Aug. 11, 1942. R. S. SANFORD 2,292,899

BUCKLE

Filed March 7, 1941

Fig. 1.

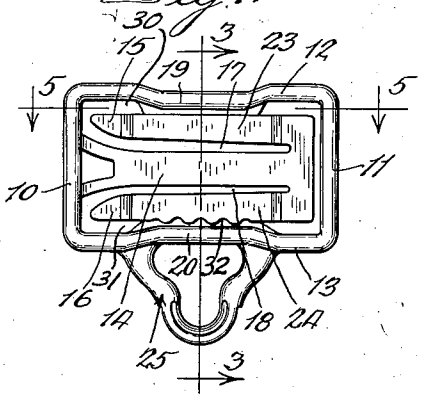


Fig. 3.

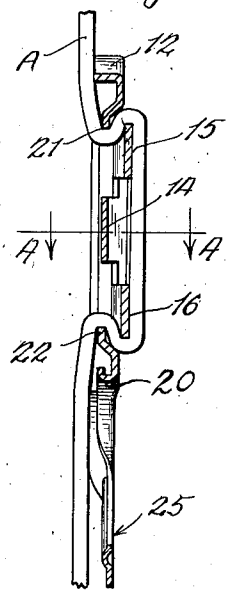


Fig. 2.

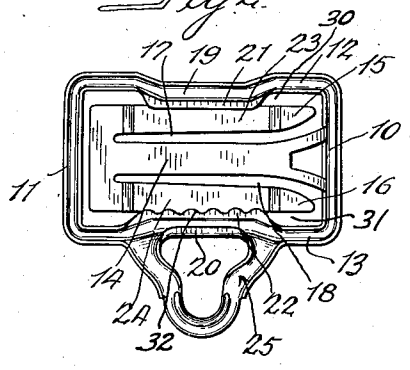


Fig. 4.

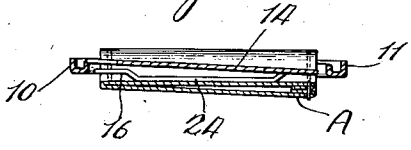


Fig. 6.

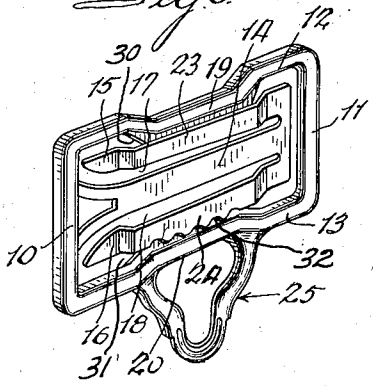
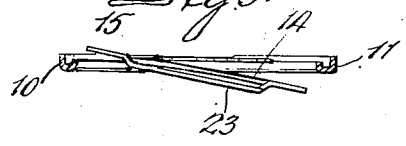


Fig. 5.



Inventor:
Roy S. Sanford.
By: Thiess, Olson & Mecklenburger.
Attys.

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2,292,899

BUCKLE

Roy S. Sanford, Oakville, Conn., assignor to The Autoyre Company, Incorporated, Oakville, Conn., a corporation of Connecticut

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17 Claims. (Cl. 24—73)

This invention relates to a buckle and has special reference to a buckle adapted to be adjustably associated with straps, bands, and the like, for the support of garments or other objects on the person.

More particularly, this invention relates to a buckle comprising a frame having side bars and upper and lower cross bars connecting the side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion that subtends in close proximity a major portion of the length of the upper cross bar to form an upper slot to which a strap may be threaded and gripped and to form a lower slot adjacent the lower cross bar for receiving the free end of the strap, the gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

It is contemplated by the present invention to adopt this construction for use with various types of objects particularly on the person. However, in the drawing and in the following description, the buckle will be shown and described in connection with a shoulder strap of an overall, the strap being threaded through an upper slot and passing downwardly through a lower slot with the free end of the strap pointing downwardly. It is readily apparent, of course, that various other uses could be mentioned in connection with buckles and fasteners generally of the type adapted to be adjustably associated with straps and that this invention, therefore, is not to be limited to the specific use hereinafter described and illustrated in the drawing.

