ADJUSTABLE STRAP AND TONGUE BUCKLE FOR USE THEREWITH

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My invention relates to improvements in adjustable straps and tongue buckles for use therewith.

An object of my invention is to provide a tongue buckle in which the tongue thereof is mounted on the opposite end of the buckle from a standard type of harness buckle commonly used in belts and which pivots from a closed position extending inwardly over the buckle to an open position extending outwardly beyond the buckle for insertion within a selected hole in the adjustable end of the belt.

With my invention, an elongated tongue is pivotally mounted on the outer bar of the buckle to pivot from an outer open position for selective insertion of the tongue in a selected hole or slit in the adjustable end of the strap and to pivot to a closed position overlying and abutting the adjustable strap, with the tongue itself being so constructed that the pressure of the belt tends to retain the tongue in its closed position without any spring brake or spring locking action of any type, and I am enabled to do this by providing a preferably flat tongue pivotally mounted on the outer buckle rod extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot and projecting inwardly a substantial distance over the front surface of said buckle, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot with said adjustable strap end abutting the said loop to pivot the end of the tongue downwardly against the adjustable strap end to retain the buckle in closed position.

Both embodiments, however, are based on the novel principle of providing a buckle member having a ball, having an inwardly projecting tongue pivotally mounted on the ball, and projecting over the connecting member.

Further objects of both embodiments, however, are to provide a simple novel type of tongue on a connecting member preferably resiliently mounted thereon to function in a manner to be described and one which may be as readily attached and detached as an ordinary belt buckle and which preferably provides at least one connecting member in the strap which permits extensibility of the belt, if desired, in use.

Further features of my invention relate to the structure of the individual parts thereof.

A further feature of my invention relates to improvements in structure wherein the tongue is pivotally mounted on the connecting buckle member whether it be used alone or as a slidable member in a larger connecting member and is so pivotally mounted on a ball projecting from said connecting member that the straight legs of the ball abut the edges of the tongue, so that it will pivot evenly over the centre portion of the buckle member at all points in the pivotal movement thereof.

A further feature of my invention resides in the fact that I provide a distinctively different and novel effect in a belt or other strap when faced from the front. The connecting member or the connecting buckle member is of such a width that the exterior edges thereof are exposed above and below the belt, the end cross bars of the belt are no longer visible and the tongue appears even over the surface of the belt between the side bars or edges of the connecting member.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of embodiments thereof such as are shown in the accompanying drawings.

In the drawings, Fig. 1 is a perspective view of one embodiment of my improved strap in use employing a buckle having a pivoted tongue with a strap extending around the torso of a wearer shown in dotted lines.

Fig. 2 is an enlarged side elevation of the strain compensating and detachable and adjustable portions of the embodiment of my improved strap shown in Fig. 1, showing the strap in adjusted attached position.

Fig. 2a is a transverse sectional view taken inside of the ball base through the ball legs, the overlying strap end and the tongue, looking toward the adjacent end of the strain compensating member.

Fig. 3 is an enlarged longitudinal sectional view taken through my improved strap along the line 3—3 of Fig. 1.

Fig. 4 is an enlarged side elevation of the strain compensating and detachable and adjustable portions of the embodiment of my improved strap shown in Fig. 2, but showing the buckle tongue pivoted to an open strap attaching position.

Fig. 5 is a perspective view of the improved buckle tongue I preferably employ.

Fig. 6 is a perspective view of the improved ball member or buckle I preferably employ.

Fig. 7 is a cross sectional view taken along the line 7—7 of Fig. 1.

Fig. 8 is a perspective view of a different embodiment of my improved strap in use employ-
ing a buckle comprising a single buckle member having a flat tongue pivoted on the outer end thereof.

Fig. 9 is a side elevation of the buckle member and adjacent strap portions of the embodiment shown in Fig. 8, showing the strap in an adjusted attached position.

Fig. 10 is a longitudinal sectional view taken through my improved strap along the line 10–10 of Fig. 8.

In the drawings, wherein like characters of reference generally indicate like parts throughout the several views, Figs. 1, 3, 9, 10, and 20' as shown in Figs. 2 to 6, generally indicate embodiments of adjustable straps constructed in accordance with my invention. In the first embodiment shown, said adjustable strap is automatically extensible on movements of the object strapped, such as movements of the muzzle 32 of the wearer shown in dotted lines in Fig. 1 when moving rapidly or exercising, or of the wrist of the wearer wearing a wrist watch. My invention includes a non-extensible strap portion 34 of a length to encircle a limb or a body member as shown in Fig. 1, or to join two article portions together, such as the edges of shoes, overshoes or corsets, having a fixed end 36 and an adjustable end 38 and a strain compensating member 40 having a resiliently extensible portion 42 projecting from at least one end thereof having means such as the ball base or end 48 on its outer end secured to one of said strap ends, namely, the adjustable strap end 38 as shown in Fig. 2 and means 46 which may comprise a rod or pull bar 44 on the opposite inner end of said connecting member 40 for securing the fixed strap end thereto.

