W. A. SCHULER.

FLEXIBLE KEY RING.

APPLICATION FILED JUNE 7, 1918.

1,315,528. Patented Sept. 9, 1919.

Fig. 1

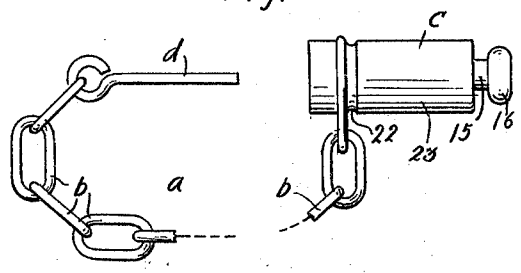


Fig 3.

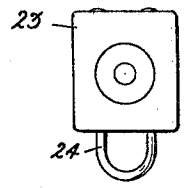


Fig. 2

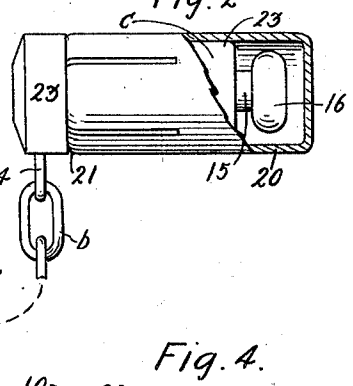


Fig. 4.

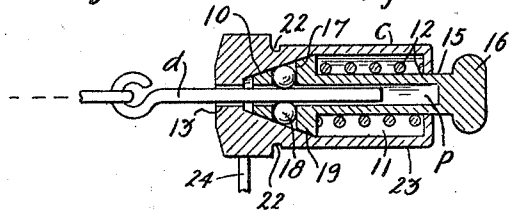
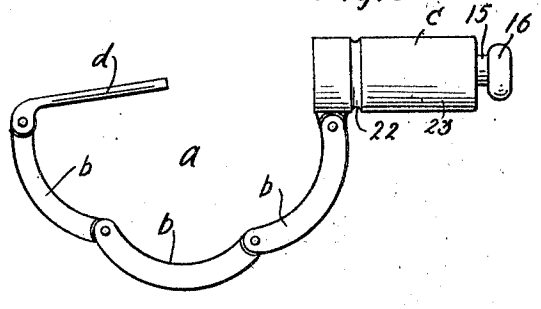


Fig. 5



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FLEXIBLE KEY-RING.

1,315,528. Specification of Letters Patent. Patented Sept. 9, 1919.

Application filed June 7, 1918. Serial No. 238,635.

To all whom it may concern:

Be it known that I, WILLIAM ANTON SCHULER, a citizen of the United States, residing in New York city, county and State of New York, have made certain new and useful Improvements in Flexible Key-Rings, of which the following is a specification.

This invention relates to flexible key rings, in which a series of short links or sections are linked, hinged or articulated together to be threaded through the loops or eyes of a series of keys for locks, such as door-locks and furniture locks; the two terminals of this articulated ring are fixed, respectively, to a locking device or lock, consisting of two separable, complementary parts or members.

The object of the invention is to provide an improved form of key ring and to safeguard the lock against accidental release of keys. The accidental release of keys may frequently occur, as by entangling the keys with the operating button, when such a key ring without a suitable lock guard is carried in the pocket. The flexibility of the key ring permits the keys to arrange themselves in the pocket of the owner in a suitable manner and the locking device is of such size as to take up a minimum space. One of the complementary parts of the lock is in the form of a pin. The other part of the lock, consisting of a cylinder, piston, spring and jamming device, is adapted to receive and retain the pin. In this latter part the pin passes into the tubular piston through a perforation in the cylinder, said piston having a tapering shoulder, spring-pressed into engagement with a tapering bore in the cylinder, and there is a jamming device, like a metal ball of, say, polished steel, independently movable, and locked between said pin, when in position, and the wall of the tapered bore. The piston has a free terminal with an exposed button, adapted for manipulation by the finger of the hand, all so arranged that the spring normally jams pin, intermediate ball and wall together; this jams and locks the pin. Withdrawal of the piston compresses the spring and releases the ball and pin. Over this operating button is placed a protective means, such as an exterior cylinder, removably supported on the main cylinder.

In the accompanying drawings Figure 1 shows the articulated ring, with a two-part lock; Fig. 2 is a side elevation showing also a protective means; Fig. 3 is an end elevation; Fig. 4 shows the locking device in section; Fig. 5 shows a modification.

