

No. 672,174.

Patented Apr. 16, 1901.

D. A. LEONARD.
PERMUTATION LOCK.

(Application filed Sept. 8, 1900.)

(No Model.)

Fig. 1.

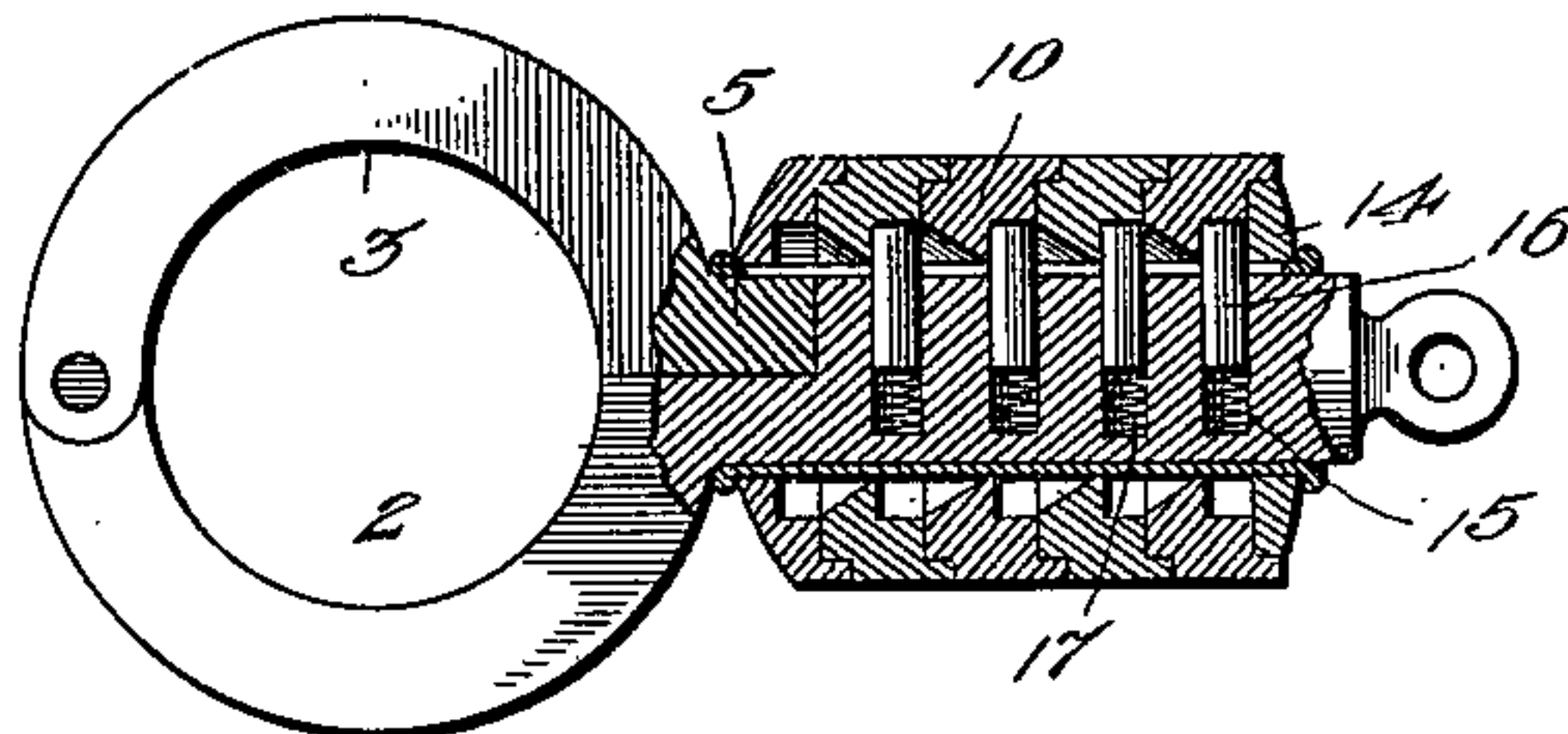


Fig. 2.

