

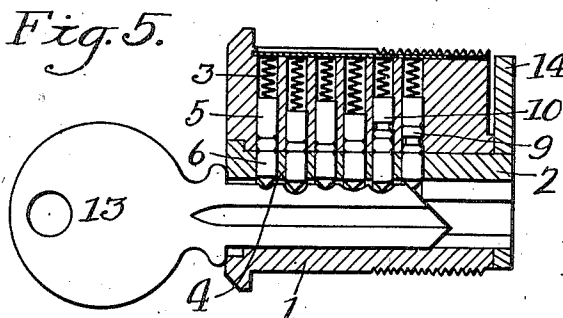
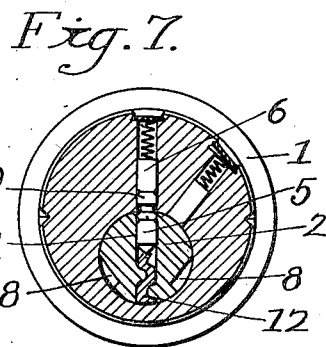
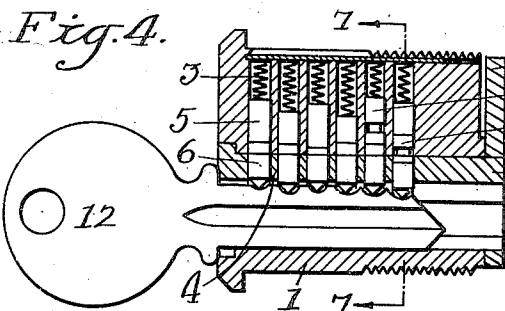
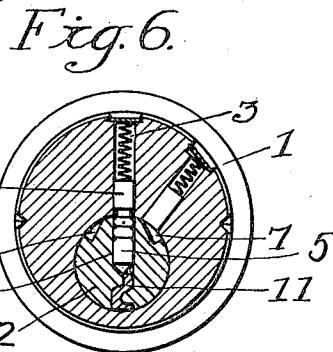
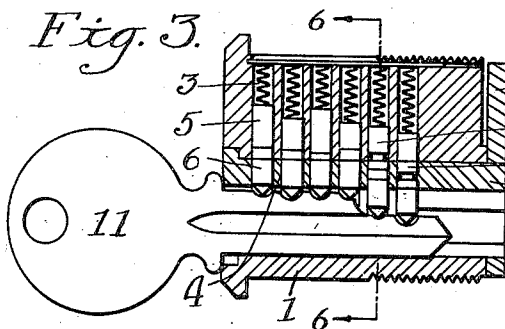
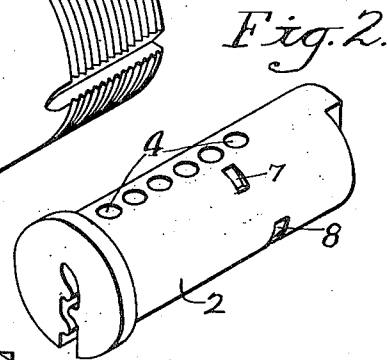
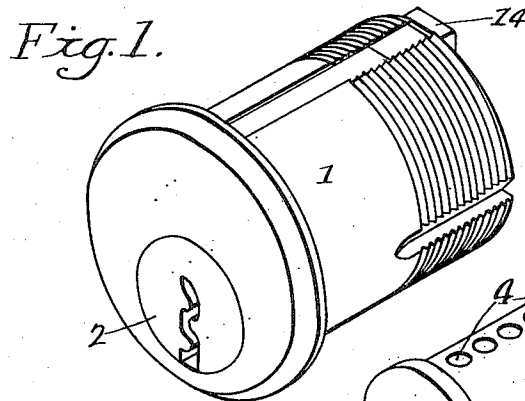
Nov. 22, 1927.

1,650,564

W. WOLFF

PIN TUMBLER CYLINDER LOCK

Filed June 10, 1927



Inventor:
Wilhelm Wolff—
by his Attorneys:
Howson & Howson

UNITED STATES PATENT OFFICE.

WILHELM WOLFF, OF READING, PENNSYLVANIA, ASSIGNOR TO PENN HARDWARE COMPANY, INC., OF READING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PIN-TUMBLER CYLINDER LOCK.

Application filed June 10, 1927. Serial No. 197,875.

This invention relates to improvements in pin tumbler locks, and the principal object of the invention is to provide novel and improved means for limiting the angular movement of the key plug in the cylinder whereby the extent of the angular movement of the plug is determined by the character of the key used.

In the attached drawings:

10 Figure 1 is a view in perspective of a cylinder lock embodying my invention;

15 Fig. 2 is a view in perspective of the key plug which is adapted to be rotatably mounted in the cylindrical casing in well known manner;

Figs. 3, 4 and 5 are longitudinal sections through the lock illustrating the function of three different keys which may be used with this lock;

20 Fig. 6 is a transverse section on the line 6—6, Fig. 3, and

Fig. 7 is a section on the line 7—7, Fig. 4.

25 With reference to the drawings, the embodiment therein illustrated comprises the usual cylindrical casing 1 having a longitudinal cylindrical bore in which the key plug 2 is rotatably mounted. The casing 1 has a series of pin tumbler chambers 3 extending from the periphery of the cylinder into the cylindrical opening occupied by the plug 2, while the plug has a corresponding series of tumbler chambers 4 which are adapted to register and cooperate with the chambers 3 in well known manner. The chambers 3 and 4 are provided with pin tumblers 5 and 6 respectively which function in the usual manner to normally lock the plug in the cylinder, except when certain keys are inserted.

