July 14, 1942. P. W. WHITE 2,290,135

BUCKLE

Filed Aug. 27, 1941

Fig. 1.

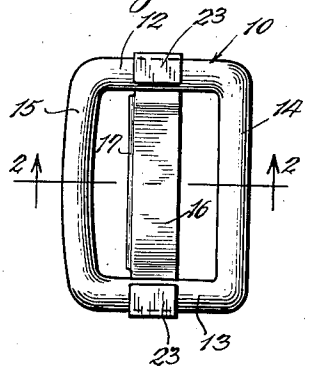


Fig. 3.

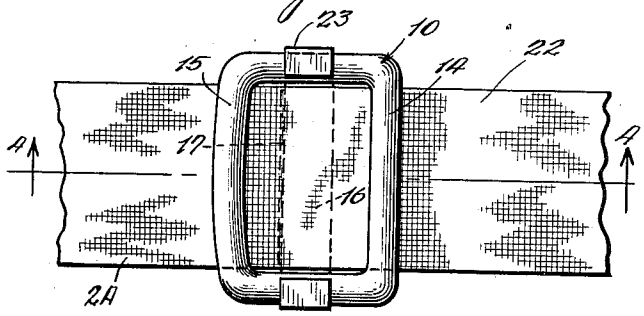


Fig. 2.

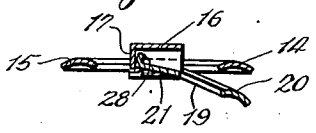


Fig. 4.

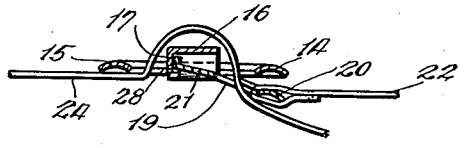


Fig. 7.

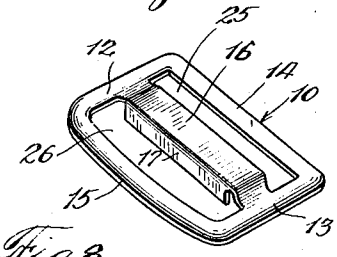


Fig. 5.

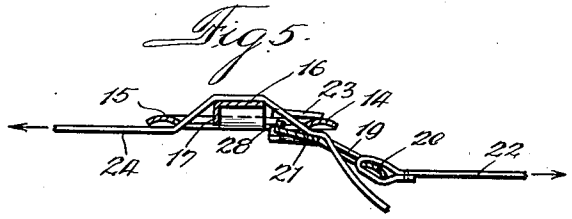


Fig. 8.

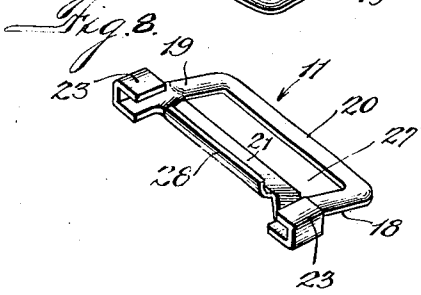
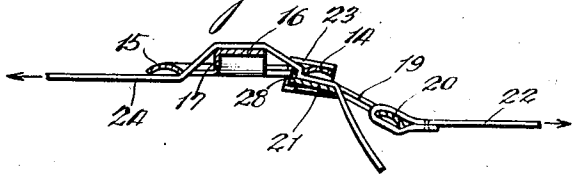


Fig. 6.



Inventor
Paul W. White.
By: Thiess, Olson & Mecklenburg.
Attys.

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2,290,135

BUCKLE

Paul W. White, Waterbury, Conn., assignor to Parva Products Company, Chicago, Ill., a corporation of Delaware

Application August 27, 1941, Serial No. 408,420

7 Claims. (Cl. 24—194)

This invention relates to buckles or like fasteners, more particularly to buckles or fastening devices adapted to be adjustably associated with straps or bands for the support of garments or similar articles on the person, and the invention has for an object the provision of an improved buckle which is relatively inexpensive to manufacture, is durable and simple in construction, and which may readily be threaded and manipulated.

