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ADJUSTABLE STRAP AND BUCKLE THEREFOR

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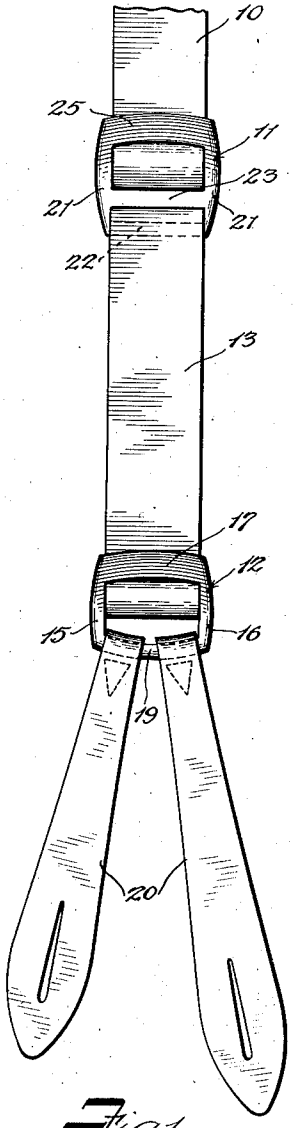


Fig. 1.

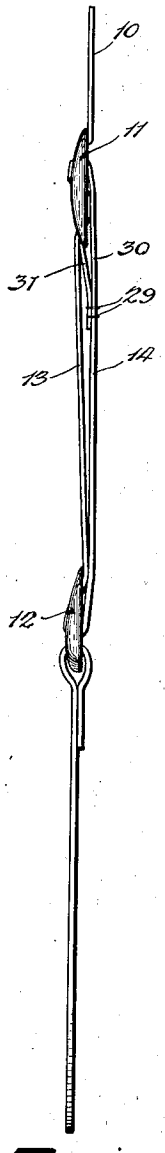


Fig. 2.

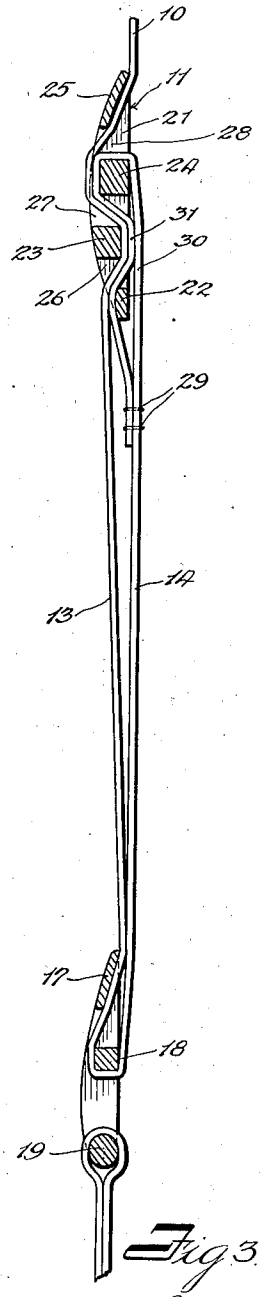


Fig. 3.

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ADJUSTABLE STRAP AND BUCKLE THEREFOR

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4 Claims. (Cl. 2—340)

This invention relates to adjustable straps, more particularly to adjustable suspenders comprising straps and cooperating one-piece buckles therefor, and the invention has for an object the provision of an improved adjustable suspender of this character.

Suspender straps have heretofore been provided wherein adjustability is achieved by the provision of a one-piece buckle construction, but such arrangements have not been entirely satisfactory due to the fact that such buckles have been found to have either a tendency to slip when tension is applied to the suspender strap or to clamp the strap so tightly that adjustment thereof is so difficult as to be unsatisfactory. These difficulties arise due to the fact that the one-piece buckles heretofore provided have not been universally applicable to straps of different thickness, the clamping and adjustment action of such buckles being dependent entirely upon the manner in which the strap is threaded through the buckle, and the result has been that when applied to thin straps excessive slipping has been encountered, while when applied to thick straps adjustment of the suspender strap has been too difficult for satisfactory commercial use. Consequently, it is a further object of this invention to provide an adjustable suspender construction wherein the strap cooperates with a one-piece buckle which is properly designed for cooperation with the strap to provide satisfactory clamping and adjusting characteristics regardless of the thickness of the strap.

In carrying out the invention in one form, a one-piece buckle comprising four spaced-apart cross bars is provided, which cross bars define strap receiving slots therebetween. The suspender is of the usual type comprising a pair of straps adapted to pass over the shoulders of the user and either cross or be connected by cross members for attachment to the back of the garment. The front end of each suspender strap is in the usual case looped upon itself to form an adjusting loop, the closed end of which passes through a ring, which ring is attachable to the garment. The free end of the strap is attached to the adjusting buckle which cooperates with an intermediate portion of the strap to form the adjusting loop, and the position of the buckle on this intermediate portion of the strap determines the length of the suspenders.

