Oct. 31, 1950 J. R. C. QUILTER 2,528,078

FRICTIONAL LOCKING BUCKLE

Filed Sept. 4, 1946

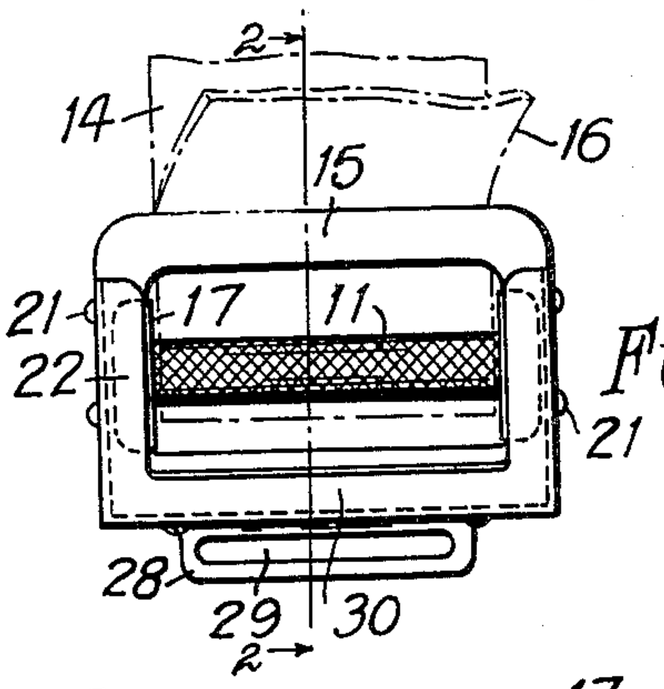

Fig.1.

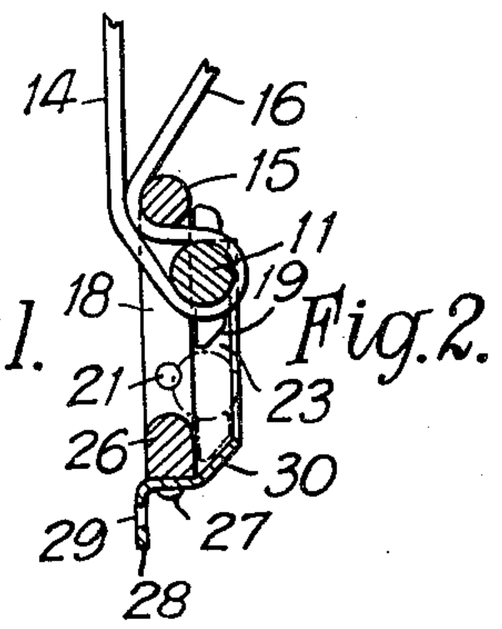

Fig.2.

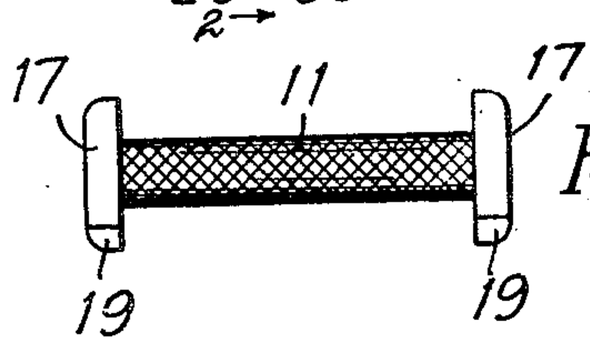

Fig.3.

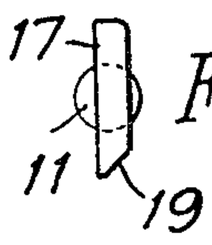

Fig.5.

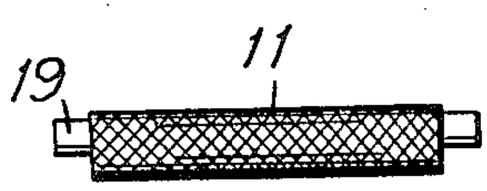

Fig.4.

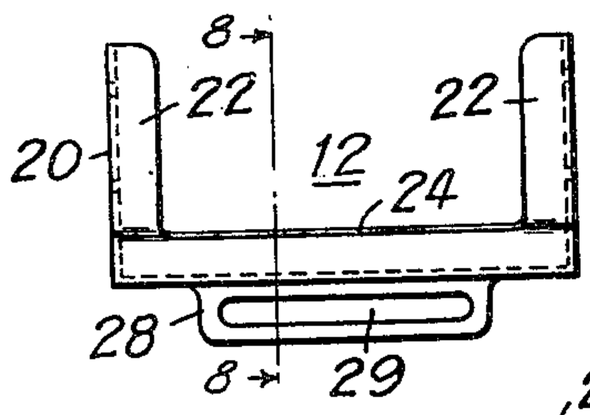

Fig.6.

