

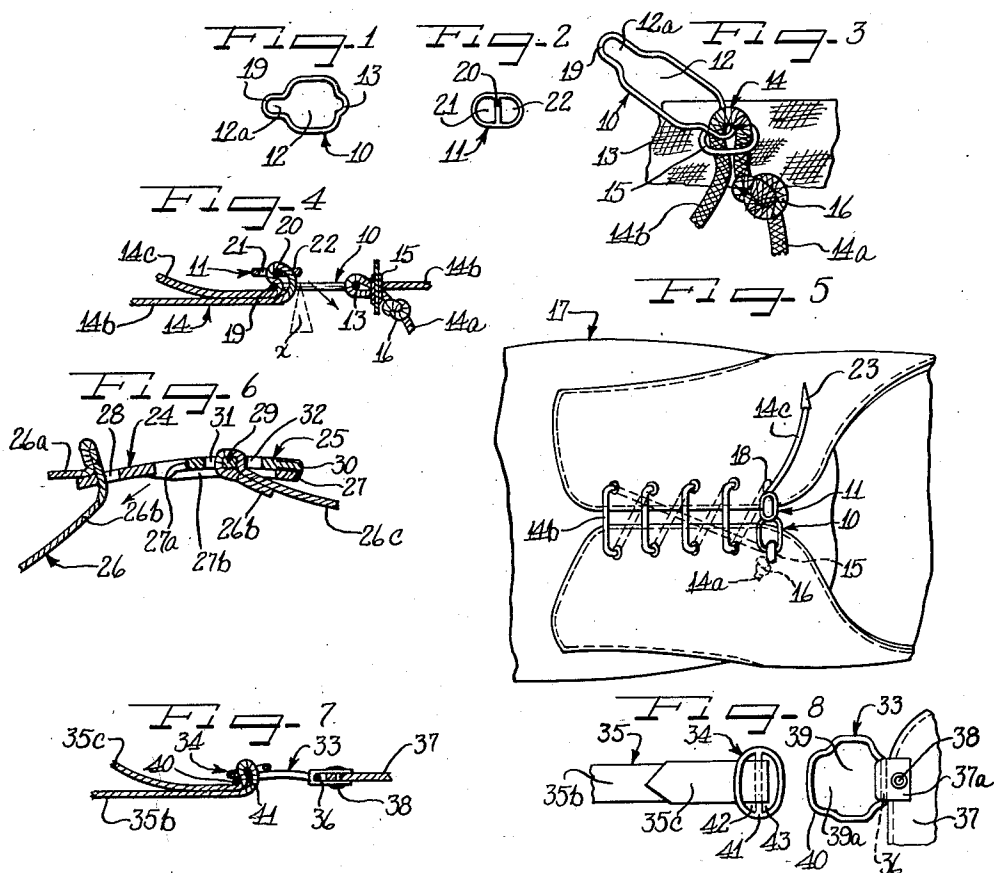
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J. RAVE

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MEANS FOR FASTENING SHOELACES

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Inventor

Jean Rave

Hill, Sherman, Merwin, Gross & Simpson
Attorneys

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MEANS FOR FASTENING SHOELACES

Jean Rave, Nice, France, assignor to Rapco S. A.,
Tangier, North Africa, a corporation of Tangier

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This invention relates to an improved fastening means, and more particularly, to an improved fastening or fixation means comprising a two-piece buckle-like assembly for use in fastening a longitudinally extending flexible member, such as a lace, thong or belt to a suitable base material or to the opposite end of such lace, thong or belt.

In general, shoe laces are tied first by making a knot and then by making a slip knot, in a bow knot arrangement. Not only does the bow knot arrangement offer difficulties in connection with the time and effort involved in accurately tying the same, but also the knot tends to become untied readily, thereby to cause additional trouble and difficulty.

Belts, thongs of leather or fabric, and the like are, likewise, difficult to tie and are inclined to become untied during normal wear.

