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2,731,697

CLAMP BUCKLE

Filed Nov. 29, 1952

2 Sheets-Sheet 1

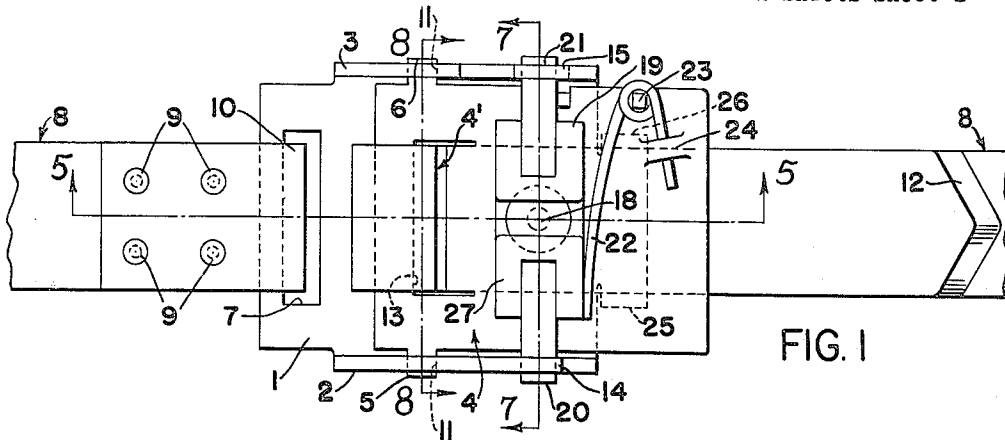


FIG. 1

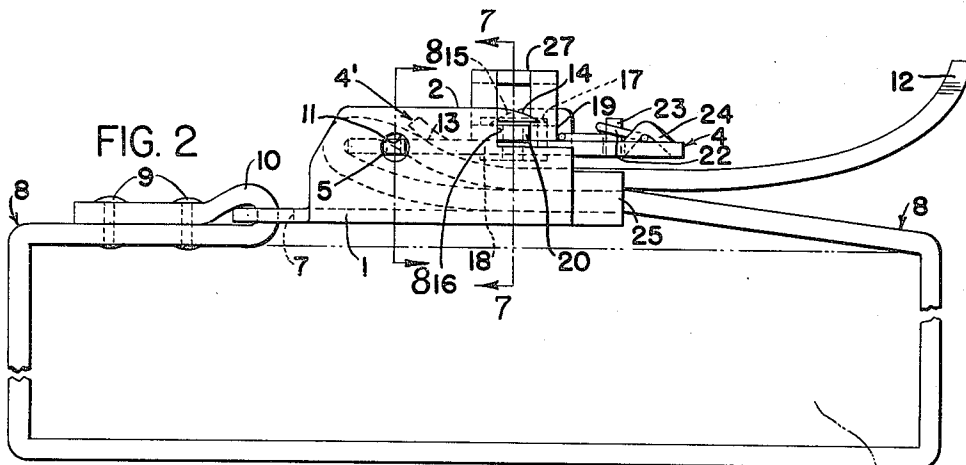


FIG. 2

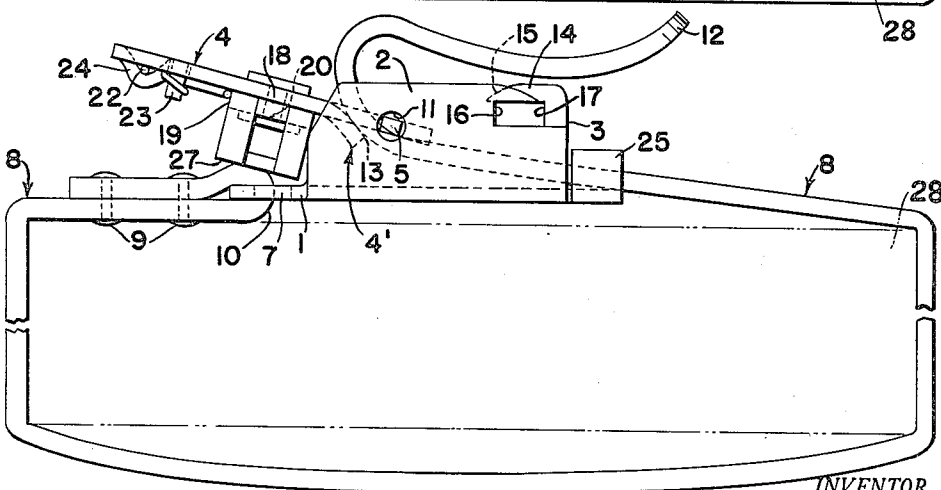


FIG. 3

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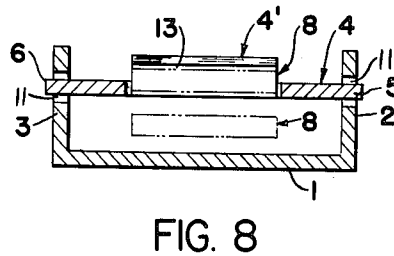
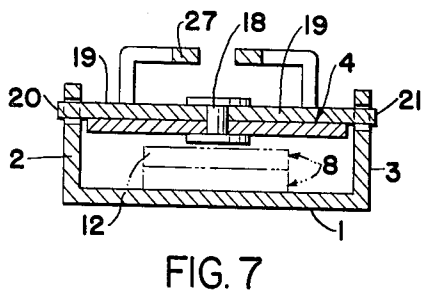
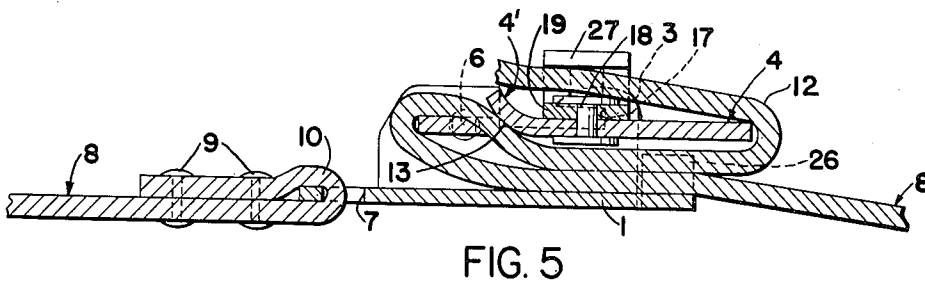
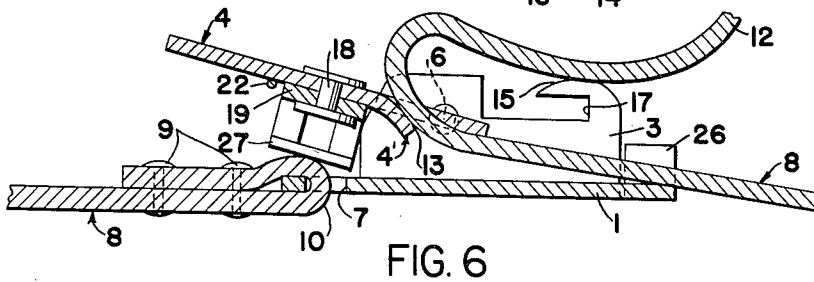
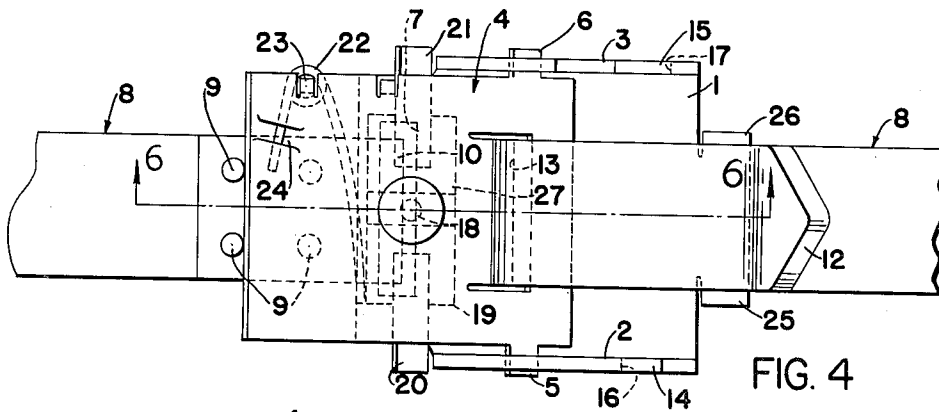
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2 Sheets-Sheet 2



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2,731,697

CLAMP BUCKLE

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Application November 29, 1952, Serial No. 323,228

1 Claim. (Cl. 24—273)

This invention relates in general to buckles for use on belts, straps and the like, and has for one of its primary objects to provide a simple, inexpensive and efficient locking and clamping buckle, to which one end of the strap is secured, and which provides means for quick manual attachment and release of the strap for its intended purpose.

