



PATENT SPECIFICATION

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(54) Title: Cylinder lock with slider as well as flat key with control rib

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Cylinder lock with slider as well as flat key with control rib

5 The invention relates to a cylinder lock with cylinder core rotatable therein, comprising a keyway for a flat key and probe elements for ward cuts and/or control surfaces of the key as well as locking elements, which block or release the cylinder core against rotating.

10 Furthermore the invention relates to a flat key with ward cuts and/or control surfaces on the narrow sides and/or flat sides of the key.

Cylinder locks, which by means of different tumblers probe ward cuts or control surfaces on a corresponding flat key, are well-known. Main advantage of such locks and keys is
15 the possibility of economic manufacture as well as relatively high locking security. In order to improve the locking security of such locks it is desirable to increase the variation options on the key as well as of the lock. This usually means that the design of the locks becomes more and more complex, which can have a disadvantageous effect on the functional reliability of the locks, and leads to higher production costs.

20 An object of the present invention is therefore to create a cylinder lock, which eliminates the disadvantages indicated above and permits an increase in the variation options, whereby at the same time the lock design should remain as simple as possible and the manufacturing cost kept to a minimum. A further object of the invention is to provide a
25 corresponding flat key for such a cylinder lock.

This object is achieved as a result that a slider, which overlaps the keyway is provided above the keyway, whereby the slider on its side turned to the keyway comprises at least one control recess, which can be meshed with corresponding control ribs on the
30 key spine, and whereby the slider in its neutral position engages with corresponding securing recesses in the cylinder housing and, with the correct key, can be moved to the release position transversely to the keyway, in order to release the cylinder core against rotating.

35 Also created is a corresponding flat key, on the key spine, comprising a control rib which extends in the longitudinal direction towards the key tip and has a front control flank, as well as left and right nose flanks parallel to the key longitudinal direction.

A feature of the cylinder lock according to the invention is that the slider is arranged in a recess of the cylinder core and pre-tensioned toward the cylinder housing by means of a spring. The control recess present on the slider is variable in its length and width, whereby the length of the control recess should be less than the length of the slider, and the width of the control recess less or equal to the width of the keyway, and whereby in the release position of the slider the recess is also arranged along the central longitudinal plane of the keyway or parallel thereto. The main advantage of such a slider is that with relatively little effort it can be arranged so as to overlap the keyway, and that by varying the length, the width as well as position of the recess, an increase in the variation scope of the lock is obtained.

A further feature of a cylinder lock according to the invention is that the control recess comprises a guide flank, which serves to guide the corresponding control ribs on the key spine, whereby the guide flank is formed diagonally or rounded and in neutral position rises above the central longitudinal plane of the keyway. When a key with corresponding control rib on the key spine is inserted, the control rib is thus guided via the guide flank, whereby the slider is moved transversely to the keyway against the force of the spring and, with the correct key, the lock is therefore brought to the release position.

Further inventive features of the flat key are that the control rib extends along the central longitudinal plane or parallel thereto along the key spine toward the key tip, being preferably arranged in the centre, left or right of the central longitudinal plane.

The control rib can be implemented so as to be variable in its width, said width being greater than 0 and less than the width of the key spine. The control rib can be varied in its length, width as well as position, so that it fits into the respective corresponding control recesses of the slider in the cylinder lock.

Further features of the invention will be evident from the figures and claims as well as the description.

Fig. 1 shows a schematic longitudinal section through an inventive cylinder lock with flat key inserted. Fig. 2 shows a plan view onto a cylinder core with flat key not completely inserted. Fig. 3 shows a plan view onto a cylinder core with flat key completely inserted. Fig. 4 shows a schematic cross section through a cylinder lock with the slider in locking position. Fig. 5 shows a schematic cross section through a cylinder lock with the slider in

release position. Figs. 6 to 9 show various embodiments of the slider of a cylinder lock according to the invention. Fig. 10 shows a side view of a flat key according to the invention. Fig. 11 shows a plan view of a flat key according to the invention.

