

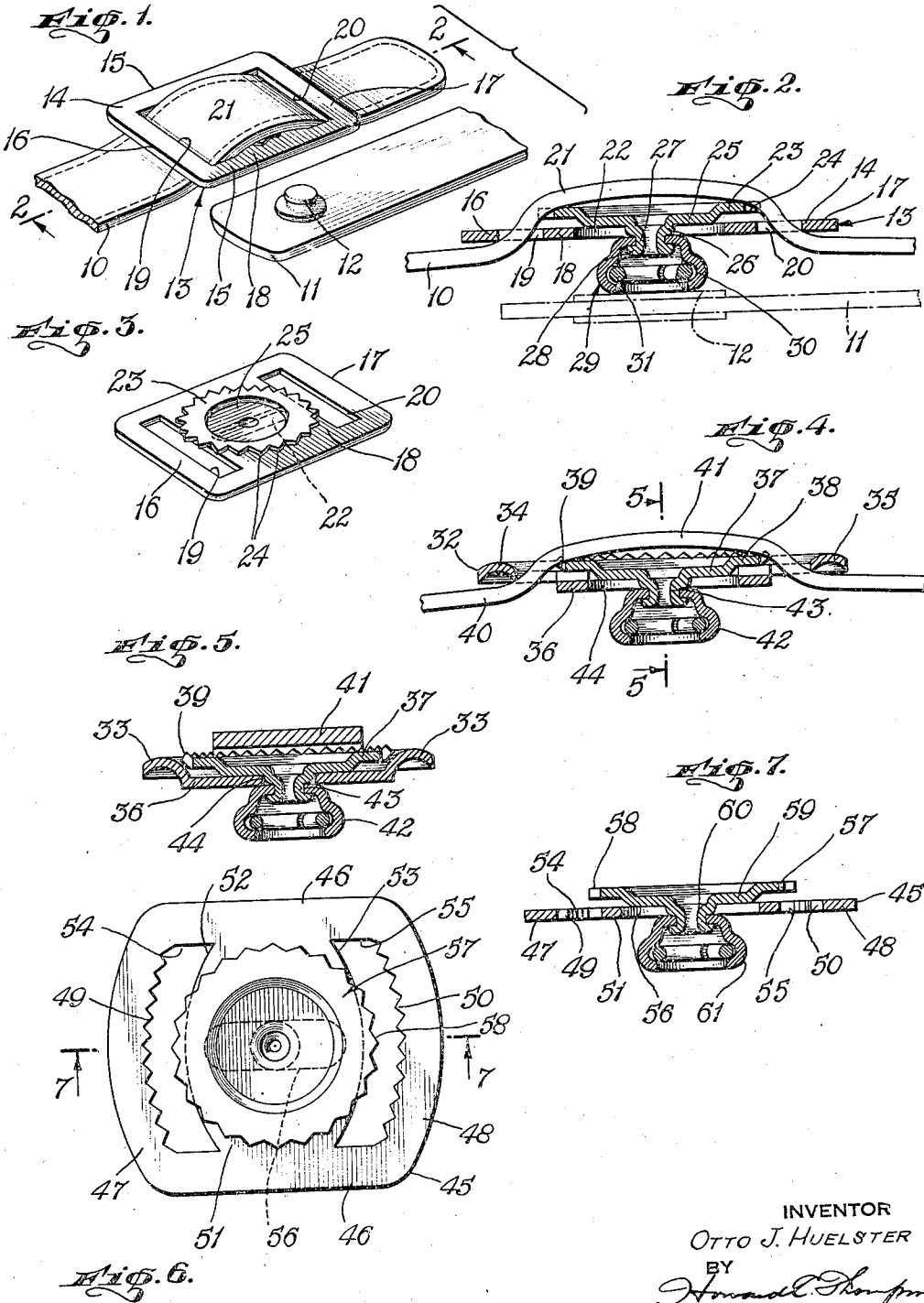
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BELT BUCKLE WITH SLIDABLE GRIPPER ELEMENT

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BELT BUCKLE WITH SLIDABLE GRIPPER
ELEMENT

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This invention relates to buckles as commonly employed on belts. More particularly, the invention deals with buckles freely adjustable along one end portion of a belt in adjusting the size thereof, and having snap fastener engagement with the other end portion of the belt for quickly coupling and uncoupling the belt ends and without disturbing adjustment of the buckle on one end of the belt. Still more particularly, the invention deals with buckle devices of the kind under consideration wherein the socket part of the snap fastener employed is arranged upon and movable with the gripper element of the buckle and slidably movable in the buckle frame. The novel features of the invention will be best understood from the following descriptions when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed, and in which the separate parts are designated by suitable reference characters in each of the views; and in which:

Fig. 1 is a perspective view showing portions of a belt preparatory to coupling the same through the snap fastener means employed.

