

The invention relates to a lock system according to the preamble to independent claim 1 as well as to a key for such a lock system.

5 Lock systems of the said generic system are generally known. They have as a rule several hierarchically arranged flat keys by means of which a correspondingly large number of lock cylinders can be attended to. The keys are flat keys, as known, for example, from the
10 Applicant's DE-C-3 021 334. From this publication it is also known that the number of lockings can be considerably increased by holes with several control surfaces and corresponding tumblers. The number of locking alternatives can be increased by other steps, for example
15 by a line displacement of the prototype.

The problem at the basis of the invention is to provide a further way to increase the number of lockings of a lock system of the generic type. This should be possible
20 in a constructionally simple manner and without detrimentally affecting reliability of operation. The problem is solved by the invention according to claim 1.

In the lock system of the invention the security keys are
25 so-called non-reversible keys, and immediately recognizable as such by the shaping of the key head. To open a lock, the key must therefore be inserted in one of the two possible turning positions into the key channel. Furthermore, a part of the lock cylinders has rotors
30 which, compared with the other rotors, are rotated

over 180° relative to the cylinder housing around their longitudinal axis. In this connection the rotors may have open or closed key channels. A considerable advantage of the lock system of the invention consists in that two completely independent locking codes can be set up on one key. By a reduction of the rotation symmetry of the key and of the tumblers belonging to it the number of lock variations can thus be practically doubled. With other known measures for increasing the lock variations this is satisfactorily compatible. For example, the holes may also be stepped holes and, at the same time, a line displacement of the hole patterns will also be possible.

The steps required at the lock cylinders are comparatively simple and do not alter in principle the construction of the lock cylinders. In particular, the number of the tumblers in the lock cylinders must not be increased over those of comparable cylinders. Likewise, an economic production of the keys is ensured.

An overriding key is, for example, provided with two independent locking codes, while a secondary key is given only one code. A key of the system of the invention has preferably at least two different rows of holes which are arranged oppositely on the wide lateral surfaces of the key shank. Thus, with the key, without having to turn it, it will be possible to open two different lock cylinders with the same or a different locking code.

Further advantageous characteristics are to be found in the dependent claims and the following description. An example of embodiment of the invention is explained in greater detail below with reference to the drawings wherein:

Fig. 1a and 1b are side views of a key for the system of the invention.

Fig. 1c is a cross-section through a key along line 1c-1c of Figure 1a,

Fig. 2 is a front view of a lock cylinder of the lock system of the invention, and

Fig. 3 is a further lock cylinder of the lock system of the invention.

Figures 1a to 1c show a flat key with a shank 2 and a key head 3. The shank 2 has six different rows of holes A to F with, for example, five holes each. These holes are simple countersunk or stepped holes which cooperate with associated tumblers in the lock cylinders.

The key has two independent locking codes which are formed by the rows of holes A, E and D or by the rows of holes B, C and F. Each group of rows of holes consists of one row of holes E or F with high side holes on the narrow sides 13 or 14, as well as lateral holes on the wide side surfaces 15 and 16. As may be seen, the holes cannot be brought to cover by a turn of the key around its longitudinal direction, as would be the case with a reversible key.

So that the orientation of the key 1 may be recognized at once. the key head 3 may have, for example, an asymmetrically arranged opening 4. Naturally, for this, other markings or shapings are possible; for example, the key 1 may be designed L-shaped.

In Figs. 2 and 3 a representation is given of various lock cylinders 5 and 6 of a system of the invention, in diagrammatic manner. These lock cylinders may be simple lock cylinders or double lock cylinders, or also other special cylinders. Also, different cylinder profiles are possible. With the cylinder according to Fig. 2 use is made of a rotor 9 introduced in usual orientation into the cylinder housing 11. Into a key channel 7 core pins a, e and d protrude in the usual manner. This cylinder can fully correspond to a known cylinder. In the cylinder 6 of Fig. 3 there is inserted into a cylinder housing 12 a rotor 10 which is rotated relative to the rotor 9 to 180° around its longitudinal axis. Laterally, the key channel 8 of the rotor is thus open at the top. Into the key channel 8 core pins b, c and f protrude, which are also designed as usual.

If now the key 1 is inserted into the key channel 7 of the lock cylinder 5 in the orientation shown in Fig. 1a, the rows of tumblers and the core pins a, d and e are mutually arranged in proper order, so that the rotor 9 can be turned and the corresponding lock opened. If the key 1 is introduced in the same orientation into the key channel 8 of the lock cylinder 6, the core pins b, c and f are brought into proper arrangement by the rows of holes B, C and F, so that this rotor 10 also can be rotated.

If now a key not shown here has only the row of holes B, C and F, it will be possible with these secondary keys to open a lock with the lock cylinder 6, but not a lock with the lock cylinder 5. The reverse applies for a key, not shown here either, with the rows of holes A, D and E. In a system, now, for the sake of example, all inner doors are fitted with lock cylinders 5 and all outside doors with lock cylinders 6. By varying the holes, naturally, it will be possible to produce very many lock cylinders 5 or lock cylinders 6 with many locking possibilities. The number of locking possibilities can, in particular, be considerably increased thereby, if the lock cylinders 5 and 6 are provided with different permutations.

15.

It follows from the above indications that in this way a lock system is provided in which, in constructionally simple manner and therefore at an advantageous cost, the number of locking variations and thereby the locking security can be considerably increased.

20



C l a i m s

1. Lock system with at least one key (1) and two lock cylinders (5, 6), each of which has at least one rotor (9, 10) with several rows of tumblers (a-f) and a key channel (7, 8) for the insertion of the flat safety key (1) having several rows of holes (A-F), characterized in that the rotor (9, 10) of one lock cylinder (5, 6) is rotated around its axis of rotation by 180° relative to the cylinder housing (11, 12) in relation to the rotor (10, 9) of the other lock cylinder (6, 5), and in that the key (1) is a non-reversible key which is provided with holes (A, F) for arranging the one row of tumblers (a, e, d) of one cylinder (5, 6) and/or the other row of tumblers (b, c, f) of the other lock cylinder (6, 5).

2. Lock system according to claim 1, characterized in that the two rotors (9, 10) have a different basic code or locking code.

3. Lock system according to claim 1 or 2, characterized in that a non-reversible key (1) is an overriding key, and in that for the lock cylinders reversible keys are also provided as secondary keys.

4. Key for a lock system according to claim 1, characterized in that it is recognizable by the asymmetrical shaping of the key head (3) as a non-reversible key.

5. Key according to claim 4, characterized in that it has one or two groups of rows of holes (A, D, E; B, C, F),



which respectively represent one key code and which are arranged along one narrow side (13, 14) of the key shank (12) (Fig. 1c).

- 5 6. Key according to claim 5, characterized in that at least one group comprises three row of holes (A, E, D or B, C, F), one row of holes (E or F) being formed by high side holes and the other two row of holes (A, D or B, C) being formed by oppositely-placed lateral holes on the wide side
- 10 surfaces (15, 16) of the key shank (2).
7. Key according to one of claims 4 to 6, characterized in that it is an overriding key and has two independent key codes.