5 The schematic longitudinal section illustrated in Fig. 1 shows a cylinder lock with a cylinder core 13, a housing 3, as well as a flat key 1 inserted therein. The key 1 comprises a key bow 2 as well as a key shank 4, on which ward cuts 7 - illustrated here by way of example - are arranged, as well as a control rib 10 on the key spine 14 at the key tip 22.

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Housing bores 5, which in neutral position of the lock are flush with cylinder core bores 6 are located in the housing 3. Spring-loaded split stop pins (not shown), which probe the ward cuts 7 of the key 1 are located inside these bores 5, 6. As further tumbler, a slider 8, which is pre-tensioned toward the housing 3 by means of a spring 9 and which overlaps the keyway 17 is located above the latter. This slider 8 probes the control rib 10 with its control recess 18, whereby the front control flank 12, the width of control rib 10 as well as the position of control rib 10 on the key spine 14 are sensed in particular.

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Figs. 2 and 3 in each case show a plan view onto a cylinder core wherein a flat key 1 according to the invention is inserted. In the case of the embodiment shown in Fig. 2 the flat key 1 is not yet completely inserted in the keyway 17. The slider 8 is pre-tensioned toward the housing by means of the spring 9.

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In the case of the key 1 illustrated the control rib 10 is arranged on the key spine 14 at the key tip 22 left of the central longitudinal plane 25 and parallel thereto.

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If the key 1 is inserted far into the keyway 17, the front control flank 12 of the control rib 10 meets the guide flank 19, whereby the slider 8 is moved transversely to the keyway 17. The width of the control rib 10, the depth, as well as correct position along the central longitudinal plane 25 is sensed by means of the control recess 18. With the correct key 1 fully inserted as shown in Fig. 3 the slider 8 is located in its release position.

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Figs. 4 and 5 in each case show a schematic cross section through a cylinder lock with a housing 3, a cylinder core 13 and a keyway 17. In the locking position the slider 8 is located in a securing recess 21 arranged in the housing, wherein it is held by means of the spring 9 and blocks the lock against rotating.

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With the correct key 1 inserted, the slider 8 is moved from its locking position and moved transversely to the keyway 17 by means of the control rib 10, which meshes with the control recess 18, as a result of which the lock is released.

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Fig. 6 shows a slider 8 of an inventive cylinder lock in a side view with the control recess 18 as well as the guide flank 19.

10 Figs. 7 to 9 in each case show a plan view onto a slider 8 with differently configured control recesses 18. Furthermore the spring detent flank 20 is shown, by means of which the force of the spring 9 is transmitted to the slider. The width of the control recess 18 as well as the recess length 24 can be differently configured depending on the embodiment, which substantially increases the variation options of the lock. The recess length 24 in this case should be greater than 0 but less than the slider length 23, so that
15 the front control flank 12 of the control rib 10 of the key 1 can be sensed. In order to increase the variation scope further the position along the central longitudinal plane 25 may be different, as shown in Figs. 8 and 9. In Fig. 8 the recess 18 is arranged on the left parallel to the central longitudinal plane 25 and in Fig. 9 on the right parallel to the central longitudinal plane 25.

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Fig. 10 shows a flat key according to the invention 1 with a key bow 2 and a key shank 4. Ward cuts 7, which are probed by split tumblers in the cylinder lock are arranged here by way of example. A control rib 10 with a front control flank 12, as well as nose flanks 15 on each side respectively, is also arranged on the key spine 14 at the key tip
25 22.

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Fig. 11 shows a plan view onto the flat key 1 from Fig. 10, whereby in the case of this embodiment the control rib 10 is arranged on the left parallel to the central longitudinal plane 25. In order to increase the variation scope the control rib 10 can also be arranged
30 in the centre or on the right parallel to the central longitudinal plane 25.

