

Cylinder lock and key combination with a dual tumbler assembly and a key
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FIELD OF THE INVENTION

5 The present invention relates to a cylinder lock and key combination, comprising

- a key with an elongate key blade, and
- a lock having a rotatable key plug with a key slot and at least one dual tumbler assembly for locking the key plug
- 10 against rotation, including
 - an outer pin which is movable elevationally in a chamber in the key plug, and
 - an inner pin, which is movable telescopically in a central cylindrical bore in said outer pin,
 - 15 - said outer pin being provided with at least one key contacting end portion for engagement with a first code portion of said key blade upon insertion thereof into the key slot of the lock,
 - said inner pin also being provided with at least one key
 - 20 contacting end portion, for engagement with a second code portion of said key blade,
 - said first and second code portions of the key blade defining specific code patterns on said key blade, one code pattern for each tumbler assembly, and
 - 25 - each such code pattern comprising adjacent code portions corresponding to the locations and depths of said first and second key contacting end portions of an associated tumbler assembly.

30 The invention also relates to a key for use in such a lock and key combination.

BACKGROUND OF THE INVENTION AND PRIOR ART

In prior art technology, there are many examples of cylinder lock and key combinations of the kind referred to above, having telescopic tumbler assemblies with outer pins and inner pins. In one example, disclosed in W098/5838 (Mul-T-Lock), each tumbler assembly comprises a principle pin and a plurality of peripheral pins arranged to fit in the principle pin in a selectable non-coaxial arrangement therewith. Such a combination is quite complex, with at least three pins in each tumbler assembly, and a corresponding number of auxiliary components, such as springs and corresponding pins in the lock surrounding the rotatable key plug (denoted tumbler in this document).

Another example is an embodiment disclosed in GB 2453626 A (ASSA ABLOY Ltd.), where each telescopic tumbler pin assembly comprises an outer pin in which an inner pin is slidably mounted. The key contacting end portion of the outer pin is formed as a sleeve with a cylindrical shape having a uniform end surface. This end surface is frustro-conical, so as to provide a sliding engagement with a correctly cut key blade. The inner pin, on the other hand, has a rounded or pointed end portion, the axial position of which provides a key code. For each tumbler assembly, the code on the key blade is constituted by the axial positions of an annular seating surface (engaging with the cylindrical end portion of the outer pin) and a central dome-like projection (providing a coded seat for the end portion of the inner pin).

OBJECT OF THE INVENTION

Against this background, the object of the present invention is to provide a telescopic tumbler assembly having a

relatively simple structure, with only a few parts, and still offering a very high number of code combinations.

SUMMARY OF THE INVENTION

5 According to the invention, there is provided a cylinder lock and key combination with at least one tumbler assembly having an outer pin and an inner pin, wherein the code position of the at least one key contacting end portion of the outer pin is defined by an axially displaced portion situated at a
10 circumferentially coded location along a circle having its centre on said centre-line of said dual tumbler assembly.

In this way, the number of codes which can be obtained for each tumbler assembly is very large, a first degree of freedom
15 being the axial position of the end portion of the inner pin, a second degree of freedom being the circumferential position of the axially displaced portion of the outer pin and a third degree of freedom being the axial position of the axially displaced portion of the outer pin. Moreover, the outer pin
20 may be provided with two or more axially displaced portions. In such embodiments, the tumbler assembly is provided with at least three key contacting end portions, making the number of possible code combinations even greater.

25 In spite of the great number of code combinations, the structure of each tumbler assembly is relatively simple and easy to manufacture.

The invention also provides a key for use in a lock and key
30 combination, with at least one code pattern comprising a code portion configured to receive the key contacting portion of an inner pin and at least one further code portion, located at a circumferentially coded position at a radial distance from a

centre point of the code pattern for receiving a corresponding axially displaced portion of the outer pin.

The "axially displaced portion" of the outer pin may be an axially projecting lug, or an axially extending recess.

A number of suitable embodiments will appear from the detailed description below and the appended claims, including various dependent claims relating to different embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail below, with reference to the drawings.

