

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: FISHER, Montgomery K.
Application Number: 09/916,834
Art Unit: 3677
Examiner: Victor Sakran

Amendment Under 37 C.F.R. § 1.111

24 September 2002

Assistant Commissioner for Patents
Washington DC 20131

Dear Sir:

In response to the Office Action dated 25 June 2002, the Applicant hereby amends the Application, explains the basis for patentability, and requests reconsideration of the application.

Under 37 C.F.R. § 1.121(c)(1), please rewrite claim 1 as shown at Tab 1. A version of the rewritten claim marked up to show all changes relative to the previous version of the claim is attached at Tab 2; the changes are shown by cross-out for deleted matter and double underlining for added matter.

The grounds for rejection set out in the Office Action are addressed below:

Claim 1: 35 U.S.C. § 112, Second Paragraph

This rejection has been addressed by the amendment of claim 1 referred to above. Accordingly, it is respectfully requested that the rejection under § 112, second paragraph, of claim 1 be withdrawn.

Claims 1 & 5-8: 35 U.S.C. § 103(a)

The Application covers a double-helical process for lacing. The Office (¶ 6) states that “*Schopbach* discloses the general combination claimed of a lacing device in which the path followed by said lace defines a double twist (helix),” citing Figure 1 and specified text from that patent. *Schopbach*’s Figure 1 shows a corset in which the lacing conforms to Applicant’s double-helical process. The Office (¶ 8) also included “prior art made of record and not relied on,” of which *Hicks* and *Chisholm* include drawings (*Hicks* Figs. 1 & 2, *Chisholm* Fig. 1) in which a portion of the lacing conforms to Applicant’s double-helical process. Applicant acknowledges that prior art that teaches or discloses the advantages of double-helical lacing for a use analogous to shoe lacing, such as corset or glove lacing, would render obvious a double-helical lacing process for shoes. However, the objectives of the patents cited by the Office have nothing whatever to do with the manner of lacing, and none describes or even mentions the manner of lacing in the specification or claims. It is a long-established principle that

prior patents are part of the prior art only by what they disclose on their face; that prior accidental production of the same thing, where the character and function were not recognized until the invention of the later patent, does not effect anticipation; and that anticipation is not disclosed by a drawing which only incidentally shows a similar arrangement of parts, where such arrangement is not essential to the first invention, and was not itself adopted and used to perform the function which it performs in the second invention, and where the first patent contains no suggestion of the way in which the result sought is accomplished by the second inventor.

Fulton Co. v. Bishop & Babcock Co., 284 F. 774, 777 (6th Cir. 1922) (citations omitted). The text from *Schopbach* specified by the Office addresses the manner of weaving the invention’s “lacing-hole strip” (page 1, column 2, lines 64-91), and the use of the

invention for lacing holes located “at any part of or place . . . where such lacing holes are required” (page 2, column 2, lines 50–64). The text of *Schopbach* mentions the use of lacing strings only in the context of explaining the function of that patent’s objective, which is “to provide lacing holes for the back lacings of the corset without the employment of metallic eyelets for the said lacing holes.” Neither that text nor any other text in the specification or claims says anything about how the lacing is performed, for the obvious reason that the lacing process is irrelevant to the function of the disclosed invention. The same is true of *Hicks* and *Chisholm*.

In a situation analogous to this one, the Court of Customs and Patent Appeals reversed the rejection of an application for obviousness:

We are aware, of course, that a claimed invention may be anticipated or rendered obvious by a drawing in a reference, whether the drawing disclosure be accidental or intentional. But, as the solicitor correctly states, a drawing is available as a reference for all that it teaches a person of ordinary skill in the art. The drawing here . . . simply would not, in our view, teach or suggest the claimed invention to those who had never seen appellants’ disclosure. . . . We are further stayed from a holding of obviousness when, as here, the drawing occurs in a reference in no way directed toward the problem involved, and the drawing must be viewed in a teaching vacuum so far as the invention before us is concerned.

In re Meng, 492 F.2d 843, 847–848, 181 U.S.P.Q. 94 (1974) (citation omitted). Nothing in *Schopbach* or the other references teaches or discloses anything about double-helical lacing, because those patents are “in no way directed toward the problem involved” in the lacing process. Nothing in the prior art attempts to solve the problems inherent in lacing ordinary shoes or boots, using ordinary laces. As noted in the Application, the prior art efforts to facilitate lacing have all involved custom-made laces and/or shoes.

Nothing in *Schopbach*, *Hicks*, *Chisholm*, the other references cited by the Office, or any reference or source within Applicant's knowledge (after extensive research), supports a conclusion that shoes, corsets, gloves, or anything else have ever been intentionally laced so that all or part of the lacing followed a double-helical path. Only once has Applicant observed someone with a shoe laced with a double-helical process, and only one of the person's shoes was so-laced, the other laced by a variety of processes: in response to Applicant's query, that person stated that she had paid no attention to how she laced either shoe, and the double-helical lacing was, like her other shoe's mishmash lacing, a result of randomness.

As a practical matter, if one is illustrating a laced item, and if the manner of lacing is irrelevant to the content of the illustration, the illustrator will predictably pay less attention to that portion of the illustration. It is therefore easy to comprehend how illustrators came to draw such a variety of lacings, as exemplified in *Schopbach*, *Hicks*, and *Chisholm*. From a simple drafting perspective, it is easier to draw double-helical lacing than lacing by the most common "basic crisscross lacing process" described in the Application and illustrated in the Application's Figure 1. A feature in a patent drawing resulting from drafting practice, having no relevance to and conveying no information about the subject invention, does not disclose that feature for purposes of assessing prior art. See *In re Klein*, 987 F.2d 1569, 1573, 26 U.S.P.Q.2d 1133 (Fed. Cir. 1993). This point is well-illustrated by comparing the informal drawings Figures 1 and 5 that accompanied the application (09/121,722) that resulted in *Curet* patent 6,282,817, with the formal drawings Figures 1 and 5 for that patent. (A copy of *Curet* application 09/821,815, which is a continuation of and identical to 09/121,722, is attached at Tab 3; a copy of patent 6,282,817 is attached at Tab 4.) The informal *Curet* drawings showed lacing that followed a double-helical pattern for a portion of the lacing path, but there was no mention of the lacing process in the specification or claims. The lacing process was not mentioned because the manner of lacing was irrelevant to the apparatus disclosed

in that application—just as the manner of lacing was irrelevant in all of the references cited by the Office concerning this Application. The lacing process illustrated in the informal drawings Figures 1 and 5 was an inadvertent anomaly, of either lacing or drafting, not a representation of a feature relevant to that invention. When the formal drawings were submitted for the *Curet* patent, which were accepted by the Office and issued with the actual patent, the lacing process shown was the common “basic crisscross lacing process” discussed in the Application and illustrated in the Application’s Figure 1. It is clear from the contents of the file wrapper that the *Curet* applicant intended no change of the scope of his patent application by the change in the drawings, because neither the applicant nor the examiner noted the difference in the lacing process shown in the drawings. The change in the drawings was reasonably ignored by both the applicant and the examiner because the manner of lacing was as irrelevant in *Curet* as in the prior art cited by the Office for this Application.

It is important when assessing obviousness to consider that the process of the Application results in significant advantages over the prior art processes (as described in the Application). The Applicant was a graduate student in chemistry who also engaged in spelunking, and the boots he wore during the latter activity (such as illustrated in the Application Figures 16–20) often became wet and muddy. When boots and laces are wet and muddy, they are very difficult to lace and unlace. The Applicant set out to overcome this problem, and the solution to the caver’s boot–lacing problem arose from the chemist’s mental image of the double helical structure of the molecule DNA. There is absolutely nothing in the science of DNA, just as there is nothing in the prior art of lacing, that suggests the advantages of a double helical process for lacing boots. This is an example of pure invention: a combination of utterly unrelated prior art features to solve a problem in an unexpected way. In retrospect, it indeed appears to be a simple solution, but as the U.S. Supreme Court has pointed out in this context, “[i]ts simplicity should not blind us as to its character.” *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U.S. 428,

434 (1911); see also *In re Meng*, 492 F.2d 843, 848, 181 U.S.P.Q. 94 (C.C.P.A. 1974) (“Of course the invention seems simple, after the fact. But simplicity, particularly in an old and crowded art, may argue for rather than against patentability.”). The significant and unexpected advantages of the Application’s double-helical lacing process over all other lacing processes rebut the Office’s assertion that “the particular use of shoelaces in a shoe or the like is considered to be no more than a matter of design choice to one having ordinary skill in the art at the time the invention was made.”