While buckles or the like embodying this invention are adaptable for use with various types of objects, particularly on the person, and may be employed, with slight variations not departing from the spirit of the invention, universally where detachable connections are desired, the buckle is particularly intended for use and will be described in association with the adjusting strap on a vest or similar garment. Garments such as vests are ordinarily provided with a two-piece adjusting strap extending across the back thereof and secured to the outer portions or side seams of the vest, the inner ends of the two-piece strap being adjustably connected by a buckle. Inasmuch as adjustment of the buckle, so as to increase or decrease the length of the adjusting strap, is many times made with the vest on the body of the wearer so that the buckle cannot be observed during the adjusting operation, it is important that the buckle be capable of easy adjustment without the necessity of complicated manipulation. At the same time, it is equally important that the buckle, when adjusted to provide the desired length of the adjusting strap, will not thereafter slip but will tightly hold the strap in its adjusted position.

In order to avoid discomfort to the wearer of the garment, vest buckles must be of relatively small size and of light construction and yet must be capable of withstanding relatively heavy tensions on the adjusting strap. While in ordinary usage vest buckles are not subjected to great tension, these buckles, due to their inaccessibility for observation during the adjustment thereof, may at times be subjected to exceedingly heavy stresses caused by the wearer of the garment mistakenly exerting a force on the strap which tends to increase the gripping action of the buckle when actually the wearer intends merely to adjust the buckle.

Accordingly, it is a further object of this invention to provide a buckle for vests or the like comprising a pair of slidably engaged frames formed of relatively light gauge sheet metal in which the strap may be conveniently threaded and readily adjusted without complicated manipulation, and which positively holds the strap in adjusted positions without slippage even though subjected to excessive tension on the strap.

In carrying out the invention in one form, a slide buckle is provided comprising a pair of slidably engaged frames in face-to-face relation, each of which frames includes side bars connected together by cross bars defining at least one slot for receiving a strap which is threaded through the buckle. One of the frames includes a central cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, while the other of the frames includes an end cross bar for attachment to one portion of the adjusting strap, this attaching cross bar being adapted to underlie the end bar of the first frame when the frames are in position to be threaded by the other portion of the adjusting strap. In addition, the latter frame includes a second cross bar inclined with respect to the plane of the frame which is adapted to underlie the raised cross bar when the frames are in threading position, and which co-operates with the end cross bar on the first frame to clamp the strap in adjusted positions upon tensioning of the strap. Preferably, the attaching cross bar on the latter of the two frames is depressed from the plane of the frame to provide, between it and the overlying end bar on the first frame, a space which permits attachment of the strap to the attaching bar without causing binding between the frame when in the threading position.

The inclined cross bar is preferably provided at its upper edge with an upturned portion extending substantially entirely thereacross, which co-operates with a downturned portion extending substantially entirely across the raised cross bar on the other frame to prevent relative movement of the frames in one direction beyond a desired position, and which co-operates with an edge of the end cross bar against which the strap is clamped to provide an abutting engagement which positively limits relative movement of the frames in the opposite direction even under excess conditions of tension.

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

Fig. 1 is a plan view of a buckle embodying the present invention, showing the slidable frames in threading position before attachment of the buckle to a strap or similar article;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is a plan view of the buckle of Fig. 1, with the strap attached thereto and threaded through the buckle;

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 3, showing the position of the parts after threading of the strap but before tension is applied thereto;

Fig. 5 is a sectional view similar to Fig. 4 but showing the parts in clamping relation with tension applied to the strap;

Fig. 6 is a sectional view similar to Figs. 4 and 5 but showing the relationship of the parts under conditions of excessive tension; and

Figs. 7 and 8 are perspective views of the two slidable frames which form the buckle illustrated in Figs. 1 to 6, inclusive.

