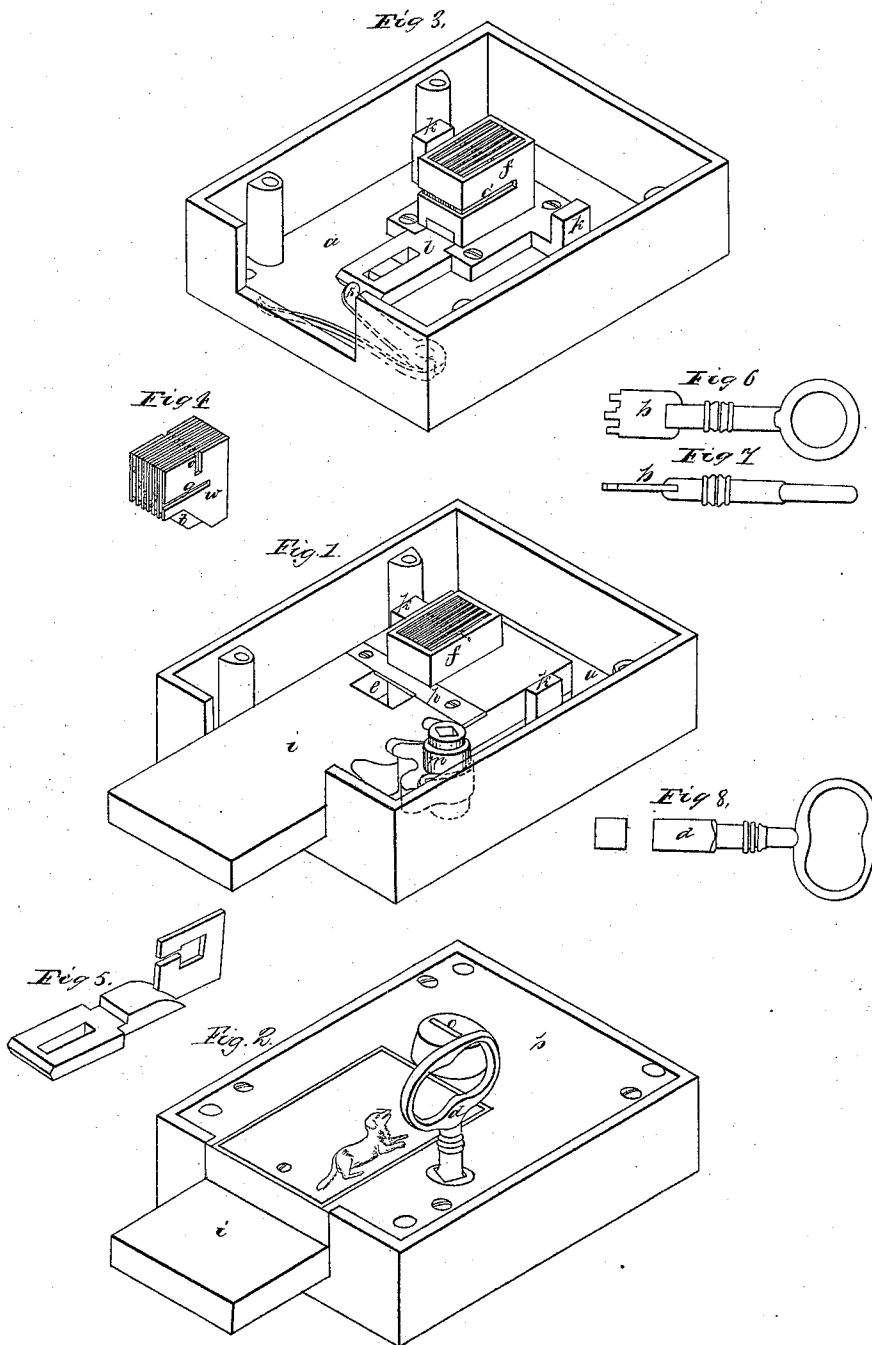


*J. M. Lippincott,*

*Bank Lock.*

*N<sup>o</sup> 15,489.*

*Patented Aug. 5, 1856.*



# UNITED STATES PATENT OFFICE.

JOSEPH M. LIPPINCOTT, OF PITTSBURGH, PENNSYLVANIA.