Accordingly, it is respectfully requested that the rejection under § 103(a) of claims 1 and 5–8 be withdrawn.

In ¶ 6, the Office also states that “*Blanc* teaches the use of a shoe lace device comprising shoelaces, wherein said shoelaces defining a double twisting for tying the shoe around a foot; see Figure 3, and the entire document.” This appears to be mistaken, because the lacing shown in *Blanc*’s Figure 3 is simply the “basic crisscross lacing process” described in the Application and illustrated in the Application’s Figure 1, and the manner of lacing the shoe is mentioned nowhere in *Blanc*’s specification or claims.

Claims 2–4: 35 U.S.C. § 103(a)

The non-obviousness of claims 2–4 relies first upon the validity of claim 1. Once claim 1 is recognized as patentable, the patentability of dependent claims 2–4 follows because each adds an advantage to the advantages of the process of Claim 1. Claim 2 adds the advantage that it is more convenient to tie laces that emerge from the lace-holes on the same surface of the shoe upper. The advantage added by Claim 3 is explained in the Specification of the Application (in the paragraph that carries over from page 14 to page 15). The rapid tightening and loosening enabled by the process of Claim 1, as explained in the Specification of the Application (in the paragraph that carries over from page 13 to page 14 and the following paragraph), is enhanced by employment of a means

to prevent the ends of the shoelaces from pulling through the lace-holes during loosening of the shoelaces as in Claim 4.

Conclusion

The claims, as amended, fully describe a process which, as explained above, is patentably distinguished from the cited prior art. If the Office is in disagreement with these amendments and arguments, or if other issues arise that may present an obstacle to allowance, Applicant would welcome a telephone call to discuss such matters before further action is taken. Otherwise, allowance of claims 1-8 is respectfully requested.

Respectfully submitted,



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Attachments

Tab 1 Rewritten Claim 1

Tab 2 Rewritten Claim 1 (marked up to show changes)

Tab 3 Patent Application Number 09/821,815 (continuation of and
identical to 09/121,722)

Tab 4 Patent Number 6,282,817

Tab 1

I claim:

1. (amended) A process for lacing a shoe having a plurality of lace-holes in two parallel rows, with a shoelace, in which the path followed by the shoelace describes a double helix, comprising the following steps:

initial insertion of one lace-end through the lowest lace-hole in one of the rows of lace-holes, entering the upper surface of the lace-hole and emerging on the under surface;

insertion of the other lace-end through the lowest lace-hole in the other row of lace-holes, entering into the under surface of the lace-hole and emerging on the upper surface;

pulling the lace-ends until there is no substantial slack in the shoelace between the lowest pair of lace-holes and each side of the unlaced shoelace is of approximately equal length;

sequentially, for each of the remaining pairs of lace-holes:

inserting the lace-end that emerges on the under surface of a lace-hole into the under surface of the next higher lace-hole on the opposite side,

inserting the lace-end that emerges on the upper surface of a lace-hole into the upper surface of the next higher lace-hole on the opposite side,
and

pulling both lace-ends until there is no substantial slack in the shoelace between the lace-holes; and

finishing when shoelace has been passed through the highest pair of lace-holes
desired to be laced.

Tab 2

I claim:

1. (amended) A shoe lacing-process for lacing a shoe having a plurality of lace-holes in two parallel rows, with a shoelace, in which the path followed by the shoelaces describes a double helix, comprising the following steps:

initial insertion of one lace-end through the lowest lace-hole in one of the rows of lace-holes, entering the upper surface of the lace-hole and emerging on the under surface;

insertion of the other lace-end through the lowest lace-hole in the other row of lace-holes, entering into the under surface of the lace-hole and emerging on the upper surface;

pulling the lace-ends until there is no substantial slack in the shoelace between the lowest pair of lace-holes and each side of the unlaced shoelace is of approximately equal length;

sequentially, for each of the remaining pairs of lace-holes:

inserting the lace-end that emerges on the under surface of a lace-hole into the under surface of the next higher lace-hole on the opposite side,

inserting the lace-end that emerges on the upper surface of a lace-hole into the upper surface of the next higher lace-hole on the opposite side,
and

pulling both lace-ends until there is no substantial slack in the shoelace between the lace-holes; and

finishing when shoelace has been passed through the highest pair of lace-holes
desired to be laced.

Tab 3



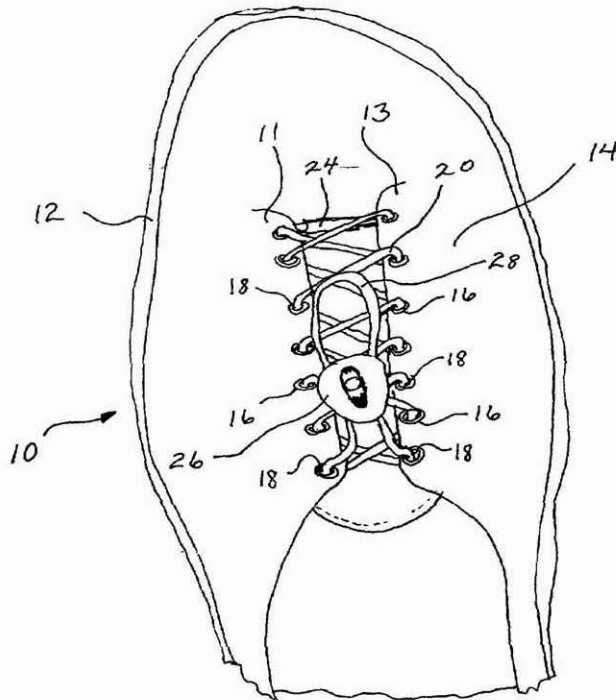
US 20010039747A1

(19) **United States**(12) **Patent Application Publication****Curet**(10) **Pub. No.: US 2001/0039747 A1**(43) **Pub. Date: Nov. 15, 2001**(54) **APPARATUS AND METHOD FOR LACING****Publication Classification**(76) **Inventor: William D. Curet, Lake Charles, LA (US)**(51) **Int. Cl.⁷ A43C 11/00; A43B 23/00**(52) **U.S. Cl. 36/50.1; 36/136**

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ATLANTA, GA 30308-2216 (US)**(21) **Appl. No.: 09/821,815**(22) **Filed: Mar. 29, 2001****Related U.S. Application Data**(63) **Continuation of application No. 09/121,722, filed on Jul. 25, 1998, now Pat. No. 6,282,817.**(57) **ABSTRACT**

Lacing apparatus comprising a lace which may be threaded through a plurality of apertures defined by at least two portions of one or more articles; connecting means for connecting the free ends of the lace to one another, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another. Footwear incorporating features of this apparatus, as well as methods of releasably lacing together two or more objects, are also disclosed.



