



(11) **EP 3 159 463 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
25.12.2019 Bulletin 2019/52

(51) Int Cl.:
E05B 17/04^(2006.01) E05B 9/10^(2006.01)

(21) Application number: **16193677.8**

(22) Date of filing: **13.10.2016**

(54) **ANTI-AMOK CYLINDER**
ANTI-AMOK-ZYLINDER
CYLINDRE ANTIEFFRACTION

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **19.10.2015 DE 102015117725**

(43) Date of publication of application:
26.04.2017 Bulletin 2017/17

(73) Proprietor: **Salto Systems, S.L.**
20180 Oiartzun (Guipuzcoa) (ES)

(72) Inventor: **PLATH, Matthias**
24787 Fockbek (DE)

(74) Representative: **Ungria López, Javier**
Avda. Ramón y Cajal, 78
28043 Madrid (ES)

(56) References cited:
FR-A- 1 480 360 GB-A- 2 334 546
GB-A- 2 469 652 GB-A- 2 471 300
GB-A- 2 471 656

EP 3 159 463 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

Object of the invention

[0001] The invention is directed to an anti-amok cylinder comprising an inner grip and an outer grip wherein the inner grip is connected to a closing lug and a coupling device is provided which is designed to connect the outer grip to the closing lug when a closing authorization is present.

State of the art

[0002] Anti-amok cylinders are known from public prior use. The anti-amok function makes it possible for someone to withdraw into a room closed by a door which has an anti-amok cylinder without a person without closing authorization getting access to the room from outside but one can always actuate the anti-amok cylinder without closing authorization from inside and can leave the room.

[0003] For this purpose the inner grip of an anti-amok cylinder is connected to the closing lug at any time wherein only the outer grip can be connected to the closing lug by presenting a closing authorization. For instance, the closing authorization can be proved as key, as key card or as transmitter transmitting a signal indicating the closing authorization. Without closing authorization the outer grip is not connected to the closing lug so that an actuation of the anti-amok cylinder and an opening of the door and thus an access to the room (protected from amok) is not possible.

[0004] An example of an anti-amok cylinder is also known from EP 1 719 861 S2. Handles for such cylinders are known from DE 10 2004 009 992 A1.

[0005] Anti-amok cylinders are used in all cases in which on the one side a simple access to a plurality of rooms, for instance through a common corridor, and on the other side a high safety necessity exists. Especially school buildings are progressively provided with anti-amok cylinders.

[0006] A disadvantage with regard to the use of anti-amok cylinders consists in the fact that the anti-amok function can be misused in a manner that a person providing the closing authorization can be prevented from entering a room secured by an anti-amok cylinder from outside by the fact that the inner grip is fixed by a person who is on the inner side of the room. Accordingly, the person on the outside of the room - in spite of a presented closing authorization - for entering the room is forced to apply a higher force than the force applied from inside concurrent with the closing lug in order to be able to enter the room - this is often not possible or only possible with very high effort.

[0007] This disadvantage is often subject of school boy tricks, too. Also in other fields or in other situations it can be necessary to secure that a person having a closing authorization gets actually access to the room secured by an anti-amok cylinder without any circumstances.

[0008] Examples of anti-amok cylinder with anti-barricade function are known from GB 2 334 546 A and GB 2 469 652 A in which the door can still be unlocked from the outside if necessary by operating the correct key.

[0009] Accordingly, it is the object of the invention to provide an anti-amok cylinder according to which a person having a closing authorization cannot be prevented from access to a room secured by an anti-amok cylinder.

10 Description of the invention

[0010] According to the invention this object is attained by an anti-amok cylinder having the features of claim 1. The subclaims refer to preferred embodiments of the invention.

[0011] It is the basic idea of the invention to connect the inner knob and the closing lug of the anti-amok cylinder to one another by means of a coupling which is designed for separating the connection between inner knob and closing lug when a closing authorization is presented and for reaching a torque acting from the outer grip onto the closing lug.

[0012] Accordingly, if, when actuating the outer grip, a pre-adjusted force difference with regard to the inner grip is exceeded, the inner grip is disengaged from the closing lug so that the door can be opened from outside even if the inner grip is fixed.

[0013] The invention is especially suitable for the use in connection with doors closing rooms which are on principle accessible by persons presenting a closing authorization and where the persons with closing authorization shall not be prevented from access by manual action from inside.

[0014] A special case of application is defined by schools in which the scholars could prevent the entering of the classroom by a teacher by fixing the inner grip up to now. The invention enables the teacher an undisturbed access to the classroom when he applies a higher force acting upon the closing lug than the force applied by keeping shut.

[0015] Accordingly, an anti-amok cylinder comprising an inner grip and an outer grip is provided wherein the inner grip is connected to a closing lug and a coupling device is provided which is designed for connecting the outer grip to the closing lug when a closing authorization is present. According to the invention the inner knob and the closing lug are connected by means of a coupling which is designed for separating the connection between inner knob and closing lug when the closing authorization is present and for reaching a torque acting from the outer grip onto the closing lug wherein the coupling is designed as locking member coupling.

