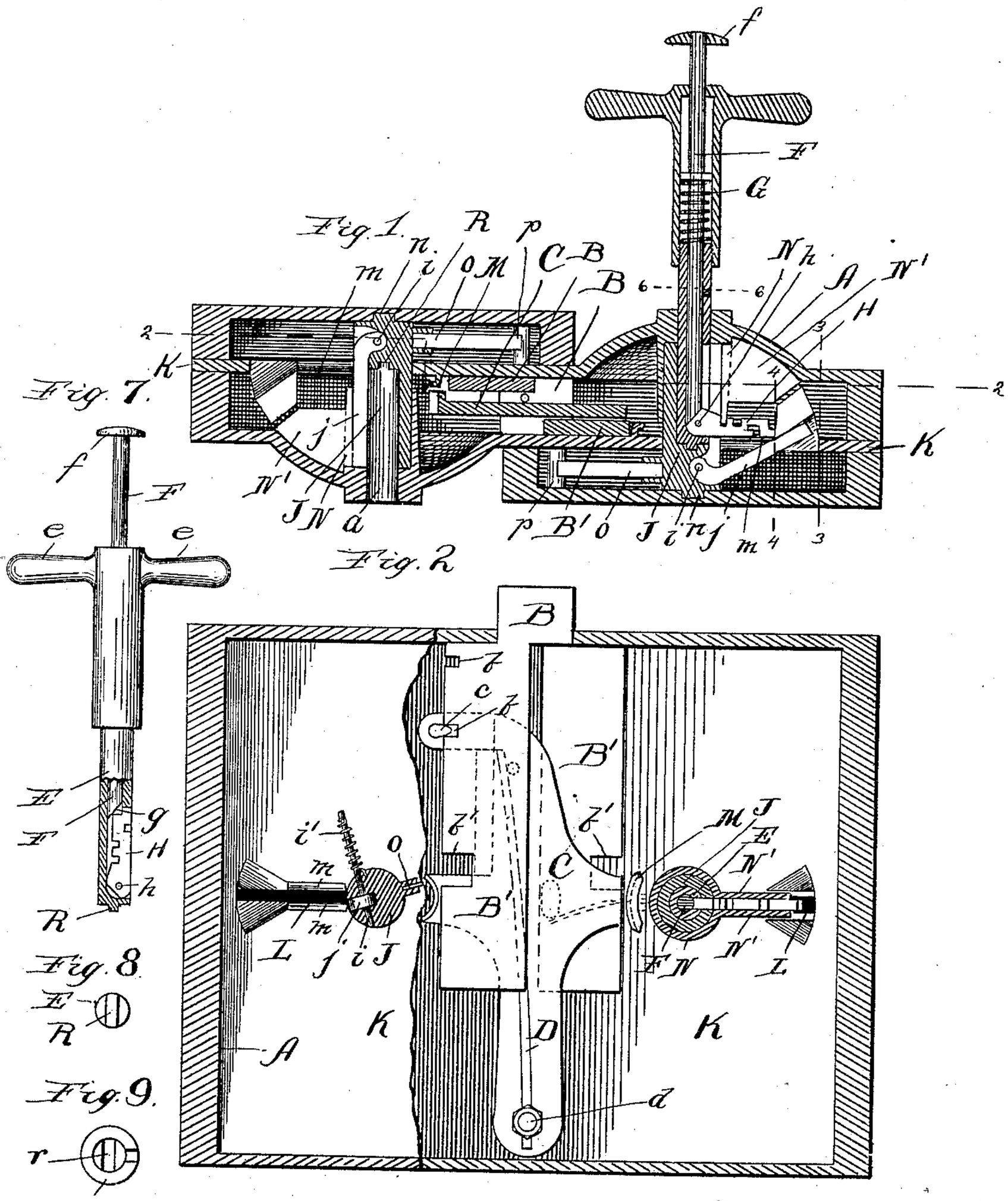
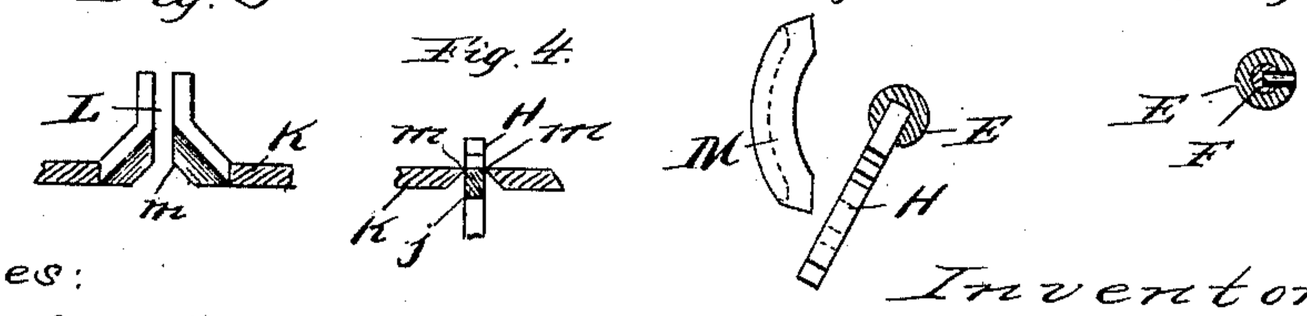
(Model.)