My invention is adapted for use with any type of a flexible strap such as a leather strap, woven strap, knitted or other strap and even may be used with a metal strap. The fixed end 36 may be secured to the strain compensating member 40 in any suitable manner and the adjustable end 38 is made adjustable in the novel manner about to be explained.

In the embodiments of my invention shown, the fixed strap end 36 has a tip 37 looped undernest into it, as at 42, the means for attaching the fixed strap end to the strain compensating member comprising hole means or a transverse slot 49 interior of the ball base or rod 44 or inner portions 54, so that when the tip 37 of the fixed strap end is inserted through the slot 49, it may form a loop 38 which may be rigidly secured to said fixed strap end in any suitable manner such as by the rivets 36.

As stated, my invention is preferably employed with a resiliently extensible strain compensating member 46 within the belt or strap having a resiliently extensible buckle portion projecting from one or both ends thereof. I may construct my connecting member with one extensible portion only, but I have shown it in the drawings and all embodiments as including two extensible members 42 and 43' dummy end and so on in Fig. 10, one of these is omitted, it is obvious that means must be provided on the opposite end of the compensating member 40 to secure the strap end 36 or 38 thereto.

In the embodiment shown in Figs. 1–7, the box portion, comprising the strain compensating member 46, may be of the embodiment shown in Fig. 10 having greater width than the strap having longitudinal compartments 74 along each edge thereof on the rear surface of the front plate 77 thereof. The front plate 77 may be suitably ornamented, if desired, and the compartments 74 are preferably formed integral with the metal of the front plate 77. Said compartments are also provided with the end wall or walls 76 having hole means 78 therein, and thus the connecting member 46 is provided with spaced hole means 78 in each end thereof.

I also provide a slidably connecting buckle member 42' or 42 having means exterior of said connecting member comprising a rod 44 or 48 for attachment of each strap end 36 or 38 thereto, in the embodiment shown the hollow buckle members 42' or 42, each having a respective rod 44 or 48 forming a ball base and the spaced legs 82 having flat outer portions 51 spaced from each other substantially the width of said rod 48 and extending inwardly a distance parallel to each other, portions 83 projecting transversely externally from the inner ends of said spaced outer leg portions 81 for a distance greater than the width of the strap forming the outer or front cross bar of the buckle and leg inner portions 55 forming buckle side bars projecting inwardly from the rod 48 and said strap portions 83 within said respective compartments 74 extending through the holes 78 for this purpose.

Each leg 82 has portions 84 extending inwardly and transversely of said box forming the equivalent of an inner or rear buckle cross bar. I also provide spring means 86 interposed between said transversely extending portions 84 and the compartment end walls 76, said spring means being yieldable to permit outward movement of said extensible portions 42 or 42' when an outward pull is exerted thereon and resilient to return said slidably portion 42 or 42' to its original position when said pull is ended.

As stated hitherto, one or two ball members may be employed and other types of connecting members having one ball or a ball projecting from each end thereof, with said ball or balls resiliently or fixedly mounted on said connecting member 40 may be used or as in the embodiment shown in Figs. 8–10 said ball or buckle member 42 may be used as the sole connecting member with the fixed strap end 36 tapered around the transverse portions 84 of the ball 48 and used in the manner shown in Figs. 1–4.

While I have shown one connecting member in both embodiments, it is obvious that any suitable type of connecting member may be employed and that the balls or buckle members 42 or 42' may be resiliently mounted in the connecting member 40 as shown or rigidly mounted to project from the respective end or ends of said connecting member.

An essential feature of the present invention consists in providing a tongue 100, projecting inwardly from the ball base or rod 48 of the connecting member 42 when in operating position.

