Jan. 12, 1943. S. SEGAL 2,307,808

RING LOCK

Filed Oct. 31, 1940 2 Sheets-Sheet 1

Fig. 1.

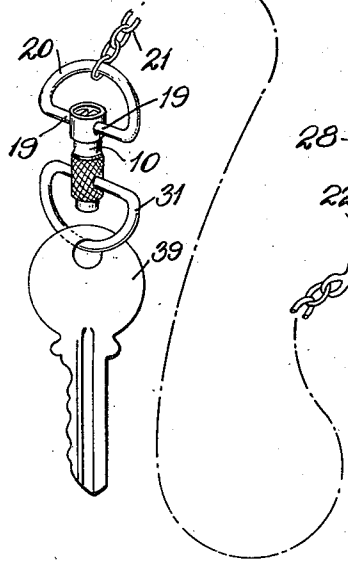


Fig. 2.

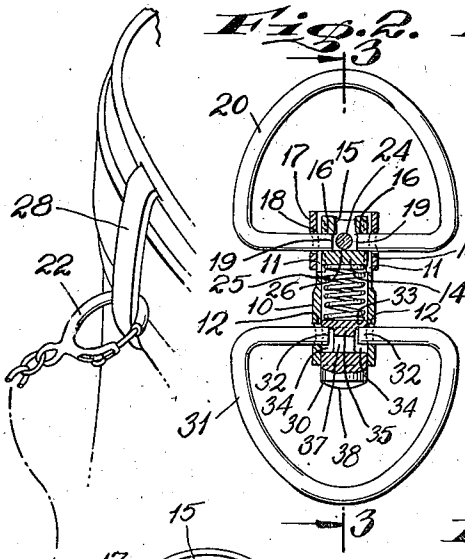


Fig. 3.

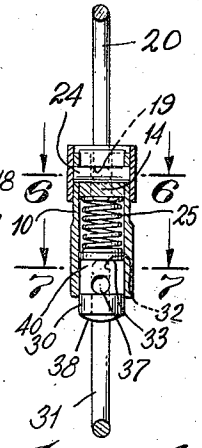


Fig. 5.

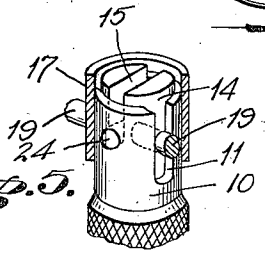


Fig. 4.

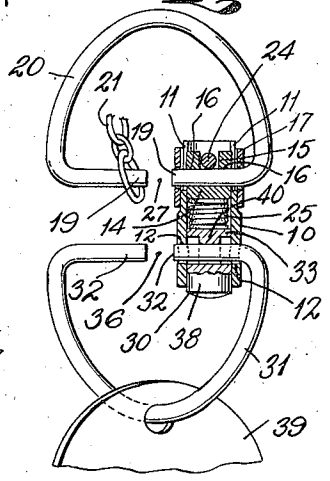


Fig. 8.

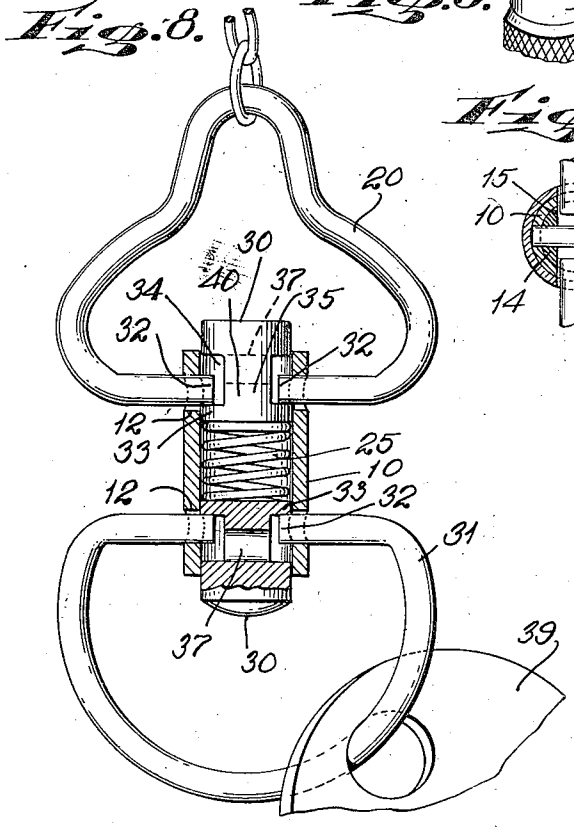
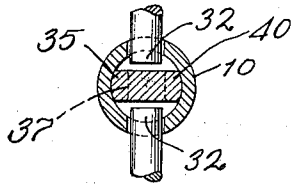


Fig. 6.