[0016] According to the invention, the locking member coupling comprises a camshaft connected to the closing lug in a rotarily fixed manner, an inner grip sleeve connected to the inner grip in a rotarily fixed manner and a radially displaceably arranged locking member wherein the camshaft and the inner grip sleeve are supported in

a rotary manner with respect to one another against the force of a spring. The locking member is received by a locking member recess formed in the inner grip sleeve in a first position supported against the cam of the camshaft and generates the connection between the inner grip and the closing lug. However, the locking member protrudes from the locking member recess into a second position interrupting the connection between the inner grip and the closing lug when the force of the spring has been overcome and the cam acting as abutment of the locking member has been rotated.

[0017] In an especially preferred manner the locking member is radially displaceably supported in an inner sleeve connected to the camshaft wherein the inner sleeve is rotatably supported partly against the camshaft and completely against the inner grip sleeve.

[0018] According to a first design the inner sleeve and the camshaft are connected by means of the spring and are rotatably supported against its force. According to an especially preferred embodiment the spring connects the inner sleeve to a coupling intermediate member which is connected to the camshaft in a rotarily fixed manner. Especially, the spring is formed as leg spring. Alternatively, a pressure spring can be used.

[0019] According to another preferred embodiment the outer grip and/or the inner grip are formed as knob. Especially in connection with the use of knobs the invention is advantageously used since in this case the effort necessary for overcoming the above-described hindrance by a person on the inner side is significantly reduced.

[0020] The use of a key, of a key card or of a wirelessly transmitted radio signal is suitable as closing authorization. In an especially preferred manner the anti-amok cylinder is designed as digital cylinder (electronic double knob cylinder).

[0021] Finally, a door with the inventive anti-amok cylinder is also claimed.

Brief description of the figures

[0022] In the following the invention is described in detail by means of especially preferred examples shown in the enclosed drawings. Of the drawings:

Figure 1 shows a partly sectional view of a first anti-amok-cylinder according to the invention designed in an especially preferred manner;

Figure 2 shows an explosion view of the anti-amok cylinder of figure 1;

Figure 3 shows an explosion view of the members of the anti-amok cylinder of figure 1 which form the locking member coupling;

Figure 4 shows a top view, side view and sectional view of the locking member coupling of the anti-amok cylinder of Figure 1; and

Figure 5 shows an explosion view of an alternatively designed locking member coupling example not being part of the invention.

5 Description of a preferred embodiment of the invention

[0023] Figure 1 shows a partly sectional side view of the anti-amok cylinder according to the invention designed in an especially preferred manner wherein figure 2 is an explosion view of the anti-amok cylinder of figure 1. These two figures are commonly discussed.

10 **[0024]** In figure 1 the anti-amok cylinder shows on its left side an outer grip 4 formed as outer knob 4 and on its right side an inner grip 7 formed as inner knob 7 which are connected to a closing cylinder arranged in a double cylinder housing 1. In the shown example the anti-amok cylinder is formed as digital anti-amok cylinder.

15 **[0025]** When the closing authorization is present, the outer knob 4 is coupled to the electronic core 3 so that, when the outer knob 4 and the electronic core 3 are coupled, the electronic core 3, the camshaft connected to the same in a rotarily fixed manner and the closing lug 2 connected to the camshaft 5 in a rotarily fixed manner are rotated by rotation of the outer knob 4 and a door (not shown) can be opened.

20 **[0026]** A camshaft 5 is rotatably supported in the inner knob mandrel 10 of the inner knob 7 without being connected to the same. The inner knob 7 is secured at the inner knob mandrel 10 by means of the grooved pin 16 and the inner knob mandrel 10 is secured at the double cylinder housing 1 by means of the inner knob split-pin 11.

25 **[0027]** The coupling intermediate member 14 is fixed at the camshaft 5 in a rotarily fixed manner by means of the split-pin 15 so that the coupling intermediate member 14 rotates together with the camshaft 5 when the same rotates. The coupling intermediate member 14 and the inner sleeve 6 receiving the coupling intermediate member 14 have a web-like stud extending into the same direction, respectively, which is engaged by a spring (not shown), especially formed as leg spring, wherein the spring holds the two webs - and thus the coupling intermediate member 14 and the inner sleeve 6 - in the same rotary position against the force of the spring.

30 **[0027]** The coupling intermediate member 14 is fixed at the camshaft 5 in a rotarily fixed manner by means of the split-pin 15 so that the coupling intermediate member 14 rotates together with the camshaft 5 when the same rotates. The coupling intermediate member 14 and the inner sleeve 6 receiving the coupling intermediate member 14 have a web-like stud extending into the same direction, respectively, which is engaged by a spring (not shown), especially formed as leg spring, wherein the spring holds the two webs - and thus the coupling intermediate member 14 and the inner sleeve 6 - in the same rotary position against the force of the spring. According to the preferred design the inner sleeve 6, the coupling intermediate member 14 and the spring are received in the coupling member 13 arranged on the camshaft 5. Especially the coupling member 13 forms a recess for receiving the spring and the webs formed by the coupling intermediate member 14 and the inner sleeve 6 wherein the recess limits the distortion of the coupling intermediate member 14 and the inner sleeve 6 with respect to another.

35 **[0028]** The inner sleeve 6 has a recess radially extending through the sleeve wall in which the locking member 8 is radially displaceably supported. In the normal condition according to which the inner knob 7 is connected to the closing lug 2 in a manner rotating the same, the locking member 8 is partly engaged in a locking member

recess formed within the inner knob sleeve 9 which, in the shown example, is formed as longitudinal extending groove. The locking member 8 is maintained in position through the recess of the inner sleeve 6 in the locking member recess of the inner knob sleeve 9 by the cam of the camshaft 5.

