PATENT CLAIMS

1. A key for a rotary cylinder lock, comprising
a key grip and
a key shank which adjoins the key grip and extends along a longitudinal axis,
wherein the key shank comprises, on the outer side thereof, control recesses, in particular control bores, for positioning tumblers on the rotary cylinder lock, and at least one control element arranged movably in the key shank, which control element has a control surface cooperating with a tumbler of the rotary cylinder lock, wherein the key shank, in the region of the control element, has a tapered cross section which is tapered in relation to the cross section with the control recesses,
wherein the tapered cross section or a further tapered cross section is arranged between the key tip and the key grip at a distance from the key tip, wherein the key shank has an elevation between the key tip and the tapered cross section,
wherein the key shank has a first slope and a second slope, wherein the first slope rises to the elevation, and wherein the second slope runs toward the tapered cross section.

2. The key as claimed in claim 1, wherein the control element protrudes out of the key shank such that the control surface lies at a distance from the outer side of the tapered cross section.

3. The key as claimed in claim 1, wherein the control surface lies flush with the outer side of the tapered cross section.

4. The key as claimed in claim 3, wherein, in the starting position, the control surface lies in a plane which is defined by the outer side of the key shank in the region of the control recesses or wherein the control surface lies in a region between the outer side of the tapered cross section and said plane.

5. The key as claimed in claim 1, wherein the control element comprises a bolt arranged in a bore in the key, and a spring element, in particular a compression spring, which spring element subjects the bolt to a force which presses the control element outward, as seen from the key shank, wherein the bolt has said control surface.

6. The key as claimed in claim 1, wherein the control element has two bolts which extend along a common axis and are acted upon by the same spring element, wherein the first bolt protrudes over a first surface on the key shank or is flush with said surface, and the second bolt protrudes over a second surface on the key shank or is flush with said surface, which surfaces lie opposite each other with respect to the longitudinal axis and in particular provide the narrow side of the key.

7. The key as claimed in claim 4, wherein the bolt has a cylindrical, in particular circular, cross section, and/or wherein the bolt is provided with a control edge in the region of the control surface,

which control edge runs at an angle to the longitudinal axis.

8. The key as claimed in claim 1, wherein the tapered cross section forms the end region of the key shank in the region of the key tip opposite the key grip.

9. The key as claimed in claim 1, wherein the elevation extends transversely with respect to the longitudinal direction of the key shank at maximum to the maximum extension of the key shank.

10. A rotary cylinder lock and key as claimed in claim 1, wherein the rotary cylinder lock comprises
a stator,
a rotor mounted rotatably in the stator, with a key channel, and
at least one tumbler cooperating with the control element,
wherein the tumbler comprises a stator pin mounted in the stator and a rotor pin mounted in the rotor, wherein rotor pin and stator pin are positionable from a blocking position to a release position by the control element, and wherein, in the blocking position, the rotor pin preferably projects into the key channel.

11. The rotary cylinder lock as claimed in claim 10, wherein the rotor pin and stator pin are movable radially outward from the blocking position into the release position.

12. The rotary cylinder lock as claimed in claim 10, wherein the stator pin in the stator is subjected to a spring force by a stator spring, wherein the spring

force presses the stator pin and the rotor pin in the direction of the key channel.

13. The rotary cylinder lock as claimed in claim 12, wherein the spring force of the spring element in the key is greater than the spring force of the stator spring, such that the control element moves the stator pin and the rotor pin radially outward with respect to the key channel when the control element comes into contact with the rotor pin.

14. The rotary cylinder lock as claimed in claim 10, wherein the rotor pin is mounted movably in a guide sleeve which projects into the key channel, which guide sleeve is fixedly connected to the rotor and cooperates with the tapered cross section.

15. The rotary cylinder lock as claimed in claim 14, wherein, during the introduction movement of the key into the rotary cylinder lock, the control element cooperates with the guide sleeve, in particular via a control edge, and is thereby movable to the height of the tapering.

16. The rotary cylinder lock as claimed in claim 10, wherein, in addition to the tumbler which cooperates with the control element, a further tumbler is provided, which cooperates with the outer side of the tapered cross section and is movable radially outward from a blocking position into a release position.

17. The rotary cylinder lock as claimed in claim 16, wherein the further tumbler comprises a stator sleeve mounted movably in the stator and a rotor sleeve

mounted movably in the rotor, and a stator sleeve spring acting on the stator sleeve,
wherein the stator sleeve spring subjects the stator sleeve and the rotor sleeve to a spring force in the direction of the key channel, and
wherein rotor sleeve projects with an end side into the key channel and is movable via said end side from the blocking position into the release position by the outer side of the tapered cross section.

18. The rotary cylinder lock as claimed in claim 16, wherein the stator sleeve and the rotor sleeve, respectively, are mounted movably, wherein the stator sleeve and the rotor sleeve, respectively, are movable radially outward from a blocking position into a release position, or wherein the stator sleeve and the rotor sleeve, respectively, are movable radially outward from a blocking position over the release position and subsequently radially inward into the release position.

19. The rotary cylinder lock as claimed in claim 16, wherein the stator pin and the rotor pin are mounted movably in the stator sleeve and the rotor sleeve, respectively, and are movable radially outward from a blocking position into a release position.

20. The rotary cylinder lock as claimed in claim 10, wherein, when the key is pushed into the key channel, the tumbler, in particular the stator pin and rotor pin, respectively, and/or the further tumbler, in particular the stator sleeve and rotor sleeve, respectively, are movable radially outward via the elevation from a blocking position over the release

position and are then movable from over the release position into the release position.

21. The rotary cylinder lock as claimed in claim 20, wherein the tumbler or the further tumbler has a stator bore in which the stator pin and/or the stator sleeve is mounted movably, wherein the length of the stator bore is greater than the length of the stator pin and of the stator sleeve, respectively.