K. J. F. LUNDQUIST.

LOCK.

No. 434,989. Patented Aug. 26, 1890.





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UNITED STATES PATENT OFFICE.

KARL J. F. LUNDQUIST, OF CHICAGO, ILLINOIS.

LOCK.

SPECIFICATION forming part of Letters Patent No. 434,989, dated August 26, 1890.

Application filed November 4, 1889. Serial No. 329,181. (Model.)

To all whom it may concern:

Be it known that I, KARL J. F. LUNDQUIST, a citizen of Sweden, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Locks, of which the following is a specification.

My intention in this invention has been to produce a lock which while it is simple in construction is yet proof against picking. It is more especially adapted for use on doors of dwellings and other buildings.

The nature of my invention will be fully understood from the accompanying drawings and the subjoined description.

In the drawings, Figure 1 is a central horizontal section of a double lock constructed according to my invention, and showing also a section of the key. Fig. 2 is a vertical section upon the line 2 2 of Fig. 1. Figs. 3 and 4 are detail sectional views upon the lines 3 3 and 4 4, respectively, of Fig. 1. Fig. 5 is a section of the key with the bit thrown out in operating position in connection with one of the guards registering with a ward in the bit. Fig. 6 is a section of the key on the line 6 6 of Fig. 1. Fig. 7 shows the key detached and partly in section. Fig. 8 is a view of the point of the key, and Fig. 9 shows the bottom of the barrel adapted to receive the key-point.

In said drawings, A represents a suitable surrounding case applied to a double lock—that is to say, a lock which can be operated from either side of the door. The invention, it will be understood, however, is equally applicable to locks which have a key-hole upon one side only.

B is the bolt, and C is the locking-tumbler, provided with a stop *c*, entering the wards *b* in the bolt and securing the latter in its two positions. This tumbler is oscillated on a pivot *d* by the spring D.

The key is composed of a barrel or hollow stem E, carrying at its outer end the arms *e*, whereby it may be actuated. The barrel E may, if preferred, be made in two parts, as shown. Within this stem is a longitudinal plunger F, provided with a cap or thumb-piece *f* at its outer end. The inner end of this plunger is beveled, as shown at *g*, and a retracting-spring G is preferably applied to it within the barrel E, so that it may be automatic in returning to its normal position after it has served its function of throwing out the bit. The bit is shown at H and is pivoted at *h*. The normal positions of the bit and plunger are shown at Fig. 7, and it will be seen that if the plunger be pushed inward the bit will be forced outward to a position at right angles to the key and to the position shown at Fig. 1. In the normal position of the parts the bit is out of the way and the key presents a round exterior. To receive this key the case A is provided with an opening *a*, and below this opening is located a barrel or cylinder J, having a yielding side or panel *j*, which is pivoted at *i* in the barrel J, and is retained in its normal position shown at the left in Fig. 2 by the spring *i'*, encircling the extended end of pivot *i*. This yielding side or piece *j* is thrown outward to the position shown at the right in Fig. 1 by the throwing out of the key-bit, it being supposed that the key has been inserted in the barrel with the bit opposite the piece *j*.

Through the center of the case A extends a partition K, or in the case of a double lock there are two such partitions, each extending through half of the case, and the bolt lies against and is supported by such partition, or in the case of a double lock it is supported between the two partitions, as shown at Fig. 1.