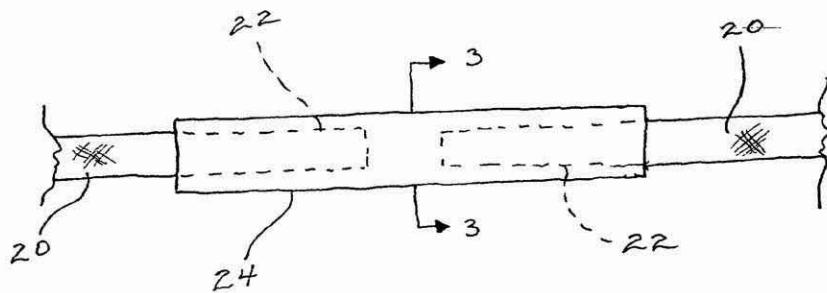


Fig. 2

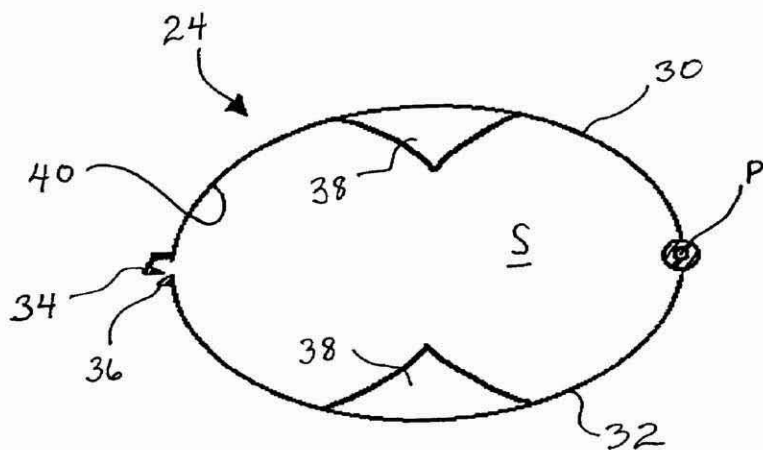


Fig. 3

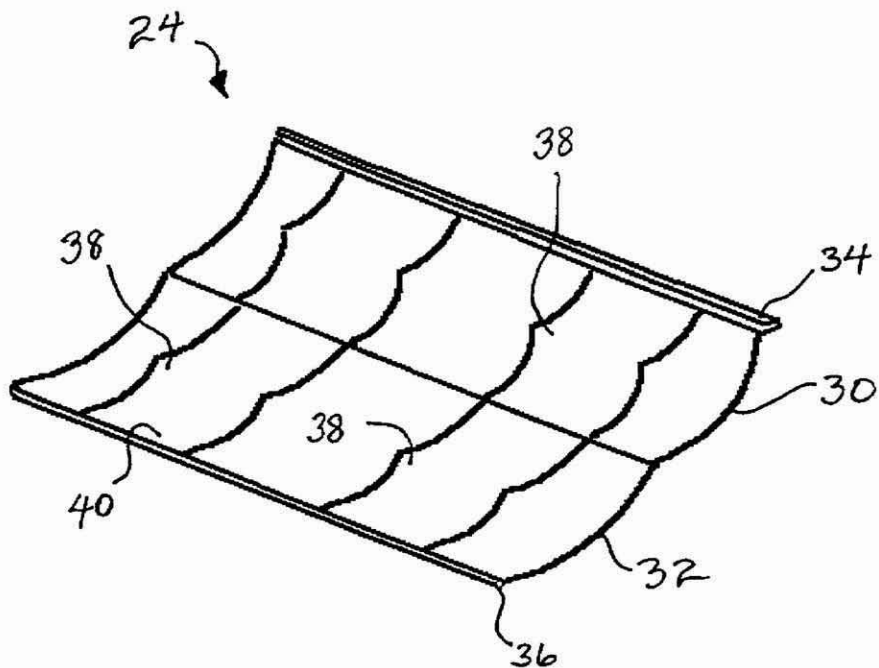


Fig. 4

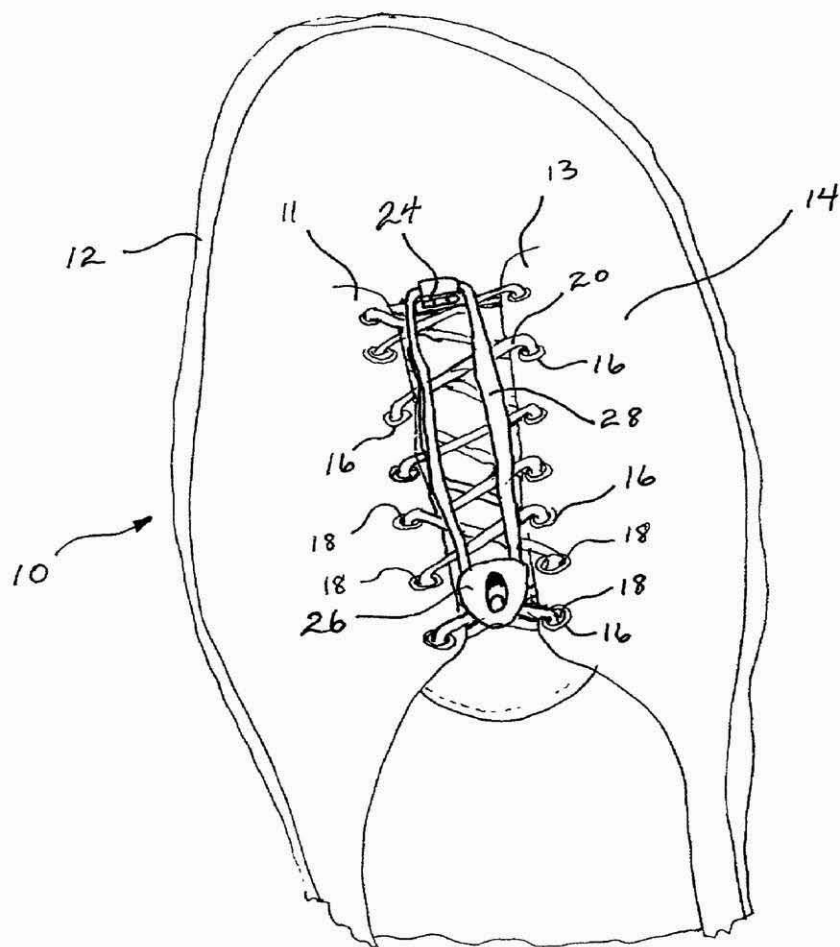


Fig. 5

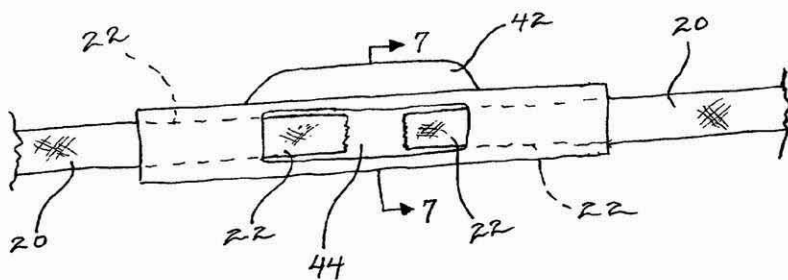


Fig. 6

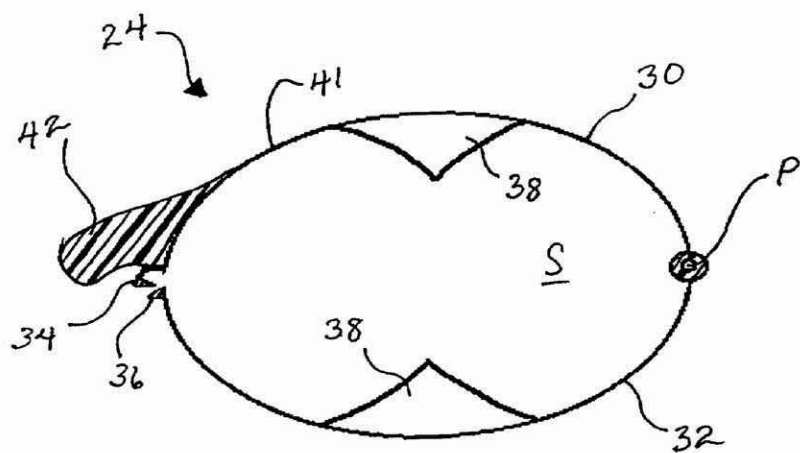


Fig. 7

APPARATUS AND METHOD FOR LACING**TECHNICAL FIELD**

[0001] The present invention relates to apparatus and methods for releasably securing two or more objects, or portions thereof, in proximity with one another by employing at least one lace which is threaded through two or more apertures defined by the objects or portions thereof.

BACKGROUND

[0002] Articles which each employ a lacing system to releasably secure two or more portions of the article in proximity with one another have long required that the user tie together the free end portions of a lace which has been threaded through a plurality of eyelets in respective portions of the article. In footwear, for example, the lace typically is first threaded through eyelets in respective halves of an upper portion of the footwear, and the halves are synched together by pulling upon the free end portions of the threaded lace. Once the halves have been synched together as desired, the user ties together the free end portions of the lace to prevent the upper portion halves from spreading apart, thereby securing the footwear to the foot. While alternative configurations are known which do not employ a threaded lace to releasably secure two or more portions of an article together, footwear and other articles which employ such a lacing system remain popular for many reasons, including their ability to firmly and adjustably secure portions of the subject article together.

[0003] Unfortunately, many articles which employ one or more laces for these purposes put the user to the inconvenience of having to tie the free end portions of the threaded lace together to maintain a secure fit during use of the article. Often, the free end portions become untied inadvertently, causing the user inconvenience and creating a potentially hazardous condition should the user step upon one of the free end portions while walking or running. Where time is critical, such as for example during athletic competition, the burden of retying the loose free end portions of a shoe lace can prove to be detrimental. To prevent lace from becoming untied during use, multiple knots often are used to tie together the free end portions, which in turn further complicates the process of untying the free end portions and removing the footwear when desired. Moreover, for those who lack the ability or inclination to tie and untie the free end portions of the lace, footwear which incorporates a lace configuration may not be feasible or appealing.