The one-piece buckle embodying the principles of this invention is so associated with the strap that the free end of the back strand of the adjusting loop is looped upon itself and secured to form a small attaching loop which encircles one or more bars of the buckle so that a portion of the attaching loop passes in front of alternate bars and rearwardly of an intermediate bar. The front strand of the adjusting loop is threaded through the buckle so as to overlie the portions of the attaching loop which pass in front of the alternate bars and to underlie the portion of the attaching loop which passes behind the intermediate bar. The front strand of the loop is thus interposed between the intermediate bar and the attaching loop and upon the application of tension to the strap is urged tightly against this intermediate bar so as to clamp the strap in adjusted positions. The suspender strap after passing in front of the upper one of the above-referred-to alternate cross bars passes rearwardly of the uppermost cross bar so as to provide a neat and finished appearance to the buckle when the strap is threaded therethrough.

For a more complete understanding of the invention reference should now be had to the drawing, in which

Figure 1 is a front elevational view of one end of a suspender strap embodying the present invention and illustrating a one-piece buckle associated with the strap;

Fig. 2 is a side elevational view of a portion of the suspender strap and buckle shown in Fig. 1, and

Fig. 3 is an enlarged sectional view taken substantially along the vertical center line of Fig. 1.

Referring now to the drawing, there is shown in Fig. 1 only one end of one strap, but it will of course be understood that the complete suspender is of the usual type and embodies two straps, each of which is provided with an adjusting buckle. As shown in the drawing, the suspender strap 10 is threaded through a one-piece buckle 11 and through a suitable ring 12, the strap then being looped upon itself to form the front and back strands 13 and 14, respectively, of an adjusting loop. The ring 12 may be attached to the garment to be supported in any desired manner and may be of any suitable construction. It is shown in the drawing as being a three-bar ring having side bars 15 and 16 connected by cross bars 17, 18 and 19. The suspender strap is looped about the intermediate cross bar 18 as shown best in Fig. 3, with both strands of the loop passing rearwardly of the upper cross bar 17. Associated with the lower cross bar 19 is a pair of attaching elements 20 such as are commonly provided in suspenders

of the general type to which this invention is applicable.

The one-piece suspender buckle 11 comprises a frame having side bars 21 connected by four spaced-apart cross bars 22, 23, 24 and 25 which define strap receiving slots therebetween identified in Fig. 3 by the reference numerals 26, 27 and 28, respectively.

In order to enhance the appearance of the buckle, the side bars 21 are given the arcuate configuration shown, and the upper end cross bar 25 is cut away to provide a sloping rear surface so that the strap 10 may lie therebehind without bulging rearwardly of the buckle. Similarly, and for the additional purpose of providing proper gripping of the strap, the intermediate cross bars 24 and 25 are cut back on their opposite surfaces to permit a portion of the suspender straps threaded therearound to lie at least partially within the confines of the side bars of the buckle. The manner in which the suspender strap is associated with and threaded through the buckle 11 insures that a proper gripping or clamping action will be obtained and that ease of adjustment will be provided regardless of the thickness of the strap.

As shown best in Fig. 3, the back strand of the adjusting loop portion of the suspender strap is looped upon itself and secured, as for example by sewing at the points indicated by the reference numeral 29, to provide a small attaching loop having a back portion 30 and a front portion 31. The front portion of this attaching loop extends in front of the cross bar 24, through the slot 27, in back of the cross bar 23, through the slot 26 and in front of the cross bar 22, while the back portion 30 of the attaching loop extends in back of the cross bars 24, 23 and 22 so as effectively to conceal these bars and prevent contact thereof with the body or underlying garments of the wearer. The rear portion 30 of the attaching loop may, if desired, pass through the slot 26 along with the portion 31 so that both portions of the attaching loop lie in front of the lower cross bar 22. Such an arrangement, however, would to some extent increase the bulging at the front face of the buckle and would also leave the rear surface of the cross bar 22 exposed to view.

The front strand of the adjusting loop as shown best in Fig. 3 is threaded through the slots 26, 27 and 28 in alternate directions so that the front strand 13 overlies the attaching loop in front of the bars 22 and 24, that is, the front portion 31 of the attaching loop lies between the front strand 13 and the bars 22 and 24, and the front strand 13 overlies the portion 31 of the attaching loop in back of the cross bar 23 so as to lie between the portion 31 and the cross bar 23. Furthermore the strand 13 lies in back of the upper cross bar 25, thus to provide a finished appearance to the buckle and strap combination and to insure that the front strand 13 closely overlies the cross bar 24 and the portion of the attaching loop which encircles this cross bar.