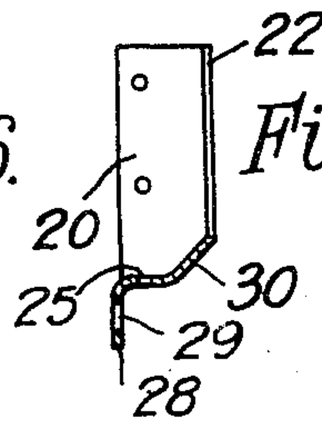

Fig.8.

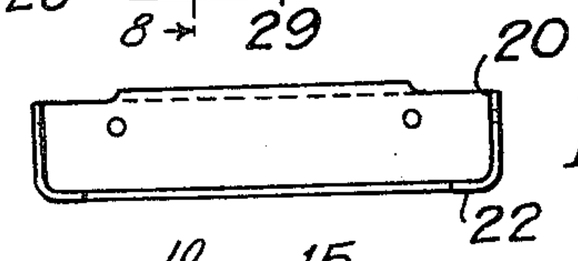

Fig.7.

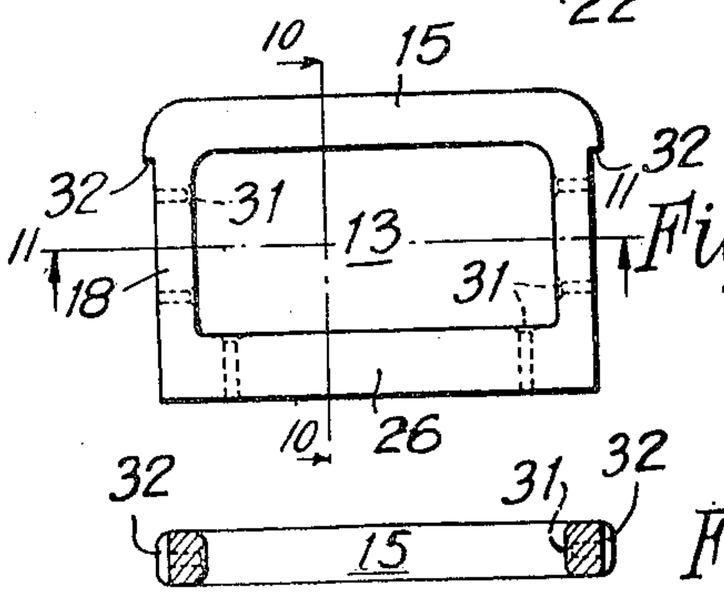

Fig.9.

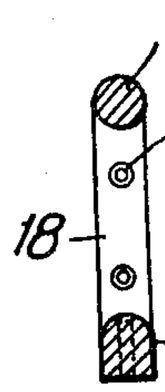

Fig.10.

Fig.11.

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FRICTIONAL LOCKING BUCKLE

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Application September 4, 1946, Serial No. 694,791
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2 Claims. (Cl. 24—171)

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This invention relates to buckles for straps and the like.

The main object of the invention is to provide an improved buckle of the frictional type whereby the strap may be quickly tightened by pulling its free end through the buckle and a firm grip produced by the frictional locking action as soon as the free end is released.

In these frictional buckles, the strap passes over a rigid portion of the frame and around a parallel bar capable of sliding in relation thereto, the tension of the strap when tightened holding the bar towards the rigid frame portion, with the free end gripped between them. The sliding bar is usually knurled in order to increase its gripping power, and is guided by slots or the like at the ends of the frame, the extremities of the bar being flattened to engage in these slots; under heavy loads the bar has been found to rock and roll over like a pulley in engagement with the strap and even to burst the retaining slots in which its extremities are guided.

One of the objects of the invention is to prevent such rocking and rolling of the sliding friction bar, even with heavily loaded straps such as employed in connection with parachute packs.

Another object is to provide the sliding friction bar with extremital shoes of sufficient length in relation to their co-operating guides to restrain the rocking tendency and to distribute the forces over a considerable area of the guides.

A further object is to provide the buckle frame with a bar-guiding member rigidly attached to the frame, parallel portions of the respective members affording between them spaces or slots in which the extremital shoes of the sliding bar are slidably engaged.

Other objects and advantages of the invention will hereinafter appear from the following description of a preferred embodiment, given with reference to the accompanying drawings in which:

Figure 1 is a front elevation of the improved buckle, showing in dot-and-dash lines the strap loosely engaged therewith.

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1, showing in full lines the strap pulled tight.

Figures 3, 4 and 5 represent, respectively a front elevation, an inverted plan view, and a left-end view of the sliding bar.

Figures 6, 7 and 8 represent, respectively, a front elevation of the guide member, a plan view of the guide member and a vertical section on line 8—8 of Figure 6.

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Figures 9, 10, and 11 represent, respectively, a front elevation of the buckle frame, a vertical section on the line 10—10 of Figure 9 and a horizontal section on the line 11—11 of Figure 9.

