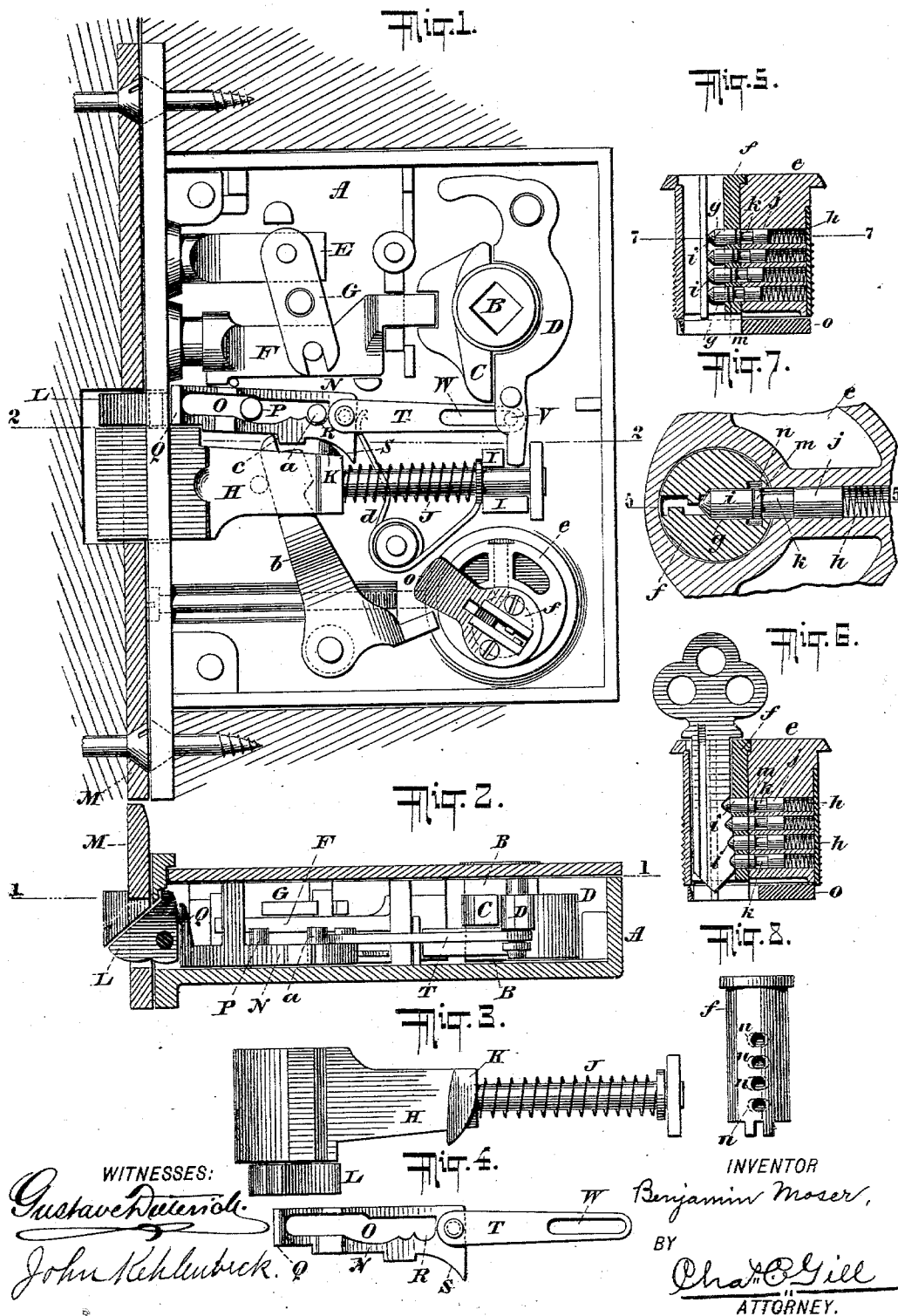


(No Model.)

B. MOSER.
LOCK.

No. 563,867.

Patented July 14, 1896.



UNITED STATES PATENT OFFICE.

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LOCK.

SPECIFICATION forming part of Letters Patent No. 563,867, dated July 14, 1896.

Application filed January 8, 1895. Serial No. 534,193. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN MOSER, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The invention relates to improvements in locks; and it consists in the novel features of construction and combinations of parts hereinafter described, and particularly pointed out in the claims.

