2 Sheets—Sheet 1.

W. H. TAYLOR.

Lock.

No. 213,006. Patented Mar. 4, 1879.

Fig 1.

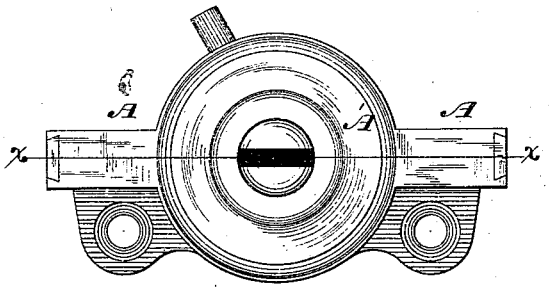


Fig 2.

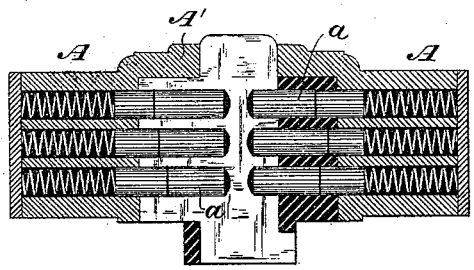


Fig 5.

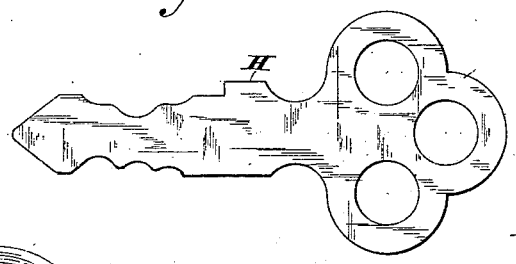


Fig 3.

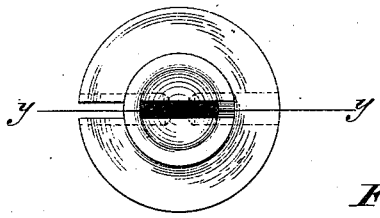


Fig 4.

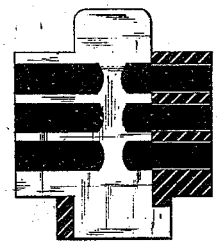
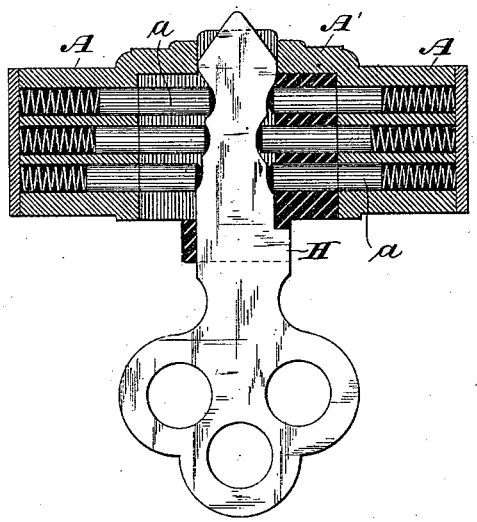


Fig 6.



WITNESSES

Wm A Skinkle

Geo W Breck.

INVENTOR

Warren H Taylor.

By his Attorneys

Baldwin, Hopkins, & Peyton

2 Sheets—Sheet 2.

W. H. TAYLOR.

Lock.

No. 213,006. Patented Mar. 4, 1879.

Fig 7.

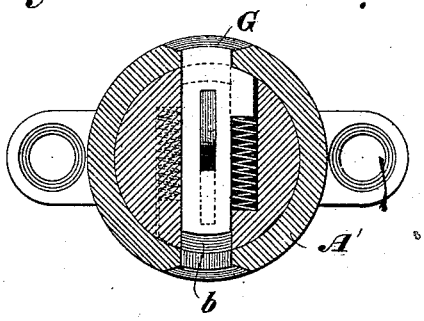


Fig 8.

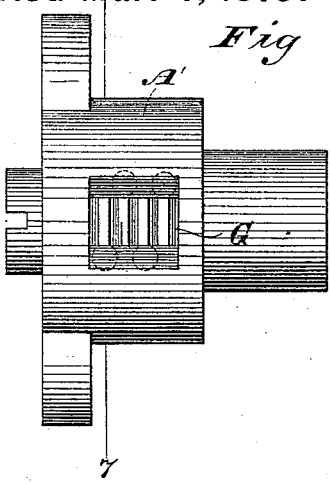


Fig 10.

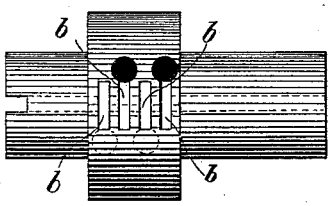


Fig 9.

