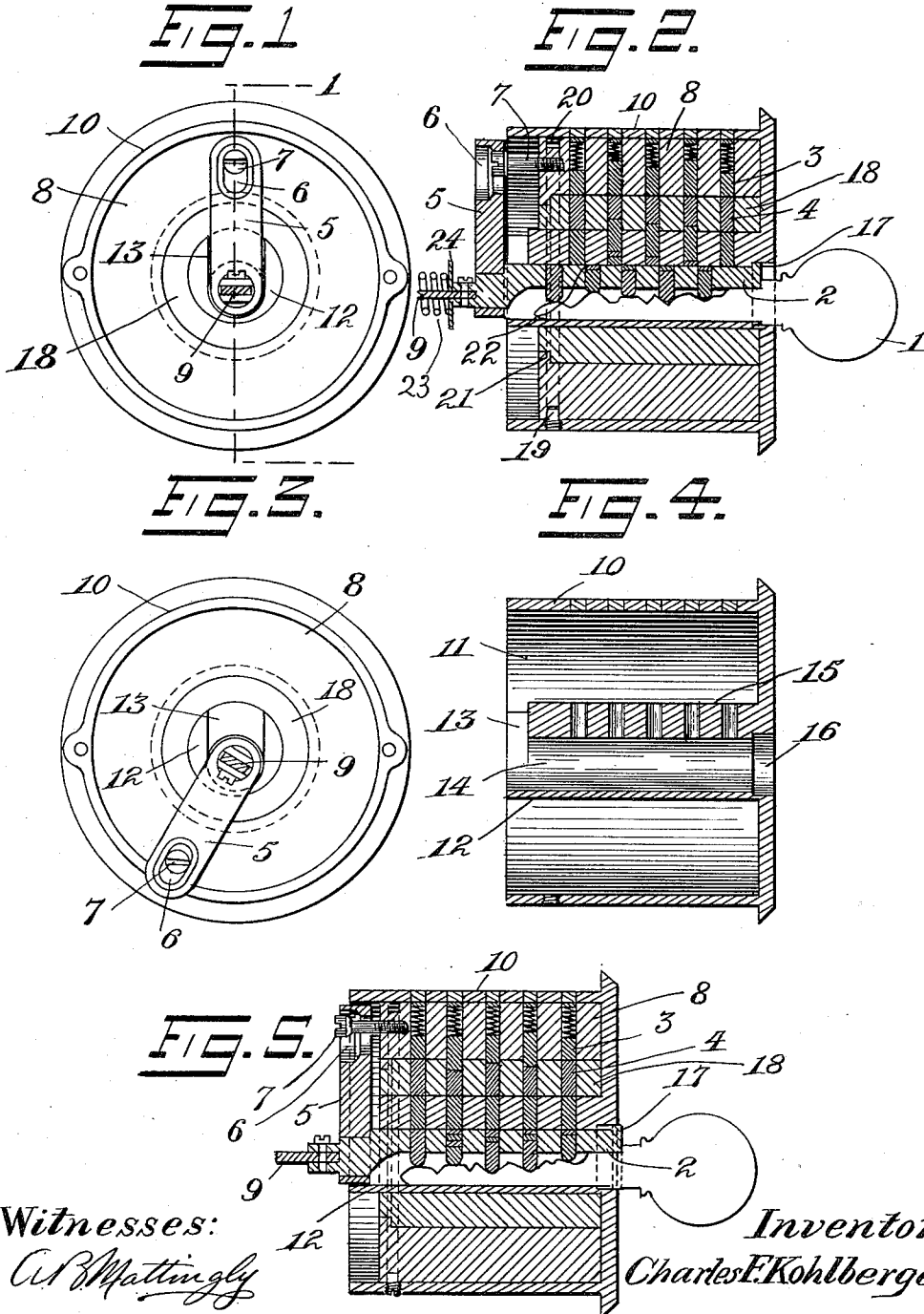


C. F. KOHLBERGER.
 COMPOUND PIN TUMBLER MECHANISM.
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UNITED STATES PATENT OFFICE.

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COMPOUND PIN-TUMBLER MECHANISM.

1,009,155.

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To all whom it may concern:

Be it known that I, CHARLES F. KOHLBERGER, a citizen of the United States, residing in Astoria, in the county of Queens and State of New York, have invented certain new and useful Improvements in Compound Pin-Tumbler Mechanism, of which the following is a specification.

