

Description

The invention relates generally to cylinder lock systems of the kind described in the international patent application No. PCT/SE87/00038 (WO87/04749), i.e. systems including a cylinder lock comprising:

- a cylinder shell;
- a key plug rotationally mounted in said cylinder shell to provide a shear line between said cylinder shell and said key plug;
- a longitudinal key slot extending into said key plug parallel to the rotational axis thereof for receiving a key blade having an elongated, generally longitudinally extending wave-like code pattern; and
- a row of locking tumblers, each tumbler including a body part guided for elevational movement in an associated transverse cavity in said key plug and a finger projecting transversally outwardly from said body part so as to extend into said key slot and engage with said code pattern of a properly shaped key blade being inserted into the key slot; said locking tumblers being blockingly associated with the cylinder shell either directly or indirectly by means of a fence member so that elevational positioning of said locking tumblers with said properly shaped key blade enables clearance of the shear line.

The lock known from the above-mentioned international application has the special feature of a pivotable finger on each locking tumbler, so that the finger causes the respective tumbler to be specifically rotated when a properly shaped key is being inserted into the lock. Hereby, a very high number of code combinations and a good resistance against picking are obtained. However, this feature makes the lock and the key blade relatively complicated and expensive.

The object of the present invention is to provide a cylinder lock and key system which is somewhat easier and less expensive to manufacture while retaining the most important advantages of the previously known system.

This object is achieved in that the cylinder lock is provided with non-rotatable tumblers and associated fingers as defined in claim 1. Specific embodiments thereof are given in claims 2 - 6.

The inventive concept also includes a cylinder lock and key blade combination system with a master key, as defined in claim 7, and a locking tumbler for use with a cylinder lock, as defined in claim 8.

The invention will be described more fully below with reference to the appended drawings.

Fig. 1

illustrates a key blade in a perspective view;

Fig. 2a

is a transverse section along line II-II in Fig. 1;

Fig. 2b

is a similar section through a slightly modified key blade;

Fig. 3

illustrates a lock according to the invention to be used in combination with the key blade of Fig. 1, a part of the lock being broken away to show the inside thereof;

Fig. 4

shows, in a larger scale, a partial section through the key plug of the lock of Fig. 3;

Fig. 5

shows a locking tumbler blank in perspective view;

Figs. 6a - 6c

show, likewise in perspective views, three different locking tumblers made from a blank as shown in Fig. 5;

Figs. 6d and 6e

show a locking tumbler in side and front views, respectively;

Figs. 7a - 7c

show schematically three different locking tumblers in side views;

Figs. 8a - 8c

show, in perspective views, three different locking tumblers of a modified kind; and

Figs. 9a - 9c

show, in side views and in a larger scale, three different key blades cooperating with locking tumblers as shown in Figs. 6a - 6c, including a master key blade (Fig. 9c).

The key blade 1 shown in Fig. 1 has a longitudinal axis A of insertion and is insertable into the lock shown in Fig. 3.

As appears from Fig. 2a, the key blade is generally flat with substantially planar side surfaces 2 and 3. The side surface 2 to the left in Fig. 2a has a minor step 4, and the side surface to the right in Fig. 2a has a longitudinal groove 5 with an upper side wall 6 inclined so as to face away from the blade 1 and a lower side wall 7 oriented substantially at right angle to the central plane P of the blade. Furthermore, the lower edge surface 8 is slightly curved.

In the modified key blade 1' shown in Fig. 2b, the longitudinal groove 5' has two mutually parallel side walls 6' and 7 oriented at right angle to the central plane P.

It will be apparent from Figures 1, 2a and 3 that the key blade 1 has a cross-sectional shape fitting into the key slot 9 of the lock. With a slight modification of the ridge 10 at the right hand side wall of the key slot 9, the modified key blade 1' of Fig. 2b will also fit into the lock.

The lock 11 is of the rotary type and comprises a cylinder shell 12 and a key plug 13 rotationally mounted in the shell 12 to provide a shear line between the shell 12 and the plug 13 in parallel to the rotational axis thereof for receiving the key blade 1.