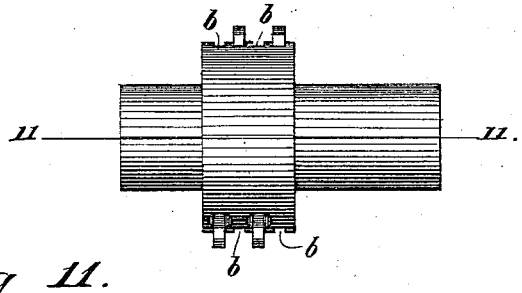
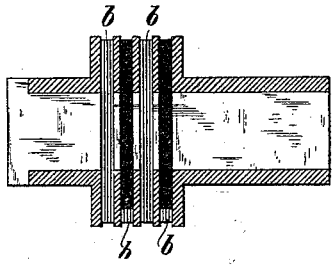


Fig 11.



WITNESSES

Wm A Skinkle

Geo W Brick

INVENTOR

Warren H Taylor.

By his Attorneys

Baldwin, Hopkins, & Peyton.

UNITED STATES PATENT OFFICE.

WARREN H. TAYLOR, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE LOCK MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **213,006**, dated March 4, 1879; application filed July 5, 1878.

To all whom it may concern:

Be it known that I, WARREN H. TAYLOR, of Stamford, county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Locks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention is in the nature of an improvement on the locks patented by Lewis Yale, Jr., on 27th June, 1865, and by H. S. Shepardson on 18th January, 1870, and others of that class, the two named being taken as examples.

The object of my invention is to adapt locks of the class above described to lesser thicknesses of wood, and at the same time to increase the security of the locks against picking. I accomplish this object by constructing the locks with two independent sets of tumblers, which enter the keyway of the lock from different sides, like those of the patent of Hardy, Walker, and Walker of March 6, 1866, but which, unlike those of that patent, are of greater width throughout their entire length than the width of the keyway, whereby I am enabled to construct my lock with greater economy, and get all the well-known advantages of employing a thin sheet-metal key.

By this arrangement each set of tumblers may contain only half of the number of the tumblers used in a lock as ordinarily made, thus making the escutcheon or cylinder-case about one-half of its usual length, while at the same time the lock will contain the same number of tumblers to be set before it can be unlocked, and the difficulty of setting them with any but the proper key will be increased, as hereinafter explained.

The construction and operation of my device in the locks which I have taken as examples may be easily seen from the drawings, in which—

Figure 1 is a front elevation of my improved tumbler-case and key cylinder or hub as applied to the Yale lock. Fig. 2 is a horizontal section through line *x x* of Fig. 1. Fig. 3 is an end view of my improved key hub or cylinder. Fig. 4 is a section through line *y y* of Fig. 3. Fig. 5 is the key of my improved lock, which must be bitted on both sides, in order to set both sets of tumblers at once, and, when used with my improved lock, it is also provided with a stop, which only permits it to be inserted the proper distance, and also insures that the bittings on the two sides shall come under the proper set of tumblers. Fig. 6 shows the key inserted in the lock. Fig. 7 is a front sectional view of a Shepardson lock on line 7 7 of Fig. 8, to which lock my device is applied. Fig. 8 is a top view of Fig. 7. Fig. 9 is a side view of the key hub or cylinder of a Shepardson lock adapted for my device, the tumblers *a a* being represented as in their normal condition—*i. e.*, one set projecting from one side of the hub or cylinder and the other set from the other, so that they will engage with the cylinder-case on both sides. Fig. 10 is a top view of the key-hub, showing four holes or recesses for the two sets of flat sliders or tumblers and two holes for the springs, which tend to throw one set of sliders into engagement with one of the slots (G, Fig. 8) in the cylinder-case. By means of similar springs on the opposite side of the cylinder the other set of sliders tend to engage with the slot in the other side of the cylinder-case. Fig. 11 is a section through *x x*, Fig. 9, showing the tumbler-recesses and the spring-holes of one set of tumblers.

Like letters of reference indicate the same or corresponding parts in different figures.

A A are the tumbler-cases; A′ A′ are the escutcheons or cylinder-cases, and *a a* are the tumblers, pins, or sliders which tend to slide into such position as will hold the key-hub stationary or in the locked position.

The particular construction of the tumbler-cases and tumblers need not be herein described, as those which are shown as examples are fully described in the patents referred to above; and I do not confine myself to any particular form of tumbler.

I will now briefly describe how I introduce my improvement into the locks shown in the drawings.

In the Yale lock, I fasten two ordinary tum-

bler-cases to the exterior of an escutcheon or cylinder-case on lines which are preferably but not necessarily diametrically opposite each other. Each tumbler-case may contain any desired number of tumbler-recesses, which, of course, extend through the cylinder-case. Then, as one way to form my key hub or cylinder, I take a brass rod of the requisite length and diameter, and on two lines of its exterior I bore any desired number of tumbler holes or recesses corresponding with the recesses in the tumbler-cases. These holes are bored to within a short distance of the center of the rod, as shown in Fig. 4, but not so far that the holes bored from opposite sides will meet.