The instant invention provides a unique two-piece buckle-like assembly, which may be slipped in and out of locking engagement easily and without the necessity of tying any knots in the lace, thong, belt or the like flexible material employed. The instant invention is characterized in that it includes two distinct parts: a first part, which is permanently attached to one end of a shoe lace or the like element to be connected and which consists of a loop or frame defining a central aperture and designed for receiving the second part; and, a second part, which comprises a slide or frame member having two apertures separated by a cross piece, the lace passing through these apertures and astride or overlapping the cross piece, so that the slide may be slid along the lace and so that the lace may be suitably tightened by pulling the same over the cross piece while the slide and loop are in locking engagement.

It is therefore an important object of the instant invention to provide an improved fastening means for a lace, belt, thong or the like.

It is a further object of the instant invention to provide an improved fastening means of the type described for bringing together two ends of a suitable lace-like material merely by connecting two buckle-like pieces, without the necessity of tying knots or threading the lace-like material through the buckle-like pieces in order to obtain the locking engagement therebetween.

It is another object of the instant invention to provide a two-piece buckle-like fastening means of the type described that is adapted to afford disengagement therebetween quickly and easily.

It is still a further object of the instant invention to provide a lace fastening means which will automatically maintain a locking position but which may be readily adjusted at will merely by pulling on one end of the shoe lace cooperating therewith.

It is still another object of the instant inven-

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tion to provide a fastening means of the type described that is sturdy, durable, inexpensive, and uniquely uncomplicated in fabrication as well as operation.

Other objects, features and advantages of the present invention will become apparent to one skilled in the art from the following description of preferred embodiments thereof illustrated in the accompanying drawings, in which:

In the drawings:

Figure 1 is a top plan view of the first of the buckle-like pieces, hereinafter referred to as the loop, which may be used in a preferred embodiment of the invention;

Figure 2 is a top plan view of the second of the buckle-like pieces, hereinafter referred to as the slide, which may be used in conjunction with the loop of Figure 1 in a preferred embodiment of the instant invention, particularly adapted for use with shoe laces;

Figure 3 is a view in perspective of the loop of Figure 1 showing one type of attachment thereof to one end of a lace;

Figure 4 is a sectional elevational view showing the loop of Figure 1 and the slide of Figure 2 in assembled position in cooperation with a lace, the sectional view being taken substantially longitudinally of the assembly;

Figure 5 is a top plan view showing the preferred embodiment described in Figures 1-4, inclusive, mounted in operative relationship in cooperation with a shoe lace in a shoe;

Figure 6 is a sectional elevational view, similar in character to the view of Figure 4, showing in assembly another shoe lace fastening means embodying the instant invention;

Figure 7 is still another sectional elevational view, similar in character to the views of Figures 4 and 6, showing still another fastening means embodying the invention, in this case, particularly adapted for use with a belt; and

Figure 8 is a top plan view of the preferred embodiment of the invention shown in Figure 7, showing the slide and loop of that embodiment in separated position.

In the embodiment of the invention illustrated in Figures 1-5, inclusive, the reference numerals 10 and 11 indicate, respectively, a loop and a slide, which are the two buckle-like pieces of the instant fastening means.

The loop 10 consists of thin thread-like or strip-like material, shaped to form a generally elliptical rigid frame having a large central aperture, as at 12. The loop 10 also has a small generally hemi-annular integral formation 13 protruding from one end thereof which forms a slight extension to the aperture 12 and whereat a suitable flexible lace 14 may be attached.

As is shown best in Figures 3, 4 and 5, the lace 14 may be doubled over the loop 10 at the hemi-annular portion 13 and then passed through an

eyelet 15. The shorter or loose end 14a of the lace 14 passing through the eyelet 15 may be knotted, as at 16, so as to prevent slipping of the lace 14 through the eyelet 15 and around the hemi-annular portion 13 in response to pull on the working end 14b of the lace 14. It will thus be seen that the arrangement just described affords hinge-like means for more or less permanently securing the loop 10 for pivotal movement (at one end 13 thereof) to one extremity 14a of the lace 14.