## LOCK.

Specification of Letters Patent No. 15,489, dated August 5, 1856.

*To all whom it may concern:*

Be it known that I, JOSEPH M. LIPPINCOTT, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Locks for Banks and Safe-Doors; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification, in which—

Figure 1, is a perspective view of the interior of my bank lock, with the top of the case removed. Fig. 2, is a perspective representation of the exterior of the same lock. Fig. 3, is a perspective representation of the interior of my lock, with the locking bolt and wrench pinion removed, so as to exhibit the spring bolt and tumbler chamber. Fig. 4, is a perspective view of the wards and tumblers placed side by side, in the same relative position as they occupy when in the tumbler chamber, but removed therefrom. Fig. 5, exhibits the spring bolt which actuates the tumblers, together with one of the tumblers, showing their relative position in the lock. Figs. 6 and 7, are a side and edge view of the key used to open my lock. Fig. 8, is the wrench used to turn the wrench pinion.

In the several figures like letters of reference refer to similar parts of my lock.

My improvement consists in the use of a stationary tumbler chamber, and in the use of a slot or aperture in the tumblers into which the grooves for the passage of the fence open, but distinct therefrom, to enable the tumblers to resume their normal position whenever the key is removed, when the lock is unlocked as well as when it is locked, to prevent the possibility of taking an impression of the tumblers for the purpose of making a false key.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the drawings, *a*, is the bedplate or case of the lock, *b*, the top of the case or cover.

*d* is the wrench or handle, by which the bolt *i* is moved in locking or unlocking when the tumblers are set by the insertion of the key *b*, into the keyhole *c*. The keyhole *c*, is of the exact width and thickness of the blade, *b*, of the key. A tumbler chamber, *f*, (see Fig. 3) is attached to the bedplate, *a*, of the lock midway from either side. It is a small, hollow, rectangular box, open at

top and with a horizontal groove *g'*, extending about  $\frac{3}{4}$  of its length, at the proper height to receive the fence *h*, of the bolt *i*. The spring bolt *l*, resting on the bedplate *a*, of the lock enters an aperture in the base of the tumbler chamber into which it fits closely, the spring *s*, pressing it back into the tumbler whenever it is temporarily displaced by the introduction of the key. The bolt *i* (see Fig. 1) has a slot or groove *e* through it at its rear end, of the width of the tumbler chamber through which the tumbler chamber projects when the bolt *i*, is in place. The uprights *k*, *k*, serve to keep the bolt in place. The fence *h*, is a thin strip of iron of the same thickness as the groove *g'*, in the tumbler chamber, which is wedged on to the face of the locking bolt, at right angles to its length, and in such position that when the bolt *i*, is locked, the fence just enters the groove *g'*, and the edge of the tumblers, and when the bolt *i*, is drawn back in unlocking it passes back through the groove. (In Fig. 1, the fence is represented as in the position it occupies when the bolt is locked). The bolt *i*, has teeth on its lower edge, which gear into the wrench pinion *m*, by which it is advanced or drawn back.

In the tumbler chamber *f*, is placed a series of wards *w*, and tumblers *t*. These are arranged alternately, a ward being placed outside on either side. The shape of the wards is seen at Fig. 4, and of the tumblers at Fig. 5. All the wards are exactly alike in size and shape. They have a horizontal groove *g*, similar in depth and width to the groove in the tumbler chamber, and, when in place, range exactly with it. The bottom of each ward rests on the bottom of the tumbler chamber; the lower part of the front end of the wards is cut away to admit of the passage of the spring bolt *l*, into the tumbler chamber, without touching the wards. The wards have also a perpendicular groove *o* (see Fig. 4), to admit the key, of uniform thickness and depth, and about midway from either end of the wards.

