Oct. 30, 1951 P. W. WHITE 2,573,527

BUCKLE

Filed May 29, 1948 2 SHEETS—SHEET 1

Fig. 1

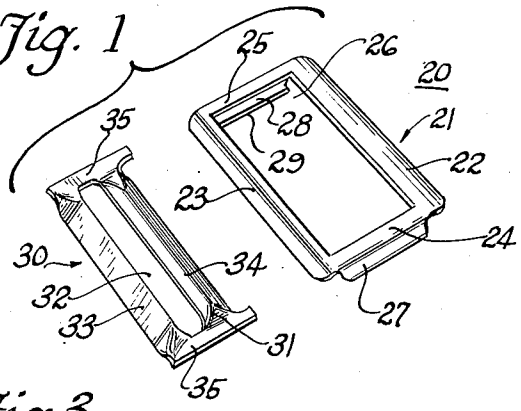


Fig. 3

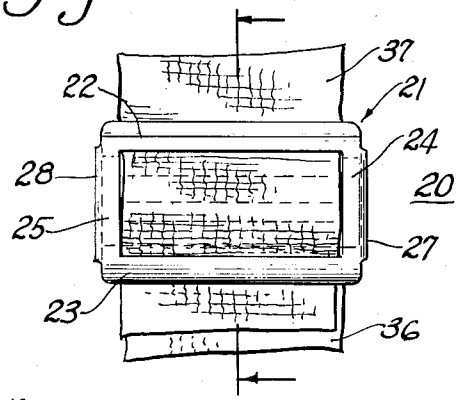


Fig. 2

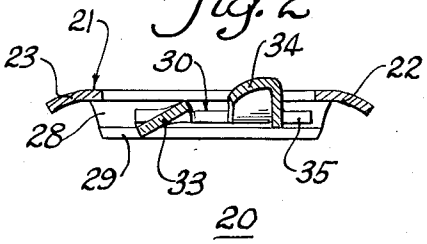


Fig. 4

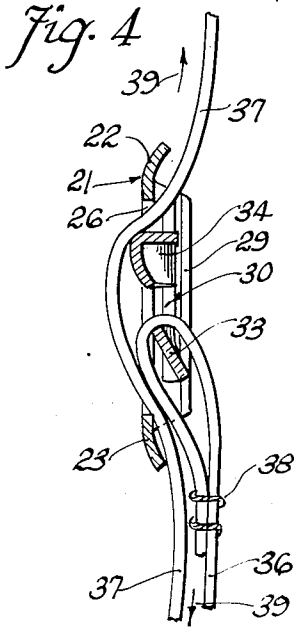


Fig. 5

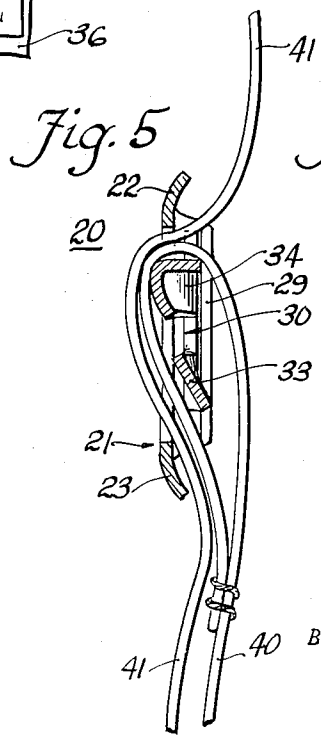
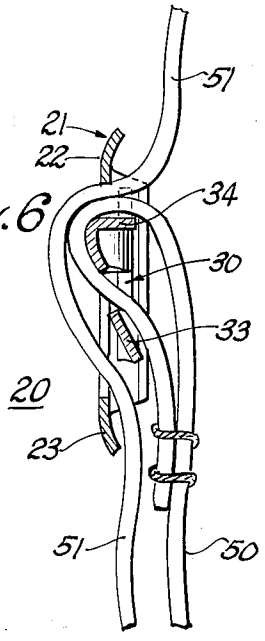