As is shown in Figure 5, the lace 14 may be a shoe lace and the eyelet 15 may be one of the top pair of eyelets in a shoe, designated generally at 17. The knot 16 on the lace end 14a is, of course, concealed from view and only the portion of the lace 14 at that end which actually envelops or doubles over the loop 10 may be seen by the observer. The remainder of working portion 14b of the lace 14 is passed through the eyelet 15 and then the remaining shoe eyelets in the usual manner, ultimately passing through the top eyelet 18, opposite the top eyelet 15, to furnish a free lace end 14c opposite the knotted end 14a.

As can be seen, the free end 14c of the lace 14 cooperates with the slide 11. The slide 11, like the loop 10, consists of thin thread-like or strip-like material shaped to form a generally elliptical rigid frame. The slide 11, however, has over-all dimensions sufficiently small to permit free passage thereof through the central aperture 12 of the loop 10. The pivotal mounting of the loop 10 upon the lace 14 at the loop end 13 facilitates the free cooperative movement of the slide 11 back and forth through the aperture 12, when such is desired.

At the end 19 of the loop 10, longitudinally opposite to the lace fastened end 13, the loop 10 has a restricted or narrowed generally longitudinal outward extension, which affords a substantially narrowed aperture portion 12a. The aperture portion 12a is narrower than the width of the slide 11 so that the slide 11 may not pass freely therethrough (at least not without twisting or turning the slide 11 endwise).

The slide 11 is a buckle-like member having a centrally positioned integral cross-piece 20 extending laterally of the elliptical body of the slide 11 so as to define two substantially semi-elliptical apertures 21 and 22 on opposite sides of the cross piece 20. As can be seen, at the free end 14c of the lace 14, the lace 14 is placed astride the cross piece 20 so as to loop wrap or substantially envelop the cross piece, 20. In so doing, it will be noted that the lace 14 may be considered as two parts or lines, viz., the free or manually graspable end 14c and the working portion 14b (which, in any given assembled position, as in Figure 4, extends from the lace point of contact with the loop end 13 to the lace point of contact with the cross piece 20).

As can also be seen readily from Figures 4 and 5, the apertures 21 and 22 in the slide 11 are not substantially larger, in cross-sectional area, than the lace 14 itself. The free end 14c thus has some drag or frictional retention in passing through the outer slide aperture 21; and the working portion 14b, likewise, has a certain amount of drag in passing through the inwardly positioned slide aperture 22. As will, of course, be appreciated from the entire disclosure, the instant device operates to a substantial extent on the basis of the physical laws involving friction. The locking effect obtained, which will be described hereinafter, must necessarily depend upon the relative-

ly high frictional characteristics of laces and the like as well as the relatively sharp turning or crimping of the lace 14 passing through the slide apertures 21 and 22. The slide 11 thus tends to remain in a given position on the lace 14, although it is clear that such resistance to motion may be readily overcome by exertion of manually applied forces for adjustment of the slide 11 upon the lace 14.

As is shown in Figure 5, a shoe lace tip 23 is preferably mounted at the extremity of the free lace end 14c, not only for the purpose of holding the lace fibers together during ordinary wear and tear but also to prevent the slide 11 from being removed or lost from the free lace end 14c. As can be seen in Figure 5, the tip 23 is larger than the apertures 21 and 22 and could not pass therethrough. Such is a preferred arrangement for the instant fastening means.

Referring again to Figure 4, wherein the cooperation among the various elements is best brought out, it will be seen that the fastener is assembled by passing the slide 11, looped by the lace 14, upwardly through the central loop aperture 12 and then outwardly to the left over the restricted loop aperture portion 12a. Pulling upon the lace lines 14c and 14b causes the slide 11 to be urged to the extreme outward end of the restricted aperture portion 12a. Merely manual pulling on the manually graspable lace end 14c causes sliding of the lace 14 through the slide apertures 21 and 22 and over the cross piece 20 until the working lace portion 14b is tensioned; then such manual pulling results in pull being exerted by both lace lines 14b and 14c, which in turn results in outward slide movement as described.

