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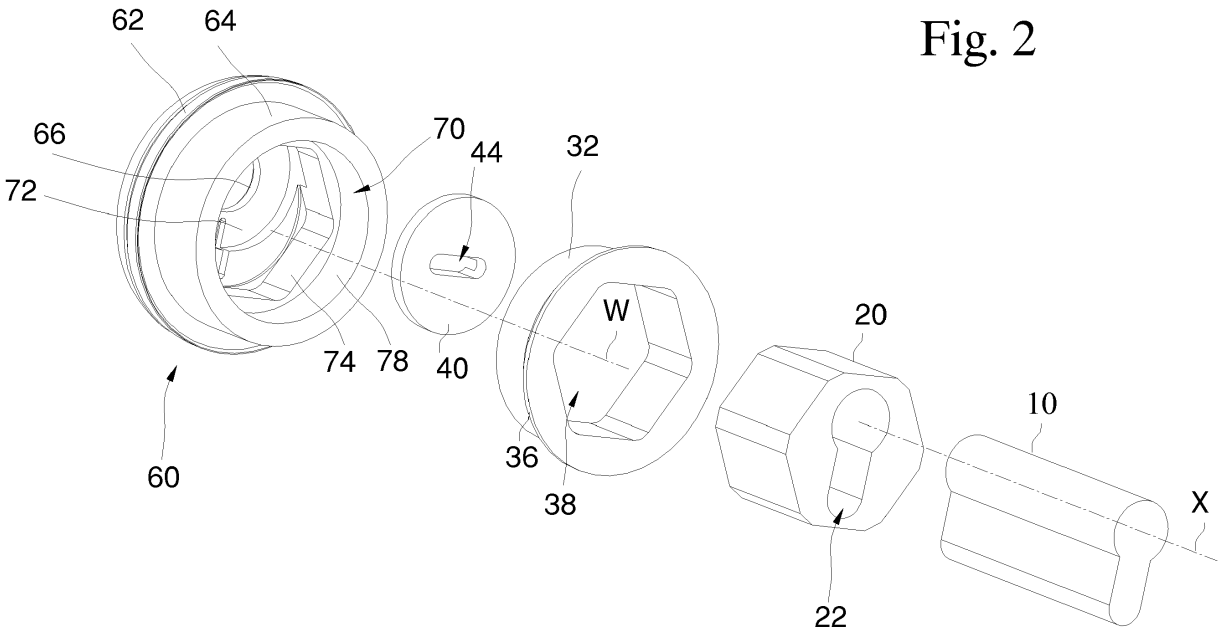
(54) **PROTECTION DEVICE FOR A LOCK CYLINDER**

(57) A protection device for a lock, e.g. a door or fixture. To armor the cylinder the device comprises a central body provided with a pass-through axial cavity, a head which protrudes from one end of the central body and a tail portion 36) that from the other end of the central body protrudes radially-

Fig. 2



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Description

[0001] The invention relates to a protection device for a key lock, e.g. a key lock for door or window frame.

[0002] Known key locks installed on doors or window frames are made up of three pieces: the cylinder, the lock box and the device called *defender.* The aforementioned *defender* protects the cylinder from break-ins. Several types thereof were invented, but they can be grouped into three main categories: simple *defender,* anti-tear *defender* and anti-shock *defender.*

[0003] The *defender* consists of a massive cylindrical block secured to the key lock by two pass-through screws, in the back of which the cylinder is inserted. The base in sight of the massive cylindrical block is then finished by an additional plate that surrounds it, screwed to the exterior plane of the door. This type of *defender* is quite vulnerable to burglary. Just a common metal tube is enough for quickly cause the breakage of the fastening screws. At this point one can easily extract the *defender* and access to the cylinder now exposed.

[0004] The anti-tear type is a more resilient protection. It consists of a flared cylinder housed in a corresponding opening of a metal plate, from which it protrudes towards the opposite side of the door. This time a tube for leverage can at most deform the cylinder lock, however a break-in attempt often damages the lock to the point that no longer it is possible to open it. Even if the house owner has prevented the thieves to come in, in fact he cannot anymore either, with great inconvenience and repair costs. The reason for the occurrence of the attempted burglary is to be found in the absence of visual deterrents: once installed, indeed, it is rather difficult to distinguish the anti-tear type from a simple *defender.*

[0005] The anti-shock *defender* is a protection consisting of a solid cylindrical block, fixed to the key lock always by two screws (see e.g. the Italian patent no. 1,380,918). Unlike the simple *defender,* the anti-shock type is wrapped in an additional plate that does not have screws in sight. Against this type of *defender* burglary with the tube is more difficult due to this protective cotter-pin which prevents the immediate use thereof. In addition, the anti-shock type is different from the other two because it proves to be a visual deterrent (the eventual thief soon realizes that more time and more tools are needed for burglary) and thus avoids damage. The anti-shock type remains vulnerable to bending by means of other types of connectors such as, for example, metal bars or pliers stuck in the slot of the pad.