Another object is to provide such a buckle that permits easy manual tension for tightening the strap around the object to be tied and which also includes a leverage locking mechanism whereby its manual operation into locked position exercises a further tension on the strap in order to more securely clamp the object and to more securely maintain the buckle against inadvertent unlocking.

A further object is to provide such a leverage locking mechanism that is readily manually operated to lock and unlock the buckle.

A further object is to provide such a leverage mechanism whose operation to increase tension on the strap to a predetermined angle of movement of the mechanism automatically results in the locking of the buckle with the strap in a predetermined degree of tension.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended claims certain embodiments thereof being illustrated in the accompanying drawings, in which:

Figure 1 is a view in top plan of the clamping buckle, one end of the strap being secured thereto and the other end portion being engaged by the buckle in locked and clamped position;

Figure 2 is a view in side elevation of the assembly shown in Figure 1, showing an object clamped by the buckle and strap;

Figure 3 is a view similar to Figure 2, showing the locking clamping lever swing open from locked position with the strap loosely carried by the buckle;

Figure 4 is a top plan view of the assembly shown in Figure 3;

Figure 5 is a view in section taken along line 5—5 of Figure 1;

Figure 6 is a view in section taken along line 6—6 of Figure 4;

Figure 7 is a view in section taken along line 7—7 of Figures 1 and 2; and

Figure 8 is a view in section taken along line 8—8 of Figures 1 and 2.

Referring more particularly to the drawings, my buckle is shown as comprising a flat base 1 with upturned side channel members 2 and 3. To the two side channel members, I pivotally secure a clamping lever, in the form of a plate, generally indicated at 4. This pivotal connection may comprise a hole 11 in each member 2 and 3 to receive pins 5 and 6, or integral extensions of lever plate 4.

One end of the buckle base 1 is provided with a transverse slot 7 to loosely receive one end of a strap, belt, or

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the like, generally indicated at 8, to be folded back on itself and secured by rivets 9 to provide a secured loop. I have generally indicated the strap at 8 having a fixed loop end 10. As a means of illustration, I have indicated generally at 28 an object to be embraced and clamped by the strap, the loose end of which I have generally indicated at 12.

Near the left end, as viewed in Figures 1, 2 and 5, and near the right end, as viewed in Figures 3, 4 and 6, the clamping lever plate 4 is provided with a transverse slot 13. I have shown this slot 13 as preferably formed in the lever plate 4 by means of striking the slot out of the plate 4 to provide a louvre, generally indicated at 4'. As indicated in Figures 2, 3, 5 and 6, this forms a convenient inclined ramp to smoothly receive strap 8 as the leading loose end 12 is threaded therethrough to embrace and clamp the work 28.

The two channel side walls 2 and 3 of base 1 are formed with oppositely extending arcuately sloping ramps 14 and 15 and locking slots 16 and 17. Pivotal secured by a pin 18 to the upper surface of lever 4, as viewed in Figures 1, 2, 5 and 7, is a member 19 with transverse ends, or pins 20 and 21. This pivotal member 19 acts as a locking lever and, as viewed in Figure 1, is normally urged clockwise about its pivot 18 to bring its locking pin 20 into locked engagement with slot 16 of side wall 2 and its locking pin 21 into locked engagement with slot 17 of side wall 3 by the resilient force of spring 22 bearing against member 19, wrapped about pin 23 and anchored at 24 to lever plate 4. As an optional refinement, the plate 4 may be formed with guide side walls 25 and 26 to receive the strap. Pivotal member 19 may be provided with a finger grip 27 to enable it to be conveniently rotated counterclockwise, against the force of spring 22 to unlock pins 20 and 21 from locking slots 16 and 17, as viewed in Figure 1, to unlock clamping lever plate 4 and permit it to be swung counterclockwise about its pivot pins 5 and 6, as viewed in Figures 3, 4 and 6.