Fig. 7.



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Fig. 9.

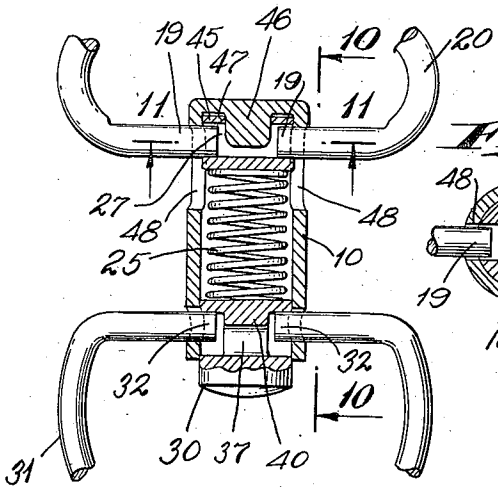


Fig. 11.

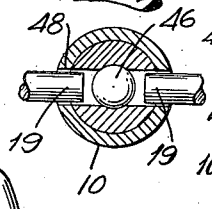


Fig. 10.

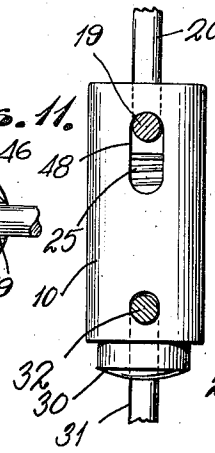


Fig. 15

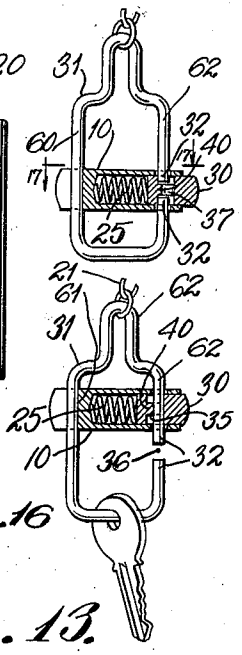


Fig. 16

Fig. 12.

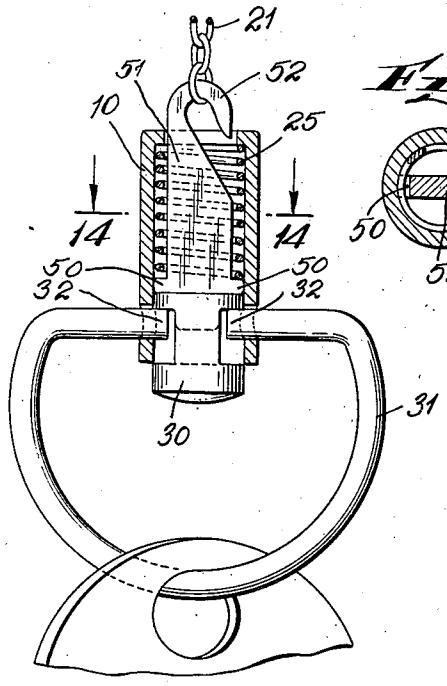


Fig. 14.

Fig. 13.

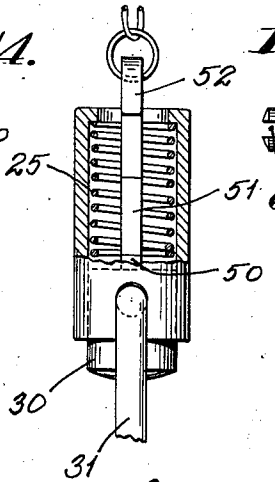
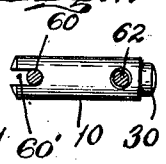


Fig. 17



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UNITED STATES PATENT OFFICE

2,307,808

RING LOCK

Samuel Segal, Brooklyn, N. Y.