[0006] Therefore an adequate protection device of the above kind is missing that not only protects the key cylinder effectively as the anti-tear type, but that prevents the attempted break-in as the anti-shock type. The object is therefore to obviate one or more of the above problems with a device or system as in the appended claims, in which the dependent ones define advantageous variants thereof.

[0007] A first aspect of the invention relates to a device of the aforesaid type.

[0008] In general the device may have a central body with a certain longitudinal cross-section and two end portions with radially greater cross-section; in particular a cylindrical body with enhanced cross-section at the ends (to enable the interlocking in the fixture and prevent the extraction thereof). The device may be mounted on the fixture by e.g. inserting it in a pass-through countersunk opening of a plate or in a generic accommodation, provided that it has a shape complementary to the tail portion. In general, however, any coupling system to the frame of the fixture may be used, so the tail portion may be absent.

[0009] In general the device serves for externally armoring a lock cylinder mounted on a fixture and comprises three assemblable pieces:

- a central (e.g. cylindrical or hexagonal cross-sectioned) body provided with a pass-through axial cavity (e.g. of complementary section to that of the end of the cylinder, and preferably in the cavity being insertable the end of the cylinder),

- a head, which protrudes from one end of the central body radially with respect to the axis of the cavity and which comprises a pass-through opening communicating with the axial pass-through cavity (the head being preferably intended for abutment against a first surface of the fixture),

- a tail portion that from the other end of the central body protrudes radially relative to the axis of the cavity (the tail portion being preferably intended for abutment against a surface of the frame opposite to the first).

[0010] The structure of the device thus enables a protected anchoring to the the door or fixture, and at the same time an adequate protection of the cylinder.

[0011] The device is open to many variations, e.g.:

- the central body is preferably fixed, thanks to the geometry of the parts, with respect to the head and to the tail portion; in particular the head and the tail portion comprise respective axial cavities in which to house the central body, the cross-sections of the central body and of these axial cavities being substantially complementary and/or such that their walls in contact form a prismatic pair, so that the central body cannot axially rotate relative to the tail portion and to the head (e.g. the cross-sections of the central body and of such axial cavities are of polygonal shape); and/or

- the device is formed by two pieces which are (e.g. equal and) modular along a plane passing through the axis of the cavity; and the two pieces, when are composed, they can form at one end of the device

a diametrical groove; and/or

- the device is formed by two pieces joinable along the axis of the cavity (wherein e.g. the two pieces comprise the head and the central body and the tail portion); in particular the head may be mountable axially overlapped to a free end of the central body so as to (i) not be able to move axially away from it and (ii) align the pass-through cavity and the pass-through opening to provide access to said end of the cylinder; and/or

- said joinable pieces comprise on their outer surface reliefs or cavities complementary, respectively, to grooves or relieves present on the surface of the pass-through cavity of the head; and/or

- the central body may comprise a prismatic pair formed by two pieces insertable concentrically into one another, wherein the piece in the center comprises the pass-through axial cavity and the outer piece comprises the tail portion. With this option, preferably
  the piece in the center is housed in a complementary pass-through cavity of the outer piece,
  the head comprises a cavity complementary to the cross-section of the piece in the center, and
  the piece in the center is mounted to slide and be able to enter into said complementary cavity, so as to prevent the rotation and/or the release of the head relatively to the central body; and/or

- the head (or a corresponding mushroom-shaped element) comprises (i) a central shank coupled to the central body and (ii) a crown protruding radially from the central shank (protruding without having an axial symmetry, too); and/or

- the central body is inserted or insertable, preferably coaxially, into the head and into the tail portion. The central body comprises said pass-through axial cavity for the cylinder and is rotationally bound to the head and to the tail portion by a prismatic pair formed by the external walls of the central body and by the inner walls of the pass-through cavity comprised in the tail portion and in head. In particular, the central body is housed in a complementary pass-through cavity of the tail portion and the head; and/or

- the central body and head both comprise a thread through which they are screwable axially on one another; and/or

- the central body and the head comprise a bayonet connection through which they are connectable axially on one another; and/or

- the device comprises an element which
  is mounted between the central body and the head, comprises a pass-through slot, and
  is mounted so that the pass-through slot is aligned and communicating with the pass-through opening of the head; and/or