The lock 11 includes two rows 14,15 of locking tumblers or pins located in two mutually parallel planes. A first row 14 of six locking pins is centrally located substantially in the central plane of the key slot 9 so as to cooperate with the upper edge portion 16 of the key blade 1, as described in the above-mentioned international application No. PCT/SE87/00038. A second row 15 of five locking tumblers or pins 15a - 15e is laterally offset (to the right in Fig. 3). In the illustrated embodiment, each locking pin 15a - 15e is totally confined with the key plug 13 in a corresponding, cylindrical cavity or bore 17a - 17e, respectively (compare also Fig. 4).

According to the present invention, the locking tumblers 15a - 15e in the second row are non-rotatably guided in the respective bores 17a - 17e and are each provided with a finger 18a - 18e, which projects transversally outwardly in a specific position into the key slot 9. Thus, the locking tumblers 15a - 15e are only movable elevationally, and upon a specific elevational positioning of each such locking tumbler by means of a properly shaped key blade 1, a common fence member or side bar 19 will be allowed to engage into recesses 20a - 20e formed in the cylindrical surfaces of the body parts 21a - 21e of the tumblers and to be displaced transversally into its inward, seated position in the slot 22 of the key plug 13, thus clearing the shear line and releasing the lock. As an alternative, the locking tumblers may engage directly with the cylinder shell (e.g. in the same manner as the locking tumblers of the first row 14). Each locking tumbler 15a - 15e includes a substantially cylindrical body part 21a - 21e and a finger 18a - 18e with a relatively wide base portion 23a - 23e and a relatively narrow, substantially cylindrical free end portion 24a - 24e, as illustrated by the three different tumblers 15a,15b,15c shown in Fig. 6b, Fig. 6c and Figs. 6a,6d,6e, respectively.

The three different tumblers are all made from a similar tumbler blank 15' having a substantially cylindrical body part 21' and a likewise cylindrical or disc-like finger blank part 18', from which the material is cut out so as to form the desired finger end portion located centrally (24c, Fig.6a), to the left as seen in Fig. 6b (24a) or to the right as seen in Fig. 6c (24b). Compare also Fig. 6e.

As appears from Fig. 4, the part-cylindrical base portion 23a, 23b, 23c, etc. of each finger is guided for elevational movement in a corresponding part-cylindrical bore 25a, 25b, 25c, etc. located

adjacent and parallel to the respective bore 17a, 17b, 17c, etc. so as to be open transversally to the key slot 9 into which the respective finger end portion 24a, 24b, 24c, etc. extends for making contact with an inserted key blade.

In a given lock, the finger end portions 24a, 24b, 24c, etc. will be distributed in a specific, irregular pattern along the key slot 9, which pattern is generally different from the (normally uniform) longitudinal distribution of the finger body parts 21a, 21b, 21c, etc. in the longitudinal direction (in parallel to the key slot 9 and the axis A of insertion of the key blade).

Thus, in spite of the fact that the locking tumblers in the row 15 are non-rotatably guided by means of the relatively wide base portions 23a, 23b, 23c, etc., it is possible to obtain a specific longitudinal code pattern with $3^5 = 243$ possible combinations. In case the recesses 20a, 20b, 20c are also distributed in three different elevational positions, the total number of code combinations will be $243 \times 243 = 59059$.

The finger end portions 24a, 24b, 24c etc. make contact with the lower side wall 7 of the groove 5 provided in the side surface 3 of the key blade. As appears from Figs. 1 and 2a, in the side wall 7, there is formed an elongated, longitudinally extending wave-like code pattern surface, against which the finger end portions are urged downwards by means of compressive springs 26a - 26e (see Fig. 3) acting on the upper portion of the respective body part 21a, 21b, 21c, etc. Alternatively, the opposite side wall 6' may be formed, e.g. by means of a cutter pin, with an identical configuration as the lower side wall code pattern surface 7, in which case the respective finger free end portion 24a, 24b, 24c, etc. will be held with a slight play between the opposite side wall surfaces 6',7 (compare Fig. 2b), and the compressive springs 26a - 26e can be left out. The tumblers 15a - 15e will then be positively guided by the wave-like key groove so as to reciprocate elevationally in response to the wave-like groove pattern when the key blade 1' is being inserted into the key lock.

