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ADJUSTABLE SINGLE-TAPE STRAP

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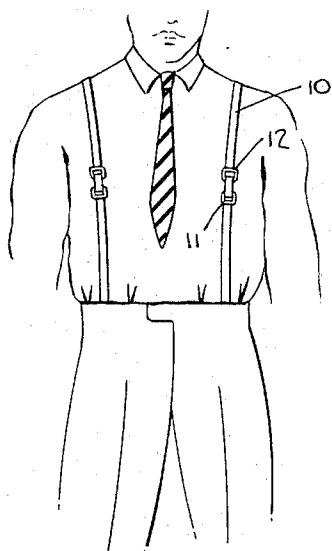


Fig. 1.

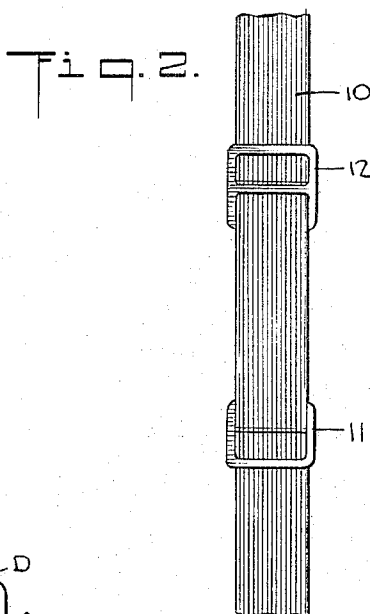


Fig. 2.

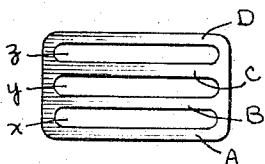


Fig. 3.

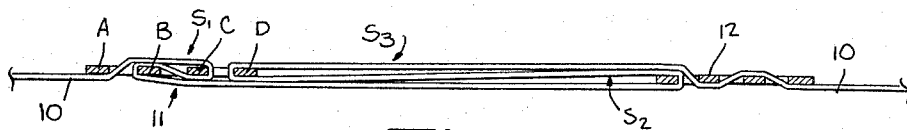


Fig. 4.

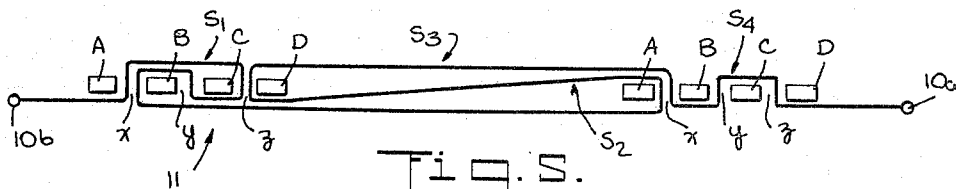


Fig. 5.

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## ADJUSTABLE SINGLE-TAPE STRAP

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2 Claims. (Cl. 2-323)

This invention relates generally to adjustable straps, and more particularly to a strap constituted by a single length of tape threaded through a pair of identical buckles which may be shifted relative to each other to vary the effective length of the strap.

Straps are known in which one continuous length of webbing material such as a fabric tape, is threaded through two buckles, one acting as an anchorage buckle and the other as an adjusting buckle, whereby the anchorage buckle is maintained on the tape in a fixed position whereas the adjusting buckle is slidable along the tape to vary the effective length of the strap. Such straps make use of an anchorage buckle having three transverse slots and an adjusting buckle having but two such slots. In order to hold the buckles at any set position, it is necessary that the slots be sufficiently narrow to produce tape friction resisting movement.

Single-tape straps of the above-described type have advantages over single buckle straps making use of two tape sections, for there is no loose strap end extending from the buckle and there is no need to provide hoops to hold the loose end against the strap. Such loose ends are undesirable in articles of clothing, for they tend to interfere with the wearer's comfort, particularly when the strap is used as a shoulder strap in undergarments such as slips or brassieres. Moreover, the loose ends are unsightly, and tend to fray. Another important advantage of such single-tape straps is that no sewing is required in their manufacture, for all that is required is a threading of the tape through the buckles.

The drawbacks of single-tape adjustable straps of the above-described type are that they are relatively difficult to adjust and also have a tendency to slip. Moreover, the fact that the two buckles are of different design complicates the manufacture of such straps and the assembly thereof.

Accordingly, it is the principal object of the present invention to provide a single-tape adjustable strap making use of two identical buckles. A significant advantage of the invention is that the strap, while easily adjustable, nevertheless maintains a set position without slippage.

More specifically, it is an object of the invention to provide a single-tape strap including two identical buckles each of which has three transverse slots, the arrangement being such that the tape threaded therethrough maintains one buckle at a fixed position while the other buckle is readily adjustable relative to the first buckle to vary the size of the strap.

Another advantage of the present invention is that the strap construction with its two identical buckles lends itself to automatic fabrication, whereby the tape may be mechanically threaded at high speed through the buckles.

Also an object of the invention is to provide an adjustable strap of high strength and attractive design, which may be manufactured and sold at low cost. A strap in accordance with the invention may be used for a great variety of purposes, such as a shoulder strap for undergarments, as straps for life preservers, knapsacks, braces, and the like.

