Dec. 27, 1960 B. R. SILVER 2,965,943

BUCKLE ASSEMBLY

Filed Feb. 13, 1958

Fig. 1.

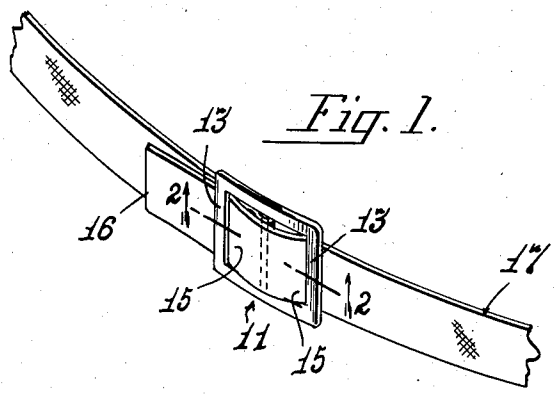


Fig. 2

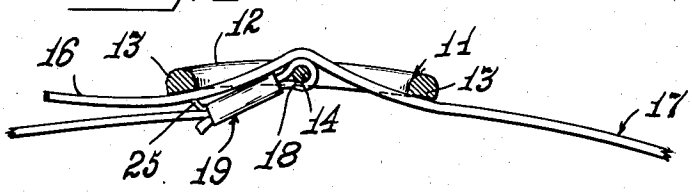


Fig. 3

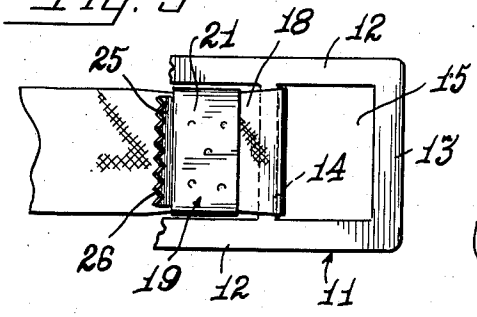


Fig. 4.

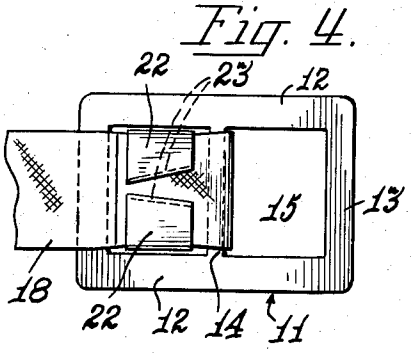
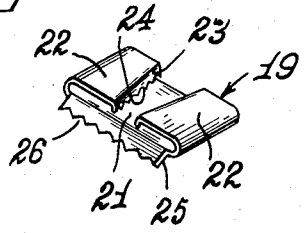


Fig. 5.



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United States Patent Office 2,965,943 Patented Dec. 27, 1960

2,965,943

BUCKLE ASSEMBLY

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Filed Feb. 13, 1958, Ser. No. 715,016

8 Claims. (Cl. 24—170)

The invention relates to improvements in a buckle-strap assembly and is particularly concerned with the novel construction of a band or clip adapted to secure one end of a strap looped to a buckle frame and having novel means for cooperating with the other or free end of the strap, when said other end is threaded through the buckle frame, to resist relative movement in one direction.

Some known buckle-strap combinations of the general character of the present disclosure include a buckle frame having a serrated strap engaging slide jaw thereon or having a tongue pivotally mounted on the center bar thereof for passage through one of a series of holes performed in the free end of the strap. In either instance, the strap is secured to the buckle by being looped over the center bar and then stitched or riveted. In the instance of a tongue-buckle, the attached end of the strap is slotted to permit extension of the tongue therethrough. Either form above described is costly to manufacture and assemble, and in the instance of a tongue-buckle, adjustment of the strap is determined by the spacing of the tongue-receiving holes therein, consequently adjustment in small increments is not possible.

Another instance of prior known structures has a central bar formed with integral teeth or protuberances which are engageable with the free end portion of the strap threaded through the buckle frame. That structure, however, is also objectionable because of the need to provide openings in the end of the strap looped over the central bar for the projection of the teeth therethrough.

The invention disclosed in the accompanying drawings is concerned primarily with an assembly including a novel band or clip to secure a strap end to a buckle frame in a simple and efficient manner, inexpensively. The clip consists of a strip of shape-retaining bendable material formed into a flat split loop or band adapted to embrace complemental portions of a strap looped around the center bar on a buckle frame for attaching the buckle frame to the strap. The clip includes an angularly disposed flange or lip having serrations or teeth on its free edge which engage in a complemental portion of the strap when the free end of said strap is threaded, in a conventional manner, through the buckle frame so as to resist withdrawal of said free end portion when the strap is tensioned while in use. The inter-association of the parts is such that the engaged free end of the strap can be easily and quickly disengaged manually. Furthermore, the instant construction includes novel means to anchor the clip to the looped end of the strap in such manner as to prevent its tearing out. This is of particular importance when the strap consists of plastic or woven fabric material.