It should be noted that the one-sided or two-sided guiding surface (7 or 6',7, respectively) or the key groove 5,5' is rather easy to make, e.g. by means of a cutter pin in one step, since the guiding surface can preferably be perpendicular to the side surface 3 (and the groove bottom surface) of the key blade along the whole length thereof. Furthermore, the rest position of the respective finger end portion (in the fully inserted position of the key blade) does not have to be located in a concavity location (as was necessary in the lock and key system described in the above-mentioned international application) but may be situated at any well-defined, preferably substantially horizontal portion

of the code pattern surface.

In Figs. 7a, 7b, 7c, there is illustrated how the recesses 20', 20'' and 20''' may be distributed elevationally in the body part 21 of the respective tumbler, wherein the recess 20' (Fig. 7a) can accommodate the side bar 19 in either one of two elevational positions (H2, H3), as can the recess 20''' (Fig. 7c, H1,H2), whereas the recess 20'' (Fig. 7b) requires the side bar to be in position H2. As previously known per se, such elevationally distributed recesses of different height can be used to establish a master key system (another possibility will be explained below with reference to Figs. 9a, 9b, 9c). Of course, the displacement of the side bar 19 into its seated position within the recess 22, in the embodiment shown in Fig. 3 with two rows 14, 15 of tumblers, also requires the lugs 19a - 19f to be accommodated in corresponding recesses (not shown) in the locking pins in the first row 14.

An essential feature of the present invention is that the free end portions of the locking tumbler fingers are located in specific, predetermined positions. In principle, this can be achieved with fingers each extending at a specific angle from the central axis of the tumbler body part. Another possible embodiment is illustrated in Figs. 8a, 8b and 8c wherein the tumblers 15'a, 15'b and 15'c have fingers including a relatively wide base portion 23'a, 23'b, 23'c, which is guided in a corresponding recess adjacent to the bore housing the body part 21'a, 21'b, 21'c of the tumbler and thus prevents rotation of the tumbler, and a relatively narrow free end portion 24'a, 24'b, 24'c, each having a substantially triangular cross section with one rounded corner portion 27'a, 27'b, 27'c constituting a specifically located (to the left, centrally, or to the right as shown) bearing surface adapted to make contact with the code pattern of the key blade.

The predetermined, irregular longitudinal distribution pattern of the finger free end portions will also provide an advantageous possibility of establishing a master key system, as illustrated in Figs. 9a, 9b, 9c. The relatively simple groove code patterns of the key blades 1' and 1'' are specifically configured to correspond to one specific lock only (having the fingers 18'a - 18'e and 18''a - 18''e, respectively), whereas the more complex groove code pattern of the master key blade 1''' (Fig. 9c) includes all the critical code pattern portions of the key blades 1' and 1'' so as to match the predetermined finger positions of both locks. It will be understood that this principle can be applied in combination with differently located recesses in the body portions of the tumblers to provide a sophisticated master key system.

Naturally, the inventive concept may be materialized in many ways within the scope of the claims. As to the expression "irregular longitudinal distribu-

tion pattern" in claim 1, it should be noted that "irregular" denotes the normal case with more or less randomly positioned finger end portions.

However, in a few possible combinations, all of the finger end portions may be positioned alike, e.g. to the left, centrally, or to the right.

