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(54) **Lock cylinder equipped with a connecting bridge**

(57) Lock cylinder (1), with a cylindrical core (2) housed inside a casing (3) that is made up of at least one casing portion (9) provided with a recess into which a connecting bridge (14) is partially housed, while a part of the connecting bridge (14), in the shape of a cap, rests on and settles against an outer surface (18) that sur-

rounds the opening (17) of the recess (15). Optionally, the cylinder (1) has radial pins (36) that secure the connecting bridge (14) to the casing portions (9). The cylinder (1) improves resistance to breakage by twisting or bending, breakage by extraction and breakage by drilling.

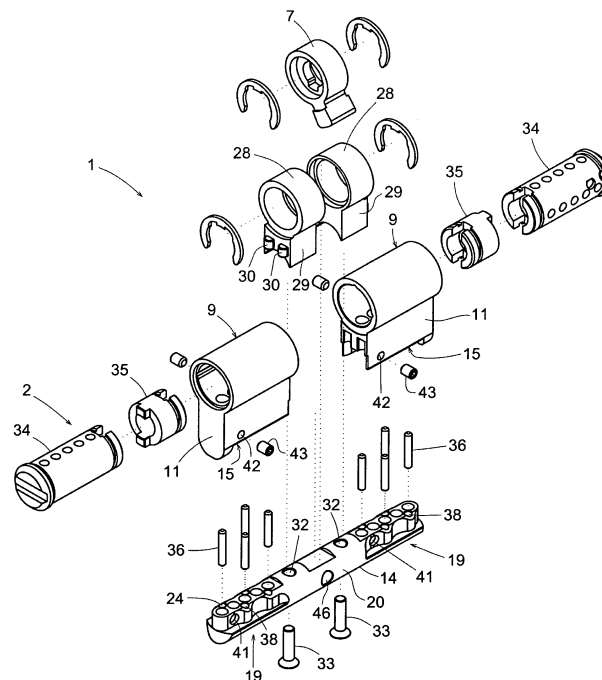


FIG.7

Description

Technical field

[0001] The invention relates to a lock cylinder of the type that has a casing and an internal rotating cylindrical core whose rotary movement inside the casing is allowed when the key that corresponds to the cylinder is inserted into a slot in the core.

Prior art

[0002] A lock cylinder is a type of lock commonly used to allow a door or similar to be locked with a key. The lock cylinder is composed mainly of a cylindrical core arranged inside a longitudinal casing, both usually made of brass. The casing includes a rib that protrudes radially, normally along the entire length of the casing and the core. A transverse securing hole is provided, usually in the central area of the cylinder rib, for insertion of a screw to fix the cylinder to the door leaf. The cylindrical core is capable of rotating about its longitudinal axis inside the casing. A latch rotates jointly with the cylindrical core in such a way that the latch can adopt various positions in relation to the casing, including a withdrawn position inside the rib of the casing, and position in which the latch protrudes outwardly from the casing so that the latch can become locked inside a recess, for example in the door frame. The core comprises a slot or hole into which a key can be inserted. Inside the rib, radially arranged prongs are pushed elastically, for example by springs, in a radial direction towards the key. The prongs are designed to be inserted into corresponding recesses in the surface of the key. When the key that corresponds to the lock is inserted in the core slot, i.e. a key whose recesses are in exact correspondence with the length of the respective prongs, the prongs are displaced radially outward by the key, sufficiently to not block the rotation of the core in relation to the casing, thereby allowing the latch to rotate. On the contrary, if a key that does not correspond with the lock is inserted, one or more prongs will not be displaced radially outward sufficiently and, therefore, rotation of the core in relation to the casing will be blocked, thereby preventing the latch from rotating.

[0003] Lock cylinders can be provided with a single casing, inside which the rotating core and latch are arranged. Cylinders of this type are marketed in different preset or standard lengths, therefore to be used for installation only in doors whose thickness adapts to the length of the cylinder.

[0004] Alternatively, double lock cylinders are known, which are provided with two separate casing portions that house prongs, and with additional parts. For instance, optional casing prolongation parts can be included to vary the length of the cylinder. Thus, the cylinder length can be adapted to doors of different thicknesses by replacing some parts with others of a different length, without having to replace the complete cylinder. Cylinders of this

type are also known as modular cylinders.

[0005] One example of a double lock cylinder is shown in patent no. EP0748908, which describes a cylinder composed of two consecutive casings joined together by a connecting bridge. The connecting bridge is a bolt or substantially cylindrical elongated part, arranged longitudinally, parallel to the cylinder core. Each end of the connecting bridge is inserted longitudinally into a blind hole in the rib of the corresponding casing, and is fixed to the casing with a radial screw so that the casings and connecting bridge are joined rigidly together.

[0006] Another example of a double lock cylinder, also provided with two casings joined by a connecting bridge, is described in patent application no. WO0216712. In this case, the connecting bridge is inserted into recesses in the outermost face of the casing ribs, so assembly of the connecting bridge into the casings is carried out radially until the connecting bridge rests inside these recesses. Moreover, the connecting bridge and the recesses have a contour comprising radial cylindrical areas arranged complementary to each other so that cylindrical protrusions on the connecting bridge fit into cylindrical notches in the casing recesses, thereby reinforcing the union between the connecting bridge and the casings.

[0007] Lock cylinders in general, and double lock cylinders in particular, must be resistant to intentional breakage caused by human beings, for example by a person who tries to force the cylinder in order to open a lock without authorization. To this effect, three types of breakage are essentially considered in a double lock cylinder when the lock cylinder is subjected to external attacks caused in burglaries (with these three types of breakages mentioned in European cylinder-related regulation no. EN1303, concerning requirements and test methods for lock cylinders):

A. Cylinder breakage by twisting or bending. Using a purpose-made tool (or otherwise a wrench), and gripping the protruding end of the cylinder that protrudes outwardly from the door, different twisting and bending stresses are applied until the cylinder breaks at its weakest point, usually located in the area of the cylinder where the transverse securing hole is located.