[0004] U.S. Pat. No. 3,296,669 to Elder, Jr. discloses footwear which does not require the user to tie the free ends of a shoelace. While the configuration disclosed there has certain advantages over other types of laced footwear, the lacing system described requires the use of fixed tabs at the free ends of the shoelace to prevent the free ends from being pulled through the eyelets when the shoelace is pulled by the user. Such fixed tabs do not enable the user to adjust the length of the shoelace without causing damage to the structure which retains the lace within the eyelets. The disclosed locking device further requires the user to employ sufficient dexterity to align the lace along a path formed by the locking device and to press the lace in between prongs which define the path in order to secure the lace in place.

[0005] Thus, a need still exists for efficient lacing apparatus which does not depend upon the user to tie and/or untie

the free end portions of the lace and yet permits the free ends of the lace to be rigidly yet adjustably connected to one another while providing the advantages of a threaded lace for securing footwear to a foot.

SUMMARY OF THE INVENTION

[0006] This invention is deemed to satisfy this need in a highly efficient and novel way. In one embodiment, this invention provides lacing apparatus which comprises (a) a lace which may be threaded through a plurality of apertures defined by at least two portions of one or more articles; (b) connecting means (e.g., a clamp) for connecting the free ends of the lace to one another, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and (c) mechanical locking means (e.g., a wheel lock-type cord fastener) for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another. The articles, portions of which define the apertures through which the lace is threaded, may be comprised of a wide variety of objects including virtually anything which may be releasably laced together. Suitable non-limiting examples include bags, blouses, skirts, girdles, footwear, medical support straps, and the like. Footwear is a particularly suitable article, non-limiting examples of which include one or more shoes, boots, sandals, etc. For convenience only, the preferred embodiments of this invention will be illustrated hereinafter as applied to footwear. Preferably, the connecting means is a clamp, and more preferably the clamp comprises two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves may form the hollow cylinder, and wherein the clamp further comprises lace retention means (e.g., one or more spiked flanges) for retaining at least a portion of each of the free end portions of the lace within the hollow cylinder. In another preferred embodiment, the clamp further comprises a secondary flange extending radially outwardly from the outer surface of the hollow cylinder for receiving and retaining an unlaced portion of the continuous loop formed by the lace, and one of the halves of the hollow cylinder defines an aperture through which the free ends of the lace may be threaded. In this way, a user may access the free ends of the lace once threaded through the aperture and cut or otherwise remove excess length from the lace to thereby adjust the length of the lace which effectively forms the continuous loop.

[0007] Another embodiment of this invention provides footwear which comprises (a) a sole; (b) an upper footwear portion connected to the sole and defining two or more apertures; (c) a lace which may be threaded through the apertures; (d) connecting means for connecting the free ends of the lace together to form a continuous loop; and (e) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another.

[0008] In yet another embodiment of this invention, a method of releasably securing two or more objects together is provided. The method comprises (a) threading a lace through (1) mechanical locking means for receiving the lace

and releasably locking at least two portions of the lace in proximity to one another and (2) through two or more apertures formed by the objects, (b) connecting together the free ends of the lace to form a continuous loop, (c) pulling upon the threaded lace so as to bring the objects into proximity with one another, and (d) securing the mechanical locking means so as to releasably lock the lace portions in proximity to one another, thereby inhibiting separation of the objects.

[0009] These and other embodiments and features of the invention will become still further apparent from the ensuing description, appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a top view in perspective of a shoe which incorporates a preferred lacing apparatus of this invention.

[0011] FIG. 2 is a plan view of a component part of the apparatus of FIG. 1.

[0012] FIG. 3 is a cross-section of the component part of FIG. 2 taken along line 3,3 in FIG. 2.

[0013] FIG. 4 is an elevated view in perspective of the component part of FIG. 2.

[0014] FIG. 5 is a top view in perspective of a shoe which incorporates another preferred lacing apparatus of this invention.

[0015] FIG. 6 is a plan view of a component part of the apparatus of FIG. 5.

[0016] FIG. 7 is a cross-section of the component part of FIG. 6 taken along line 7,7 in FIG. 6.

[0017] In each of the above figures, like numerals are used to refer to like or functionally like parts among the several figures.

DETAILED DESCRIPTION OF THE INVENTION

[0018] As may now be appreciated, this invention enables portions of one or more articles to be brought into proximity with one another and releasably yet securely retained in such position through the use of lace, all without requiring the tying of free ends and without the inconvenience and potential hazard presented by dangling free ends of a lace. The invention also enables the threaded lace to be secured in place efficiently and durably and into the form of a continuous loop to facilitate the use of the lace.

[0019] Referring now to the accompanying drawings, FIGS. 1-4 illustrate a preferred embodiment of this invention. FIG. 1 illustrates one view of apparatus of this invention which has been installed on footwear in the form of a shoe 10, partially broken away. As depicted, shoe 10 is comprised of a sole 12 and an upper footwear portion 14 connected thereto. Upper footwear portion 14 includes two flap portions 11 and 13, which in turn both include a plurality of eyelets 16 so that portions 11 and 13 define a plurality of apertures 18 through which a lace 20 has been threaded. Lace 20 has two free ends 22,22 which, although not required, are proximate to the front end, i.e., the end opposite from the heel (not shown), of shoe 10, and which are connected to one another by connecting means in the form of a plastic clamp 24, thereby placing lace 20 in the

form of a continuous loop. Lace 20 also is threaded through mechanical locking means in the form of a wheel lock-type cord fastener 26, the configuration of which is fully described in U.S. Pat. No. 3,564,670 to Bengtsson. An example of a similarly suitable fastener of this type may be seen in U.S. Pat. No. 5,477,593 to Leick. Fastener 26 receives the lace and is configured to releasably lock at least two portions of lace 20 in proximity with one another, to thereby secure the lace, and in turn the portions of footwear upper portion 14 through which the lace is threaded, together. A loop segment 28 extends from fastener 26.

[0020] With particular reference to FIGS. 2-4 it may be seen that clamp 24 is in the shape of an open-ended hollow cylinder formed from two halves 30 and 32 which are hinged together along respective longitudinal edges so as to pivot relative to one another about a longitudinal axis represented in cross-section on FIG. 3 as pivot point P. Halves 30 and 32 may be clamped together by a snap fit provided by beveled flanges 34 and 36 which extend longitudinally along the respective edges of halves 30 and 32 which are opposite the hinged connection. Clamp 24 further comprises lace retention means in the form of a plurality of spiked flanges 38 which extend from an inner surface 40 of the hollow cylinder formed by halves 30 and 32 into the space S within the hollow cylinder. This particular clamp is especially preferred because it provides the advantage of a streamline connection between the free ends of the lace to prevent hang ups between the clamp and surrounding material during use, and yet it also provides a secure connection between the free ends of the lace. Without being bound by theory, it is thought that the pulling force exerted on the lace and transferred therethrough typically is less inclined to cause this clamp to open inadvertently on account of the linear longitudinal relationship between the lace and the clamp.

[0021] FIGS. 5-7 illustrate another preferred embodiment of this invention. This embodiment differs from that illustrated in FIGS. 1-4 in the design and configuration of clamp 24. As depicted in FIGS. 5-7, half 30 of clamp 24 has been modified so that a secondary flange 42 extends out radially from an outer surface 41 of the hollow cylinder formed by half 30. In addition, half 30 defines an elongate aperture 44 through which free ends 22,22 of lace 20 are visible in FIG. 6. Flange 42 is curved in cross-section to facilitate the retention of loop segment 28 of lace 20, as seen on FIG. 5. In this way, loop segment 28 may be retained to prevent it from dangling to the side of shoe 10, if desired. Alternatively or in addition, free ends 22,22 may be threaded through aperture 44 and cut to adjust the overall length of lace 20 to thereby reduce the size of loop segment 28, reducing the need to retain segment 28 and prevent it from dangling to the side of shoe 10. It will now be appreciated that the secondary flange may take on one of many forms, and such form is no limitation of this invention so long as the secondary flange is capable of retaining the lace to prevent the loop segment from dangling to the side of the shoe.

[0022] It will be appreciated by those of ordinary skill in the art that the connecting means of this invention may comprise a wide variety of mechanical devices, including but not limited to snaps, male-to-female twist locks, hook-and-loop type material, and the like. Preferably, the connecting means comprises a clamp, as described with particularity above. Those of ordinary skill in the art will also appreciate that the lace retention means of this invention

may be comprised of a wide variety of devices, non-limiting examples of which include snaps, hooks, straps, and the like. However, the lace retention means preferably comprises a secondary flange as described in detail above.

[0023] Furthermore, those of ordinary skill in the art now will appreciate that the mechanical locking means of this invention may comprise a wide variety of mechanical devices, including but not limited to various locks, clamps, fasteners and the like. Preferably, the mechanical locking means comprises a cord fastener, and most preferably comprises a wheel lock-type cord fastener as described in detail hereinabove.