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Claims

- 5 1. Cylinder lock with a cylinder core rotatable therein, comprising a keyway for a flat
key and probe elements for ward cuts and/or control surfaces of the key as well
as locking elements, which block or release the cylinder core against rotating,
characterized in that a slider (8), which overlaps the keyway (17), is provided
above the latter, wherein the slider (8) on its side turned to the keyway (17)
10 comprises at least one control recess (18), which can be meshed with
corresponding control ribs (10) on the key spine (14), the slider (8) in its neutral
being engaged with corresponding securing recesses (21) in the cylinder
housing (3) and, with the correct key (1), can be moved to the release position
transversely to the keyway (17), in order to release the cylinder core (13) against
15 rotating, the slider (8) being arranged in a recess of the cylinder core and pre-
tensioned toward cylinder housing (3) preferably by means of a spring (9).
2. Cylinder lock according to Claim 1, characterized in that the control recess (18)
comprises a guide flank (19), which serves to guide the corresponding control
ribs (10) on the key spine (14), wherein the guide flank (19) is formed diagonally
20 or rounded and in neutral position rises above the central longitudinal plane (25)
of the keyway.
3. Flat key for a cylinder lock according to one of Claims 1 or 2 with ward cuts
and/or control surfaces on the narrow sides and/or flat sides of the key,
25 characterized in that a control rib (10), which extends in the longitudinal direction
toward key tip (22) and comprises a front control flank (12), as well as left and
right nose flanks (15) parallel to the key longitudinal direction, is provided on the
key spine (14).
- 30 4. Flat key according to Claim 3, characterized in that the control rib (10) extends
along the central longitudinal plane (25) or parallel thereto along the key spine
(14) toward key tip (22), wherein it is preferably arranged in the centre, on the left
or on the right of the central longitudinal plane (25).
- 35 5. Flat key according to Claims 3 or 4, characterized in that the control rib (10) is
implemented so as to be variable in its width, wherein the width is greater than 0
and less than the width of the key spine (14).