Claims

1. A cylinder lock comprising a cylinder shell (12);
 - a key plug (13) rotationally mounted in said cylinder shell to provide a shear line between said cylinder shell and said key plug;
 - a longitudinal key slot (9) extending into said key plug parallel to the rotational axis thereof for receiving a key blade (1) having an elongated generally longitudinal- ly extending wave-like code pattern; and
 - a row (15) of locking tumblers (15a etc), each tumbler including a body part (21a, etc.) guided for elevational movement in an associated transverse cavity (17a, etc.) in said key plug and a finger (18a, etc.) projecting transversally outwardly from said body part (21a) so as to extend into said key slot (9) and engage with said code pattern of a properly shaped key blade being inserted into the key slot; said locking tumblers being blockingly associated with the cylinder shell either directly or indirectly by means of a fence member (19), so that elevational positioning of said locking tumblers with said properly shaped key blade enables clearance of the shear line,
- characterized in
 - that said locking tumblers (15a, etc.) are non-rotatably guided for elevational movement only in said transverse cavities (17a, etc.); and
 - that said fingers (18a, etc.) are located in such predetermined positions that the free end portions (24a, etc.) thereof form a specific, irregular longitudinal distribution pattern being different from the longitudinal distribution of the tumbler body parts (21a,etc.).
2. A cylinder lock as defined in claim 1, characterized in that each finger is positioned in a specific angular position relative to the associated body part.
3. A cylinder lock as defined in claim 1, characterized in that all fingers (18a, etc., 24'a,



of the code pattern surface.

In Figs. 7a, 7b, 7c, there is illustrated how the recesses 20', 20'' and 20''' may be distributed elevationally in the body part 21 of the respective tumbler, wherein the recess 20' (Fig. 7a) can accommodate the side bar 19 in either one of two elevational positions (H2, H3), as can the recess 20''' (Fig. 7c, H1, H2), whereas the recess 20'' (Fig. 7b) requires the side bar to be in position H2. As previously known per se, such elevationally distributed recesses of different height can be used to establish a master key system (another possibility will be explained below with reference to Figs. 9a, 9b, 9c). Of course, the displacement of the side bar 19 into its seated position within the recess 22, in the embodiment shown in Fig. 3 with two rows 14, 15 of tumblers, also requires the lugs 19a - 19f to be accommodated in corresponding recesses (not shown) in the locking pins in the first row 14.

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The predetermined, irregular longitudinal distribution pattern of the finger free end portions will also provide an advantageous possibility of establishing a master key system, as illustrated in Figs. 9a, 9b, 9c. The relatively simple groove code patterns of the key blades 1' and 1'' are specifically configured to correspond to one specific lock only (having the fingers 18'a - 18'e and 18''a - 18''e, respectively), whereas the more complex groove code pattern of the master key blade 1''' (Fig. 9c) includes all the critical code pattern portions of the key blades 1' and 1'' so as to match the predetermined finger positions of both locks. It will be understood that this principle can be applied in combination with differently located recesses in the body portions of the tumblers to provide a sophisticated master key system.

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tion pattern" in claim 1, it should be noted that "irregular" denotes the normal case with more or less randomly positioned finger end portions.

However, in a few possible combinations, all of the finger end portions may be positioned alike, e.g. to the left, centrally, or to the right.

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 - a longitudinal key slot (9) extending into said key plug parallel to the rotational axis thereof for receiving a key blade (1) having an elongated generally longitudinally extending wave-like code pattern; and
 - a row (15) of locking tumblers (15a etc), each tumbler including a body part (21a, etc.) guided for elevational movement in an associated transverse cavity (17a, etc.) in said key plug and a finger (18a, etc.) projecting transversally outwardly from said body part (21a) so as to extend into said key slot (9) and engage with said code pattern of a properly shaped key blade being inserted into the key slot; said locking tumblers being blockingly associated with the cylinder shell either directly or indirectly by means of a fence member (19), so that elevational positioning of said locking tumblers with said properly shaped key blade enables clearance of the shear line,
- characterized in
 - that said locking tumblers (15a, etc.) are non-rotatably guided for elevational movement only in said transverse cavities (17a, etc.); and
 - that said fingers (18a, etc.) are located in such predetermined positions that the free end portions (24a, etc.) thereof form a specific, irregular longitudinal distribution pattern being different from the longitudinal distribution of the tumbler body parts (21a, etc.).
2. A cylinder lock as defined in claim 1, characterized in that each finger is positioned in a specific angular position relative to the associated body part.
3. A cylinder lock as defined in claim 1, characterized in that all fingers (18a, etc., 24'a,



etc.) are positioned in parallel to each other, each finger being offset a specific distance relative to the central axis of the associated body part (21a, etc., 21'a etc.).