Fig. 6



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BUCKLE

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Fig. 7

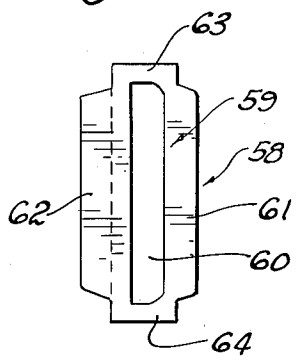


Fig. 8

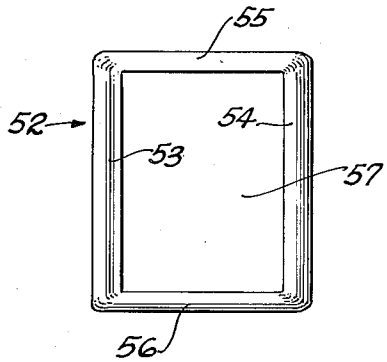


Fig. 9

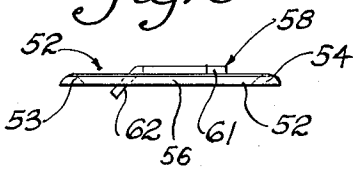


Fig. 10

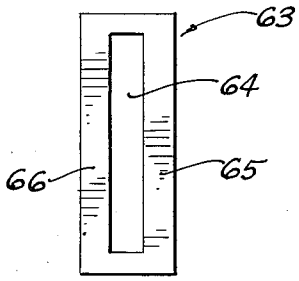


Fig. 11

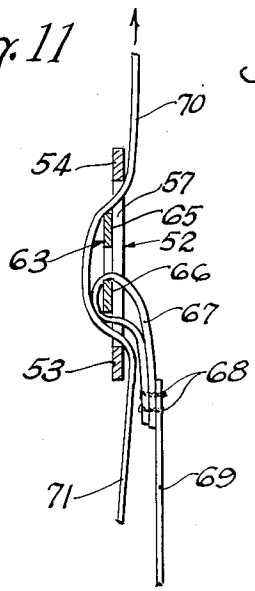
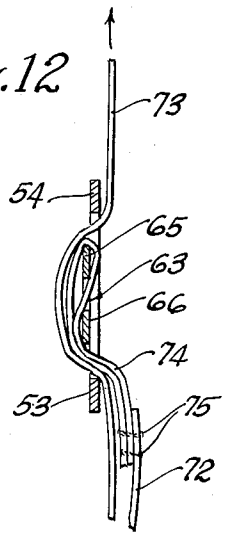


Fig. 12



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BUCKLE

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Application May 29, 1948, Serial No. 30,061

6 Claims. (Cl. 24—196)

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This invention relates to buckles, more particularly to slide buckles or devices adapted to be mounted on straps, bands or the like for the support of garments or other objects on the person, and the invention has for an object the provision of improved buckles of this type which are capable of wide application and adapted for use on straps or bands of varying thickness.

Slide buckles embodying the present invention may be adapted for various uses and while the embodiments herein shown are intended for use as suspender and lingerie buckles, the invention may be employed for other purposes, either with or without slight variations from the particular construction shown, and in fact, may be employed universally where detachable and adjustable connections are desired.

It has heretofore been proposed in slide buckle constructions to provide a resilient covering for one of the strap gripping cross-bars by wrapping a portion of the strap therearound, various such buckle constructions being shown in the applicant's prior reissue patent Re. 22,040, issued February 24, 1942, for "Buckle," but the provision in such buckles of a center cross-bar or similar member on the buckle frame over which the strap is threaded, has imposed definite limitations on the flexibility of application of such buckles to straps of varying thickness. Accordingly, it is a further object of this invention to provide a simple slide buckle construction which is inexpensive to manufacture, easy to assemble, readily threadable by the user and which may be applied with a greater degree of reliability than has heretofore been possible, to straps or bands widely varying in thickness without encountering slippage or difficulty of adjustment.

