Jan. 20, 1959 W. M. MOPPS 2,869,204

SHOELACE RETAINING CLAMP

Filed Oct. 10, 1955 2 Sheets-Sheet 1

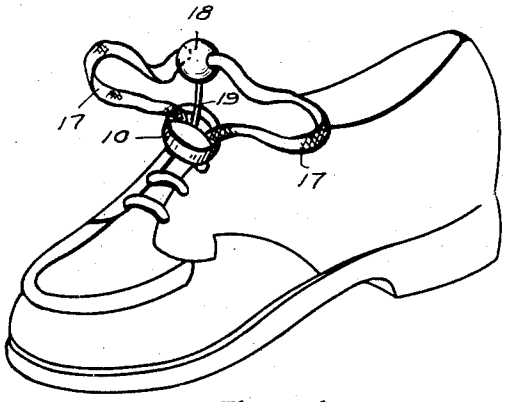


Fig. 1

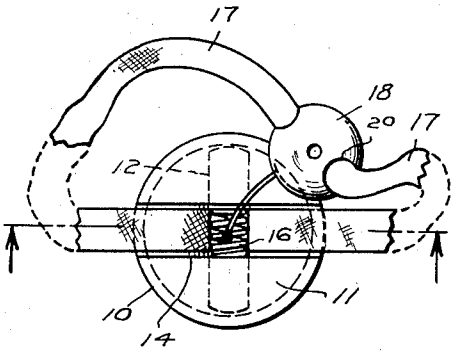


Fig. 2

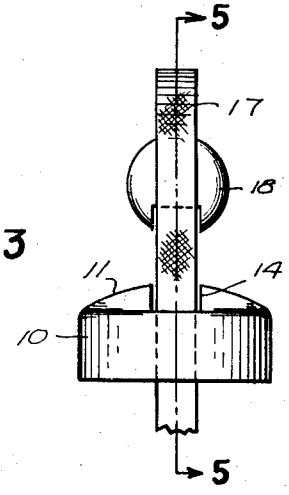


Fig. 3

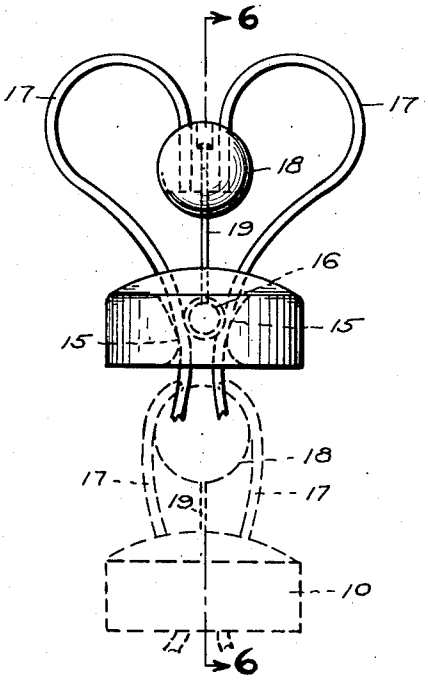


Fig. 4

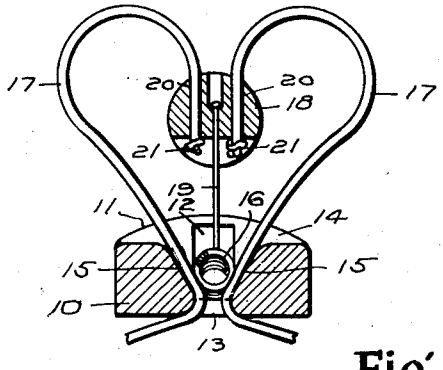


Fig. 5

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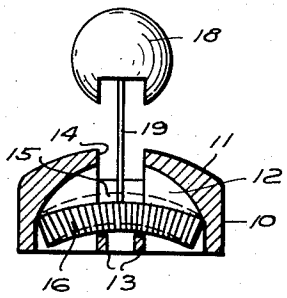


