

(No Model.)

L. MOUAT, Jr.
CYLINDER LOCK AND KEY.

No. 598,469.

Patented Feb. 1, 1898.

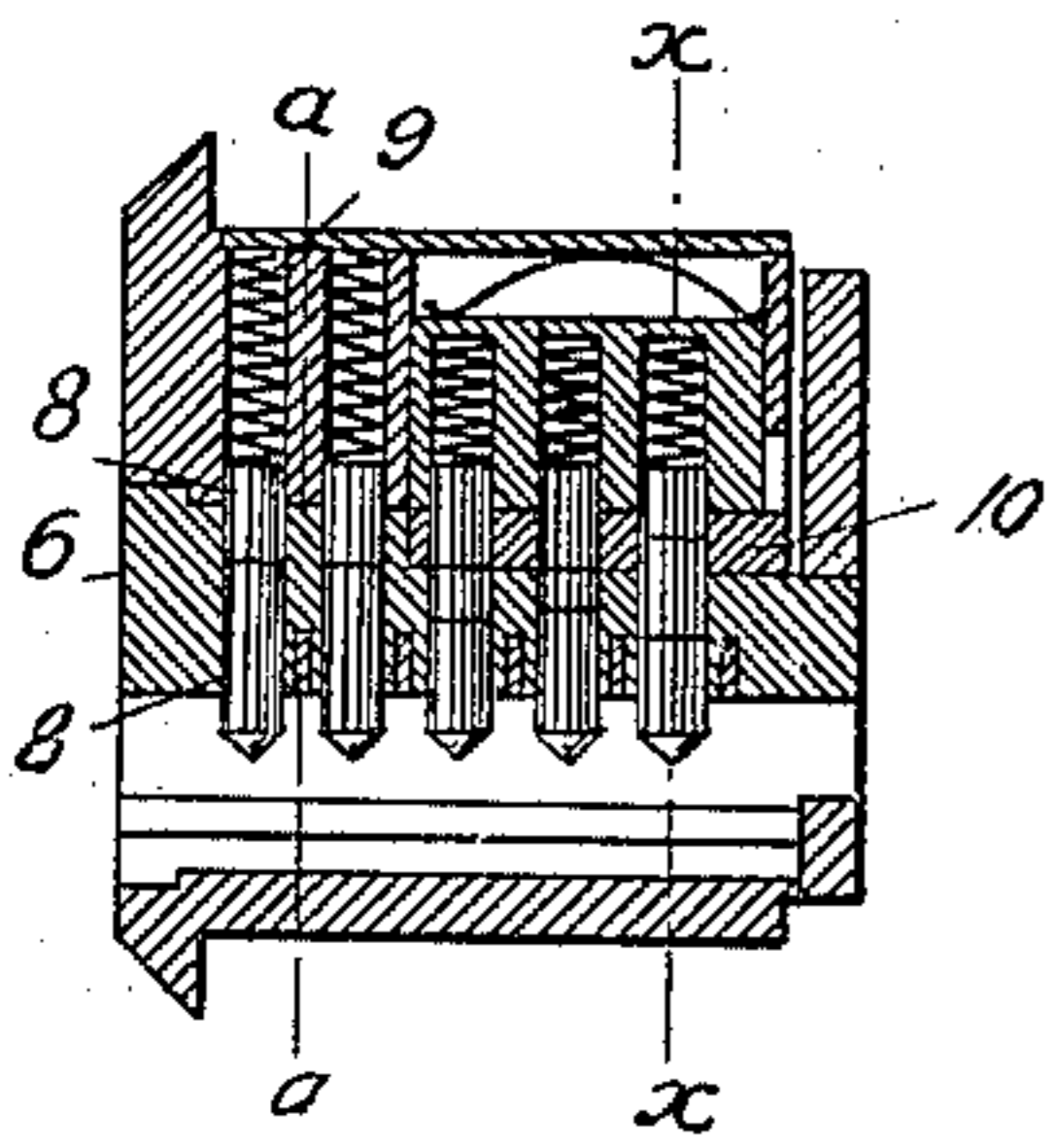