In carrying out the invention in one form, a slide buckle is provided comprising a frame and a slide which are disposed in longitudinally slidable face-to-face relation and provided with cooperating cross-bars for clamping a strap portion threaded therebetween in adjusted positions upon relative longitudinal movement of the frame and slide, and a cover of resilient material for one of the cooperating cross-bars is provided for engagement with the threaded strap portion, the slide cross-bar having a transverse slot therein whereby the resilient cover may be selectively applied either to a portion of the slotted cross-bar on one side of the slot, or to the entire cross-bar, depending upon the thickness of the threaded strap portion. More particularly, the frame includes a single strap receiving opening which is of greater width than the slide cross-bar and a

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portion of the slide cross-bar is disposed on one side of the plane of the frame so that a strap threaded through the frame from the other side thereof, then over the slide cross-bar and back through the frame will be substantially distorted out of the plane of the frame, and the other portion of the slide cross-bar is inclined in a plane across the path of relative movement of the frame and slide.

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

Fig. 1 is an exploded perspective view of a slide buckle embodying the present invention showing the frame and slide in disassembled relation;

Fig. 2 is a longitudinal sectional view through the buckle of Fig. 1 with the frame and slide in assembled relation;

Fig. 3 is a front elevational view of the buckle shown in Fig. 1 threaded for use as a suspender;

Fig. 4 is a longitudinal sectional view taken substantially along the line 4—4 of Fig. 3;

Fig. 5 is a longitudinal sectional view similar to Fig. 4, but showing the buckle applied to a strap of lesser thickness than that of Fig. 4;

Fig. 6 is a similar longitudinal sectional view showing the buckle applied to a strap of greater thickness than that of Fig. 4;

Figs. 7 and 8 are front plan views respectively showing the slide and frame of a buckle constituting a further embodiment of the present invention;

Fig. 9 is a side view of a buckle embodying the frame and slide of Figs. 7 and 8 in assembled relation;

Fig. 10 is a front view showing another form of slide that may be employed with the frame of Fig. 8 to provide a buckle constituting a still further embodiment of the present invention;

Fig. 11 is a longitudinal sectional view showing a buckle made up of the frame and slide of Figs. 8 and 10 threaded for use on lingerie; and

Fig. 12 is a longitudinal sectional view similar to Fig. 11 but showing the buckle threaded with a thinner strap than that employed in Fig. 11.

Referring now to Figs. 1 to 6, inclusive, the invention is shown as embodied in a buckle **20** which comprises a frame **21** having cross-bars **22** and **23** connected by end-bars **24** and **25** to form a single strap receiving opening **26**. The end-bars **24** and **25** are provided with rearwardly extending flanges **27** and **28** which terminate in inwardly extending lips **29** to form guide channels in which the slide of the buckle is supported for relative longitudinal movement with respect to the

frame 21. In addition, the buckle 20 comprises a slide 30 which consists of a single cross-bar 31 having a slot 32, which extends transversely of the path of movement of the slide and divides the cross-bar 31 into portions 33 and 34. At its opposite ends the cross-bar 31 of the slide 30 is formed to provide runners or side-bars 35 adapted to be received within the guide channels of the frame 21. As shown best in Fig. 2, the cross-bar 31 of the slide 30 is so formed that the portion 33 thereof is inclined with respect to the path of movement of the slide and the portion 34 of the slide cross-bar extends above the upper face of the frame cross-bars 22 and 23 as viewed in Fig. 2.

When intended for use as a suspender buckle, the slide buckle 20 is threaded as shown in Fig. 4, wherein the usual loop formed by the suspender strap is represented by the strap portions 36 and 37, it being understood that the lower end of the suspender loop is adapted to be secured to trousers or other garments in the usual fashion. As shown in Fig. 4 the end of the strap portion 36 is wrapped around the inclined portion 33 of the slide cross-bar and secured by stitching 38, although any other suitable manner of securement may be employed.

The strap portion 37 which forms the front strand of the loop is threaded, as shown, behind the cross-bar 23 of the frame 21, through the strap receiving opening 26, over the front of the slide 30, and then back through the strap receiving opening so as to pass rearwardly of the frame cross-bar 22, the threaded portion of the strap 37 being thus distorted forwardly from the buckle frame by the cross-bar portion 34 on the slide. The end of the strap portion 36, which is wrapped around the cross-bar 33, forms a resilient or fabric covering for the cross-bar portion 33 and when tension is applied to the suspender loop and to the strap portion 37 as indicated by the arrows 39, the frame 21 and the slide 30 will move longitudinally so as to clamp both the wrapped around part of the strap portion 36 and the threaded part of the strap portion 37 between the inclined cross-bar portion 33 on the slide and the cross-bar 23 on the frame. The frictional engagement of the two clamped strap portions assists in holding the buckle against slippage and the distortion imparted to the strap portion 37 by the cross-bar portion 34 insures that the strap portion 37 will properly engage the cross-bar 22 on the buckle frame to provide a proper pull up and tightening action.

