(No Model.)

J. ROCHE.

LOCK.

No. 476,559. Patented June 7, 1892.

Fig. 1

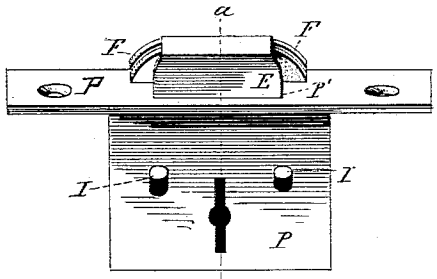

Fig. 2

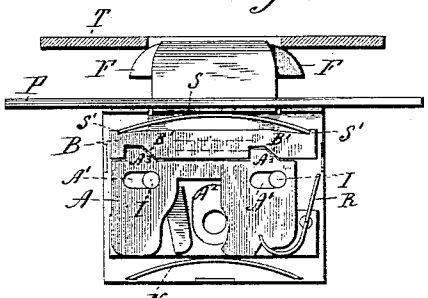

Fig. 3

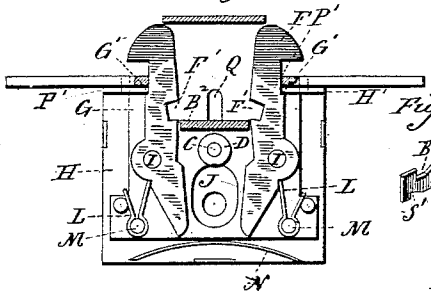

Fig. 8

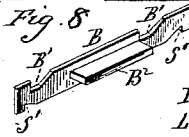

Fig. 7

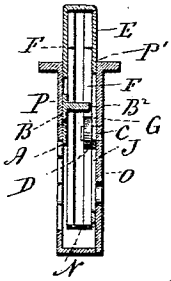

Fig. 6

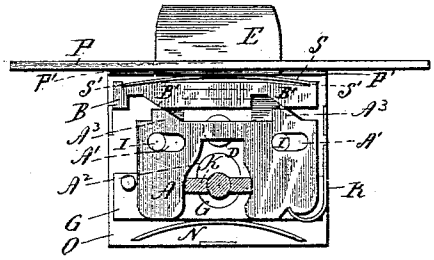

Fig. 5

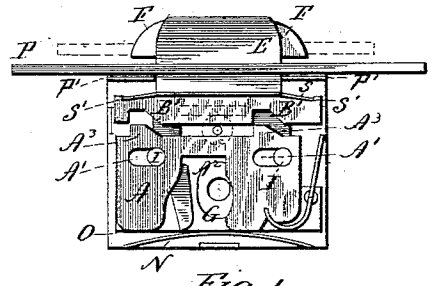

Fig. 4

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UNITED STATES PATENT OFFICE.

JAMES ROCHE, OF TERRYVILLE, CONNECTICUT, ASSIGNOR TO THE EAGLE LOCK COMPANY, OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 476,559, dated June 7, 1892.

Application filed November 2, 1891. Serial No. 410,599. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROCHE, of Terryville, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Desk-Locks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in perspective of a lock constructed in accordance with my invention and shown with its housing and combined bolts and tumblers in their normal positions; Fig. 2, a view in front elevation of the lock in the same adjustment with its cap removed and with a keeper in position to begin the initial inward movement of the housing and combined bolts and tumblers positively; Fig. 3, a similar view, without the keeper, with the housing and the bridge of the guard in vertical section, the cam-plate and main portion of the guard being removed; Fig. 4, a view of the lock corresponding to Fig. 3, but with the housing, and hence the combined bolts and tumblers, moved inward to bring the notches in the latter into alignment with the bridge of the guard to permit the retraction of the combined bolts and tumblers, as shown by broken lines, so that the housing may pass through the keeper; Fig. 5, a view of the lock in front elevation with the cap removed and with its parts in adjustment due to them after the keeper is in place; Fig. 6, a similar view of the lock, showing the unlocking of the secondary locking mechanism to permit the removal of the keeper by means of the key; Fig. 7, a view of the lock in vertical transverse section on line *a b* of Fig. 1; Fig. 8, a detached rear perspective view of the guard.

My invention relates to an improvement in that class of locks (commonly known as "desk" or "piano" locks) having bolt-like housings, from the open ends whereof the hooked upper ends of combined bolts and tumblers are projected and retracted, the object being to lock the bolts in their projected positions, whereby the lock cannot be picked by pushing them back, by gaining access to the mortise receiving the housing when the lock is in use, nor by means of a tool inserted between the face-plate and the keeper.

With these ends in view my invention consists in the combination, with a housing, of combined bolts and tumblers having their hooked ends normally projecting from the ends of the housing and secondary locking members to normally lock the said combined bolts and tumblers positively in their projected positions.

My invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

As herein shown, the secondary locking members of my improved lock consist of a laterally-movable cam-plate A, a vertically-movable guard B, and a stop composed of a stud C, carrying a small collet D. The said parts are combined with a reciprocal housing E and reciprocal combined bolts and tumblers F, the housing being formed by bending upon itself the narrowed upper end of a plate G, placed against the back plate H of the lock, and carrying two studs I I, forming fulcra for the two sets (each of three) of combined bolts and tumblers F, which are located on the opposite sides of an oval opening J, formed in the center of the lower end of the plate G, and receiving the key K, which is shown in Fig. 6 of the drawings. The upper ends of the said combined bolts and tumblers are hooked and entered into the opposite ends of the housing, from which they are normally projected by means of springs L, engaging with the outer faces of the inner ends of the combined bolts and tumblers and secured in place upon the plate G by means of studs M. Each of the combined bolts and tumblers is provided with one of these springs, which are arranged in two sets corresponding to the arrangement of the combined bolts and tumblers. The inner edges of the inner ends of the said combined bolts and tumblers are shaped for engagement by the bits of the key K before mentioned. A spring N, engaging with the lower edge of the plate G and held in place by the cap O (see Fig. 7) of the lock-case, exerts a constant tendency to push the plate G outward, the said movement of the

plate being limited by the engagement of the shoulders G′ G′, formed at the ends of its upper edge, with the inner faces of two flanges H′ H′, formed upon the upper edge of the back plate H and turned down at a right angle thereto for the attachment of the face-plate P, which is provided with a central longitudinal opening P′ for the housing to play through.

Although the housing and the combined bolts and tumblers are, as herein shown, reciprocal, both the former and the hooked outer ends of the latter always project beyond the face-plate of the lock, which is thus distinguished as to the said parts from prior locks, in which the housing and the corresponding ends of the combined bolts and tumblers have been withdrawn through the face-plate into the lock-case, excepting in trunk-locks, in which, however, the combined bolts and tumblers are locked in their projected positions and unlocked by purely-manual devices. The inward movement of the plate G is limited by the engagement of the hooked ends of the combined bolts and tumblers F with the outer face of the face-plate P. The said plate G is guided in its movement by the engagement of the housing E with the walls of the slot P′ and by the engagement of the side walls of a vertically-elongated slot Q, formed in it, with the pin C, before mentioned, the said pin being mounted in the back plate H. It will be seen from the foregoing description that the plate G virtually forms a carrier for the housing, the combined bolts and tumblers, and the springs L which operate them.

With reference again to the secondary locking members the laterally-movable cam-plate A is constructed near the opposite ends of its upper edge with two aligned horizontally-elongated slots A′ A′, respectively, receiving the outer ends of the studs I′ I′, which hold the said cam-plate in place. The said cam-plate is also constructed with a central opening A^2, the side walls whereof are suitably curved to be operated upon by the bits of the key and provided upon its upper edge with two cam-fingers A^3 A^3, which co-operate with corresponding cam-notches B′ B′, formed in the lower edge of the guard B, which is provided midway of its length and upon its inner face with a bridge B^2, conformed in length to the distance between the inner edges of the combined bolts and tumblers when the same are in their projected positions and which are adapted to co-operate with the said bridge by having their inner edges constructed with notches F′, the said notches in the respective sets of combined bolts and tumblers being located opposite each other. A spring R, attached to the cam-plate A and engaged at its opposite end with a cap O, is provided for exerting a constant tendency to move the plate laterally for the alignment of its cam-fingers with the cam-notches of the guard. A spring S, placed horizontally between the edge of the housing and the upper edge of the guard, is provided for exerting a constant tendency to move the same downward toward the cam-plate, the guard being constructed with notches S′ S′ in the ends of its upper edge to hold the said spring S in place.

