer a need to tie the free ends of the lace into a bow, the surplus free-ends of the lace may be cut off to leave a stub indicated at 9.

[0019] The shoe-lace-gripper 8 is illustrated in more detail in Figure 2 in its initial open configuration ready to receive a length of the shoe-lace 2. The shoe-lace-gripper 8 comprises a first element or base 10 of generally ovoid configuration, comprising a substantially planar base plate 11 defining an upper surface 12. A wall 13 is provided upstanding from the upper surface 12 of the base plate 11 around the periphery of the base plate. A substantially planar second element or lid 14 is hingedly connected to the base 10 by means of a hinge 15 located between the periphery 16 of the lid 14 and the upper edge of the wall 13. The lid 14 again has a generally ovoid configuration of substantially equal dimensions to the base 10.

[0020] The upper surface 12 of the base 10 is provided with a plurality of parallel and adjacent upstanding gripping formations 17a. The particular arrangement illustrated has three such gripping formations. Each gripping formation 17a is generally elongate in form, having its longitudinal axis substantially parallel to the minor axis of the oval defining the base 10. Each gripping formation 17a has a substantially uniform triangular cross-section. It will therefore be readily apparent that each gripping formation 17a defines an upper ridge 18 spaced above the upper surface 12 of the base plate 11. The upper ridge 18 of each formation 17a is spaced

from the corresponding ridge 18 of the or each adjacent formation 17a.

[0021] The lid 14 is also provided with gripping formations 17b, the gripping formations 17b of the lid 14 being substantially identical in form to the gripping formations 17a of the base 10. The specific arrangement illustrated in figure 2 is shown having two gripping formations 17b carried by the lid, but as will become apparent, the lid could be provided with any suitable number of gripping formations 17b as long as at least one is provided. The or each gripping formation 17b provided on the lid 14 is arranged such that its longitudinal axis is substantially parallel to the minor axis of the oval defining the lid 14.

[0022] The sets of gripping formations on both the base and lid are configured to have the same spacing or pitch such that the ridges 18 of one set of gripping formations are aligned with the troughs 19 of the other set of gripping formations. It will therefore be appreciated that the two sets of gripping formations are configured for interdigitation with one another as the lid 14 is moved about the hinge 15 towards the closed configuration illustrated in figure 4.

[0023] An inlet aperture 20 is provided through the base plate 11 in the end region of the base plate 11. As illustrated in Figure 2, the inlet aperture 20 is preferably provided between an end gripping formation 21 and the wall 13, and is located substantially on the major axis of the oval defining the base 10.

[0024] An outlet aperture 22 is provided through the wall 13 at the opposite end of the base 10. The outlet aperture 22 is also located substantially on the major axis of the base 10 so as to be aligned with the inlet aperture 20.

[0025] A releasable catch 23 is provided on the lid 14 and positioned near to the periphery 16 of the lid. The catch 23 has a hook formation at its end. Upon closure of the lid 14 onto the base 10, about the hinge 15, the hook carried by the catch 23 engages with a co-operating aperture 24 or recess provided on the wall 13 thus releasably locking the lid 14 to the base 10 in the configuration illustrated in Figure 4. Of course, any other convenient form of catch or locking mechanism could be used to secure the lid 14 to the base 10 in the closed configuration. Indeed if it is envisaged that the lid 14 could be sized so as to be received within the peripheral wall 13 of the base 10 as an interference fit, so as to hold the lid in its closed position.

[0026] The shoe-lace-gripper 8 is illustrated in Figure 3 in its open configuration with a shoe-lace 2 passing from the outside of the base 10 through the inlet aperture 20, over the ridges 18 of the set of gripping formations 17a on the base and out through the outlet aperture 22 in the wall 13 of the base 10.

[0027] The lid 14 may then close over onto the base 10, pivotally about the hinge 15, until the catch 23 engages releasably with the co-operating aperture or recess 24, thus reaching the closed configuration illustrated in figure 4, in which the peripheral edge 16 of the lid

14 abuts the uppermost edge of the side wall 13.

