(No Model.)

H. B. SARGENT.

CYLINDER LOCK.

No. 437,939. Patented Oct. 7, 1890.

Fig. 1

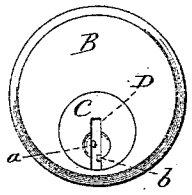


Fig. 2

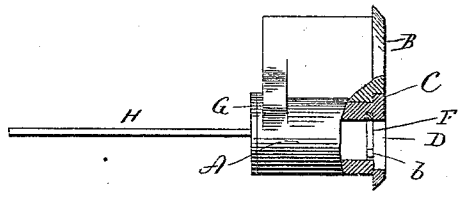


Fig. 7

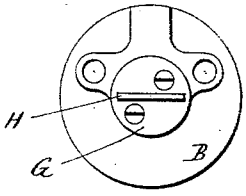


Fig. 4

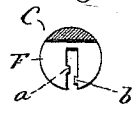


Fig. 5

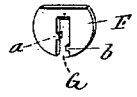


Fig. 8

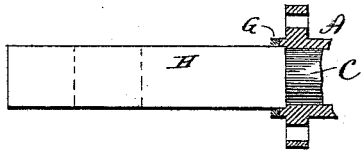


Fig. 6

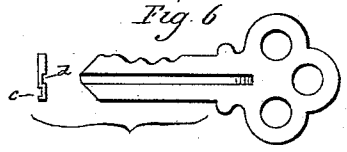


Fig. 3

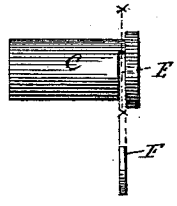
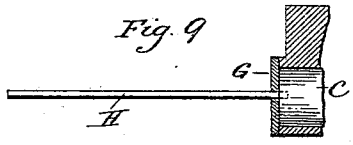


Fig. 9



Witnesses.
J. A. Shumway
Lillian D. Kelsey.

Henry B. Sargent
Inventor.
By attys.
Earle & Seymour

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY B. SARGENT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE SARGENT & COMPANY, OF SAME PLACE.

CYLINDER-LOCK.

SPECIFICATION forming part of Letters Patent No. 437,939, dated October 7, 1890.

Application filed June 9, 1890. Serial No. 354,709. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. SARGENT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Cylinder-Locks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a face view of the cylinder and case; Fig. 2, a side view of the same, a portion broken away, showing vertical central section of the cylinder at the front end; Fig. 3, a side view of the cylinder detached, showing the disk F as about to be applied; Fig. 4, a transverse section on line *x x* of Fig. 3, looking rearward, and showing face view of the disk F in place; Fig. 5, a perspective view of the disk F detached; Fig. 6, side and end views of the key; Fig. 7, an end view looking toward the rear of the cylinder; Fig. 8, a longitudinal central section cutting on the plane of the bar H; Fig. 9, a longitudinal section at right angles to Fig. 8.

This invention relates to an improvement in that class of locks in which a cylinder is employed, into which a flat key may be introduced to operate upon the tumblers to release the cylinder from its surrounding case, so as to permit the key to turn the cylinder, the cylinder itself being connected to the mechanism of the lock, whereby the rotation of the cylinder after the key is inserted will withdraw the bolt, and when the bolt is brought to the locked position the key may be withdrawn. The keys of these locks are flat thin metal, the key-hole of corresponding shape, and usually the tumblers are arranged in the case of the cylinder, so as to move readily into or out of engagement with the cylinder, the tumblers extending into the cylinder so far as to interlock therewith in one position, but so that the insertion of the key will force the tumblers to disengage the cylinder, so as to permit the key to turn the cylinder.

The object of the first part of the invention is a construction which will permit a great variety of keys with no substantial change in the tumbler mechanism of the lock—that is to say, so that a large number of locks having the same tumbler mechanism and the same-shaped keys to operate the tumblers, so far as the tumblers are concerned, may yet be so varied that no two keys of such number may be employed for the same lock—the advantage of such construction being that the cost of manufacture of the lock is very much reduced over what it would be were the variation made in the tumblers themselves. The variation thus proposed is produced by my invention by the introduction into the sides of the key-hole of the cylinder of one or more projections, which necessitate the construction of the key with a corresponding longitudinal groove upon its sides, in order that the key may enter the lock; and the invention consists in the peculiar manner of the introduction of these projections into the cylinder, whereby a large number of locks of identical construction, so far as the case and cylinder are concerned, may be adapted each to its own independent key, and so that the key of one lock cannot be introduced into another lock, and as more fully hereinafter described, and particularly recited in the claims.

A represents the case of the cylinder, which is preferably fitted with a circular face-plate B, as usual in this class of locks.

C represents the cylinder, its forward end open through the face-plate, the cylinder being arranged in the case in the usual manner, and so that when free so to do the cylinder may be rotated under the action of the key. The cylinder is constructed with a key-hole D, opening through its front end, forming a flat recess in the cylinder, and into which the key may be inserted, and when properly adjusted the cylinder is adapted to be turned by the key. The cylinder is provided with any of the usual arrangements of tumblers, not necessary to be described, as such arrangement constitutes no part of the present invention. In Fig. 3 the cylinder C is shown detached.

At some point in the body of the cylinder, but considerably in rear of its forward or outer end, a transverse slot E is made from one side inward, this slot being at right angles to the axis of the cylinder and extending substantially across the key-hole, as seen in

Fig. 4, the part shown in section in this figure being the solid or uncut part of the cylinder.