[0024] The lace of this invention may comprise virtually any strand-like material or conventional lace material which may be connected at its free ends using connecting means of this invention, but preferably comprises a strand of elastic material. More preferably, the elastic material is synthetic rubber. In a particularly preferred embodiment, the lace is comprised of a segment of shock cord which is easily threaded and is elastic along its longitudinal axis, and yet includes a sturdy outer surface of woven nylon or other stretchable yet durable material which may enhance the useful life of the lace.

[0025] In the practice of the methods of this invention, and with reference to the preferred embodiments depicted in the accompanying Figures, two or more objects in the form of two portions **11** and **13** of upper footwear portion **14** may be releasably secured together by threading lace **20** through mechanical locking means, in the form of fastener **26** and through apertures **18**, connecting together free ends **22,22** to form a continuous loop, pulling upon lace **20** at loop segment **28** to bring together the portions **11** and **13** of upper footwear portion **14** through which lace **20** is threaded, and securing wheel lock-type cord fastener **26** so as to releasably lock two lace portions of lace **20** in proximity to one another. In this way, the portions **11** and **13** of upper footwear portion **14** which define apertures **18** may be brought into proximity to one another, and their separation is inhibited. Shoe **10** may thus be secured rapidly and efficiently to a foot without tying free ends of a lace, and without dangling the free ends of a lace at the lateral side of the shoe, all with very little required in the way of manipulation to releasably secure the wheel lock-type cord fastener.

[0026] Each and every U.S. Patent or other printed publication referred to herein is incorporated by reference as if fully set forth herein to the maximum extent permitted as a matter of law.

[0027] The particular dimensions of the component parts of the apparatus and footwear of invention may vary widely and do not constitute a limitation of this invention. This invention is susceptible to considerable variation in its practice. Therefore, the foregoing description is not intended to limit, and should not be construed as limiting, the invention to the particular exemplifications presented hereinabove. Rather, what is intended to be covered is as set forth in the ensuing claims and the equivalents thereof permitted as a matter of law. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the cited function and not only structural equivalents but also equivalent structures.

What is claimed is:

1. Lacing apparatus which comprises:

- a) a lace which may be threaded through a plurality of apertures defined by at least two portions of one or more articles;
- b) connecting means for connecting the free ends of the lace to one another, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and
- c) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another.

2. Lacing apparatus according to claim 1 wherein the connecting means comprises a clamp.

3. Lacing apparatus according to claim 2 wherein the clamp is comprised of two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves may form the hollow cylinder, and wherein the clamp further comprises lace retention means for retaining at least a portion of each of the free end portions of the lace within the hollow cylinder.

4. Lacing apparatus according to claim 3 wherein the hollow cylinder defines an inner surface and an outer surface, wherein the lace retention means comprises one or more spiked flanges which extend from the inner surface into the space formed by the hollow cylinder.

5. Lacing apparatus according to claim 4 wherein the clamp further comprises a secondary flange extending radially outwardly from the outer surface of the hollow cylinder, and wherein one of the halves of the hollow cylinder defines an aperture through which the free ends of the lace may be threaded.

6. Lacing apparatus according to claim 4 wherein the locking means comprises a wheel lock-type cord fastener.

7. Lacing apparatus according to claim 6 wherein the lace comprises a strand of elastic material.

8. Lacing apparatus according to claim 7 wherein the elastic material is a synthetic rubber.

9. Lacing apparatus according to claim 1 wherein the locking means comprises a wheel lock-type cord fastener.

10. Lacing apparatus according to claim 1 wherein the lace comprises a strand of elastic material.

11. Lacing apparatus according to claim 10 wherein the elastic material is a synthetic rubber.

12. Lacing apparatus according to claim 1 wherein the articles comprise items of footwear.

13. Footwear which comprises:

- a) a sole;
- b) an upper footwear portion connected to the sole and defining two or more apertures;
- c) a lace which may be threaded through the apertures;
- d) connecting means for connecting the free ends of the lace together to form a continuous loop; and
- e) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the

lace has been threaded through the apertures and the free ends of the lace are connected to one another.

14. Footwear according to claim 13 wherein the connecting means comprises a clamp.

15. Footwear according to claim 14 wherein the clamp is comprised of two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves may form the hollow cylinder, and wherein the clamp further comprises lace retention means for retaining at least a portion of each of the free end portions of the lace within the hollow cylinder.

16. Footwear according to claim 15 wherein the hollow cylinder defines an inner surface and an outer surface, wherein the lace retention means comprises one or more spiked flanges which extend from the inner surface into the space formed by the hollow cylinder.

17. Footwear according to claim 16 wherein the clamp further comprises a secondary flange extending radially outwardly from the outer surface of low cylinder, and wherein one of the halves of the hollow cylinder defines an aperture through which the free ends of the lace may be threaded.

18. Footwear according to claim 16 wherein the mechanical locking means comprises a wheel lock-type cord fastener.

19. Footwear according to claim 18 wherein the lace comprises a strand of elastic material.

20. Footwear according to claim 19 wherein the elastic material is a synthetic rubber.

21. Footwear according to claim 13 wherein the locking means comprises a wheel lock-type cord fastener.

22. Footwear according to claim 13 wherein the lace comprises a strand of elastic material.

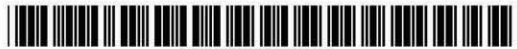
23. Footwear according to claim 22 wherein the elastic material is a synthetic rubber.

24. A method of releasably securing two or more objects together, the method comprising:

- a) threading a lace through (1) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another and (2) through two or more apertures formed by the objects,
 - b) connecting together the free ends of the lace to form a continuous loop,
 - c) pulling upon the threaded lace so as to bring the objects into proximity with one another, and
 - d) securing the mechanical locking means so as to releasably lock the lace portions in proximity to one another, thereby inhibiting separation of the objects.
25. A method according to claim 24, wherein the objects are portions of footwear and wherein the mechanical locking means comprises a wheel lock-type cord fastener.

* * * * *

Tab 4



US006282817B1

(12) United States Patent
Curet**(10) Patent No.: US 6,282,817 B1**
(45) Date of Patent: *Sep. 4, 2001**(54) APPARATUS AND METHOD FOR LACING****(75) Inventor: William D. Curet, Lake Charles, LA (US)****(73) Assignee: W.O.W., Inc., Lake Charles, LA (US)****(*) Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

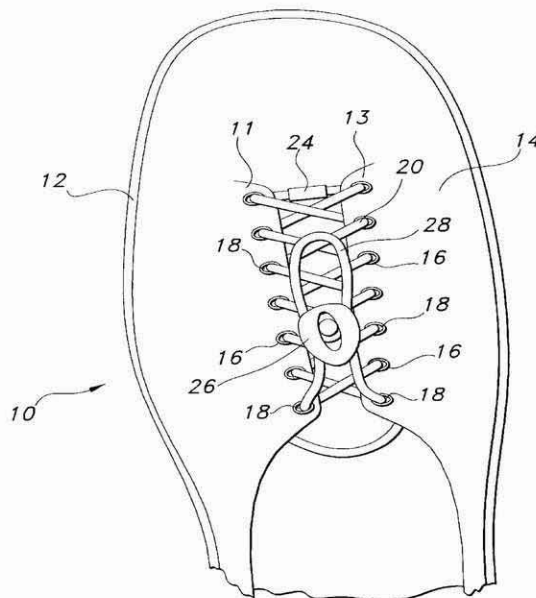
Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