Having now described my improved lock in detail, I will set forth the mode of its operation. In the normal adjustment of its parts the plate or carrier G is pushed outward by the spring N to maintain the housing E and the combined bolts and tumblers F at the limit of their outward movement, as shown by Figs. 1 and 2 of the drawings. The hooked ends of the combined bolts and tumblers will at this time be projected from the open ends of the housing and positively locked in such position by means of the interposition of the bridge B^2 of the guard B between their inner edges at a point below their notches F′, as shown by Fig. 3 of the drawings, the outward movement by the spring N of the plate or carrier G, and hence the cam-plate A and the guard B, which are moved with it, causing the bridge B^2 of the guard to be cleared from the collet D of the stop, and thus permitting the spring S to act in closing the guard down upon the upper edge of the cam-plate, in which position the bridge stands between the inner edges of the combined bolts and tumblers. Now when the keeper T is brought into contact with the lock, it first engages with the projecting hooked ends of the combined bolts and tumblers; but inasmuch as they are positively locked in their projected positions they will not retire within the housing, but the spring N will yield and permit the plate or carrier G, and hence the housing and combined bolts and tumblers, to move inwardly. During this movement the bridge B^2 of the guard B will engage with the collet D of the stop and arrest the said bridge; but the other parts spoken of will continue to move inward until the notches F′ in the combined bolts and tumblers have been brought into alignment with the ends of the bridge, thus unlocking the combined bolts and tumblers, which will now be retired either by the pressure of the keeper upon their hooked ends or by the action of the spring N, which in its effort to restore the carrier and the parts carried by it to their normal positions will shoot the housing through the opening in the keeper. Then as soon as the hooked ends of the bolts have passed to the opposite side of the keeper they will be projected again by the action of their springs L. As the combined bolts and tumblers are moved outward again by the spring N the bridge B^2 of the guard will be cleared from the collet D of the stop and the spring S permitted to operate in closing the guard down upon the cam-plate, at which time the bridge is interposed between the edges of the combined bolts and tumblers again, as shown by Fig. 3 of the drawings. It will thus be seen that as soon as the keeper has been engaged with the bolts they are

positively locked in their projected positions by the secondary locking members of my improved mechanism, so that the lock cannot be picked by gaining entrance to the mortise formed behind the keeper to receive the housing nor by an instrument inserted between the face-plate and the keeper; nor can the lock be picked after the keeper has been combined with it, even by a person who understands its operation, by first pressing the housing inward, because the engagement of the hooked ends of the combined bolts and tumblers with the keeper now interposed between them and the face-plate P prevents the housing from being pushed inwardly for a sufficient distance to bring the notches in the combined bolts and tumblers into alignment with the bridge of the guard. When a suitable key is introduced into the lock and turned, it moves the cam-plate A laterally, and thus lifts the guard out of engagement with its upper edge and so as to bring the bridge into line with the notches in the combined bolts and tumblers, which are then separated at their lower ends, so as to retract their hooked upper ends into the housing, thus permitting the removal of the keeper.

It will be observed that in the construction shown and described the bolts are automatically unlocked for the engagement of the keeper with them by an inward movement of the housing and the combined bolts and tumblers. If desired, however, I may construct the lock with a fixed housing, in which case the secondary locking mechanism would have to be operated both for the engagement and disengagement of the keeper by means of a suitable key.

I have shown and described two sets (each of three) of combined bolts and tumblers; but a single combined bolt and tumbler on each side of the key-opening will answer, although by preference I use sets of two or more each. I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations therein as fairly fall within the spirit and scope of my invention.

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

1. In a lock, the combination, with a housing always projecting beyond the face-plate of the lock with which it is combined, of two combined bolts and tumblers having their inner edges notched at opposite points and their hooked outer ends normally projecting laterally from the end of said housing and always projecting beyond the said face-plate, and automatic secondary locking members to normally lock the said combined bolts and tumblers positively in their projecting positions, the said secondary locking members being located between the combined bolts and tumblers and co-operating with the notched inner edges thereof and constructed to be acted upon by a key, substantially as described.

2. In a lock, the combination, with the back and face plates thereof, of a reciprocal housing, bolts normally projecting laterally from the ends of the same and moving therewith, and secondary locking members connected with the said movable housing and the back plate for normally locking the bolts positively in their projected positions, substantially as described.

3. In a lock, the combination, with the back and face plates thereof, of a reciprocal carrier provided with a bolt-like housing and constructed with an opening for the key by which it may be operated, a spring arranged to push the said carrier outwardly, one or more combined bolts and tumblers pivoted to the said carrier on opposite sides of the said opening, respectively, and having their hooked outer ends entered into the said housing, the inner edges of their outer ends being correspondingly notched and their inner ends shaped to be engaged by the key, a spring-actuated cam-plate moving with the said carrier and having independent lateral movement, a spring-actuated guard extending laterally across the bolts above their fulcra and having an inwardly-projecting bridge adapted to hold the bolts apart in their projected positions, and a stop mounted in the said back plate to arrest the guard from movement with the combined bolts and tumblers, substantially as set forth.

4. In a lock, the combination, with a housing, of combined bolts and tumblers having their inner edges correspondingly notched, and secondary locking mechanism consisting of a laterally-movable spring-actuated cam-plate having a key-opening and provided upon its upper edge with two cam-fingers, a spring-actuated vertically-movable guard constructed with two cam-notches corresponding to the said fingers and provided with an inwardly-projecting bridge for engagement with the inner edges of the bolts above their fulcra, and a stop for co-operation with the guard, the bridge whereof is moved into alignment with said notches for the retraction of the hooked upper ends of the combined bolts and tumblers, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES ROCHE.

Witnesses:
GEO. W. CROSLEY,
H. B. PLUMB.