In the first embodiment shown in Figs. 1–7, the tongue 100 projects inwardly and longitudinally of the front of the connecting member or buckle 42 and may be of the type shown in Fig. 4. In this embodiment, the tongue is pivotally mounted on the ball rod or cross bar 48 so that the strap or belt may be attached more easily around the person. In this embodiment the rod has the flat tongue 100 pivotally mounted thereon by having its end formed into the pivot loop 125. When in the box end or buckle member 42 or 42'. This tongue has a portion 122 extending first outwardly and downwardly as shown, then has a portion 124 extending back on itself in an arcuate loop extending upwardly to above its pivot
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48 and a portion 126 projecting inwardly a substantial longitudinal distance over the front surface of said connecting member 40 and terminating in an end 128, said tongue being curved in such a manner that the point of contact of the belt against the loop in use passes below and to the outside of the pivot. The inner surfaces of the closely spaced outer portions 81 of the legs 82 abut the edges of the flat tongue 100 to positively keep the tongue 100 aligned centrally of the belt. Said tongue 100 is pivotable to the open position shown in Fig. 4 so that its end 128 may be more easily inserted through a selected slit 102 of the set 104 of longitudinal slits 103 adjacent the tip 52 of the adjustable strap end 38. Said tongue end 128 is inserted through said selected slit 102, and the tongue is pivoted to the closed position shown in Figs. 1-3, when the slit 102 will sink to the outermost portion of the loop 124, with said adjustable strap end 38 abutting the outermost portion of the loop 124 as at 130, so that the natural expansion of the torso will pull the adjustable strap end axially outwardly to cause it to abut said loop 124 to pivot the end 128 of said tongue downwardly against said connecting member or strap. It is thus apparent that my improved pivot tongue 100 functions as a lever with the strap 39 abutting the power arm of the loop as at 130 to pivot it upwardly so that its work arm or tip 128 will be pivotable downwardly against the connecting member or strap to retain the tongue in a closed position. The tip 52 of the adjustable strap end may then be inserted in the space 116 in the keeper 54 above the fixed end 36 of the strap in the manner shown. In this embodiment, if desired, as shown, the strap end may be inserted over the connecting member 40, but, if desired, it may, after the tongue 100 is inserted through a selected slit 102 therein, be inserted downwardly through the space or slot 33 between the rod 48 and member 44, underneath the connecting member 40, and then inserted in a space in the keeper 54 provided underneath the fixed end 36 or it may, if desired, be passed upwardly through the slot 45 and inserted through the space 116 in the top of the keeper 54 as shown. It is obvious that this construction of connecting member 40 or ball or buckle 42 having the tongue 100 permits a strap having the plurality of spaced adjusting holes 104 near the tip 52 of said adjustable end 38 to be attached thereto.

In both embodiments of my invention shown in Figs. 1 to 10, the fixed end 36 of the strap is preferably permanently looped around the ball base or rod 44 or transverse portions 84 and permanently secured thereto. In both embodiments the adjustable strap end has to be detached as then the belt is taken off by removing the tongue 100, from a selected hole 102 in the adjustable strap end 38 after the tip 52 thereof is removed from the space 116 in the keeper. In the embodiments shown in Figs. 1 to 10, this is no more difficult than in an ordinary belt.

As stated, however, if desired, the balls 42 and 42' may be fixedly, non-extensibility mounted on the opposite ends of the connecting member and, if desired, the ball 42' not having the tongue 100, mounted on the rod 48 thereof, may be dispensed with. If desired, as in the embodiment shown in Figs. 8-10, the connecting member 40 may be dispensed with and the fixed end 36 of the strap secured to the inturned ends 84 of the legs 82 of the ball or buckle member 42 with the adjustable end 38 laid over the member 42 as in the embodiment shown in Figs. 1-7 so that the tongue 100 may be inserted in a selected hole 102 therein with the tip 52 thereof fastened to the strap in any of the manners previously explained.

When the ball or buckle member 42 is used alone, however, as in the embodiment shown in Figs. 8-10, it is apparent that the outerly spaced leg portions 84 form the ball legs, being joined together by the ball rod or base 48, that the transversely extending portions 83 form the outer or front cross bar of the buckle and that the leg inner portions 85 form the side bars of the buckle and that the inturned ends 84 form the inner or rear bar of the buckle and are of a length to permit the attachment of the loop 59 of the fixed end 36 of the belt around them. It will be thus apparent that the connecting member becomes a buckle member comprising an oblong hollow frame 87 and the side bars 85 spaced from each other preferably more than the width of the strap display said bars in use above and below the strap, the portions 83 becoming the outer or front cross bar of the buckle, the portions 81 becoming the spaced parallel ball legs projecting longitudinally centrally of said buckle and the transverse rod 40 joining the ends of said legs together becoming the ball base, and the inturned ends 84 forming the inner or rear cross bar of the buckle. As the flat tongue 100 is of a width substantially the distance between said legs 81, it is obvious that the inner surfaces of said legs will abut the edges of said tongue in use to keep said tongue aligned centrally of the buckle in use without wobbling on movements of the wearer. It is apparent that my device in use presents a very pleasing appearance with the tongue extending longitudinally of the strap centrally thereof and with either the side bars 85 of the buckle or the upper and lower edges of the connecting member 40 appearing as additional longitudinally extending metallic portions above and below the strap in use.

If desired, the connecting member 40 may be turned upside down to have the compartments 74 project forwardly from the edges of the plate 71, thus providing a central channel for the reception of the adjustable strap end therein.

It is apparent, therefore, that I have provided a novel type of adjustable strap and tongue buckle for use therewith with the advantages described above.