- the head is mushroom-shaped, and comprises a central shank connected to a radial enlargement crown that with respect to the shank protrudes radially relative to the axis of the cavity and form a bottom wall of the cavity present in the shank; the shank comprising said pass-through opening communicating with the axial pass-through cavity of the central body, preferably so that the pass-through opening of the head is formed by the assembly of a cavity present in the shank, of size such as to accommodate one end of the central body, and by a pass-through opening in the radial enlargement crown, wherein the cavity present in the radial enlargement crown (i) has smaller cross-section than the cross-section of the pass-through opening present in the shank, and (ii) is aligned with the pass-through axial cavity present in the central body, so that the ends of the central body, when inserted into the shank, is covered frontally by said bottom wall except for a region corresponding to the cavity present in the radial enlargement crown; and/or

- the tail portion has the shape of an edge that is projecting from the central body and tapered toward the head; and/or

- the central body has the shape of a cylinder and/or the central body and the head have polar symmetry with respect to a central axis of theirs; and/or

- all or some of the above-mentioned cavities have constant cross-section within the respective elements to which they belong; and/or

- the central body on its outer side surface comprises grooves alignable with grooves present both in the inner surface of the axial pass-through opening of the head, and in the inner surface of the axial pass-through opening of the tail portion. The device comprises a locking element insertable in an empty space formed by two said grooves belonging to different pieces and made, through their assembly, adjacent or facing each other, the locking element preferably having a shape complementary to such empty space. The locking element is preferably a cylindrical or generally elongated plug, or a flexible thread-like element comprising at the two ends two bulges or grains; and/or

- the central body is constituted of two separate pieces joinable along the axis of the cavity; in particular said separate pieces comprise on their outer surface re-

liefs or additional cavities complementary, respectively, to cavities or reliefs present on the surface of the pass-through cavity of the head and/or tail portion.

[0012] Another aspect of the invention relates to a fixture equipped with the device. The fixture may comprise a lock cylinder,

- a device as in any one of the preceding claims, wherein
- the central body is fixed inside the fixture, and into the cavity of the central body there is inserted one end of the cylinder, and
- the head is mounted in sight on the outer surface of the fixture.

[0013] As options for the fixture:

- it may comprise
  a lock cylinder,
  a block mounted inside the fixture which is equipped with an axial pass-through cavity of cross-section complementary to that of the end of the cylinder and fixed inside the fixture, into the cavity being inserted the end of the cylinder,
  a first element integral with the block and mounted in sight on the outer surface of the fixture, the first element protruding from one end of the block radially with respect to the axis of the cavity and comprising a pass-through opening communicating with the axial pass-through cavity; and/or
- comprises a second element integral with the block which from the end of the block opposite to the first element, protrudes radially relative to the axis of the cavity and is placed in abutment against a portion of the fixture; and/or
- comprises a plate provided with a pass-through hole with a shape complementary to the tail portion or to said second element, the latter being in abutment against the edge of the pass-through hole.

[0014] Another aspect of the invention relates to a method for armoring a lock cylinder for a fixture, in particular a method for armoring externally a lock cylinder of a fixture, comprising the steps of:

- inserting one end of the cylinder into a complementary axial pass-through cavity of a block, the block having two ends each comprising a radial enlargement,
- fixing the block inside the fixture by bringing a radial enlargement in abutment against an inner surface of the fixture and by bringing the other radial enlargement in abutment against an outer surface of the fixture.

[0015] The method may also comprise the steps of:

- mounting onto the free end of the block a piece comprising one of the two radial enlargements, said piece comprising a pass-through axial cavity,
  said step of mounting comprising the steps of
- aligning the cavity of the block and of the piece, and
- coupling the block and the piece so that they cannot axially move away from one another.

[0016] The advantages of the invention will be even clearer from the following description of a preferred embodiment of device, in which reference is made to the accompanying drawing wherein

- Figure 1 shows an exploded view of the device;
- Figure 2 shows another exploded view of the device, but from a different angle;
- Figure 3 shows a cross-sectional view of a door portion on which the device is mounted;
- Figure 4 shows an exploded view of a second device;
- Figure 5 shows a front view of the device of Fig. 4;
- Figure 6 shows a view from behind of the device of Fig. 4;
- Figures 7-9 show exploded views of a third device;
- Figure 10 shows an exploded view of a fourth device;
- Figure 11 shows the fourth device as assembled;
- Figure 12 shows a component of the fourth device.

[0017] In the figures same reference numerals indicate same elements, which, to not clutter the drawings, are sometimes without references.

[0018] A protection device AC is used to armor a lock cylinder 10 having a key-hole 12 in which to insert a key C along an axis X.