It should also be noted that the loop end 19 (defining the restricted aperture portion 12a) is so designed for cooperation with the slide 11 that it affords a pivot point support for the slide 11 as at x, inwardly of the cross piece 20, so that the downward force component of the pull upon the lace lines 14c and 14b will not cause the slide to be pulled through the loop 10. Movement in the direction of the arrow in Figure 4, is of course, accomplished by manually grasping the slide 11 and urging the same inwardly, out of locking position, and through the central aperture 12. Manual lifting of the outer extremity of the slide 11 will, of course, cause slidable pivoting of the same forward of the cross piece 20, so that the cross piece 20 is lifted out of crimping engagement.

In contrast, manual pull upon the free lace end 14c causes, first, tensioning of the working lace portion 14b and, then, outward movement of the slide 11, which is afforded slidable pivotal support inward of the cross piece 20 by the loop end 19. Eventually, the slide 11 moves a short distance to the extreme outward edge of the loop end 19 and there the slide 11 is locked in position by frictional forces, as will be readily understood. The free lace end 14c is crimped between the cross piece 20 and the loop end 19 and also between the working lace portion 14b and the loop end 19. Tensioning on either of the lace lines 14c or 14b tends only to tighten the lock or to increase the crimping effect, although a sufficiently strong pull on the free lace end 14c can cause relative movement between the parts. As just mentioned, manual lifting of the outer end of the slide 11 also causes relative movement between the parts, the pivotally mounted slide

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11 moving as a hinge to uncrimp the free lace end 14c.

In general, materials employed are such that no appreciable resilient forces are built up in moving the slide 11 into locking position so that slight variations or fluctuations in the tension on the working lace portion 14b would not have the effect of permitting the slide 11 to spring out of locking engagement. The slide 11 tends to retain its locked position until positive (manual) force is applied to the slide 11 itself or to the free lace end 14c. The slide 11 and loop 10 may be made of the same or different rigid materials, including synthetic resin plastics, wire, metal strips, wood and the like. The lace 14 may be made of a suitably flexible material such as the fabric-like material of shoe laces, leather or the like.

For example, the embodiment of the invention shown in Figure 6 is a fastening means comprising a hardened plastic loop 24 and a slide 25, adapted for use with a shoe lace 26. The loop 24 has substantially the same inner aperture contour as that of the loop 10 (of Figures 1-5, inclusive); but the narrowed slide retaining extension 27 of the loop 24 has upwardly extending side walls 27a (here partially hidden by the slide 24) which cooperate with the extension bottoms 27b to define a pair of parallel tracks adapted to slidably engage the slide 25 and guide the longitudinal movement thereof. Also, the bottoms 27a are curved downwardly and outwardly from the loop aperture so as to effectively improve the slide locking operation. In addition, the lace extremity 26a is affixed to the opposite end of the loop 24 via the small aperture 28 and is doubled over and sewed so as to prevent slipping therethrough, as can be seen.

The slide 25 is similar in shape and design to the slide 11 (of Figures 1-5, inclusive), being adapted to pass freely through the central loop aperture but being adapted to be slidably retained in the downwardly arced track provided at the extension 27. The slide 25 cooperates with the loop 24 so as to be pivotally slidably engaged inwardly of the slide cross piece 29 in response to outward pull on the lace 26 looped about the cross piece 29. In addition, the slide 25 has a roughened, serrated-like tail portion 30 extending outwardly from lace-receiving apertures 31 and 32 separated by the lace-wrapped cross piece 29. The roughened tail portion 30 facilitates manual grasping of the slide 25 and also tends to help retain the lace 26 (in contact therewith when the slide is pulled to the right in locking position) from sliding too freely during fluctuations in the locking tension on the lace 26 and slide 25.