It is understood that my invention is not limited to the specific embodiments shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. An adjustable strap automatically extensible on movement of the object straped, comprising a non-extensible flexible strap of a length to encircle a limb or body torso or join two article portions together, having a fixed end and an adjustable end having a plurality of aligned circumferentially spaced adjusting slots extending a distance inwardly from adjacent the tip thereof and a strain compensating connecting member having a resiliently extensible ball portion projecting from one end thereof, having exterior legs and a transverse rod joining the ends of said legs together, said rod having a flat tongue pivotally mounted thereon extending when in closed position first outwardly and downwardly,
then looped upwardly to above its pivot and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member, keeper means for retaining the free end of said strap beyond said inserted tongue on top of the fixed end of said strap when in attached position, and means for securing the fixed end of the strap to the opposite end of the connecting member.

2. An adjustable strap, comprising a non-extendable flexible strap of a length to encircle a limb or body torso or join two article portions together, having a fixed end and an adjustable end, having a plurality of aligned circumferentially spaced adjusting slots extending a distance inwardly from adjacent the tip thereof and a hollow oblong connecting buckle member having a ball portion projecting longitudinally from one end thereof, having legs and a transverse rod joining the ends of said legs together, said rod having a flat tongue pivotally mounted thereon substantially throughout the length thereof extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member.

3. A hollow oblong connecting member for straps having a ball portion projecting longitudinally from the outer end thereof, having legs and a transverse rod joining the ends of said legs together, said rod having a flat tongue pivotally mounted thereon substantially throughout the length thereof extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a slot in the free strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member, having means on its inner end to secure the fixed strap end thereto.

4. A connecting member for use with straps having spaced legs, having rod means extending transversely of the inner ends thereof connectable to a strap end and a transverse rod joining the outer ends of said legs together, said rod having a flat tongue pivotally mounted and a transverse rod extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in an adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member.

5. A connecting buckle member for straps, comprising a hollow, oblong frame, having side bars spaced from each other more than the width of the strap to display said bars in use, an outer cross bar, and inner cross bar means for mounting a fixed strap end thereon, said outer cross bar having a hollow oblong connecting buckle member having a ball portion projecting longitudinally therefrom and a transverse rod joining the ends of said legs together, said rod having a flat tongue of a width substantially the distance between said legs, having an end looped around said rod to pivotally mount said tongue thereon and pivot the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member.

6. A connecting buckle member for straps, comprising a hollow, oblong frame, having side bars, an outer cross bar and inner cross bar means for mounting a fixed strap end thereon, said outer cross bar having spaced parallel legs projecting longitudinally centrally thereof and a transverse rod joining the ends of said legs together, said rod having a flat tongue of a width substantially the distance between said legs, having an end looped around said rod to pivotally mount said tongue thereon, with the interior edges of said legs abutting the edges of said tongue to maintain it in alignment centrally of said buckle at all stages of its pivotal movement, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a slot in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member to be visible therefrom in use, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotable to an open position to be insertable through a selectable slot in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member.

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tance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selectable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.

9. A connecting buckle member for straps, comprising a hollow, oblong frame, having side bars spaced from each other more than the width of the strap to display said bars in use, an outer cross bar and inner cross bar means for mounting a fixed strap end thereon, said outer cross bar having a tongue, having an end looped around said outer cross bar to pivotally mount said tongue thereon, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a hole in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member to be visible thereover in use, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selectable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.

10. A connecting buckle member for straps, comprising a hollow, oblong frame, having side bars, an outer cross bar and inner cross bar means for mounting a fixed strap end thereon, said outer cross bar having a tongue, having an end looped around said outer cross bar to pivotally mount said tongue thereon, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a hole in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selectable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.
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11. A connecting buckle member for straps, comprising a hollow, oblong frame, having side bars, an outer cross bar and inner cross bar means for mounting a fixed strap end thereon, said outer cross bar having a tongue pivotally mounted thereon, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a hole in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selecteable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.

12. A connecting assembly for straps, comprising a tongue having an end looped around said cross bar to pivotally mount said tongue thereon, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a hole in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selecteable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.

15. A connecting assembly for straps, comprising connecting means having a cross bar and means for mounting a fixed strap end thereon, said cross bar having a tongue pivotally mounted thereon, said tongue extending when in closed position first outwardly and downwardly, then looped upwardly to above its pivot to extend through a hole in the free adjustable strap end and projecting inwardly a substantial longitudinal distance over the front surface of said connecting member, said tongue being curved in such a manner that the normal to the tongue at the point of contact of the belt against the loop in use passes below and to the outside of the pivot, and being pivotal to an open position to be insertable through a selecteable hole in the adjustable strap end and to a closed position extending over said connecting member with said adjustable strap end abutting the loop to pivot the end of said tongue downwardly towards said connecting member against the adjustable strap end.

A. L. BLISS.

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