Application October 31, 1940, Serial No. 363,759

13 Claims. (Cl. 24—238)

The present invention deals with key chains and more particularly is directed to novel locking means for key rings carried by the chains. Important objects and salient functional and structural features of the invention will be apparent from the following detailed description considered with the accompanying drawings wherein:

Fig. 1 is a perspective view of a key chain, particularly illustrating the key ring or holder carried thereby.

Fig. 2 is an enlarged sectional view of the ring holder.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 2 but illustrating the rings of the holder shifted to open positions.

Fig. 5 is a fragmentary perspective view of the ring holder shown partly in section.

Figs. 6 and 7 are sectional views on the line 6—6 and 7—7 of Fig. 3.

Fig. 8 is a partly sectional view of a modified ring holder.

Fig. 9 is a sectional view of another modified ring holder.

Fig. 10 is a sectional view on the line 10—10 of Fig. 9.

Fig. 11 is a sectional view on the line 11—11 of Fig. 9.

Fig. 12 is a sectional view of another form of holder.

Fig. 13 is a broken side view of Fig. 12.

Fig. 14 is a sectional view on the line 14—14 of Fig. 12.

Fig. 15 illustrates another ring holder shown partly in section.

Fig. 16 is a view similar to Fig. 15 depicting the loop carried by the ring holder unlocked, and

Fig. 17 is a sectional view on the line 17—17 of Fig. 15.

The ring holder according to Figs. 1–7 is characterized by a hollow cylindrical casing 10 having at its upper end alined slots 11 and at its lower end the alined openings or bearings 12.

Slidably mounted and guided within the bore of casing 10 is a locking cylindrical tumbler 14 having the diametrically arranged slot or channel 15 communicating with the alined openings 16 disposed perpendicularly to slot 15.

Surrounding casing 10 is the vertically displaceable cylindrical sleeve 17 which includes alined openings 18 disposed in alinement with alined openings 16 of tumbler 14 and these openings are adapted to slidably guide terminals 19 of the bail or ring 20 swingably attached to the chain 21 having a conventional locking ring 22 which may be conveniently attached to a belt strap 23 of a garment as is well understood.

Fixedly carried by the upper end of the tubular casing 10 is the diametrically arranged stop pin 24 which is normally disposed below but in vertical alinement with slot 15 of tumbler 14 and in the diametrically extending bore defined by the openings 16 and in between terminals 19 of the ring 20.

Within the bore of the casing 10 is the helicoidal spring 25 which holds the bottom part of the bore 26 defined by openings 16 against stop pin 24 fixed to casing 10.

By the present arrangement terminals 19 of the swingable bail or ring 20 slidably fit into alined openings 16 and 18 and also slidably extend through the alined slots 11 and may be said to couple the outer slidable sleeve 17 with the inner slidably guided tumbler 14. Thus with the bail 20 or loop in the position illustrated in Fig. 2, terminals 19, although disposed on both sides of the fixed pin 24 which serves as a stop for these terminals are in fact in openings 16 and are adapted to be shifted downwardly relative to the casing 10 when the bail 20 has been likewise shifted downwardly relative to the casing 10 for actuating the outside sleeve 17 away from the upper part of the casing 10. Or in other words if the pin 24 is between terminals 19, pin 24 prevents lateral displacement of ring 20 to preclude the projection of gap 27 defined by terminals 19 outside of the holder until ring 20 is depressed which action concomitantly depresses both the outer sleeve 17 and inner tumbler 14 away from the top of casing 10 in which instant spring 25 is compressed by tumbler 14 against the locked lower tumbler 30.

Having depressed the bail 20 to shift abutment or stop pin 24 into the upper part of slot 15, bail 20 becomes free of the locking or stop pin 24 and consequently may be shifted laterally of the casing 10, the tumbler 14 and sleeve 17 whereby ends 19 are arranged to one side of and outside casing 10 (Fig. 4). It follows that the chain 21 or even keys or the like may be readily threaded on bail or ring 20, thereafter the bail is moved in a direction for shifting the spaced terminals 19 within the interior of the casing 10 and when gap 27 becomes alined with pin 24, spring 25 expands shifting both tumbler 14 and sleeve 17 upwardly towards the upper end of the casing 10 but relative to terminals 19. Hence the bail although pivotally or rotatably sustained rela-

tive to the casing 10 in the alined openings or bearings 16 and 18, is now locked by pin 24 against lateral displacement until the bail is again actuated for depressing both the sleeve and tumbler simultaneously as hereinbefore described for unlocking the bail.