40 It will be noted that the plug 2 is provided in the present instance with two sets of notches 7, 7 and 8, 8, the notches 7 being in circumferential alignment with one of the chambers 5 and the notches 8 being in alignment with another of said chambers. In the present instance the notches 8 are in alignment with the innermost of the chambers, while the notches 7 are in alignment with the chamber adjacent thereto.

50 It will be noted that the width of the notches 7 is somewhat less than the diameter of the chambers 3 and 4. In the last of the combined chambers 3—4, I provide a tumbler section 9 which differs from the other

tumblers in that it has on the inner end thereof an extension of reduced diameter, this reduced portion being of a size permitting its entrance into the notches 8. A similar tumbler section 10 is provided in the chambers in alignment with the notches 7.

60 One form of key for use with this lock is illustrated in Fig. 3, this key 11 having bits so formed as to bring the upper end of one of the tumbler sections in each of the chambers to the surface of the plug 2 to permit rotation of the plug. The bit controlling the tumblers in the second innermost of the combined chambers 3—4 is so formed, as shown in Figs. 3 and 6, that the lower end of the tumbler section 10 occupies a position at the periphery of the plug. Under these circumstances, when the plug is turned by the key, the reduced extension of the tumbler section 10 will eventually enter either one or other of the notches 7, depending on which way the plug is rotated, and will thereby limit the angular movement of the plug in the casing.

When the key 12, however, is used, as illustrated in Fig. 4, the tumbler section 10 is elevated to a position rendering it inoperative, while the tumbler section 9 in the innermost of the tumbler chambers is brought to an operative position, as shown in Figs. 4 and 7. When under these circumstances the plug is turned, the notches 7 are inoperative to limit the rotation, since the aligned tumbler section in the chamber 3 is of the full diameter and is therefore incapable of entering the notches. The reduced portion of the tumbler section 9, however, eventually enters one or other of the notches 8 and again limits the angular movement of the plug. It will be noticed however, that by reason of the different angular positions of the notches 7 and 8, the key 12 is permitted to rotate the plug to a considerably greater extent than the key 11.

65 A third form of key 13, shown in Fig. 5, is so bitted that both the sections 9 and 10 are rendered inoperative, there being in each instance tumbler sections of full diameter in the chambers 3 at the surface of the plug, so that in this instance the plug 2 may be completely rotated in the casing.

100 As illustrated, the plug 2 projects beyond the rear end of the casing and carries on the projecting end a latch or bolt-actuating cam

14 whose maximum angular movement is made to vary in accordance with the particular key employed, as described above.

I claim:

5 1. In a pin tumbler lock, the combination with a casing having a keyway comprising a plurality of tumbler chambers, of a plug rotatably mounted in the casing and having a plurality of tumbler cavities correspond-
10 ing with and adapted to cooperate with the said chambers, said plug having also a keyway intersecting said cavities and a peripheral recess in alignment with one of the said tumbler chambers and of lesser width than
15 the diameter of said chamber, and tumblers in said cavities and chambers including a section in the chamber in alignment with said peripheral recess having at its inner end an extension of reduced diameter adapted
20 when in contact with the plug and when the latter is turned to enter the recess to limit the angular movement of the plug in the casing.

2. In a pin tumbler lock, the combination
25 with a casing having a plurality of tumbler chambers, of a plug rotatably mounted in the casing and having a set of tumbler cavities corresponding with the said casing chambers and cooperative with the latter,
30 said plug having also a key slot intersecting the said cavities and a peripheral recess in circumferential alignment with and of lesser width than one of the said tumbler chambers, tumblers in said chambers and cavities
35 including a section in the chamber aligned with the said peripheral recess having a reduced extension adapted when in contact with the plug and when the latter is turned to enter the recess to thereby limit the angular
40 movement of the plug, and a second section underlying the section first named and adapted when in contact with the periphery of said plug to render the said first named section inoperative with respect to the peripheral
45 recess.

3. In a pin tumbler lock, the combination with a casing having a plurality of tumbler chambers, of a plug rotatably mounted in the casing and having a set of tumbler
50 cavities corresponding with the said casing

chambers and cooperative with the latter, said plug having also a key slot intersecting the said cavities and a plurality of peripheral recesses in circumferential alignment with and of lesser width than a corresponding
55 number of the said tumbler chambers, the said recesses being differentially arranged with respect to the line of the plug cavities, tumblers in said chambers and cavities including a section in each of the chambers
60 aligned with the said peripheral recesses having a reduced extension adapted when in contact with the plug and when the latter is turned to enter the aligned recess to thereby limit the angular movement of the plug,
65 and a second section in each of the said aligned chambers underlying in each instance the section first named and adapted when in contact with the periphery of the said plug to render the first-named section
70 inoperative to enter the aligned peripheral recess.

4. In a pin tumbler lock, the combination with a casing having a plurality of tumbler chambers, of a plug rotatably mounted in
75 the casing and having a set of tumbler cavities corresponding with the said casing chambers and cooperative with the latter, said plug having also a key slot intersecting the said cavities and a plurality of peripheral
80 recesses in circumferential alignment with and of lesser width than a corresponding number of the said tumbler chambers, the said recesses being differentially arranged with respect to the line of the plug cavities,
85 tumblers in said chambers and cavities including a section in each of the chambers aligned with the said peripheral recesses having a reduced extension adapted when in contact with the plug and when the latter is
90 turned to enter the aligned recess to thereby limit the angular movement of the plug, and a second section underlying the first-named section in at least one of said chambers and adapted when in contact with the
95 periphery of said plug to render the first-named section inoperative with respect to the peripheral recess.

WILHELM WOLFF.