In Fig. 5, the buckle 20 is shown as applied to a somewhat thinner suspender strap in which the conventional loop is formed by the strap portions 40 and 41, the end of the strap portion 40 in this case, being wrapped around both the cross-bar portions 33 and 34 of the slide and the strap portion 41 being threaded through the buckle exactly as in Fig. 4. Again when tension is applied to the strap portions, relative longitudinal movement between the frame 21 and the slide 30 will clamp the resilient covering for the cross-bar portion 33 and the strap portion 41 between the cross-bar 33 on the slide and the cross-bar 23 on the frame 21. However, in this case, it will be observed that when in clamping position a greater length of the strap portion 41 is engaged by the part of the strap portion 40 which is wrapped around the slide so as to provide a greater frictional engagement, and at the same time the part of the strap portion 40 which extends over the cross-bar portion 34 adds to the distortion of the threaded part of the strap portion 41 and the combination of these two features assures proper functioning of the buckle even though the thinner strap is employed.

In Fig. 6, the buckle 20 is shown as applied to a very heavy strap in which the usual suspender loop is provided by the strap portions 50 and 51, the strap portion 50 being wrapped around only the cross-bar portion 34 of the slide 30 and the strap portion 51 being threaded through the frame 21 exactly as in Figs. 4 and 5. Upon application of tension to the strap portions shown in Fig. 6 longitudinal movement of the frame 21 and the slide 30 again occurs, but in this case only the strap portion 51 is clamped between the cross-bar portion 33 of the slide and the cross-bar 23 of the frame. However, the frictional engagement between the part of the strap portion 50 which is wrapped around the cross-bar portion 34 and the threaded part of the strap portion 51, together with the increased pull up force achieved by the maximum distortion of the thicker strap, provides adequate holding so as to prevent slippage while at the same time sufficient clearance is provided to permit easy adjustment of the buckle, even with the heavier strap.

It will thus be seen that an improved slide buckle has been provided which by virtue of the slot in the cross-bar slide may be successfully employed upon straps varying in thickness over a wide range without interfering either with the ready adjustment of the buckle on the strap or the ability of the buckle to clamp the strap against slipping.

In the embodiment of the invention shown in Figs. 7, 8, and 9 the guide channel for maintaining the frame and the slide in assembled relation are omitted, and the slide is adapted merely to rest on the end cross-bars of the frame and to be held in position by the tension forces applied to the strap. Thus, as shown in Fig. 8, the frame 52 constitutes merely a rectangular member having cross-bars 53 and 54 connected by end-bars 55 and 56 so as to define a strap receiving opening 57, and the slide 58, shown in Fig. 7, constitutes merely an elongated metal strip forming a cross-bar 59 having a slot 60 therein which divide the cross-bar in two spaced portions 61 and 62. As shown in Fig. 9, the slide 58 is adapted to engage the front of the frame 52, the cross-bar portion 62 of the slide being inclined as shown so as to extend across the plane of longitudinal movement, and the end portions 63 and 64 of the slide rest on the end cross-bars 55 and 56, respectively, of the frame. It will be understood that the buckle shown in Fig. 9 may be threaded as heretofore described in connection with Figs. 4 to 6 so that one end of the suspender strap is wrapped around either the cross-bar portion 62 alone, the cross-bar portion 61 alone, or both cross-bar portions, depending upon the thickness of the strap, and it will be apparent that the application of tension to the strap will serve to maintain the frame of the slide in face-to-face engagement during longitudinal movement and during clamping of the strap.