In a buckle of the type noted above it is highly desirable to provide for the utmost simplicity in the threading of the strap through the buckle. Buckles of this character are ordinarily attached to the strap of an overall at the place of manufacture of the overalls and it is, of course, expedient that the affixing of the buckle to the strap be done with the utmost simplicity. After the overall is purchased for use it is, of course, desirable that the adjustment of the strap through the buckle when in use on the wearer be accomplished with ease. Further it is desirable that the free end of the strap point downwardly. Thus the primary requisites of a buckle of this character is its ease in threading from the standpoint of the manufacturer and the ease of adjustment from the standpoint of the wearer.

In the present invention the arrangement and nature of the two slots and the flexibiliy of the gripping means cooperate to accomplish the above desired results. Further, the construction and arrangement of the elements of the buckle are such as to minimize the weight thereof and thereby the expense from the standpoint of material used. The present buckle is preferably formed of a comparatively thin spring material into which have been imparted high physical properties by thermal heat treatment after all forming operations involved have been completed. With such heat treatment and the use of thin spring material the weight of the buckle is materially reduced. This is a material saving from the standpoint of the manufacturer of the buckle in his shipments to the overall manufacturer who likewise shares in this saving.

The resiliently connected central bar permits easy threading and a very positive grip on the strap. By reason of the central bar overlying a portion of the upper and the lower bars the path of the strap in its threaded relation to the buckle is very tortuous and thus tension applied to the strap is greatly relieved from the central cross bar. Most of the tension on the strap is taken up by the upper and lower cross bars of the frame which cross bars preferably are embossed or otherwise reinforced to make them comparatively rigid. This permits the central cross bar to remain flexible and this bar may readily be moved out of its normal plane by pressure of the fingers of an operator in threading or the user in adjusting the strap through the buckle.

In a buckle of this nature it is desirable that a uniform pressure of the flexible central bar be had over the width of the strap. It is usual where flexible tongues or cross bars operate to hold the strap in an adjusted position with respect to the buckle that an uneven distribution of pressure is obtained on the strap by reason of the comparatively short, effective length of the resilient arms. In the present invention the central cross bar is resiliently secured at one end thereof to one of the side bars, the central cross bar being provided with gripping portions that are resiliently secured to the free end of the central cross bar. Thus the gripping portions which apply the pressure to the strap have very long supporting arms which permit of uniform gripping of the strap over the subtended portions of the cooperating cross bars.

One of the objects of this invention is to provide a buckle of the character indicated above in which it is comparatively easy to thread a strap; in which it is easy to adjust the strap after it is threaded therein and while on a wearer;

in which a loose end of the strap points downwardly when in use on the wearer, and which is of minimum weight to be less expensive in packing, freight, storage and from the standpoint of material used in the making of the buckle.

Another object of this invention is to provide a buckle of the type above noted which is formed of a single sheet of resilient metal having an outer frame and a central cross bar, the cross bar having one or more gripping portions which subtend a major portion of respective cross bars of a frame to provide upper and lower strap openings to receive a strap threaded therethrough.

Other objects and advantages of this invention will hereinafter be more particularly pointed out and, for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing, in which latter:

Figure 1 is a front elevational view of a buckle incorporating the features of this invention;

Fig. 2 is a rear elevational view of Fig. 1;

Fig. 3 is an enlarged central vertical sectional view taken on the line 3—3 of Fig. 1 and showing a strap threaded therethrough and gripped in position therein;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1 showing the central cross bar in a flexed condition; and

Fig. 6 is a perspective view of the buckle shown in Fig. 1.

Referring now more particularly to the drawing, the buckle of this invention comprises a frame preferably embossed or crowned around the outer confines thereof to provide side bars 10 and 11 connected by upper and lower cross bars 12 and 13, respectively. The buckle is formed preferably of a single piece of resilient sheet metal with a central cross bar 14 being resiliently connected at one end thereof to one of the side bars 10 and being formed from the material within the confines of the frame.