Fig.1 and fig. 1a illustrate, in a perspective view and a side view, respectively, a key according to the invention, with two tumbler assemblies being schematically illustrated in fig. 1;

Fig. 1b shows, in a larger scale, a portion of the code pattern on the key of fig. 1a;

Fig. 1c is a top view of the key and tumbler assembly shown in fig. 1;

Fig. 1d is a cross-section through a lock with a key plug accommodating the key and the tumbler assemblies shown in fig. 1;

Fig. 2 is a perspective view of a second embodiment of a key according to the invention, where the code pattern is situated on an edge portion of the key blade;

Fig. 2a is a side view of the key and tumbler assembly shown in fig. 2;

Fig. 2b is a top view of the key blade of figs. 2 and 2a;

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Fig. 2c shows, in a larger scale, a portion of the code pattern on the edge portion of the key blade;

Fig. 3 is a side view of a tumbler assembly of the kind shown in fig. 1 and fig. 2;

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Fig. 3a is a longitudinal section through the tumbler assembly according to fig. 3;

Fig. 3b is a top view of the tumbler assembly shown in fig. 3;

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Fig. 3c shows the top view of fig. 3b in a larger scale;

Figs. 4, 4a, 4b and fig. 4c are similar views as figs. 3, 3a, 3b, 3c of a modified embodiment having an inclined inner pin;

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Figs. 5, 5a, 5b and 5c are similar views of a further embodiment, where the inner pin has an asymmetric end portion;

Fig. 6 shows a tumbler assembly, similar to the one shown in fig. 3, and an axially adjoining drive pin assembly to be arranged in a lock housing (not shown) surrounding the rotatable key plug where the tumbler assembly is located;

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Fig. 6a is a longitudinal section through the assembly shown in fig. 6;

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Figs. 6b and 6c are top views of the assembly of fig. 6, the fig. 6c being drawn to a larger scale;

5 Figs. 7, 7a, 7b and 7c are views, similar to those of figs. 6, 6a, 6b and 6c, of a modified embodiment of the tumbler assembly, with an inner pin having an asymmetric key contacting lug;

10 Figs. 8, 8a, 8b, 8c, 8d, 8e, 8f, 8g and 8h illustrate a key with a key blade having two different code patterns, and tumbler assemblies each having an outer pin with a long part and a short part cooperating respectively with the two code patterns on the key, the figs. 8d, 8e and fig. 8f illustrating three different embodiments;

15 Figs. 8i, 8k, 8l, 8m and 8n show two modified embodiments for a thin and a thick (dashed lines) key blade, respectively;

20 Figs. 9a, 9b, 9c, 9d, 9e and 9f illustrate the tumbler assembly only, the embodiment being the same as the one shown also in figs. 8a, 8b, 8c and 8d, without the associated key;

25 Figs. 10, 10a, 10b, 10c and 10d illustrate a further embodiment of a key and associated tumbler assemblies, where the outer pin is provided with two axially projecting lugs;

30 Figs. 11a, 11b, 11c, 11d, 11e, 11f, 11g and 11h illustrate a further embodiment where the inner pin is offset radially from the centre-line of the tumbler assembly.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In figs. 1, 1a, 1b and 1c, there is shown a key 10 with a key blade 11. The key blade 11 is elongate and, in the illustrated

embodiment, generally flat. Although not shown explicitly, the key blade is normally provided with profiled ribs and grooves so as to fit in a corresponding profiled keyway in a lock (fig. 1d). The key blade 11 is provided with a number of code patterns 12, each such code pattern 12 cooperating with a corresponding tumbler assembly 50.

According to the present invention, a new kind of tumbler assembly 50 is used. Normally, there is a row of such tumbler assemblies being arranged in a row of cylindrical bores, adjacent to a key slot 15, in a rotatable key plug 20 of an associated lock, with a housing 30, as illustrated schematically in fig. 1d. The lock itself may be of a general kind well known to those skilled in the art.

The new kind of dual tumbler assembly 50 comprises an outer pin 51 and an inner pin 52, which is movable telescopically in an axial bore 51a in the outer pin 51. Both the outer pin 51 and the inner pin 52 have axially protruding key contacting end portions which engage with the associated code pattern 12 on the key blade. The inner pin 52 has a key contacting end portion in the form of a conical pointed lug 52b, which in this embodiment is located on the centre-line C of the tumbler assembly. As will appear below, this pointed lug 52b can alternatively be asymmetrically located in relation to the centre-line C.

