2 Sheets—Sheet 1.

# C. C. DICKERMAN.

## Locks.

No. 204,139. Patented May 28, 1878.

Fig. 1.

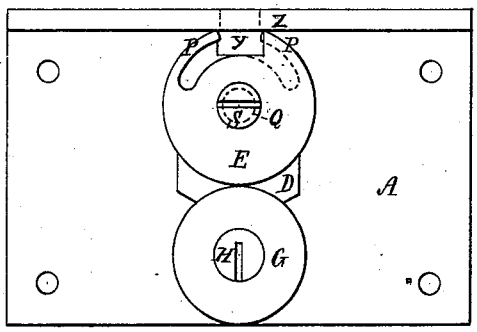



Fig. 2.

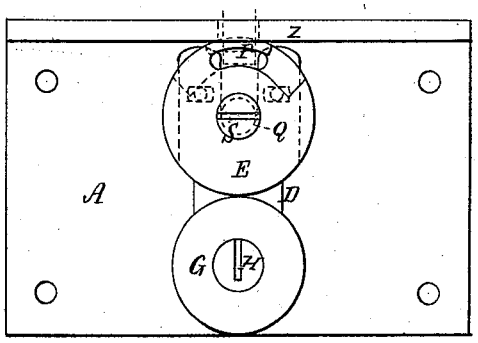



Fig. 3.

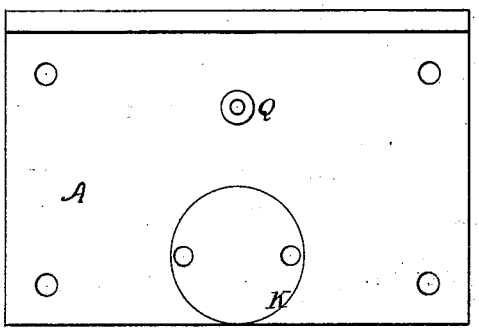



Fig. 4.

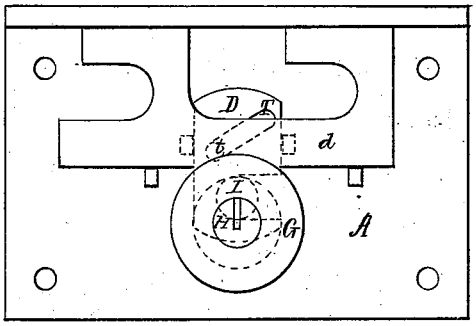



Fig. 5.

Fig. 9

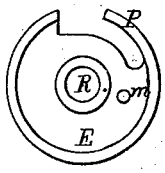



Fig. 8.

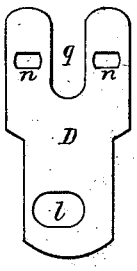
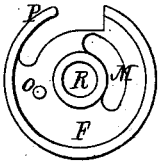



Fig. 10



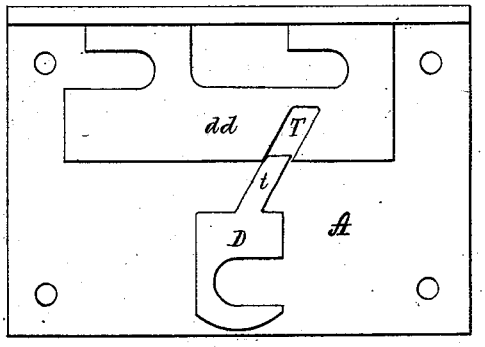




Fig. 6.

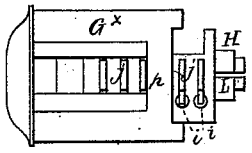
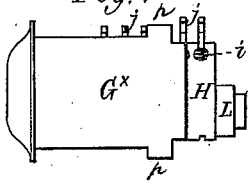



Fig. 7.




Witnesses.
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2 Sheets—Sheet 2.

# C. C. DICKERMAN.

## Locks.

No. 204,139. Patented May 28, 1878.