It is therefore an object of the invention to provide a novel buckle-strap assembly of the character herein disclosed.

Another object is to provide novel means to secure a looped strap to a buckle frame.

Another object is to provide a novel buckle-strap assembly with novel means to facilitate incremental adjustment of the free end of the strap easily and quickly.

With the foregoing and such other objects in view, which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in form, proportion, size and minor details of the structure may be made without departing from the spirit of the invention.

Referring to the drawings in which the same characters of reference are employed to identify corresponding parts:

Fig. 1 is a fragmentary perspective view of a buckle and strap assembly embodying the features of the invention.

Fig. 2 is a longitudinal sectional view taken substantially on line 2—2 of Fig. 1.

Fig. 3 is a plan view of the looped end of the strap, showing a portion of the attached buckle frame broken away.

Fig. 4 is a back view of the attached end of the strap and buckle frame.

Fig. 5 is a perspective view of the clip or band.

Referring to the accompanying drawings, the buckle 11 illustrated, comprises a substantially rectangular one-piece frame including side rails 12, connecting end bars 13 and a central or cross bar 14 parallel to the end bars and connected at its ends to the side rails 11. The buckle may be flat or curved, as shown, and it has spaces 15 through which the free end portion 16 of a belt or strap 17 may be threaded.

The other end portion 18 of the strap is looped over the center bar 14 of the buckle frame and is secured by means of a clip or band 19. As shown, when attaching the buckle frame to the strap end 18, said strap end is threaded from the rear side of the buckle frame through one of the spaces 15, over said central bar 14 and then rearwardly through the other space 15 into overlapping relation with the main portion of the strap. The band or clip 19 preferably is formed from a strip of thin shape-retaining bendable sheet material, preferably metal. It includes a substantially rectangular body portion 21 and side wings 22 which, when folded substantially into the shape best illustrated in Fig. 5, extend inwardly toward each other over one face of the body portion 21. The clip is fitted over the overlapping portions of the strap closely adjacent to the central bar 14 either before or after folding of the wings 22 and said band then is pressed firmly therearound to prevent separation of said overlapped strap portions.

In order to insure a sufficiently firm mounting for the buckle frame, and one that will not tear out readily, the opposed free edges of the wings 22 are cut at an angle so as to diverge, as shown, and said edges are folded inwardly downwardly to define edge flanges 23 which are serrated, as at 24. When the band is mounted, the flanges 23 are substantially embedded in the material of the strap. The diverging arrangement of said flanges results in distribution of the points of contact of the serrations along other than lines parallel to the length of the strap. Weakening of the strap material resulting from its penetration by the serrations is minimized because of this non-alignment. This is particularly important when the strap consists of webbing or other woven material or plastic.

When the band 19 is in place, the body portion 21 thereof is disposed toward the buckle frame, as shown. The free edge of said body portion furthest from the central bar 14 is formed with an outwardly inclined flange 25 having serrations 26 on its edge. These serrations 26 are adapted to cooperate with the free end portion 16 of

the strap when the latter is threaded through the buckle frame substantially in the manner shown in Figs. 1 and 2. As there illustrated, the free end portion **16** of the strap is engaged by the serrations **26** in the area of one of the overlying end bars **13** of the buckle frame so that, when the strap is tensioned in use, the serrations **26** embed themselves in the engaged strap portion and prevent withdrawal of said portion in a direction to loosen or unfasten the strap. The degree of engagement of the serrations **26** with the strap portion **16** is increased in proportion to the applied tension and when such tension is relieved, the free end portion **16** may be pulled through the buckle frame in either direction.

Otherwise stated, the free end portion **16** of the strap may be threaded easily and quickly through the buckle frame and drawn up any desired amount. Such drawing up or tightening of the strap is permitted owing to the angular inclination of the serrated flange **25**, which enables the strap to slide over the serrations without their engaging in said strap. When the end portion **16** has been drawn into any position desired with respect to the buckle frame and the strap then tensioned by the load enclosed or supported thereby, the serrations **26** bite deeply into the said free end portion of the strap to prevent its withdrawal in the opposite direction. In order to release the strap, it is only necessary to rock the buckle frame relative to the band **19** sufficiently to disengage the serrations **26** from the strap end.

It should be apparent that the instant construction avoids the need, as in prior fastening devices, for providing apertures in the strap to receive a tongue or projections therethrough. Furthermore, the present construction and assembly is useful in connection with garment belts, load carrying and supporting straps, safety belts, and the like.

