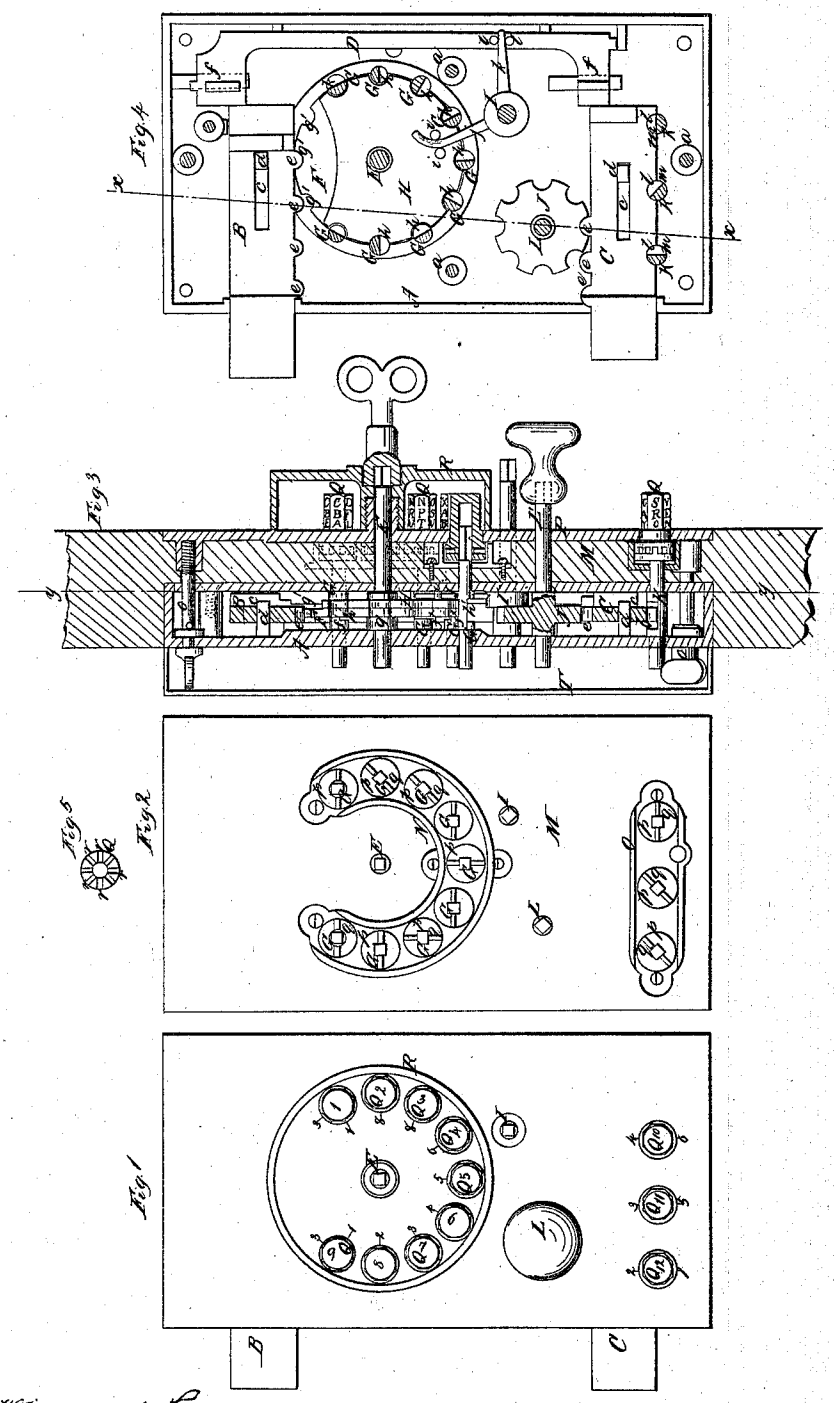
G. W. Dana,

Permutation Lock.

No. 26,569. Patented Dec. 27, 1859.



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UNITED STATES PATENT OFFICE.

GEO. W. DANA, OF DURAND, ILLINOIS.

LOCK.

Specification of Letters Patent No. 26,569, dated December 27, 1859.