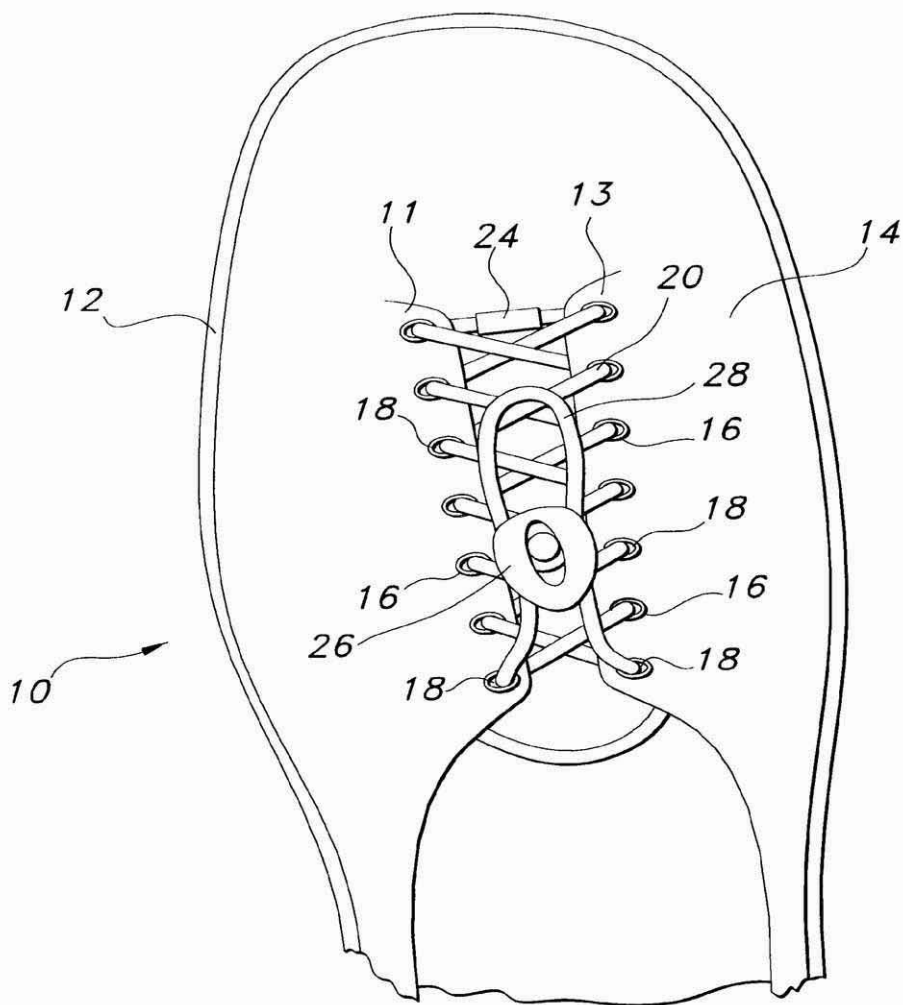
(21) Appl. No.: 09/121,722**(22) Filed: Jul. 25, 1998****(51) Int. Cl.⁷ A43C 11/00****(52) U.S. Cl. 36/50.1; 24/712.1; 24/712.5****(58) Field of Search 36/50.1, 50.5; 24/712.5, 712.6, 712.1****(56) References Cited****U.S. PATENT DOCUMENTS**652,647 6/1900 Soderberg 24/713
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Primary Examiner—Bryon P. Gehman*Assistant Examiner*—Jila M. Mohandesi*(74) Attorney, Agent, or Firm*—Troutman Sanders LLP;
Gregory Scott Smith**(57) ABSTRACT**

A lacing apparatus is provided comprising a lace which maybe threaded through a plurality of apertures defined by at least two portions of an article; a connector for connecting the free ends of the lace to one another, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and a mechanical locking device for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another. Footwear incorporating features of this apparatus, as well as methods of releasably lacing together two or more objects, are also disclosed.

12 Claims, 4 Drawing Sheets

**FIG 1**

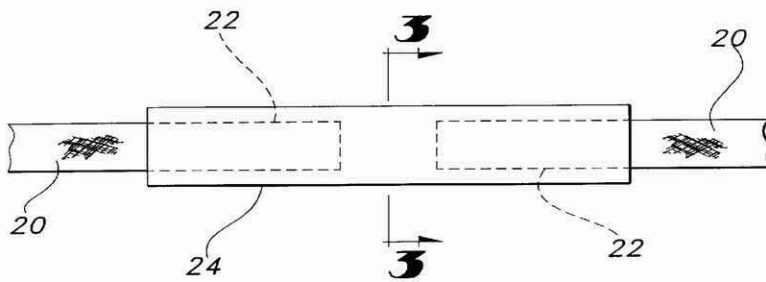


FIG 2

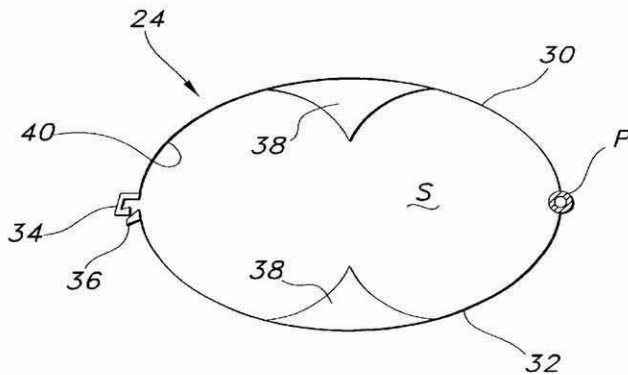


FIG 3

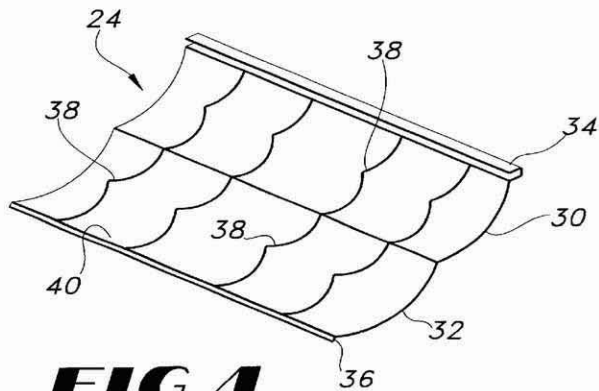
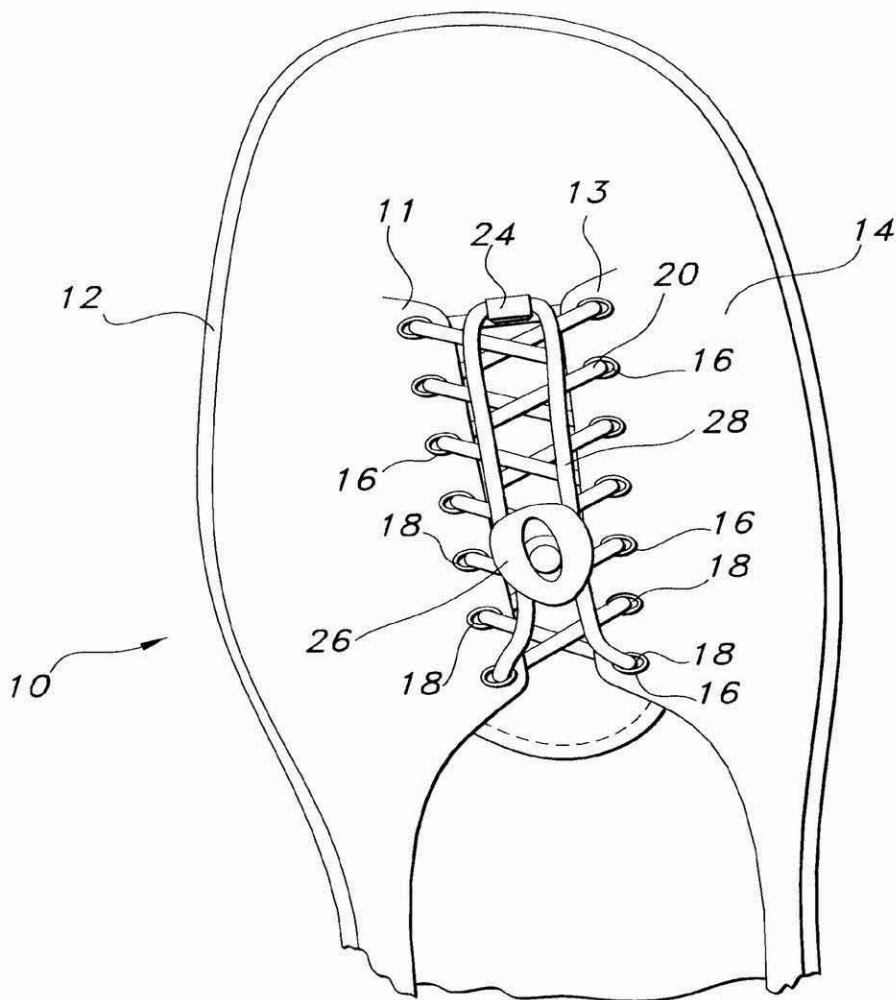