The strap receiving slots 26, 27 and 28 are of sufficient width to permit the strap 10 to be readily drawn therethrough when it is desired to adjust the length of the adjusting loop formed by the strands 13 and 14, but when tension is applied to the suspender strap the front portion 31 of the attaching loop is caused to move toward the cross bar 23 due to the fact that this portion 31 passes in front of the cross bars 22 and 24, and such movement of the portion 31 is effective to urge the overlying portion of the front strand 13 against the rear surface of the cross bar 23. Thus the front strand 13 of the strap 10 is tightly clamped between the portion 31 of the attaching loop and the cross bar 23. Further clamping action is of course obtained due to the fact that the strand 13 is considerably deformed from a straight path through the buckle and due to the additional fact that a considerable portion of this strand 13 overlies in frictional relation the front portion 31 of the attaching loop. Thus there is provided a one-piece four-bar suspender buckle which, when properly associated with the suspender strap, provides for secure and firm gripping of the strap in adjusted positions upon the application of tension thereto and at the same time permits ready adjustment of the strap relative to the buckle.

While a particular embodiment of the invention has been shown, it will be understood, of course, that the invention is not limited thereto since many modifications may be made, and it is therefore contemplated by the appended claims to cover any such modifications as fall within the true spirit and scope of the invention.

I claim:

1. In an adjustable suspender of the type comprising a strap having one end attachable to a garment and the other end looped upon itself to form the front and back strands of an adjusting loop, and a ring attachable to the garment having a slot for receiving the portion of said strap connecting said front and back strands at one end of said loop; the combination of a buckle for adjustably connecting the front and back strands at the other end of said loop comprising a one-piece frame having spaced apart upper and lower end cross bars and upper and lower intermediate cross bars defining strap receiving slots therebetween; said back strand of said loop encircling said upper intermediate and said lower end cross bars and being secured upon itself to form an attaching loop; said front strand being threaded through said frame so as to pass alternately in front and in back of said cross bars for adjusting movement through said slots; the threaded portion of said front strand passing between said lower intermediate cross bar and said attaching loop of said back strand whereby said front strand is clamped therebetween when tension is applied to said strap.

2. In an adjustable suspender of the type comprising a strap having one end attachable to a garment and the other end looped upon itself to form the front and back strands of an adjusting loop, and a ring attachable to the garment having a slot for receiving the portion of said strap connecting said front and back strands at one end of said loop; the combination of a buckle for adjustably connecting the front and back strands at the other end of said loop comprising a one-piece frame having spaced apart upper and lower end cross bars and upper and lower intermediate cross bars defining strap receiving slots therebetween; said back strand of said loop encircling said upper intermediate and said lower end cross bars and being secured upon itself to form an attaching loop; said front strand being threaded through said frame so as to pass alternately in front and in back of said cross bars for adjusting movement through said slots; the

threaded portion of said front strand passing between said lower intermediate cross bar and said attaching loop of said back strand, the front surfaces of said lower end and upper intermediate cross bars being disposed forwardly of the back surface of said lower intermediate cross bar to cause the front portion of said attaching loop to move toward said lower intermediate cross bar and clamp said front strand thereagainst when tension is applied to said strap.

3. In an adjustable suspender of the type comprising a strap having one end attachable to a garment and the other end looped upon itself to form the front and back strands of an adjusting loop, and a ring attachable to the garment having a slot for receiving the portion of said strap connecting said front and back strands at one end of said loop; the combination of a buckle for adjustably connecting the front and back strands at the other end of said loop comprising a one-piece frame having four spaced apart cross bars defining strap receiving slots in said frame; said back strand of said loop being looped and secured upon itself to form an attaching loop having a front portion extending in front of a first one of said bars, in back of a second one of said bars and in front of a third one of said bars; said front strand of said adjusting loop being threaded through said slots to overlie said front portion of said attaching loop in front of said first and third bars and to overlie said front portion in back of said second bar; said front strand passing in back of the fourth one of said cross bars; said front portion of said attaching loop upon the application of tension to said strap urging said overlying portion of said front strand against the back of said second bar to clamp said strap in adjusted position, said front strand upon the release of said tension being readily movable through said slots to adjust said adjusting loop.

4. In an adjustable suspender of the type comprising a strap having one end attachable to a garment and the other end looped upon itself to form the front and back strands of an adjusting loop, and a ring attachable to the garment having a slot for receiving the portion of said strap connecting said front and back strands at one end of said loop; the combination of a buckle for adjustably connecting the front and back strands at the other end of said loop comprising a one-piece frame having four spaced apart cross bars defining strap receiving slots in said frame; said back strand of said loop being looped and secured upon itself to form an attaching loop having a front portion extending in front of a first one of said bars, in back of a second one of said bars and in front of a third one of said bars; said front strand of said adjusting loop being threaded through said slots to overlie said front portion of said attaching loop in front of said first and third bars and to overlie said front portion in back of said second bar; said front strand passing in back of the fourth one of said cross bars; the front surfaces of said first and third cross bars being disposed forwardly of the back surface of said second cross bar to cause said front portion of said attaching loop to move toward said second cross bar upon the application of tension to said strap and clamp said front strand of said adjusting loop against said second bar.

PAUL W. WHITE.