To all whom it may concern:

Be it known that I, GEORGE W. DANA, of Durand, in the county of Winnebago and State of Illinois, have invented a new and Improved Lock; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a face view of the plate at the outer side of the door and through which the arbors and spindles of the lock pass. Fig. 2 is a face view of the portion of the door immediately behind the plate, shown in Fig. 1. Fig. 3 is a transverse section of the lock taken in the line *x*, *x*, Fig. 4. Fig. 4 is a section of ditto, taken in the line *y*, *y*, Fig. 3. Fig. 5 is an inner face view of one of the caps.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a burglar-proof and powder-proof lock, one admitting of change or permutation, and one also that may be easily manipulated both as regards the effecting of the changes and the locking and unlocking of the lock.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A represents the case of the lock, which may be of rectangular form, of metal and constructed in the usual way. The case, A, has three bearings, *a*, *a*, *a*, connected with its back plate, said bearings also serving as nuts to receive the screws, which secure the front plate, *b*, to the case, A.

Within the case, A, two bolts, B C, are placed. These bolts are each slotted, as shown at *c*, in Fig. 4 and a guide or stump, *d*, is fitted in each slot, said guides or stumps being attached to the back plate of the case. The bolts may be arranged in the usual way so far as their sliding operation is concerned. Each bolt at one side is provided with a series of teeth, *e*, which may be of semi-circular form as shown clearly in Fig. 4.

Within the case, A, directly back of the bolts, B C, a slide bar, D, is placed and fitted on and between suitable guides. This bar at each end is provided with a lateral projection, *f*, which ends form bearings at the back ends of the bolts when the latter are in a locked state, as shown in Fig. 4.

E is an arbor which passes transversely through the case, A, and is retained in proper position by a shoulder, *g*, thereon, which just fits between the front and back plates of the case. On the shoulder, *g*, a wheel, F, is placed and firmly secured. This wheel has its periphery notched at equal distances apart forming semi-circular recesses, *g'*, to receive the teeth, *e*, of the bolt, B, as shown clearly in Fig. 4. The wheel, F, when not obstructed serves as a means for shooting the bolt B, back and forth, a key being applied to the outer end of the arbor, E, for such purpose.

Around the wheel, F, a series of spindles, G, are placed. These spindles like the arbor, E, pass through the case and have shoulders, *f**, within the case which retain them in proper place. Each spindle, G, is slotted or has a recess, *h*, made in one side of its shoulder, as shown clearly in Figs. 3 and 4. The spindles are placed at equal distances apart corresponding with the notches *g'*, and are allowed to turn freely in their bearings, and their slots or recesses, *h*, may extend inward about half the diameter of the shoulders, *f**. The spindles, G, do not extend entirely around the wheel, F, only nine spindles are used, but there are twelve recesses, *g'*, in the wheel, F.

On the wheel, F, a similar wheel, H, is placed. This wheel has a segment removed from it, as shown clearly in Fig. 4. The periphery of wheel, H, is recessed, corresponding precisely with the recesses of wheel, F. The wheel, H, is allowed to turn freely on the shoulder, *g*, of the arbor, E.

On the upper surface of wheel, H, two pins, *i i*, are placed, and between these pins an arm, *j*, passes, said arm being attached to an arbor, I, which is allowed to turn freely within the case, A. To the arbor, I, there is also attached an arm, *k*, the outer part of which passes between projections, *l l*, on the slide bar, D. The arms, *j k*, project from the arbor, I, about at right angles with each other as shown in Fig. 4.

Into the teeth *e*, of the bolt C, a wheel, J, gears. The wheel, J, is formed precisely like the wheel, F, but may be smaller in diameter; and in the present instance is used simply as a pinion to throw the belt, C. At the side of the bolt, C, opposite to that where the teeth, *e*, are formed, there are semi-circular recesses, *l*, and spindles, K, are also fitted in the case adjoining the side of the bolt, C, by the recesses, *l*. The spindles, K, have slots

or recesses, *m*, made in their shoulders precisely similar to those in the spindles, G.

The arbors, E I, spindles, G K, and also the arbor, L, of the wheel, J, pass through the door, M, to which the case, A, is attached by screws *o*, *o*, as shown clearly in Fig. 3, and in the outer or face side of the door, M, chambers or cases, N O, are fitted, through which the arbors and spindles pass.