FIG. 1

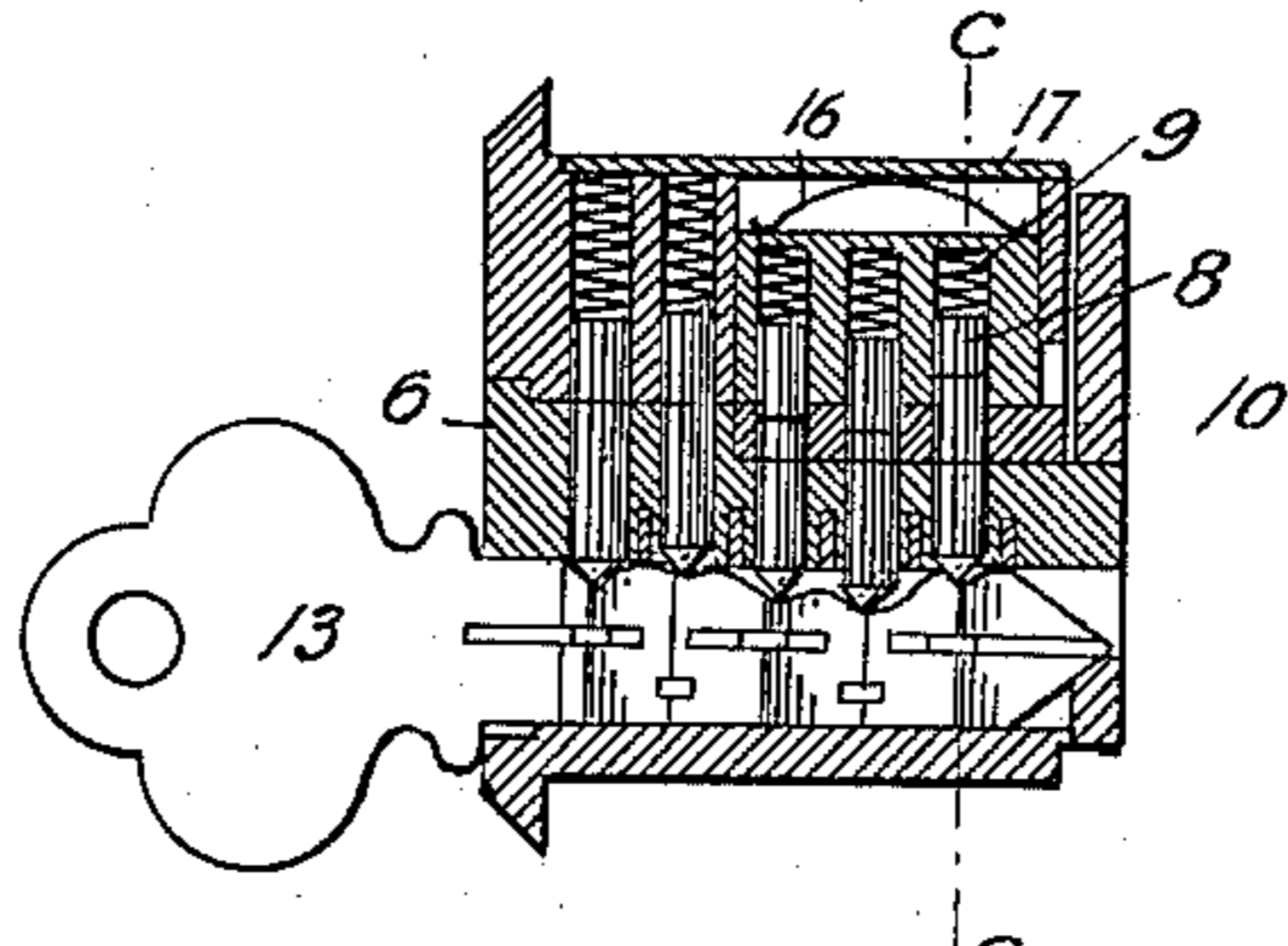


FIG. 2

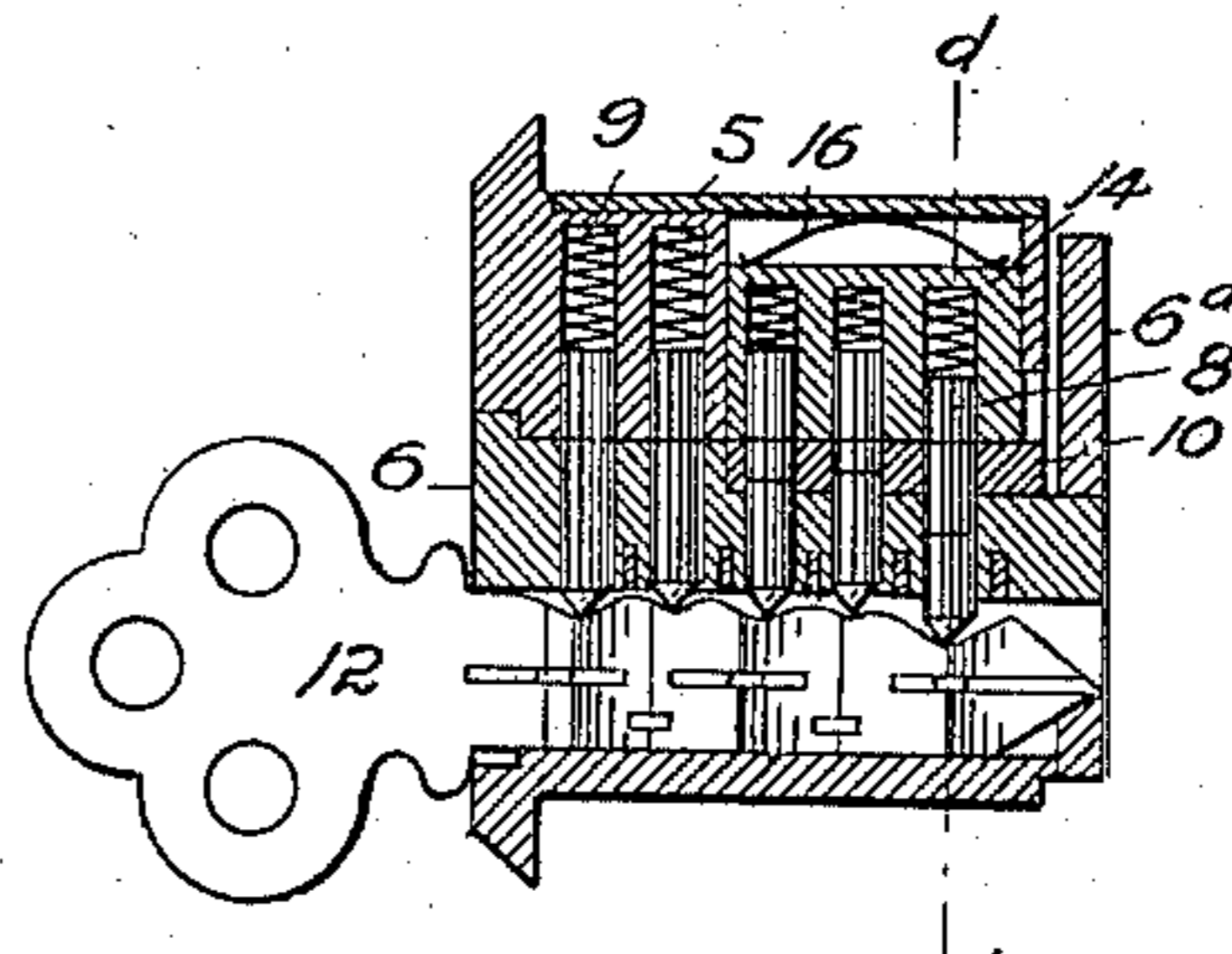


FIG. 3

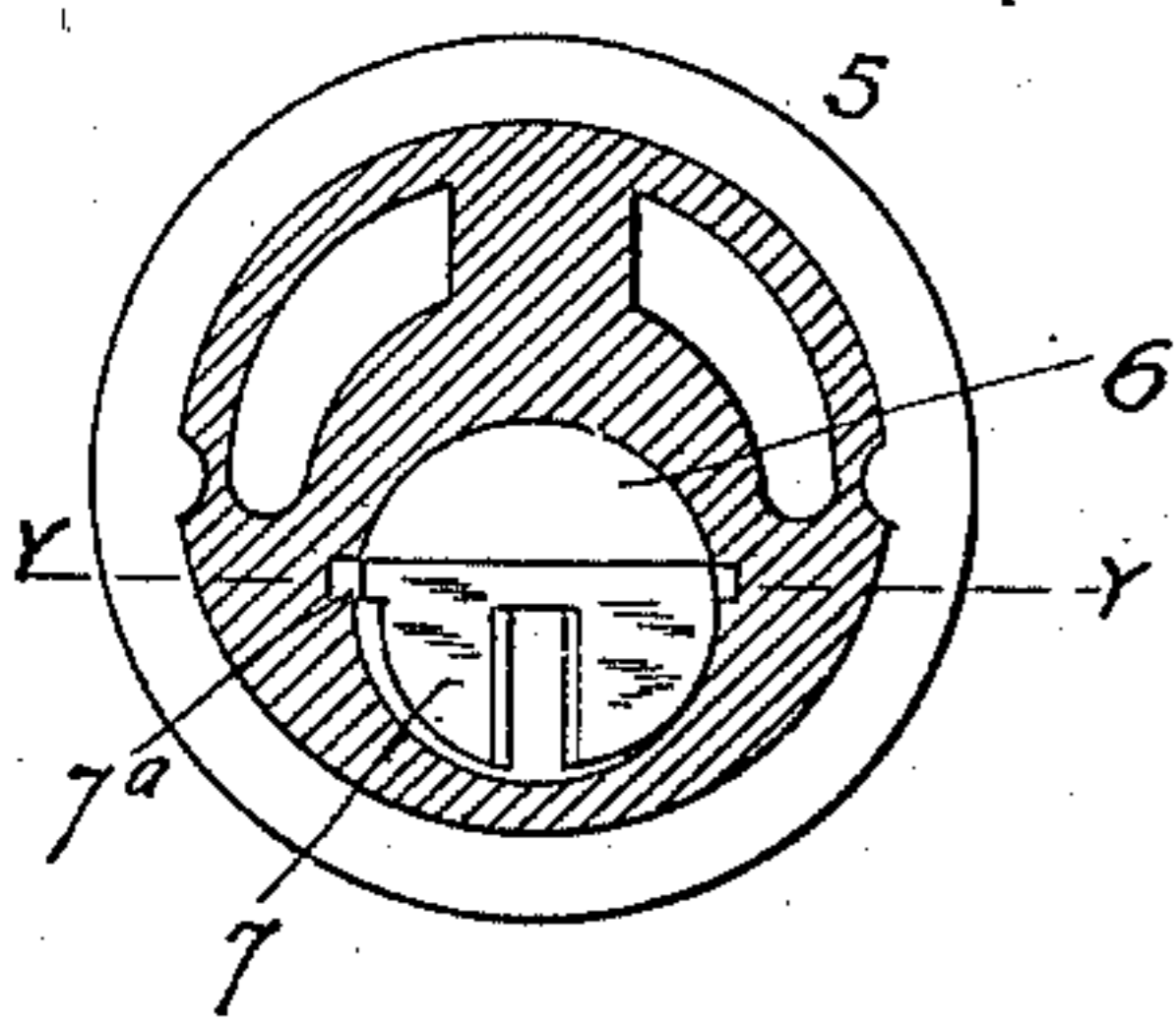