Fig. 6

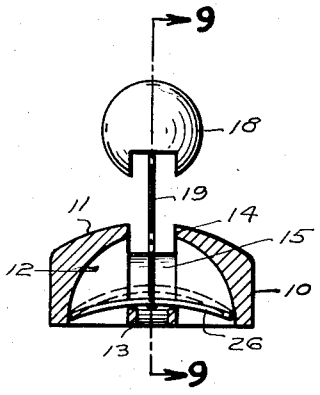


Fig. 8

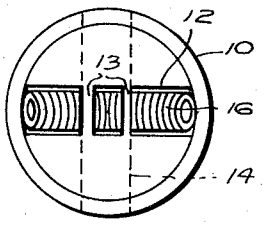


Fig. 7

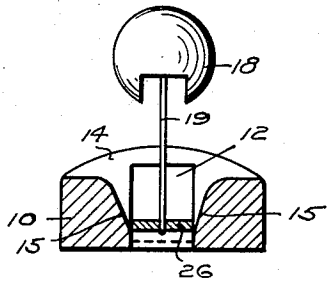


Fig. 9

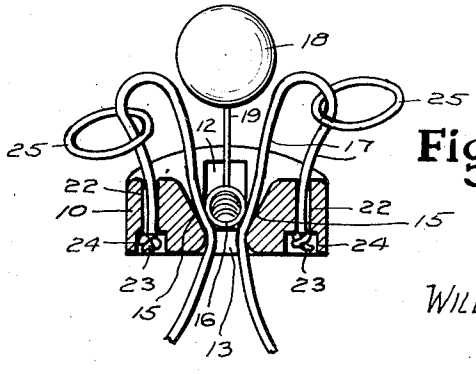


Fig. 10

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SHOELACE RETAINING CLAMP

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Application October 10, 1955, Serial No. 539,301

7 Claims. (Cl. 24—117)

This invention relates to a clamping device whereby to securely bind shoelaces against loosening.

The invention contemplates a novel clamping device that is permanently engaged with the normally free ends of the shoelaces in a manner whereby the shoelaces when tightened will be securely clamped against a reverse movement, and with the device being so constructed as to avoid the necessity of tying knots which customarily is difficult for small children and that frequently become untied due to the inability of the child to form the usual tight knot that will not become loose.

The device further embodies a novel clamping device through which the ends of the shoelaces are trained and with the device embodying clamping means that grip the shoelace in one direction yet will freely permit of its sliding movement and the loosening of the lace when shifted in an opposite direction in a simple manner.

An object of the invention resides in providing a generally cylindrical slide device through which the ends of the shoelace are trained and with the slide device being shiftable with respect to the shoelace toward and from the upper extremity of the shoe and with the device being provided with wedging surfaces and a bowed wedging spring whereby to wedge the laces against the wedging surfaces when pressure is exerted in one direction and with the lace being readily loosened with respect to the wedging surfaces and the wedging spring when pulled in an opposite and outward direction.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings, wherein has been illustrated the preferred embodiments of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

Figure 1 is a perspective view of a laced shoe showing the invention applied thereto,

Figure 2 is a plan view of a clamping slide embodied in the invention,

Figure 3 is a side elevation of the device with the shoelace trained therethrough,

Figure 4 is a side elevation at a right angle to that illustrated in Figure 3,

Figure 5 is a section taken substantially on line 5—5 of Figure 3,

Figure 6 is a section taken substantially on line 6—6 of Figure 4,

Figure 7 is a bottom plan view of the device with the shoelace omitted,

Figure 8 is a view similar to Figure 6 but illustrating a slightly modified form of clamping spring,

Figure 9 is a section taken on line 9—9 of Figure 8 and,

Figure 10 is a sectional view similar to Figure 5 but illustrating a slightly modified form of the device.

Referring specifically to the drawings, the device embodies a generally cylindrical slide 10, preferably having a convex upper surface 11. The slide 10 may be formed

of any desirable material, such as plastic and may be formed in any desired color to conform generally to the color of the individual's shoes. The slide 10 is provided with a downwardly opening chamber 12 that extends transversely of the body and with the chamber being bisected by spaced-apart ribs 13. The upper surface 11 of the slide 10 is slotted transversely and at a right angle to the chamber 12, as shown at 14. The bottom wall of the slot 14 terminates in downwardly and inwardly inclined wedging surfaces 15 and with the slot and the surfaces 15 communicating with the chamber 12. The surfaces 15 at their lower portions are rounded to terminate flush with the lower surface of the slide 11. The structure so far described is preferably formed as an integral unit.

Disposed within the chamber 12 is a relatively closely packed coil spring 16 that extends for the major length of the chamber 12 and with its intermediate portion resting upon the ribs 13. The dimension of the chamber 12 is such that with the spring 16 disposed therein, its opposite ends terminate adjacent to or against the end walls of the chamber. The convolutions of the spring normally lie closely adjacent the wedging surfaces 15 and with the spring under normal tension, with the tendency to straighten, it will be constantly biased toward the surfaces 15 whereby to effectively have a wedge engagement with shoelaces that overlie the wedge surfaces.