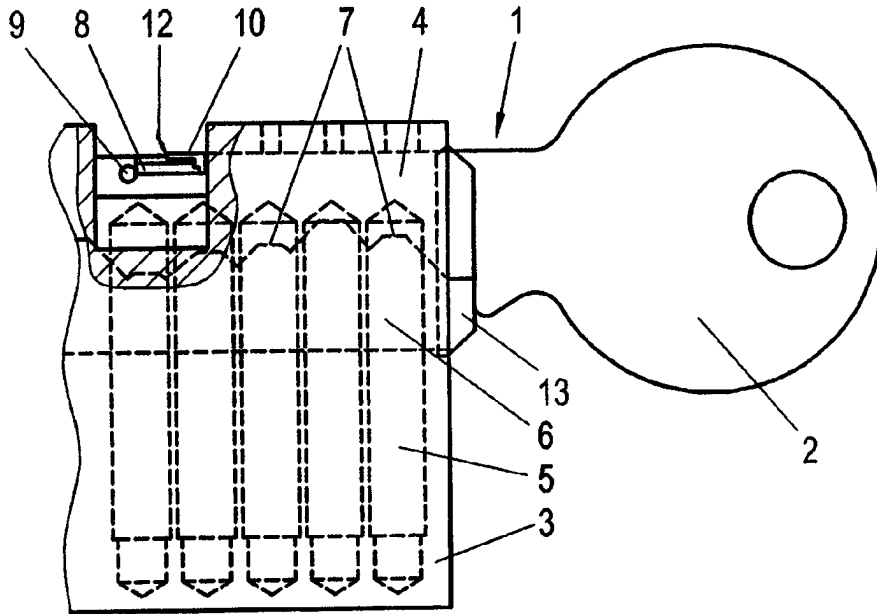


Fig. 1

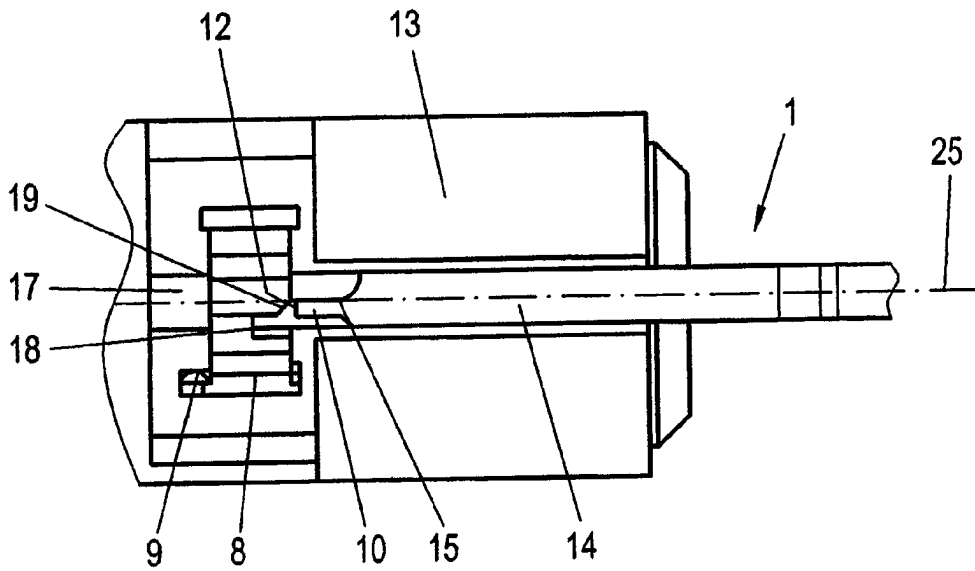


Fig. 2

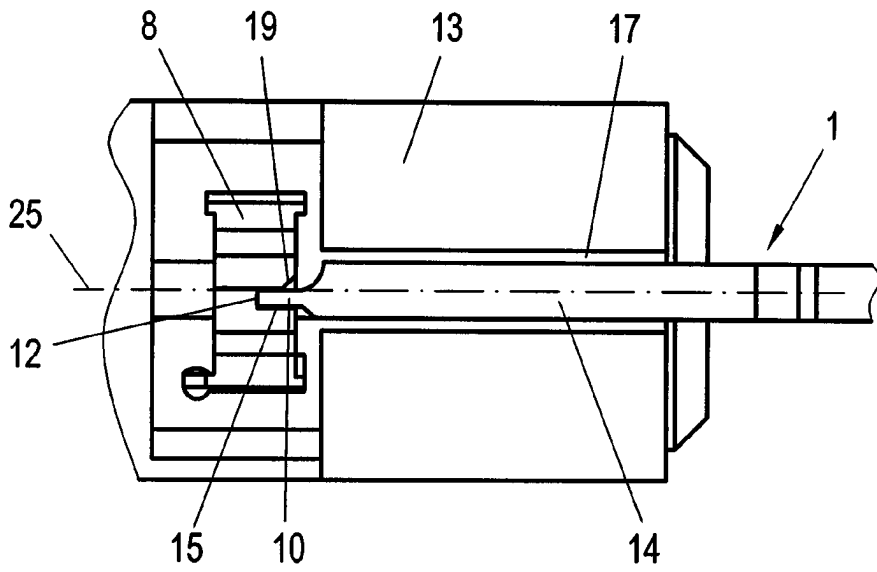


Fig. 3

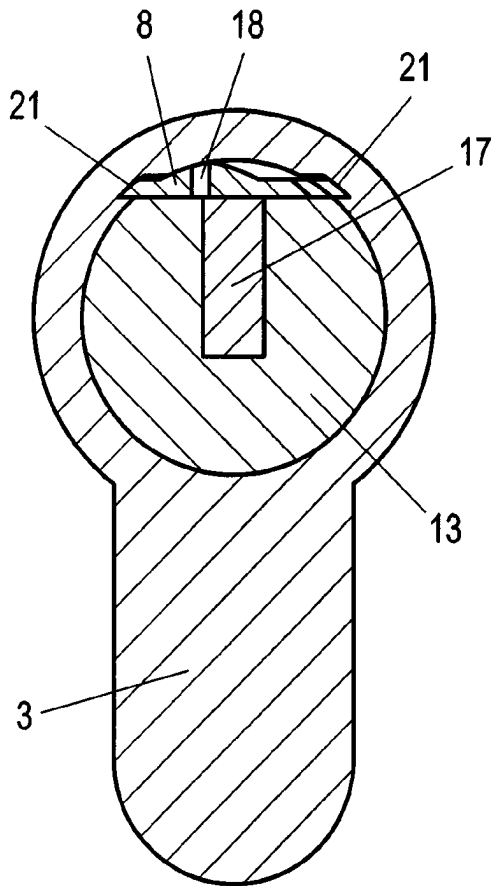