FIG. 4

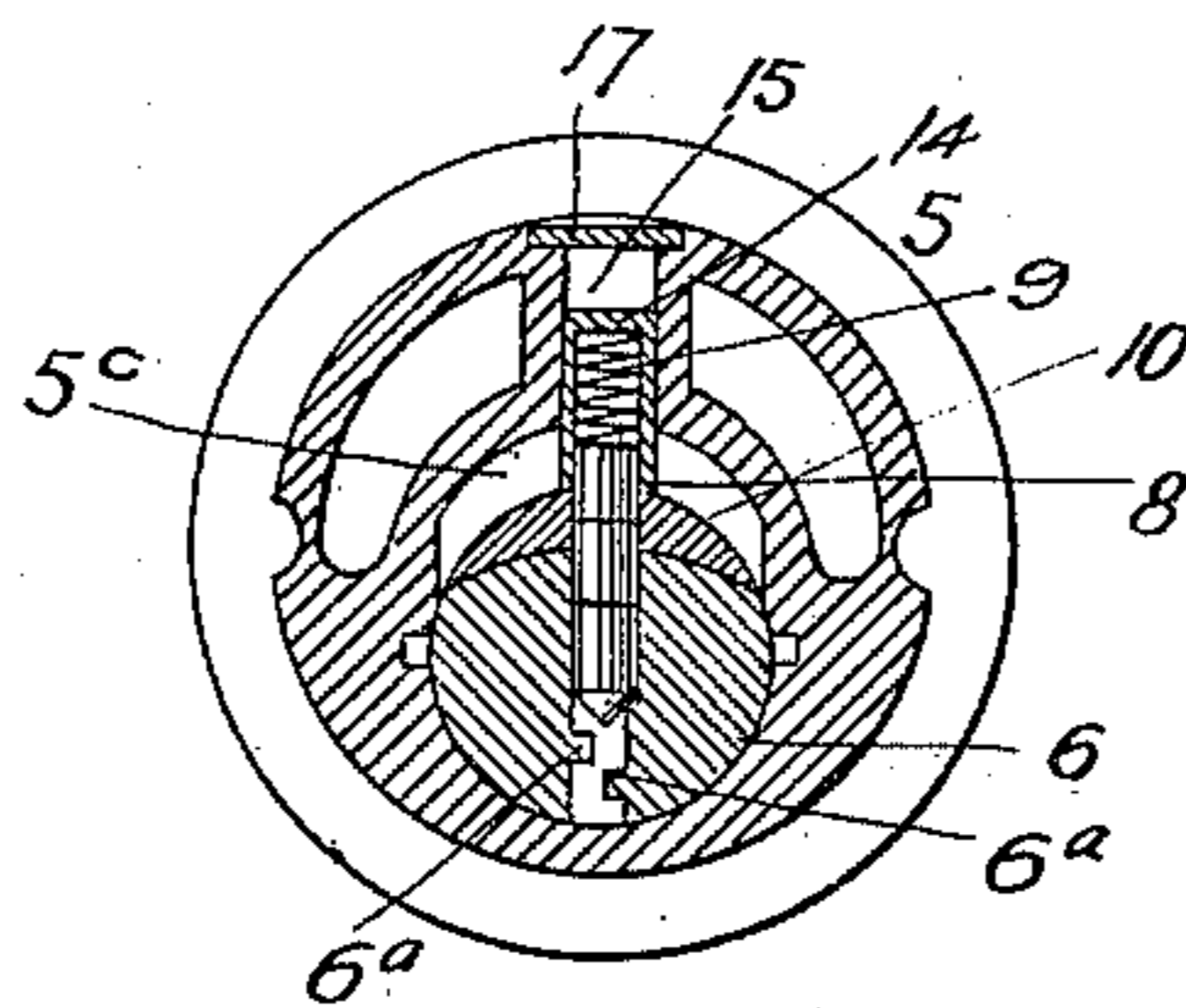


FIG. 5

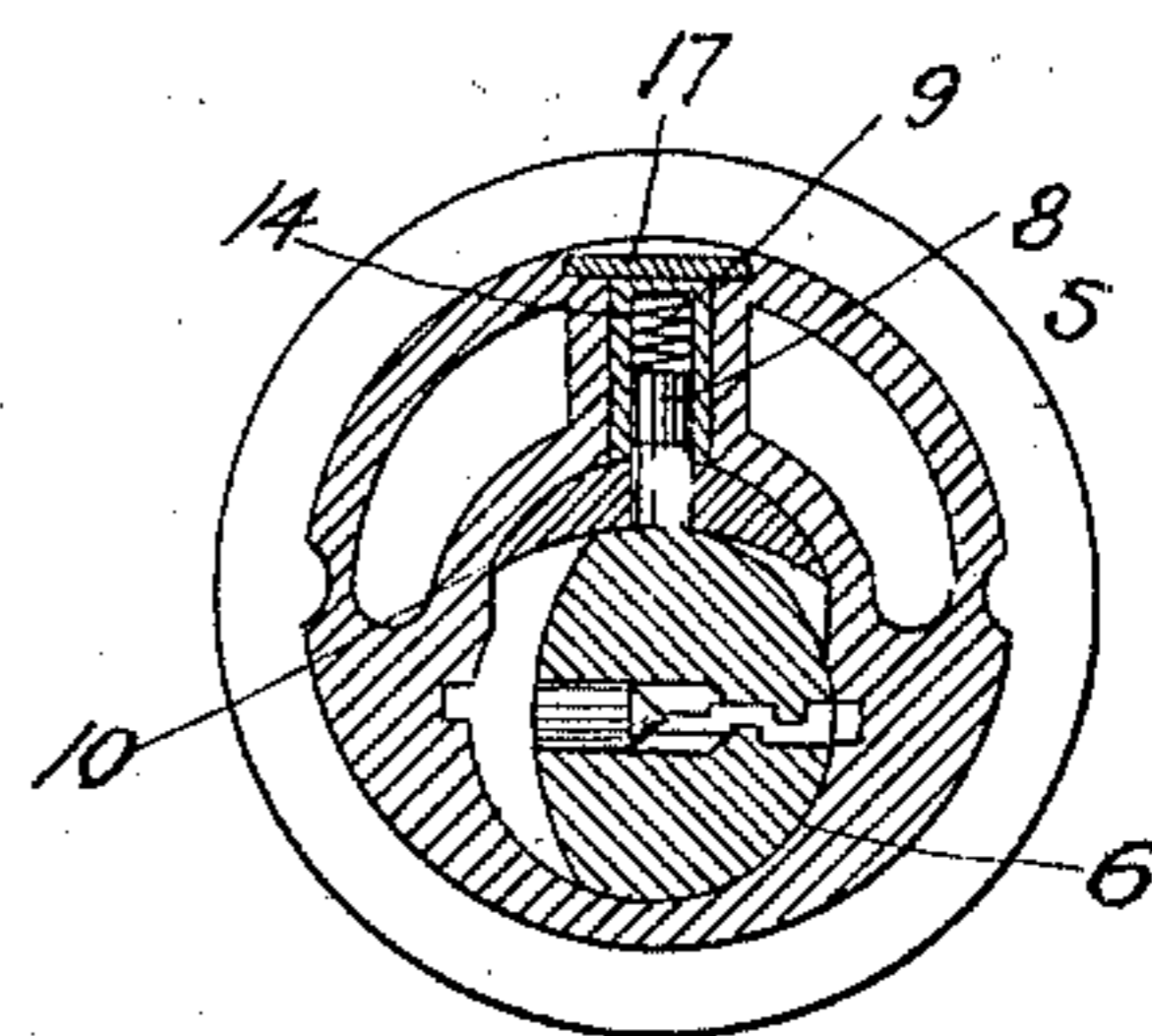


FIG. 6