The lower bail or loop 31 has its ends or terminals 32 swingably or rotatably disposed in the lower openings or bearings 12 in the casing 10, which ends are swingably retained in such relation by the shoulders 33 of the locking depressible tumbler 30 when these ends 32 are disposed in the grooves or sockets 34 therein on both sides of the attenuated web 35 which constitutes means to prevent gap 36 to be shifted out of the casing 10 when opening or slot 37 in web 35 is completely out of registration with the terminals 32.

Normally web 35 has its opening 37 completely out of registration with terminals 32 of the bail (Fig. 2). Hence the bail may be swingably locked by shoulders 33 of the shiftable tumbler 30 due to the action of the expanded spring 25. However the tumbler or manipulator 30 is slidably guided in the bore of casing 10 and may be shifted against the resistance of spring 25 upon the application of finger pressure to head 38 thereof. Hence ends 32 are caused to line up completely with opening or slot 37 and consequently the bail becomes unlocked and may be shifted to arrange gap 36 out of casing 10 in which case a key 39 may be quickly threaded on the bail. Thereafter the bail may be again arranged to its locked position by shifting the same to dispose terminals 32 inwardly of the casing 10 at which time lip 40 of web 35 automatically snaps into gap 36 whereby terminals 32 rotatably straddle stop lip 40 at which time spring 25 expands thus holding tumbler 30 yieldingly against terminals 32.

In the form according to Fig. 8 the upper and lower rings or bails are swingably or rotatably retained by slidable tumblers of the type shown at the lower part of Fig. 2 and the same may be said of the lower rings illustrated in Figs. 9, 10, 12 and 13. However in the form according to Figs. 9 and 10, the upper bail has its ends 19 retained in a displaceable tube 45 normally held raised by spring 25. In this raised relation projection 46 of the casing 10 is disposed in opening 47 of tube 45 and since projection 46 extends into gap 27 of the terminals 19 and since the latter normally straddle the projection or lip 46, the bail may be considered as locked against lateral displacement, preventing at this time the disposition of gap 27 outside of casing 10.

In instances where it is desired to unlock the bail or loop to permit the insertion of a key thereon or the removal of a key therefrom, the bail 20 is first depressed. Hence ends 19 move downwardly in guide slot 48 of the casing and tube 45 is depressed against the resistance of spring 25. The opening 47 also leaves lip or projection 46. It follows that the ends 19 of the bail or loop are now free to be slidably moved out of the floating tube 45 to be arranged outside of the casing in which instant a key may be threaded on the bail or removed therefrom as desired. Pursuant to this operation, the ends of the bail are moved inwardly of the casing at a time when the spring is held depressed so that the ends 19 may be arranged at the ends of tube 45 after which the bail is allowed to retract whereby projection 46 interlocks with the wall of opening 47, hence locking the bail 20 against lateral displacement, thus guarding against accidental unlocking thereof.

According to the embodiment shown in Figs. 12–14, the loop or ring is swingably or rotatably sustained by casing 10 by the shiftable controlled locking tumbler of the type shown in connection with Figs. 1–9, however it is held normally yieldingly against the rotatable terminals or ends 32 by the helicoidal spring 25 acting against flanges or shoulders 50 of the stem 51 which is suitably fixed to the manipulator or tumbler 30. Spring 25 surrounds the attenuated stem 51 which is vertically guided in the bore of casing 10. The stem also includes a hook 52 on which one end the chain 21 is retained as desired.

In the form according to Figs. 15 and 16, the hollow casing 10 or locking means for the bail or loop 31 extends widthwise thereof and is vertically guided by the uninterrupted arm 60 fitting into slot or opening 60' at one end of the casing and by the interrupted arm 62 embodying the spaced terminals 32. In Figs. 15 and 16, the locking tumbler 30 is of the type illustrated in Figs. 1–14 and the upper portion 40 of the web thereof interlocks with terminals 32. Where access is desired to gap 36, tumbler 30 is shifted inwardly against the resistance of spring 25, thus removing portion 40 out of gap 36. Thereafter the slidably guided locking casing 10 is shifted upwardly along arms 61 and 62, thus positioning gap 36 to one side of the casing hence allowing the insertion or removal of a key on or from loop 31. Subsequently the casing is bodily shifted downwardly and the tongue 40 automatically snaps into gap 36, thus causing the casing to be locked against effective unlocking displacement relative to the loop or ring which embodies at its upper end the contracted inverted U-shaped portion on which chain 21 is threaded. However at the completion of the locking relation of tongue or web 40 of the tumbler with the terminals 32 of the loop, casing 10 is substantially at the lower part of the loop.