B. Cylinder breakage by extraction. Using a suitable tool and pulling on a screw previously inserted into the core key hole, traction stress is applied on the longitudinal axis of the core, causing breakage of the cylinder hole area or by separating the casing from the connecting bridge.

C. Cylinder breakage by drilling. Since cylinders are normally made of brass, in the event that they are lacking any kind of anti-drill element, a drill easily perforates the cylinder and destroys all its internal parts, enabling it to be opened.

[0008] The objective of the invention to provide a lock cylinder design composed of two or more casing portions united by means of a connecting bridge, where the connection between the connecting bridge and the casing portions is further strengthened and the risk of the cylinder suffering a breakage, out of one or more of the three types of breakage mentioned above, is reduced.

Brief description of the invention

[0009] It is an object of the invention to provide a lock cylinder comprising a substantially cylindrical core rotationally arranged inside a casing, where the casing includes a radially-protruding rib, where the core includes a radially-protruding latch that, depending on the rotational position of the core in relation to the casing, may either remain housed in a space in the rib or protrude from the cylinder. The casing is divided in several parts, including one or more casing portions provided with a rib portion. The rib portion has two side faces and one outer transverse face. In addition, the lock cylinder includes a connecting bridge configured to unite two casing portions to each other or to unite a casing portion with another casing element. The connecting bridge is provided with at least one end portion intended to be housed in a recess cut in the outer transverse face of the rib portion of the casing portion.

[0010] The recess where the connecting bridge is placed is delimited by outer walls, and finishes in an opening. The outer walls of the recess end in an outer surface that surrounds the recess opening. The end portion of the connecting bridge, which is housed inside this recess, has a first part with a shape that adapts to the recess and a second part that rests on and settles against the outer surface that surrounds the recess opening. Thus, in accordance with the invention, the end portion, i.e. the connecting bridge area that is inserted in a recess in the casing portion, is not entirely inserted but rather has an area that is housed inside the recess and another with a larger cross section, by way of a cap, that rests on the outer surface that surrounds the recess.

[0011] The lock cylinder according to the invention has the advantages associated with a modular lock cylinder equipped with a connecting bridge, i.e. with a lock cylinder that is assembled from several separate longitudinal parts, in order to adjust the length of the assembled cylinder, and in which a connecting bridge unites all or several of these parts. The most significant advantage of a modular lock cylinder is that it can adapt to the dimensions of any door where installation of the lock is required, rather than being designed for a specific door thickness. It is, therefore, a more versatile lock cylinder than lock cylinders comprising a casing which is made up of one single part.

[0012] Moreover, having a connecting bridge that is partially inserted into one or more recesses, with a first part inserted into the recess and a second part or cap supported on the walls that surround the recess, allows

the resistance of the cylinder, in terms of external bending and twisting loads, to be substantially improved. The reason why resistance to bending and twisting loads is improved is that the connecting bridge cross section is maximized in the area where this bridge most suffers when subjected to bending and twisting loads, i.e. at the points of the connecting bridge that are farthest from the central longitudinal axis; increasing the cross section of the cylinder at these points of greatest stress entails greater resistance to that stress. In addition, the existence of the cap enables the support surface between the casing and the connecting bridge to be increased, thereby better distributing stresses and reducing, insofar as possible, the tension generated both in the casing and in the connecting bridge, especially in the case of bending and twisting stresses.

Brief description of the drawings

[0013] Details of the invention can be seen in the accompanying drawings, which do not seek to restrict the scope of the invention:

- Figure 1 shows a perspective view of a first embodiment of a lock cylinder according to the invention.
- Figure 2 shows a second perspective view of the cylinder of the previous figure.
- Figures 3 and 4 show a perspective view and a bottom view, respectively, of one of the cylinder casing portions of Figure 1.
- Figures 5 and 6 show a perspective view and a top view, respectively, of the cylinder connecting bridge of Figure 1.
- Figure 7 shows an exploded view of the cylinder of Figure 1.
- Figure 8 shows a second embodiment of the connecting bridge.

Detailed description of the invention

[0014] Figure 1 shows a perspective view of a first embodiment of a lock cylinder according to the invention. The cylinder (1) includes a substantially cylindrical core (2) arranged rotationally inside a casing (3). The casing (3) includes a hollow cylindrical body (4), which is arranged along a longitudinal axis (5), and a rib (6) that protrudes radially from the hollow cylindrical body (4). The core (2) is, in turn, also arranged around the longitudinal axis (5) and rotates in relation to this longitudinal axis (5). The core (2) includes a latch (7) that protrudes radially from the rest of the core (2). As it is part of the core (2), the latch (7) also rotates in relation to the longitudinal axis (5). Depending on the rotational position of the core (2) in relation to the casing (3), the latch (7) can be housed in a space (8) in the rib (6), or protrude from the casing (3) as shown in Figure 1. When the latch (7) protrudes from the casing (3), the latch (7) is able to engage in some kind of recess provided in a door frame for

this purpose, preventing the opening of the door leaf in relation to the frame.

[0015] As shown in the figure, the casing (3) is divided longitudinally into several parts. One or more of these parts -two in the present embodiment- is a casing portion (9) provided with a hollow cylindrical body portion (10) and a rib portion (11). The rib portion (11) has two outer side faces (12) and an outer transverse face (13). As is known in the art, a plurality of prongs are housed inside the rib portion (11), the prongs being pushed elastically and radially toward the longitudinal axis (5), thereby providing the locking or unlocking mechanism for rotating the core (2). According to the invention, the rib portion (11) has a recess cut in the outer transverse face (13), the recess not being shown in Figure 1. The function of this recess is to partially house a connecting bridge (14) that interconnects the casing portions (9) and other cylindrical elements (1) in a specific way that will be explained later. Figure 2 shows a second perspective view of the cylinder (1), seen from a lower point of view, that further illustrates the arrangement of the connecting bridge (14) between the two casing portions (9), the casing portions (9) being provided with a rib portion (11) with a recess to house the connecting bridge (14).

