

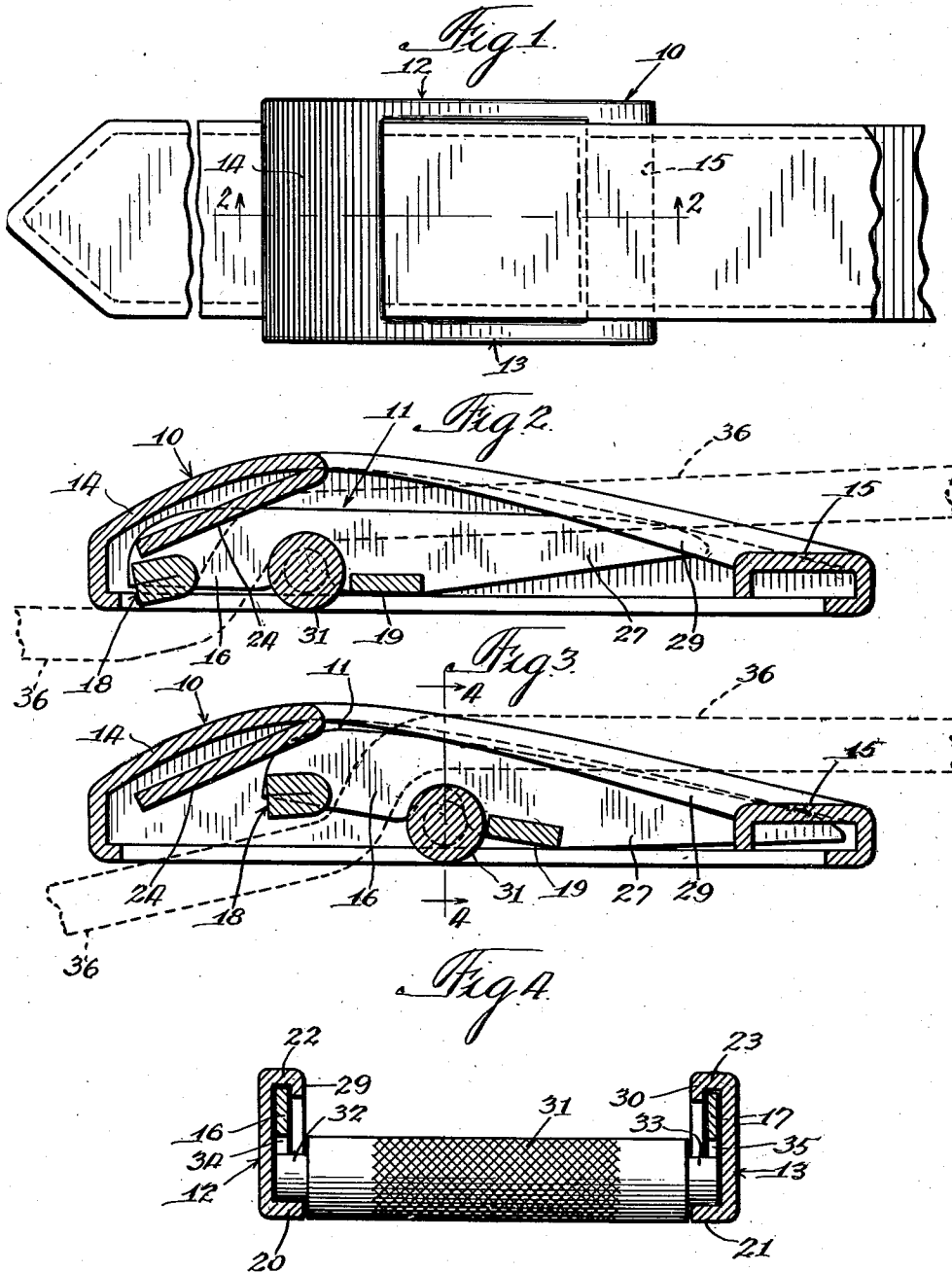
July 15, 1941.

P. W. WHITE

2,249,409

BUCKLE

Filed Oct. 2, 1939



Inventor:
 Paul W. White.
 By: Amos, Frisco, Olsen & Mackenburger.
 Attys:

UNITED STATES PATENT OFFICE

2,249,409

BUCKLE

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

Application October 2, 1939, Serial No. 297,462

8 Claims. (Cl. 24—194)

This invention relates to a buckle and has special reference to a slide buckle adapted to be mounted on a strap, band or the like for securing articles together or for the support of garments or other objects.

More particularly, this invention has reference to a slide buckle for association with a strap comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween in which the frames have spaced side bars and spaced cross bars connecting the side bars for defining openings there-through to receive the strap, one of the cross bars normally being loosely held in position with respect to one of the frames by the cooperation of both of the frames and one cross bar of one of the frames having an inclined surface cooperating with the loosely held cross bar to clamp the strap threaded therebetween in adjusted positions upon relative movement of the frames in one direction.