The outer pin 51 is composed of a first or upper part 51c, provided with the bore 51a, at the inside thereof, and a second or lower part 51d, which is provided with an axially displaced end portion, in this embodiment in the form of an axially projecting lug 51b. This axially displaced end portion or projecting lug 51b is situated at a circumferentially coded

position at a radial distance from the centre-line C so as to engage with an associated code portion, in this embodiment in the form of a recess portion 12b in the associated code pattern 12 on the key blade 11.

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In fig. 1b there are shown, schematically, the coded locations configured to receive the axial lugs 51b, 52b, serving as key contacting portions. Thus, the conical lug 52b of the inner pin 52 is, in this embodiment, located on the centre-line C, and the possible code variations for this key contacting portion is the axial position on the centre-line. Normally, this axial position, or depth, may be defined at two, three or four different levels.

15 The axially projecting lug 51b on the outer pin 51, on the other hand, may be positioned at any coded location along the dash-dotted circle CL. For practical reasons, there should be four to twelve possible positions corresponding to a mutual angular difference of 90° to 30° . Of course, the axial length or depth of the lug 51b may also be coded into 2-4 different levels. These coded variations will correspond to various axial depths of the code recess portion 12a and a multitude of variations for the coded recess portion 12b, including axial depth variations as well as angular positions as indicated above.

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In order to retain the exact angular position of the axial lug 51b on the outer pin 51, it is of course essential that the outer pin 51 is maintained in an angular or rotational position in the associated bore in the key plug of the lock. This is achieved by the radially outwardly projecting members or fins 51f which are guided in associated grooves along the bores of the key plug.

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As will be explained further below, the exact structure of the tumbler assembly 50 may be modified in many ways. However, in all embodiments, there is a combination of an inner pin with an axially projecting lug 52b (or axial recess) and an outer pin 51 with at least one axially projecting lug 51b (or axial recess), the position of the lug 52b or recess being coded axially, and the position of the axial lug 51b (or recess) being coded circumferentially (up to 12 or even more positions) as well as axially. Accordingly the number of code combinations for one tumbler assembly 50 is very great, e.g. 48 if there are two axial positions for each lug or recess and 108 if there are three axial positions for each lug or recess.

As appears from figs. 2, 2a, 2b and 2c, it is possible to locate the code pattern on the edge portion of the key blade, rather than on one or two of the sides of the key blade. In this embodiment, the tumbler assemblies 50 are oriented with their centre-lines extending in a central plane of the relatively flat key blade 11' of the key 10'. Each tumbler assembly 50 with an outer pin 51 and an inner pin 52 is designed just like in the previous embodiment, the only difference being that the associated code patterns on the edge portion of the key blade 11' may fall partially outside the key blade material, if the key blade 11' is thin in relation to the dimensions of the tumbler assemblies. In this case, there may be a lower number of possible locations for the recess portions 12'b (see fig. 2c), but the number of possible code combinations for each tumbler assembly 51, 52 will still be relatively large.

Figs. 3, 3a, 3b and 3c illustrate, separately, the tumbler assemblies shown in figs. 1 and 2. In fig. 3, the outer pin 51

is visible, with its guiding member or fin 51f and its axially projecting lug 51b. The only visible part of the inner pin is the lower key contacting end portion or lug 52b. The latter is located on the centre-line C of the tumbler assembly.

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From the longitudinal section shown in fig. 3a, it is seen that the upper, somewhat wider part of the inner pin 52 is guided by the cylindrical bore 51a in the upper part 51c of the outer pin 51. It is also evident that the inner and outer
10 pins are movable axially together and that the outer pin 51 may be displaced downwards in relation to the inner pin 52. Thus, the axially projecting lugs 51b and 52b may be displaced axially, either together or relative to each other. It will be understood that the mutually engaging cylindrical surfaces of
15 the inner and outer pins may be axially straight, as shown in figs. 1 and 2, or provided with shoulders which limit the relative axial movement. These shoulders 51e and 52e may be configured to limit the relative axial movement of the inner pin 52 either downwards (as shown) or upwards.