4. A cylinder lock as defined in claim 3, **characterized** in that all fingers have a relatively wide base portion (23a, etc., 23'a, etc.), which fits into an associated recess (25a, etc.) adjacent to the respective transverse cavity (17a, etc.) so as to non-rotatably guide the tumbler, and a specifically positioned, relatively narrow end portion (24a, etc., 24'a etc.) having at least one bearing surface (27'a, etc.) adapted to make contact with said code pattern of said key blade.
5. A cylinder lock as defined in claim 4, **characterized** in that said free end portion (24a, etc.) has a substantially circular cross section.
6. A cylinder lock as defined in claim 4, **characterized** in that said free end portion (24'a, etc.) has a substantially triangular cross section with a rounded corner edge portion (27'a, etc.) constituting said bearing surface.
7. A cylinder lock and key blade combination system, including specific cylinder locks as defined in anyone of the preceeding claims and specific key blades (1', 1'') having specific elongated, generally longitudinally extending wave-like code patterns corresponding to the specific cylinder locks, **characterized** in that the system includes at least one master key blade (1'''), the code pattern of which comprising longitudinally distributed code pattern portions corresponding to at least two different specific key blade code patterns.
8. A locking tumbler for use with a cylinder lock as defined in anyone of claims 1 - 6, said locking tumbler (15a, etc.; 15'a, etc.) including a finger projecting transversally out-wardly from a body part, **characterized** in that said finger comprises a relatively wide base portion (23a, etc.; 23'a, etc.) adapted to prevent rotational movement of the tumbler and a relatively narrow free end portion (24a, etc.; 24'a, etc.) having at least one specifically located bearing surface adapted to make contact with said code pattern of said key blade.

Patentansprüche

1. Ein Zylinderschloß mit
 - einem Zylindergehäuse (12);

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- einem Zylinderkern (13), der drehbar in diesem Zylindergehäuse gelagert ist und eine Trennlinie zwischen dem Zylindergehäuse und dem Zylinderkern vermittelt;
- einem längs verlaufenden Schlüsselkanal (9), der sich in den Zylinderkern parallel zu dessen Drehachse hineinerstreckt und ein Schlüsselblatt (1) aufnimmt, das ein längliches, längs verlaufendes wellenähnliches Codemuster aufweist; und
- einer Reihe (15) von Arretiernocken (15a, etc.), wobei jeder Nocken einen Körperteil (21a, etc.), der zur Ausführung einer Hubbewegung in einem zugeordneten, querverlaufenden Hohlraum (17a, etc.) im Zylinderkern geführt ist, und einen Finger (18a, etc.) einschließt, der vom Körperteil (21a) transversal nach außen vorsteht, so daß er in den Schlüsselkanal (9) hineinreicht und mit dem Codemuster eines richtig gestalteten, in den Schlüsselkanal eingeführten Schlüsselblattes in Eingriff gelangt; wobei die Arretiernocken mittels eines Anschlaggliedes (19) entweder direkt oder indirekt blockierend mit dem Zylindergehäuse verbunden sind, so daß eine Hubpositionierung der Arretiernocken mit dem richtig gestalteten Schlüsselblatt eine Freigabe der Trennlinie ermöglicht,