[0028] As illustrated in figure 5 in cross-sectional view, when the shoe-lace-gripping device 8 is closed, the two sets of gripping formations 17a, 17b face each other in an inter-digitated manner to urge or deform the shoe-lace 2, extending between the respective sets of gripping formations 17a, 17b, into a tortuous or serpentine path 25. The shoe-lace 2, passing through the inlet aperture 20 and over the ridges 18 of the gripping formations 17a on the base 10, and out through the outlet aperture 22 in the wall is therefore now compressed between the opposing sets of gripping formations 17a and 17b and forced to follow the tortuous path 25 therebetween. It should therefore be appreciated that the shoe-lace 2 is tightly gripped by the shoe-lace-gripper 8, by virtue of both the friction between the shoe-lace 2 and the gripping formations 17a, 17b and the bending of the shoe-lace 2 along the tortuous path 25, such that the shoe-lace 2 cannot be withdrawn from the shoe-lace-gripper 8 unless the shoe-lace-gripper is subsequently opened again.

[0029] One shoe-lace-gripper 8 is illustrated in Figure 6 in its closed configuration, and gripping a length of shoe-lace 2 extending out of the final eyelet 7 of the shoe 1. As the body of each shoe-lace-gripper 8 is larger than the internal dimensions of the final eyelet hole 7, it therefore prevents the free end of the shoe-lace 2 being drawn through the final eyelet 7, thereby obviating the need to tie the shoe-lace in a bow as is conventional.

[0030] Any surplus length of shoe-lace extending from the outlet aperture 22 of the base 10 may, if desired, be cut off to leave a stub 9. The stub 9 may be subsequently pushed back through the outlet aperture 22 into a recess 26 (Figure 5) so as to be out of sight. The recess 26 is located inside the body of the shoe-lace-gripper 8 between the outlet aperture 22 and the opposing gripping formations 17a, 17b.

[0031] Ideally the shoe-lace-gripper 8 would be made from plastics material. The hinge 15 is preferably a living hinge. It should also (for example by moulding) be appreciated that the hinge 15 between the lid 14 and the upper edge of the wall 13 may be positioned at locations around the periphery 16 of the lid other than that illustrated in the figures herein.

[0032] Although the figures show the preferred embodiment of the invention, it should be appreciated that other configurations of shoe-lace-gripper are possible. For example, instead of a generally void configuration, the gripper device could alternatively be substantially, square, rectangular, circular, trapezoidal or any other convenient or aesthetically desirable shape.

[0033] The two sets of gripping formations of the embodiment illustrated, have a 'saw tooth' profile which cooperate in an inter-digitated manner to form the tortuous path 25. It is to be appreciated, however, that the profile of the gripping formations may vary from that illustrated, so long as the opposing sets of gripping formations cooperate in an inter-digitated manner to form a tortuous

path.

[0034] It is also envisaged that the outermost surfaces, or any other convenient part of the gripper device could be provided with a log or other indicia marking the arrangement particularly suitable, for example, for use as a potential item.

[0035] In the present specification "comprises" means "includes or consists of" and "comprising" means "including or consisting of".

[0036] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

20 Claims

1. A shoe-lace-gripper configured to grip a shoe-lace and prevent withdrawal of the shoe-lace through an eyelet of a shoe, the shoe-lace-gripper comprising:

a pair of gripper elements;
and means to lock, clamp or urge the gripper elements together in a gripping configuration so as to grip a length of the shoe-lace between the two gripper elements;
the gripper elements being configured to urge or deform at least part of said length of the shoe-lace into a serpentine tortuous path when said gripper elements adopt said gripping configuration, thereby securing the shoe-lace-gripper to the shoe-lace in a fixed position along the shoe-lace;

wherein at least part of the shoe-lace-gripper is sized so as to be larger than the eyelet of the shoe; wherein a first of said gripper elements is provided with a plurality of gripping formations, and the second of said gripper elements is provided with at least one corresponding gripping formation arranged for interdigitation with the gripping formations of the first element when the elements adopt said gripping configuration, so as to define said serpentine tortuous path.