The arcuate contour of the loop 24 and the slide (and, particularly, the loop extension 27) is substantially that of the region of object, such as a shoe, over which the fastening device is mounted, so as to effect a generally uniform force distribution through the device. Also, the arcuate track of the extension 27 has the effect of creating an increasing outward longitudinal force component of the generally downward force applied to the cross piece 29 by the lace 26 which must extend upwardly through the loop 24 as well as the slide 25 to wrap the cross piece 29.

As can be seen from Figure 6, pull exerted upon the working lace portion 26b and the free lace end 26c thus results in sidewise movement of the slide 26 (to the right) in sliding cooperation with the track defined by the extension bottom 27b and the side walls 27a. As the slide 25 moves into

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locking position (crimping the lace 26 in substantially the manner described in connection with Figure 4, the slide tail 30 extends outwardly over the outward extremity of the extension 27, so as to be readily manually graspable. Slidable pivotal contact inwardly of the cross piece 29 is afforded by the extension 27 in substantially the manner described in connection with Figure 4, and forward or inward movement of the slide 25 in response to inward manual pull on the tail 30 thereof may be used to effectively push the slide 25 through the central aperture in the loop 24, as shown by the arrow in Figure 6.

Referring now to Figures 7 and 8, which show still another preferred embodiment of the instant invention, it will be seen that the fastening device so disclosed comprises a loop 33 and a slide 34, in this instance adapted to be used with a flexible belt 35 made of a suitable fabric or leather-like material and having substantially greater width than the laces 14 and 26 hereinbefore described.

As can be seen, the loop 33 is hingedly mounted at its fastened end 36 by means of a fabric strip 37a wrapped about the loop end 36 and fastened to a fabric base or other suitable retaining means 37, by means of a rivet 38. Again, the general contour of the aperture 39 defined by the loop 33 is similar to the loop apertures hereinbefore described. As can be seen, the central aperture is sufficiently wide to permit the slide 34 to pass therethrough freely without turning or twisting of the slide 34; and at the end 40, which is the slide retaining end, mounted longitudinally opposite to the fastened end 36 of the loop 33, the width of the loop 33 is reduced to less than the width of the slide 34, so as to provide generally parallel longitudinally extending slide supports or extensions for retaining the slide 34 by pivotal sliding engagement inwardly of the cross piece 41 of the slide 34.

In the structure of Figures 7 and 8, the slide 34 is provided with substantially parallel laterally disposed slots 42 and 43, which are separated by the cross piece 41. As will be appreciated, the slots 42 and 43 are not substantially larger in cross sectional area than the belt 35 which passes therethrough and over the cross piece 41, for the reasons hereinbefore mentioned in connection with frictional sliding engagement between the slide 34 and the belt 35.

The working belt portion 35b may actually comprise an extension of the fabric base 37, or it may consist of a separate piece of fabric preferably attached to the fabric base 37 by means (not shown) suitable for such purposes. The working portion 35b extends upwardly through the inner slide aperture 43, over the cross piece 41 and then downwardly and outwardly through the slide slot 42 to define the free, manually graspable end of the belt at 35c. By pulling on the belt portions 35b and 35c, one moves the slide 34 into locking position at the slide retaining end 40 of the loop 33, in substantially the manner hereinbefore described. It should also be noted that the loop 33 has a slightly arcuate shape in elevation, being arcuately deflected downwardly at the slide retaining end 40, in substantially the same manner and for substantially the same purpose as set forth in connection with the embodiment of the invention shown in Figure 6.