dadurch gekennzeichnet,

- daß die Arretiernocken (15a, etc.) in den querverlaufenden Hohlräumen (17a, etc.) unverdrehbar, lediglich zur Ausführung einer Hubbewegung geführt sind; und
 - daß die Finger (18a, etc.) in derart vorbestimmten Positionen angeordnet sind, daß ihre freien Endabschnitte (24a, etc.) ein spezifisches, unregelmäßiges, längsverlaufendes Verteilungsmuster bilden, das gegenüber der längsverlaufenden Verteilung der Arretiernockenkörperteile (21a, etc.) verschieden ist.
2. Ein Zylinderkernschloß nach Anspruch 1, dadurch gekennzeichnet, daß jeder Finger in einer spezifischen Winkelstellung relativ zum zugeordneten Körperteil angeordnet ist.
 3. Ein Zylinderkernschloß nach Anspruch 1, dadurch gekennzeichnet, daß alle Finger (18a, etc., 24'a, etc.) parallel zueinander angeordnet sind, wobei jeder Finger um eine spezifische Distanz relativ zur Mittelachse des zugeordneten Körperteils (21a, etc., 21'a, etc.) versetzt ist.



4. Ein Zylinderkernschloß nach Anspruch 3, dadurch gekennzeichnet, daß alle Finger einen relativ breiten Basisabschnitt (23a, etc., 23'a, etc.) haben, der in eine zugeordnete Aussparung (25a, etc.) in der Nähe des betreffenden querverlaufenden Hohlraums (17a, etc.) paßt, um so den Nocken unverdrehbar zu führen, und daß alle Finger weiterhin einen spezifisch positionierten, relativ schmalen Endabschnitt (24a, etc., 24'a, etc.) haben, der wenigstens eine Lagerfläche (27'a, etc.) aufweist, die dazu dient, mit dem Codemuster des Schlüsselblattes Kontakt zu machen.
5. Ein Zylinderkernschloß nach Anspruch 4, dadurch gekennzeichnet, daß der freie Endabschnitt (24a, etc.) einen im wesentlichen kreisförmigen Querschnitt hat.
6. Ein Zylinderkernschloß nach Anspruch 4, dadurch gekennzeichnet, daß der freie Endabschnitt (24'a, etc.) einen im wesentlichen dreieckigen Querschnitt mit einem abgerundeten Eckenrandteil (27'a, etc.) hat, der die Lagerfläche bildet.
7. Ein Zylinderkernschloß- und Schlüsselblatt-Kombinationssystem mit spezifischen Zylinderkernschlössern nach einem der voranstehenden Ansprüche und spezifischen Schlüsselblättern (1', 1'') mit spezifischen, länglichen, allgemein längs verlaufend sich erstreckenden wellenähnlichen Codemustern, die den spezifischen Zylinderkernschlössern entsprechen, dadurch gekennzeichnet, daß das System wenigstens ein Hauptschlüsselblatt (1'') einschließt, dessen Codemuster längs verlaufend verteilte Codemusterabschnitte umfaßt, die wenigstens zwei verschiedenen spezifischen Schlüsselblattcodemustern entsprechen.
8. Ein Arretiernocken zur Verwendung mit einem Zylinderkernschloß nach einem der Ansprüche 1 bis 6, wobei der Arretiernocken (15a, etc.; 15'a, etc.) einen transversal von einem Körperteil nach außen vorstehenden Finger einschließt, dadurch gekennzeichnet, daß der Finger einen relativ breiten Basisabschnitt (23a, etc.; 23'a, etc.) umfaßt, der dazu dient, eine Drehbewegung des Nockens zu verhindern, und daß der Finger weiterhin einen relativ schmalen, freien Endabschnitt (24a, etc.; 24'a, etc.) umfaßt, der wenigstens eine spezifisch angeordnete Lagerfläche aufweist, die dazu dient, mit dem Codemuster des Schlüsselblattes Kontakt zu machen.