[0016] In this invention, the connecting bridge is preferably made of a more resistant material than brass, such as an alloy steel, so that in situations of attempted burglary the lock cylinder is more capable of withstanding loads, compared to conventional lock cylinders made entirely of brass.

[0017] Figures 3 and 4 show a perspective view and a bottom view of one of the casing portions (9). It can be more clearly seen that the casing portion (9) is provided with a hollow cylindrical body portion (10) and a rib portion (11), where the rib portion (11) in turn has two side faces (12) and an outer transverse face (13). In addition, the recess (15) cut in the outer transverse face (13) of the rib portion (11) can be observed. According to the invention, the recess (15) is delimited by outer walls (16) and finishes in an opening (17). The outer walls (16) finish in an outer surface (18) that surrounds the opening (17) of the recess (15).

[0018] Figures 5 and 6 show a perspective view and a top view of the connecting bridge (14). As shown, the connecting bridge (14) is provided with at least one end portion (19) -in this case, with two end portions (19), one on each side of a central portion (20)- intended to become housed in a recess (15) at the outer transverse face (13) of the casing portion (9) described above. This means that, in the present embodiment, the connecting bridge (14) has two end portions (19) intended to become housed in the recesses (15) in of the two respective casing portions (9). According to the invention, the end portion (19) that is housed inside the recess (15) has a first part (21) with a shape adapted to the recess (15) and a second part (22) in the form of a cap or widening of the first part (21). The first part (21) is intended to be inserted into the recess (15), whereas the second part (22) is in-

tended to remain outside the recess (15), supported and settled against the outer surface (18) that surrounds the opening (17) of the recess (15). Thus, in accordance with the invention, when the cylinder (1) is assembled, the end portions (19) of the connecting bridge (14) are inserted into the recesses (15) in a radial direction only partially. Having a connecting bridge (14) that is partially inserted into the recesses, with the first part (21) inserted into the corresponding recess (15) and the second part (22) or cap supported on the walls that surround the recess, allows the resistance of the cylinder, as regards external bending and twisting loads, to be substantially improved. The reason why the resistance to bending and twisting loads is improved is that the stresses or forces between the connecting bridge (14) and the casing (3) are distributed across more surfaces, such as the outer walls (16) and the outer surface (18) of the casing portion (9), and the corresponding surfaces of the connecting bridge (14). In addition, the presence of the cap allows for the end portion (19) of the connecting bridge (14) to only require a small amount of machining or material removal -just enough to form the first part (21), with a smaller cross section- compared to state-of-the-art solutions in which the ends of the connecting bridge are thinner around their entire perimeter than the central portion (20) of the connecting bridge. Having a lesser reduction of the thickness of the connecting bridge (14), in accordance with the invention, the connecting bridge (14) is more robust and provides greater resistance to the cylinder lock than in conventional solutions.

[0019] Preferably, as shown in the figures, the first part (21) of the end portion (19) has undulating outer walls (23), with alternating concave protruding lobes (24) and concave recesses (25). In turn, the outer walls (16) of the recess (15) are complementary to the outer walls (23) of the end portion (19), the outer walls (16) thus including convex recesses (26) and concave protrusions (27) that correspond respectively with the concave protruding lobes (24) and the convex recesses (25) on the end portion (19) of the connecting bridge (14). The undulating shape of the walls, created as a succession of concave and convex curves, proves a very effective geometry so as to make separation of the connecting bridge (14) and the casing portion (9) difficult when the lock cylinder is subjected to a method of breakage by extraction, as they prevent any relative longitudinal displacement taking place between the casing portion (9) and the connecting bridge (14), and yet the undulating shape is relatively simple to machine, so the cost of the product remains reasonable.

[0020] Figure 7 shows an exploded view of the cylinder (1) of Figure 1. As shown, the cylinder (1) includes the aforementioned casing portions (9), each provided with its corresponding rib portion (11) including a recess (15) to partially house a respective end portion (19) of the connecting bridge (14). In addition, the depicted cylinder (1) is provided with at least one casing prolongation part (28) -two in this embodiment-, whose function is to allow

the cylinder (1) to be extended without needing to replace the casing portions (9), which are higher cost parts because they require more complex machining and because the prongs and springs of the lock mechanism are contained inside them.

[0021] Optionally, as shown in Figure 7, the casing prolongation parts (28) include a rib portion (29) from which one or more lugs (30) protrude longitudinally, configured to be housed in corresponding longitudinal recesses (31) in the adjacent casing (9); the recesses (31) are visible in the illustration of the casing portion (9) in Figures 3 and 4. It is also contemplated that the lugs (30) could be housed in similar recesses cut in an adjacent casing prolongation part (28). In any case, the connection between the lugs (30) and the corresponding recesses (31) helps prevent the relative rotation between these adjacent parts or portions.

[0022] Optionally, as also shown in Figures 5 and 6, at least one radial hole (32) -two in this embodiment- is provided in the central portion (20) of the connecting bridge (14). As shown in Figure 7, the two radial holes (32) receive a respective bolt (33), visible in Figure 7, which is screwed into a respective casing prolongation part (28). This allows the connecting bridge (14) to be effectively secured to the casing portions (9) and to the casing prolongation parts (28). Therefore, the presence or absence of radial holes (32) will depend on the length of the cylinder (1); e.g., shorter cylinders may not need these radial holes (32).

[0023] In the present embodiment, as shown in Figure 7, the core (2) is made up of several disconnectable and connectable longitudinally consecutive parts, allowing the overall length of the core (2) to be varied. Specifically, the core (2) comprises two core portions (34) machined to cooperate with the prongs housed in the casing portions (9) and two core prolongation parts (35) intended to extend the core (2) to the desired length. The core portions (34), the two core prolongation parts (35) and the latch (7) are connected in a non-rotational manner, so that they rotate together in relation to the longitudinal axis (5) and rotation of the core (2) can be transmitted along the entire length of the lock cylinder (1). For instance, in the embodiment shown, the non-rotational connection is a tongue and groove connection.