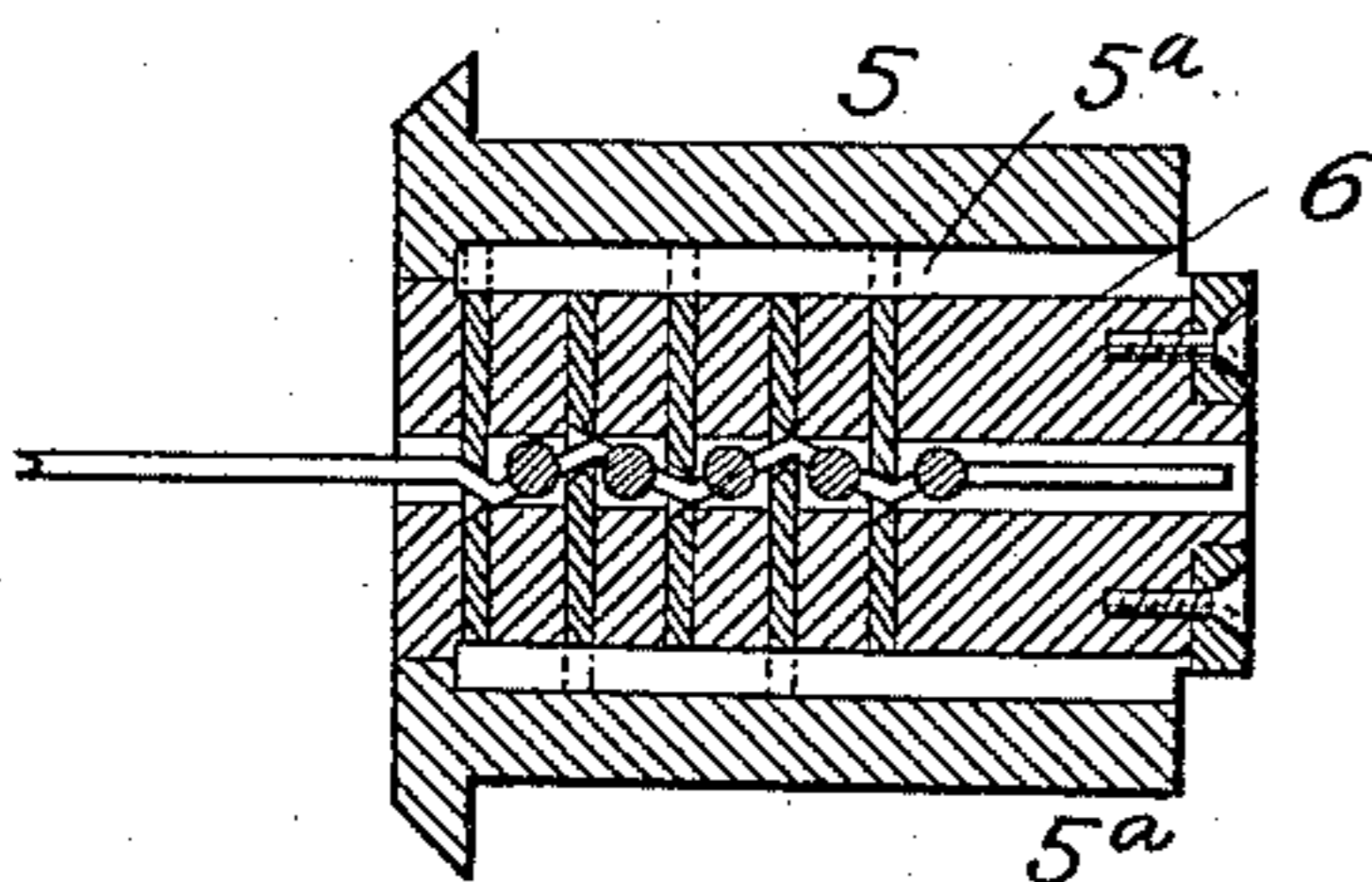


FIG. 7

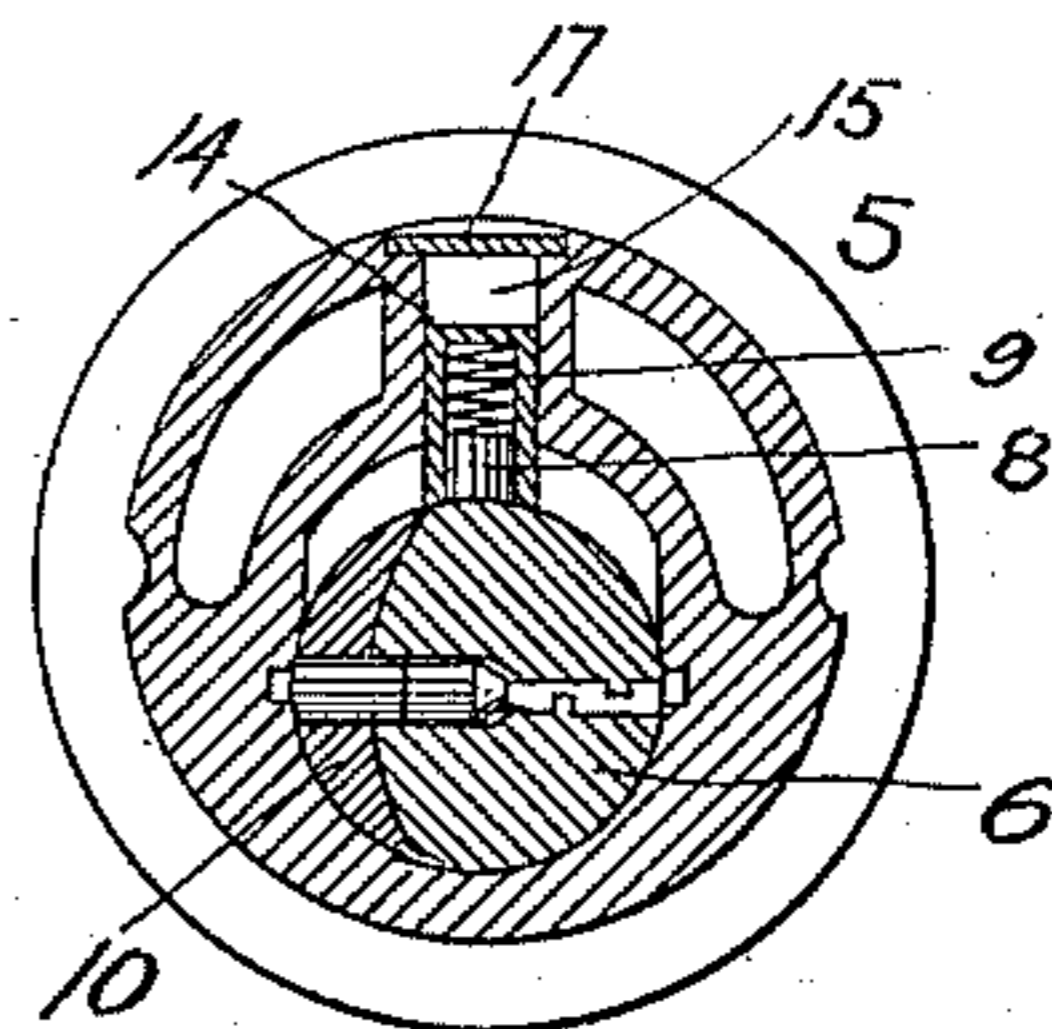


FIG. 8

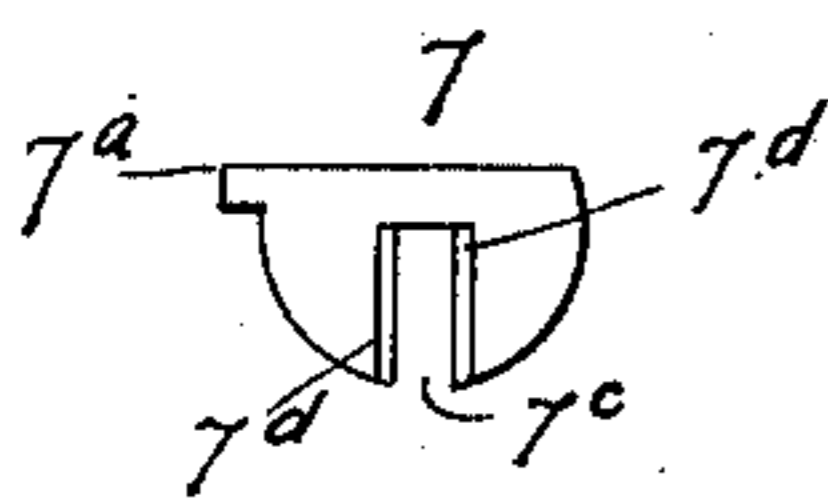


FIG. 11