My present invention relates to a compound pin tumbler lock mechanism set in an escutcheon cylinder, wherein by the use of an individual or a master key the lock may be operated similar to those of the well known type. In my present improvement, however, I have arranged the key barrel to slide, after the pins have set by the proper key. This sliding action of the key barrel effectively prevents any manipulation of the pin tumblers after the insertion of a key.

A further improvement is the introduction of a plurality of pin tumbler cylinders, and the introduction with this combination of a series of pin tumblers so formed that they constitute what I term major and minor tumblers. In the type of pin tumbler mechanism heretofore known and used, the securing or anchoring portion of the lock has always been the outer portion of the escutcheon cylinder, whereas in my improved form the securing portion is located intermediate of the key barrel and the two pin tumbler cylinders, which I nominate primary and secondary pin tumbler cylinders.

A further improvement in my mechanism, by the reason of the sliding action of the key barrel, is a secondary locking means or key barrel support, whereby I secure the key barrel from rotating when the key is out by means of this securing lock, and also by means of the aforesaid pin tumblers.

In the accompanying drawings Figure 1 is a rear view of my improved mechanism. Fig. 2 is a sectional view taken on line 1—1, Fig. 1, showing an individual key therein. Fig. 3 is a rear view showing a key barrel with its cylinder connecting means rotated part way. Fig. 4 is a sectional view on line 1—1, Fig. 1, of the escutcheon cylinder with the mechanism removed. Fig. 5 is a sectional view of my mechanism with the master key therein.

In Fig. 2 is shown an individual key 1 in the key barrel 2, the individual key having set the pin tumblers 3 and 4, and on

being pressed further the key barrel 2 slides backward a slight distance carrying with it the bottom or inclosed sections of the pin tumblers. Attached to the rear end of key barrel 2 by suitable means is a connecting arm 5, which has elongated slot 6 at its outer end. This elongated slot is shaped so as to conform very nearly to the head of a driver stud 7, which in turn is attached to the secondary tumbler sleeve 8. The position of the mechanism, as shown in Fig. 2, is ready for rotating by means of the key and the head of the stud 7 is in engagement with the narrow portion of the slot 6, thereby being in condition to rotate and by any convenient means, such as a flat connecting piece 9 suitably connected to the rear end of the key barrel 2, this may be transmitted to any type of bolt operating means.

By referring to Fig. 4 it will be noted that the escutcheon cylinder 10 has a concentric chamber 11 formed by the outer wall of the cylinder and the inner key barrel supporting hub 12. At the rear end of the hub 12 is a notch that engages the connecting bar 5 when the key barrel is in normal position and the lock closed. The key barrel aperture 14 is eccentrically placed in the hub 12 for the purpose of affording greater length on one side thereof for the pin tumbler securing wall, as at 15. The chamber 16 is of a greater depth than the collar 17 on the key barrel for the purpose of permitting the same to slide backwardly after the inserting of the proper key. The chamber 11 forms a space for the accommodation of the primary cylinder 18 and the secondary cylinder 8. For the purpose of retaining the primary and secondary cylinders I have introduced a short stud 19 into the outer shell of the escutcheon 10 and have cut a corresponding groove 20 around the outside of the secondary cylinder 8. On the outer end of the said cylinder is a flange 21 which engages the corresponding groove turned in the outer end of the primary cylinder 18. Other suitable means for retaining these members in their positions may be used.

In Fig. 5 I have shown a sectional view of my pin tumbler mechanism with a master key therein but with the key barrel in normal position. It will be noted that the pins are in alinement with the breaking line

formed between the surfaces of the primary cylinder 18 and the hub portion 12, the unbroken portion of the pins, however, crossing the surface or breaking line between the primary cylinder 18 and the secondary cylinder 8. This causes the two cylinders to turn on the key barrel hub as a single cylinder when operated through the connecting bar 5 and the stud 7, whereas in Fig. 2 with the individual key, the pins are shown in alinement on the breaking line between the primary cylinder 18 and the secondary cylinder 8. This permits the secondary cylinder 8 to rotate while the primary cylinder 18 is held fixed by the locking of the pins not in alinement with the breaking surfaces. It will be noted in this connection that a series of pins having what I term minor tumblers, are formed of small disk-like pieces 22, which in combination with the major tumblers, such as 3, Fig. 2, form a number of breaking points in the combination. In each individual lock these minor tumblers have to be set to certain pre-determined positions to properly operate the cylinders and form additional baffle against picking or operating by the wrong key. It will be seen by this compound arrangement of primary and secondary tumbler cylinders and major and minor pin tumblers, that I have multiplied the number of possible combinations in a certain run of this type of lock.

