

J. H. KINSMAN.
PAD-LOCK.

No. 185,758.

Patented Dec. 26, 1876.

Fig. 1.

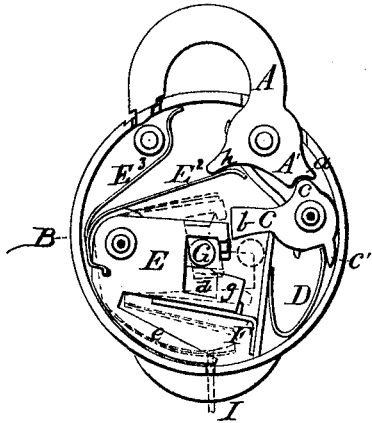


Fig. 2.

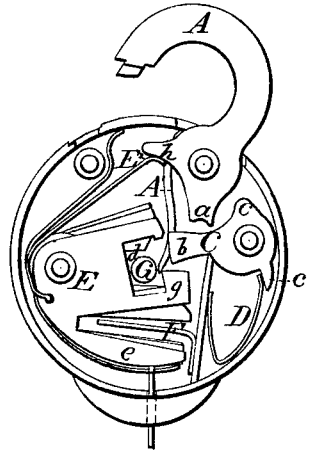


Fig. 3.

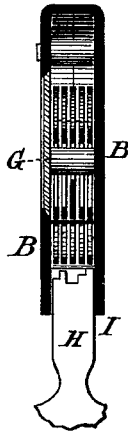


Fig. 4.

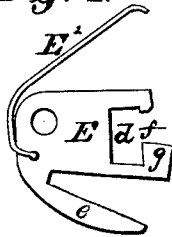


Fig. 5.

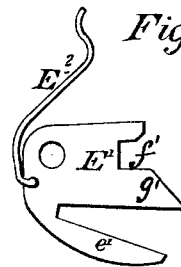


Fig. 6.

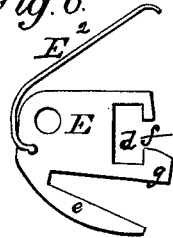
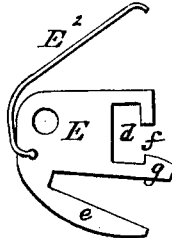


Fig. 7.



Attest:

Philip M. Hinkle.

Inventor:

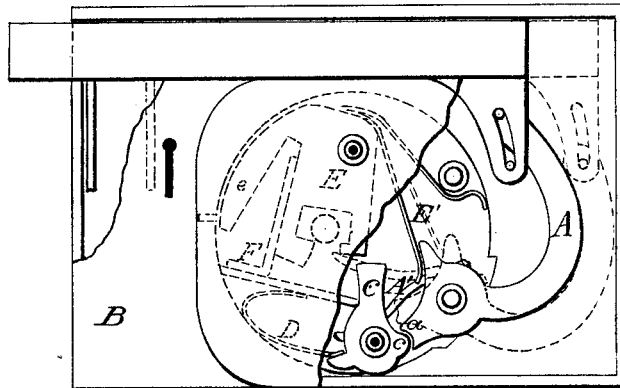
John H. Kinsman.
per *L. Deane.*
H. V.

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Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN H. KINSMAN, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN PADLOCKS.

Specification forming part of Letters Patent No. **185,758**, dated December 26, 1876; application filed May 24, 1875.

To all whom it may concern:

Be it known that I, JOHN H. KINSMAN, of Salem, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Locks; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of a circular padlock with the upper outer shell removed, showing the parts in position when the device is locked. The dotted lines indicate the movement of the tumblers and independent roller in unlocking. Fig. 2 is a like view, showing the parts in position when the device is unlocked. Fig. 3 is a central section through the tumblers and key-hole, showing chamber or seat formed by the recesses in the tumblers and the independent roller therein. Figs. 4, 5, 6, and 7 show the different forms of the tumblers (with the springs attached) now used to illustrate the invention. Fig. 8 is a plan view of the invention applied to a door-lock.

This invention relates to improvements in locks; and it consists more particularly, first, in so constructing and arranging the several parts of the lock, that when locked the hasp or shackle and dog are completely disconnected from the tumblers, and can only be acted upon and unlocked by the interposition of an independent roller; second, in a series of tumblers or movable pieces each having a portion of the interior cut away, the said openings thus formed uniting when the several tumblers are placed in position upon each other, to form a cavity, recess, or chamber in which the aforesaid roller rests when the device is locked, and from which it is adapted to fall by gravity when the device is being unlocked; third, in a guard plate or partition extending from the upper to the under plate of the lock-case, and interposed between the tumbler legs or projections and body of the tumblers, and serving to prevent any tampering with the interior part of the lock; fourth, in the combination, with the series of tumblers adapted to form, by their peculiar construc-

tion and arrangement, a cavity or recess, a roller in such a manner that it can only be released from the cavity or recess by the operation of the proper key in the right position upon the legs or projections of the tumblers; fifth, in the combination, with the heel of the hasp or shackle, of an arm adapted to automatically restore the roller to position in the recesses of the tumblers whenever the device is unlocked; sixth, in the combination of the tumblers, having suitable springs, and adapted to provide in certain positions a suitable seat or recess with the roller and hasp or bolt heel-spring and connecting mechanism—all as will now be more specifically and in detail set out and explained.