In Fig. 1, there is a flexible key ring *a*, consisting of a series of short sections *b*, like the links of a chain, or a series of short metal plate sections hinged together, or articulated, in any known manner. There is a locking device in two parts *c*, *d*, for separably uniting terminals of ring *a*. The two complementary parts *c* and *d* are, respectively, fixed to the terminal sections of ring *a*. The part *c* includes main cylinder 23, its piston 15, controlling spring 12 and ball or balls 18. The part 23 is preferably cylindrical, of metal; it has a tapering bore 10, Fig. 4, and chamber 11, is adapted to receive piston 15, and helical spring 12; the end of part 23 is perforated, as at 13, in line with a perforation *p* in piston 15; piston 15 terminates at one end in a button 16, adapted for finger control or manual manipulation; the opposite end of piston 15, has a shoulder 19, tapered to conform to the taper 10 in the wall of part 23, and there is a cylindrical chamber 17, in shoulder 19, adapted to carry a steel ball 18, or a plurality of such balls, the arrangement being such that the pressure of spring 12 on shoulder 19, forming part of piston 15, will jam ball 18, between surface 10, and pin *d*, when pin *d* is in position in perforation *p*, so that on compressing spring 12, by withdrawing piston 15, slightly, pin or part *d* will be released to be withdrawn.

Means are provided to avoid accidental withdrawal of piston 15, by mechanical interference. In Fig. 2, this means consists of a cylindrical cover 20, crimped at 21 to take position in a groove 22, in cylinder 23, to which staple 24, carrying one end of sectional ring *a*, is fixed.

In Fig. 4, the cross-section shows spring 12, the shoulder 19 forcing balls 18 to jam pin *d*, which is in position, and hold it firmly until spring-pressure is removed by withdrawing piston 15 against the spring-pressure.

In Fig. 5, arc-shaped plate links *b*, are shown pivoted or articulated to form the ring *a*, for the keys, and terminating in pin *d*.

It results from the described structural arrangement that a series of keys placed or threaded on the flexible, articulated ring *a*, (composed of short articulated sections)

and retained by means of the locking device *c*, *d*, may be quickly removed or supplemented by separating the complemetary parts of the lock which is readily accomplished by a slight retracting movement of the finger applied on button 16.

What I claim is:

1. In a key ring the combination of a plurality of metal sections hinged together and a locking device for separably uniting the terminals of said series, said device consisting of two complementary parts, each part forming one terminal of the series of sections, one part having an aperture of tapered diameter adapted to receive the other part, an independent, movable ball within the aperture, located between said parts, in contact with both said parts, a spring adapted to jam the ball and retain said parts, means for releasing said parts and a guard to protect said means against accidental interference while permitting manual operation.

2. In a key ring the combination of a plurality of metal sections hinged together and a locking device for separably uniting the terminals of said series, said device consisting of two complementary parts, each part forming one terminal of the series of sections, one part having an aperture of tapered diameter adapted to receive the other part, an independent, movable ball within the aperture, located between said parts, in contact with both said parts, a spring adapted to jam the ball and retain said parts, means for releasing said parts and a mechanical device attached to one of said parts, adapted to prevent accidental interference and permit the manual operation of the other part to remove spring-pressure.

3. In a key ring the combination of a plurality of metal sections hinged together and a locking device for separably uniting the terminals of said series, said device consisting of two complementary parts, each part forming one terminal of the series of sections, one part having an aperture of tapered diameter adapted to receive the other part, an independent, movable ball within the aperture, located between said parts, in contact with both said parts, a spring adapted to jam the ball and retain said parts, means for releasing said parts and a device removably secured to one of said parts, adapted to prevent accidental release of the lock, but permitting manual operation of said releasing means when said device is removed.

4. In a key ring the combination of a plurality of metal sections hinged together and a locking device for separably uniting the terminals of said series, said device consisting of two complementary parts, each part forming one terminal of the series of sections, one part having an aperture of tapered diameter adapted to receive the other part, an independent, movable ball within the aperture, located between said parts, in contact with both said parts, a spring adapted to jam the ball and retain said parts, means for releasing said parts, and a supplemental section of rigid material removably attached to the cylinder, adapted to permit release of spring pressure.

5. In a key ring a plurality of articulated metal sections and a locking device for separably uniting the terminals of said series, said device consisting of two complementary parts, each part forming one terminal of the series of sections, one of said parts having an aperture of tapered diameter adapted to receive a tapered plunger, an independent, movable ball within the aperture, located between said parts, in contact with both said parts, a spring actuated plunger having a right line, reciprocating movement adapted to jam the ball and retain said parts in engagement, and a removable guard inclosing the free end of said plunger adapted to protect said plunger from accidental interference.

WILLIAM A. SCHULER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."