[0029] Since the inner knob sleeve 9 is connected to the inner knob mandrel 10 in a rotarily fixed manner and is furthermore connected to the inner knob 7 in a rotarily fixed manner, a rotation of the inner knob 7 causes a rotation of the inner knob sleeve 9 which lets co-rotate the inner sleeve 6 by means of the locking member 8 received in the locking member recess. The inner sleeve 6 rotates the closing lug 2 on account of the spring holding together the inner sleeve 6 and the coupling intermediate member 14 in the same rotary position and on account of the circumstance that the coupling intermediate member 14 is connected to the camshaft 5 in a rotarily fixed manner.

[0030] The outer knob 4 does not co-rotate when the inner knob 7 is rotated for the case that a closing authorization is not present since the outer knob 4 is not connected to the electronic core 3 connected to the camshaft 6 in a rotarily fixed manner without closing authorization.

[0031] However, if a closing authorization is present, i. e. the outer knob 4 is connected to the camshaft 5 in a rotary manner by means of the electronic core 3, a rotation of the outer knob 4 alone results in a rotation not only of the closing lug 2 but also of the inner knob 7, and a rotation of the inner knob 4 alone results in a rotation not only of the closing lug 2 but also of the outer knob.

[0032] Now, when the closing authorization is present and the outer knob 4 is coupled into the electronic core 3, the outer knob 4 is rotated for the actuation of the closing lug 2 and simultaneously the inner knob 7 is fixed to prevent a corotating, the spring holding the inner sleeve 6 and the coupling intermediate member 14 in the common rotary position is stressed wherein the coupling intermediate member 14 is twisted together with the camshaft 5 with respect to the inner sleeve 6. This has the result that the cam of the camshaft 5 has been brought into a position in which the same does not serve as abutment for the locking member 8 so that the locking member 8, upon further rotation of the outer knob 4 against the force of the spring, is pushed out of the locking member recess of the inner knob sleeve 9 when the inner sleeve 6 is further rotated and is taken along with the inner sleeve 6.

[0033] However, if the locking member 8 is no longer arranged in the locking member recess of the inner knob sleeve 9, the inner knob sleeve 9, the inner knob mandrel 10 and the inner knob 7 connected thereto can be twisted with respect to the inner sleeve 6 and the camshaft 2 without having effects on the closing lug 2 actuated by the outer knob 2.

[0034] Accordingly, if upon rotation of the outer knob 4 the force of the spring generated when fixing the inner knob 7 is overcome, the inner knob 7 is uncoupled from

the closing lug 2 by displacement of the locking member 8. Thus, the force to be maximally applied for a closing process on the side of the outer knob 4 is determined by the spring constant.

[0035] Figure 3 shows an explosion view of the members forming the locking member coupling of the anti-amok cylinder of figure 1. In this representation the cam of the camshaft 5 and the longitudinally extending locking member recesses in the inner knob sleeve 9 can be clearly recognized. The cam, the locking member 8 and the locking member recess are formed in such a manner that the locking member 8 is tightly pressed into the locking member recess by the cam on the one side and the locking member 8 can slide out from the locking member recess without jamming on the other side.

[0036] For this, the cam is especially wedge-shaped with inclined side surfaces which allow a releasing of the cam from the locking member 8 and an approaching of the cam to the locking member 8. Furthermore, the locking member recess is formed as groove with inclined side surfaces enabling sliding out of the interlocking member 8 which is also wedge-shaped in a part region.

[0037] For further clarification figure 4 shows the construction of an especially preferred embodiment in a top view, side view and sectional view of the locking member coupling of the anti-amok cylinder of figure 1.

[0038] Finally, figure 5 shows an explosion view of an alternately designed locking member coupling example not being part of the invention wherein the coupling members are located in a sleeve 17.

[0039] In this example again a shaft 5' connected to a closing lug (not shown) is provided which, however, is formed without cam in this example. The inner grip (not shown) arranged on the left side is connected to the closing lug in a corotating manner as long as the inner grip disk 9' connected to the inner grip in a rotarily fixed manner is in engagement with the inner disk 6' by a groove and tongue design, for instance, wherein the one disk 9', 6' includes a groove and the other disk 9', 6' includes a tongue mating therewith.

[0040] The inner grip disk 9' and the inner grip 6' are compressed by the coupling member 14' tightly connected to the shaft 5' in opposition to the force of a spring (not shown) arranged between these members. The coupling member 14' and the side of the inner disk 6' directed to the same have a projection spacing the two members at their front faces, respectively. If the two raised spacers are arranged opposite to one another a gap is formed between the inner disk 6' and the coupling member 14' wherein the inner disk 6' is pressed against the inner grip disk 9' against the force of the spring without gap.

[0041] If with engaged outer grip the coupling member 14' is twisted against the force applied by the spring which presses the inner disk 6' against the coupling member 14', the raised spacers are twisted with respect to one another so that the inner disk 6' is pressed in the direction of the coupling member 14' by the spring from the inner grip disk 9' with reduction of the gap between inner disk

6' and coupling member 14' and is uncoupled from the inner grip disk 9'. As a result the inner grip is uncoupled from the closing lug and the person authorized for the access can actuate the anti-amok cylinder without great effort.