Referring now to the drawing, the invention is shown as embodied in a vest buckle comprising a pair of slidable frames 10 and 11 disposed in face-to-face relation and formed of relatively thin sheet metal which may be on the order of .023 of an inch or less in thickness. The frame 10 comprises spaced side bars 12 and 13 connected together by end cross bars 14 and 15 and by a center cross bar 16 which is centrally deformed upwardly so as to be raised above the plane of the side and end bars. Preferably, the side bars 12 and 13 and the end bars 14 and 15 are embossed, as shown, to provide a substantially arcuate cross section in order to increase the resistance to bending exhibited by the frame 10, and the center bar 16 is provided with a downturned portion 17 which extends substantially across the entire raised portion thereof for a purpose which will be more fully set forth hereinafter. The frame 10 may readily be struck from a blank of suitable sheet material by a single stamping operation.

The frame 11, which may similarly be formed by a single stamping operation, includes side bars 18 and 19 connected together by cross bars 20 and 21, the bars 18, 19, and 20 being embossed, as shown, and the cross bar 21 being turned out of the plane of the frame over the major portion of its length to provide a clamping surface in the form of an inclined plane. As shown in Figs. 3 to 6, inclusive, the bar 20 on the frame 11 forms the attaching bar for the buckle and may be encircled by a portion 22 of the vest strap to which the buckle is applied, the strap being sewed or otherwise secured about the attaching bar. In order properly to hold the frames in slidable engagement for substantially parallel movement relative to each other, the frame 11 is provided with substantially channel-shaped ears 23 which, when the frames 10 and 11 are assembled, partially encircle the side bars of the frame 10.

It will be apparent that the frame 10 is so formed as to provide a pair of slots 25 and 26 through which a strap may readily be threaded, and that the frame 11 provides a single slot 27 through which the strap may likewise be threaded. When the frames 10 and 11 are in the threading position shown in Figs. 1 to 4, inclusive, the attaching cross bar 20 of the frame 11 underlies the end cross bar 14 of the frame 10, and the inclined bar 21 of the frame 11 underlies the raised center cross bar 16 of the frame 10 so that the slots 25 and 27 coincide and the slot 26 is unobstructed by any part of the frame 11. Accordingly, portion 24 of the vest strap may be threaded through the buckle by passing the end thereof upwardly through the slot 26 over the top of the raised center bar 16 and downwardly through the coincident slots 25 and 26, so that the free end of the strap portion 24 underlies the other portion 22 of the strap.

Upon the application of tension to the strap portions 22 and 24, the slidable frames 10 and 11 will be caused to move from the relative threading position, shown in Fig. 4, to the clamping position shown in Fig. 5 wherein the strap portion 24 is clamped between one edge of the cross bar 14 on the frame 10 and the inclined plane portion of the cross bar 21 on the frame 11. Thus a wedging gripping action is exerted which prevents slipping of the strap relative to the buckle, and it will be apparent that the gripping force exerted on the strap will increase in proportion to the pull or tension applied to the strap. Movement of the frames 10 and 11 to the clamping position shown in Fig. 5 when tension is applied to the strap portions 22 and 24, as indicated by the arrows in Fig. 5, is caused by the fact that the strap portion 22 is directly secured to the slide 11 and tends to move it in a right-hand direction, as viewed in Figs. 4 and 5, while the frame 10 is urged in a left-hand direction due to the fact that the strap 24 is threaded over and around the raised enter bar 16 thereof, the bars 15 and 16 acting as pull-up bars.

As heretofore indicated, the frames 10 and 11 are formed of relatively thin metal and accordingly, upon exertion of excessive tension on the strap portions 22 and 24, there will be a tendency for the inclined plane portion of the cross bar 21 to give or yield, and in the absence of special provisions for preventing such unsatisfactory operation the bar 21 might be deformed sufficiently to permit the frame 11 to pull through beneath the cross bar 14, whereupon the frames would separate and the buckle would be rendered unfit for further use.