[0019] The device AC comprises a first block 30, a second block 20 and a cover element 60.

[0020] The first block 30 comprises a central cylindrical body 32 having a thread 34 on the outer lateral surface. From a base of the body 32 extends radially a protruding countersunk cross-sectioned lip 36 in order to form a circular tapered skirt. The center of the body 32 is empty by the presence of an axial pass-through cavity 38 with

hexagonal or any cross-section.

[0021] The second block 20 has the shape of a prism with hexagonal shape or any shape, with external cross-section complementary to the cavity 38, and comprises a central pass-through inner cavity 22 of cross-section complementary to the cross-section of the cylinder 10.

[0022] The cavities 22 and/or 38 have an axis W parallel to the axis X.

[0023] The cover element 60 is mushroom-shaped, and comprises a cylindrical central hollow shank 64 and a head 62 provided with a pass-through opening 66. The shank 64 has a central cylindrical cavity 70 (Fig. 2) which reaches the inner base of the head 62, where it further penetrates into it through a cavity 74 with hexagonal plan or any other shape, identical to the area of the block 30 and a deeper cavity 72 with circular plan. The shank 64 also comprises, on the internal side surface, a thread 78 complementary to the thread 34. The inner diameter of the shank 64 is substantially equal to the outer diameter of the body 32, so that the two can be screwed one on the other.

[0024] The cavity 72 replicates the area of a pad, constituted of a disc 40 having a central rectangular slot 44 flanked on two sides by two halfmoons in relief 42 whose area replicates in turn the cavity 66.

OPERATION and INSTALLATION METHOD

[0025] The device AC is applied e.g. to an lock S provided with movable latch CH to close a door P, see Fig. 3.

[0026] The door P is formed by a metal shell 80 on which is mounted a metal plate 86 provided with a countersunk hole 88 complementary to the lip 36. The first block 30 is inserted into the hole 88 so that the body 32 protrudes from the plate 86 while the lip 36 abuts against, and it is retained through interference by, the edges of the hole 88.

[0027] Then on the metal shell 80 is mounted an external panel 82, in a pass-through hole of which there is housed the body 32. Then the pad 40 is placed in the cavity 72, and the cover element 60 and the pad 40 thus mounted on the body 32 are screwed until the head 62 makes contact with the panel 82.

[0028] From the back of the first block 30 the second block 20 is inserted into the cavity 38 and then pressed against the cover element 60, so that the second block 20 slides (into the cavity 38) and goes full-stroke into the cavity 74, thereby preventing the cover element 60 from rotating and being unscrewed from the body 32.

[0029] Then the lock S is mounted on the plate 86 crossing with the cylinder 10 the cavity 22 until it skims the pad 40. In this way the first block 30 remains integral with the plate 86 and cannot be torn. Upon completed assembly, the cavity 66 is aligned with the axis X and by inserting the key C in the cavity 66 (and 44) the cylinder 10 and thus the latch CH can be operated.

[0030] A device AC's advantage is that unlike the traditional *defender* it does not use screws to be fixed to the lock - but e.g. only joints. It combines in one single product the positive aspects of the anti-tear type and of the anti-shock type, thereby discouraging immediately break-ins and preventing damage thereof.

[0031] Even if the thief tried to break in by means of pipes, levers, pliers or latches whatsoever, the device AC would make any bending stress ineffective: the stress, transmitted through the massive block 20 - well coupled to the components 60 and 30 - would find the adequate strength of the plate 86, firmly anchored to the body shell of the security door or of any other frame of door, window, gate or the like on which it is installed.

VARIANTS

[0032] The invention is open to many variations, also combinable with each other, e.g.:

the first block 30 and the second block 20, earlier described as separate, may be a single piece, given by the composition of the two detached solids. It is necessary, though, to change the locking and/or anti-rotation systems for the cover element 60; and/or

the described components may also in turn be formed by several parts;

the body 32's cross-section may be polygonal or of any shape, not only circular; and/or

the prismatic pair formed by the cross-section of the cavity 38 and by that of the second block 20 may be based on a different polygon than the hexagon, or on a hollow or bulky solid, of any even variable cross-section; and/or

the pad 40 has the advantage of protecting the first block 30 and/or the second block 20 from a drilling. Note that the pad 40 has bigger size than the common one, maximizing the protective resistance: and/or

the shape of the cover element 60 may be different from a mushroom, e.g. a perforated disc without the shank and with a threaded circular groove for mating with the thread 34. It is enough that the cover element 60 is able to couple with the first block 30 projecting radially therefrom with respect to the axis X, also not in axial symmetry; and/or

one can use a different locking system between the cover element 60 and the first block 30 (whether composed integrally by the second block 20 or not). Although the screwing of the threads 34, 78 is very convenient during assembly and resistant, other systems are sufficient. E.g. one can use:

- either an adhesive or a glue, or a bayonet locking

(i.e. a connection between the two pieces in which one is inserted into the other and rotated to lock it). In both cases you one can use the insertion or the end of the cylinder 12 inside the first block 30 and/or inside of the cover element 60 to prevent the relative rotation; and/or

- the interference of snapping parts. One or each of the first block 30 or the cover element 60 may comprise snapping teeth, e.g. made of elastic material and/or with spring-loaded, able to be inserted permanently in the cavities of the other piece during assembly; and/or

- connection cables, by providing anchoring seats properly formed in the above-mentioned elements;

the protruding lip 36 may be replaced by any other system that prevents the extraction of the block 30, also in the absence of the plate 86, e.g. screws, welds, adhesives or joints with the box of the lock S or with the metal shell 80.

[0033] Another device variant AC2 is shown in FIG. 4.

[0034] The device AC was formed by a pair of pieces to be assembled along the axis W, one internally and one externally to the door P.

[0035] The elements 30, 60 may be integrated in one single piece, which is split longitudinally into two symmetrical parts whose symmetry plane is a vertical plane passing through the axis X. The two elements thus obtained can be installed one after the other, or simultaneously, into the hole 88 and blocked by interlocking thereby propping each other up. The resulting device AC2 comprises therefore a pair of pieces 100, 200, preferably identical and symmetrical, to be assembled along a plane passing through such axis.

[0036] In figures 4-6 the pieces 100, 200 are equal, so we describe only one for sake of simplicity.

[0037] The piece 100 comprises a semi-cylindrical central body 102 which at one end comprises a projecting semi-mushroom shaped head 104 and at the other end comprises a protruding half-ring 106, preferably tapered toward the head 104.

[0038] The body 102 and the head 104 extend along an axis Z (corresponding to that of the imaginary cylinder of which the body 102 is a half) along which there is a pass-through semi-cylindrical cavity 108.

[0039] The pieces 100, 200 are couplable along the flat surface containing the axis Z, see the illustration of the assembled device AC2m in Fig. 5 and 6. As shown, the two bodies 102 make up a whole cylinder with axis Z, and the heads 104 make up a whole circular mushroom.

[0040] The assembly AC2m of the pieces 100, 200 has a cylindrical internal cavity given by the juxtaposition of the cavities 108 of the individual pieces 100, 200. In the cylindrical cavity a hollow cylinder 120 can be inserted, with same functionality of the element 20.

[0041] The tail of the assembly AC2m is not regular and continuous but has two diametrically opposed slits 110 in the shape of a V, which altogether form in the body 102 a diametrical groove. In essence, in each piece 100, 200 the end wall of the body 102 with the semi-ring 106, in the vicinity of the edges is not parallel to the axis Z but inclined from the center of the body 102 toward the half-ring 106. In substance, from the opposite side of the head 104 there is a wedge removed on each edge of the semi-cylinder forming the body 102.

[0042] To mount the device AC2, the pieces 100, 200 are neared as in Fig. 4, leaving the two heads 104 separated but joining the half-rings 106. The slits 110 are eliminated and the body 102 can be tucked into a door P, as shown in Fig. 3. Then the heads 104 are neared up to make contact (Fig. 5 and 6) creating the slits 110: the half-rings 106, now spread apart, abut against the plate 86, as earlier the lip 36 did.

[0043] Then the cylinder 120 is inserted into the cavities 108, which locks the mutual position of the pieces 100, 200 and prevents the extraction of the assembly from the door P.

[0044] Another variant of device AC3 is shown in Figures 7-9. It comprises

- a block 300 (equal to the block 30 except that it is cylindrical);

- a block or central body 310 and

- a head or cover element 320 in the shape of a mushroom.

[0045] In the block 310 there is no thread and it is divided in two equal parts 312, 314, analogous to the pieces 100 and 200, which this time comprise a series of circular fins 316 with smaller section on the shank. The parts 312, 314 can be composed as the parts 100 and 200 thanks to slits 318 similar to the slits 110, so that the fins 316, when the pieces 312, 134 are pushed together to form a substantially cylindrical body, can align to form complete rings embossed on the block 310.

[0046] The overall geometry of the embossed rings is present in negative in the inner cavity of the head 320 in the form of annular grooves 322. The V-shaped slit or gap 318 allows to insert the rings formed by the fins 316 into the grooves 322 of the head 320 through a relative rotation of the parts 312, 324 (with the same principle explained for the variant AC2). The block 310 thus allows the fixing of the two parts 312, 414 within the head 320. Only by extracting it, the device AC3 can be disassembled.