Reference List

[0042]

1	double cylinder housing
2	closing lug
3	electronic core
4	outer grip/outer knob
5	camshaft
5'	shaft
6	inner sleeve
6'	inner disk
7	inner grip/inner knob
8	locking member
9	inner grip sleeve/inner knob sleeve
9'	inner coupling disk
10	inner grip mandrel/inner knob mandrel
11	inner grip split-pin/inner knob split-pin
12	cylinder grooved pin
13	coupling member
14	coupling intermediate member
15	grooved pin
16	grooved pin
17	sleeve

Claims

1. An anti-amok cylinder comprising an inner grip (7) and an outer grip (4) wherein the inner grip (7) is connected to a closing lug (2) and a coupling device (3, 5, 12) is provided which is designed for connecting the outer grip (4) to the closing lug (2) when a closing authorization is present, wherein the inner grip (7) and the closing lug (2) are connected by means of a coupling (5, 8, 9) which is designed for separating the connection of the inner grip (7) and the closing lug (2) when the closing authorization is present and for reaching a torque acting from the outer grip (7) onto the closing lug (2) wherein the coupling (5, 8, 9) is a locking member coupling (5, 8, 9) **characterized in that** the locking member coupling (5, 8, 9) is defined by

- a camshaft (5) connected to the closing lug (2) in a rotarily fixed manner,
- an inner grip sleeve (9) connected to the inner grip (7) in a rotarily fixed manner and
- a radially displaceably arranged locking member (8) wherein
- the camshaft (5) and the inner grip sleeve (9)

are supported in a manner distortable against one another by the force of a spring and

- the locking member (8)
- in a first position supported against the cam of the camshaft (5) is received by a locking member recess formed in the inner grip sleeve (9) and defines the connection between the inner grip (7) and the closing lug (2) and
- in a second position protruding from the locking member recess after overcoming the force of the spring and rotation of the cam of the camshaft (5) acting as abutment of the locking member (8) is arranged to interrupt the connection between the inner grip (7) and the closing lug (2).

2. The anti-amok cylinder according to claim 1, **characterized in that** the locking member (8) is radially displaceably supported in an inner sleeve (6) connected to the camshaft (5) wherein the inner sleeve (6) is supported in a rotary manner partly with respect to the camshaft (5) and completely with respect to the inner grip sleeve (9).

3. The anti-amok system according to claim 2, **characterized in that** the spring connects the inner sleeve (6) to the camshaft (5).

4. The anti-amok cylinder according to claim 3, **characterized in that** the spring connects the inner sleeve (6) to a coupling intermediate member (14) which is connected to the camshaft (5) in a rotarily fixed manner.

5. The anti-amok cylinder according to one of the claims 1 - 4, **characterized in that** the spring is a leg spring.

6. The anti-amok cylinder according to one of the preceding claims, **characterized in that** the outer grip (4) and/or the inner grip (7) are formed as knob (4, 7).

7. The anti-amok cylinder according to one of the preceding claims, **characterized in that** not only the inner grip (7) but also the outer grip (4) are formed as knob (4, 7) wherein the outer knob (4) has a larger diameter than the inner knob (7).

Patentansprüche

1. Anti-Amok-Zylinder, der einen inneren Griff (7) und einen äußeren Griff (4) umfasst, wobei der innere Griff (7) mit einer Schließnase (2) verbunden ist und eine Kupplungsvorrichtung (3, 5, 12) vorhanden ist, die dazu dient, den äußeren Griff (4) mit der Schließnase (2) zu verbinden, wenn eine Schließberechtigung vorliegt, der innere Griff (7) und die Schließnase (2) über eine Kupplung (5, 8, 9) verbun-

den sind, die dazu dient, die Verbindung des inneren Griffes (7) und der Schließnase (2) zu trennen, wenn die Schließberechtigung vorliegt, und ein Drehmoment zu erreichen, das von dem äußeren Griff (7) auf die Schließnase (2) wirkt, wobei die Kupplung (5, 8, 9) eine Sperrglied-Kupplung (5, 8, 9) ist, **dadurch gekennzeichnet, dass** die Sperrglied-Kupplung (5, 8, 9) gebildet wird durch:

- eine Nockenwelle (5), die mit der Schließnase (2) drehfest verbunden ist,
 - eine Hülse (9) für den inneren Griff, die mit dem inneren Griff (7) drehfest verbunden ist, und
 - ein radial verschiebbar angeordnetes Sperrglied (8), wobei
 - die Nockenwelle (5) und die Hülse (9) für den inneren Griff so gelagert sind, dass sie durch die Kraft einer Feder gegeneinander verdreht werden können, und
 - das Sperrglied
 - in einer ersten Position, in der es an dem Nocken der Nockenwelle (5) anliegt, von einer in der Hülse (9) für den inneren Griff ausgebildeten Sperrglied-Aussparung aufgenommen wird und die Verbindung zwischen dem inneren Griff (7) und der Schließnase (2) bildet, und
 - in einer zweiten Position, in der es nach Überwindung der Kraft der Feder und Drehung des Nockens der Nockenwelle (5), der als Anschlag des Sperrgliedes (8) wirkt, aus der Sperrglied-Aussparung vorsteht, so angeordnet ist, dass es die Verbindung zwischen dem inneren Griff (7) und der Schließnase (2) unterbricht.
2. Anti-Amok-Zylinder nach Anspruch 1, **dadurch gekennzeichnet, dass** das Sperrglied (8) radial verschiebbar in einer mit der Nockenwelle (5) verbundenen inneren Hülse (6) gelagert ist, wobei die innere Hülse (6) in Bezug auf die Nockenwelle (5) teilweise und in Bezug auf die Hülse (9) für den inneren Griff vollständig drehbar gelagert ist.
 3. Anti-Amok-System nach Anspruch 2, **dadurch gekennzeichnet, dass** die Feder die innere Hülse (6) mit der Nockenwelle (5) verbindet.
 4. Anti-Amok-Zylinder nach Anspruch 3, **dadurch gekennzeichnet, dass** die Feder die innere Hülse (6) mit einem Kupplungs-Zwischenglied (14) verbindet, das drehfest mit der Nockenwelle (5) verbunden ist.
 5. Anti-Amok-Zylinder nach einem der Ansprüche 1 - 4, **dadurch gekennzeichnet, dass** die Feder eine Schenkelfeder ist.
 6. Anti-Amok-Zylinder nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der

