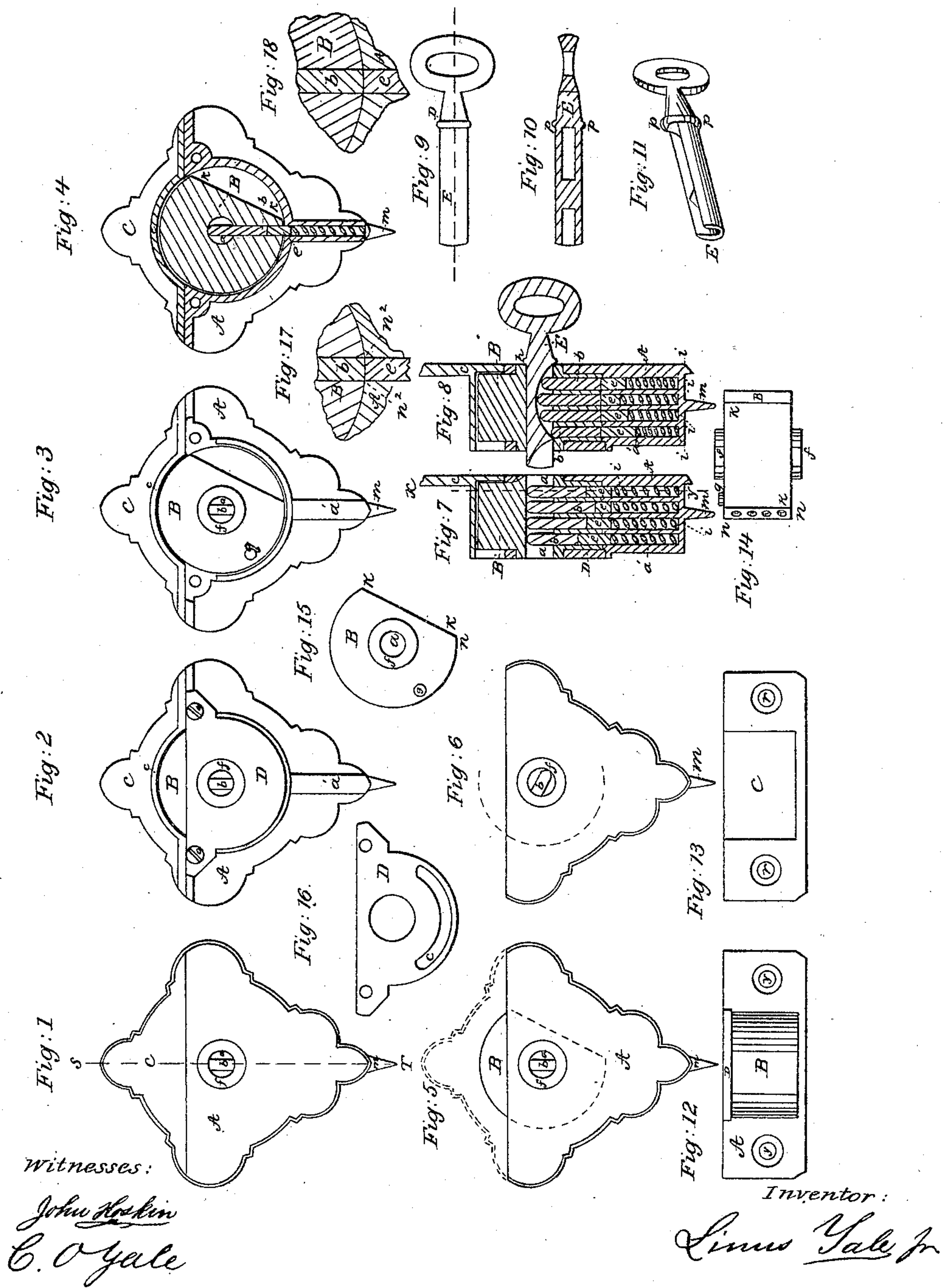


L. YALE, Jr.
POST-OFFICE DRAWER LOCK.

No. 31,278.

Patented Jan. 29, 1861.



UNITED STATES PATENT OFFICE.

LINUS YALE, JR., OF PHILADELPHIA, PENNSYLVANIA.

LOCK.

Specification of Letters Patent No. 31,278, dated January 29, 1861.

To all whom it may concern:

Be it known that I, LINUS YALE, Jr., of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Locks for Drawers, Closets, Cupboards, &c.; and I do hereby declare the following to be a true and exact description of its construction.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, reference being had to the drawings hereunto annexed, in which and in the following description the same letters refer to the same parts of the lock.

A is the case, B the revolving tumbler or bolt, C is the keeper, D is the back and E is the key.

Figure 1 is a front view of the complete lock, locked, with the keeper in place. Fig. 2 is a rear view of the same. Fig. 3 is a rear view of the lock with the back removed showing the bolt B in place in the locked position. Fig. 4 is a section of the lock through the red line X Y Fig. 7, showing as also in Figs. 7 and 8, the key hole *a*, the pistons *b b b b*, their drivers *e e e e*, and their actuating springs *h h h h*, which are placed in cylindrical holes *i i i i*, drilled for that purpose in the pin-chamber in the case *a'*, and also in the bolt B. Fig. 5 is a front view of the lock with the keeper removed, but indicated by the dotted lines, to show the bolt in the locked position. Fig. 6 shows the lock as it appears with the keeper removed and the bolt in the unlocked position. Figs. 7 and 8 are vertical sections of Fig. 1 through the line S, T. In Fig. 8 the key E is shown in its place, and the stops, or pins *b b b b* and *e e e e*, set ready to allow the bolt to rotate. Figs. 9, 10 and 11 are plan section and perspective view of the key E. Fig. 12 is an edge view of the lock, showing the case, bolt and back, and also the screw holes *y, y*, by which it is attached. Fig. 13 is an edge view of the keeper C showing its screw holes whereby it is attached. Figs. 14 and 15 are two views of the bolt showing the key hole *a*, the shoulders *f f* on which it rotates in the case and back, the stop pin *g*, the piston holes *i i i i* and the slightly flattened portion of its periphery at *n*, and the slabbed off or cut away portion of its periphery at *k k*, which when the bolt is in the unlocked position, disengages it from the keeper, which till then