[0047] The number and size of the fins 316 may vary. A variant of the device AC3 has e.g. a single protruding flap or a single protruding tooth on each part 312, 324, where the single fin or tooth are made at the end or on

an edge of a part 312, 324. Preferably each part 312, 324 comprises at least a fin or tooth which is placed at the end or on an edge of a part 312, 324 and which is radially protruding with respect to the fins or teeth present on the central portion of the part 312, 314.

[0048] The position of the fins 316 and that of the grooves 322 may be exchanged.

[0049] Another variant AC4 of the device AC is shown in Figures 10-12. The device AC4 comprises

- a tail portion 440 like the portion 30,
- a central body 420 like the central body 20 and
- a head or mushroom-shaped cover element 400 such as that numbered 60.

[0050] We highlight below the only differences compared to the variant AC:

- the central body 420 is cylindrical and has surface grooves 422 that run along the side surface thereof in parallel to the longitudinal axis;
- the mushroom-shaped cover element 400, which as described above is threaded internally in its greater internal cavity, comprises in its internal cavity grooves 402 collimating axially with the grooves 422;
- the tail portion 440, which as described above is threaded externally in its portion with smaller diameter, comprises in its internal cavity, relative to the portion with smaller diameter, grooves 442 collimating axially with the grooves 422.

[0051] An anti-rotation system is thus created for the central body 420 within the elements 400, 440 which allows producing the central body with cylindrical geometries, constructively simpler than the hexagonal prism in the variant AC.

[0052] In the example there are six grooves 422 in the body 440 and two in the head 400 and in the tail portion 420. The number of the grooves may, however, be different, as long as they fit in the assembled device (Fig. 11).

[0053] The device AC4 also comprises at least one centering pin 450, of such dimensions as to enter snugly into a seat formed by the grooves 442, 402, 422 when made adjacent through the assembly of the pieces 400, 420, 440 into one another (as in Fig. 11). Based on the rotation occurred during the screwing of the part 440 in the piece 400, the pin 450 is inserted into one of these seats and will prevent the rotation of the block 420 with respect to the remaining pieces.

[0054] The pin 450 may be replaced by a flexible element 460 (Fig. 12) having at its ends a larger head 462.

Claims

1. Device (AC; AC2) for externally armoring a lock cylinder (10) mounted on a fixture (P) comprising three elements:

   a central body (30) provided with a pass-through axial cavity of complementary section (38) to that of the end of the cylinder, in the cavity being insertable the end of the cylinder,
   a head (60), which protrudes from one end of the central body radially with respect to the axis of the cavity and which comprises a pass-through opening (66) communicating with the axial pass-through cavity, the head being intended for abutment against a first surface of' the fixture,
   a tail portion (36) that from the other end of the central body protrudes radially relative to the axis of the cavity, the tail portion being intended for abutment against a surface of the frame opposite to the first.

2. Device according to claim 1, formed by two pieces (100; 200) which can be composed along a plane passing through the axis of the cavity and, when composed, result in the three elements.

3. Device according to claim 2, wherein the two pieces, when they are composed, form at one end of the device a diametral slot (110).

4. Device according to claim 1, formed by two pieces (60, 30) joinable along the axis of the cavity, wherein the two pieces

   - are the head and the assembly of the central body and the tail portion,
   - and, when composed, result in the three elements.

5. Device according to claim 1 or 4, wherein
   the head is mountable axially overlapped to a free end of the central body so as to (i) not be able to move axially away from it and to (ii) align the pass-through cavity and the pass-through opening for providing access to said end of the cylinder.

6. Device according to claim 4 or 5, wherein the central body comprises a prismatic pair formed by a central piece and an outer piece (30, 20) insertable concentrically into one another, wherein the piece at the center comprises said axial pass-through cavity and the outer piece comprises the tail portion.

7. Device according to claim 6, wherein
   the piece at the center is housed in a complementary pass-through cavity (38) of the outer piece,

the head comprises a cavity (70) complementary to the cross-section of the piece at the center, and
the piece at the center is mounted to slide and to be inserted in said complementary cavity, so as to prevent rotation or the release of the head relatively to the central body.

8. Device according to any one of the preceding claims, wherein the central body and the head both comprise a thread through which they are screwable axially on one another.

9. Device according to any one of the preceding claims, wherein the central body and the head comprise a bayonet coupling by means of which they are connectable axially on one another.

