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G. BODEN ET AL
RESILIENT SNAP HOOK
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2,613,422

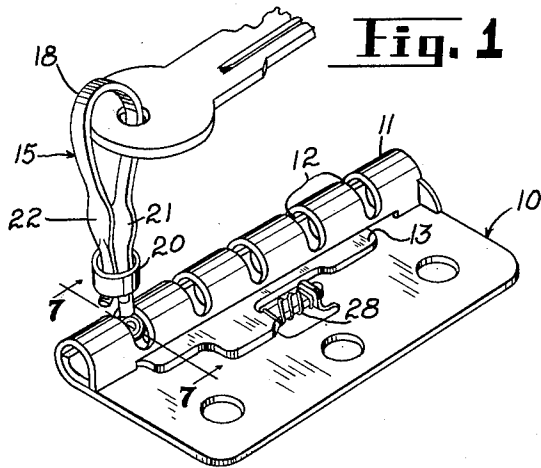


Fig. 1

Fig. 2

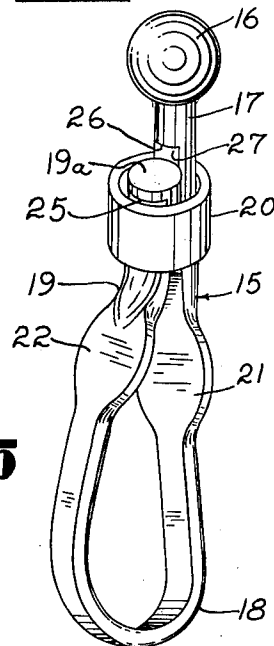


Fig. 3

Fig. 4

Fig. 5

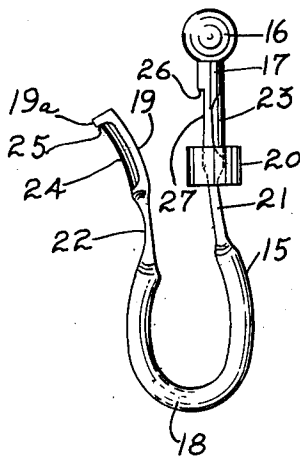
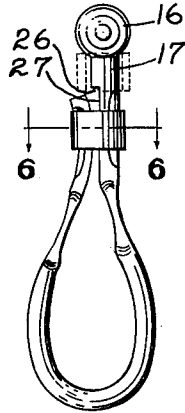


Fig. 6

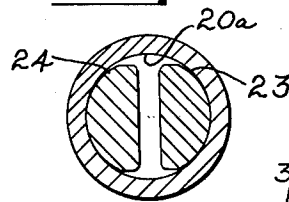


Fig. 7

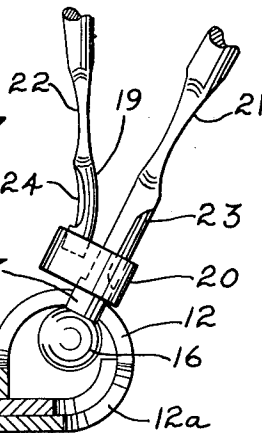
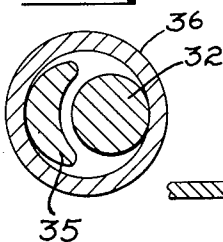
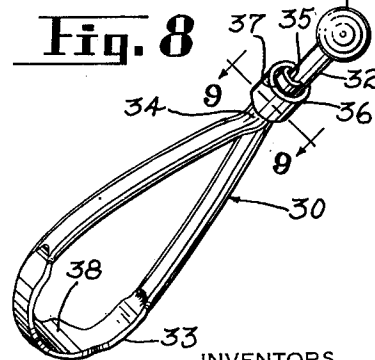


Fig. 8

Fig. 9



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RESILIENT SNAP HOOK

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1 Claim. (Cl. 24—238)

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This invention relates to key retainer loops such as used in connection with various types of key containers, and is an improvement upon applicants' prior application Ser. No. 13,894 filed March 9, 1948. In the referred to application, a key loop is provided having a ball end for swivelly mounting the loop in a key container, and a free end disposed adjacent the neck of said loop and held thereagainst by a sliding sleeve.