In the drawings, A denotes the hasp or shackle suitably pivoted in the case B. In the projection of its heel is a concavity, *a*, in the form of an arc of a circle, adapted to fit over the projection *c* on the pivoted dog C, which projection has a convexity in form of an arc of a circle of like radius with the circle aforesaid. By means of the exact correspondence in shape and size, when the device is locked the convexity *c* smoothly and closely fits into the concavity *a*, and forms a firm stay and binder to the heel of the hasp or shackle, so that the same cannot be moved. This pivoted dog C is kept steadily in place by a spring, D, which presses against the spur *c'* of the dog, and in this position the arm *b* of said dog projects horizontally over a space at the mouth of the seat or chamber (to be presently described) formed in the tumblers E E'. There may be two or more of these tumblers, though in my present device, illustrating the invention, I have shown five. These tumblers are arranged and pivoted in the case at any desirable point, so as to have suitable play during the process of locking and unlocking the device. Each one has on one side, now shown at the lower side, a leg or projection, *e*, of like shape and size, and projecting at a small angle from the tumbler.

As placed in the lock case a fixed guard-plate, F, projects into the spaces or angles between the said legs and tumblers, and serves to limit the upward and downward movement of the tumblers and legs, because in said movement the one or the other strikes upon

the upper or under side of said plate F. This plate is wide enough to extend from the upper to the under plates of the lock-case, and may be affixed to another plate set at right angles to it, the upper edge thereof constituting the stay of the dog in its down movement in locking the device, and the inner face toward the tumblers, making the bounds for the movement of the independent roller G as it falls from its seat or chamber in the tumblers, as will presently be explained; or, instead of two plates for this purpose, a single piece of metal, suitably bent, will answer for the same purpose.

The several tumblers E are made of thin pieces of metal stamped or cut out, each having a hole in one end, through which the pivot passes, the leg or projection *e* aforementioned, the opening *d*, and the mouth or opening *f* in the front edge. Excepting in the position of this opening *f*, these tumblers E are nearly alike. Ordinarily a single die can be used to stamp them out, the shape and contour of the said opening *f* being afterward fashioned by hand or by suitable tools.

Generally the opening *d* in each tumbler is made oblong, the front wall or boundary of said opening *d* being cut away sufficiently to form a mouth for the passage in or out of the independent and movable roller G; but this mouth *f* is not in the same place in each tumbler.

In addition to the regular tumblers E, there is also a guard-tumbler, now shown as the central tumbler, and marked E¹, which has simply an opening, *f*¹, in its edge, of about the same size as the mouths in the tumblers E. Its lower jaw *g*¹ serves as a guide to conduct the roller G into the mouths *f* of said openings *d* when the proper key has placed them in a position to receive it.

In some instances it may be found advantageous to apply and use more than one guard-tumbler; but any such adaptation would be merely the counterpart of what I have already described.

When the several tumblers are placed the one upon the other, the legs and pivot apertures of all will coincide, while the openings *d* serve to make a seat or chamber of sufficient size to contain the roller G when the device is locked, while the uncut portions of the front edges form fingers or guards, which hold said roller in place.

To the rear edges of the tumblers are affixed the springs E², all of which, excepting the guard-tumbler spring E³, have their ends extending up and resting against a projection, *h*, of the heel of the hasp, and serve to actuate the tumbler, and also to throw out the hasp. The end of spring E³ of the guard-tumbler rests against the side of the case or lock; but this arrangement is a mere matter of mechanical skill, and may be varied to suit convenience.

To the projection *h* of the heel of the hasp or shackle is attached an arm, A', the use and

office of which are to return the roller G' to its seat or chamber after the operation of unlocking the device has been performed. The key is usually a flat piece of metal with its upper end or edge, as the case may be, serrated or indented to correspond with the tumblers, and adapted to be fitted in key-hole I, and cause such movement of the tumblers as will bring the mouths *f* of the several openings *d* in line with each other, and open a passage to the seat or chamber formed as aforesaid by said openings *d*. This lock may be of any suitable shape or form, square, oblong, round, or elliptical. In some of these, as shown in Fig. 8, it may be necessary to adjust the bolt to the hasp or shackle; but all this is mere detail of construction, and falls within the province of the workman in constructing the device above described.

As thus made, combined, and arranged, the operation of my said device will be readily understood. When the device is locked the roller G is held in its seat or chamber by the uncut portions of the front edges of said tumblers. The key being inserted and pressed upward or turned while the lock is held or fixed edgewise, the mouths *f* being downward or on the under side of said seat or chamber, the mouths will so coincide as to form a passage through which the said roller G falls, and it then comes against the inner face of the guard-plate F; then, by the continued motion of the key upon the tumblers, the upper edges of the lower jaws *g* of the tumblers, impinging upon said roller, cause it to press against the projecting arms *b* of the dog C until said dog rises far enough to release the convexity *e* from its seat in the concavity *a* on the heel of the hasp or shackle. At this moment the tumbler-springs E, operating on the projection *h* of said heel, throw back the hasp. In this movement of the heel the arm A' has returned the said roller G to its seat.

The roller G may be in shape cylindrical, or a ball or sphere.

Having thus described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the hasp or shackle, the dog, the roller, and the tumblers, whereby when the device is locked the hasp or shackle and the dog are completely disconnected from the tumblers, substantially as described.

2. The combination of the tumblers, each having an opening, *d*, with the roller G, said openings forming a seat or chamber for the reception of the roller, substantially as and for the purposes set forth.

3. In combination with the guard-plate F, extending from the upper to the under plate of the lock-case, the tumbler having legs or projections, substantially as described.

4. In combination with the dog, the roller G, adapted to operate in connection therewith and with the tumblers, substantially as described.

5. The combination of the arms A', on the heel of the hasp or shackle, with the roller G and the tumblers, substantially as set forth.

6. The combination of the tumblers provided with suitable springs, and otherwise constructed as set forth, with the roller G, hasp or shackle A, arm A', dog C b c c, and spring D, substantially in the manner, and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN H. KINSMAN.

Witnesses:

H. T. TAGGART,
JOHN W. PILLING.