(No Model.)

H. B. SARGENT & A. A. PAGE.

MASTER KEY PIN LOCK.

No. 561,343. Patented June 2, 1896.

Fig. 1

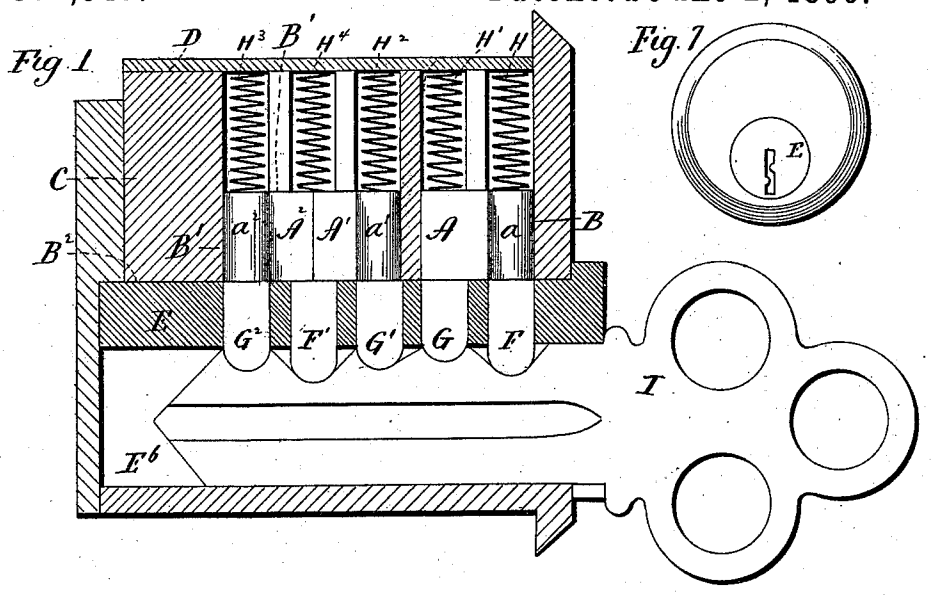


Fig. 7

Fig. 2

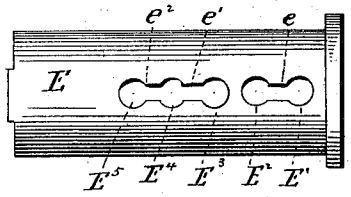


Fig. 6

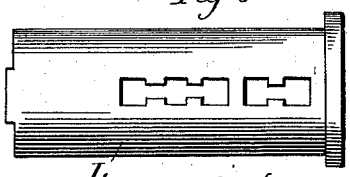


Fig. 3

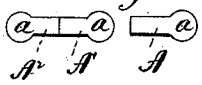


Fig. 5

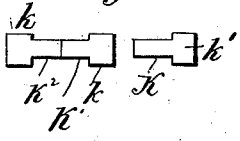
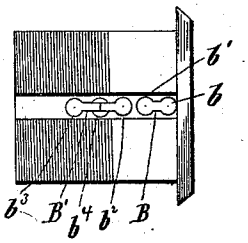


Fig. 4



Witnesses.
J. H. Shumway
Lillian D. Kelley

Henry B. Sargent
and Albert A. Page.
Inventors.
By Attys
Earle & Seymour

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

UNITED STATES PATENT OFFICE.

HENRY B. SARGENT, OF NEW HAVEN, AND ALBERT A. PAGE, OF EAST HAVEN, CONNECTICUT, ASSIGNORS TO THE SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT.

MASTER-KEY PIN-LOCK.

SPECIFICATION forming part of Letters Patent No. 561,343, dated June 2, 1896.

Application filed March 19, 1894. Serial No. 504,222. (No model.)

To all whom it may concern:

Be it known that we, HENRY B. SARGENT, of New Haven, and ALBERT A. PAGE, of East Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Master-Key Pin-Tumbler Locks; and we do hereby declare the following, when taken in connection with the 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, an enlarged view, in vertical longitudinal section, of one form which a lock constructed in accordance with our invention may assume, the said lock being shown in connection with a day-key; Fig. 2, a detached plan view of the cylinder of the lock; Fig. 3, a detached plan view of the bolts of the lock; Fig. 4, a detached plan view, on a still smaller scale, of the lock-case with the bolts removed to show the form of the bolt-chambers; Fig. 5, a detached plan view of one of the modified forms which the bolts may assume; Fig. 6, a detached plan view of the cylinder of such a lock; Fig. 7, a view in front elevation and drawn to ordinary size of a lock containing our invention.

Our invention relates to an improvement in pin-tumbler master-key cylinder-locks, the object being to produce a simple, durable, and effective article, designed with special reference to ease and accuracy of manufacture and reliability of operation.

With these ends in view our invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

As shown in Figs. 1 to 4, inclusive, of the drawings, the lock is constructed with three oblong bolts A, A′, and A^2, located in a single oblong radial chamber B and a double oblong radial chamber B′, formed in the lock-case C and extending at their outer ends through the same and normally closed by a slide D of ordinary construction, and at their inner ends intersecting a cylindrical longitudinal chamber B^2, formed in the case to receive the rotatable cylinder E, which is constructed with five radial pockets E′, E^2, E^3, E^4, and E^5 and with a longitudinal key-slot E^6, formed in the lower edge of the cylinder and intersecting the bottom walls of all of the said pockets, which contain master-key tumblers F and F′ and day-key tumblers G, G′, and G^2. It will be observed that the bolt A is arranged to be independently acted upon by the master-key tumbler F and the day-key tumbler G, which are respectively located for engagement with its outer and inner edges. It is clear that under this arrangement the tendency of either tumbler will be to tilt the bolt in operating the same, inasmuch as the tumblers do not engage with the bolt at its center, but at its respective edges. To overcome that tendency of the bolt to tilt, we construct it at one edge with a bearing *a*, which, as shown, consists of a circular longitudinal enlargement, which bears upon the correspondingly-enlarged outer edge *b* of the single chamber B, which contains two springs H H′, arranged to engage with the opposite edges of the outer end of the bolt, the spring H being located in the enlarged outer edge *b* of the chamber and the spring H′ being located in the enlarged inner edge *b*′ of the chamber. We do not limit ourselves, however, to enlarging both edges of the chamber, though that construction is preferred, because it affords means for keeping the springs in place.