As illustrated in Figs. 1 and 2, the buckle comprises a sliding bar 11, a guide member 12 and a frame 13, these parts being shown separately in detail in Figs. 3 to 11. A strap 14 or the like, shown in dotted lines in Fig. 1, passes in a loop around the bar 11, its tension holding the bar towards the upper side or cross bar 15 of the frame with the free end 16 of the strap gripped between them, as shown in Fig. 2; the normal position of the bar 11, resting on the frame when the buckle is assembled and before fitting the strap 14 in place, is shown in dotted lines in that figure.

The sliding bar 11 is provided with extremital shoes 17, adapted to slide along the ends 18 of the frame; these shoes are integral with the bar, the extremities being thus of T-shape, as seen in Fig. 3, and the length of the shoes or cross-bars of the T-pieces may be, for example, two or three times the diameter of the knurled middle portion of the bar. Preferably the shoes 17 are slightly offset from the axis of the bar, as shown in Figs. 4 and 5; the purpose of the offset is to maintain the bar partly within the opening of the frame 13, so as to overlap the upper and lower sides of the frame at the respective ends of its movement, thus preventing it from falling out of position before the strap is inserted. The shoes may also be bevelled at 45° at one corner 19, as shown in Fig. 5, to match a corresponding bevel in the guide member, as mentioned below.

The guide member 12 consists of a metal shell or stamping of a channel shape, as seen in Fig. 6, corresponding to the ends 18 and one side of a rectangular buckle frame; the ends of the guide member form uprights of angle section, as seen in Fig. 7, with flanges 20 fitting upon the ends 18 of the frame, to which they are secured by rivets 21 parallel to the axis of the bar 11. The other flanges 22 of the guide ends are spaced from the frame ends 18, these spaces forming parallel slots 23, as seen in Fig. 2, in which the shoes 17 of the sliding bar are engaged. The middle portion 24 of the guide member may be of Z-section, with parallel or inclined flanges, the web 25 being secured to the lower side or crossbar 26 of the frame by rivets 27 perpendicular to the axis of the sliding bar; the outwardly projecting flange 28 is slotted at 29 for attachment of the buckle to a support, such as a looped strap, webbing or the like (not shown). The other flange 30, which is continuous with the free flanges 22 of the end

portions or uprights, may either extend in the same plane as those flanges or be set at a bevel angle of 45 degrees thereto, as shown, corresponding to the bevelling of the shoes 17 at their corners 19, as mentioned above; the bevelling of these parts provides a more convenient shape of the buckle adjacent to its slotted connection 29.

The buckle frame 13 is shown in Fig. 9 as being of open rectangular shape, the ends 18 and one side 26 being drilled and countersunk at 31 to receive the rivets 21, 27 securing the guide member 12 thereto; the ends 18 and sides 15, 26 will be rounded internally, as seen in Figs. 10 and 11, but the ends and the side 26 are sharp-cornered on their external faces to provide a firm seating for the guide member 12, and the external end faces may be stepped to form shoulders 32 fitting over the ends of the guide member flanges 20 riveted to these faces.

In operation, the shoes or T-shaped pieces 17 at the extremities of the bar 11 will slide in the spaces or slots 23 afforded between the flat ends 18 of the frame 13 and the free flange edges 22 of the end portions of the guide members 12, the contacting surfaces being of sufficient area to withstand wear and the length of the shoes 17 being such that they can resist the tendency of the bar 11 to rock or roll over under the force exerted by the strap 14 or the like passing around it.

The slotted attachment 29 may be dispensed with in cases where the buckle is employed for adjustment of a leg strap or the like, in which case the upper side 15 of the frame may be engaged by a looped portion of a connector strap or the like, the adjustable leg strap or the like being looped around the sliding bar 11 in a direction to pull down against the opposite side 26 of the frame, this leg strap extending out of the frame at the face remote from the guide member 12 and the pull upon the leg strap tending to draw the shoes 17 down the slots 23, instead of up the slots as in the construction illustrated.

What I claim is:

1. In a buckle of the frictional locking type, having an open rectangular frame and a round friction bar in sliding relation to said frame, the combination of a pair of parallel shoes integral with the extremities of said bar, and a guide member for said shoes, said guide member including angle-section flanged portions parallel with the ends of said frame, one flange of each said portion being secured to an end of said frame and the other flange being spaced therefrom, and said shoes being slidably engaged in the spaces between said frame ends and said other flanges.

2. A frictional locking buckle, comprising an apertured rectangular frame having two parallel ends and upper and lower crossbars connecting said ends, a separate member of channel shape having a bottom portion and two flanged uprights, said bottom portion being secured to said lower crossbar, said uprights being secured to said ends with their flanges spaced from said ends to provide parallel slots, and a slidable locking bar having extremital shoes engaged in said parallel slots between said ends and said uprights.

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