Fig. 2 is a longitudinal sectional view on the line 2-2 of Fig. 1, showing one end of the belt in side elevation and the other end of the belt carrying the stud of the snap fastener, in dot and dash lines.

Fig. 3 is a perspective view of the buckle shown in Figs. 1 and 2, detached.

Fig. 4 is a view similar to Fig. 2, showing only the one belt part in side elevation, and showing a modified form of buckle frame.

Fig. 5 is a section on the line 5-5 of Fig. 4.

Fig. 6 is a plan view of another form of buckle which I employ; and

Fig. 7 is a section on the line 7-7 of Fig. 6.

In Figs. 1 to 3 inclusive is shown one adaptation of my invention, Fig. 1 showing the end portions 10 and 11 of a belt or other support, the end 11 having a more or less conventional stud 12 on one surface thereof adjacent the belt end, whereas the belt end 10 has a buckle 13 adjustably supported thereon.

The buckle 13 comprises an elongated frame 14 substantially rectangular in form and defined by side rails 15 joined by transverse end rails 16 and 17, and a central plate portion 18 spaced from the rails 16 and 17 by apertures 19 and 20, through which the belt end 10 is adapted to be freely threaded by first passing the end outwardly through the aperture 19, and then inwardly through the aperture 20 in the manner shown, to arrange that part 21 of the belt positioned between the apertures 19 and 20 over the plate 18.

The plate 18 has centrally and longitudinally thereof an elongated aperture 22, and arranged upon the upper surface of the plate 18 is a gripper element 23 preferably of gear like construction,

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that is to say, this element is in the form of a round disc having at its periphery circumferentially spaced gripper teeth 24. The central portion of the element 23 is offset downwardly, as seen at 25, so as to rest upon the plate 18, thus minimizing the surface contact area of the element 23 with the plate as well as to space the tooth like periphery of the element 23 above the plate, thus providing a freer gripping action on the belt and also facilitating adjustment of the buckle longitudinally of the belt.

At this time, it is also well to point out that by providing a gear like gripper element, many advantageous results are provided. First, in that free rotation of this element on the buckle frame provides indefinite use of the buckle in minimizing wear upon the gripper teeth as different teeth are brought into engagement with the belt in adjustment thereof. Further, a circular gripper element of this type and kind localizes the gripping action on the central portion of the belt, thus avoiding any injury to stitched edges and also compensating for belts including intumed or folded edges. Furthermore, a more positive gripping action is provided. Still further, it will be apparent that a gripper element of the type and kind defined lends itself to simplified and economized manufacture as well as assemblage in the buckle frame.

Centrally of the offset portion 25, the gripper has a downwardly extending short tubular hub portion 26 which fits freely but snugly in the aperture 22 in guiding the gripper for longitudinal movement in the frame, while at the same time providing free rotary movement of the gripper in said frame. Below the portion 26 is a further reduced tubular portion 27 which is riveted or spun over, as seen at 28 in securing a socket part 29 of a snap fastener to the gripper 23. This coupling of the socket part 29 with the gripper 23 may be free so that the socket part can rotate on the tubular portion 27 or may be fixed against any movement, depending upon the method of assembly employed. The socket part 29 may be of any desired form and construction, and in the present illustration, comprises a cup shaped body having an enlarged or radially offset lower end 30 for supporting a spring ring 31, this ring being adapted to yieldably engage the stud 12, as in other snap fastener devices of this type and kind. This construction provides a quick coupling and uncoupling of the buckle 13 with the stud 12 in coupling and uncoupling the strap ends 10 and 11. It will be understood that after the buckle 13 has been adjusted to the desired size on a belt, the buckle will remain in this position until such time as change in size is required.

In Fig. 2 of the drawing the gripper 23 is shown in what might be termed a neutral position, however, when the belt ends are coupled together and

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are strained in a direction tending to pull these ends apart, the gripper 23 will be arranged to the right of the showing in Fig. 2, with the belt sharply bent in its passage through the aperture 20 and abutting the end rail 17.