In the ordinary type of pin tumbler mechanism it has been customary to make what is known as a right hand paracentric key to operate with a certain combination of pin tumbler settings until these are exhausted and then making a left hand paracentric key with the same bittings in combination with the same pin tumbler arrangements whereby with one combination or run of all the possible combinations of a certain number of pin tumblers, the number of possible combinations are doubled. By reason of my improvement the number of these combinations are still further multiplied without resorting to the making of a right hand or left hand key.

In Fig. 2 is shown at one end of the key barrel 2 and adjacent to the connecting lever 5, a spring retaining washer 24 against which presses a spring 23, which is only partially shown, the other end of which may engage any convenient portion of the lock housing for the purpose of exerting pressure on the end of the key barrel 2, tending to keep key barrel 2 in its normal position when locked. This spring also returns the key barrel 2 after unlocking and withdrawing the key, thus bringing the tumblers contained in said key barrel in alinement with their proper tumblers carried by the primary and secondary sleeves. It is obvious that when the key is removed and

the key barrel has returned to its normal position that the notch 13 in the back end of the key barrel engages the operating or connecting lever 5 causing it to register and permitting the upper tumblers 3 to drop into and engage the pin tumbler apertures in the key barrel 2.

Having thus described my invention, I claim:

1. In a lock of the class specified, a casing having a key barrel receiving portion integral therewith and adapted to slidably and rotatably support a key barrel and to rotatably support on its outer periphery a primary tumbler sleeve.

2. In a lock of the class specified, a casing having a key barrel receiving portion integral therewith and adapted to slidably and rotatably support a key barrel and to rotatably support on its outer periphery a primary tumbler sleeve, said primary sleeve adapted to rotatably support a secondary tumbler sleeve as set forth.

3. In a lock of the class specified, a casing having a key barrel receiving portion having at its outer end thereof a securing slot to engage the secondary tumbler sleeve operating member as set forth.

4. In a lock of the class specified, a casing having a key barrel receiving portion integral therewith, and having a pin tumbler key barrel aperture eccentrically positioned therein, and a pair of concentric rotary pin tumbler sleeves arranged between said key barrel and the outer cylindrical wall of said casing, substantially as set forth.

5. In a compound pin tumbler mechanism having a plurality of concentric pin tumbler cylinders, a key barrel therein, and having externally arranged connecting means between said cylinders and said key barrel for transmitting rotary motion from the key barrel to one or all of said pin tumbler cylinders, substantially as set forth.

6. In a compound pin tumbler mechanism of the class specified, comprising a casing having an outer cylindrical shell, an integral front wall, and a key barrel supporting means integral with said front wall, said key supporting means adapted to rotatably support a plurality of concentrically arranged pin tumbler cylinders and form an intermediate securing means between said key barrel and said concentric pin tumbler cylinders.

7. In a compound pin tumbler mechanism of the class specified, comprising a casing having an outer cylindrical shell, an integral front wall, and a key barrel supporting means integral with said front wall, said key supporting means adapted to rotatably support a plurality of concentrically arranged pin tumbler cylinders and forming an intermediate securing means between said key barrel and said concentric pin tumbler cyl-

inders and having an auxiliary key barrel lock at one end thereof, substantially as described.

8. In a compound pin tumbler mechanism of the class described comprising a casing having an outer cylindrical shell, an integral front wall, and a key barrel supporting means adapted to slidably and rotatably support a key barrel, said key barrel supporting means externally adapted to rotatably support a plurality of concentrically arranged tumbler cylinders and containing a plurality of major and minor pin tumblers therein, and secondary securing slot at the outer end thereof, forming with said major and minor pins a securing means against operation of said key barrel, except with the proper key.

9. In a compound pin tumbler mechanism comprised of a casing having an outer shell, a plurality of pin tumbler cylinders mounted therein, a key barrel arranged in the interior of said pin tumbler cylinders, operable pin tumblers therebetween, and a stationary pin tumbler securing means intermediately arranged between said cylinders and said key barrel.

10. In a lock of the class described, an outer casing having an inner stationary key barrel supporting means, a rotative and sliding key barrel interiorly arranged, said key barrel supporting means having a plurality of rotative pin tumbler cylinders mounted thereon and forming a securing means between said key barrel and said pin tumbler cylinders, pin tumblers arranged therein, and external operating means arranged exteriorly of said casing and between said key barrel support and said cylinders to normally hold the same in locked position and to cause said cylinders to rotate upon manipulation by the proper key.

11. In a pin tumbler lock of the class described, comprised of a key barrel and means operated thereby, wherein the key barrel is mounted in a stationary support, said support forming an intermediate securing means between said key barrel and said operating means.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."