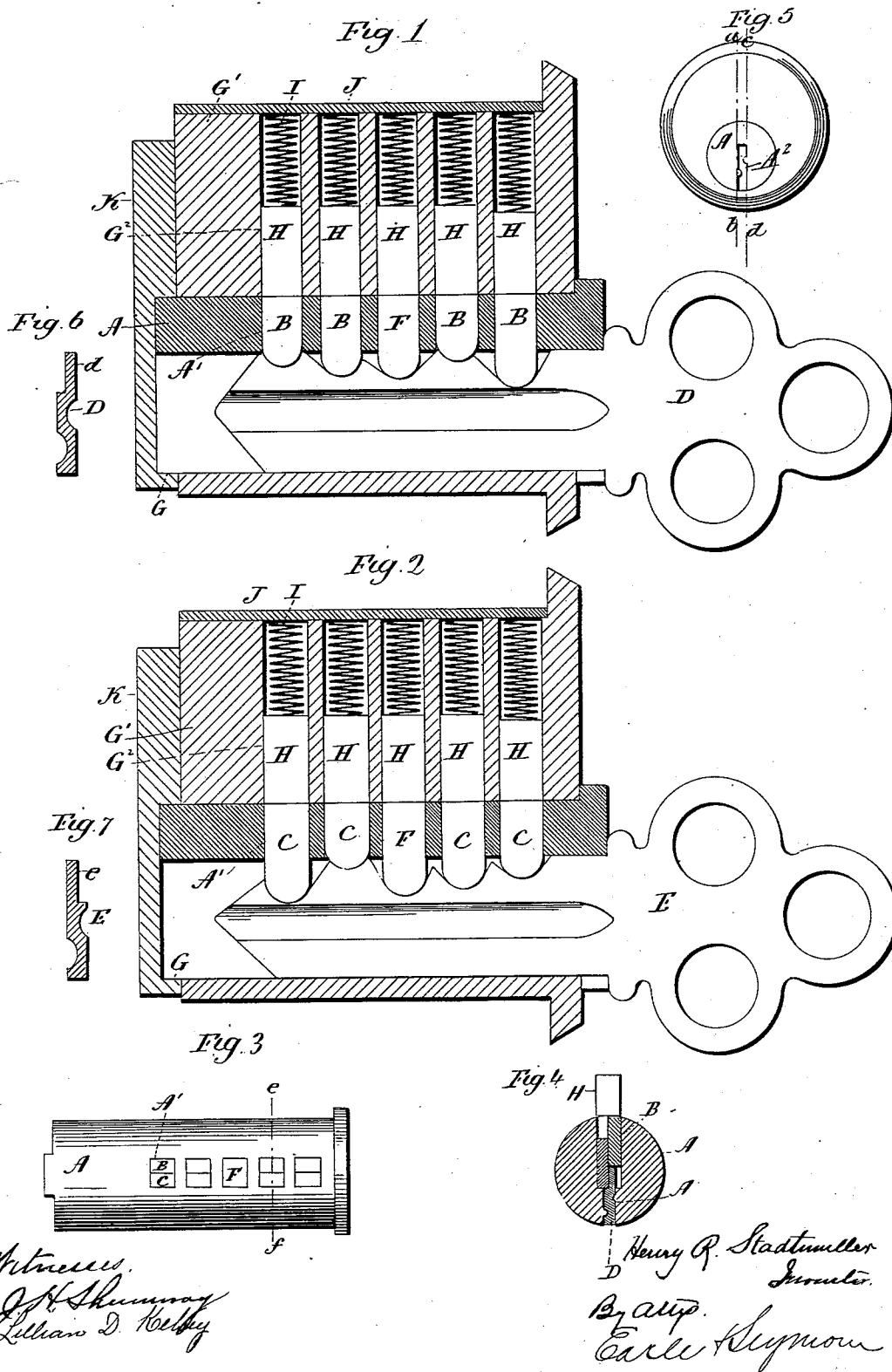


(No Model.)

H. R. STADTMULLER.
MASTER KEY PIN LOCK.

No. 564,803.

Patented July 28, 1896.



UNITED STATES PATENT OFFICE.

HENRY R. STADTMULLER, OF WHITNEYVILLE, CONNECTICUT, ASSIGNOR
TO THE SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT.

MASTER-KEY PIN-LOCK.