Considering Fig. 2 of the drawing it will also appear that the diameter of the gripper is such as to normally dispose the teeth beyond the ends of the plate 18 or to extend over both of the apertures 19 and 20, whereas in the operation of the gripper, as above stated, one portion will be disposed well above the aperture 20, and the opposed portion of the gripper will be arranged inwardly of the aperture 19 and upon the plate 18. This same relationship and movement of the parts will be true with the other forms of construction illustrated in Figs. 4 to 7 inclusive.

In Figs. 4 and 5 of the drawing is shown a slight modification of the structure illustrated in Figs. 1 to 3. In these figures, 32 represents the buckle frame, similar to the frame 14, and instead of having flat side and end rail members, the side and end rail members are preferably convexed on the outer surface thereof and concaved on the inner surface thereof, as will clearly appear in the side rails 33, shown in Fig. 5, and the end rails 34 and 35, shown in Fig. 4, the latter being equivalent to the rails 16 and 17. With this construction, instead of having a center plate as the plate 18 in alignment with the rails 16 and 17, a center plate 36 is depressed to a degree equal to or at least substantially equal to the central offset portion 37 of a gripper 38, the offset portion 37 being similar to the offset 25. The gripper is further modified by having the peripheral gripper teeth 39 thereof inclined upwardly or disposed angularly to the body portion of the gripper. This offsetting of the teeth will provide a firmer engagement of the gripper with the belt employed, and in Fig. 4, one end portion of a belt is indicated by the reference 40.

By offsetting the plate 36 downwardly, the gripper becomes housed within the outwardly bowed or convexed periphery of the buckle or will be arranged for the most part in the recess surface thereof, as will clearly appear from a consideration of Figs. 4 and 5 of the drawing. This will keep the portion 41 of the belt arranged above the gripper in closer relationship to the border frame of the buckle, and minimize what might be termed the bulging or humping of the belt within the buckle frame.

At 42 is shown a socket member similar to the socket 29, and attached to the gripper 37 through a sleeve construction 43 identical with the coupling as at 26, 27 and 28, and for this reason, no further detailed description is given. The offset plate 36 has an elongated aperture 44 therein similar to the aperture 22, to provide free longitudinal movement of the gripper in the buckle frame.

In Figs. 6 and 7 is shown another form of buckle, wherein the buckle frame 45 has its side walls 46 joined at the ends in curved cross bars 47 and 48, inner surfaces of which are provided with longitudinally spaced teeth 49 and 50. The sides 46 are also joined by a center plate portion 51, the ends of which terminate in curved walls 52 and 53, spaced from the inner tooth edges of the bars 47 and 48 to form the strap or belt receiving openings 54 and 55. The plate 51 includes a longitudinal opening 56 to provide longitudinal movement of the gripper element 57 therewith. The element 57 is substantially iden-

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tical with the element 37 shown in Fig. 2. In other words, the periphery includes circumferentially spaced gripper teeth 58, and the center depressed portion 59 of the gripper has the sleeve extension 60 similar to the extension 43 for attachment of the socket part 61 therewith. As the socket part 61 is similar to the part 29, for this reason, no detailed description of the part is necessary.

Considering the structure of Figs. 6 and 7, it will be apparent that the curvature of the bars 47 and 48 will have a tendency to shape the belt, strap or other member mounted in the buckle to engage a greater number of teeth on the gripper element 57, and while the use of the teeth 49 and 50 are not essential, by including these teeth, a more positive gripping action can be obtained with a belt or strap arranged in the buckle.

In the various forms of buckles disclosed, the belt or strap when mounted in the buckle in the manner indicated, for example in Figs. 2 and 4 of the drawing, will be retained against accidental shifting along the belt or strap, even when the gripper element is maintained in the centralized, or more or less neutral position. However, when a strain is applied to the belt or strap ends, tending to separate the same, the gripper will be moved to the right, as will be apparent from a consideration of Fig. 2 of the drawing, in which the belt end 11, including the stud 12, is indicated in dot and dash lines.