The tumblers are differently shaped from the wards (see Fig. 5). They are nearly square, the lower front corner being removed to allow the beveled point of the spring bolt *l*, to pass under them to raise and keep them in place. These tumblers are of the same size and shape, but may differ slightly from each other in thickness. Each

has a horizontal groove  $g''$ , corresponding in width with the groove  $g'$ , in the tumbler chamber, and grooves  $g$ , in the wards; but the depth of the grooves from the top of the tumbler differs in each one, and one only should correspond in height with the groove in the tumbler chamber  $f$ . The tumblers have not the perpendicular groove  $c$ , seen in the wards, as the key is designed to pass in this groove through the wards, without moving, but at the same time press down the tumblers.

In the middle of each tumbler is a square aperture  $n$ , (see Fig. 5,) into which the groove  $g''$  opens. This aperture is of the same size and in like relative position in each tumbler and is of the same width as the fence  $h$ , of the bolt  $i$ , but deep enough to allow the play of the tumblers up and down when the fence is in this aperture. There is no such aperture as  $n$  in any of the wards.

Having described the construction of my improved bank lock, I will proceed to describe its operation.

When the key  $b$ , is placed in the keyhole  $c$ , which is situated immediately over the perpendicular grooves,  $o$ , in the wards  $w$ , the projections on the bit of the key (see Fig. 6), rest on the edge of the tumblers  $t$ . The key is then forced down, the blade passing into the perpendicular groove  $o$  in the wards, and depressing each tumbler to the depth of the projection on the bit of the key, which comes in contact with it. As these projections on the blade,  $b$ , of the key, (see Fig. 6) are all of different length, each tumbler is depressed to a different corresponding depth in the tumbler chamber (the wards remaining stationary), and the length of these bits on the key bearing such exact relation to the situation of the horizontal groove in each tumbler, that when the key is pressed down as far as it will go, each horizontal groove  $g''$ , in the tumblers, comes exactly to the level of the grooves  $g$ , in the wards, and the groove  $g'$  in the tumbler chamber. There is now no obstacle presented to the entrance of the fence  $h$ , through the passage formed by the conjunction of all the grooves,  $g'$ ,  $g$ , and  $g''$ , and the bolt  $i$  may therefore be readily drawn back, in unlocking, by simply turning the wrench pinion  $m$ , by the wrench  $d$ . So soon,

however, as the bolt  $i$  is shot back, and the fence has reached the end of the groove  $g$ , it has fairly entered the aperture  $n$ , in the tumblers, which being deeper than the groove  $g'$ , permits the tumblers to rise, (if the pressure of the key is removed) and they are forcibly thrown up by the reaction of the spring bolt  $i$ , which was forced back by the pressure of the tumblers when the key was inserted. The tumblers thus all rise to the level of the wards, and the grooves  $g'$ , in the tumblers, being no longer in range with the groove  $g$ , in the wards, the fence  $h$ , is fastened in its place, and the bolt  $i$ , cannot be thrown forward without again using the key to adjust the tumblers as before. It is thus manifest that it is necessary to arrange the tumblers with the key in locking as well as unlocking the bolt  $i$ , and that as the tumblers are thrown up even at top with the wards, whenever the key is withdrawn, there is no opportunity afforded to take an impression of the tumblers when set, for the purpose of making a false key.

If it should happen that the key should be lost or mislaid, or for any reason it should become desirable to change key, it may be done by taking out the tumblers,  $t$ , and arranging them in different relative order in the tumbler chamber, when it will require a new and different key to lock and unlock the bolt  $i$ .

What I claim as my invention, and desire to secure by Letters Patent, is,

1. The use of a stationary tumbler chamber with movable wards and tumblers, in combination with the fence  $h$ , constructed and arranged substantially as hereinbefore set forth.

2. The use of an aperture  $n$ , in the tumblers  $t$ , into which the grooves  $g''$ , for the passage of the fence open, but distinct therefrom, for the purpose of allowing the tumblers to resume a position in which the grooves are out of range, while the fence is yet engaged in the tumblers, substantially in the manner and for the purpose hereinbefore set forth.

In testimony whereof, I have hereunto set my hand this first day of July, A. D. 1856.

JOSEPH M. LIPPINCOTT.

Witnesses:

I. F. SLAGLE,

JOHN A. MARTIN.