[0024] Optionally, the cylinder (1) also includes at least one pin (36), arranged radially between the connecting bridge (14) and a casing portion (9), reinforcing the connection of these parts. Specifically, the embodiment shown includes four pins (36) for each end portion (19) that is partially inserted into the corresponding recess (15). The pins (36) are inserted into holes (37) cut in the base of the recess (15) of the casing portion (9) -holes (37) being visible in Figures 3 and 4- and in corresponding holes (38) cut in the first part (21) of the end portion (19) of the connecting bridge (14) -holes (38) being visible in Figures 5 and 6-. The pins (36) provide resistance to both bending and twisting, securing the connecting bridge (14) to the casing (3) when the cylinder (1) is subjected to a

force that tries to bend it. At the same time, the pins (36) strengthen the cylinder (1) against extraction forces, since they prevent relative longitudinal movement between the casing (3) and the connecting bridge (14). In addition, the pins (36), preferably made of hardened steel or any other material that combines strength and hardness, prevent a drill from piercing the cylinder and destroying its internal parts, thereby avoiding unwanted opening of the lock. Therefore, the pins (36) can protect the cylinder from practically all the types of breakage described in the introduction to the present document.

[0025] Optionally, as is the case of the embodiment shown, the cylinder (1) includes two sets of pins (36), one on each side of the central portion (20) of the connecting bridge (14), to strengthen the connection on both sides of the connecting bridge (14). In addition, in each set of pins (36), it is advantageous to have the pins (36) farther from the central portion (20) made of harder material or materials and to have the rest of pins (36), closer to the central portion (20), made of more resistant material or materials. The harder pins (36) will prevent breakage by drilling and the more resistant pins (36) will increase the ability of the cylinder (1) to withstand bending and twisting torques. In the embodiment shown, for instance, each set of pins (36) includes four pins (36); the two pins (36) farther away from the central portion (20) are made of a harder and less resistant material than the two pins (36) closer to the central portion (20). Some examples of harder materials are: bearing steels (DIN 100cr6, DIN 100crmo7 and the like), case hardening steels (f1550 and similar) and nitriding steels (DIN 31crmo12 and the like). Some examples of more resistant materials are: chromium molybdenum alloy steels (DIN 34crmo4 and the like) and spring steels (DIN 55cr3 and the like).

[0026] As mentioned heretofore, the prongs of the cylinder (1) are housed in the rib portions (11) of the casing portions (9), specifically in radial holes (39) provided for this purpose, shown in Figures 3 and 4. These radial holes (39) are arranged consecutively and longitudinally. In turn, the first part (21) of the end portions (19) of the connecting bridge (14), i.e. the part of the end portions (19) that is housed in a recess (15), can include radial holes (40) to also partially house the prongs, as shown in Figures 5 and 6. These radial holes (40) are also arranged consecutively and longitudinally. Specifically, in the embodiment shown, the casing portion (9) has five radial holes (39) and each first part (21) of the connecting bridge (14) also has five radial holes (40). According to the invention, as shown in Figures 5 and 6, the holes (38) that house the pins (36) are interspersed longitudinally between the radial holes (40) to house the prongs. The holes (38) to house the pins (36) are preferably included in concave protruding lobes (24), thereby allowing the radial holes (40) where the prongs are housed to be as far as possible from the holes (38) where the pins (36) are housed, i.e. distancing the pins (36) as far as possible from longitudinal axle of the connecting bridge. In con-

sequence, the widthwise ends of the lock cylinder (1) are strengthened (which is beneficial since in these end areas important stresses are generated when the cylinder is subjected to bending loads) without having required to increase the thickness of the connecting bridge (14), meaning that the invention makes efficient use of materials.

[0027] Optionally, as shown in Figures 3, 5 and 7, the first part (21) of the end portion (19) of the connecting bridge (14) includes at least one transverse hole (41) that corresponds with a transverse hole (42) on the side face (12) of the rib portion (11). A setscrew (43) is inserted in both transverse holes (41, 42), thereby reinforcing the securing of the connecting bridge (14) to the casing portions (9). The transverse holes (41, 42) and corresponding setscrews (43) are preferably screw-threaded. In the embodiment shown, the transverse hole (41) is located in a convex recess (25) in the first part (21). This allows the casing area where the setscrews (43) are secured, i.e., the area of the casing (3) where the transverse hole (42) that corresponds to the transverse hole (41) in the connecting bridge (14) is located, to be relatively thick, as this area is a protruding area that corresponds with a convex recess (25) in the connecting bridge (14). Locating the setscrew (43) in a relatively thicker area of the casing (3) contributes towards decreasing the thickness required of the connecting bridge (14).

[0028] Figure 8 shows a second embodiment of the connecting bridge (14) in which a staple (44) is longitudinally arranged at the central portion (20) of the connecting bridge (14). The staple (44) is connected to two holes (45) cut radially in this central portion (20). The staple (44) is preferably made of a flexible material and its function is to hold together both sides of the connecting bridge (14), in the undesirable event that the connecting bridge (14) breaks in two in the area of the central portion (20). It should be taken into account that the central portion (20) normally includes a transverse hole (46) for housing a bolt that secures the cylinder (1) to a door, which can adversely affect the resistance of said central portion (20). The staple (44) can be simply inserted in the holes (4), as is the case of the figure, or inserted and riveted.

[0029] The lock cylinder of the invention can be double, i.e. have two casing portions, one on each side of the latch, as in the embodiment shown in the figures. Alternatively, it is contemplated that the lock cylinder can have any other number of casing portions provided with a rib portion. In addition, the lock cylinder can include a single casing portion provided with a rib portion like the one claimed, with the connecting bridge connected to it by its insertion into a recess with a cap, and where the connecting bridge connects this casing portion to another applicable assembly part rather than to another casing portion.