Fig. 4

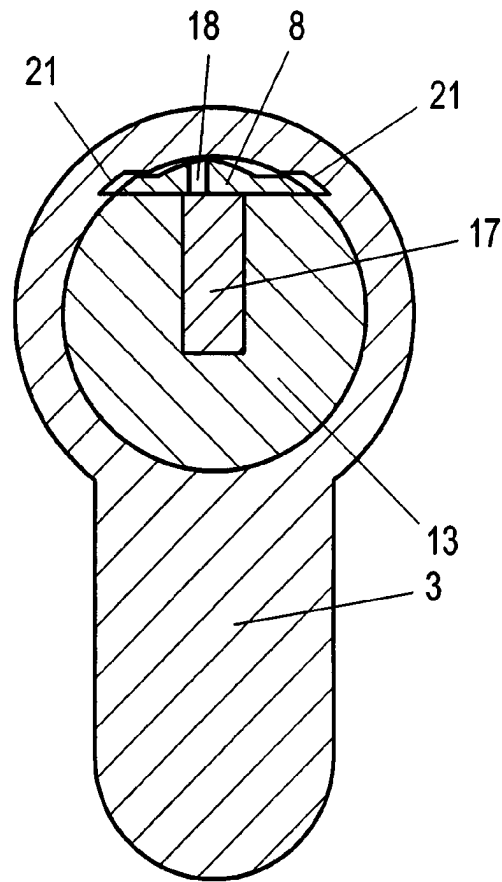


Fig. 5

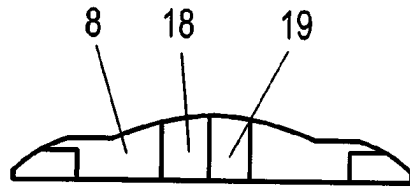


Fig. 6

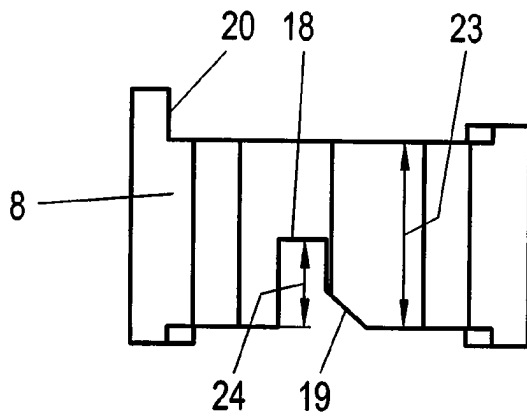


Fig. 7