22. A rotary cylinder lock and key

said key comprising

a key grip, and

a key shank which adjoins the key grip and extends along a longitudinal axis,

wherein the key shank comprises, on the outer side thereof, control recesses, in particular control bores, for positioning tumblers on the rotary cylinder lock, and at least one control element arranged movably in the key shank, which control element has a control surface cooperating with a tumbler of the rotary cylinder lock, wherein the key shank, in the region of the control element, has a tapered cross section which is tapered in relation to the cross section with the control recesses,

wherein the rotary cylinder lock comprising

a stator,

a rotor mounted rotatably in the stator, with a key channel, and

at least one tumbler cooperating with the control element,

wherein the tumbler comprises a stator pin mounted in the stator and a rotor pin mounted in the rotor, wherein rotor pin and stator pin are positionable

from a blocking position to a release position by the control element, and wherein, in the blocking position, the rotor pin preferably projects into the key channel,

wherein in addition to the tumbler which cooperates with the control element, a further tumbler is provided, which cooperates with the outer side of the tapered cross section and is movable radially outward from a blocking position into a release position and

wherein the further tumbler comprises a stator sleeve mounted movably in the stator and a rotor sleeve mounted movably in the rotor, and a stator sleeve spring acting on the stator sleeve,

wherein the stator sleeve spring subjects the stator sleeve and the rotor sleeve to a spring force in the direction of the key channel,

wherein rotor sleeve projects with an end side into the key channel and is movable via said end side from the blocking position into the release position by the outer side of the tapered cross section;

wherein the tapered cross section or a further tapered cross section is arranged between the key tip and the key grip at a distance from the key tip, wherein the key shank has an elevation between the key tip and the tapered cross section; and

wherein the key shank has a first slope and a second slope, wherein the first slope rises to the elevation, and wherein the second slope runs toward the tapered cross section.

23. The rotary cylinder lock and key as claimed in claim 22, wherein the control element protrudes out of the key shank such that the control surface lies at a distance from the outer side of the tapered cross section.

24. The rotary cylinder lock and key as claimed in claim 22, wherein the control surface lies flush with the outer side of the tapered cross section.

25. The rotary cylinder lock and key as claimed in claim 22, wherein, in the starting position, the control surface lies in a plane which is defined by the outer side of the key shank in the region of the control recesses, or wherein the control surface lies in a region between the outer side of the tapered cross section and said plane.

26. The rotary cylinder lock and key as claimed in claim 22, wherein the control element comprises a bolt arranged in a bore in the key, and a spring element, in particular a compression spring, which spring element subjects the bolt to a force which presses the control element outward, as seen from the key shank, wherein the bolt has said control surface.

27. The rotary cylinder lock and key as claimed in claim 26, wherein the bolt has a cylindrical, in particular circular, cross section, and/or wherein the bolt is provided with a control edge in the region of the control surface, which control edge runs at an angle to the longitudinal axis.

28. The rotary cylinder lock and key as claimed in claim 22, wherein the control element has two bolts which extend along a common axis and are acted upon by the same spring element, wherein the first bolt protrudes over a first surface on the key shank or is flush with said surface, and the second bolt protrudes

over a second surface on the key shank or is flush with said surface, which surfaces lie opposite each other with respect to the longitudinal axis and in particular provide the narrow side of the key.

29. The rotary cylinder lock and key as claimed in claim 28, wherein the bolt has a cylindrical, in particular circular, cross section, and/or wherein the bolt is provided with a control edge in the region of the control surface, which control edge runs at an angle to the longitudinal axis.

30. The rotary cylinder lock and key as claimed in claim 22, wherein the tapered cross section forms the end region of the key shank in the region of the key tip opposite the key grip.

31. The rotary cylinder lock and key as claimed in claim 22, wherein the elevation extends transversely with respect to the longitudinal direction of the key shank at maximum to the maximum extension of the key shank.

32. The rotary cylinder lock and key as claimed in claim 22, wherein rotor pin and stator pin are movable radially outward from the blocking position into the release position.

33. The rotary cylinder lock and key as claimed in claim 22, wherein the stator pin in the stator is subjected to a spring force by a stator spring, wherein the spring force presses the stator pin and the rotor pin in the direction of the key channel.

34. The rotary cylinder lock and key as claimed in claim 22, wherein the spring force of the spring element in the key is greater than the spring force of the stator spring, such that the control element moves the stator pin and the rotor pin radially outward with respect to the key channel when the control element comes into contact with the rotor pin.

35. The rotary cylinder lock and key as claimed in claim 22, wherein the stator sleeve and the rotor sleeve, respectively, are mounted movably, wherein the stator sleeve and the rotor sleeve, respectively, are movable radially outward from a blocking position into a release position, or wherein the stator sleeve and the rotor sleeve, respectively, are movable radially outward from a blocking position over the release position and subsequently radially inward into the release position.

36. The rotary cylinder lock and key as claimed in claim 22, wherein the stator pin and the rotor pin are mounted movably in the stator sleeve and the rotor sleeve, respectively, and are movable radially outward from a blocking position into a release position.

37. The rotary cylinder lock and key as claimed in claim 22, wherein, when the key is pushed into the key channel, the tumbler, in particular the stator pin and rotor pin, respectively, and/or the further tumbler, in particular the stator sleeve and rotor sleeve, respectively, are movable radially outward via the elevation from a blocking position over the release position and are then movable from over the release position into the release position.

38. The rotary cylinder lock as claimed in claim 37, wherein the tumbler or the further tumbler has a stator bore in which the stator pin and/or the stator sleeve is mounted movably, wherein the length of the stator bore is greater than the length of the stator pin and of the stator sleeve, respectively.