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The relative locations of the axially projecting lugs 51b and 52b will also appear from figs. 3b and 3c. The axially projecting lug 52b of the inner pin 52 is in this case located on the centre-line C, whereas the axially projecting lug 51b
25 on the outer pin 51 is situated at a coded location, with its pointed end positioned circumferentially somewhere along the circle line CL. The lug 52b is conical with a pointed or slightly rounded end 52b, whereas the lug 51b has gradually sloping portions 51bs on either side of the pointed or
30 slightly rounded tip 51b. According to the present invention, the lug 51b is situated at a coded location, e.g. at one of a number of circumferentially well defined positions, along the circle line CL. The circumferential position represents one

degree of freedom, whereas the axial positions of the lugs 51b and 52b provide two further degrees of freedom, thus providing a very large number of possible code combinations of each tumbler assembly 50.

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As illustrated in figs. 4, 4a, 4b and 4c, the inner pin 52' of the tumbler assembly 50' may be slightly inclined relative to the centre-line C of the tumbler assembly. In this case, the cylindrical bore 51'a in the outer pin 51' is of course tilted accordingly. The inclinational angle may be 20° or less in relation to the centre-line C. Still, it will be possible to vary the code locations of the lugs 51b and 52b in the same manner as in the previous embodiment.

15 A similar effect is obtainable by way of the embodiment shown in figs. 5, 5a, 5b and 5c. Here the axially projecting lug 52''b is asymmetrically located along an inner circle CL2, whereas the axially projecting lug 51''b on the outer pin 51'' is located somewhere on an outer circle line CL1. In this way, 20 the number of code combinations will be even greater.

In figs. 6, 6a, 6b and 6c further components of the lock are shown, viz. a drive pin assembly 60 with an outer pin or sleeve 61 and an inner pin 62 arranged axially in line with 25 the tumbler assembly 50 with the outer pin 51 and the inner pin 52. The drive pin assembly 60 is arranged in an associated bore in a surrounding, stationary housing of the lock (not shown), so that the abutting end surfaces of the tumbler assembly 50 and the drive pin assembly 60 are located at the 30 shear line between the rotatable key plug and the surrounding lock housing. In this embodiment, an inner pressure spring 72 acts on the inner drive pin 62, whereas an outer pressure spring 71 acts on the outer drive pin 61. In this way, the

drive pin assembly 60 will normally be located in a position which locks the key plug against rotation. Only when a correctly cut key is inserted into a key slot of the key plug (not shown), will it be possible to rotate the key plug by turning the inserted key.

Figs. 7, 7a, 7b and 7c illustrate a similar embodiment, the differences being that the outer pin 51''' is provided with a widened cylindrical bore 51'''a accommodating a circumferential flange 52'''f on the inner pin 52'''. Also, the projecting lug 52'''b (see fig. 7c) on the inner pin 52''' is asymmetric or radially displaced in a similar manner as in figs. 5, 5a, 5b, 5c.

A further embodiment of the tumbler assemblies 50' is shown in fig. 8. Here, the inner pin 52 with its axially projecting lug 52b is similar to those shown in figs. 1 and 2. However, the outer pin 151 is provided with two opposite lower parts, i.e. one short part 151s and one longer part 151l. At their bottom ends, these parts are provided with axially projecting lugs 151sb and 151lb, respectively. The shorter lugs 151sb cooperate with upper coded recesses 12''b, on the edge portion of the key blade 111', whereas the longer lugs 151lb engage with coded recesses 120 cut into a shelf on the associated side of the key blade 11''. The central lugs 52b on the inner pins 52 engage with code recesses 12''a on the edge of the key blade 111'.

As appears from fig. 8h the shorter lugs 151sb may be located in various circumferential positions, e.g. two, three or four positions, on the circular portion CLs, whereas the longer lugs 151lb may be positioned at a selected position along the circular portion CLl. It will be appreciated that this

structure opens up for many code combinations. The engagement between the tumbler assembly and the key blade 11" will also appear from figs. 8a, 8b, 8c, 8d, 8e, 8f. Figs. 8d and 8e show two embodiments with the longer projecting lug being oriented to the right and to the left, respectively. In fig. 8f there is a third embodiment where the longer part of the outer pin 151 is provided with two different longer lugs 151' *lc* and 151' *ld*. In this embodiment (fig. 8f) the two lugs may be coded in the same way as in WO2007/018456 (WINLOC AG), with one or the other, or both, of the longer lugs 151' *lc* and 151' *ld* engaging with an associated one of the coded recesses 120 on the shelf of the key blade 111'.

In figs. 8i, 8k, 8l, 8m and 8n there are shown some modified embodiments.