2. A shoe-lace-gripper according to claim 1, wherein each of said gripping formations takes the form of a ridge or serration upstanding from the respective gripper element.

3. A shoe-lace-gripper according to any preceding claim, wherein said gripper elements are hingedly mounted to one another for movement between an open configuration in which a shoe-lace can be in-

serted between the two gripper elements, and said gripping configuration.

4. A shoe-lace-gripper according to any preceding claim wherein said two gripper elements are releasably lockable in said gripping configuration. 5
5. A shoe-lace-gripper according to any preceding claim moulded from plastics material. 10
6. A shoe-lace-gripper according to claim 5 as dependant upon claim 4, wherein said gripper elements are interconnected by a living hinge. 15
7. A shoe-lace-gripper according to any preceding claim, wherein one of said gripper elements is provided with a pair of apertures to allow the passage of the shoe-lace therethrough. 20
8. A shoe-lace-gripper according to any preceding claim provided in combination with a shoe-lace. 25
9. A shoe-lace-gripper according to any one of claims 1 to 8, provided in combination with a shoe having a shoe-lace. 25

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FIG 1



FIG 2

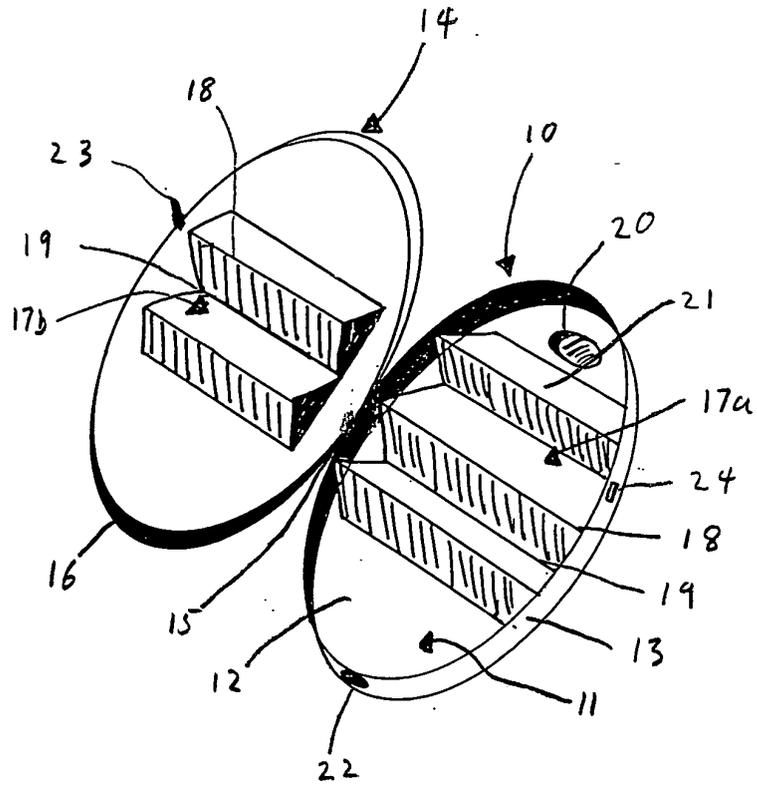


FIG 3

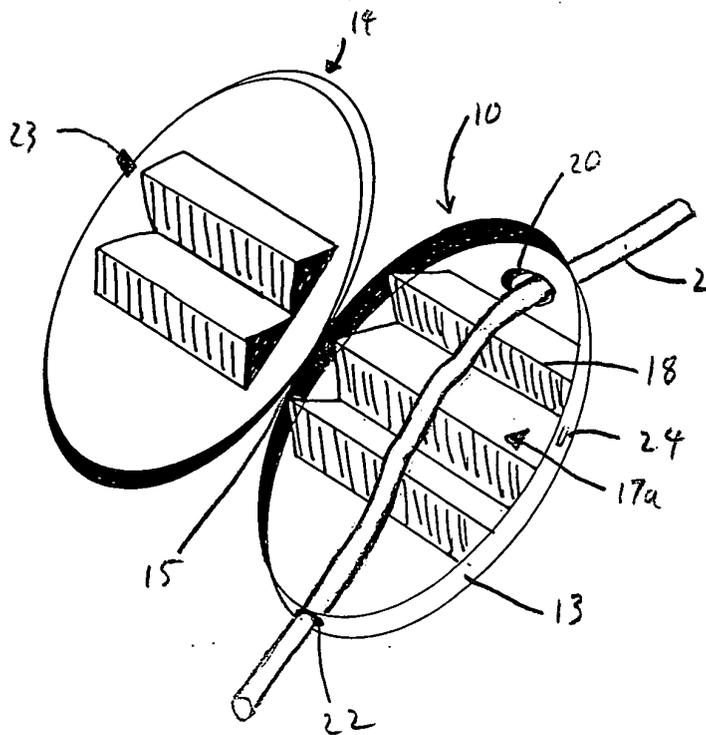


FIG 4

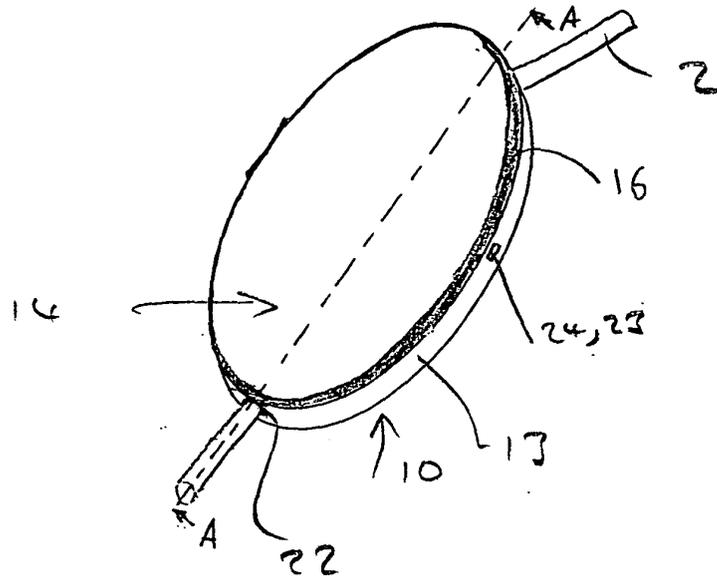


FIG 5

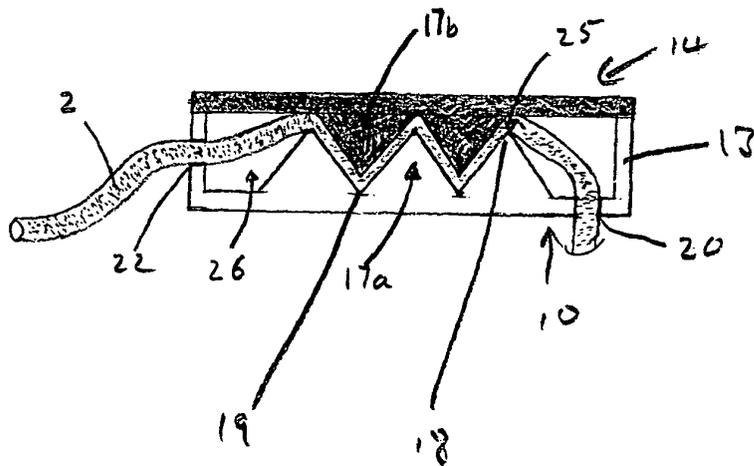


FIG 6





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 03 02 5026

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		9 December 2003	Claudel, B
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 03 02 5026

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09-12-2003

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