The device of the present invention may be adapted for use in various connections and, as a matter of fact, the construction may be employed with slight variations not departing from the spirit of this invention almost universally where detachable connections are desired. Hereafter and in the drawing the device will be described and shown in its association with a strap of a belt although it is readily understood that the buckle may be employed with a strap for skates, books and the like, for attachment to lingerie, for encircling the leg as a hose supporter, for use as a suspender or for detachable engagement with garments of various characters. It is, of course, to be understood that various other uses may be mentioned and that this invention is not to be limited to any single specific use.

The buckle contemplated herein is so constructed and arranged as to provide an effective gripping or clamping of the strap between the cooperating strap-engaging cross bars and yet leave the strap unmarred after being clamped therebetween. Ordinarily a secure clamping engagement obtained between cooperative strap-engaging faces of a slide buckle results in the strap clamped therebetween being marked so as to present an unsightly appearance of the strap after continued use. In all positions of the strap in the buckle the strap-engaging portions are so constructed and arranged as to leave the strap unmarred after engagement thereby.

In effecting a clamped engagement between a strap and the strap-engaging cooperating faces of relatively movable members of a slide buckle

and particularly in that type of slide buckle presenting an inclined strap-engaging face, a locked engagement is obtained which is difficult and inconvenient to release. It is desirable, therefore, to clamp a strap in a fixed adjusted position so that the lock effected thereby is readily released when desired to adjust the strap within the buckle to a loosened condition. The present invention contemplates an effective locking or clamping of the strap in a locked position to be readily releasable therefrom when desired.

One of the objects of this invention is to provide a buckle having relatively slidable frame members of the character indicated above in which the construction is relatively inexpensive to manufacture, is durable, and is simple in construction, in threading, and in manipulation.

Another object of this invention is to provide a buckle having relatively slidable frame members of the type hereinabove described whereby the strap is unmarred following an effective clamping engagement thereof by the strap-engaging members of the relatively slidable frame members.

It is also an object of this invention to provide a buckle having relatively slidable frame members of the above-referred-to type whereby the clamped frame members are readily released from a locked condition thereof.

Other objects and advantages of this invention will hereinafter be more particularly pointed out and, for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing, in which latter:

Figure 1 is a front view of a buckle incorporating the features of this invention as shown in its relation with a belt strap shown fragmentarily;

Fig. 2 is an enlarged central sectional view taken on the line 2—2 of Fig. 1, a portion of the strap being shown in dotted lines as being clamped in an adjusted position within the frames of the buckle;

Fig. 3 is a view similar to Fig. 2 showing the frames of the buckle in a changed position with the strap loosely threaded therethrough; and

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3, the roller being shown in full lines.

Referring now more particularly to the drawing, the construction therein shown as embodying the features of this invention comprises a pair of frame members 10 and 11, the frame member

10 being substantially rectangular in shape and having spaced side bars 12 and 13 connected by spaced cross bars 14 and 15 to define a strap opening. The frame 11 is likewise substantially rectangular in shape and has spaced side bars 16 and 17 connected by spaced cross bars 18 and 19 forming an opening.

The side bars 12 and 13 of the frame 10 comprise opposed channels, ledges 20 and 21, as shown more particularly in Fig. 4, extending in a direction inwardly toward each other from one edge of the side bars 12 and 13, respectively, and ledges 22 and 23 extending in a direction inwardly toward each other from the other edge of the side bars 12 and 13, respectively. The opposed channels thus formed receive the side bars 16 and 17 of the frame 11 for directing longitudinal movements of the frames.

The cross bar 14 of the frame 10 is preferably inclined and has an extending portion bent back upon itself from the material of the opening of the frame 10 to overlie the inclined portion and to present an inclined strap-engaging face 24.

The cross bar 18 of the frame 11 is folded back upon itself to provide a smooth rounded edge facing the opening to the frame, the rounded edge presenting a strap-engaging face. The side bars 16 and 17 are each provided with an extension 27, the extensions being preferably formed integrally with the side bars. The extensions 27 slidably engage in their longitudinal movement the opposed channels formed by the side bars 12 and 13 of the frame 10.

In order to prevent angular displacement of the frame 11 with respect to its normal longitudinal movement, the ledges 22 and 23 are provided with angularly extending flanges 29 and 30, respectively, the flanges 29 and 30 overlying the sides of the extensions 27 to form a guide-way therefor. The frame 11 together with its extensions 27 lies wholly within the confines of the frame 10 even during the relative longitudinal movement thereof in both directions.

In order to present a gripping bar which may effectively clamp the strap in a fixed adjusted position without marring the strap, a cross bar 31 in the form of a roller is connected between the side bars 16 and 17 of frame 11 in the opening between the cross bars 18 and 19. The roller is disposed closely adjacent the cross bar 19 to form a strap opening between the roller and the cross bar 18. As shown more particularly in Fig. 4, the cross bar or roller 31 is provided with reduced extensions 32 and 33 on opposite ends thereof to be received in notches 34 and 35, respectively, of the arms 16 and 17 of frame 11. The notches 34 and 35 open into one side edge of the respective side bars so that the roller 31 is loosely held in position with respect to the frame 11 by the cooperation of both of the frames, the ledges 20 and 21 preventing displacement in one direction and the notches 34 and 35 preventing displacement in the opposite direction and in both sidewise directions. In other words, the roller is loosely engaged in the notches and prevented from displacement therefrom by the ledges 20 and 21.