10. Device according to any one of the preceding claims, comprising an element which
is mounted between the central body and the head, comprises a pass-through slot, and
is mounted so that the pass-through slot is aligned and communicating with the pass-through opening of the head.

11. Device according to any one of the preceding claims, wherein the central body on its outer side surface comprises grooves alignable with grooves present both on the inner surface of the axial pass-through opening of the head, and in the inner surface of the axial pass-through opening of the tail portion, the device comprising a locking element insertable in an empty space formed by two said grooves belonging to different pieces and made, through their assembly, adjacent or facing each other.

12. Device according to claim 11, wherein the locking element has a shape complementary to said empty space.

13. Fixture (P) comprising

- a lock cylinder (10),
- a device (AC; AC2) as in any one of the previous claims,
wherein
- the central body is fixed inside the fixture, and into the cavity of the central body there is inserted one end of the cylinder, and
- the head is mounted in sight on the outer surface of the fixture.

14. Fixture (P) comprising

- a lock cylinder (10),
- a block (30) mounted inside the fixture which is provided with a pass-through axial cavity of cross-section complementary to that of the end of the cylinder and fixed within the fixture, in the cavity being inserted the end of the cylinder,
- a first element (60) integral with the block and mounted in sight on the outer surface of the fixture, the first element projecting from one end of the block radially with respect to the axis of the cavity and comprising a pass-through opening communicating with the axial pass-through cavity .