The provision of the slidable fulcrum at the slide retaining end of the loop has several distinct advantages. For example, the slide fabrication is simplified because the slide may have

a symmetrical design on opposite sides of the cross piece, and unfastening of the assembly is substantially simplified. The slide in such an assembly is merely pushed forward and through the central loop aperture to unfasten the same; and the sliding fulcrum does not create such a long lever arm that extensive force is needed to move the same or that extra strength in the slide or loop structure is needed. Such features are of great importance in shoe lacing fastening. Also, better balance of forces can be obtained by the use of a slide having little more to its structure than a frame just big enough to define to strap- or lace-sized apertures separated by a cross piece. The outer end of the slide, in locking position, does not extend outwardly any such distance that would permit other forces or objects to interfere with its function. The outer end, and preferably both ends, of the slide extend from the cross piece thereto a distance substantially less than the longitudinal dimension of the loop. Such a slide is light enough in weight, also, to permit it to be retained upon a shoe lace, for example, in a given position by means of a minimum of frictional forces developed by cooperation between the lace and the slide.

From the foregoing disclosures, it can be seen that the loop and slide in each embodiment of the invention may have a variety of shapes and dimensions and may be made of a variety of materials, providing always that the particular coupling and locking action accompanied by the slidable fulcrum support cooperation therebetween may take place as described. Also, of course, the matter of fixing the loop permanently to the particular fabric base or fastened end of a belt, thong or lace may be accomplished by such suitable procedures as sewing, clipping, riveting, tying and the like.

In general, sharp edges in the loop and slide design should be avoided to minimize the wear and tear on the belt or lace, but as has been mentioned, some frictional drag is desirable in the cooperation between the slide and the belt or lace. Increasing the width of the slide cross piece may in some cases be advantageous in that it tends to increase the amount of material of the lace or belt that is bent in being passed through the slide.

Also, it will be appreciated that the instant fastening means is adapted for attaching to various kinds of lace of round or flat sections, of woven material as well as leather laces which are generally very difficult to tie, particularly, such laces as the square section lace used with hunting, marching and army shoes, and also flat leather laces.

This is a continuation-in-part of my copending applications Serial No. 15,153, filed March 16, 1948 and now abandoned, and Serial No. 327,126, filed July 17, 1951.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention, and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. Fastening means comprising a rigid loop having a first end and a second end longitudinally opposed thereto, a flexible strap, lace or the like secured at one of its extremities to said first end, and a rigid slide comprising a frame having a pair of parallel slots with a cross piece

therebetween looped by the opposite free extremity of said strap passing through the parallel slots, each of said slots defining an elongated narrow opening of substantially the cross-sectional size of said strap, lace or the like, the inside width of said first end being wider than said slide to permit free passage of said slide therethrough, said second end having a pair of parallel longitudinally extending slide supports so positioned that the inside width of said second end between said supports is narrower than said slide to cooperate therewith to slidably fulcrum said slide substantially inwardly of said cross piece so as to urge said slide into locking engagement at said second end in response to outward pull on the looped strap.

2. Fastening means comprising a rigid loop having a first end and a second end longitudinally opposed thereto, a flexible strap, lace or the like secured at one of its extremities to said first end, and a rigid slide comprising a frame having a pair of parallel strap-sized slots with a cross piece therebetween looped by the opposite free extremity of said strap passing through the parallel slots, the inside width of said first end being wider than said slide to permit free passage to said slide therethrough, said second end presenting a pair of downwardly deflected curved substantially parallel loop sides of inside width less than said slide to cooperate therewith to slidably fulcrum said slide substantially inwardly of said cross piece so as to urge said slide into locking engagement at said second end in response to outward pull on the looped strap.

3. A two-piece buckle device for fastening together opposite extremities of a lace, thong, belt and the like flexible member, comprising a rigid loop having a first end and a second end longitudinally opposed thereto, said first end being adapted to be secured to one of said lace extremities, and a rigid slide comprising a frame having a pair of lace-sized apertures with a cross piece therebetween looped by the opposite free extremity of said member passing through the apertures, the inside width of said first end being wider than said slide to permit free passage of said slide therethrough, said second end having a pair of parallel longitudinally extending slide supports so positioned that the inside width of said second end between said supports is narrower than said slide to cooperate therewith to slidably fulcrum said slide substantially inwardly of said cross piece so as to urge said slide into locking engagement at said second end in response to outward pull on the looped member.

JEAN RAVE.

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