[0030] Other embodiments of the invention, different from those shown in the figures, are also contemplated. For instance, it is contemplated that the connecting

bridge might be made of more than one part. For example, the connecting bridge can be provided with several connecting bridge portions (having end portions (19) in accordance with the invention) and central prolongation parts, similarly to how the core (2) and casing (3) described heretofore in the embodiments illustrated in this description.

[0031] It is also contemplated that the core might include a variable number of core portions and prolongations, that the casing might include a variable number of casing portions and prolongations and that the connecting bridge might include variable number of bridge portions and prolongations.

Claims

1. Lock cylinder (1), comprising a substantially cylindrical core (2) arranged rotationally inside a casing (3), wherein the casing (3) includes a rib (6) that protrudes radially, where the core (2) includes a latch (7) that protrudes radially from the rest of the core (2) and which, depending on the rotational position of the core (2) in relation to the casing (3), might either become housed in a space (8) in the rib (6) or otherwise protrude from the cylinder (1), where the casing is composed of at least one casing portion (9) provided with a rib portion (11) that has two side faces (12) and an outer transverse face (13), wherein the cylinder (1) further comprises a connecting bridge (14) provided with at least one end portion (19) configured to become housed in a recess (15) cut in the outer transverse face (13) of the rib portion (11), **characterised in that:**

- the recess (15) is delimited by outer walls (16) and finishes in an opening (17), wherein said outer walls (16) finish in an outer surface (18) that surrounds the opening (17) of the recess (15); and

- the end portion (19) that is housed inside said recess (15) has a first part (21) with a shape that adapts to the recess (15) and a second part (22) that rests on and settles against the outer surface (18) that surrounds the opening (17) of the recess (15).

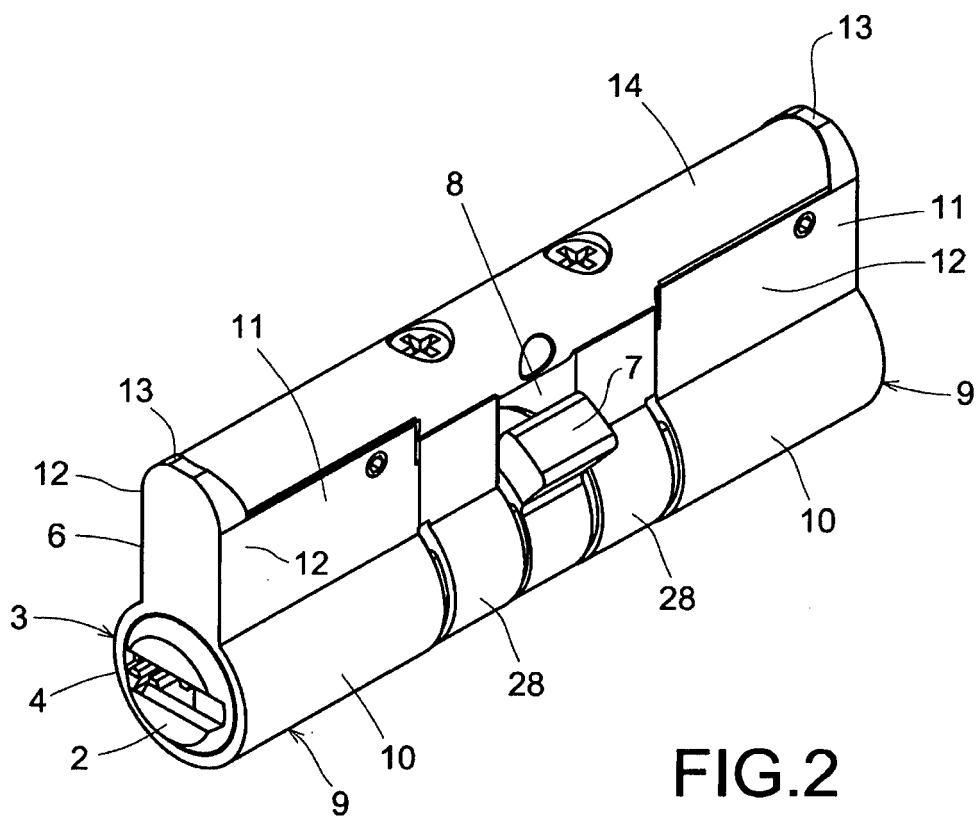
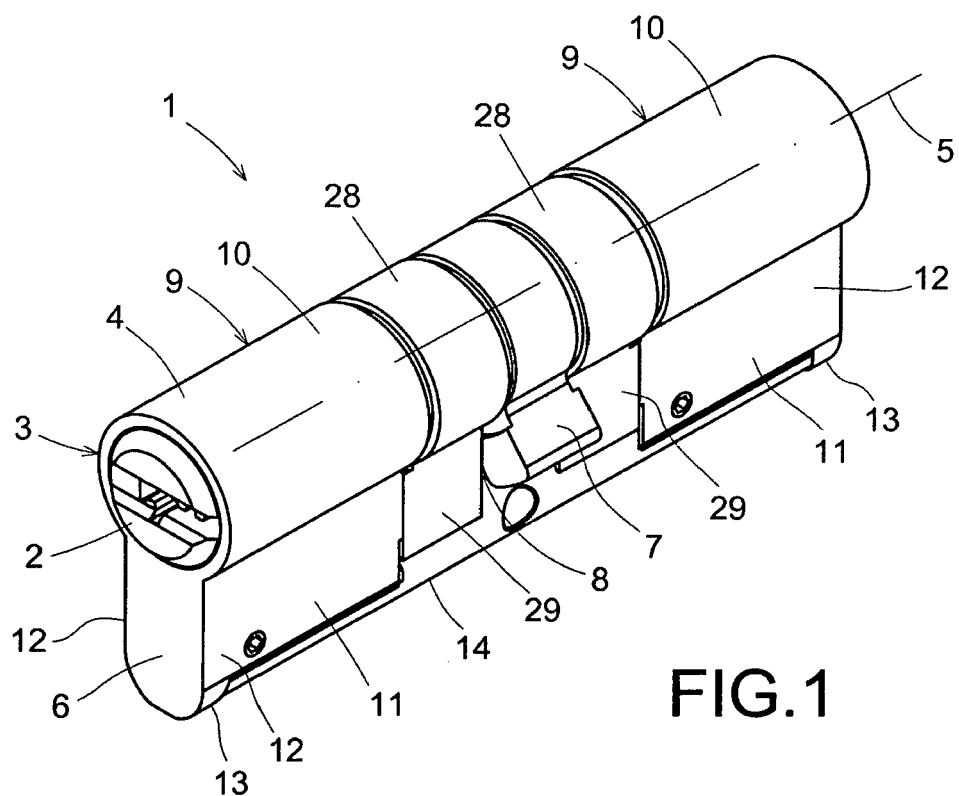
2. Lock cylinder (1), according to claim 1, **characterised in that** the first part (21) of the end portion (19) has undulating outer walls (23), with alternating concave protruding lobes (24) and concave recesses (25), and **in that** the outer walls (16) of the recess (15) are complementary to the outer walls (23) of the end portion (19).
3. Lock cylinder (1), according to claim 1, **characterised in that** it comprises at least one pin (36) inserted into a hole (37) cut in the recess (15) of the casing