äußere Griff (4) und/oder der innere Griff (7) als Knopf (4, 7) ausgebildet sind/ist.

7. Anti-Amok-Zylinder nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** nicht nur der innere Griff (7), sondern auch der äußere Griff (4) als Knopf (4, 7) ausgebildet ist, wobei der äußere Knopf (4) einen größeren Durchmesser hat als der innere Knopf (7).

Revendications

1. Barillet anti-effraction comprenant une poignée intérieure (7) et une poignée extérieure (4) dans lequel la poignée intérieure (7) est connectée à une patte de fermeture (2) et un dispositif de couplage (3, 5, 12) est fourni qui est conçu pour relier la poignée extérieure (4) à la patte de fermeture (2) quand une autorisation de fermeture est présente, dans lequel la poignée intérieure (7) et la patte de fermeture (2) sont reliées au moyen d'un couplage (5, 8, 9) qui est conçu pour séparer la liaison de la poignée intérieure (7) et la patte de fermeture (2) quand l'autorisation de fermeture est présente ou pour atteindre un couple agissant depuis la poignée intérieure (7) sur la patte de fermeture (2) dans lequel le couplage (5, 8, 9) est un couplage (5, 8, 9) d'élément de verrouillage **caractérisé en ce que** le couplage (5, 8, 9) d'élément de verrouillage est défini par
 - un arbre à cames (5) relié à la patte de fermeture (2) d'une manière fixe en rotation,
 - un manchon de poignée intérieure (9) relié à la poignée intérieure (7) d'une manière fixe en rotation et
 - un élément de verrouillage (8) agencé de façon à pouvoir se déplacer radialement dans lequel
 - l'arbre à cames (5) et le manchon de poignée intérieure (9) sont supportés d'une manière déformable l'un contre l'autre par la force d'un ressort et
 - l'élément de verrouillage (8)
 - dans une première position supporté contre la came de l'arbre à cames (5) est reçu par un évidement d'élément de verrouillage formé dans le manchon de poignée intérieure (9) et définit la liaison entre la poignée intérieure (7) et la patte de fermeture (2) et
 - dans une seconde position faisant saillie depuis l'évidement d'élément de verrouillage après avoir vaincu la force du ressort et la rotation de la came de l'arbre à cames (5) agissant comme butée de l'élément de verrouillage (8) est agencé pour interrompre la liaison entre la poignée intérieure (7) et la patte de fermeture (2).

2. Barillet anti-effraction selon la revendication 1, **caractérisé en ce que** l'élément de verrouillage (8) est supporté de façon à pouvoir être déplacé radialement dans un manchon intérieur (6) relié à l'arbre à cames (5) dans lequel le manchon intérieur (60) est supporté d'une manière rotative en partie par rapport à l'arbre à cames (5) et complètement par rapport au manchon de poignée intérieure (9). 5
3. Système anti-effraction selon la revendication 2, **caractérisé en ce que** le ressort relie le manchon intérieur (6) à l'arbre à cames (5). 10
4. Barillet anti-effraction selon la revendication 3, **caractérisé en ce que** le ressort relie le manchon intérieur (6) à un élément intermédiaire de couplage (14) qui est relié à l'arbre à cames (5) d'une manière fixe en rotation. 15
5. Barillet anti-effraction selon l'une quelconque des revendications 1-4, **caractérisé en ce que** le ressort est un ressort à branches. 20
6. Barillet anti-effraction selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la poignée extérieure (4) et/ou la poignée intérieure (7) sont formées comme un bouton (4, 7). 25
7. Barillet anti-effraction selon l'une quelconque des revendications précédentes, **caractérisé en ce que** non seulement la poignée intérieure (7) mais aussi la poignée extérieure (4) sont formées comme un bouton (4, 7) dans lequel le bouton extérieur (4) a un diamètre plus grand que le bouton intérieur (7). 30