Briefly stated, these objects are attained in a single-tape strap comprising two identical buckles, one of which serves as an anchor and the other as the adjusting element, each buckle having three transverse slots defining in successive order a first end bar, first and second intermediate

bars, and a second end bar. The tape threads through the anchor buckle so that it passes under the first end bar and over and under the second intermediate bar, and then over and under the first intermediate bar, to form a locking loop section which prevents displacement of the buckle. The tape then extends to the adjusting buckle where it goes under and over the first end bar and back to the anchor buckle, thereby forming a first free loop section. At the anchor buckle, the tape then goes under and over the second end buckle and back to the adjusting buckle to form a second free loop section. Finally, the tape runs sinuously over the first end bar, under the first intermediate bar, over the second intermediate bar, and under the second end bar, to form a sinuous tape section which permits sliding movement of the adjusting buckle in either direction relative to the anchor buckle to vary the length of the free loops therebetween, but offering sufficient resistance to hold the adjusting buckle at any set position thereof.

For a better understanding of the invention, as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawing, wherein like components in the several views are identified by like numbers. In the drawing:

FIG. 1 illustrates a pair of single-tape straps in accordance with the invention, acting as men's braces;

FIG. 2 shows one of the straps in plan view;

FIG. 3 shows a plan view of one of the two identical buckles included in the strap;

FIG. 4 shows in sectional view the manner in which the tape is threaded through the buckles; and

FIG. 5 is a schematic view showing how the tape is threaded through the buckles.

Referring now to the drawing, the strap in accordance with the invention is constituted by a continuous webbing 10 which is threaded through a pair of identical buckles 11 and 12. The webbing 10 may be fabricated of woven or non-woven tape or ribbon of any suitable natural or synthetic material.

Buckles 11 and 12 are formed by flat plastic, metal or plastic-coated metal plates having three transverse slots *x*, *y* and *z*, of identical size, cut therein to define cross-bars which, in successive order going from left to right in the drawing, are designated as first end bar A, first and second intermediate bars B and C, and second end bar D. The tape is so threaded through these buckles that buckle 11 is locked in place to become an anchor buckle, whereas buckle 12 may be slid relative to buckle 11 to adjust the effective length of the tape, the set position of adjusting buckle 12 being maintained by tape friction.

To explain how the tape is threaded through the buckles, we shall identify the right extremity as 10*a* and the left as 10*b*. The threading is carried out by passing the extremity 10*a* through the buckle slots in the following manner: The tape is first passed under bar A of the anchor buckle 11, up through slot *x*, over bar C, down through slot *z*, and under bar C, up through slot *y*, over bar B, down through slot *x*, thereby forming a locking loop section S<sub>1</sub> which encircles bar C and prevents movement of the anchor buckle.

The tape then is extended to the adjusting buckle 12 where it goes under bar A, up through slot *x*, and over bar A, where it is returned to the anchor buckle to form a first take-up loop section S<sub>2</sub>. The tape is then passed under end bar D, up through slot *z* and over end bar D, where it is again extended to the adjusting buckle 12 to form a second and overlapping take-up loop section S<sub>3</sub>. Then the tape passes sinuously over bar A, down through slot *x*, under bar B, up slot *y*, over bar C, down slot *z*, and finally under bar D, to form a sinuous section S<sub>4</sub>.

The sinuous section  $S_4$  of the tape offers resistance to the displacement of the adjusting buckle 12, but does not prevent sliding movement thereof when manually shifted in either direction relative to the anchor buckle.

The over-all length of the strap between extremities 10a and 10b is determined by the amount of tape material included in the overlapping take-up loop section, the more tape material in the take-up sections, the shorter the over-all length of the strap. Thus the greater the distance between the adjusting buckle and the anchor buckle, the shorter the strap.

The extremities 10a and 10b of the single-tape strap may be sewn, hooked or otherwise connected to the article being strapped. In the case of a men's brace, as shown in FIG. 1, the ends may be provided with button-holes for connection to buttons sewed to the trousers. The size of the buckles and the length and width of the tape is, of course, chosen to be appropriate to the end use intended.

While there has been shown a preferred embodiment of the invention, it is to be understood that changes may be made therein without departing from the essential features of the invention as defined in the annexed claims.

What is claimed is:

1. An adjustable single-tape strap comprising a pair of identical buckles each having three transverse slots to define in successive order a first end bar, first and second intermediate bars and a last end bar, and a continuous tape threaded through said buckles to cause the tape to pass under the first end bar, over and under the second intermediate bar, and over and under the first intermediate bar of the one buckle to form a locking loop anchoring said one buckle, the tape then being extended to the other buckle to pass under and over the first end bar thereof from which point it is extended back to the one buckle to define a first take-up loop, the tape then passing under and over the last end bar of the one buckle and extending back to the other buckle to define a second and overlapping take-up loop, the tape then travelling sinuously over the first end bar, under the first intermediate bar, over the

second intermediate bar and under the last end bar of the other buckle to define an adjusting section.

2. An adjustable single-tape strap comprising a pair of identical buckles each having three transverse slots to define in successive order a first end bar, first and second intermediate bars and a last end bar, one buckle acting as an anchor and the other as an adjusting buckle, and a continuous tape so threaded through said buckles whereby the tape passes under the first end bar, over and under the second intermediate bar, and over and under the first intermediate bar of the one buckle to form a locking loop, the tape then being extended to the other buckle to pass under and over the first end bar thereof from which point it is extended back to the one buckle to define a first take-up loop, the tape then passing under and over the last end bar of the one buckle and extending back to the other buckle to define a second and overlapping take-up loop, the tape then travelling sinuously over the first end bar, under the first intermediate bar, over the second intermediate bar and under the last end bar of the other buckle to define an adjusting section permitting sliding movement of the buckle to vary the amount of tape in the overlapping take-up loops and thereby vary the over-all length of the strap.

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