The key blade 111" may be somewhat thinner (without the dashed portion on the back side as seen in fig. 8i). If so, the outer pin 151" will only have one axially projecting lug, a long lug 151" *lb* (compare figs. 8k and 8l).

On the other hand, if the key blade is thick (as in the previous embodiments), there is room for a code pattern with coded recesses 120 on the back side 111" *a* as well, and long lugs 151" *lb* branching down on both sides of the key blade 111", as shown in figs. 8m and 8n. It should be pointed out that it is just a coincidence that the two long lugs 151" *lb* in fig. 8n have the same lengths. Generally, they are of different lengths, being dependent on the particular depths of the recesses 120.

In figs. 9a, 9b, 9c, 9d, 9e and 9f, the tumbler assembly 50', and the associated tumbler drive assembly 60', and the spring

assembly 70' (of the embodiment shown in figs. 8 through 8d) are shown as such, without the engaging key.

In the embodiment shown in figs. 10, 10a, 10b, 10c and 10d,
5 the key 10 with the key blade 11 and the coded recess portions 12 is similar to the embodiment shown in fig. 1, although each code pattern 12 comprises a centrally located recess portion 12a and two adjoining recess portions 12b and 12c each accommodating a lug 51b, 51c on the outer pin 51. The central
10 recess portion 12a is adapted to receive the axially projecting lug 52b on the inner pin 52, this lug 52b being located on the centre-line C. The locations of the three lugs 51b, 51c and 52b appear best from fig. 10d. In this embodiment, the two lugs 51b, 51c are located opposite to each
15 other on the circle line CL. However, these two lugs may be positioned at any two distinct points along the circle line CL (less than 180° apart). It will be appreciated that there is a very high number of possible code locations for these three lugs 51b, 51c and 52b.

20 The tumbler assembly 50 shown in figs. 11a, 11b, 11c, 11d, 11e, 11f, 11g and 11h resembles the one shown in figs. 5-5c, with one lug 51b on the outer pin 51 and another lug 52b on the inner pin 52. However, in this case, the inner pin 52 has
25 a radially offset flange 52a which is provided with the axially projecting lug 52b (see fig. 11e). In order to make room for the offset flange 52a, the second or lower part 51d of the outer pin 52 extends only partly in the circumferential direction, leaving a free space axially adjacent to the first
30 or upper part 51c.

With such a structure, the projecting lug 52b on the inner pin 52 may be located at the same radial distance from the centre-

line C on the circle line CL, as can be seen from the figs.
11c, 11d, 11g, 11h. Accordingly, each of the lugs 51b and 52b
may be located at any circumferential position on a semi-
circle (half of the circle line CL). In this case, there is no
5 coded recess portion on the centre-line C.

CLAIMS

1. A cylinder lock and key combination, comprising
- a key (10, 10', 10'') with an elongate key blade (11), and
 - 5 - a lock having a rotatable key plug (20) with a key slot (15) and at least one dual tumbler assembly (50) for locking the key plug against rotation, including
 - an outer pin (51) which is movable elevationally in a chamber in the key plug, and
 - 10 - an inner pin (52), which is movable telescopically in a central cylindrical bore (51a) in said outer pin,
 - said outer pin being provided with at least one key contacting end portion (51b) for engagement with a first code portion (12b) of said key blade upon insertion thereof
 - 15 into the key slot of the lock,
 - said inner pin (52) also being provided with at least one key contacting end portion (52b), for engagement with a second code portion (12a) of said key blade,
 - said first and second code portions (12b, 12a) of the key
 - 20 blade defining specific code patterns on said key blade, one code pattern (12) for each tumbler assembly, and
 - each such code pattern comprising adjacent code portions (12b, 12a) corresponding to the locations and depths of said first and second key contacting end portions
 - 25 (51b, 52b) of an associated tumbler assembly (50),
 - wherein said outer pin of said tumbler assembly is composed of a first or upper part (51c), formed by a cylindrical sleeve portion defining, at the inside thereof, said central cylindrical bore (51a), which extends along a
 - 30 centre-line (C) of said dual tumbler assembly, and a second or lower part (51d) being provided with at least one of said key contacting end portions (51b), which is axially

displaced at said second or lower part of said outer pin (51),

- a first or upper portion of said inner pin (52) of said tumbler assembly being cylindrical and dimensioned for axial, guided movement within said central, cylindrical bore (51a) of said first or upper part (51c) of said outer pin, and a second or lower portion of said inner pin also being provided with at least one of said key contacting end portions (52b),

- said key contacting end portions (51b, 52b) of said outer and inner pins (51, 52) of said tumbler assembly (50) being located adjacent to each other at axially and radially well-defined code positions relative to said centre-line (C) of said tumbler assembly, and

- wherein the code position of said at least one key contacting end portion (51b) of said outer pin (51) is defined by said axially displaced portion (51b) being situated at a circumferentially coded location along a circle (CL) having its centre on said centre-line (C) of the tumbler assembly (50).