It will also appear that the belt buckle is universal insofar as its mounting on a belt is concerned. In other words, it is immaterial which end of the buckle is directed toward the end of the belt or strap, as both ends are the same and the gripper is capable of movement in the direction of both ends in performing its gripper action.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A buckle comprising an elongated frame, said frame having transverse belt receiving openings in end portions thereof, the frame having an elongated aperture centrally thereof and terminating short of said end openings, a round gripper element, said element having an integral hub portion projecting from the center of said element and arranged and operating in the aperture of said frame in movement of the element longitudinally and rotatably of the frame, the periphery of said element being arranged adjacent the openings in said frame and adapted to grip a belt threaded through the openings in said frame in movement of the element longitudinally of the frame, said element being arranged on one surface of the frame, means attached to said hub and arranged on the other surface of the frame for coupling the buckle with another support and for retaining the element against displacement from the frame, and said element having an offset circumferential edge portion paralleling and spaced away from the adjacent surface of the frame.

2. A buckle comprising an elongated frame, said frame having transverse belt receiving openings in end portions thereof, the frame having an elongated aperture centrally thereof and terminating short of said end openings, a round gripper element, said element having an integral hub portion projecting from the center of said element and arranged and operating in the aperture of said frame in movement of the element

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longitudinally and rotatably of the frame, the periphery of said element being arranged adjacent the openings in said frame and adapted to grip a belt threaded through the openings in said frame in movement of the element longitudinally of the frame, said element being arranged on one surface of the frame, means attached to said hub and arranged on the other surface of the frame for coupling the buckle with another support and for retaining the element against displacement from the frame, the periphery of said element having circumferentially spaced projections, said projections joining the body portion of the element in a circumferential part offset outwardly with respect to the first named surface of the frame, and one wall of each opening in the frame opposite the gripper element having projecting gripper teeth.

3. In a buckle having a frame apertured for threading of a belt therethrough, a gear like gripper element rotatable upon one surface of the frame, the frame having a longitudinal aperture, means extending from the axis of the element into said aperture for rotatably and slidably mounting the element on the frame, said means having a reduced part extending beyond the other surface of the frame, a fastener member attached to the reduced part of said means and disposed on said other surface of the frame, and said fastener member retaining the element against displacement from the frame and having a rigid mounting on the reduced part of said means.

4. In a buckle having a frame apertured for threading of a belt therethrough, a gear like gripper element rotatable upon one surface of the frame, the frame having a longitudinal aperture, means extending from the axis of the element into said aperture for rotatably and slidably mounting the element on the frame, said means having a reduced part extending beyond the other surface of the frame, a fastener member attached to the reduced part of said means and disposed on said other surface of the frame, said member retaining the element against displacement from the frame, said member comprising a resilient stud receiving socket, the first named surface of the frame being depressed to house the major portion of the element therein, and the central portion of the element being depressed to dispose the periphery of said element in spaced parallel relation to the depressed surface of said frame.

5. A belt buckle comprising a frame apertured for threading of a belt therethrough, the frame having an elongated aperture disposed substantially at right angles to the first apertured portion of the frame, a gripper element arranged on one surface of the frame, said element hav-

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ing an integral hub portion extending through said elongated aperture for rotatably and slidably mounting of the element on the frame, said hub portion having a reduced end portion disposed at the other side of the frame, and a snap fastener member mounted on the reduced portion of the hub at the other surface of the frame and engaging the frame to retain said element against displacement from the frame.

6. A belt buckle comprising a frame apertured for threading of a belt therethrough, the frame having an elongated aperture disposed substantially at right angles to the first apertured portion of the frame, a gripper element arranged on one surface of the frame, said element having an integral hub portion extending through said elongated aperture for slidably mounting of the element on the frame, said hub portion having a reduced end portion disposed at the other side of the frame, a snap fastener member mounted on the reduced portion of the hub at the other surface of the frame and engaging the frame to retain said element against displacement from the frame, that part of the frame having the elongated aperture therein being depressed, and the outer portion of said element being raised with respect to the surface of said depressed portion and substantially paralleling the same.

7. In a buckle having a frame with a crosswise aperture at each end for threading of a belt therethrough, a gear-like gripper element slidably and rotatably mounted upon one surface of the frame, the frame having a longitudinal aperture between the crosswise apertures, said gripper element having a centrally located hub extending through the longitudinal aperture, and a snap fastener part surrounding and attached to the protruding part of said hub and bearing directly against the opposite surface of the frame along the sides of said longitudinal aperture to retain the attached gripper element and fastener part in slidable and rotatable relation to the frame.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
887,209	Mattson	May 12, 1908
1,798,677	Johnson et al.	Mar. 31, 1931
1,839,574	Merzinger	Jan. 5, 1932

FOREIGN PATENTS

Number	Country	Date
667,935	Germany	Nov. 23, 1938
688,069	Germany	Feb. 12, 1940