35

40

45

50

55

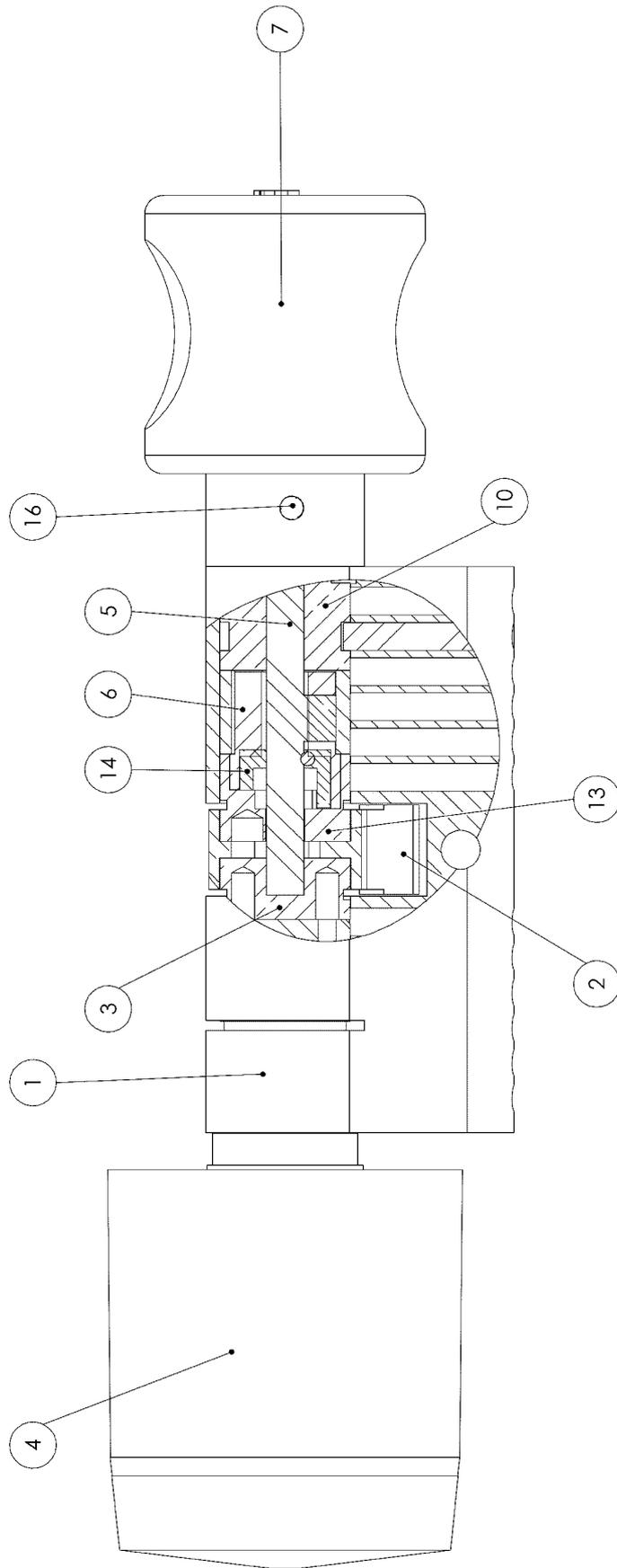


FIG. 1

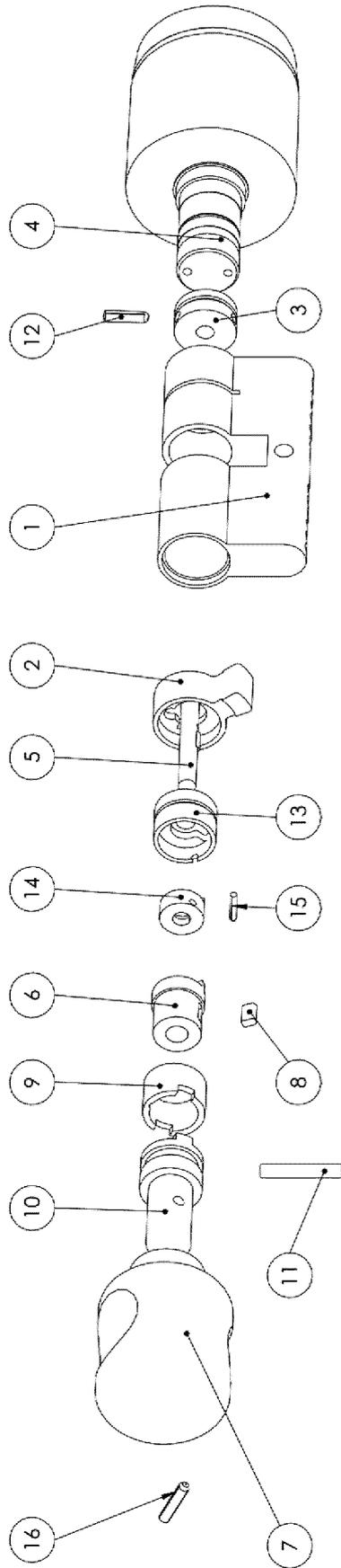


FIG. 2