The bolts A′ and A^2, which are located in the double chamber B′, are arranged so that their inner edges will have sliding bearing upon each other, whereby one bolt serves as a guide for the other, and whereby also economy of space is secured; but we do not limit ourselves to arranging the bolts to slide upon each other when we employ pairs of bolts. The master-key tumbler F′ is arranged under the inner edges of these bolts, so as to operate them simultaneously, while they are operated independently by means of the day-key bolts G′ and G^2, respectively arranged to engage with the outer edge of the bolt A′ and the outer edge of the bolt A^2. Inasmuch as the tendency of the tumblers will be to tilt the bolts, as they do not engage with the same centrally, we construct the outer edges of the bolts with longitudinal circular enlargements

a' and a^2, forming bearings and corresponding to the longitudinal circular enlargement a of the bolt A. To accommodate the said enlargements of the bolts and to coöperate therewith, the edges of the double bolt-chamber B′ are circularly enlarged, as at b^2 b^3. These enlargements also receive and hold in place the springs H^2 and H^3, respectively engaging with the outer edges of the bolts A′ and A^2, and to provide for the spring H^4, which engages with the bearing inner edges of both of the bolts, the said chamber is constructed with a central enlargement b^4. We do not, however, limit ourselves to enlarging the chamber centrally, as at b^4, for some other provision for the spring H^4 may be made.

In Fig. 1 of the drawings we have shown the day-key I, which acts upon the day-key tumblers G, G′, and G^2 for lifting the bolts to the racking-line. The master-key we have not shown; but it will be understood that it is constructed so as to act upon the master-key tumblers F and F′ for lifting the bolts to the racking-line. In order to adapt the cylinder to receive the bolt A, its radial pockets E′ and E^2 are connected together by a passage e, while to adapt it to receive the bolts A′ and A^2 its pockets E^3 and E^4 are connected by a passage e' and its pockets E^4 and E^5 by a passage e^2, all as seen in Fig. 2.

The bolts required by our invention may be easily and accurately formed from long rods drawn or shaped in right cross-section, while the chambers in the case and the pockets in the cylinder may also be readily formed to receive the bolts and tumblers, respectively, by drilling the case and cylinder and then drifting out the metal between the holes formed by drilling. By enlarging one end of each bolt, so as to prevent it from tilting, we are enabled to employ these simple and effective double bolts and to operate them independently by day-key and master-key tumblers.

It is not necessary that the enlargements at the ends of the bolts be circular in form, for they may be of some other shape, such as rectangular, as shown in Fig. 5 of the drawings, in which the outer edges of the bolts K, K′, and K^2 are constructed with rectangular longitudinal enlargements k k k.

Fig. 6 of the drawings shows a cylinder L, constructed for a lock having bolts like those shown in Fig. 5. In carrying out our invention we may of course vary the number of bolts employed, and may arrange them all as single bolts or in pairs. We would therefore have it understood that we do not limit ourselves to the exact construction herein shown and described, but hold ourselves at liberty to make such changes and alterations as fairly fall within the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a master-key, pin-tumbler, cylinder-lock, the combination with a lock-case constructed with a cylinder-chamber, and a radial, longitudinally-arranged, oblong bolt-chamber intersecting the said cylinder-chamber; of a cylinder located in the said cylinder-chamber, two bolts located in the bolt-chamber, two springs respectively having independent engagement with the said bolts for operating them independently of each other, a spring engaging with both of the said bolts for operating them simultaneously, two day-key tumblers located in the cylinder, and respectively arranged therein to engage with the two bolts for operating them independently of each other, and a master-key tumbler located in the cylinder in position to engage with both bolts for operating them simultaneously, substantially as described.

2. In a master-key, pin-tumbler, cylinder-lock, the combination with a case constructed with a double oblong bolt-chamber, of two bolts located in the said chamber, longitudinally enlarged to take a bearing therein to prevent them from tilting, and having sliding bearing upon each other at their inner edges, a cylinder located in the lock-case, a master-key tumbler located in the cylinder in position to engage with the inner edges of both bolts, and two day-key tumblers also located in the cylinder, and respectively arranged therein to engage with the two bolts for operating them independently of each other, substantially as set forth.

3. In a master-key, pin-tumbler, cylinder-lock, the combination with a case constructed with a double oblong bolt-chamber, of two bolts located in the said chamber and having sliding bearing upon each other at their inner edges, a cylinder located in the lock-case, a master-key tumbler located in the cylinder in position to engage with the inner edges of both bolts, and two day-key tumblers also located in the cylinder, and respectively arranged therein to engage with the two bolts for operating them independently of each other, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

HENRY B. SARGENT.
ALBERT A. PAGE.

Witnesses:
ELLIOTT LITTLEJOHN,
FRED. C. EARLE.