F represents a disk, which is of a thickness corresponding to the thickness of the slot E, and in circumference should correspond substantially to that of the cylinder, and it is cut away at one side, so as to give to the disk F a shape, as seen in Fig. 5, corresponding to the slot E in the cylinder. The disk F is constructed with a central opening G through it, corresponding in shape to the key-hole D of the cylinder, and in one or both sides of the key-hole through the disk an inward projection *a* or *b* is made at any desired position on either or both sides, and so that when placed in the cylinder, as seen in Fig. 4, these projections will extend into the key-hole, as clearly seen in that figure, and as also seen in Fig. 1. When the disk is thus arranged in the cylinder, the cylinder may be placed in the case in the usual manner, and when so placed the disk is retained in its proper relation to the cylinder, so as to positively rotate therewith without changing the relation of its projections in the key-hole.

The key is constructed, as seen in Fig. 6, with longitudinal grooves *c d* on its sides, corresponding to the projections *a b* of the disk F, and so that as the key is inserted these grooves will respectively take upon the corresponding projections and pass into the cylinder, so as to operate upon the tumblers.

Numerous disks may be constructed having the inward projections of the key-hole in different position from that of any of the others of a certain number or series, and under such arrangement no two keys of such series or number can enter the same lock, because the projections of different locks so vary that only the key fitted for those particular projections can be entered.

By the arrangement of the projections *a b* in the key-seat at a point some distance inward from the forward end of the cylinder the projections are less liable to interfere with the insertion of the key than when placed at the extreme outer end, as has been originally done, for the reason that there being no obstruction directly at the forward end the key enters the key-hole the same as if no projections were present, and the grooves of the key readily find the projections, whereas with the projections at the extreme front the person inserting the key must bring the projections to register with the grooves before the key can enter. This is a very great advantage.

This construction permits an interchange of tumblers, so that at any time it may be desirable one lock may be easily converted to a lock requiring an entirely different key by simply the substitution of a differently-constructed disk and corresponding key, the disks being easily removed by withdrawing the cylinder from its case; or, if desired, the disks may be made fast in the cylinder, this construction permitting the disks to be made from steel or other hard metal which will not wear by constant operation of the key, and makes the lock much more durable than would be the case were these projections formed as a part of the cylinder itself.

In this class of locks the cylinder portion is applied from the outside of the door, the lock being a mortise-lock or a rim-lock, as the case may be, and connection is made from the cylinder to the mechanism of the lock. As doors vary in thickness, it is necessary that there should be a corresponding variation in the length of the connection.

In the more general construction of this class of connections a mortise or notch is formed in the inner end of the cylinder and a flat bar introduced, one end resting in the said mortise or notch, so as to engage the cylder, and the other extending into engagement with the mechanism of the latch, the bar being cut to the proper length—that is, the bars are made of a length sufficient for the greatest thickness of door, and then cut off as the doors are thinner. This bar is an independent of separate piece, liable to be lost in packing or transportation.

The object of this part of my invention is to make the connection as a permanent part of the cylinder, yet adapt it to be cut off to the requisite length; and this part of the invention consists in constructing the disk, which is applied to the rear end of the cylinder to hold the cylinder in place, with a flat longitudinal bar extending centrally from said disk and made as a permanent part thereof.

The cylinder C is secured in its case by means of a disk G, applied to the rear end of the cylinder after it is placed in the case, the diameter of the disk being greater than the diameter of the cylinder, and so as to extend laterally onto the case around the cylinder to form a projecting flange, which will abut against the inner end of the case to prevent its withdrawal. This disk is a common arrangement in this class of locks. I construct this disk G with a longitudinally-projecting bar H. This bar is flat and is arranged in a diametrical plane of the cylinder, as shown, and it is made a permanent part of the disk, either by shaping the bar and the disk from a single piece of metal, so that they are positively integral, or made separate and riveted, brazed, or soldered together, so as to be substantially integral so far as the operation is concerned. The said bar H is made of a length equal to the longest length required, or the length necessary for the thickest doors, and then for thinner doors a portion is cut from the end of the bar to reduce the length, as may be required. By this construction the connecting-bar H becomes practically a part of the cylinder, and all liability to derangement or loss of said bar is avoided, and the bar thus permanently connected to the cylinder is much firmer than can be made under the usual construction, where the bar

is made separate and simply inserted into a notch formed in the rear end of the cylinder.

I claim—

1. In a lock having a cylinder arranged within a case, the said cylinder constructed with a longitudinal key-hole for the reception of the key and so that the cylinder may be rotated by a key when so inserted, the cylinder constructed with a transverse slot across its body, forming a recess E, extending substantially across the key-hole, combined with a disk in shape and thickness corresponding to the said slot and introduced therein, the said disk having an opening through it corresponding to the key-hole, but with one or more projections from either side of said opening into the key-hole, and the key constructed with longitudinal grooves corresponding to the said projections, substantially as described.

2. In a lock in which the cylinder is arranged in a case so as to be revolved by a key introduced therein, the combination therewith of a disk G, attached to the inner end of the cylinder, the said disk constructed with a longitudinal centrally-projecting bar H as a permanent part of said disk, substantially as and for the purpose described.

HENRY B. SARGENT.

Witnesses:
E. H. EGGLESTON,
WM. S. COOKE.