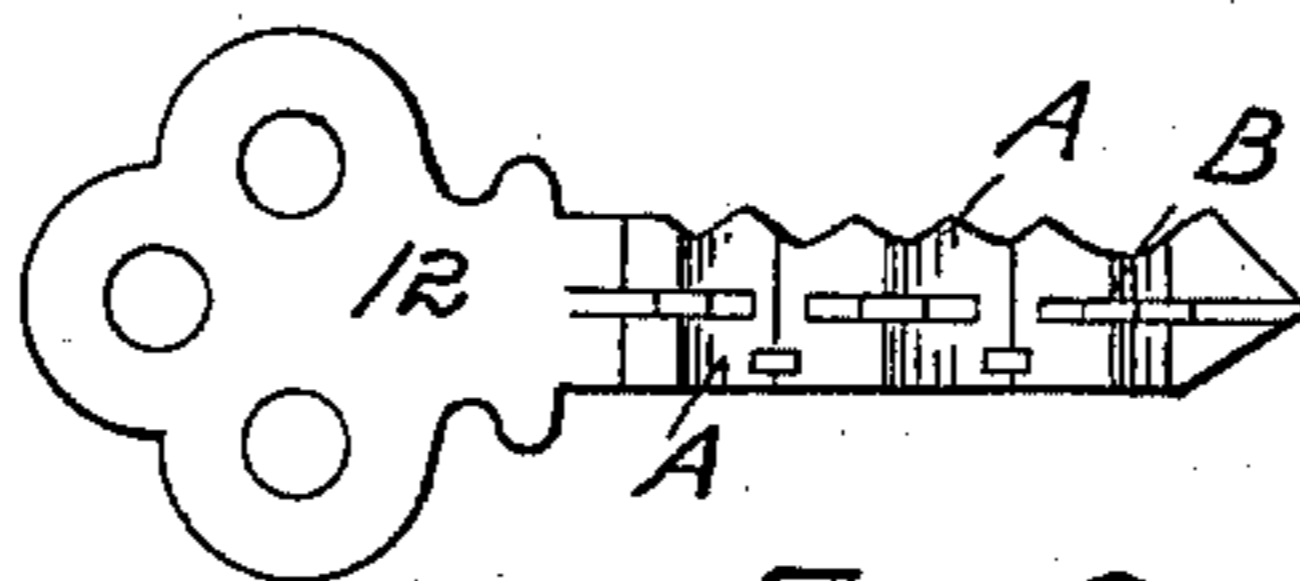


FIG. 9

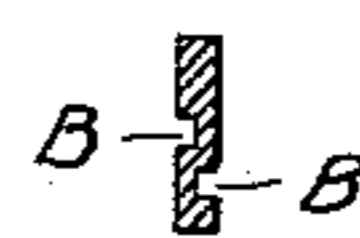


FIG. 12



FIG. 10

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CYLINDER-LOCK AND KEY.

SPECIFICATION forming part of Letters Patent No. 598,469, dated February 1, 1898.