FIG. 1

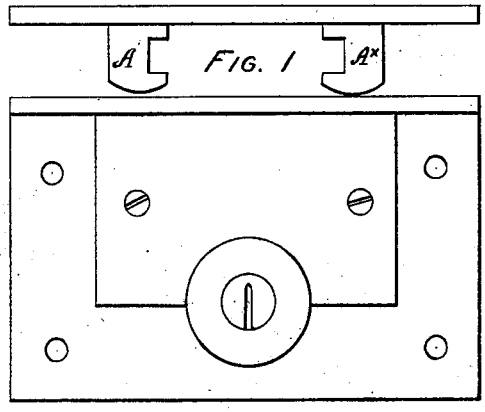



FIG. 2

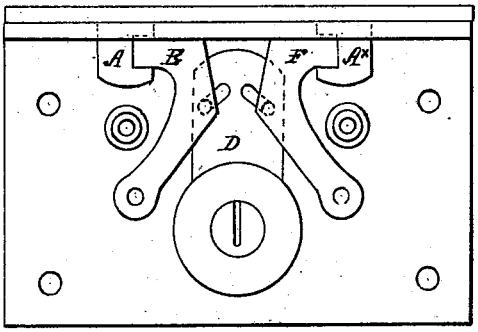



FIG. 10

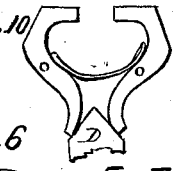



FIG. 3

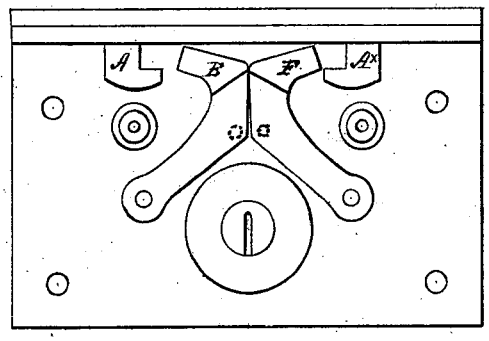



FIG. 5

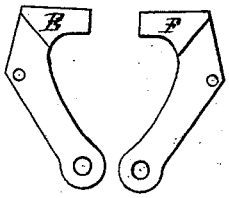



FIG. 6

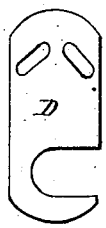



FIG. 7


FIG. 8

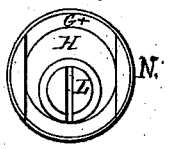



FIG 4

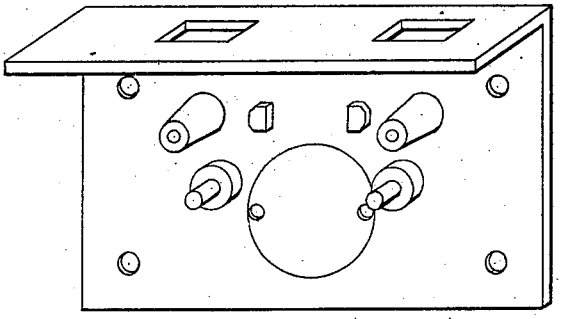
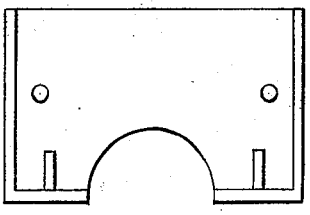


FIG. 9



WITNESSES.

H. C. Stratton.

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Chas. C. Dickerman

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# UNITED STATES PATENT OFFICE.

CHARLES C. DICKERMAN, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **204,139,** dated May 28, 1878; application filed September 20, 1875.

*To all whom it may concern:*

Be it known that I, CHARLES CUSHING DICKERMAN, of the city of Boston, county of Suffolk, and State of Massachusetts, have invented a new and Improved Lock, of which the following is a specification:

The nature and object of the invention is to provide a cheap and simple device by which the rotation of a boss placed eccentrically upon the end of a rotating cylinder or the face of a rotating plate may effect the advance or recession of a bolt, of whatever nature the bolt may be, whether rotating or acting in a straight line.

