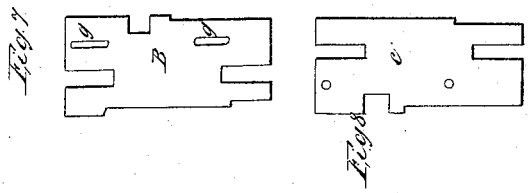
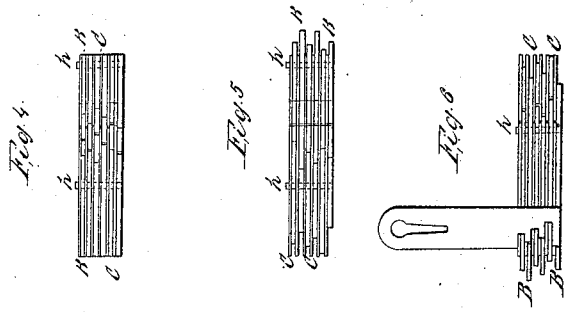
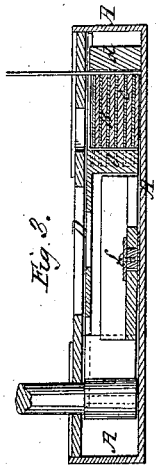
L. F. Munger,

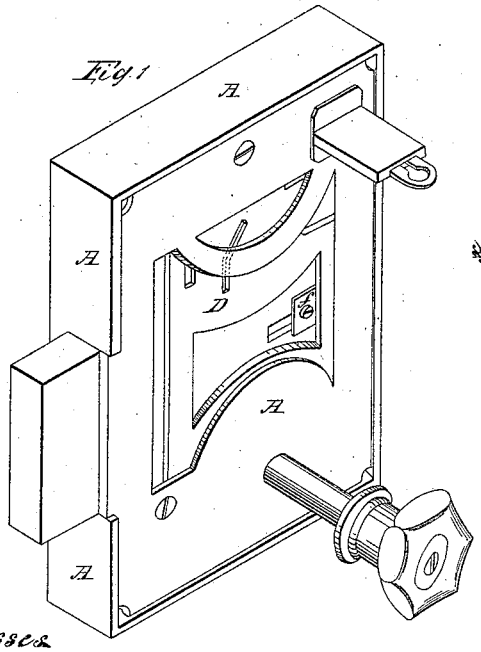
Lock.

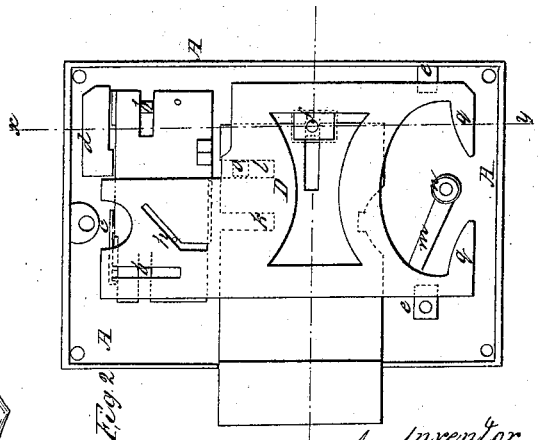
No. 46,531. Patented Feb. 21, 1865.











Witnesses
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UNITED STATES PATENT OFFICE.

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LOCKS.

Specification forming part of Letters Patent No. **46,531**, dated February 21, 1865.

To all whom it may concern:

Be it known that I, LYMAN F. MUNGER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Locks; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an isometrical perspective view of the face of the lock as detached from the door, with the knob attached and the key inserted. Fig. 2 is an elevation of the same with the skeleton guard-plate removed, showing the fence-tumbler in blue shade lines in contradistinction to the key-tumblers and bolt, which are left white. Fig. 3 is a sectional view of the lock on line *x y* of Fig. 2. Figs. 4 and 5 are top views of the key-tumblers, the former showing the same set according to the frictional hold each of the tumblers, through the intermediary of the furring-plates, has upon the others, the latter exhibiting the position assumed by the tumblers when the lock is worked with the key inserted. Fig 6 is a top view of the tumblers with the key inserted; and Figs. 7 and 8 are side views of the key-tumblers and furring-plates, respectively.

This invention relates to that class of locks in which one or more sliding or swinging tumblers are used in connection with a stump fast to a plate independent of and detached from the bolt, the object of this invention being to produce such locks at comparatively small cost, yet perfectly secure against picking, and not liable to get out of order.

This invention consists, first, in the combination, in a lock-case, of frictional key-tumblers, bolt, and fence-tumbler, together with the follower or lever to actuate the same under the arrangement hereinafter described, so that both the said key-tumblers and bolt, when actuated, shall move in planes parallel to each other, substantially as hereinafter set forth; second, in the combination with horizontally-sliding key-tumblers and double-gated bolt of a double-acting fence-tumbler, operating as described, so as to lock the bolt, whether shot out or withdrawn, substantially as hereinafter set forth; third, in the method, hereinafter described, of operating the key-tumblers by forming a cam-groove in the fence-tumbler in combination with a pin passing through and projecting from the said key-tumblers, the whole being arranged for operation, substantially as hereinafter set forth.