In the position shown in Fig. 2, the frame 11 is moved in one direction with respect to the frame 10 to clamp a strap 36 between the strap-engaging roller 31 and the strap-engaging inclined face 24 of the cross bar 14, the free end of the strap being threaded through the opening in the frame 11 and between the roller 31 and strap-engaging face 24 through the opening in

the frame 10. The strap is shown in a disengaged position between the strap-engaging faces in Fig. 3, the frame 11 being moved in an opposite longitudinal direction to separate the roller of the frame 11 from the inclined strap-engaging portion 24 of the cross bar 14.

When tension is had on the strap 36 the smooth rounded portion of the folded cross bar 18 is engaged by the strap due to the tortuous path of the strap through the openings in the frames and the strap pulls the frame 11 in one direction relative to the frame 10 which is held against movement by the other end of the strap engaging the cross bar 15. Due to the tortuous path of the strap the smooth rounded portion of the cross bar 18 presents sufficient friction to effect relative movement of the frames.

When the strap moves the frames to the position thereof shown in Fig. 2, the thickness of the strap is compressed in direct proportion to the amount of tension applied to the strap, one of the strap-engaging cross bars being inclined and the other strap-engaging cross bar being held in a direction of movement converging with respect to the inclined face. Ordinarily, a wedging action thus produced locks the frames so that it is somewhat difficult to break the lock and release the strap. In the present invention the cross bar is loosely mounted or loosely held in position with respect to one of the frames by the cooperation of both of the frames and the cross bar thus loosely mounted is preferably in the form of a roller. While the above construction effectively locks the frames and effectively clamps the strap therebetween, a breaking of the lock to release the strap is readily accomplished and further the well-rounded surface of the roller and the flat surface of the inclined strap-engaging cross bar 24 prevents marring of the strap.

In order to facilitate the correct threading of the strap through the openings of the frames 10 and 11 it is desirable that the space between the end of the cross bar 18 and the strap-engaging face 24 of the cross bar 14 be in effect obstructed so that the strap cannot be threaded therebetween. The present construction contemplates the provision of the opposed channels varying in depth over the length thereof so that as the extensions 27 ride along one wall of the channels during relative longitudinal movement of the frames, the frame 11 will be tilted with respect to the frame 10 so that the cross bar 18 will follow substantially the inclination of the strap-engaging face 24. The space between the end of the frame 11 and the inclined strap-engaging face 24 will, in effect, be obstructed by being smaller than the thickness of the strap during the positions of relative longitudinal movement of the frames so as to prevent the strap from being threaded therebetween. The movement of the frames to effect a relative tilting therebetween is shown in Figs. 2 and 3.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable en-

gagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, the side bars of one of said frames having notches and one of said cross bars of said notched frame comprising a roller, the ends of which normally are loosely held in position in said notches by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames co-operating with said loosely held cross bar to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

2. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, one of said cross bars comprising a roller normally loosely held in position with respect to one of said frames by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames having an inclined surface co-operating with said roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

3. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, the side bars of one of said frames having notches and one of said cross bars of said notched frame comprising a roller normally loosely held in position in said notches by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames having an inclined surface co-operating with said loosely held roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

4. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, the side bars of one of said frames having notches and one of said cross bars of said notched frame comprising a roller having reduced ends normally loosely held in position in said notches by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames having an inclined surface co-operating with said loosely held roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

5. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, one of said frames having a peripheral flange directed inwardly thereof to confine the other frame therein, said frames

having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, the side bars of one of said frames having notches and one of said cross bars of said notched frame comprising a roller, the ends of which are normally loosely held in position in said notches by the peripheral flange of the other of said frames, one cross bar of one of said frames having an inclined surface co-operating with said loosely held roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

6. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, opposed channels formed on the side bars of one of said frames for receiving the side bars of the other of said frames for directing relative longitudinal movements of said frames, side bars of the other of said frames having notches and one of said cross bars of said notched frame comprising a roller, the ends of which are normally loosely held in position in said notches by one side of the channels of the other of said frames, one cross bar of one of said frames having an inclined surface co-operating with said loosely held roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

7. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, one cross bar of one of said frames being folded back upon itself to provide a rounded edge and the other of said cross bars comprising a roller normally loosely held in position with respect to said frame by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames co-operating with said loosely held roller to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

8. A slide buckle for association with a strap, comprising a pair of frames disposed in a face-to-face relation for longitudinally slidable engagement therebetween, said frames having spaced side bars and spaced cross bars connecting said side bars for defining openings therethrough to receive the strap, side bars of one of said frames having notches, one cross bar of said notched frame being folded back upon itself to provide a rounded edge and the other of said cross bars comprising a roller normally loosely held in position in said notches by the co-operation of both of said frames, means for directing longitudinal movement of said frames, one cross bar of one of said frames having an inclined surface co-operating with said loosely held cross bar to clamp the strap threaded therebetween in adjusted positions upon relative movement of said frames in one direction.

PAUL W. WHITE.