In some cases, it may be sufficient to omit the inclined plane feature of the slide and to use a simple straight slide of the type indicated by the reference numeral 63 in Fig. 10, wherein a slot 64 serves to divide the slide in two cross-bar portions 65 and 66. In Figs. 11 and 12 a buckle comprising the frame 52 of Fig. 8 and the slide 63 of Fig. 10 is shown threaded for use as a lingerie

buckle. Thus in Fig. 11 a loop of fabric 67 is wrapped around the cross-bar 66 on the slide 63 and is secured, as for example by stitching 68, to a slip or similar article of apparel 69. The shoulder strap 70 which forms a part of the garment is then threaded in front of the cross-bar 54 of the frame 52, through the strap receiving opening 57, over the back of the slide 63, and through the strap receiving opening so as to pass in front of the cross-bar 54 whereby the loose end 71 of the strap 70 is disposed behind the loop 67 and the top of the garment 69. When tension is applied to the shoulder strap 70 relative longitudinal movement between the frame 52 and the slide 63 will effect clamping of the loop 67 and the threaded portion of the shoulder strap by the cross-bar portion 66 on the slide and the cross-bar portion 53 on the frame.

In Fig. 12 the same buckle is shown applied to a garment 72 employing a somewhat thinner shoulder strap 73 and in this case the loop 74 which is secured to the garment 72 as by stitching 75 is wrapped around the cross-bar 65 on the slide 63 so that both strands of the loop 74 pass in back of the cross-bar portion 66. Consequently, increased frictional engagement between the loop 74 and the threaded portion of the shoulder strap 73 is obtained together with increased distortion of the threaded portion whereby satisfactory clamping action is obtained so as to prevent slippage of the thin strap without altering the construction of the frame and the slide while at the same time providing ease of adjustment. It will be understood, of course, that in the buckle construction shown in Figs. 11 and 12 the loop may pass around only the cross-bar 65 and in front of the cross-bar 66 similarly to the threading shown in Fig. 6, or it may pass around both the cross-bars 65 and 66 in the manner shown in Fig. 5, as may be necessitated by the thickness of the strap.

While particular embodiments of the invention have 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 contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of the invention.

I claim:

1. A slide buckle comprising a frame, a slide having spaced side-bars disposed in longitudinally slidable face-to-face relation with said frame, cooperating cross-bars on said frame and said slide, said cooperating cross-bar on said slide being inclined in a plane across the path of movement of the frame and slide to provide a clamping surface facing the other of said cooperating cross-bars to clamp a strap portion threaded therebetween in adjusted positions upon relative longitudinal movement of said frame and slide, said cooperating cross-bar on said slide having a transverse slot therein whereby another strap portion may be selectively wrapped around part or all of said slide cross-bar as required by the thickness of said strap portions, both of said strap portions being clamped between said cooperating cross-bars.

2. A slide buckle comprising a frame having a pair of spaced end-bars and a pair of spaced cross-bars defining a single substantially rectangular strap-receiving opening therethrough; and a slide having spaced side-bars disposed in longitudinally slidable face-to-face relation with said frame, said slide including a cross-bar disposed opposite said opening, whereby a strap-portion may be threaded through said frame-opening from one side of said frame, then over said slide-cross-bar and back through said opening to said one side of said frame; said slide-cross-bar having a transverse slot therein whereby another strap-portion may be selectively wrapped around the portion of said slide-cross-bar on either side of said slot or around both of said slide-cross-bar portions as required by the thickness of said strap portions; one of said portions of said slide-cross-bar including a part disposed out of the plane of said frame oppositely from said one side thereof to effect distortion of the strap portion threaded through said frame and over said one of said portions; and the other of said portions of said slide-cross-bar cooperating with the adjacent frame-cross-bar to clamp said threaded strap portion in adjusted positions upon relative longitudinal movement of said frame and slide.

3. A slide buckle comprising a frame having a pair of spaced end-bars and a pair of spaced cross-bars defining a single substantially rectangular strap-receiving opening therethrough; and a slide having spaced side-bars disposed in longitudinally slidable face-to-face relation with said frame, said slide including a cross-bar disposed opposite said opening, whereby a strap-portion may be threaded through said frame-opening from one side of said frame, then over said slide-cross-bar and back through said opening to said one side of said frame; said slide-cross-bar having a transverse slot therein whereby another strap-portion may be selectively wrapped around the portion of said slide-cross-bar on either side of said slot or around both of said slide-cross-bar portions as required by the thickness of said strap portions; one of said portions of said slide-cross-bar including a part disposed out of the plane of said frame oppositely from said one side thereof to effect distortion of the strap portion threaded through said frame and over said one portion; and the other of said portions of said slide-cross-bar being inclined in a plane across the path of relative movement of said frame and slide to provide a sloping strap engaging surface for cooperation with the adjacent frame-cross-bar to clamp said threaded strap-portion in adjusted positions upon relative longitudinal movement of said frame and slide.