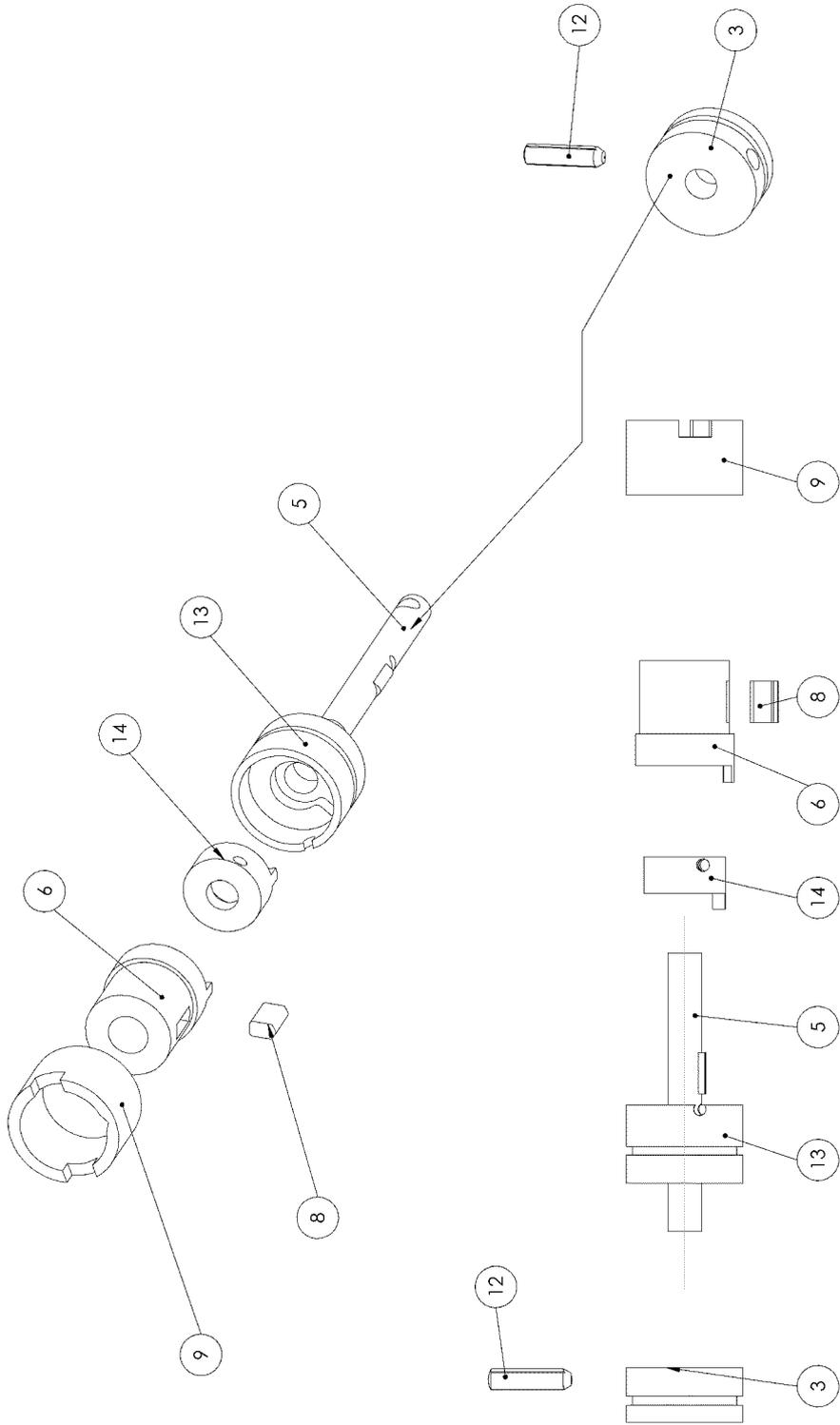


FIG. 3

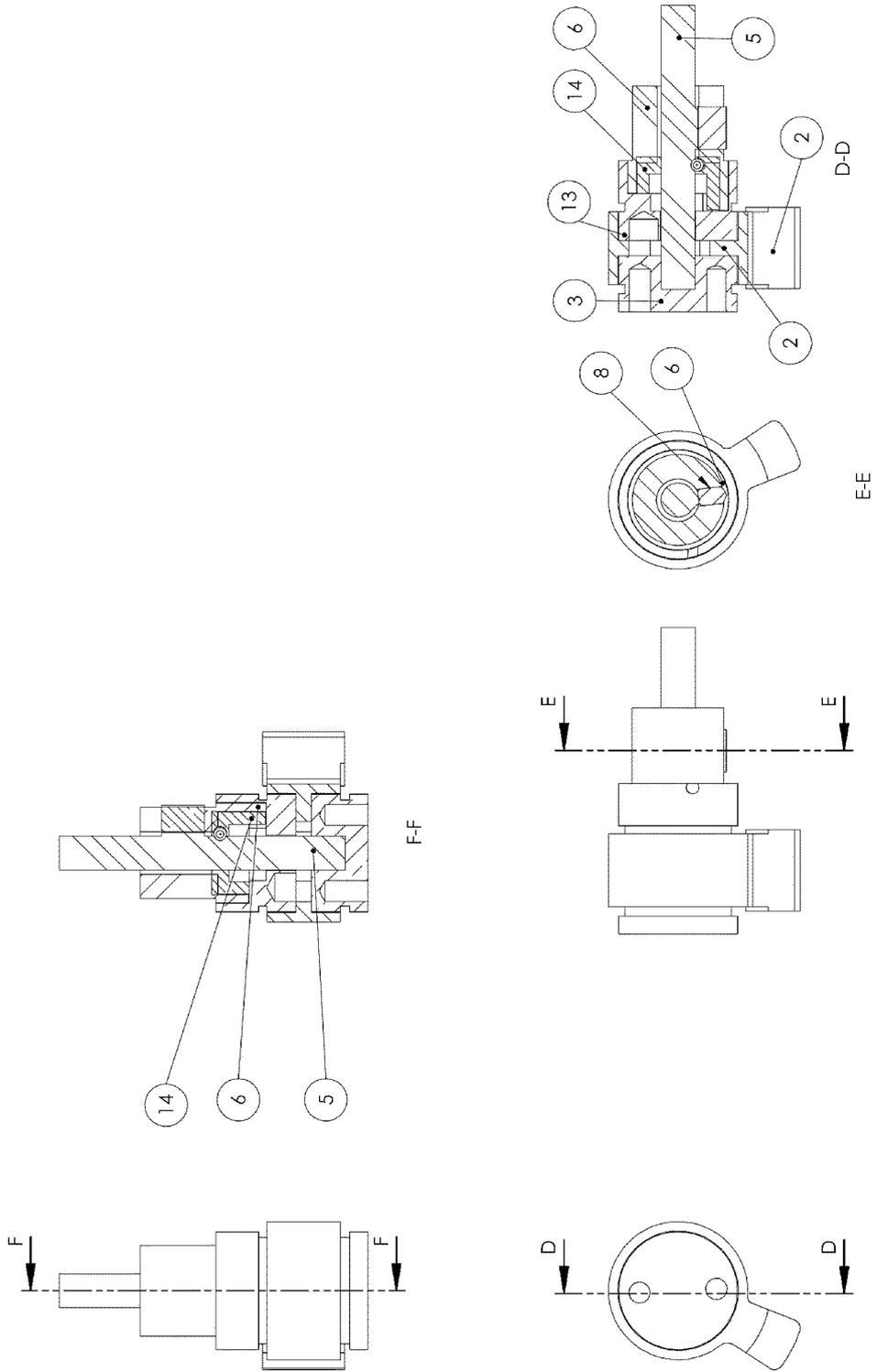


FIG. 4

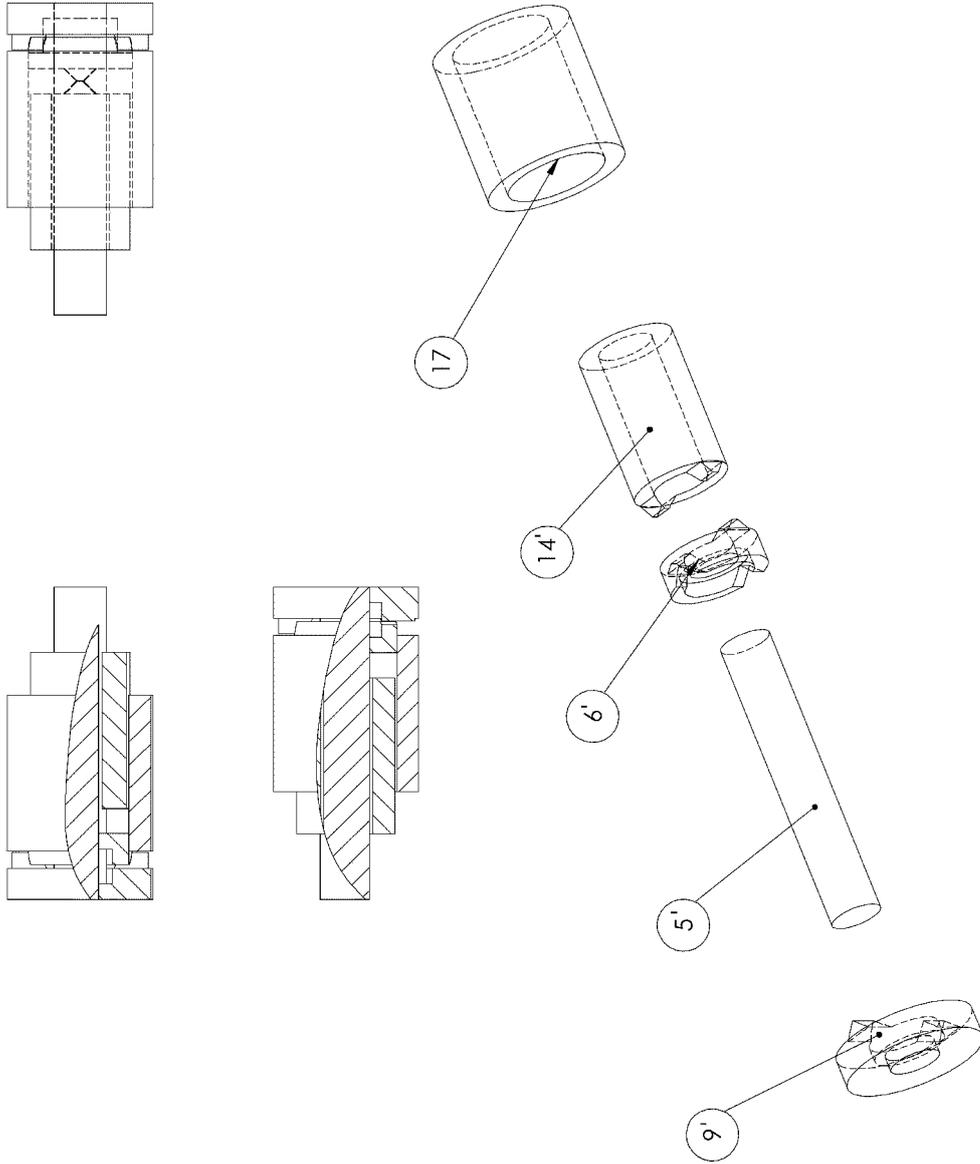


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1719861S2 A [0004]
- DE 102004009992 A1 [0004]
- GB 2334546 A [0008]
- GB 2469652 A [0008]