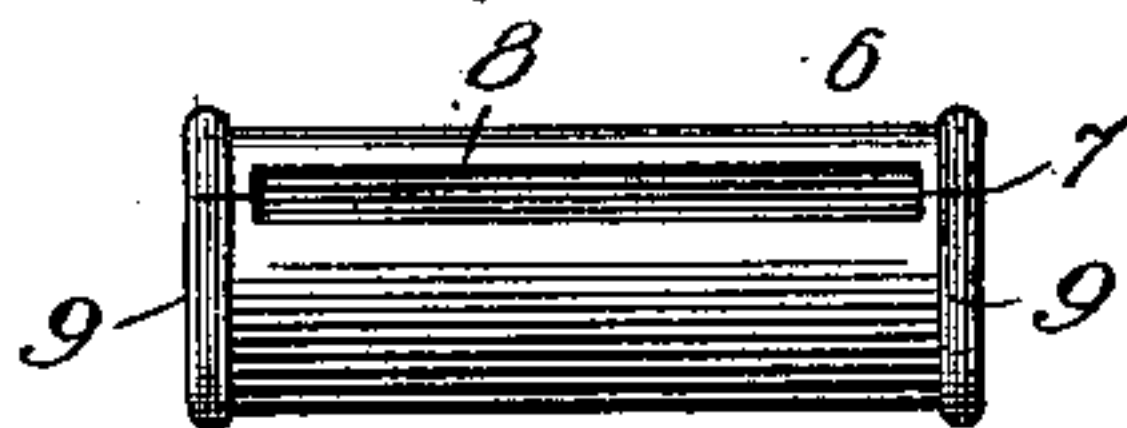


Fig. 3.

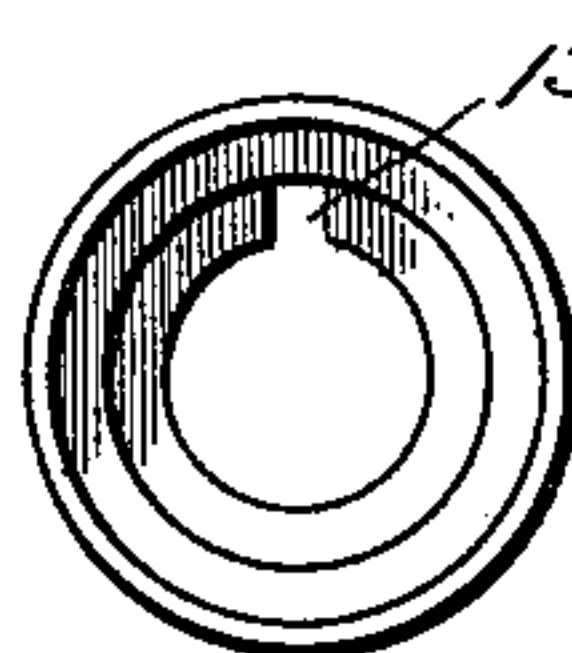


Fig. 4.

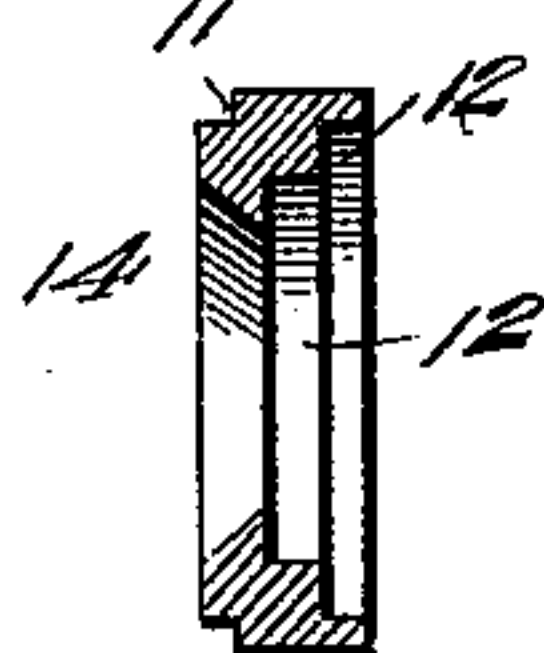


Fig. 5.