To enable others to make and use my said invention, I shall now proceed to describe the construction and operation of a lock made in accordance with my improvements.

And, referring to the drawings, A is the lock-case. It is or may be made of a quadrangular form, closed on all sides, with suitable openings in the front plate for the knob, shank, and key. I prefer to make the front plate of skeleton form so as to allow of ready inspection of the parts of the lock whenever necessary. In one part with the bottom plate of the case, or otherwise permanently united thereto, are two projecting studs, *b*, upon which the key-tumblers are hung or fitted. A guide-piece, *c*, is provided for the more perfect holding of the said tumblers in position. To the case is further secured a block, *d*, shaped and located so as to admit of the insertion of the key in its proper relation to the action of the tumblers. Gage-blocks *e* and a guide-pin, *f*, are also fastened to the case for the purpose of guiding the fence-tumbler and the bolt in their reciprocating travel when actuated by the bit or lever of the knob. The key-tumblers, of which there may be more or less according to the degree of security required, are composed of steel plates B, indented at the top and bottom in conformity with the key and stump, respectively, and at the sides in such manner as to slide horizontally upon the studs *b b*, before referred to. They are further slotted at *g* to admit of the pins *h*, which are fast to one of the furring-plates, to pass through and project above the whole series of tumblers. Each tumbler is interposed between brass furring-plates C, having frictional contact therewith, so as to impart movement to or partake it with the tumblers when actuated by the fence-tumbler. These furring-plates have indentations at their sides, by which means they are hung upon the studs *b*, and a gating is formed upon the under side for the purpose of allowing the stump to move up to release the bolt. The bolt is here shown to slide in its mortise and upon a guide-pin, *f*, horizontally—*i e.*, in a line parallel with the key-tumblers—although it will be readily understood that, without departure

from this invention, the lock may be so contrived as that the bolt has an up-and-down motion. The bolt plate is double-gated—*i. e.*, two gates, *k* and *l*, are cut into the upper part of the plate, which gates are located so that one of them shall correspond to the gates of the key-tumblers when the bolt is shot out, while the other corresponds to the gates of the key-tumblers when the bolt is withdrawn. The bolt is moved by the bit *m* of the knob, the shank of which is hollow and capable of rotation upon a stationary pin, *n*, fast in the bottom plate of the lock-case.

The fence-tumbler D, which is provided with the stump *o*, whereby the bolt is locked in either of its extreme positions, is so combined with the various parts of the lock before described as to both receive and impart the movements necessary for the operation of the lock. Its movement is in this instance transversely to the bolt and the key-tumblers, and it is guided in said movement by blocks *e e* and the stud *b*. The under side of this tumbler is double cam-shaped so that by rotating the knob either to the right or to the left the tumbler will by the action of the bit be elevated and depressed. The key-tumblers are operated by the cam groove *p* in the fence-tumbler, which, fitting the pin *h* will cause the key-tumblers to move laterally when up-and-down motion is imparted to the fence-tumbler.

The operation of this lock is as follows: The knob being turned upon its axis, the bit first comes in contact with the cam-face of the fence-tumbler and lifts it, until the stump reaches the key-tumblers. If the key-tumblers are unadjusted—*i. e.*, if the key is not inserted to place the tumblers in such order as to open the gate—then the fence-tumbler will be checked in its upward movement and the knob cannot be rotated any farther and no action can be had on the bolt; but if the key is inserted, then the upward movement of the fence-tumbler will determine the lateral displacement of the key-tumblers, according to the steps or configuration of the key, in such manner as to open the gate—*i. e.*, to bring the gating or fence notch of each key-tumbler and furring-plate exactly opposite to the stump in the fence-tumbler. Now, on continuing the motion of the knob, the fence-tumbler is still further raised, and the stump will enter the gate of the key-tumblers, thus releasing the bolt, which is now pushed out by the bit to its full stroke when the bit, striking the cam *q*, will bring the fence-tumbler down again, its stump entering the rear gating of the bolt, which thus becomes locked, while the key-tumblers are shoved back by the downward motion of the fence-tumbler. The key may then be withdrawn. For unlocking, the operation is precisely the same, only the knob is turned to the right instead of to the left.

From the above it will be seen that this my invention is susceptible of some modifications without departure from its principle. Thus instead of a cam-groove an elbow-lever may be used and other minor alterations may be made with more or less beneficial results, or a latch may be combined with the lock, under an arrangement such as to be operated by the knob without disturbing or actuating the tumblers.

Having thus described my invention, and the manner in which the same is or may be carried into effect, I claim—

1. The combination, in a lock-case, of frictional key-tumblers, bolt, and fence tumbler, together with the follower or lever to actuate the same under the arrangement herein described, so that both the said key-tumblers and bolt when actuated shall move in planes parallel to each other, substantially as set forth.

2. In combination with horizontally-sliding key-tumblers and double-gated bolt, the double-acting fence-tumbler operating, as described, so as to lock the bolt whether shot out or withdrawn, substantially as set forth.

3. The method herein described of operating the key-tumblers by forming a cam-groove in the fence-tumbler in combination with a pin passing through and projecting from the said key-tumblers, the whole being arranged for operation substantially as set forth.

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Witnesses:

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