SPECIFICATION forming part of Letters Patent No. 564,803, dated July 28, 1896.

Application filed March 19, 1894. Serial No. 504,207. (No model.)

To all whom it may concern.

Be it known that I, HENRY R. STADTMULLER, of Whitneyville, in the county of New Haven and State of Connecticut, have invented a new Improvement in Master-Key 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 view in vertical longitudinal section of one form which a lock constructed in accordance with my invention may assume, the said section being taken on the line *a b* of Fig. 5 and looking in the direction of the arrows *x* and showing the day-key tumblers as lifted by the day-key; Fig. 2, a corresponding view on the line *c d* of Fig. 5, looking in the direction of the arrows *y* and showing the master-key tumblers as engaged by the master-key; Fig. 3, a detached plan view, on a smaller scale, of the rotatable cylinder; Fig. 4, a view of the said cylinder in transverse section on the line *e f* of Fig. 3, showing also one of the pins or bolts; Fig. 5, a still smaller view of the lock in front elevation; Fig. 6, a view in transverse section of the day-key, drawn to the same scale as Fig. 1; Fig. 7, a similar view of the master-key.

My invention relates to an improvement in master-key pin-tumbler cylinder-locks, the object being to produce a simple and effective lock not liable to derangement and designed with particular reference to easy and accurate construction and assemblance.

With these ends in view my invention consists in a master-key pin-tumbler lock having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

Locks of the type to which my invention relates are so well known that without first detailing their general construction I will proceed at once to the description of the cylinder *A*, which contains my present invention. In carrying out my invention I construct the said cylinder with a longitudinal series of radial pockets *A'*, located in its upper edge, and with a single radial longitudi-

nal key-slot *A²*, extending through the lower edge of the cylinder and centrally intersecting the bottom walls of the said pockets, as clearly shown in Fig. 4 of the drawings. As herein represented, I have shown five pockets of rectangular form in cross-section, but obviously the number of pockets employed may be more or less than five, and also their form in cross-section may be varied, though the rectangular form shown is preferred on account of the ease and accuracy with which it may be made by drilling a round hole and then drifting it out with a drift. In these pockets I locate the tumblers *B* and *C* of two independent series of tumblers, designed to be operated independently of each other by a day-key *D* and a master-key *E* of peculiar construction. These tumblers are technically known as "pin-tumblers," having received that name because in early locks of the type under consideration the tumblers in question consisted of pins or very short lengths of round wire. As herein shown, however, the tumblers are rectangular in cross-section and formed from thick sheet metal, but as they correspond to the pin-tumblers of early locks of the said type the term in question will identify them. The day-key tumblers *B* and the master-key tumblers *C* are respectively arranged in independent longitudinal series, so far as their coaction with the day and master keys is concerned, but so far as their organization in the cylinder *A* is concerned the opposite members of the respective series are paired in the pockets of the cylinder, so that their inner faces bear upon each other, as clearly shown in Figs. 3 and 4. It will be understood that the respective tumblers of each series are differentiated in length from each other and also from the tumblers of the other series.

Preferably, although not necessarily, I also employ one or more solid or double tumblers *F* for additional security. As shown herein, I have employed one of such tumblers, and located it in the central pocket, to which it substantially corresponds in transverse section, but I may shift it about and locate it in any other of the pockets, whereby it becomes an additional factor in the differentiation of the locks of the same series from each

other. If preferred, I may employ more than one of these tumblers, and if I employ a plurality of them they may be shifted around as desired. I may, however, dispense with solid or double tumblers altogether and use only paired tumblers.

Inasmuch as the key-cylinder has but a single key-slot, and as it is designed to operate the respective series of tumblers independently, which is to say without disturbing each other, I am obliged to employ keys of peculiar construction. By reference to Fig. 6 of the drawings it will be seen that the notched upper edge *d* of the day-key D is offset to the right, while by reference to Fig. 7 of the drawings it will be seen that the corresponding notched edge *e* of the master-key E is offset to the left. When therefore the day-key is inserted into the key-slot, its notched upper edge will engage with the overhanging inner edges of the lower ends of the day-key tumblers B exclusively, and operate those tumblers without disturbing any of the master-key tumblers C, although the tumblers B will slide up and down upon the tumblers C. When, on the other hand, the master-key E is inserted into the key-slot, its notched edge *e*, which is offset to the left, will engage with the overhanging inner edges of the lower ends of all of the master-key tumblers C, but will not engage with the corresponding edges of the tumblers B of the other series. When the master-key tumblers C are operated, they will slide up and down against the day-key tumblers B, but without disturbing the same. It will thus be seen that although the opposite tumblers of the two series are arranged in pairs, so as to bear upon each other in the pockets in the cylinders for convenience and accuracy in the construction of the lock, they are virtually isolated from each other, so far as their operation by the day and master keys is concerned. I thus secure a great advantage in the construction of the lock, as it is apparent that I can form a single series of comparatively large pockets cheaper and with more accuracy than two series of small pockets.