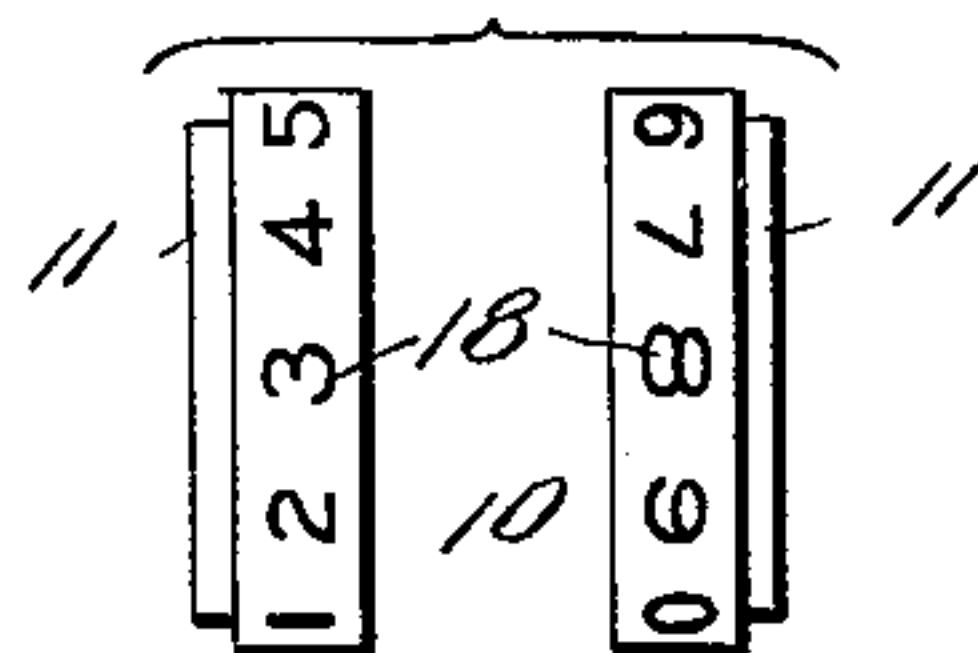
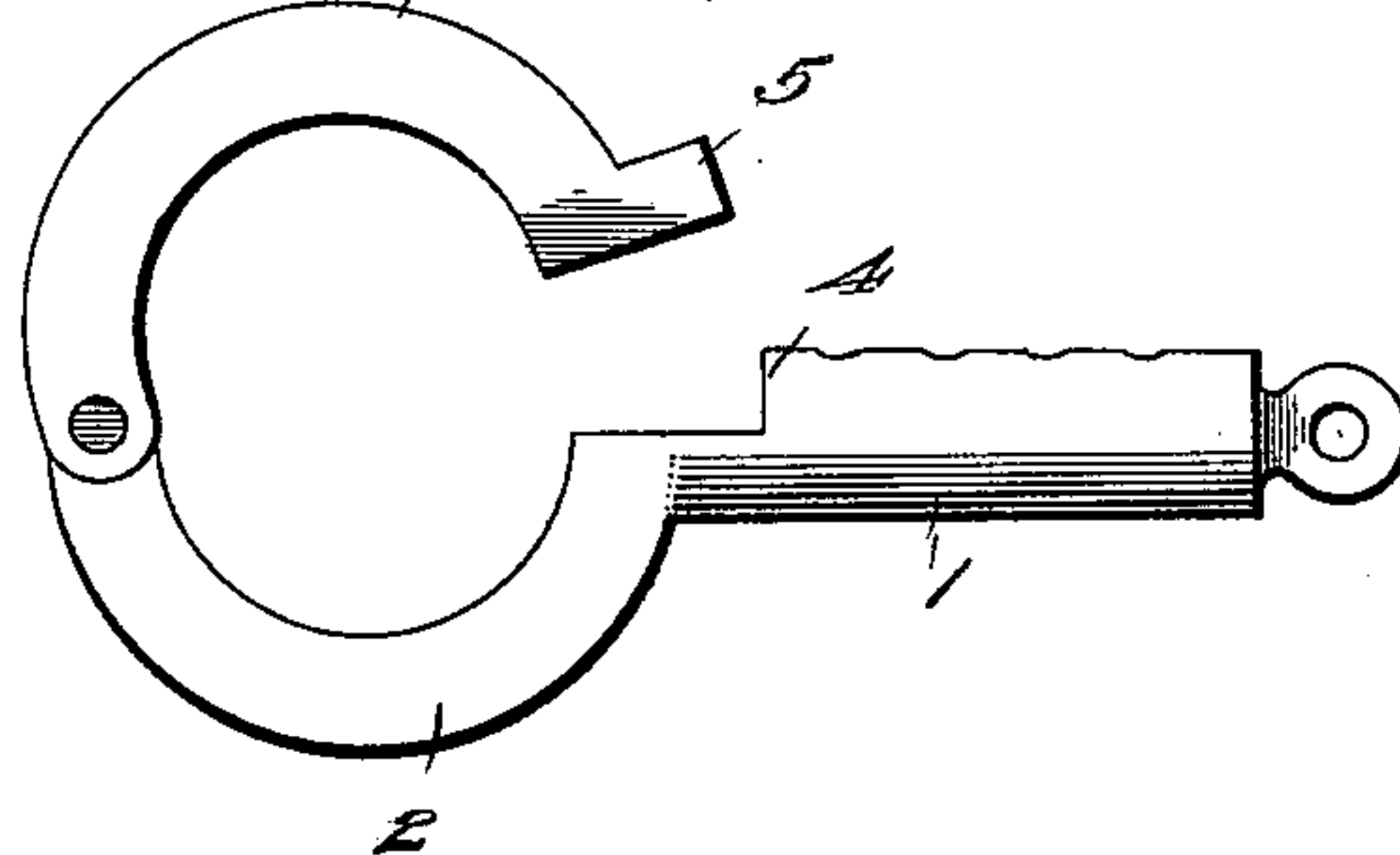