My device is specially adaptable to the lock with serrated key patented by Henry S. Shepardson, January 18, 1870, and my drawings in part include the Shepardson device. The remainder of the devices relate to certain details of construction hereinafter more particularly explained.

In Plate I all the caps of the lock-case are removed. Figure 1 is a view of a lock with rotary tumblers when unlocked. Fig. 2 is a view of the same locked. Fig. 3 shows the escutcheon-groove, as explained hereinafter. Figs. 6, 7, 8, 9, and 10 show, in detail, some internal parts of the lock shown in Figs. 1 and 2. Figs. 4 and 5 show optional modifications of my lock. Plate II shows divers optional modifications of my lock and details of the same, hereinafter more particularly and in full explained.

I now confine myself to the devices shown in Plate I.

In the drawings, Plate I, A, Figs. 1, 2, 3, 4, and 5, is the lock-case. G, Figs. 1, 2, and 4, is the escutcheon-case containing the escutcheon. $G^{\times}$, Figs. 6 and 7, is the escutcheon without the case. This escutcheon-case G and escutcheon $G^{\times}$, with its plug or tumbler holder H, sliding tumblers *j*, and springs *i*, key-slot and key, are not of my invention, and are fully described, with the mode of operation of these conjoined devices, in United States Patent issued to Henry S. Shepardson, January 18, 1870, and therefore need not be more fully described here.

I proceed to describe the features of this lock which are of my own invention.

In Fig. 3 is seen, at K, a circle described on the inner surface of the lock-case A, which circle marks the course of a groove in the inner face of the lock-case, into which, when my lock is put together, is sunk the inner end of the cylinder G, which constitutes the escutcheon-case. It has heretofore been customary to fasten the escutcheon-case simply to the plain smooth inside surface of the lock-case.

The advantages obtained by the adoption of my escutcheon-case groove are numerous. In the first place, a firm bearing of the escutcheon-case upon the inner surface of the lock-case is obtained, thus making a more substantial lock. Next, in the manufacture without my groove, the operative must place the escutcheon-case with the utmost exactitude, so that the bolt-propeller D, hereinafter described, may not be impeded in its action by friction against the sides of the slot in the end of the escutcheon-case G, through which it passes, and with my groove he has only to place the escutcheon-case in the groove, and it is instantly exactly fitted, and thus a great economy of time results.

Another advantage of my groove is that I use only two screws instead of four, which number has heretofore been used.

My groove affords that security against lateral displacement which has heretofore been securable only through a multiplication of screws. I thus secure greater economy of manufacture in the items both of labor and material.

Another advantage is in the item of greater neatness of appearance of my lock—a point well known to be of great importance in its effect on purchasers.

My escutcheon differs from the escutcheon invented and patented by Shepardson, as above stated, in this particular: In his escutcheon the slots for the protrusion of the sliding tumblers *j*, called the "escutcheon-tumbler slots," (seen in Fig. 6,) are continued to the extreme right-hand end of the escutcheon. The cylinder which forms the escutcheon is thus divided into two portions, united only at their bases. The two parts are therefore liable to be either drawn apart or pressed together, in the latter case hindering the rotation of the escutcheon $G^{\times}$ in its shell N, and in either case interfering with the proper action of the sliding tum-

blers *j*, which disadvantageous effect is produced in this manner.

The sliding tumblers *j* are made of exactly the length of the diameter of the inside longitudinal cavity of the escutcheon G×, and their normal working requires that when the appropriate key is inserted, and under no other conditions, the outer ends of these sliding tumblers *j* shall reach exactly to the line described by the circle of the inside cavity or cylindrical hole of the escutcheon. If they reach beyond on either side, the plug or tumbler holder cannot rotate. If they fall short of these lines, as the teeth of the obtusely-serrated slip of metal which forms the key are graduated in length to the exactness of a very small fraction of an inch, it will readily be seen that a key other than the appropriate one might be capable of locking or unlocking the lock.