The invention will be fully understood from the detailed explanation hereinafter given, reference being had to the accompanying drawings, in which—

Figure 1 is a face view of the interior of a lock constructed in accordance with and embodying the invention, the figure being partly in section on the dotted line 1 1 of Fig. 2. Fig. 2 is a transverse section of same on the dotted line 2 2 of Fig. 1. Fig. 3 is a detached view of the bolt withdrawn from the lock-casing and illustrating the obverse face thereof. Fig. 4 is a detached elevation of the plate by which with the connecting devices the bolt may be dead-locked in its outward position. Fig. 5 is a central longitudinal section of the key-cylinder, the said section being on the dotted line 5 5 of Fig. 7 and the key being omitted. Fig. 6 is a like view of same, showing the key in position and the tumblers set to permit the turning of the hub receiving the key. Fig. 7 is a transverse section of same on the dotted line 7 7 of Fig. 5 and on an enlarged scale, the key being omitted; and Fig. 8 is a side elevation of the hub.

In the drawings, A designates the usual lock-casing, having the sleeves B of customary form to receive the sections of the usual swiveled knob-spindle, the said sleeves B being provided with the arms C to engage the lever D of customary form. In the casing A are the reciprocating finger-bolts E F, connected by the plate G, and one of which is adapted when at its inner position to engage one of the sleeves B, as illustrated in Fig. 1, in the customary manner. The finger-bolts E F and plate G are of ordinary construction and not specifically claimed herein.

The locking-bolt is designated by the letter H, and its shank passes between the lugs I and is provided with the outwardly-acting spring J. The novel feature of the bolt H consists in the cam projection K, provided thereon and adapted for the uses hereinafter explained. Upon one side of the bolt H is pivoted the plate L, which is adapted to strike the nosing M when the door is moved to its closed position and free the dead-locking device preparatory to the bolt H by its contact with said nosing, being driven into the lock-casing A.

Within the lock-casing A and at one side of the bolt H is arranged the dead-locking plate N, having the longitudinal slot O to move along the guiding-pin P, and said plate is provided at its outer end with the flange Q, which, as illustrated in Fig. 2, is in close relation to the inner surfaces of the plate L, pivoted to the bolt H. The plate N is provided at the inner end of the slot O with the recess R and adjacent thereto with the cam-surface S; and the said plate N is connected by the rod T with the outer end of the lever D by means of a pin V, passing from said lever through the slot W cut in said rod T, the said slot permitting an inward thrust of said plate N without affecting the lever D. The lock-casing is provided with a pin *a*, which is within the slot O of the plate N and is adapted to engage the walls of the recess R, formed in said plate N for the purpose of locking said plate in its outward position and causing the said plate to dead-lock the bolt H in its outward position.

It will be observed upon reference to Fig. 1 that the cam-surface S of the plate N is adapted to be engaged by the cam projection K on the bolt H and that when the said cam-surfaces S K are in the position in which they are illustrated in Fig. 1 the plate N will have been given a sufficient elevation for the recess R to encompass and engage the lower part of the pin *a*, thereby locking the said plate N in the position shown, and said plate N being thus locked in position its cam projection S, being at the inner side of the projection K on the bolt, will serve to lock the latter in its outward position. In order to free the bolt H, so that it may be moved into the

lock-casing, it is necessary that the plate N should receive a slight movement inward prior to the bolt H being started inward, so that the cam-surface S thereof may pass from the cam projection K on the bolt, and the said plate be thereby permitted to lower sufficiently to free the recess R from the pin *a*, after which the said plate N and bolt H may be moved inward simultaneously.

The bolt H may be moved into the lock-casing and the preliminary movement of the plate N performed either from the knob at the inner side of the door through the medium of the lever D or by the proper key inserted into the lock-cylinder and acting through the pivoted lever *b*, whose upper end engages the shoulder *c*, formed on the said plate N, and which lever *b* below its said upper end is adapted to engage the bolt H. The lever *b* first moves the plate N a slight distance inward and then comes into contact with the bolt H and moves it with the plate N into the lock-casing. After the bolt H and plate N have been withdrawn into the lock-casing and the door opened, the spring J will drive the bolt H outward and the spring *d* will drive the plate N outward, and during this movement the cam-surfaces S on the said plate N and the cam projection on the said bolt H will come together and cause the notch R to engage the pin *a*, thereby locking the said plate N and bolt H at their outward position.