Fig. 6.



Witnesses

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PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 672,174, dated April 16, 1901.

Application filed September 8, 1900. Serial No. 29,399. (No model.)

To all whom it may concern:

Be it known that I, DAVID A. LEONARD, a citizen of the United States, residing at Shannon, in the county of Carroll and State of Illinois, have invented certain new and useful Improvements in Permutation - Locks, of which the following is a specification.

This invention relates to improvements in permutation-locks, and is more particularly designed as an improvement in locks of this class designed as padlocks and locks for use upon bicycles.

One object of the present invention is to provide an improved form of lock of simple and durable construction and one which is so constructed as to dispense with the necessity of using rivets on a lock for the purpose of holding the parts together.

A further object of the invention is to provide a lock comprehending in its structure such an arrangement as to preclude the possibility of the same being picked or otherwise tampered with.

With these and other objects in view, which will appear as the nature of the improvements is better understood, the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation, partly in section, of a permutation-lock constructed in accordance with the present invention. Fig. 2 is a side elevation of a locking-sleeve for the tumbler-rings. Fig. 3 is a face elevation of one of the tumbler-rings. Fig. 4 is a transverse sectional view thereof. Fig. 5 is a side elevation illustrating the tumbler-rings assembled, and Fig. 6 is a similar view of the body of the lock with the hasp portion thereof open.

Referring to the drawings, the numeral 1 designates a cylindrical shank, which shank forms the body of the lock, and said shank is provided at one of its ends with a semicircular arm 2, to which arm is pivoted a similarly-shaped hasp 3, the shank 1 at the juncture of the arm 2 therewith being provided with a rabbeted portion 4, in which fits the contact-head 5, carried at the free end of the hasp 3. When the head 5 lies within the rab-

beted portion 4, the same forms a continuation of the shank 1 and is adapted to be engaged by the cylindrical locking-sleeve 6, slidably mounted upon said shank, as clearly shown in Fig. 1. The sleeve 6 is preferably made of thin metal, such as brass, and is divided at one of its sides, as at 7, and formed at said divided portion is a longitudinal slot 8, beads 9 being formed at the ends of the sleeve 6 in order to prevent displacement of the tumbler-rings when the same have been mounted on said sleeve.