The opposite ends 17 of the shoelace extend upwardly between the opposite sides of the spring 16 and the wedging surfaces 15 and are guided toward the surfaces 15 by the ribs 13. It will thus be apparent, that any tendency to pull the shoelace ends downwardly with respect to the slide 10, results in the shoelace ends being progressively wedged between the spring and the wedging surfaces 15. Thus, the shoelace ends will be securely clamped against movement in a direction that would permit the loosening of the lace within the eyelets of the shoe. Means are provided to relieve the clamping action of the spring 16 when it is desired to loosen the lace sufficiently to permit the removal of the shoe, such means comprising a knob 18 having a link or wire 19 connected thereto. The wire 19 at its lower end is secure to any one of the convolutions intermediate the ends of the spring. Thus, by lifting upwardly upon the knob 18, the spring 16 will be bowed upwardly to a greater extent, relieving its wedging action against the lace ends 17. It is also desirable that the terminal ends of the lace ends 17 be anchored whereby to prevent unnecessary draping over the shoe and to anchor such ends of the lace, the knob 18 has been apertured at spaced-apart points, as at 20 whereby to receive the free ends of the laces therethrough and with the terminal ends of the laces knotted at 21 to prevent their disengagement from the knob 18.

In the use of this form of the invention, the free ends of the laces 17 as they project beyond the upper-most eyelets of the shoe, are trained through the slide in opposite directions whereby each end 17 will overlie the respective wedged surface 15 and in contact with the respective side of the spring 16. It is assumed of course that the knob 18 and its wire 19 have been previously assembled with respect to the slide 10 and whereby the wire 19 is securely anchored to an intermediate coil of the spring. The terminal ends of the lace are then inserted through the apertures 20 where they are knotted against displacement. The device is now attached to the lace and is ready for operation. Now when it becomes necessary to tighten the lace with respect to the shoe, the operator engages his fingers in the loops formed by the lace ends 17 and, by pulling outwardly the slide shifts downwardly to a point where it binds against the upper portion of the shoe and in this position the slide will be held against a reverse movement by the wedging action

of the spring **16** against those portions of the lace that overlie the wedge surfaces **15**. The lace will thus be securely held in the desired degree of tightness, depending upon the comfort of the user. When the lace is to be loosened for removal of the shoe the operator grasps the knob **18** and lifts it upwardly in a direction away from the slide **10**. Such action bows the spring **16** upwardly, disengaging the spring from the lace ends **17** and permits the lace ends to slide freely through the slide **10** and at its maximum sliding movement, sufficient slack has been given to the lace that will permit of the shoe being freely removed.

In that form of the invention illustrated in Figure 10, the shoe-lace ends **17** are trained through apertures **22** formed in the slide **10** adjacent the terminal ends of the slot **14** where their ends are knotted at **23** to be recessed into countersunk openings **24**. Thus the knob **18** has no connection with the lace. To further facilitate the pulling of the loops laterally as in tightening the device, rings **25** are engaged with each loop whereby to facilitate the engagement of the fingers of the operator when the slide has been shifted to its maximum upward position where there is relatively little of the loops projecting.

In that form of the invention illustrated in Figures 8 and 9, the slide **10** and the knob **18** are substantially identical to that previously described. However, in this form of the invention a flat bowed leaf spring **26** has been employed that spans the chamber **12**. The spring **26** functions in substantially the same manner with respect to the wedged surfaces **15** as before described and effectively wedges the lace ends against the wedge surfaces at all times to prevent the loosening of the lace. The wire **19** is connected to the spring **26** through a suitable aperture intermediate the ends of the spring whereby to permit the user to bow the spring upwardly to a release position under the influence of the lifting action upon the knob **18**.

It will be apparent from the foregoing that a very simple and highly effective clamp means has been provided whereby to securely hold the shoelaces in their proper degree of tightness. The device permits children and others to quickly and easily secure the laces and quickly and easily permits the loosening of the lace when the shoe is to be removed. The device is permanently attached to the shoelaces and offers no impediment to a normal use of laced shoes. The device is easily removed and replaced upon other shoes as the case may require. The clamp is economically formed, is strong, durable and most desirable to aid extremely young children in securing their shoe laces and especially those incapable of tying the usual knots.

While the device has been illustrated primarily for use in connection with shoelaces, it will be apparent that such novel clamping means may readily be adapted as a clamping and retaining means for other flexible cords or tie devices or for limiting relative movement between the clamp and the flexible cords.