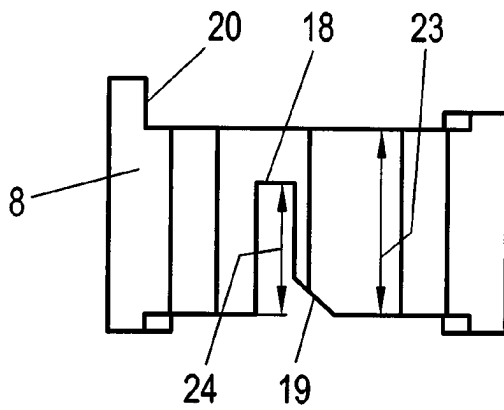


Fig. 8

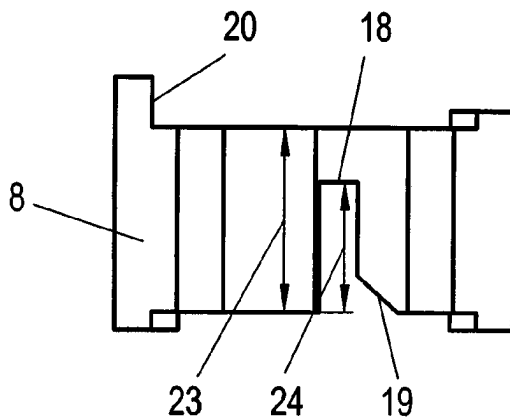


Fig. 9

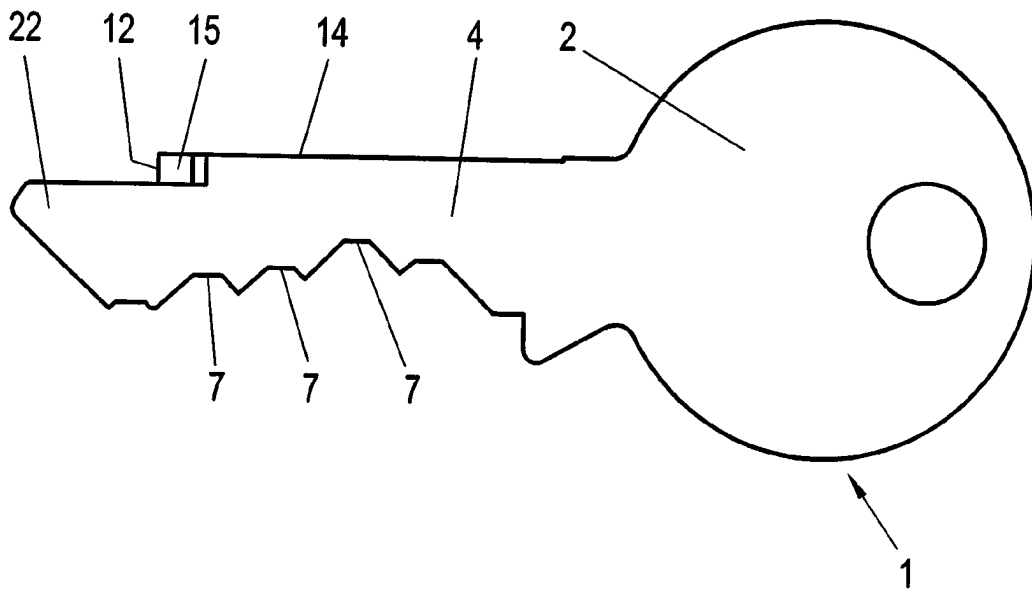


Fig. 10

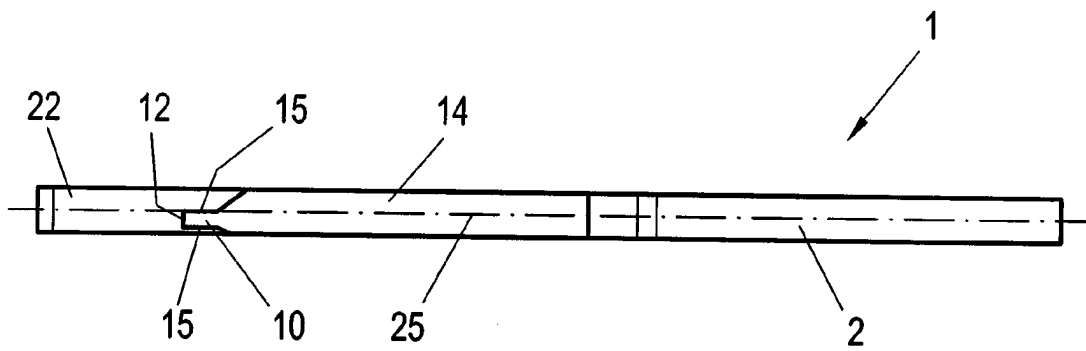


Fig. 11