

The invention relates to a key for a rotary lock cylinder in accordance with the preamble to the independent patent claim 1.

Such a key has become known from DE-B-1 093 253.

US-A-4 667 495 discloses a key which has at its front end a pin adapted for displacement crosswise to the key shank. Upon insertion of the key into a key channel, the pin is pushed against a projection which protrudes into the key channel and which pushes the pin against an oppositely disposed tumbler. The said tumbler is correctly positioned by this displacement of the pin. So that the projection is able to reach the pin, recesses are needed at the front end of the key, on the narrow sides but they do weaken this part of the key and may possibly make it difficult to insert the key into the key channel. In addition, the area available for carrying control surface is limited by the aforesaid recesses.

The invention is based on the problem of providing a key of the said type which avoids these disadvantages and requires the least possible structural modification to the rotary lock cylinder. The problem is resolved by the invention in accordance with claim 1.

The displaceable pin disposed in the key can be actuated by a rod mounted on the driving member of the rotary lock cylinder and which projects into the key channel. Consequently, displacement of the said pin becomes possible

with substantially simpler structural measures. Since a displaceable pin only protrudes outwardly as one end, it does not require on the surface of the shank any more surface area than a conventional flush bore. It is also possible to provide two displaceable pins on the key which further improves security.

A substantial advantage of this key according to the invention lies in the fact that the coded length of the pin or pins is substantially more difficult to assess than previously. Thus, copying of the key is made more difficult. In turn, this increases security for the user.

An example of embodiment of the invention will be explained in greater detail hereinafter with reference to the accompanying drawings, in which:

Fig.1 shows on an enlarged scale a partially sectional key according to the invention;

Fig.2 shows on an enlarged scale a cross-section through a part of a rotary lock cylinder with the key shank pushed in, and

Fig.3 corresponds to Fig. 2 but the key shank is pushed in completely.

The key 1 according to the invention which is shown in Fig. 1 comprises a shank 1a with conventional flush bores 1b which may also be disposed on the narrow sides 1c. The key shown as an embodiment is a so-called reversible key. However, it could also be a different key, for instance a serrated edged key.

Machined into the end 1c of the shank 1a is a channel 1d which extends in a longitudinal direction of the axis of rotation of the key 1. This channel 1d intersects with a transverse bore 1a which opens outwardly on the two narrow sides 1e of the key shank 1a. Inserted into this bore 1a are two bearing sleeves 6 the ends of which are flush with the narrow sides 1e and the inner surface of the channel 1d. Mounted for displacement in each bearing sleeve 6 is a displaceable pin 5, 10 respectively. These pins 5, 10 are in each case somewhat longer than the bearing sleeves 6. In the case of a reversing key, these pins 5, 10 are of the same length. In the case of a non-reversing key, however, these pins may be of different lengths and a single displaceable pin may also be sufficient.

The key 1 is provided for a rotary lock cylinder which in accordance with Figs. 2 and 3 comprises conventional tumblers with housing pins 2c and 3a which are co-ordinated by the associated key 1 so that a rotor 3 can be rotated in a housing 2. The rotating movement of the rotor 3 is transmitted to the lock bolt by a prior art drive means 4. Fixed to the otherwise conventionally constructed drive member 4 is a rod 4a which projects into the key channel 3c. This rod 4a is so constructed that when the key 1a is inserted into the key channel 3c without any resistance as shown in Fig. 2, it engages the channel 1d. Shortly before the key 1 is pushed fully into the key channel 3c, a conical end face 4b on the rod 4 enters into engagement with a conical surface 5b at the inner end of the pin 5, as shown in Fig. 2. The same applies accordingly to the pin 10 which is omitted from Figs. 2 and 3.

If, then, the key 1 is pushed farther into the key channel 3c, then at the same time the pin 5 is pushed radially outwardly so that, against the force of a spring 2a, it pushes the core pin 3a radially outwardly in a radial bore 3b and positions it correctly. At the same time, the other tumblers not shown here are co-ordinated by the conventional flush bores 1b.

Here, the pin 5 is dumb-bell shaped and is prevented from falling out of the sleeve by the fact that the bearing sleeve 6 has a narrowed portion 6a. So that the pin 5 can be inserted into the sleeve 6a, this latter is composed of a plurality of parts.

If the key is a reversing key, then according to Fig. 1, two oppositely disposed pins 5 are provided which are pushed outwardly by the rod 4a. The rod 4a may be so constructed that it moves the two oppositely disposed pins 5 outwardly through different lengths of travel, so that the number of locking possibilities can be increased. This can be achieved for example by removal of material from one side of the front end of the pin 5.

From the foregoing remarks, therefore, a key is provided which is extremely difficult to copy and which nevertheless can be produced from relatively few simple and rugged component parts. In addition, the above particulars disclose a rotary lock cylinder which is suitable for this key and for the manufacture of which only minimal refitting is required for production.



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#### Patent claims

1. A key for a rotary lock cylinder and with, mounted for displacement in and crosswise to the key shank (1a), at least one pin (5) with which a tumbler (3a) of the rotary lock cylinder can be co-ordinated, a channel (1d) being provided on the end face (1c) of the key shank (1a) and extending in the longitudinal direction of this latter, the pin (5) being capable of being displaced radially outwardly by a control member (4a) which has to be inserted into this channel (1d), characterised in that the control member (4a) is a straight rod, the pin (5) being disposed in a bore (1f) in the key shank (1a) which opens out on a narrow side (1e) of the key shank (1a), its other end opening into the channel (1d), and in that said pin can be retracted into said bore (1f) on the narrow side (1e) so that it does not protrude, the channel (1d) being a bore which extends coaxially in respect of a central line through the key (1).

2. A key according to claim 1, characterised in that the key has two oppositely disposed pins (5, 10) which can be displaced simultaneously and radially outwardly by the rod (4a) which has to be inserted into the channel (1d).

3. A key according to claim 2, characterised in that the two oppositely disposed pins (5) are outwardly displaceable in a radial direction and by a different amount of travel.

4. A key according to claim 3, characterised in that the different amount of travel is achieved by removal of material from one side of the front end of a pin (5).



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5. A key according to claim 1, characterised in that the pin (5) is mounted for relative displacement in a bearing sleeve (6).

6. A key according to claim 5, characterised in that the pin (5) is dumb-bell shaped.

7. A key according to claim 1, characterised in that it is a flat key with a plurality of flush bores (1b) for co-ordination with tumblers.

8. A key according to claim 7, characterised in that flush bores are also disposed on the narrow sides (1e) of the key shank (1a).

Two sheets of drawings