In order to prevent such pull-through of the frame 11 under conditions of excessive tension, the inclined portion of the cross bar 21 is provided with an upturned portion 28 which is substantially vertical and which extends across a major portion of the rear edge of the bar 21. As shown in Fig. 6, this upturned portion 28 is so disposed as to be in direct alignment with the rear edge of the cross bar 14, so that excessive tension on the strap portions 22 and 24 will cause the frame 11 to move to the position shown in Fig. 6 wherein the strap portion 24 is abuttingly engaged on opposite sides by the rear edge of the cross bar 14 and the upturned portion 28, respectively. Such abutting engagement of course positively prevents pull-through of the frame 11, even though considerably larger tensions than are normally encountered are exerted on the strap portions 22 and 24.

This upturned portion 28 is also disposed so as abuttingly to engage the downturned portion 17 on the raised cross bar 16 of the frame, and it will be observed that this cooperating relation positively limits rearward movement of the frame 11 relative to the frame 10 so as to prevent the frames from moving beyond the threading position illustrated in Figs. 1 to 4, inclusive. In this threaded position the cross bar 20 of the frame 11 directly underlies the cross bar 14 of the frame 10 as heretofore pointed out, and as shown best in Figs. 2, 4, and 8, the side bars 18 and 19 of the frame 11 are deformed so as to extend angularly downward from the plane of the buckle in order to space the attaching cross bar 20 from the overlying cross bar 14. This spacing of the

two bars prevents the strap 22, when sewed or otherwise secured about the bar 20, from causing binding between the frames when the frames are moved to the threading position. If the cross bar 20 were disposed closely adjacent the cross bar 14 with the frames in threading position, the portion 22 of the strap which encircles the bar 20 would be pinched between the bars 14 and 20 so as to cause binding, and adjustment of the strap would thereby be rendered difficult.

Adjustment of the strap portion 24 relative to the buckle may be readily and easily accomplished simply by grasping the frame 10 between two fingers of the wearer, so that the frames are retained in the threading position, and then exerting a slight pull in one direction or the other upon the strap portion 24 so as to move the strap through the slots of the buckle to the desired adjusted position.

Buckles embodying the present invention may be made from relatively thin sheet metal by simple stamping operations, they provide a compact construction having an attractive appearance which will not cause discomfort to the wearer of the garment and, while readily adjustable without complicated manipulation of the parts, they will effect a firm and positive gripping action on the strap when tension is applied thereto. No binding action between the slidable parts of the buckle is possible even though the compact construction of the buckle requires that the attaching bar directly underlies one of the bars of the other frame, and by reason of the upturned portion on the inclined bar of one of the frames and its relation to portions of the other frame, the slidable frames are positively limited to the desired degree of relative movement in either direction even though excessive tension is applied to the buckle.

While a particular embodiment of this invention has been shown, it will be understood, of course, that the invention is not to be 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.

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

1. A slide buckle comprising a pair of slidably engaged frames in face-to-face relation each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having a cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, the other of said frames having a first cross bar for attachment to a strap or like article adapted to underlie said end bar when said frames are in threading position and a second cross bar having an inclined strap-engaging portion adapted to underlie said raised cross bar when said frames are in threading position for co-operating with said end cross bar to clamp said strap in adusted positions therebetween upon tensioning of said strap, said first cross bar being depressed from the plane of said other frame to provide a space between said end bar and said underlying first bar to permit said attachment of said strap to said first bar without causing binding between said frames in said threading position.

2. A slide buckle comprising a pair of slidably engaged frames in face-to-face relation each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having a cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, the other of said frames having a first cross bar for attachment to a strap or like article adapted to underlie said end bar when said frames are in threading position and a second cross bar having an inclined strap-engaging portion adapted to underlie said raised cross bar when said frames are in threading position for co-operating with said end cross bar to clamp said strap in adjusted positions therebetween upon tensioning of said strap, the side bars connecting said first and second cross bars extending at an angle to the plane of said other frame for spacing said first cross bar from said end bar which it underlies to permit said attachment of said strap to said first cross bar without causing binding between said frames in said threading position.