Revendications

1. Serrure à cylindre comprenant :
un cylindre (12);
une douille à clé (13) montée à rotation dans ledit cylindre (12) pour former une ligne de cisaillement entre ledit cylindre et ladite douille à clé;
une fente à clé longitudinale (9) s'étendant dans ladite douille à clé parallèlement à son axe de rotation pour recevoir un panneton de clé (1) comportant une empreinte de code ondulée, allongée, s'étendant généralement longitudinalement; et
une rangée (15) de goupilles de blocage (15a, etc), chaque goupille comprenant un corps (21a, etc) guidé pour un mouvement d'élévation dans une cavité transversale associée (17a, etc) dans ladite douille à clé et un doigt (18a, etc) se projetant transversalement vers l'extérieur depuis ledit corps (21a) de manière à s'étendre dans ladite fente à clé (9) et engager ladite empreinte de code d'un panneton de clé de forme appropriée étant inséré dans la fente à clé; lesdites goupilles de blocage étant associées par blocage au cylindre soit directement soit indirectement au moyen d'une barrière (19), de manière que le positionnement par élévation desdites goupilles de blocage avec ledit panneton de clé de forme appropriée permette de dégager la ligne de cisaillement, caractérisée en ce que
lesdites goupilles de blocage (15a, etc) sont guidées pour s'élever sans rotation uniquement dans lesdites cavités transversales (17a, etc); et
lesdits doigts (18a, etc) sont situés en des positions prédéterminées telles que leurs portions d'extrémité libres (24a, etc) forment un ensemble longitudinal irrégulier, spécifique, différent de l'ensemble longitudinal des corps (21a, etc) des goupilles.
2. Serrure à cylindre selon la revendication 1, caractérisée en ce que chaque doigt se trouve dans une position angulaire spécifique relativement au corps associé.
3. Serrure à cylindre selon la revendication 1, caractérisée en ce que tous les doigts (18a, etc; 24'a, etc) sont positionnés parallèlement les uns aux autres, chaque doigt étant décalé d'une distance spécifique relativement à l'axe centrale du corps associé (21a, etc; 21'a, etc).
4. Serrure à cylindre selon la revendication 3, caractérisée en ce que tous les doigts compor-



- tent une portion de base relativement large (23a, etc; 23'a, etc), qui s'emboîte dans un évidemment associé (25a, etc) adjacent à la cavité transversale respective (17a, etc) de manière à guider la goupille sans rotation, et une portion d'extrémité relativement étroite (24a, etc; 24'a, etc), à position spécifique, comportant au moins une surface d'appui (27'a, etc) adaptée à faire contact avec ladite empreinte de code dudit panneton de clé.
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5. Serrure à cylindre selon la revendication 4, caractérisée en ce que ladite portion d'extrémité libre (24a, etc) présente une section transversale sensiblement circulaire.
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6. Serrure à cylindre selon la revendication 4, caractérisée en ce que ladite portion d'extrémité libre (24'a, etc) présente une section transversale sensiblement triangulaire avec une portion de bord de coin arrondie (27'a, etc) constituant ladite surface d'appui.
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7. Système combiné de serrures à cylindre et pannetons de clé, comprenant des serrures à cylindre spécifiques telles que définies selon l'une quelconque des revendications précédentes et des pannetons de clé spécifiques (1', 1'') comportant des empreintes de code spécifiques, ondulées, allongées, s'étendant généralement longitudinalement, correspondant aux serrures à cylindre spécifiques, caractérisé en ce que le système comprend au moins un panneton de clé principal (1'''), dont l'empreinte de code comprend des portions d'empreinte de code réparties longitudinalement, correspondant à au moins deux empreintes de code de pannetons de clé différentes, spécifiques.
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8. Goupille de blocage pour utilisation avec une serrure à cylindre telle que définie selon l'une quelconque des revendications 1 à 6, ladite goupille de blocage (15a, etc; 15'a, etc) comprenant un doigt sec projetant transversalement vers l'extérieur depuis un corps, caractérisée en ce que ledit doigt comprend une portion de base relativement large (23a, etc; 23'a, etc) adaptée à empêcher la rotation de la goupille et une portion d'extrémité libre relativement étroite (24a, etc; 24'a, etc) comportant au moins une surface d'appui à position spécifique, adaptée à faire contact avec ladite empreinte de code dudit panneton de clé.
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