portion (9) and in a corresponding hole (38) cut in the first part (21) of the end portion (19) of the connecting bridge (14).

4. Lock cylinder (1), according to claim 3, **characterised in that** the first part (21) comprises radial holes (40) to house prongs of the lock cylinder (1), wherein the holes (38) that house the pins (36) are interspersed longitudinally between the prong-housing radial holes (40). 5
5. Lock cylinder (1), according to claims 2 and 3, **characterised in that** the holes (38) to house the pins (36) are arranged in concave protruding lobes (24). 10
6. Lock cylinder (1), according to claim 3, **characterised in that** the pins (36) are made of hardened steel. 15
7. Lock cylinder (1), according to claim 3, **characterised in that** two sets of pins (36) are included, one on each side of a central portion (20) of the connecting bridge (14). 20
8. Lock cylinder (1), according to claim 3, **characterised in that** one or more pins (36) located farther from the central portion (20) are made of harder and less resistant material than the material from which one or more pins (36) located closer to the central portion (20) are made. 25
9. Lock cylinder (1), according to claim 1, **characterised in that** the first part (21) of the end portion (19) of the connecting bridge (14) includes at least one transverse hole (41) that corresponds with a transverse hole (42) in the side face (12) of the rib portion (11), and **in that** the cylinder (1) includes a setscrew (43) inserted in both transverse holes (41, 42). 30
10. Lock cylinder (1), according to claims 2 and 9, **characterised in that** the transverse hole (41) is located in a convex recess (25) in the first part (21). 35
11. Lock cylinder (1), according to claim 1, **characterised in that** it comprises at least one casing prolongation part (28), and **in that** the connecting bridge (14) comprises a central portion (20) in which one radial hole (32) is provided that receives a bolt (33) that secures the connecting bridge (14) to the casing prolongation part (28). 40
12. Lock cylinder (1), according to claim 1, **characterised in that** it comprises at least one casing prolongation part (28) including a rib portion (29) from which one or more lugs (30) protrude, intended to be housed in corresponding recesses (31) cut in an adjacent casing portion (9) or casing prolongation part (28) and prevent relative rotation between these adjacent parts or portions. 45

13. Lock cylinder (1), according to claim 1, **characterised in that** the core (2) is comprised of several disconnectable and connectable longitudinally consecutive parts to vary the overall length of the core (2).

14. Lock cylinder (1), according to claim 1, **characterised in that** a arranged staple (44) is longitudinally arranged at the central portion (20) of the connecting bridge (14), said staple (44) being connected to two holes (45) cut radially in said central portion (20). 50