3. A slide buckle comprising a pair of slidably engaged frames in face-to-face relation each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having a cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, the other of said frames having a first cross bar for attachment to a strap or like article adapted to underlie said end bar when said frames are in threading position and a second cross bar having an inclined strap-engaging portion adapted to underlie said raised cross bar when said frames are in threading position for co-operating with said end cross bar to clamp said strap in adjusted positions therebetween upon tensioning of said strap, said inclined strap-engaging portion having an upturned portion extending across substantially the entire rear edge thereof for abuttingly engaging said strap between said upturned portion and an edge of said end cross bar positively to limit the forward movement of said other frame under tension, and said raised cross bar having a downturned portion extending across substantially the entire rear edge thereof co-operating with said upturned portion to limit rearward movement of said other frame.

4. A slide buckle comprising a pair of slidably engaged frames in face-to-face relation each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having a cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, the other of said frames having a first cross bar for attachment to a strap or like article adapted to underlie said end bar when said frames are in threading position and a second cross bar having an inclined strap-engaging portion adapted to underlie said raised cross bar when said frames are in threading position for co-operating with said end cross bar to clamp said strap in adjusted positions therebetween upon tensioning of said strap, said inclined strap-engaging portion having an upturned edge portion extending across the major portion of the rear edge thereof for abuttingly engaging portions of said raised cross bar and said end cross bar respectively to limit the forward and rearward movement of said other frame relative to said one frame.

5. A slide buckle comprising a pair of slidably engaged frames in face-to-face relation each having side bars and cross bars connecting said

side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having a cross bar raised out of the plane of the frame and a strap-engaging end bar spaced therefrom, the other of said frames having a first cross bar for attachment to a strap or like article adapted to underlie said end bar when said frames are in threading position and a second cross bar having an inclined strap-engaging portion adapted to underlie said raised cross bar when said frames are in threading position for co-operating with said end cross bar to clamp said strap in adjusted positions therebetween upon tensioning of said strap, said first cross bar being depressed from the plane of said other frame to provide a space between said end bar and said underlying first bar to permit said attachment of said strap to said first bar without causing binding between said frames in said threading position, said inclined strap-engaging portion having an upturned edge portion extending across the major portion of the rear edge thereof for abuttingly engaging portions of said raised cross bar and said end cross bar respectively to limit the forward and rearward movement of said other frame relative to said one frame.

6. A slide buckle comprising a pair of slidably engaged frames formed of thin sheet metal each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having the side bars and an end cross bar thereof embossed to strengthen said frame and having another cross bar raised out of the plane of said embossed bars, the other of said frames having the side bars and a first cross bar thereof embossed for strengthening said frame and having a second cross bar inclined with respect to the plane of said embossed bars for co-operation with said end cross bar to clamp the strap in adjusted positions therebetween upon tensioning of said strap, said inclined cross bar having a portion extending upwardly from the upper edge thereof for abuttingly clamping said strap against an edge of said end cross bar positively to prevent pull-through of said other frame under tension, and said raised cross bar having a downturned portion extending across the major portion of the rear edge thereof co-operating with said upwardly extending portion to limit rearward movement of said other frame.

7. A slide buckle comprising a pair of slidably engaged frames formed of thin sheet metal each having side bars and cross bars connecting said side bars defining at least one slot for receiving a strap threaded therethrough, one of said frames having the side bars and an end cross bar thereof embossed to strengthen said frame and having another cross bar raised out of the plane of said embossed bars, the other of said frames having the side bars and a first cross bar thereof embossed for strengthening said frame and having a second cross bar inclined with respect to the plane of said embossed bars for co-operation with said end cross bar to clamp the strap in adjusted positions therebetween upon tensioning of said strap, co-operating substantially channel-shaped means on said frames for guiding said frames for substantially parallel relative movement upon tensioning of said strap, said first cross bar and said end cross bar being in overlying relation and the side bars of said other frame extending angularly downward from the plane of said one frame for spacing said first cross bar from said overlying end cross bar when said frames are in threading position, whereby a strap or other article encircling said first cross bar for attachment to said buckle does not cause binding between said frames in said threading position.

PAUL W. WHITE.