4. A slide buckle comprising a frame having spaced end-bars and cross-bars defining a single substantially rectangular strap-receiving opening therethrough; a slide having spaced side-bars disposed in face-to-face relation with said end-bars of said frame; cooperating means on said frame and said slide for guiding said slide for relative longitudinal movement; said slide having a cross-bar disposed opposite said opening and of less width than said opening whereby a strap-portion may be threaded through said frame-opening from one side of said frame, then over said slide-cross-bar and back through said opening to said one side of said frame; said slide-cross-bar having a transverse slot therein whereby another strap-portion may be selectively wrapped around the portion of said slide-cross-bar on either side of said slot or around both of said slide-cross-bar portions as required by the thickness of said strap portions; one of said portions of said slide-cross-bar extending through said frame opening to the side of said frame opposite from said one side to effect distortion of the threaded strap portion; said one cross-bar portion being adapted, when no strap portion

lies between either of said slide-cross-bar portions and the adjacent frame-cross-bar, to limit said relative longitudinal movement of said slide and frame in either direction by engagement with said frame-cross-bars; and the other of said portions of said slide-cross-bar being inclined in a plane across the path of relative movement of said frame and slide for cooperation with the adjacent frame-cross-bar to clamp said threaded strap-portion in adjusted positions upon relative longitudinal movement of said frame and slide.

5. A slide buckle comprising a frame having spaced end-bars and cross-bars defining a single substantially rectangular strap-receiving opening therethrough; a slide having spaced side-bars disposed in face-to-face relation with said end-bars of said frame; cooperating means on said frame and said slide for guiding said slide for relative longitudinal movement; said slide having a cross-bar disposed opposite said opening and of less width than said opening whereby a strap-portion may be threaded through said frame-opening from one side of said frame, then over said slide-cross-bar and back through said opening to said one side of said frame; said slide-cross-bar having a transverse slot therein whereby another strap-portion may be selectively wrapped around the portion of said slide-cross-bar on either side of said slot or around both of said slide-cross-bar portions as required by the thickness of said strap portion; one of said portions of said slide-cross-bar extending through said frame opening to the side of said frame opposite from said one side to effect distortion of the threaded strap portion; said one cross-bar portion being adapted, when no strap portion lies between either of said slide-cross-bar portions and the adjacent frame-cross-bar, to limit said relative longitudinal movement of said slide and frame in either direction by engagement with said frame-cross-bars; and the other portion of said slide-cross-bar cooperating with the adjacent frame cross-bar to clamp said threaded strap-portion in adjusted positions.

6. A slide buckle comprising a frame having spaced end-bars and cross-bars defining a single substantially rectangular strap-receiving opening therethrough; a slide having spaced side-bars disposed in face-to-face relation with said

end-bars of said frame; cooperating means on said frame and said slide for guiding said slide for relative longitudinal movement; said slide having a cross-bar disposed opposite said opening and of less width than said opening whereby a strap-portion may be threaded through said frame-opening from one side of said frame, then over said slide-cross-bar and back through said opening to said one side of said frame; said slide-cross-bar having a transverse slot therein whereby another strap-portion may be selectively wrapped around the portion of said slide-cross-bar on either side of said slot or around both of said slide-cross-bar portions as required by the thickness of said strap portions; one of said portions of said slide-cross-bar extending through said frame opening to the side of said frame opposite from said one side to effect distortion of the threaded strap portion; said one cross-bar portion being adapted, when no strap portion lies between either of said slide-cross-bar portions and the adjacent frame-cross-bar, to limit said relative longitudinal movement of said slide and frame in either direction by engagement with said frame-cross-bars; and the other of said portions of said slide-cross-bar cooperating with a portion of one frame-cross-bar to clamp said threaded strap portion in adjusted position upon relative longitudinal movement of said frame and slide; said last mentioned cooperating cross-bar portion being inclined in a plane across the path of said relative movement.

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