The cylinder A is located so as to rotate in a cylindrical chamber G, formed to receive it in the lower part of the lock-case G', and extending longitudinally through the said case, which is also constructed with a series of five radial chambers G², intersecting the chamber G at their inner ends, and arranged in correspondence with the pockets A' of the cylinder and receiving spring-actuated locking-bolts H, adapted in cross-section to enter the outer ends of the said pockets and thus lock the cylinder against rotation in the case. The pins or bolts H are normally pressed inward by means of spiral springs I, located in the outer ends of the chambers G², and secured in place by a slide J of well-known construction.

I do not limit myself to constructing the bolts H in any particular form in cross-section,

as it is only necessary that they should be adapted in form to enter the outer ends of the pockets A' in the cylinder and lock the same against rotation. As herein shown, the extreme inner end of the cylinder A is furnished with an operating-lug K, which provides for coupling the mechanism described with a latch mechanism of any approved construction. In some cases this lug is replaced by a coupling-bar, which connects the mechanism described with the latch mechanism. Both the operating-lug and coupling-bar devices are very well known to persons skilled in this art and do not need special description.

Having fully described my invention, what I 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 containing a longitudinal cylinder-chamber and a series of radially-arranged bolt-chambers the inner ends of which intersect the said cylinder-chamber; of a cylinder constructed with a single longitudinal series of tumbler-pockets arranged in correspondence with the radial bolt-chambers of the lock-case, and also constructed with a single longitudinal key-slot intersecting the bottom walls of said pockets, a longitudinal series of day-key tumblers arranged in said pockets, and having the inner edges of their lower ends extended over the upper edge of the key-slot for engagement by the day-key, which alone engages with them, a longitudinal series of master-key tumblers located in the same pockets with the day-key tumblers upon which they bear and slide and which bear and slide upon them, and having the inner edges of their lower ends extended over the opposite upper edge of the key-slot for engagement by the master-key and by that key alone; and a series of pins or bolts located in the radial bolt-chambers of the lock-case and arranged to be directly engaged by the respective tumblers of the series of day-key tumblers, and also to be directly engaged by the respective tumblers of the series of master-key tumblers which act upon them independently of the day-key tumblers and vice versa, substantially as described, and whereby the day-key tumblers and master-key tumblers are entirely independent of each other so far as the action of the respective keys upon them is concerned, the day-key never lifting the master-key tumblers, and the master-key never lifting the day-key tumblers.

2. In a master-key pin-tumbler cylinder-lock, the combination with a lock-case having a cylinder-chamber and bolt-chambers, of a cylinder having a single series of tumbler-pockets, and a single longitudinal key-slot intersecting the bottom walls of the said pockets, a longitudinal series of day-key tumblers arranged in the said tumbler-pockets, and having the inner edges of their lower ends extended over the upper edge of the key-slot for engagement by the day-key, and by that

key alone, a longitudinal series of master-key
tumblers arranged in the same tumbler-pock-
ets, bearing and sliding upon the tumblers of
the series of day-key tumblers, having their
5 lower ends extended over the opposite upper
edge of the key-slot for engagement by the
master-key and by the master-key alone, one
or more solid or double tumblers designed to
be operated upon by both keys and located
10 in pockets of said series of tumbler-pockets,
and a series of pins or bolts located in the
radial bolt-chambers of the lock-case, and ar-
ranged to be directly engaged by the respec-
tive tumblers of each of the two series of

tumblers, which are entirely independent of 15
each other so far as their action by the re-
spective keys and upon the bolts is concerned
with the exception of the slide or double tum-
blers which are acted upon by both keys, sub-
stantially as described. 20

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

HENRY R. STADTMULLER.

Witnesses:

WILLIAM S. COOKE,
ELLIOTT LITTLEJOHN.