FIG 4

**FIG 5**

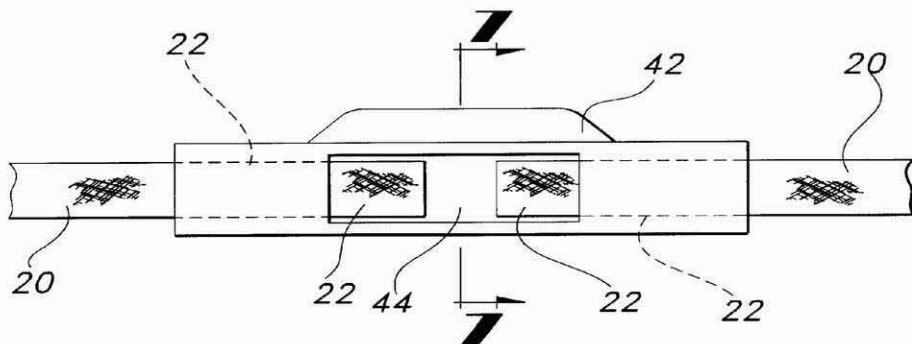


FIG 6

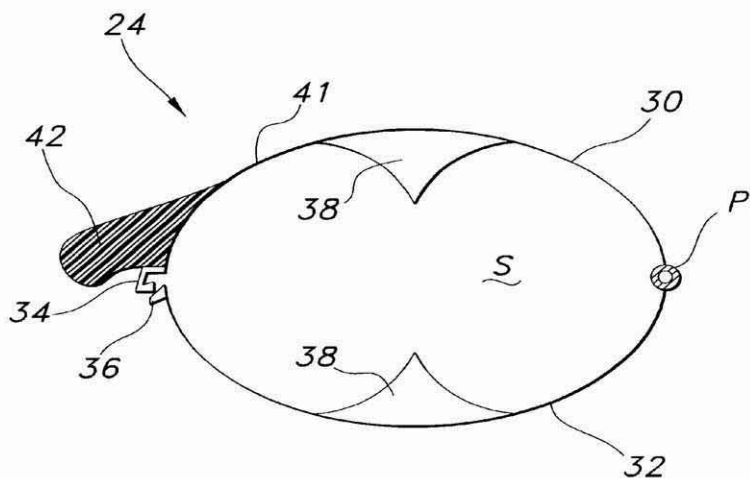


FIG 7

APPARATUS AND METHOD FOR LACING

TECHNICAL FIELD

The present invention relates to apparatus and methods for releasably securing two or more objects, or portions thereof, in proximity with one another by employing at least one lace which is threaded through two or more apertures defined by the objects or portions thereof.

BACKGROUND

Articles which each employ a lacing system to releasably secure two or more portions of the article in proximity with one another have long required that the user tie together the free end portions of a lace which has been threaded through a plurality of eyelets in respective portions of the article. In footwear, for example, the lace typically is first threaded through eyelets in respective halves of an upper portion of the footwear, and the halves are synched together by pulling upon the free end portions of the threaded lace. Once the halves have been synched together as desired, the user ties together the free end portions of the lace to prevent the upper portion halves from spreading apart, thereby securing the footwear to the foot. While alternative configurations are known which do not employ a threaded lace to releasably secure two or more portions of an article together, footwear and other articles which employ such a lacing system remain popular for many reasons, including their ability to firmly and adjustably secure portions of the subject article together.

Unfortunately, many articles which employ one or more laces for these purposes put the user to the inconvenience of having to tie the free end portions of the threaded lace together to maintain a secure fit during use of the article. Often, the free end portions become untied inadvertently, causing the user inconvenience and creating a potentially hazardous condition should the user step upon one of the free end portions while walking or running. Where time is critical, such as for example during athletic competition, the burden of retying the loose free end portions of a shoe lace can prove to be detrimental. To prevent lace from becoming untied during use, multiple knots often are used to tie together the free end portions, which in turn further complicates the process of untying the free end portions and removing the footwear when desired. Moreover, for those who lack the ability or inclination to tie and untie the free end portions of the lace, footwear which incorporates a lace configuration may not be feasible or appealing.

U.S. Pat. No. 3,296,669 to Elder, Jr. discloses footwear which does not require the user to tie the free ends of a shoelace. While the configuration disclosed there has certain advantages over other types of laced footwear, the lacing system described requires the use of fixed tabs at the free ends of the shoelace to prevent the free ends from being pulled through the eyelets when the shoelace is pulled by the user. Such fixed tabs do not enable the user to adjust the length of the shoelace without causing damage to the structure which retains the lace within the eyelets. The disclosed locking device further requires the user to employ sufficient dexterity to align the lace along a path formed by the locking device and to press the lace in between prongs which define the path in order to secure the lace in place.

Thus, a need still exists for efficient lacing apparatus which does not depend upon the user to tie and/or untie the free end portions of the lace and yet permits the free ends of the lace to be rigidly yet adjustably connected to one another while providing the advantages of a threaded lace for securing footwear to a foot.

SUMMARY OF THE INVENTION

This invention is deemed to satisfy this need in a highly efficient and novel way. In one embodiment, this invention provides lacing apparatus which comprises (a) a lace which may be threaded through a plurality of apertures defined by at least two portions of one or more articles; (b) connecting means (e.g., a clamp) for connecting the free ends of the lace to one another, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and (c) mechanical locking means (e.g., a wheel lock-type cord fastener) for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another. The articles, portions of which define the apertures through which the lace is threaded, may be comprised of a wide variety of objects including virtually anything which may be releasably laced together. Suitable non-limiting examples include bags, blouses, skirts, girdles, footwear, medical support straps, and the like. Footwear is a particularly suitable article, non-limiting examples of which include one or more shoes, boots, sandals, etc. For convenience only, the preferred embodiments of this invention will be illustrated hereinafter as applied to footwear. Preferably, the connecting means is a clamp, and more preferably the clamp comprises two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves may form the hollow cylinder, and wherein the clamp further comprises lace retention means (e.g., one or more spiked flanges) for retaining at least a portion of each of the free end portions of the lace within the hollow cylinder. In another preferred embodiment, the clamp further comprises a secondary flange extending radially outwardly from the outer surface of the hollow cylinder for receiving and retaining an unlaced portion of the continuous loop formed by the lace, and one of the halves of the hollow cylinder defines an aperture through which the free ends of the lace may be threaded. In this way, a user may access the free ends of the lace once threaded through the aperture and cut or otherwise remove excess length from the lace to thereby adjust the length of the lace which effectively forms the continuous loop.

Another embodiment of this invention provides footwear which comprises (a) a sole; (b) an upper footwear portion connected to the sole and defining two or more apertures; (c) a lace which may be threaded through the apertures; (d) connecting means for connecting the free ends of the lace together to form a continuous loop; and (e) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another.

In yet another embodiment of this invention, a method of releasably securing two or more objects together is provided. The method comprises (a) threading a lace through (1) mechanical locking means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another and (2) through two or more apertures formed by the objects, (b) connecting together the free ends of the lace to form a continuous loop, (c) pulling upon the threaded lace so as to bring the objects into proximity with one another, and (d) securing the mechanical locking means so as to releasably lock the lace portions in proximity to one another, thereby inhibiting separation of the objects.

These and other embodiments and features of the invention will become still further apparent from the ensuing description, appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view in perspective of a shoe which incorporates a preferred lacing apparatus of this invention.

FIG. 2 is a plan view of a component part of the apparatus of FIG. 1.

FIG. 3 is a cross-section of the component part of FIG. 2 taken along line 3,3 in FIG. 2.

FIG. 4 is an elevated view in perspective of the component part of FIG. 2.

FIG. 5 is a top view in perspective of a shoe which incorporates another preferred lacing apparatus of this invention.

FIG. 6 is a plan view of a component part of the apparatus of FIG. 5.

FIG. 7 is a cross-section of the component part of FIG. 6 taken along line 7,7 in FIG. 6.

In each of the above figures, like numerals are used to refer to like or functionally like parts among the several figures.

DETAILED DESCRIPTION OF THE INVENTION

As may now be appreciated, this invention enables portions of one or more articles to be brought into proximity with one another and releasably yet securely retained in such position through the use of lace, all without requiring the tying of free ends and without the inconvenience and potential hazard presented by dangling free ends of a lace. The invention also enables the threaded lace to be secured in place efficiently and durably and into the form of a continuous loop to facilitate the use of the lace.