As many possible embodiments may be made in the invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matters hereinbefore set forth or shown in the accompanying drawings are to be interpreted as illustrative and not in a limiting sense.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A buckle-strap assembly comprising a buckle frame including spaced end bars and a cross bar intermediate said end bars, a strap having an end portion looped over the cross bar and disposed in overlapping relation with the adjacent portion of the strap, a rigid split band encircling the overlapping strap portions transversely of their length to securely clamp the strap portions looped over the cross bar, said band being substantially parallel to and spaced from the cross bar, an angular outwardly extending flange on one side edge of the band coextensive with the width of the strap, and serrations on the free edge of said flange, said serrations being adapted to engage in a complemental strap portion in the region of an end bar when said portion is threaded through the spaces between the end and cross bars to resist its withdrawal in one direction.

2. A buckle-strap assembly comprising a buckle frame including spaced end bars and a cross bar intermediate said end bars, a strap having an end portion looped over the cross bar and disposed in overlapping relation with the adjacent portion of the strap, a rigid split band encircling the overlapping strap portions transversely of their length to securely clamp the strap portions looped over the cross bar, said band being substantially parallel to and spaced from the cross bar, and an angular outwardly extending serrated flange on one side edge of the band coextensive with the width of the strap, said serrated flange being adapted to engage in a complemental portion of the strap when said portion is threaded through the spaces between the end and cross bars to bind said portion between said flange and an end bar to resist its withdrawal in one direction.

3. A buckle-strap assembly comprising a buckle frame having spaced end bars and a cross bar intermediate said end bars, a strap having an end portion looped over the cross bar and disposed in overlapping relation with the adjacent portion of the strap, a rigid band encircling the overlapping strap portions transversely of their length closely adjacent to and substantially parallel with the cross bar to secure the strap portions looped over the cross bar, and an angular outwardly extending serrated flange on one side edge of the band coextensive with the width of the strap adapted to cooperate with one of the end bars for clamping a complemental strap portion between said end bar and flange to resist withdrawal of the said complemental strap portion in one direction.

4. A split band adapted to embrace and secure two layers of strap material face to face tightly, said band comprising a strip of rigid sheet material adapted to be arranged on one face of one of said strap portions and having its end portions folded inwardly toward each other to overlie the outside face of the other of said strap portions, said end portions having longitudinally inclined end edges, serrations on each of said edges adapted to be embedded in the underlying strap portion, and a serrated flange on one longitudinal edge of said strip, said flange being inclined outwardly away from the underlying strap portion.

5. A split band adapted to embrace and secure two layers of strap material face to face tightly, said band comprising a strip of rigid sheet material adapted to be arranged on the outside face of one of said strap portions and having its end portions folded inwardly toward each other to overlie the outside face of the other of said strap portions, said end portions having longitudinally inclined end edges, serrations on each of said edges adapted to be embedded in the underlying strap portion, and a row of teeth on one longitudinal edge of said strip, said teeth being inclined outwardly away from the underlying strap portion.

6. A split rigid band adapted to embrace and secure two layers of strap material face to face tightly, said band having its opposed end edges diverging in a longitudinal direction, serrations on each of said edges adapted to be embedded in the underlying strap portion, and a serrated flange on one end edge of said band, said flange being inclined outwardly away from the underlying strap portions.

7. A clip adapted to secure an end portion of a strap looped over the bar of a buckle frame and to the adjacent body portion of said strap, said clip comprising a rigid split band adapted to be arranged with its intermediate portion overlying and seated against the strap adjacent to its looped end and its end portions overlying and seated against the looped end portion, a row of teeth on the opposed free edges of said band end portions, said teeth extending inwardly toward the looped end portion so as to be embedded therein, and a serrated flange on one edge of the intermediate portion extending outwardly relative to the plane of said intermediate portion adapted to engage in a complemental strap portion threaded through the buckle frame and hold it against withdrawal in one direction.

8. A clip adapted to secure an end portion of a strap looped over the bar of a buckle frame and to the adjacent body portion of said strap, said clip comprising an elongated strip of rigid bendable material adapted to be arranged with its intermediate portion overlying and seated against the strap adjacent to its looped end and its end portions overlying and seated on the looped end portion, a row of teeth on the opposed free edge of each strip end portion, said teeth extending inwardly toward the strap end portion so as to be embedded therein and the rows of teeth being disposed angularly rela-

tive to each other so as to engage said strap end portion along lines non-parallel to each other and to the longitudinal axis of the strap, and a serrated flange on one edge of the intermediate strip portion extending outwardly angularly relative to the plane of said intermediate portion adapted to engage in a complemental strap portion threaded through the buckle frame and hold it against withdrawal in one direction.

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