On each spindle of the two sets, designated by, G K, a catch, *p*, is placed. These catches are simply circular plates provided with projections, *q*, on their upper surfaces. The catches are fitted in the chambers or cases, N O, and on squares on the spindles. To the door, M, and directly over the chambers or cases, N O, a metal plate, P, is attached, and through this plate the spindles, G K, pass and also the arbors, E I L.

On each spindle a cap, Q, is placed, said caps being of polygonal form and lettered on each side. The caps, Q, project through the plate, P, as shown clearly in Fig. 3, and the outer side of plate, P, around each cap is stamped with figures or otherwise marked, as shown in Fig. 1. The caps, Q, of the spindles, G, may be covered by a box or case, R, as shown clearly in Fig. 3.

The inner ends of the caps, Q, are provided with radial recesses, *r*, as shown in Fig. 5, to fit over the projections, *q*, of the catches, *p*.

In order to turn the wheel, F, the spindles, G, must be so turned that their slots or recesses, *h*, will be radial with the wheel so that the projections formed by the recesses or notches, *g'*, of said wheel may pass around through the recesses of the spindles, the latter being so placed relatively with the wheel to effect this result. The spindles, K, also in order to permit the movement of the bolt, C, require to be so moved that their slots or recesses, *m*, will be in line with the recesses, *l*. It will be seen that the slide bar, D, requires to be moved in order to allow the bolts to be shoved back. The movement of the slide bar, D, is effected by applying a key to the arbor, I, and simultaneously with the movement of bar D, the wheel, H, is turned as said wheel and bar are connected to arbor, I, by the arms, *j k*.

When the lock is in a locked state, as shown in Fig. 4, the projections, *f f*, of the slide bar, D, are behind the bolts, B C, and the spindles, G K, are turned so that their slots or recesses, *h m*, will be in various relative positions respectively with the wheel, F, and bolt, C, the wheel, H, also will be turned so that its recesses will register precisely with those of wheel F. In order to unlock the lock the slide bar, D, must be moved so that its projections, *f f*, will be free from the bolts, B C, and in order to effect this the spindles, G, must be so turned that their slots or recesses will be radial with the wheels, F H, so as to allow the wheel, H, to turn, for this wheel, it will be borne in mind, is connected to the slide bar, D, by the arms, *j k*, and arbor, I. This proper adjustment of the spindles is effected by the lettered caps, Q, in connection with the figured or stamped plate, P. As a person may set the spindles properly, so that the lock may be unlocked, and then note the letters on certain sides of the caps, with the figures on the plate, P. The spindles may then be turned promiscuously, and no person but one acquainted with the way in which the spindles were set could actuate the slide bar, D, and consequently could not unlock the lock. The slide bar, D, prevents any pressure of the bolts on the wheels, F J, and spindles, and consequently the position of the slots or recesses in the spindles cannot be ascertained by pressure on the bolts. When the lock is in an unlocked state the wheel, H, is in such a position that its recesses are not in register with the recesses of the wheel, F, and the projections formed by the recesses of wheel, H, will fit in the recesses or slots, *h*, of the spindles, G, and prevent the latter from being turned or tampered with. It will be seen that one or several bolts may be used in the same lock, but only one check or guard wheel, H, is required in either case, each bolt, however, should have spindles arranged with it. The changes of the caps, Q, may be made at any time by simply raising them from the catches, *p*, and turning them, or shifting their position on the spindles as they are fitted loosely thereon. The position of the slots or recesses in the spindles may be seen at any time at the inner side of the door, as the ends of the spindles may be marked in order to designate the side the recess is in. This affords great facility in making the changes. The back part of the lock may be covered by a case, T, to shield the ends of the spindles.

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

1. The employment or use of a series of spindles, G K, provided with slots or recesses, *h m*, and with lettered caps, Q, connected by catches, *p*, the spindles being arranged directly with the bolts, as with C, or indirectly by means of a wheel, F, as with B, either or both, for the purpose set forth.

2. The slide bar, D, provided with the projections, *f f*, arranged relatively with the slots, B C, and connected with the guard wheel, H, as shown, in connection with the wheel, F, and spindles, G, arranged to operate as and for the purpose set forth.

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