Referring now to the accompanying drawings, FIGS. 1-4 illustrate a preferred embodiment of this invention. FIG. 1 illustrates one view of apparatus of this invention which has been installed on footwear in the form of a shoe 10, partially broken away. As depicted, shoe 10 is comprised of a sole 12 and an upper footwear portion 14 connected thereto. Upper footwear portion 14 includes two flap portions 11 and 13, which in turn both include a plurality of eyelets 16 so that portions 11 and 13 define a plurality of apertures 18 through which a lace 20 has been threaded. Lace 20 has two free ends 22,22 which, although not required, are proximate to the front end, i.e., the end opposite from the heel (not shown), of shoe 10, and which are connected to one another by connecting means in the form of a plastic clamp 24, thereby placing lace 20 in the form of a continuous loop. Lace 20 also is threaded through mechanical locking means in the form of a wheel lock-type cord fastener 26, the configuration of which is fully described in U.S. Pat. No. 3,564,670 to Bengtsson. An example of a similarly suitable fastener of this type may be seen in U.S. Pat. No. 5,477,593 to Leick. Fastener 26 receives the lace and is configured to releasably lock at least two portions of lace 20 in proximity with one another, to thereby secure the lace, and in turn the portions of footwear upper portion 14 through which the lace is threaded, together. A loop segment 28 extends from fastener 26.

With particular reference to FIGS. 2-4 it may be seen that clamp 24 is in the shape of an open-ended hollow cylinder formed from two halves 30 and 32 which are hinged together along respective longitudinal edges so as to pivot relative to

one another about a longitudinal axis represented in cross-section on FIG. 3 as pivot point P. Halves 30 and 32 may be clamped together by a snap fit provided by beveled flanges 34 and 36 which extend longitudinally along the respective edges of halves 30 and 32 which are opposite the hinged connection. Clamp 24 further comprises lace retention means in the form of a plurality of spiked flanges 38 which extend from an inner surface 40 of the hollow cylinder formed by halves 30 and 32 into the space S within the hollow cylinder. This particular clamp is especially preferred because it provides the advantage of a streamline connection between the free ends of the lace to prevent hang ups between the clamp and surrounding material during use, and yet it also provides a secure connection between the free ends of the lace. Without being bound by theory, it is thought that the pulling force exerted on the lace and transferred therethrough typically is less inclined to cause this clamp to open inadvertently on account of the linear longitudinal relationship between the lace and the clamp.

FIGS. 5-7 illustrate another preferred embodiment of this invention. This embodiment differs from that illustrated in FIGS. 1-4 in the design and configuration of clamp 24. As depicted in FIGS. 5-7, half 30 of clamp 24 has been modified so that a secondary flange 42 extends out radially from an outer surface 41 of the hollow cylinder formed by half 30. In addition, half 30 defines an elongate aperture 44 through which free ends 22,22 of lace 20 are visible in FIG. 6. Flange 42 is curved in cross-section to facilitate the retention of loop segment 28 of lace 20, as seen on FIG. 5. In this way, loop segment 28 may be retained to prevent it from dangling to the side of shoe 10, if desired. Alternatively or in addition, free ends 22,22 may be threaded through aperture 44 and cut to adjust the overall length of lace 20 to thereby reduce the size of loop segment 28, reducing the need to retain segment 28 and prevent it from dangling to the side of shoe 10. It will now be appreciated that the secondary flange may take on one of many forms, and such form is no limitation of this invention so long as the secondary flange is capable of retaining the lace to prevent the loop segment from dangling to the side of the shoe.

It will be appreciated by those of ordinary skill in the art that the connecting means of this invention may comprise a wide variety of mechanical devices, including but not limited to snaps, male-to-female twist locks, hook-and-loop type material, and the like. Preferably, the connecting means comprises a clamp, as described with particularity above. Those of ordinary skill in the art will also appreciate that the lace retention means of this invention may be comprised of a wide variety of devices, non-limiting examples of which include snaps, hooks, straps, and the like. However, the lace retention means preferably comprises a secondary flange as described in detail above.

Furthermore, those of ordinary skill in the art now will appreciate that the mechanical locking means of this invention may comprise a wide variety of mechanical devices, including but not limited to various locks, clamps, fasteners and the like. Preferably, the mechanical locking means comprises a cord fastener, and most preferably comprises a wheel lock-type cord fastener as described in detail hereinabove.

The lace of this invention may comprise virtually any strand-like material or conventional lace material which may be connected at its free ends using connecting means of this invention, but preferably comprises a strand of elastic material. More preferably, the elastic material is synthetic rubber. In a particularly preferred embodiment, the lace is comprised of a segment of shock cord which is easily threaded

and is elastic along its longitudinal axis, and yet includes a sturdy outer surface of woven nylon or other stretchable yet durable material which may enhance the useful life of the lace.

In the practice of the methods of this invention, and with reference to the preferred embodiments depicted in the accompanying Figures, two or more objects in the form of two portions 11 and 13 of upper footwear portion 14 may be releasably secured together by threading lace 20 through mechanical locking means, in the form of fastener 26 and through apertures 18, connecting together free ends 22, 22 to form a continuous loop, pulling upon lace 20 at loop segment 28 to bring together the portions 11 and 13 of upper footwear portion 14 through which lace 20 is threaded, and securing wheel lock-type cord fastener 26 so as to releasably lock two lace portions of lace 20 in proximity to one another. In this way, the portions 11 and 13 of upper footwear portion 14 which define apertures 18 may be brought into proximity to one another, and their separation is inhibited. Shoe 10 may thus be secured rapidly and efficiently to a foot without tying free ends of a lace, and without dangling the free ends of a lace at the lateral side of the shoe, all with very little required in the way of manipulation to releasably secure the wheel lock-type cord fastener.

Each and every U.S. Patent or other printed publication referred to herein is incorporated by reference as if fully set forth herein to the maximum extent permitted as a matter of law.

The particular dimensions of the component parts of the apparatus and footwear of invention may vary widely and do not constitute a limitation of this invention. This invention is susceptible to considerable variation in its practice. Therefore, the foregoing description is not intended to limit, and should not be construed as limiting, the invention to the particular exemplifications presented hereinabove. Rather, what is intended to be covered is as set forth in the ensuing claims and the equivalents thereof permitted as a matter of law. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the cited function and not only structural equivalents but also equivalent structures.

What is claimed is:

1. Lacing apparatus which comprises:

- (a) a lace having dimensions sufficient to permit threading of the lace through a plurality of apertures whose position is defined by at least two portions of an article;
- (b) a clamp positioned on one side of the apertures, the clamp comprising two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves form a hollow cylinder, and wherein the clamp further comprises lace retention means for retaining at least a portion of each of the free end portions of the lace within the hollow cylinder, so that when the free ends of the lace are connected to one another, the lace forms a continuous loop; and
- (c) mechanical locking means positioned on an opposite side of the apertures from the connecting means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through

the apertures and the free ends of the lace are connected to one another.

2. Lacing apparatus according to claim 1 wherein the hollow cylinder defines an inner surface and an outer surface, wherein the lace retention means comprises at least one spiked flange which extends from the inner surface into the space formed by the hollow cylinder.

3. Lacing apparatus according to claim 2 wherein the clamp further comprises a secondary flange extending radially outwardly from the outer surface of the hollow cylinder, and wherein one of the halves of the hollow cylinder defines an aperture of sufficient size to permit retention of the free ends of the lace.

4. Lacing apparatus according to claim 2 wherein the locking means comprises a wheel lock-type cord fastener.

5. Lacing apparatus according to claim 4 wherein the lace comprises a strand of elastic material.

6. Lacing apparatus according to claim 5 wherein the elastic material is a synthetic rubber.

7. Footwear which comprises:

- (a) a sole;
- (b) an upper footwear portion connected to the sole and defining at least two apertures;
- (c) a lace having dimensions sufficient to permit reading of the lace through the apertures;
- (d) a clamp positioned on one side of the apertures wherein the clamp is comprised of two halves of a hollow, open-ended cylinder, each of the two halves being connectable to one another so that, when connected, the halves form the hollow cylinder, and wherein the clamp further comprises lace retention for retaining at least a position of each of the free end portions of the lace within the hollow cylinder so that the lace forms a continuous loop; and
- (e) mechanical locking means positioned on an opposite side of the apertures from the connecting means for receiving the lace and releasably locking at least two portions of the lace in proximity to one another when at least a portion of the lace has been threaded through the apertures and the free ends of the lace are connected to one another.

8. Footwear according to claim 7 wherein the hollow cylinder defines an inner surface and an outer surface, wherein the lace retention means comprises at least one spiked flange which extends from the inner surface into the space formed by the hollow cylinder.

9. Footwear according to claim 8 wherein the clamp further comprises a secondary flange extending radially outwardly from the outer surface of the hollow cylinder, and wherein one of the halves of the hollow cylinder defines an aperture through which the free ends of the lace may be threaded.

10. Footwear according to claim 9 wherein the mechanical locking means comprises a wheel lock-type cord fastener.

11. Footwear according to claim 10 wherein the lace comprises a strand of elastic material.

12. Footwear according to claim 11 wherein the elastic material is a synthetic rubber.