In assembly, and with reference to Figures 3, 4 and 6, and with the strap loop 10 secured through slot 7 to the buckle base 1, the base is laid flat on the top of the object 28. The strap is then wrapped about the under side of the object 28, shown in Figures 2 and 3. The clamp lever has been removed from its locking position of Figures 1, 2 and 5 and rotated counterclockwise about its pivot pins 20 and 21 to lie flat on its back. The inclined ramp of louvre 4' provides an easy guide means for feeding the loose strap end 12 through transverse slot 13 in the clamp lever 4. This manual feeding of the strap through slot 13 is continued with one hand while holding the assembly with the other hand until the strap is drawn fairly tautly about object 28, at which time manual pressure is brought to bear on lever plate 4 to rotate it clockwise about its pivot pins 5 and 6. This forces pin 20 to ride down ramp 14 of side wall 2, inclined in one direction, and against the action of spring 22, as member 19 pivots about pin 18, until spring 22 snaps pin 20 of lever 4 into locked position in slot 16 of walls 2. Simultaneously, pin 21 has ridden down oppositely extending ramp 15 of wall 3 to be snapped into locked position in slot 17 of side wall 3.

An important feature, and in addition to this locking feature, is the fact that during this swing of the locking lever 4 from its unlocked position, of Figures 3, 4 and 6, to its locked position, of Figures 1, 2 and 5, the forward end of lever 4 containing the slot 13, as well as the strap 8 extending through the slot, has also been moved clockwise to axially displace this slotted end of lever 4 and the strap contained therein axially to the left with respect to the buckle base. The effect of this is to draw the strap even tighter about the object 28 to more firmly clamp

the latter within the thus locked buckle. Moreover, this clamping lever action, being in tension, acts as a safeguard against inadvertent removal from its locked position.

The manually operable finger piece 27 is made in the form of a channel to receive the loose end 12 of the belt 8 when it is folded back to the left and over the top of the lever 4, as shown in Figure 5, for the purpose of locking member 19 securely in slots 16 and 17. In other words, when the loose end of the belt is brought up over lever 4, after it is forced shut and latched shut and the belt is threaded through the channeled finger piece 27, the stiff belt serves as a locking expedient to prevent member 19 from being inadvertently unlocked. This channeled finger piece 27 also serves to hold the belt down on top of lever 4 so as to form a sharp bend in the belt over the front edge of lever so as to secure the belt against any slippage when tension strain is applied.

It follows, that upon manual rotation, by finger piece 27 of member 19, against the action of spring 22, the clamping locking lever 4 is unlocked and free to be swung to its position of Figures 3, 4 and 6, in which the strap is not only loose about object 28, but also free to be withdrawn through slot 13 from the buckle.

It is to be understood that my locking and clamping buckle is equally adaptable for use in connection with belts, straps, cords and other devices such as book straps, anti-skid chains for vehicle tires and many other tie devices. For mere sake of brevity and clarity, I will refer in the following claim, its adaptability as a belt buckle, with no intention of limiting my invention thereto.

I claim:

In a belt buckle having a base with side walls, said base being adapted to have one end of a belt secured to one end thereof, each of said side walls being provided with

a ramp and a locking slot, the ramps sloping in opposite directions and the slots extending in opposite directions, a clamping lever connected by transverse pivot means to said side walls between said locking slots and the point of connection of said end of said belt to said base, said clamping lever being provided with an opening adjacent its pivotal axis to receive the free end of said belt so as to be threaded therethrough, said clamping lever having a locking lever secured by a pivot extending perpendicularly to said clamping lever, spring means for normally resiliently maintaining said locking lever with its two ends extending transversely of said side walls, said clamping lever being adapted to be rotated about its transverse pivot means forwardly to bring the two ends of said locking lever into top surface engagement with said oppositely extending ramps to automatically swing said locking lever about its pivot, against the action of said spring means, which spring means snaps automatically said locking lever into locking engagement with the locking slots in said side walls, whereby the free end of said belt, upon pivotal movement of said clamping lever to bring said locking lever into locked position in the locking slots of said side walls, exerts a tensioning clamping effect on said belt in addition to that manually exerted in the threading of the free end of said belt through the opening in said clamping lever.

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