To insure contact with the bit of the key, the bolt is provided with one or two side extensions B', such sides being located in different planes to bring them into registration with the bit. One of these sides is provided with notches or wards *b*, already mentioned, and acting with the tumbler to lock the bolt. The bit of the key in actuating the bolt enters the notch *b'*. When the bit is thrown out and carries the side *j* with it, as already described, said side *j* passes through a slot L, formed in the partition K, and at either side of said slot are beveled and sharpened edges *m*, which, when the key is rotated, enter between the bit and the piece *j* and separate the two, carrying the piece *j* to the other side of the partition K. The key is thus left untrammeled to do its work with the bolt, while the piece *j* simply moves around in the space back of the partition K, performing no function until it is allowed again to rise into its normal position. The key is provided with such number of wards as may be required by

the lock-wards M, it being understood that in this respect the key and lock may vary in construction as ordinary keys and locks vary. The key releases the tumbler and actuates the bolt by means of the notch *b'* in the latter in the ordinary way, and its rotation is continued until the bit and piece *j* have again reached the slot L, when the spring actuating the piece *j* forces the two parts back to their normal position.

The barrel J, which, as will already be understood, must rotate with the key, is steadied in its position by a bearing, (shown at N,) the same having an open side registering with the slot L. It may also be provided with a pivotal extension *n* at its farther end, and such end may be let into the case, as shown at Fig. 1. I purpose retaining this barrel normally in some other position than that in which the movable side *j* will be at liberty to be thrown out. For this purpose I employ a spring *o*, which acts against the projection *p* upon the outside of the barrel. I thus greatly increase the difficulty which would be met with in any attempt to pick the lock, as not only must the barrel be kept in the proper position to allow the movable side to be moved out by the key-bit, but such movable side itself must be maintained in its open position.

To enable the user to rotate the barrel to the proper position for use, I provide the point of the key with a squared or angular point R and the bottom of the hollow in the barrel with a similarly-shaped recess *r*, adapted to receive said point R and to turn the barrel. Both parts may be thus brought around to the slot and the lock be operated.

As a further preventive against picking, I make the lock-wards M, with tapering or pointed ends, as shown particularly at Fig. 5. These tapering or pointed ends are adapted to make impressions in wax or other material used by the burglar; but they will not make such impressions of the width requisite in the ward of the key which passes such lock-ward unless the wax be forced against the ward with unusual power, so that the wax is driven onto the body of the ward. The burglar is thus apt to construct his key-wards in such manner that they will not pass the wards M, even if the key be otherwise correct. It will be noticed that the key and barrel must be moved to a certain position before the bit can be expanded or the yielding side be forced outward; also, that if the key-bit be too short it will not depress the yielding piece *j* sufficiently to enable the latter to clear the sides of the slot L, while on the other hand, if the bit is too long, it will itself catch against the sides of said slot, so that in either case the key cannot be turned.

The bearing N may be provided with wings N' at either side of slot L, the under portion of such wings being cut away to permit the passage of the key-bit. I have referred to the parts K as partitions; but they are in reality simply plates and need not be coextensive with the lock-case.

I claim—

1. The combination of a key having an expansible bit with a lock having a barrel receiving the key and provided with a yielding side, substantially as set forth.

2. The lock provided with a rotatable barrel forming its key-receptacle and normally detained out of operative position, said barrel being provided with a yielding side, in combination with a key having an expansible bit, substantially as set forth.

3. The combination of a key having an expansible bit with a lock having a rotatable barrel adapted to receive said key, a yielding side in said barrel, bearings for the barrel, and a device for separating the bit and said yielding side when the key is rotated, substantially as set forth.

4. The lock provided with a barrel forming its key-receptacle and provided with a yielding side, bearings for said barrel having an open side, and a plate having slot L, in combination with a key having an expansible bit, substantially as set forth.

5. The lock provided with separate key-openings upon opposite sides and with a bolt having sides E' located in different planes, substantially as set forth.

6. The lock having a rotatable barrel forming its key-receptacle and provided with a yielding side, substantially as set forth.

7. The lock provided with a barrel forming its key-receptacle, such barrel being normally held out of operative position and having an opening at one side for the passage of the key-bit, in combination with means for holding it thus out of operative position, substantially as set forth.

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