I obviate all these disadvantages in this manner: In Figs. 6 and 7 it is seen that in my escutcheon the escutcheon-tumbler slot is not continued to the extreme right-hand end of the escutcheon, but, stopping a short distance from that end, leaves an unremoved portion of the cylinder, which forms the escutcheon, at the points *p p*, Fig. 7. (*p*, Fig. 6.) Thus the two main portions of the escutcheon can neither diverge nor be pressed together. I do not always put my bar *p* at the extreme end of the escutcheon, but sometimes a little distance from it.

In Fig. 8, Plate II, is seen a view of the inner end—the device being unscrewed from the lock-case—of the plug or tumbler holder H. L, Figs. 6 and 7, Plate I, and Fig. 8, Plate II, is the plug-boss, being a projection in the form of a solid cylinder from the inner end of the plug. It is seen in Fig. 6, Plate I, and Fig. 8, Plate II, to be slotted. The slot, however, is not essential to this plug-boss, being made by reason of the exigency of the adaptation of the tool used in cutting the key-slot, and in the drawing it simply shows the course and location of the key-slot. In Fig. 8, Plate II, this plug-boss is seen to be disposed upon the inner end of the plug eccentrically. When the plug, &c., are fixed in their appropriate place on the lock-case, this plug-boss protrudes into the slot *l* in Fig. 8, Plate I, (to which plate solely allusion is henceforth made till otherwise mentioned.)

Fig. 8 is a view of the bolt-propeller, which is a plate of metal of shape as seen in the drawing, and is marked D in Figs. 1, 2, and 8, and is also seen in other forms in Figs. 4 and 5. This bolt-propeller lies upon the inner face of the lock-case, upon which it slides up and down. It bears two oblong holes, *n n*, Fig. 8, (seen also in dotted lines, but not marked, in Fig. 2,) and is cut away at *q*, Fig. 8, to make room for a short cylindrical boss, Q, Figs. 1 and 2, called the "tumbler-boss," projecting from the inner surface of the lock-case A, which boss bears a screw and washer, S, Figs. 1 and 2, to hold to the lock-case the bolt-propeller and the devices shown in Figs. 9 and 10. These two devices are called the "rotary tumblers." They are seen in Figs. 9 and 10 in the reverse of the views given in Figs. 1 and 2, and consist of circular metallic plates, bearing each, respectively, a short cylindrical projection (see *m*, Fig. 9, and *o*, Fig. 10) from their faces, called the "rotary tumbler-pegs," which pegs protrude in the hither direction in Figs. 9 and 10, but in Figs. 1 and 2 in the opposite direction, and pass, respectively, into the slots *n n* of the bolt-propeller D. (Seen in Fig. 8.) The tumbler F lies next to the bolt-propeller, and is seen in Fig. 10 to bear a curved slot at M, to permit the passage to the appropriate slot of the bolt-propeller D of the peg *m* of the rotary tumbler E in Fig. 9.

At the points P and P, respectively, in Figs. 9 and 10, it is seen that a curved slot, similar to the slot M of Fig. 2, but farther from the center of the tumblers, has been cut, and that directly at the top, respectively, of the figures, the cutting away has been carried fully to the peripheries, respectively, of the two circular plates, two curving projections being left, respectively, at the points marked P and P, Figs. 9 and 10. These are the bolts, and are advanced or receded, and the lock thus locked or unlocked by the partial rotation of the rotary tumblers E and F upon the tumbler-boss Q.

The operation of the key upon the sliding tumblers need not be described, for reasons above given. We will suppose the key placed in the key-slot of the plug or tumbler holder, the sliding tumblers thus withdrawn, and the plug free to rotate. On its partial rotation, the plug-boss L, Figs. 6 and 7, moving in the slot *l* (see Fig. 8) of the bolt-propeller D, presses the bolt-propeller upward. The lower edges of the slots *n n*, Fig. 8, thus respectively press upon the rotary-tumbler pegs *m*, Fig. 9, and *o*, Fig. 10. A partial rotation is thus effected of the rotary tumblers E and F, causing the bolts P and P, Figs. 9 and 10, to advance in a circular course from opposite directions, thus retaining in the lower portion in Figs. 9 and 10 of the curved slot the link *y*, Fig. 1, (see, also, Fig. 2, dashed lines,) of the link-plate *z*, Figs. 1 and 2, theretofore placed there. The lock is thus locked. A reverse action of the key partially rotates the plug or tumbler holder backward, and the action just described of my bolt-propeller and rotary tumblers is thereby reversed, and the lock is thus unlocked.