One object of this invention is to provide a more positive means for interlocking the sleeve with the free end of the loop.

Another object is to restrict the movable positions of the sleeve upon the loop so as to eliminate interference with the keys when assembled or removed from the loop.

These and other objects and features of this invention will appear from the following description thereof in which reference is made to the figures of the accompanying drawing.

In the drawing:

Fig. 1 is a perspective view of a typical key plate such as attached to a flexible key container with the improved key retainer loop attached thereto.

Fig. 2 is an enlarged perspective view of one key retaining loop, per se, with the ring in locked position.

Fig. 3 shows a side elevational view of the key loop with the ring unlatched and the free end open in position to receive or remove a key.

Fig. 4 is a front view of the same.

Fig. 5 is a view similar to Fig. 3 but showing the ring in locked position.

Fig. 6 is a cross-sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a vertical sectional view taken along the line 7—7 of Fig. 1 and showing how the ring of the loop cooperates with a portion of the supporting member to prevent the ring from being slipped completely off the free end of the loop.

Fig. 8 is a perspective view of a modified form of key retaining loop, and

Fig. 9 is a cross-sectional view of the same taken along the line 8—8 of Fig. 8.

Referring now to the drawing in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 designates a key retainer plate having a rolled barrel portion 11 at one end with transverse slots 12 cut therein and typical of such a plate is that disclosed in the Geo. Boden Patent 2,114,172, dated April 12, 1938. As more fully described in said Boden patent, there is provided a slide lock-

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ing plate 13 that serves to block off the enlarged openings 12a disposed in the rear part of the barrel portion and which openings connect with transverse slots 12.

The key retainer loop, generally indicated by the numeral 15, consists of a ball head 16, an integral neck 17 of round stock in cross section and joining the head 16 to a U-shaped loop 18. The opposite end of the loop 18 terminates in a free end 19 that is slightly arcuate shape in its longitudinal direction and reversely bent to the shape of the loop 18.

The key retainer loop 15 is preferably made from round wire stock and is flattened on its inner and outer surfaces for substantially its entire length except at the neck 17 and for a very short terminal section of the free end 19. This flattening of the wire stock to form the loop improves the resilient characteristics of the loop for reasons as will appear later.

The loop 18, in its normal set position, is such that the free end 19 is spaced a sufficient distance from the connecting neck portion 17 of the loop so as to allow a key to be easily slipped into place on the loop, after which the loop is locked by a tubular locking sleeve 20 that is slidably fitted on the neck 17 and adapted to be slipped over the free end 19 of the loop when said free end is pressed inwardly against said neck 17.

The size of the locking sleeve is such that it cannot slip over the ball head 16 and is held within confined sliding movement upon the neck 17 by a flattened or compressed widened portion 21 at a point where the neck 17 joins the loop 18.

On the free end 19 there is another flattened or compressed widened portion 22 that conveniently serves as a finger piece when urging the free end 19 of the loop 18 against neck 17 for the purpose of removing or assembling the ring 20 over said free end 19. The opposite sides of the neck 17 and free end 19 of the loop are swaged into arcuate surfaces as at 23 and 24 respectively so as to conform more or less to the interior diameter 20a of said locking ring 20. (Note Fig. 6.)

The tip end 19a of the free end 19 of loop, is left in original state of the round wire stock from which the loop is made, and thus provide for a shoulder 25 adjacent the upper end of the arcuate swaged portion 24. It will be understood that by reason of the resilient tension of the loop when in closed position, as shown in Fig. 5, the free end 19 is resiliently urged outwardly against the inside of the lock ring 20 when in locked position. However, if there are any forces, tending to slip the ring off the free end of the loop, it

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will be prevented by the ring 20 abutting the shoulder 25 as a positive stop.