Application filed May 15, 1897. Serial No. 636,619. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE MOUAT, Jr., a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cylinder-Locks and Keys Therefor; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in tumbler cylinder-locks and keys therefor, my object being to provide a lock of this class which it shall be impossible to pick or unlock except by a person holding the key therefor. To this end my improved key is transversely corrugated and also provided with longitudinal corrugations or grooves, the latter being adapted to fit tongues formed on the rotatable plug and projecting into the key-slot. My improved lock is also provided with slotted plate-tumblers having beveled faces formed on either side of the slot to facilitate the entrance of the key. In addition to the special construction of the key and of the plate-tumblers my improved lock is provided with a novel master-key attachment which coöperates with the usual pin-tumblers with which ordinary locks of this class are provided.

The invention will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a vertical longitudinal section taken through my improved lock. Fig. 2 is a similar view showing the master-key inserted. Fig. 3 illustrates the same construction with the ordinary key inserted. Fig. 4 is a transverse section taken on the line *a a*, Fig. 1. Fig. 5 is a section taken on the line *x x*, Fig. 1. Fig. 6 is a section taken on the line *c c*, Fig. 2, the key having been given a quarter-turn from the position shown in Fig. 2. Fig. 7 is a longitudinal section taken on the line *y y*, Fig. 4. Fig. 8 is a cross-section taken on the line *d d*, Fig. 3, the key having been given a quarter-turn from the position shown in Fig. 3. Figs. 9

and 10 are flat and edge views, respectively, of the key. Fig. 11 is a detail view of one of the plate-tumblers. Fig. 12 is a transverse section of the key.

Similar reference characters indicating corresponding parts in the drawings, let the numeral 5 designate the cylindrical case bored to receive the rotatable plug 6. The plug is provided with a number of transverse slots intersecting the key-slot. In these transverse slots are located the plate-tumblers 7, having lugs 7^a, adapted to engage longitudinal grooves 5^a, formed in the case. The lugs 7^a of some of these plate-tumblers, say every other one, are adapted to project into one of the grooves 5^a of the case, while the lugs 7^a of the other plate-tumblers project into the opposite grooves 5^a. Before the key is inserted the lugs 7^a all engage the grooves 5^a, as shown by dotted lines in Fig. 7. Each plate-tumbler is provided with a vertical slot 7^c, wide enough to receive the key, whose insertion actuates the tumblers sufficiently to withdraw all the lugs 7^a from the grooves 5^a by virtue of the transverse corrugations with which the key is provided, thus allowing the plug 6 to turn with the key. This plug is provided with the usual arm 6^a, attached to its inner extremity for operating the locking-bolt. (Not shown.) Each plate-tumbler is provided with a beveled face 7^d, formed on each side of the slot 7^c to give the lock greater security. The angle of this beveled face of the plate-tumbler should conform to the inclination of the transverse corrugations of the key. The tumblers 7 should be beveled in such a manner as to form their edges on the opposite sides of the key-slot 7^c quite thin, thus allowing them to dip into or engage the sharp angles of the transverse key corrugations. Were it not for these thin beveled edges, or, in other words, if the edges of the tumbler on the opposite sides of the slot 7^c were cut abruptly instead of beveled, the slot 7^c must necessarily be wider than the thickness of the key, since the blunt or thick edges of the plate-tumbler on opposite sides of the slot 7^c would bridge the interior angles of the transverse corrugations of the key instead of going to the bottom of the said angular depressions. This construction of the plate-tumblers allows the entrance of the key when the slots 7^c of the said tumblers are

slightly out of line with the key-slot in the rotatable plug. As the key is withdrawn from the lock the plate-tumblers are given a reverse movement and the lugs 7^a are again projected into the grooves 5^a of the case.

My improved lock is also provided with the usual pin-tumblers, each adapted to engage recesses formed in the case 5 and the plug 6. These recesses in the parts 5 and 6 register normally or before the plug is turned in the operation of throwing the bolt. The said pins are raised by the insertion of the key, whereby the lines separating the pins are made to coincide with the periphery of the plug, thus allowing the latter to turn in the case. The pins 8 are acted upon by coil-springs 9, placed in the recesses of the case above and engaging the uppermost pin of each recess.

In the master-key form of lock three pins are required in one or more of the recesses. In my master-key construction a portion at least of the plug 6 is not circular or round in cross-section, or it may be more nearly accurate to state that in the master-key form of lock the plug 6 is formed of two or more distinct parts or members.

As shown in the drawings, a part or member 10, crescent-shaped in cross-section, is placed in the case above the plug and of such size and such proportion that when applied to the reduced portion of the plug it completes its cylindrical form. This crescent-shaped member is apertured to receive the pin-tumblers, which are arranged in sets of three in this portion of the lock. As shown in the drawings, a single crescent-shaped member 10 is employed. This is sufficient for the simple master-key construction. If, however, it is desired to employ a grand master-key, another crescent-shaped member will be necessary. For instance, by the employment of a single crescent-shaped member a series of locks, each constructed for a different individual key, may all be opened by the one master-key. Only the simple master-key construction is shown in the drawings; but this is sufficient to illustrate my master-key principle of lock construction.

My improved key is provided with transverse corrugations A and longitudinal grooves B, which are of sufficient depth to cut through the key at the apexes of the corrugations. The transverse corrugations, as shown in the drawings, extend the entire width of the key, which is guided in the key-slot by tongues 6^a, formed in the rotatable plug and projecting into the key-slot. These tongues 6^a engage the longitudinal grooves B of the key when the latter is inserted.