In all the forms illustrated, a loop or ring is normally held interlocked with a part of a web or attenuated part thereof fitting removably into a gap defined by adjacent free terminals of the loop and in all instances the web extends from a spring controlled tumbler slidably arranged within a hollow casing and is adapted to be conveniently manipulated by finger pressure against the resistance of helicoidal spring means appropriately retained within the casing.

Various changes may be in details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof inherent therein.

I claim:

1. In combination, a tubular casing having spaced bearings, a tumbler slidably guided in said casing and including spaced sockets, a web portion intermediate said sockets and having an opening smaller than said sockets and communicating therewith, a loop having terminals defining a gap and movably disposed in said bearings and extending into said sockets for removably straddling said web, and spring means for normally holding corresponding walls of said sockets yieldingly against said terminals to dispose a portion of said web adjacent said opening in said gap and in between said terminals to prevent the projection of said gap outside of said casing whereby said terminals are out of alinement with said opening.

2. In combination, a tubular casing having

spaced bearings, a tumbler slidably guided in said casing and including spaced sockets, a web portion intermediate said sockets and having an opening smaller than said sockets and communicating therewith, a loop having terminals defining a gap and movably disposed in said bearings and extending into said sockets for removably straddling said web, and spring means for normally holding corresponding walls of said sockets yieldingly against said terminals to dispose a portion of said web adjacent said opening in said gap and in between said terminals to prevent the projection of said gap outside of said casing, said tumbler having a manipulating portion normally extending outside of said casing and adapted to be shifted towards said spring and against the resistance of the latter to arrange said opening substantially in horizontal axial alinement with said terminals whereby said loop may be bodily displaced relative to said casing to arrange said gap outside of said casing.

3. In combination, a tubular casing having spaced bearings, a tumbler slidably guided in said casing and including spaced sockets, a web portion intermediate said sockets and having an opening smaller than said sockets and communicating therewith, a loop having terminals defining a gap and rotatably disposed in said bearings and extending into said sockets for removably straddling said web, and spring means for normally holding corresponding walls of said sockets yieldingly against said terminals to dispose a portion of said web adjacent said opening in said gap and in between said terminals to prevent the projection of said gap outside of said casing whereby said terminals are out of horizontal axial alinement with said opening, said tumbler having a manipulator adapted to be actuated against the resistance of said spring for shifting said portion out of straddling relation with said terminals to arrange said opening substantially in axial horizontal alinement with said terminals to permit the projection of said gap outside of said casing.

4. In combinaaion, a tubular casing having spaced bearings, a tumbler slidably guided in said casing and including spaced sockets, an attenuated web portion intermediate said sockets and having an opening smaller than said sockets and communicating therewith, a loop having alined terminals defining a gap and rotatably disposed in said bearings and extending into said sockets for removably straddling said web, and spring means confined within said casing for normally holding said sockets yieldingly against said terminals to dispose a portion of said web adjacent said opening in said gap and in between said terminals to prevent the projection of said gap outside of said casing whereby said terminals are out of horizontal axial alinement with said opening.

5. In combination, a tubular casing having spaced bearings, a tumbler vertically guided in said casing and including spaced sockets, a web portion intermediate said sockets and having an opening, a swingable loop having terminals defining a gap and rotatably disposed in said bearings and extending into said sockets for removably straddling said web, a helicoidal spring within said casing for normally holding corresponding walls of said sockets yieldingly against said terminals to dispose a portion of said web adjacent said opening in said gap and in between said terminals to prevent the projection of said gap outside of said casing whereby said terminals are out of horizontal axial alinement with said opening, and manipulator means carried by said tumbler and in part projecting out of said casing.

6. In combination, a loop having an uninterrupted arm and an interrupted arm having spaced terminals defining a gap, a casing slidably guided by said arms, and slidable means telescopically carried by said casing having spaced sockets for removably receiving said terminals and having an attenuated tongue intermediate said sockets and adapted to be projected into said gap to interlock with said terminals to prevent displacement of said casing to either side of said gap.