To form a keyway, I saw a slot from the outside of the cylinder, on the line of the tumbler-recesses, of a width less than the diameter of the recesses, and extending through and beyond the center of the cylinder a distance equal to half the width of the key, as shown in Fig. 3. This slot or keyway, as will be readily seen, connects the two sets of tumbler-recesses, and thus enables one key to act upon both sets of tumblers.

Each end of the cylinder is encircled by a ring, which serves to support and guide two sides of the key. At a point on the diameter of the front ring which is in line with one set of tumblers is cut a slot, into which the stop H enters. This serves to allow the key to be inserted to the proper depth, and also indicates the proper position in which to insert the key.

In the case of the Shepardson lock, I may form the key hub or cylinder in two parts from drawn stock, of the shape shown in Fig. 11, first cutting the tumbler-recesses *b b b b* in each half of the cylinder equal in depth to one-half the width of the tumblers, and so that when the two parts of the cylinder are placed together the recesses will coincide. Then I bore spring-holes, exceeding in diameter the width of the recesses, at the ends of alternate recesses in one half of the cylinder, and also similar holes at the opposite ends of the other recesses in the other half of the cylinder, all the holes being bored at the edges of the recesses nearest the periphery of the cylinder, and so as to connect with the recesses. Now, by uniting these two parts of the cylinder in any convenient way, and inserting the tumblers and springs in their proper places, we shall have one set of tumblers tending to engage with one slot, G, Fig. 8, in the cylinder-case, and the other set with the other. A key properly bitted on both sides will, however, set both sets of tumblers, and permit the cylinder to revolve to operate the lock.

The operation of each set of tumblers on the key-cylinder and the operation of the key on each of the two sets of tumblers is, in general, the same as in the locks constructed in the usual way. However, it may be remarked that each set of tumblers is "set up" different from the other, so that the bittings on the two sides of the key have no relation to each other.

It being necessary to properly set all the tumblers in a lock before it can be unlocked, it is evident that, other things remaining the same, a lock having the same number of tumblers as another is equally secure against picking.

Now, the advantage of my device is that by placing half of the tumblers on one side of the key and half on the other a lock equally secure with an ordinary lock, so far as number of tumblers is concerned, may be made of about half the usual thickness, which, practically, is a great advantage; but my lock will be more secure than an ordinary lock with one set of tumblers, although the number of tumblers may be the same, for in picking an ordinary lock the picking-tool always has a stationary bearing at the bottom of the keyway, and care is only necessary to properly adjust the tumblers above the tool.

In my lock, however, it is necessary, in order to move any tumbler, to first get a bearing against another tumbler, so that the very act of adjusting one tumbler is almost certain to disarrange another.

The reduced width of keyway which I secure by my plan of construction of locks having double sets of tumblers also increases the difficulty of picking them.

It is clear also that a key-cylinder held in position by tumblers on two of its sides will be more secure against rotation either to assist in picking the lock or to forcibly open it.

My lock has also several minor advantages in its method of application to a drawer, &c., which I need not here enumerate.

The mode of connecting the key-cylinder with the bolt mechanism of a lock is not of this invention.

I do not claim in this application any particular mode of making a key hub or cylinder, as I have several applications now pending for various methods of manufacture of such cylinders; nor do I claim, broadly, the use of two independent sets of tumblers in a lock; but

What I do claim, and desire to secure by Letters Patent, is—

1. The combination of a key-cylinder adapted to guide and support a flat or sheet-metal key and two independent sets of tumblers, both adapted to be set by the insertion of the same key, which is narrower than the width of the tumblers.

2. A revolving key hub or cylinder provided on two of its sides with tumbler-recesses, and with a key-slot of a width less than said tumbler-recesses, and adapted to receive and support a flat key connecting said tumbler-recesses.

3. A revolving key hub or cylinder, as above described, provided on two of its sides with transverse tumbler-recesses, with a keyway less than their width connecting said recesses,

in combination with a tumbler-case provided with tumbler-recesses coinciding with the recesses in the key-hub.

4. A flat or sheet-metal key bitted on two of its sides, so as to set two independent sets of tumblers at once, but the bittings on one side of which have no relation to those on the other.

5. A flat or sheet-metal key which is beveled on both of its narrow sides at its forward end, in combination with two independent sets of tumblers, which are wider than the edge of the key.

In testimony that I claim the foregoing I affix my signature in the presence of two witnesses.

WARREN H. TAYLOR.

Witnesses:

E. D. OGDEN, Jr.,

SCHUYLER MERRITT.