In order to close the door, the plate N must be freed from the bolt H in order that when the latter strikes the nosing M it will move into the lock-casing and permit the door to close, and hence the plate L has been provided in near relation to the flange Q on said plate N, the action of the said plate L being such that upon the door being closed it will strike the nosing a little in advance of the contact of the bolt H therewith and pressing against the flange Q will move the plate N inward sufficiently to free the cam-surfaces S K from each other and the recess R from the pin P, thus unlocking the bolt H and permitting it upon its contact with the nosing M to freely move into the lock-casing. With every outward movement of the bolt H the cam-surfaces S K come into position to wedge against each other and lock the bolt, and just previous to every inward movement of the said bolt the cam-surfaces S K are released from each other in order to free the bolt and admit of its inward movement.

The key-cylinder (lettered *e*) is of the usual "Yale" pattern and contains the key-hub *f*, which is provided with the tumbler-recesses *g* in line with the tumbler-recesses *h* in the main body of the cylinder *e*. Within the recesses *g* *h* are respectively placed the tumblers *i* *j*, the latter being different from the former in that they are provided with the annular grooves *k* and shoulders or heads *m*. The recesses *h* are of customary form, but the grooves *g* are provided with the laterally-extending recesses *n*, the purpose of which is in

connection with the shoulders *m* to prevent the lock from being "picked." When the key is not in the lock-cylinder, the tumblers will assume the position in which they are illustrated in Fig. 5, and when the key is in the cylinder the said tumblers will assume the position in which they are illustrated in Fig. 6 and permit the key-hub *f* to rotate and thereby through the lever *o* and lever *b* to move the plate N and bolt H.

When an attempt is made to pick a lock of the general character hereinbefore described, it is customary to apply pressure axially to the key-hub *f* and thereafter by the sense of feeling to properly move the individual tumblers, so that the hub may be permitted to rotate, and one object of the construction described is upon said pressure being applied to said hub *f* to provide means whereby the tumblers will lock the said hub and be prevented from moving inward after the said pressure has been applied. This feature will be most readily understood by reference to Fig. 7, in which it will be seen that if pressure is applied to the hub *f* the recesses *n* will pass upon the heads *m* and lock the said hub and the tumblers *j* together, thereby preventing the tumblers from being pushed inward along the recesses *h*. If during the operation of picking the lock any one of the tumblers *j* should have its head *m* remain within the recess *n*, it would be impossible to pick the lock, since the one tumbler would prevent the rotation of the key-hub *f*. It is plain, however, that upon pressure being applied to the hub *f* in the line of its axial rotation all of the recesses *n* will engage all of the heads *m* of the said tumblers *j* and effectually prevent the lock from being picked.

Without limiting my invention to precise details of construction, what I claim as new, and desire to secure by Letters Patent, is—

1. In a lock the bolt having the cam projection, combined with the locking-plate having the recess to engage a rigid pin and also a cam-surface to be engaged by said cam projection, and means for freeing said plate preparatory to the bolt being withdrawn into the lock-casing; substantially as set forth.

2. In a lock the bolt, combined with the locking-plate having a recess to engage a rigid pin, a projection on the bolt to maintain the relation of said recess and pin while the bolt is in its outward position, and means for moving said plate inward in advance of said bolt; substantially as set forth.

3. In a lock the bolt, combined with the locking-plate having a recess to engage a rigid pin, a projection on the bolt adapted to wedge against said plate and insure the engagement of said recess and pin, means for freeing said plate from either the knob or key-cylinder, and the pivoted lever-plate adapted to strike the nosing when the door is closed and start said plate inward in advance of the bolt; substantially as set forth.

4. In a lock the bolt, combined with the lock-

ing-plate having a recess to engage a rigid pin, a projection on the bolt adapted to maintain the engagement of said recess and pin, means for freeing said plate from the door-knob, the
5 key-cylinder having the lever *o*, and the pivoted lever *b* having one arm in near relation to said lever *o* and its other arm in engagement with said plate and in line with a shoulder on said bolt to engage the same; substan-
10 tially as set forth.

5. In a lock the bolt having the projection *K* and pivoted plate *L*, combined with the sliding locking-plate *N* having a recess *R* and

surface *S*, the pin in position to be engaged by said recess, means for guiding said plate, 15 and means for freeing said plate in advance of the bolt being moved inward; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 22d day of 20 December, A. D. 1894.

BENJAMIN MOSER.

Witnesses:

CHAS. C. GILL,
EDWARD D. MILLER.