7. In combination, a loop having an uninterrupted arm and an interrupted arm having spaced terminals defining a gap, a casing slidably guided by said arms, slidable means telescopically carried by said casing and having a slotted tongue adapted to be projected into said gap to removably interlock with said terminals to prevent displacement of said casing to either side of said gap, and spring means within said casing to sustain said tongue interlocked with said terminals.

8. In combination, a loop having an uninterrupted arm and an interrupted arm having spaced terminals defining a gap, a casing slidably guided by said arms, a slidable tumbler carried by said casing and having an attenuated part adapted to be removably projected into said gap to interlock with said terminals to prevent displacement of said casing to either side of said gap, and spring means within said casing and cooperating with said tumbler to yieldingly retain said attenuated part interlocked with said terminals.

9. In combination, a loop comprising an uninterrupted arm and an interrupted arm substantially parallel to said uninterrupted arm and having spaced terminals defining a gap, a casing having ends slidably and rectilinearly guided by said arms, a tumbler slidably guided by said casing and having an attenuated part adapted to be projected into said gap to interlock with said terminals to prevent displacement of said casing to either side of said gap and having an opening adapted to be shifted to be completely in alinement with said terminals to permit said gap to be shifted out of said casing, and spring means within said casing for resisting slidable displacement of said tumbler relative to said casing.

10. In combination, a loop having an uninterrupted arm and an interrupted arm having spaced terminals defining a gap, a casing slidably guided by said arms, slidable means telescopically carried by said casing and having spaced sockets for severally removably receiving said terminals and having a web intermediate said sockets, said web having an opening smaller than and in communication with said sockets for severally threadably receiving said terminals, and spring means within said casing and cooperating with said slidable means for normally urging the latter towards said terminals, said slidable means adapted to be manually controlled against the resistance of said spring means for arranging said opening substantially in axial alinement with said terminals for threadably receiving one of said terminals to permit the projection of said gap outside of said casing, said casing in said axial alinement of said terminals and opening adapted to be shifted towards said gap to permit said web to enter said gap and automatically interlock said terminals to prevent displacement of said casing relative to said loop.

11. In combination, a loop having an uninterrupted arm and an interrupted arm having spaced terminals defining a gap, a casing slidably guided by said arms, slidable means carried by said casing and having spaced sockets for severally removably receiving said terminals and having an attenuated web intermediate said sockets, said web having an opening smaller than and in communication with said sockets for severally threadably receiving said terminals, and helicoidal spring means within said casing and cooperating with said slidable means for normally urging the latter towards said terminals, said slidable means adapted to be manually shifted against the resistance of said spring means for arranging said opening substantially in axial alinement with said terminals for threadably receiving one of said terminals to permit the projection of said gap from the inside to the outside of said casing, said casing in said axial alinement of said terminals and opening adapted to be shifted towards said gap to permit said web to enter said gap and automatically interlock said terminals to prevent displacement of said casing relative to said loop, said spring means automatically shifting said slidable means in a direction away from said terminals on the interlocking of the latter and said web.

12. In combination, a loop having spaced terminals defining a gap, a casing having a bore and including alined bearings removably receiving said terminals, a tumbler movably guided by the wall of said bore and in part projecting out of said casing, said tumbler having spaced sockets registering with said bearings and a web including an opening smaller than said sockets and in communication therewith, said sockets removably receiving said terminals for interlocking the latter with said web to prevent the projection of said gap out of said casing, and spring means within said bore adapted to be actuated upon manipulation of said part towards said terminals whereby said opening and terminals are disposed substantially in axial alinement to permit the projection of one of said terminals through said opening and both of said terminals out of said casing to render said gap accessible at one side of said casing.

13. In combination, a loop having spaced terminals defining a gap, a casing having an axially arranged bore and including alined bearings removably receiving said terminals, a tumbler movably guided by the wall of said bore and in part projecting out of said casing, said tumbler having spaced sockets registering with said bearings and an attenuated web including an opening relatively smaller than said sockets and in communication therewith, said sockets removably receiving said terminals to arrange said web in said gap whereby said terminals removably straddle said web to prevent the projection of said gap out of said casing, and helicoidal spring means within said bore adapted to be actuated upon manipulation of said part towards said bearings whereby said opening and terminals are disposed substantially in axial alinement to permit the projection of one of said terminals through said opening and both of said terminals out of said casing to render said gap accessible at one side of said casing.

SAMUEL SEGAL.