The central cross bar 14 has an upper gripping portion 15 and a lower gripping portion 16 that subtend in close proximity a major portion respectively of the lengths of the upper and lower cross bars 12 and 13 respectively to form slots 30 and 31 through which a strap may be threaded and gripped. The gripping portions 15 and 16 are separated from the central cross bar 14 by slots 17 and 18 respectively, the slots extending from adjacent the fixed end of the central cross bar 14 to a point adjacent the free end thereof. Thus the gripping portions 15 and 16, by reason of their being formed from the resilient material of the frame, are resiliently secured to the free end of the central cross bar 14, the fixed end of the central cross bar 14 being resiliently secured as above stated to one of the side bars 10.

The upper and lower cross bars 12 and 13 are provided with offset portions 19 and 20 respectively and the offset portions 19 and 20 are, in turn, provided respectively with extensions 21 and 22 which underlie edges of the gripping portions 15 and 16 respectively. The offset portions 19 and 20 by reason of their being offset are subtended in close proximity by a major portion of the length of the gripping portions 15 and 16 respectively. The gripping portions 15 and 16 may preferably be provided with offset portions 23 and 24 respectively extending out of the plane of the frame or in a direction away from the underlying portions 21 and 22 respectively.

The relieved portions formed by the offset portions in the interior of the frame of the buckle have a particular value when associated with straps of an overall since in many instances the side edges of the straps of the overalls with which the buckles are associated are doubled over and in some instances doubled several times. This permits of the gripping tension being applied over the uniform area of the strap, that is, where there is but a single or double thickness. In order to explain more clearly, a strap may be of single thickness or double thickness whereby, when the strap is of a single thickness, the edges thereof may be doubled back back on themselves to form a seam for finishing the strap, or if a double thickness the strap may be folded on itself with one side having merely a double fold and the other side having the edges turned in and sewed together to have four folds as shown in Fig. 4 of the drawing. In any event, the thickness of the material between the seams on the edges of the strap is uniform and the gripping of the strap by uniform tension at a uniform thickness gives the most desirable results.

The buckle illustrated in the drawing and which has hereinabove been described, is attached to the strap of an overall by means of the threading of the strap A through the two strap-receiving slots formed therein, the buckle being detachably engaged with a button on the bib of an overall through means of a button-receiving loop 25. The opening to the button-receiving loop is of somewhat clover-leaf shape so that the enlarged head of the button may be inserted through the widest portion of the opening and the shank may be received in the narrow portion of the opening to prevent accidental disengagement of the button from the loop.

The offset portion 20 of the cross bar 13 bounding a top portion of the button-receiving loop 25 is of arcuate cross section, as shown more particularly in Fig. 3 of the drawing, and presents a curved edge at the opening into the loop for the purpose of facilitating the passage of the button into and out of the loop and of preventing the finish on the button face from becoming marred. The bottom portion of the loop is embossed intermediate the flat edges thereof instead of having the flat edges flanged peripherally thereof.

Other forms of detachable engagement may be substituted for the button-retaining loop shown in the drawing without departing from the spirit of the present invention. While the offset portion 24 on the gripping portion 16 and the extension 22 on the lower cross bar 13 have been shown in the drawing as having their co-operating edges formed to provide undulations 32, it will of course be understood that the peripheral edges of these elements may be left plain if desired, or the corresponding edges of the elements 21 and 23, respectively, may be similarly formed to provide undulating peripheral edges.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A buckle comprising a frame having side bars and upper nad lower cross bars connecting

said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion that subtends in close proximity a major portion of the length of said upper cross bar to form an upper slot through which a strap may be threaded and gripped and to form a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

2. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and having a free end, said central cross bar being provided with an integrally formed gripping portion that subtends in close proximity a major portion of the length of said upper cross bar to form an upper slot through which a strap may be threaded and gripped and to form a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being separated from said central bar by a slot extending from adjacent the fixed end to a point adjacent the free end thereof to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

3. A buckle formed of a single piece of resilient sheet metal comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar extending from one of said side bars and provided with a gripping portion that subtends in close proximity a major portion of the length of said upper cross bar to form an upper slot through which a strap may be threaded and gripped and to form a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being separated from said central bar by a slot extending from adjacent the fixed end to a point adjacent the free end thereof to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

4. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion, said upper cross bar having an offset portion that subtends in close proximity a major portion of the length of said gripping portion to form an upper slot through which a strap may be threaded and gripped, said central cross bar forming a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

5. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion, said upper cross bar having an offset portion that subtends in close proximity a major portion of the length of said gripping portion and an extension of said offset portion underlying said gripping portion to form an upper slot through which a strap may be threaded and gripped, said central cross bar forming a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

6. A buckle formed of a single piece of resilient sheet metal comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar extending from one of said side bars and provided with a gripping portion, said upper cross bar having an extension underlying a major portion of the length of said gripping portion to form an upper slot through which a strap may be threaded and gripped, said central cross bar forming a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion extending from the free end of the central cross bar to provide a uniform gripping of the strap over the underlying portions of the cooperating bars.

7. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion, said upper cross bar having an extension underlying a major portion of said gripping portion and said gripping portion having an offset portion adjacent said underlying extension to form an upper slot through which a strap may be threaded and gripped, said central cross bar forming a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the underlying portions of the cooperating bars.

8. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a gripping portion, said upper cross bar having an offset portion that subtends in close proximity a major portion of the length of said gripping portion and an extension of said offset portion underlying said gripping portion, said gripping portion having an offset portion adjacent said underlying extension to form an upper slot through which a strap may be threaded and gripped, said central cross bar forming a lower slot adjacent said lower cross bar for receiving the free end of the strap, said gripping portion being resiliently secured to the free end of the central cross bar to provide a uniform gripping of the strap over the offset portions of the cooperating bars.

9. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of gripping portions that subtend in close proximity a major portion respectively of the lengths of said upper and said lower cross bars to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

10. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of integrally

formed gripping portions that subtend in close proximity a major portion respectively of the lengths of said upper and said lower cross bars to form slots through which a strap may be threaded and gripped, each of said gripping portions being separated from said central bar by a slot extending from adjacent the fixed end to a point adjacent the free end thereof to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

11. A buckle formed of a single piece of resilient sheet metal comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar extending from one of said side bars and provided with a pair of gripping portions that subtend in close proximity a major portion respectively of the lengths of said upper and said lower cross bars to form slots through which a strap may be threaded and gripped, said gripping portions being separated from said central bar by slots extending from adjacent the fixed end to a point adjacent the free end thereof to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

12. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of gripping portions, said upper and said lower cross bars having offset portions that subtend in close proximity a major portion respectively of the lengths of said gripping portions to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

13. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of gripping portions, said upper and lower cross bars having offset portions that subtend in close proximity a major portion respectively of the lengths of said gripping portions and each of said offset portions having an extension underlying its respective gripping portion to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

14. A buckle formed of a single piece of resilient sheet metal comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar extending from one of said side bars and provided with a pair of gripping portions, said upper and lower cross bars having extensions underlying a major portion respectively of the lengths of said gripping portions to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the underlying portions of the cooperating bars.

15. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of gripping portions, said upper and lower cross bars having extensions underlying a major portion respectively of said gripping portions and each of said gripping portions having an offset portion adjacent said underlying extensions to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the underlying portions of the cooperating bars.

16. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, and a central cross bar resiliently secured at one end thereof to one of said side bars and provided with a pair of gripping portions, said upper and lower cross bars having offset portions that subtend in close proximity a major portion respectively of the lengths of said gripping portions and an extension of each of said offset portions underlying said gripping portions, said gripping portions having offset portions adjacent said underlying extensions to form slots through which a strap may be threaded and gripped, said gripping portions being resiliently secured to the free end of said central cross bar to provide a uniform gripping of the strap over the subtended portions of the cooperating bars.

17. A buckle comprising a frame having side bars and upper and lower cross bars connecting said side bars, a central cross bar forming slots through which a strap may be threaded and gripped, and a button-receiving loop extending from said lower cross bar, a portion of said lower cross bar bounding the upper portion of the opening to the loop being of arcuate cross section to present curved edges to prevent marring of a button entering or leaving the loop.

ROY S. SANFORD.