As best seen in Fig. 5, the flattened surface on the interior of loop is carried up through the neck to a point just below the head 16 having a shoulder as at 23, thus a clearance space 27 is provided in order to provide for ample room into which the free end 19 of the loop is pressed when assembling or disassembling the ring 20 over said free end 19.

In the operation of the device, when it is desired to assemble a key or remove one, assuming the loop 18 is closed as shown in Figs. 2 and 5, the locking ring 20 must first be removed from the loop free end 19 by manually pressing the latter inwardly against the clearance space 27 of the neck 17 and force the locking ring 20 upwardly to the dotted line position of Fig. 5 to clear the tip end 19a of the loop 18 whereupon the free end of the loop will spring out to the open position as shown in said Fig. 3. In this open position of the loop 15 one or more keys can be easily removed or assembled upon the loop after which the loop can be closed and locked in the same manner as described above. With the keys upon the loop 18 that later may then be assembled to the key retainer plate 10 by first slipping the locking plate 13 to one side to clear the enlarged opening 12a whereupon the head 16 of the loop 15 may be inserted through the opening and the loop hinged or swung over to a position above the plate 10 after which the locking plate 13 may be released and returned under the influence of a spring 23 to cover the enlarged opening 12a.

The loop 15 and ring 20 are so dimensioned that it will be impossible for the ring 20 to accidentally slip over and off the tip end 19a of the loop 15 when assembled to the barrel 12 of the retainer plate 10, even though ring 20 might per chance slip out from underneath the stop shoulder 25 and over the tip end 19a. (Note Fig. 7.) This additional locking feature is effected by reason of the fact that the length of the loop neck 17 is such that the distance between the tip end 19a of the loop and the adjacent surface of the barrel 12 is less than the axial length of the locking ring 20.

A modified form of key retainer loop 30 is illustrated in Figs. 8 and 9. This modified form differs in one essential from the first form illustrated in that the loop is made of round wire stock throughout substantially its entire length. The loop 30 has the usual round head 31 at one end and integral with a connecting neck 32. At the mid U-shaped section or bend 33 of the loop, the stock is flattened on opposite sides of and through substantially the entire length of said bend 33. The bend 33 is preferably flattened on a plane transverse to the plane of the loop 30 so as to harden and effect a greater degree of resiliency at that portion of the loop.

The design of the loop 30 is similar to the first form in that the bend 33 is set so that the free end 34 of the loop is normally spaced a short distance from the neck 32. The free end 34 of the loop 30 is made concavo-convex in

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cross section, as at 35 (see Fig. 9), so that the concave side will fit about the neck 32 when pressed thereagainst and the convex side will more or less conform to the interior surface of the cylindrical lock ring 36 which is similar to the ring 20 in the first form and functions in the same manner. A locking shoulder 37 is provided on the convex side of section 35 adjacent to the tip end thereof, which is similar to the shoulder 25 of the first form. It will be understood that the relative dimensions of the neck 32 and concave-convex section 35 are such that they can be compressed together and interfitted close enough so that the ring 36 can clear the shoulder 37.

In order to permanently maintain the locking ring 36 upon the loop 30, the mid portion of the flattened bend 33 is flattened to a greater degree to produce a widened portion 38 of a width greater than the interior diameter of said ring 36.

While two forms of the invention are shown in the drawing and herein described, it will be apparent that other changes and modifications may be made in the design, construction and arrangement of the elements of the combinations without departing from the spirit of the invention.

We claim:

A key retainer loop for a key container comprising a U-shaped resilient loop having a neck on one end with an enlarged head thereon and an opposite free end normally held in spaced relation to said neck, a tubular locking ring slidable endwise on said neck and having a smaller internal diameter than the diameter of said head, said ring being engageable over the free end of said loop to hold said free end in locked position adjacent said neck, and a small section of said loop having a flattened portion located between said neck and the bend of said loop having a width greater than the interior diameter of said ring to confine the slidable movement of said ring between said head and said flattened portion and in easy operating position to the free end of said loop.

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MORGAN V. DUELL.

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