has fastened it. Fig. 16 is the back of the lock D, exhibiting that side which when it is in place, is toward the bolt, thereby showing the recess *c* made to receive the stop pin *g* on the bolt whereby it is stopped in the locked or in the unlocked position. Fig. 17 is an enlarged view of a "piston" and "driver" showing the flattening of their abutting ends at *n*². Fig. 18 is a view on the same scale as Fig. 17 of the ends of the pins as ordinarily constructed showing at a glance the greater width of the joints between the ends of the pistons and their drivers as ordinarily constructed, thereby enhancing the facility of picking the lock, and also lessening the power of making a diversity of locks, each opened by a different key.

The case A and keeper C, are so constructed that their front faces as shown Fig. 1, constitute the escutcheon of the lock. The case is attached to the lock rail of a drawer &c. by the spur *m* which is thrust into the wood when it is fitted to its place, and also by screws at the screw holes *y y* which are shown in Fig. 12. The keeper C Fig. 13 is likewise fastened at the screw holes *r r*. The case and keeper are chambered out to receive the revolving tumbler B, which acts also as the bolt of the lock. The general form of this bolt is that of a frustum of a cylinder, or from which cylinder a segment has been removed or slabbed off as shown at *k k* Figs. 14 and 15. The back D is fastened to the case by the screws *o, o*, thereby retaining the bolt in its proper position. Both the case and back are drilled to fit the shoulders of the bolt *f, f*, on which the latter revolves. The bolt is drilled through to receive the key E Figs. 9, 10 and 11, by which it is actuated. It is also furnished with the stop pin *g*, which works in the recess *c* made for it in the back D, and which recess is so fitted as to stop the bolt in either its locked or unlocked position. In the locked position a segment of the bolt projects above the edge of the case as shown Figs. 2, 3, 4, and 5, entering the keeper which opposes the opening of the drawer or door to which it is attached, until it is unlocked: the latter is accomplished by revolving the bolt until its slabbed off surface *k k* is brought into the same plane with the upper portion of the case as at Fig. 6, and thus no longer projecting above the case into the keeper, the latter no longer opposes

any obstruction to the opening of the drawer door &c., in other words it is unlocked.

To prevent the bolt from being rotated, or unlocked by any key except its own, both the bolt and pin chamber a' of the case are drilled with one or more holes in the same right line, as shown at $i i i i$ in the plan of the bolt Fig. 14 and also in Figs. 4, 7 and 8, in which their relative positions are more clearly shown. These holes are each furnished with a pair of "stops" or "bolts", those which come in contact with the key being designated as "pistons" $b b b b$ —and those which lie behind them lower in the pin chamber as "drivers" $e e e e$; behind each of these drivers is a helical spring $h h h h$, which forces the pistons and drivers into and across the keyhole. The pistons and drivers are of such a length and so proportioned, that before the key is inserted, the drivers have their lower ends in the pin chamber of the case, while their upper ends rest in the bolt, and thus prevent it from revolving as shown in section Fig. 7. The length of the pistons $b b b b$ are such that when the key is thrust into the key hole as far as the ring p around it will admit, see Fig. 8, the upper ends of the pistons being forced against the planes cut in the key, by the force of the springs $h h h h$, then the lower ends should at this time terminate at the intersection of the bolt and the case; in other words the pistons are contained in the bolt, while the drivers are carried back into the pin-chamber a' in the case, as shown Fig. 8. They now oppose no resistance to the revolution of the bolt, which may be revolved by turning the key to its unlocked position. When the bolt is once more revolved to its locked position, on withdrawing the key, the springs force up the pistons and drivers, the latter entering the bolt and thus fastening the case and it together.

The key E as shown Figs. 9, 10 and 11, is

a cylindrical barrel, which has a groove or channel before spoken of cut longitudinally in it, this groove is somewhat wider than the diameter of the pistons, and may be cut on different planes, varied in depth to make variations in different keys. This groove or channel is shown in the perspective drawing Fig. 11 and also in section Fig. 8.

An inspection of Figs 2 and 3 will show that the bolt chamber of the case may be made very thin and still be sufficiently strong, allowing great economy in material.

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

1. Using a "revolving tumbler" for a "bolt" when the same is used in the described manner, or in an equivalent manner, with "jointed pins" which are the "stops" or "guards".

2. Reversing the main plate of a "pin lock" to answer the purpose of an escutcheon, to protect the drawer &c. from injury by the key.

3. The flat plane $n n$ on the revolving tumbler for the purpose described.

4. The part m for the purpose described.

5. The use of a metal keeper C, when the same has a front plate to complete the design of the front of the lock.

6. The thin curb around the tumbler instead of the ordinary case of this class of lock thereby saving metal and cheapening its construction.

7. Placing the projection a' or spring chamber opposite the bolt hole, so that the drilling thereof may be done from the inside without making an outward opening.

8. The use of, in this class of lock, flat ended and close jointed pins with the least possible waste or rounding of corners.

LINUS YALE, JR.

Witnesses:

JOHN HOSKIN,
C. O. YALE.