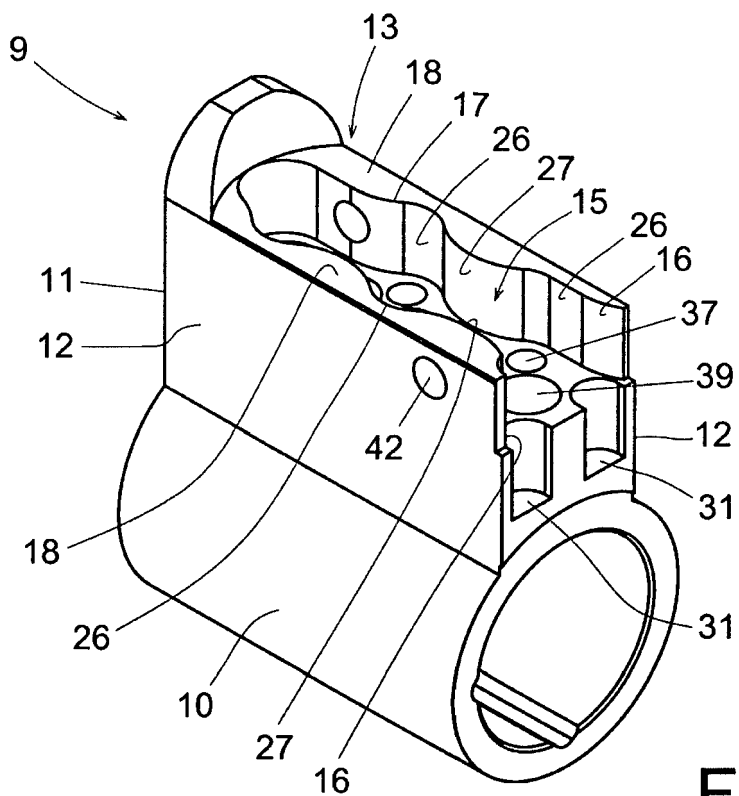


FIG.3

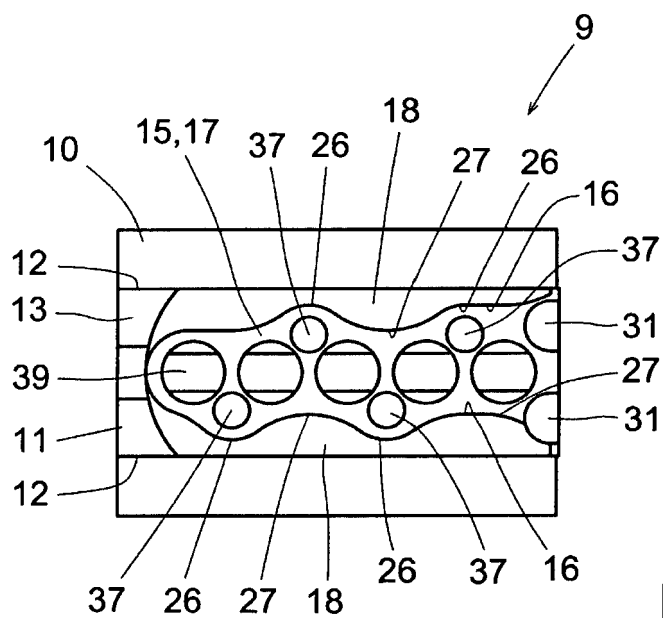
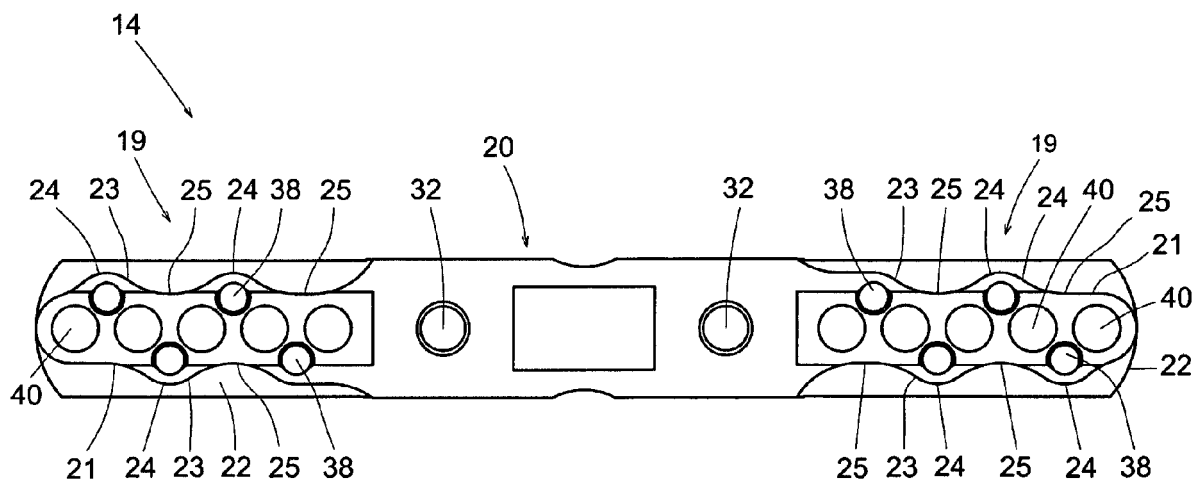
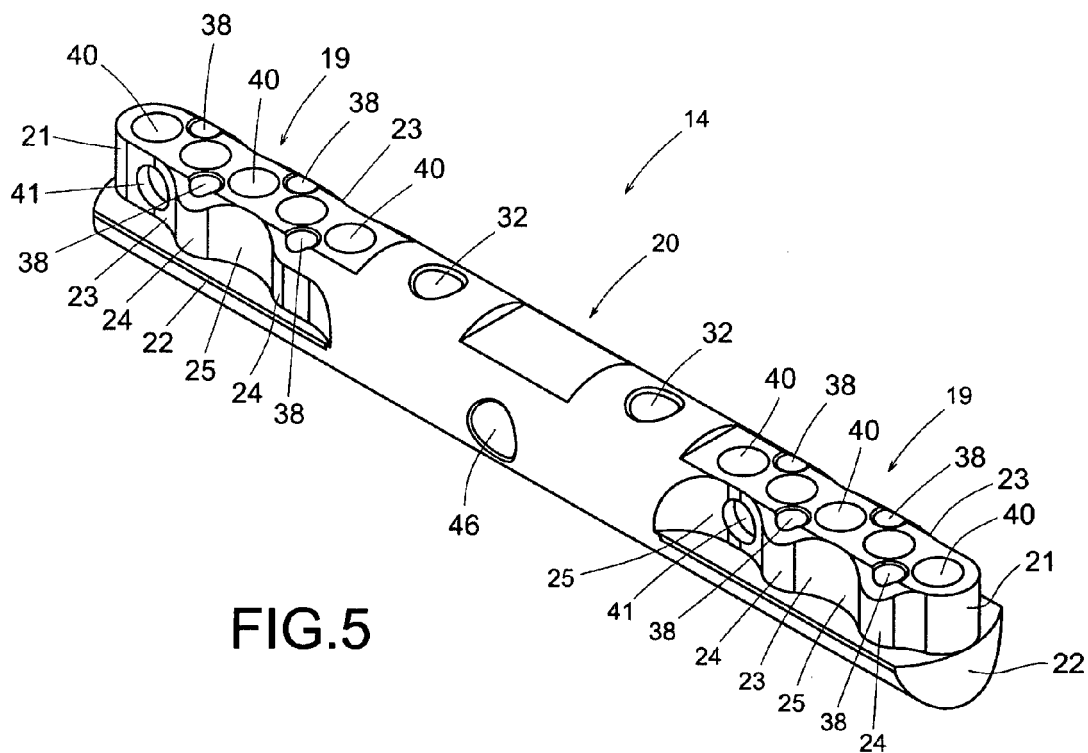