2. A lock and key combination as defined in claim 1, wherein said axially displaced portion (51b) is formed as a projecting lug.

3. A lock and key combination as defined in claim 1, wherein said inner pin (52) extends along said centre-line (C) of said tumbler assembly (50).

4. A lock and key combination as defined in claim 3, wherein the key contacting end portion (52b) of said inner pin (52) is conical and protrudes axially on said centre-line (C) of said tumbler assembly (50).

5. A lock and key combination as defined in claim 1, wherein said second or lower part (51d) of said outer pin comprises a cylindrical wall which extends only partly in the circumferential direction, leaving a free space axially adjacent to said first or upper part, and wherein said second or lower portion (52a) of said inner pin (52) is extended radially outwardly into said free space.

6. A lock and key combination as defined in claim 5, wherein said key contacting end portion (52b) of said inner pin (52) protrudes axially but is offset radially from said centre-line (C) of said tumbler assembly.

7. A lock and key combination as defined in claim 5 or 6, wherein said inner pin (52) is composed of said first or upper cylindrical portion, extending along said centre-line, and a second or lower portion having a radially offset flange (52a) provided with an axially protruding key contacting end portion (52b).

8. A lock and key combination as defined in claim 1, wherein said inner pin (52') is arranged at an angle, not exceeding 20° , relative to a centre-line (C) of said tumbler assembly (50).

9. A lock and key combination as defined in any one of claims 1-8, wherein said outer pin (51) is provided with at least one radially outwardly projecting member (51f) which prevents the tumbler assembly from rotating around said centre-line of said chamber.

10. A lock and key combination as defined in any one of claims 1-9, wherein said outer and inner pins (51, 52) are movable

axially together, one of them being movable a limited distance relative the other one.

11. A lock and key combination as defined in claims 1, wherein
5 said outer pin (51) has at least two axially projecting, key
contacting end portions with associated axially displaced
portions (51b, 51c), located at different circumferential
positions, each at a radial distance from said centre-line,
wherein said tumbler assembly is provided with at least three
10 key contacting end portions.

12. A lock and key combination as defined in claim 1, wherein
said inner pin (52) is arranged to cooperate with code
portions located on an edge portion of said key blade (111'),
15 whereas the outer pin (151) is arranged to cooperate with at
least one code portion (120) on a side shelf of said key
blade.

13. A lock and key combination as defined in claim 12, wherein
20 the outer pin (151) has two opposite second or lower parts
(151s, 151l), each having a key contacting lug (151sb, 151lb)
cooperating with an associated code portion (120b, 120) on the
key blade.

14. A lock and key combination as defined in claim 13, wherein
25 said opposite second or lower parts consist of one relatively
long part (151l) cooperating with a code portion (120) at the
lower half of the key blade and one relatively short part
(151s) cooperating with a code portion (120b) at the upper
30 half of the key blade (11').

15. A lock and key combination as defined in claim 14,
wherein said relatively long part is provided with two key

contacting lugs (151' d, 151' d), the extreme ends of which are separated from each other in the longitudinal direction of said key plug (20).

5 16. A key (10) for use in a lock and key combination as defined in claim 1, said key having an elongate key blade (11) provided with at least one code pattern (12) with code portions (12a, 12b) configured to receive corresponding key contacting end portions (52b, 51b) on a dual tumbler assembly
10 (50) with an outer pin (51) and an inner pin (52), the latter being movable telescopically in a cylindrical bore (51a) in said outer pin (51), wherein said code portions of said at least one code pattern comprise a first code portion (12a) configured to receive the key contacting portion of said inner
15 pin(52) and at least one second code portion (12b) located at a circumferentially coded position at a radial distance from a centre point of said code pattern (12), for receiving a corresponding key contacting end portion (51b) on said outer pin (51).

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