The numeral 10 designates a series of tumbler-rings, each of which is provided with a rabbeted portion 11, and formed in one face of each of said rings is a pair of annular grooves 12, the inner one of which is of less diameter than the outer one and having a radial slot 13 formed therein. The opposite face of each of the rings 10 is beveled, as at 14, and said beveled portion extends to the inner edge of the inner groove 12. It will be observed, however, that the tumbler which lies immediately adjacent to the locking-head 5 is closed at its outer face and abuts against the adjacent bead 9 of the locking-sleeve 6, and after the rings 10 have been assembled upon said sleeve the locking-washer 14 is sprung into place and fits within the outer groove 12 of the last ring, or that ring which is the most remote from the hasp 3. It will also be observed that by reason of the rabbeted portions 11 of the rings 10 said rings snugly fit within each other, and in order to assemble said rings upon the locking-sleeve 6 the edges of the latter along the divided portion are sprung together and the rings slip into place, together with the washer 14, after which pressure is removed from the sleeve 6, whereupon the edges thereof spring apart, and thus secure the rings in place.

The shank 1 is provided at suitable intervals with a series of transversely-extending recesses 15, and arranged in said recesses is a series of locking-pins 16, which are normally pressed outwardly through the medium of coil-springs 17, arranged in the inner ends of the recesses 15. The outer ends of the pins 16 are adapted to project through the slot 8 of the sleeve 6 and normally lie within the inner grooves 12 of the tumbler-rings 10, and by reason of this arrangement it is obvious

that said rings 10 are incapable of any longitudinal movement whatever upon the shank 1 until the combination is set, and in order to provide for such combination each of the tumbler-rings 10 has upon its periphery a series of characters 18, which in the present instance are shown as numerals arranged from "0" to "9."

The manner of operating the herein-described lock is as follows: With the parts in the position shown in Fig. 1 and it is desired to open the lock, the same may be accomplished by bringing the characters constituting the combination in line with a mark carried by the tumbler 10 immediately adjacent to the hasp. In the present case the combination is 3142, and when these characters have been brought in alinement with said mark the radial slots 13 will have been brought into longitudinal alinement. By applying pressure to the tumbler-rings 10 in the direction away from the hasp 3 said rings will slide along the shank 1, together with the sleeve 6, and the pins 16 will pass through the slots 13, the extent of such sliding movement being sufficient to withdraw the end of the sleeve 6 adjacent to the locking-head 5 from the latter, and said hasp will therefore be capable of being opened. To close the hasp and secure the same in locked position, it is simply necessary to move the rings 10, together with the sleeve 6, toward the hasp after locking-head 5 has been positioned in the rabbeted portion 4, the pins 16 being forced into the recesses 15 by the beveled faces 14 of the rings 10, and thereby permitting the movement of the rings mentioned, such movement being accomplished irrespective of the position of the radial slots 13 in their relation to the pins 16.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a lock of the class described, the combination with a shank having a hasp pivoted

thereto, said hasp being provided with a locking-head, of a locking-sleeve slidably mounted upon said shank and provided with a slot, said sleeve being adapted to engage said locking-head for retaining the hasp in closed position, a series of spring-pressed pins arranged in said shank and projecting through the slot of said sleeve, and a series of tumbler-rings mounted upon said sleeve and each provided with a radial slot adapted to receive said pins when the combination is set, whereby the sleeve is adapted to be freed from engagement with the locking-head, said tumbler-rings being also provided with beveled faces for permitting the return of the tumbler-rings and the locking-sleeve into engagement with the locking-head for locking the hasp in closed position.

2. In a lock of the class described, the combination with a shank, having a hasp pivoted thereto, said hasp being provided with a locking-head, of a locking-sleeve slidably mounted upon said shank and provided with a slot, spring-pressed pins arranged in said shank and projecting from said slot, and a series of tumbler-rings mounted upon the locking-sleeve, and each provided at one of its faces with a series of grooves, one of said grooves being of less diameter than the other and provided with a radial slot, said slot being adapted to receive said pins when the combination is set, whereby the locking-sleeve of the tumbler-rings are adapted to be moved away from the hasp to release the latter, the tumbler-rings being also provided with beveled faces adapted to depress the pins, whereby the locking-sleeve is adapted to be brought into engagement with the locking-head for retaining the hasp in closed position.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID A. LEONARD.

Witnesses:

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