It is to be understood that the invention is not limited to the precise arrangement shown but that changes are contemplated as readly fall within the spirit of the invention as shall be determined by the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A clamping device whereby to securely maintain shoelaces in a predetermined degree of tightness with respect to a shoe, comprising a slide device that is slidable jointly upon those ends of a shoelace that extend above a laced shoe, the slide device being chambered and cut away to form passages for the shoelace ends, the said passages being shaped to provide opposed wedge surfaces over which the shoelace slides, a clamping spring disposed within the chamber at a right angle to the wedge surfaces and with the spring upwardly bowed and being biased in a direction to simultaneously bind the shoelaces against the wedge surfaces, means connected to the spring device intermediate its ends whereby to additionally bow the spring in a direction away from the wedge surfaces to permit of a freely sliding movement of the slide device with respect to the shoelaces, the free ends of the shoelaces being fixedly anchored to the clamping device whereby to form finger engaging loops that serve to force the slide to clamping position.

2. A clamping device for holding shoelaces in a desired degree of tension with respect to a shoe, comprising a slide device that slidably engages the ends of the shoelace that extend above the shoe, the slide device being transversely chambered and with the chamber being downwardly opened, the upper portion of the slide being transversely slotted at a right angle to the chamber and with the slot terminating toward the center of the slide in a pair of opposed and downwardly and inwardly angled wedging surfaces, the said slot communicating with the chamber and with the wedging surfaces being disposed upon opposite sides of the chamber, the said slot and the wedging surfaces constituting guide channels through which the shoelace ends are passed and whereby the shoelace ends overlie the wedge surfaces, an upwardly bowed spring disposed within and for the full length of the chamber and with the spring being biased in a direction to engage and simultaneously clamp the shoelaces against the wedge surfaces, means connected with the spring intermediate its length to additionally bow the spring in a direction away from the wedging surfaces whereby the slide may freely shift upon the shoelace in a direction to relieve tension upon the laced shoe and means for anchoring the teminal ends of the shoelace to form finger engaging loops.

3. The structure according to claim 2, wherein the slide is of cylindrical form and provided with a convex head, the said chamber extending for the major width of the slide, the said spring having its ends in engagement with the end walls of the chamber to maintain the spring in a minimum bowed shape, means formed upon the slide and spanning the opening of the chamber for preventing accidental displacement of the spring and for maintaining the spring in its minimum bowed position and its maximum clamping position, the said means also serving to guide the ends of the shoelace to overlying engagement with the wedging surfaces.

4. The structure according to claim 2, wherein the spring embodies a plurality of relatively close packed coils, linkage connected to an intermediate coil of the spring and with the linkage extending upwardly above the upper portion of the slide and a knob connected to the upper end of the linkage whereby to pull the linkage upwardly for bowing the spring upwardly in a direction away from the wedging surfaces and to release a clamping action upon the shoelaces that overlie the surfaces.

5. The structure according to claim 2, wherein the spring is a flat leaf spring that extends for the full length of the chamber and with the terminal ends of the spring contacting the ends of the chamber under pressure whereby to impart a minimum bowing to the spring upwardly, cross-ribs extending across the lower open sides of the chamber intermediate its length and whereby to limit the shifting of the spring downwardly beyond its predetermined minimum bowing, the spring being biased in a direction toward the wedging surfaces and whereby its marginal edges will impart a clamping engagement upon the shoelaces that overlie the wedging surfaces, a pull knob and a flexible link between the knob and the intermediate portion of the spring whereby to additionally bow the spring upwardly in a direction away from the wedging surfaces.

6. The structure according to claim 2, wherein the means connected to the spring embodies a spherical hand knob and a flexible cord that is connected to the knob and with the intermediate portion of the spring, the said knob being provided with a pair of parallel apertures, the free ends of the shoelaces being engaged in the apertures

and anchored against displacement with respect to the knob, the shoelace ends when in anchored engagement with the knob forming finger engaging loops that project above the slide.

7. The structure according to claim 2, wherein the slide is cylindrical and with its head being convex, the transverse slot having a depth corresponding to the convex head, the slide adjacent the outer ends of the slot being vertically apertured and with the apertures upon the bottom of the slide being countersunk, the terminal ends of the shoelaces being engaged in the apertures and knotted at their ends within the countersinks whereby the ends of the shoelaces are anchored with respect to the slide, the anchoring of the shoelace ends causing the laces to form finger engaging loops and finger engaging rings carried by the loops.

References Cited in the file of this patent

UNITED STATES PATENTS

667,175	Atkinson	Feb. 5, 1901
1,342,787	White	June 8, 1920
2,200,895	Rio	May 14, 1940
2,236,506	Hirsch	Apr. 1, 1941
2,318,411	Moore	May 4, 1943
2,573,806	Paterson	Nov. 6, 1951

FOREIGN PATENTS

315,765	Great Britain	July 16, 1929
663,136	Germany	July 29, 1938