FIG.4



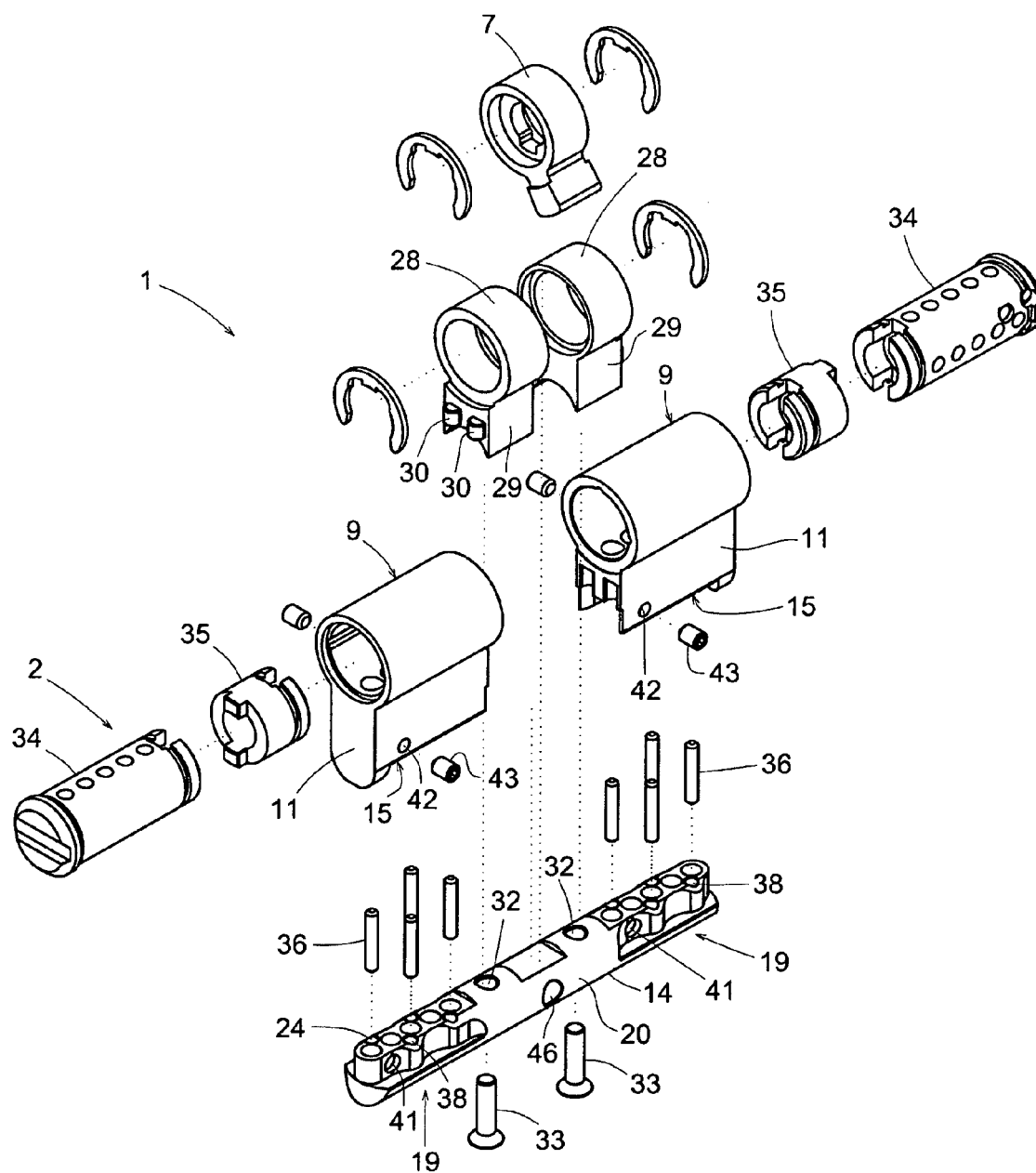


FIG.7

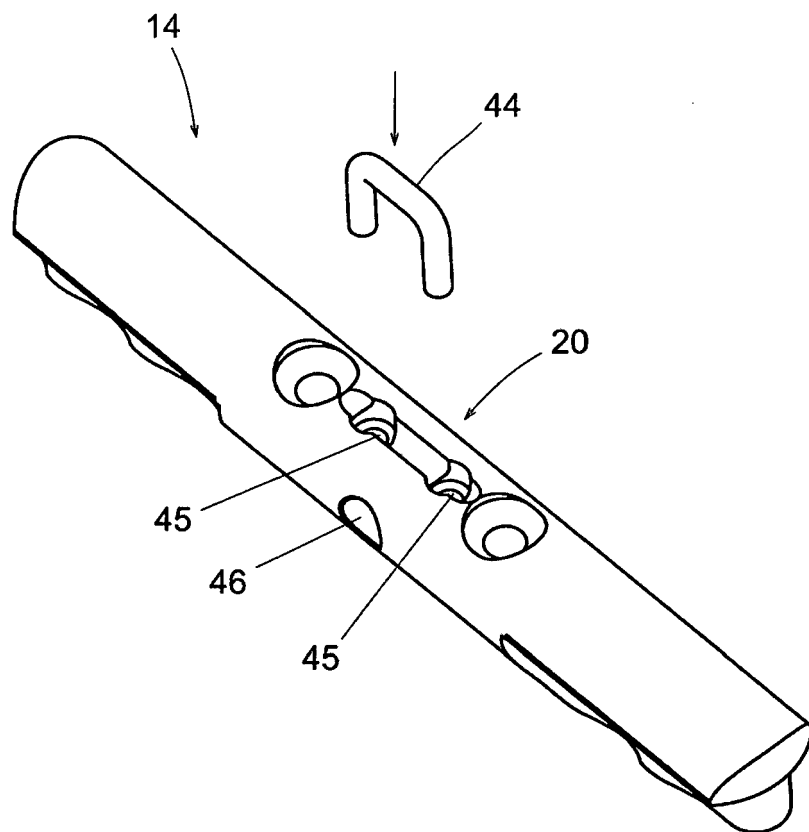


FIG.8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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