There are other modes in which I adapt my bolt-propeller to its purpose than those shown in Figs. 1 and 2.

In Plate I, Fig. 4 shows, in dashed lines, a diagonal slot, T, in the bolt-propeller D, in which slides a pin, *b*, attached to a bolt, *d*, which last moves to the right or left as the bolt-propeller goes up or down, the latter being actuated by the boss L, in dashed lines. In Fig. 5, Plate I, is seen the same horizontal motion back and forward of the bolt *d d*, ef-

fected by the up-and-down motion of the bolt-propeller D, which, in this case, bears a diagonal projection, *t*, at its upper end, entering into the diagonal slot T, as shown.

I am now to explain the figures in Plate II. In Plate II are seen other modifications of my bolt-propeller and the parts connected with it. In Fig. 1 on this sheet is seen a lock, with its link-plate and two links, A $A^{\times}$, above it, and its cap (seen detached below in Fig. 9) attached to it. Fig. 2 shows the same lock with its internal parts and in a locked state. Fig. 3 shows the same lock as in Fig, 2 in an unlocked state. In these last two figures the bolts E F are seen to be hung upon pivots at their lower ends, which pivots are attached to the inside surface of the lock-case. The bolt-propeller (marked D) is seen in Figs. 2 and 6 to bear two diagonal slots, in which work two pegs (in dashed lines) borne, respectively, by the two bolt-plates E F. In Fig. 2 the bolt-propeller is seen to be pushed up to its highest limit, the bolt-plates are separated as far as they can be, and catch upon the links A $A^{\times}$, and the lock is thus locked. In Fig. 3, the bolt-propeller is not shown, but is supposed to be drawn down to its lowest limit, the bolt-plates E F are brought together, so as to touch, and are seen to be disengaged from the links A $A^{\times}$, and the bolt is unlocked. Fig. 4, Plate II, is simply a view of the inside surface of the case or shell of the lock shown in Figs. 1, 2, and 3, with the works removed, and shows the bosses or projections cast upon that part of the lock-case for the reception of the works, and also the position of the escutcheon, the fastening-screw holes, and the link-holes above. Fig. 5 shows another form of the bolt-plates, in which the approach of the plates to each other effects the locking, and their mutual recession the unlocking, of the lock. Fig. 7 shows another form, D, of my bolt-propeller, and Fig. 10 another mode of its application. Here the two bolt-plates are seen to be kept apart by a spring, and the pushing upward of the pointed upper end of the bolt-propeller effects their mutual approach, the latter action effecting the locking or unlocking of the lock, according as the links may be arranged.

It will be observed that in all the devices shown in my drawings the link or shackle is supposed to protrude from the link-plates into the bolt-propeller bearing portion of the lock-case.

It is the combination of the protruding link with the bolt-propeller which forms the distinctive feature of my invention, the bolt-propeller with its end protruding being an old device.

I claim—

1. The combination, with the rotative plug or tumbler holder H, of the escutcheon $G^{\times}$, having longitudinal slots for receiving the ends of the sliding tumblers *j*, and a transverse bar, *p*, crossing each slot, and located within the periphery of the escutcheon, substantially as and for the purpose specified.

2. The escutcheon $G^{\times}$, having its bolt-propeller slot centrally located, substantially as described, whereby the escutcheon may be placed either side up, and yet be properly located with reference to the bolt-propeller and its actuating device.

CHAS. C. DICKERMAN.

Witnesses:
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GEORGE PENNIMAN.