The numeral 12 designates the ordinary or individual key of this construction and the numeral 13 the master-key. When the key 12 is inserted in the lock, (see Figs. 3 and 8,) the pins 8 are so arranged that the crescent-shaped member 10 turns with the body of the plug 6. When, however, the master-key is inserted in the lock, (see Figs. 2 and 6,) the

pin-tumblers are so arranged that the plug turns independently of its crescent-shaped member. In order to permit the independent turning of the plug, the case must be provided with a space 5^c above the crescent-shaped tumbler, into which the latter retreats or rises as the plug turns. Above the member 10 of the plug and located in a slot 15, formed in the case, is a movable keeper 14, in which are formed recesses for the springs 9 and pin tumblers or drivers 8. Hence this movable keeper rises and falls with the crescent-shaped member of the plug and maintains the parts in operative relation. In the upper part of the slot 15, above the keeper, is located a leaf-spring 16, which acts on the keeper and insures the proper performance of the latter's function. The slot 15 is closed at the top by a removable slide 17, forming a part of the case.

The difference between the ordinary or day key 12 and the master-key 13 lies in the difference between the biting of the two keys or the formation of the notches on their upper edges. This feature is well understood and need not be further explained.

Having thus described my invention, what I claim is—

1. A key bitted on one edge and provided with transverse corrugations, and longitudinal grooves cutting entirely through the key-plate at the apexes of the corrugations.

2. In a lock, the combination with the case having a suitable chamber and interiorly-located longitudinal grooves, a rotatable plug having a longitudinal key-slot, and transverse slots intersecting the key-slot, plate-tumblers located in said transverse slots and having lugs adapted to enter the grooves in the case, said tumblers being slotted to receive the key and having beveled faces adjacent their key-slots, and a key having transverse corrugations extending its entire width and longitudinal grooves cutting entirely through the key-plate at the apexes of the corrugations, the plug being provided with interiorly-projecting longitudinal tongues to engage the longitudinal grooves of the key.

3. The combination of a key having transverse corrugations, a lock-case having a suitable chamber, and interiorly-located longitudinal grooves, a rotatable plug having a longitudinal key-slot and transverse slots intersecting the key-slot, plate-tumblers located in said transverse slots and having lugs adapted to enter the grooves in the case, the said tumblers being slotted to receive the key and having their edges adjacent the slots beveled to conform to the angles of the transverse key corrugations.

4. In a master-key, cylinder-lock, the combination with the case having a suitable chamber and interior longitudinal grooves, a rotatable plug located in said chamber and provided with a key-slot and transverse slots intersecting the key-slot, pin-tumblers adapted to enter recesses formed in the plug and case,

and a segmental member forming in effect a detached portion of the plug which is cut away on one side, said member having one or more apertures adapted to register with the recesses in the case and plug, the chamber in the case being enlarged on one side adjacent the plug to allow the segmental member to enter when the plug turns independently of said member, and plate-tumblers located in the transverse slots in the plug and having lugs adapted to enter the longitudinal grooves of the case, the said plate-tumblers being slotted to receive the key.

5. In a master-key, cylinder-lock, the combination with the case having a suitable chamber and provided with interior longitudinal grooves, a rotatable plug located in said chamber and having a suitable key-slot, and transverse slots intersecting the key-slot, pin-tumblers located in suitable recesses formed in the case and plug, a segmental crescent-shaped member forming in effect a part of the rotatable plug, said member being apertured to register with recesses in the case and plug whereby the lock is adapted for use with two or more differently-bitted keys, the plug-chamber being enlarged on one side to receive the segmental member when the plug is moved independently thereof, and plate-tumblers located in the transverse slots of the plug, said tumblers being slotted to receive the key and having lugs adapted to enter the grooves in the case.

6. In a master-key, pin-tumbler, cylinder-lock, the combination with the case having a suitable chamber, of a rotatable plug located in said chamber and composed of a plurality of members, whereby the lock is adapted for use with two or more differently-bitted keys, pin-tumblers located in suitable recesses formed in the case and plug members, the case-chamber being enlarged adjacent the plug forming a retreat for one part during the rotation of the other part, and a movable keeper recessed to receive the drivers of the pin-tumblers, said keeper being located in a slot communicating with the said enlargement of the chamber.

7. In a master-key, pin-tumbler, cylinder-lock, the combination with the case having a suitable chamber, of a rotatable plug located in said chamber and composed of a plurality of members, pin-tumblers located in suitable recesses formed in the case and plug members, the case-chamber being enlarged adjacent the plug to form a retreat for one part

or member thereof during the rotation of the other part, and a spring-held movable keeper recessed to receive the drivers of the pin-tumblers, said keeper being located in a slot or opening communicating with the said enlargement of the chamber.

8. In a master-key, pin-tumbler, cylinder-lock, the combination with the case having a suitable chamber, of a rotatable plug located in the said chamber and composed of a plurality of members, pin-tumblers located in suitable recesses formed in the case and plug members, the case-chamber being enlarged adjacent the plug to form a retreat for one member thereof during the independent rotation of the other member, a movable keeper recessed to receive the drivers of the pin-tumblers, said keeper being located in a slot or opening communicating with the said enlargement of the chamber, a spring located above said keeper, and a detachable slide closing an opening in the case communicating with said slot.

9. In a master-key, pin-tumbler, cylinder-lock, the combination with the case having a suitable chamber and provided with longitudinal grooves on opposite sides of the chamber, of a rotatable plug located in said chamber and composed of a plurality of members, one member thereof being provided with a longitudinal key-slot and transverse slots intersecting the key-slot, a plurality of plate-tumblers located in said transverse slots, said tumblers being also slotted to register with the key-slot in the plug and provided with lugs on one side, the lug of one or more of the plate-tumblers being adapted to engage one groove in the case, and the lug of one or more of the other plate-tumblers being adapted to engage the opposite groove in the case, pin-tumblers located in suitable recesses formed in the case and plug members, the case-chamber being enlarged adjacent the plug to form a retreat for one part or member thereof during the rotation of the key-engaging part, a movable keeper recessed to receive the drivers of the pin-tumblers, said keeper being located in a slot or opening communicating with said enlargement of the chamber.

In testimony whereof I affix my signature in presence of two witnesses.

LAURENCE MOUAT, JR.

Witnesses:

G. J. ROLLANDET,
EDITH HIMSWORTH.