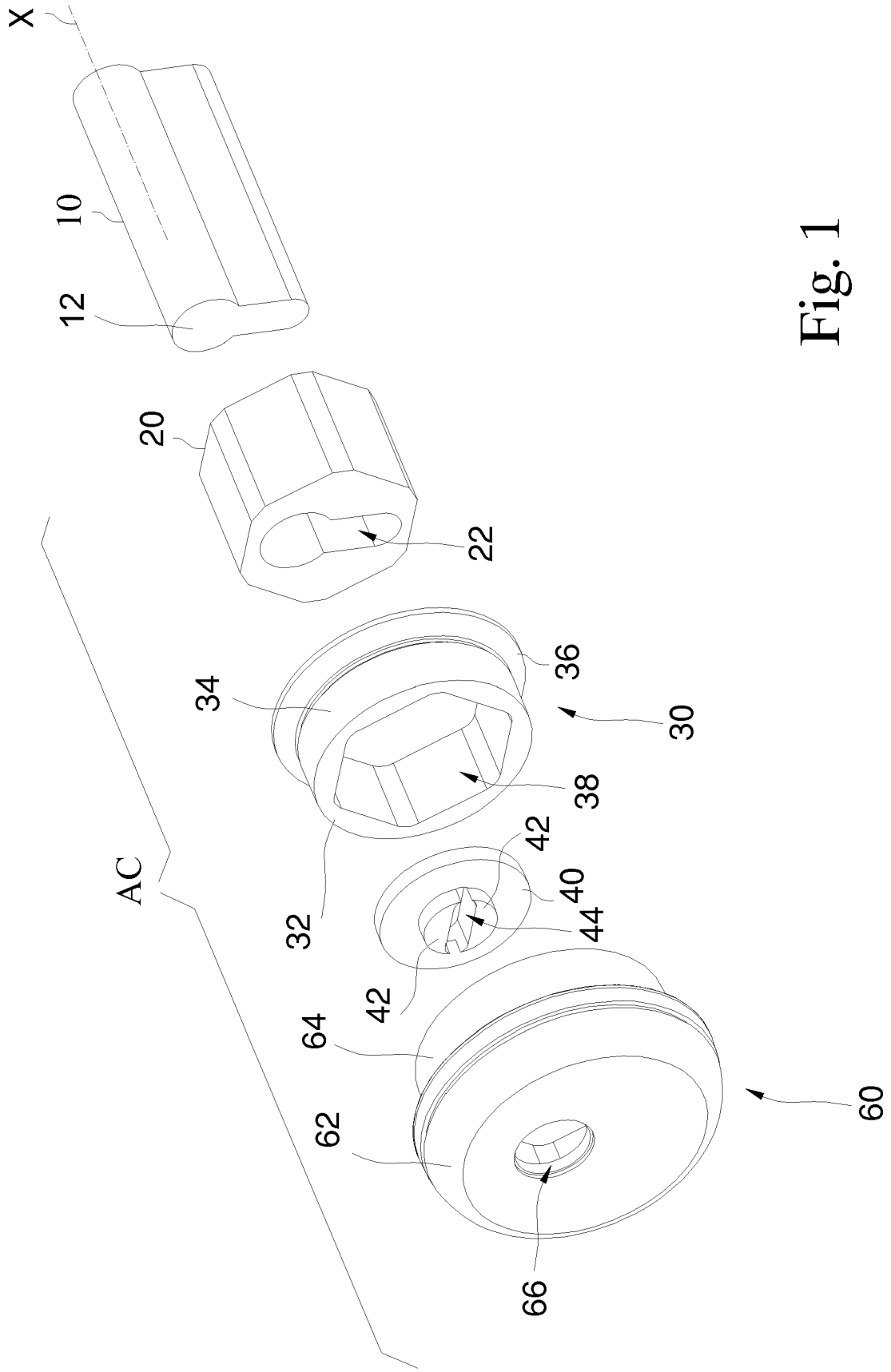
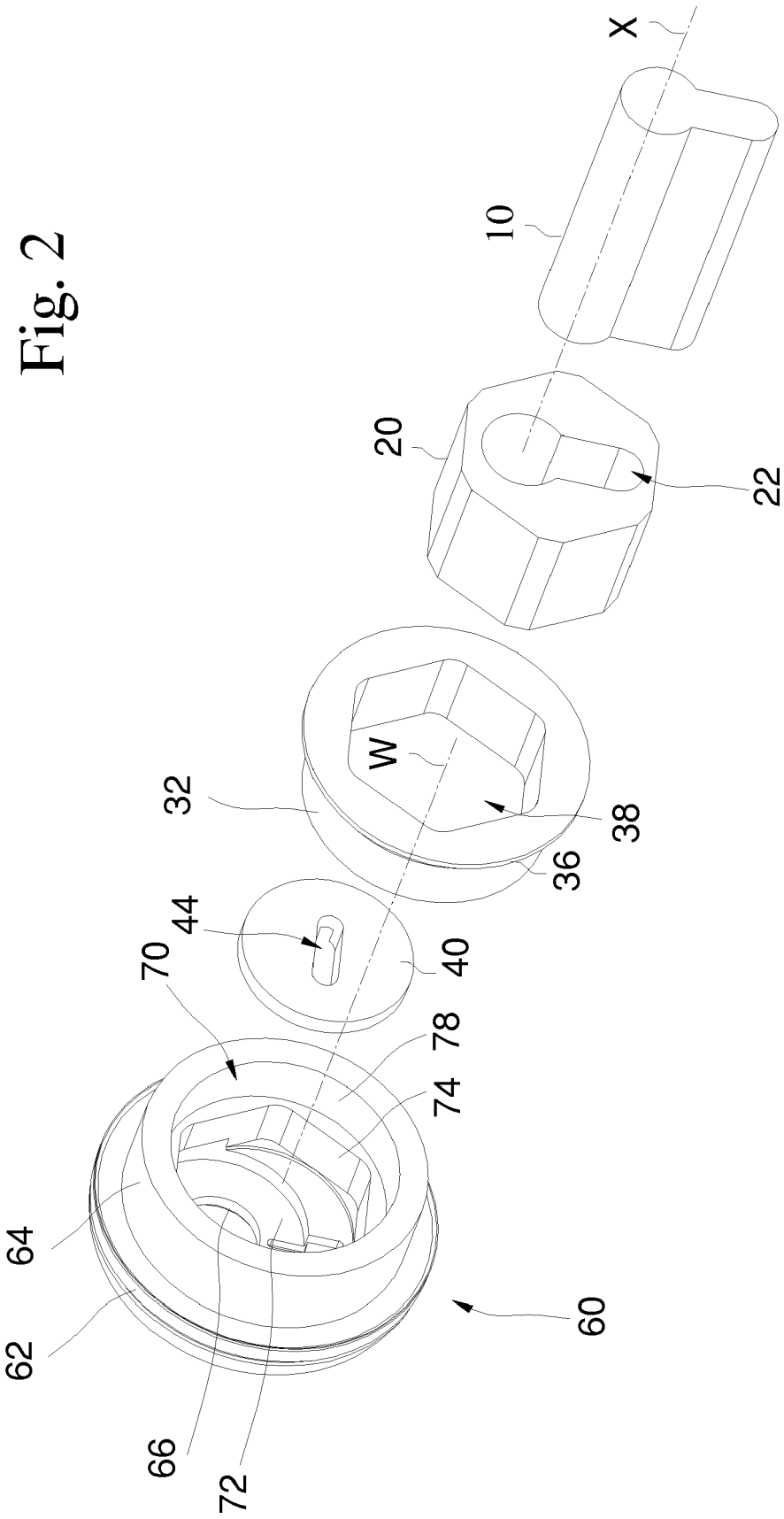


Fig. 1

Fig. 2



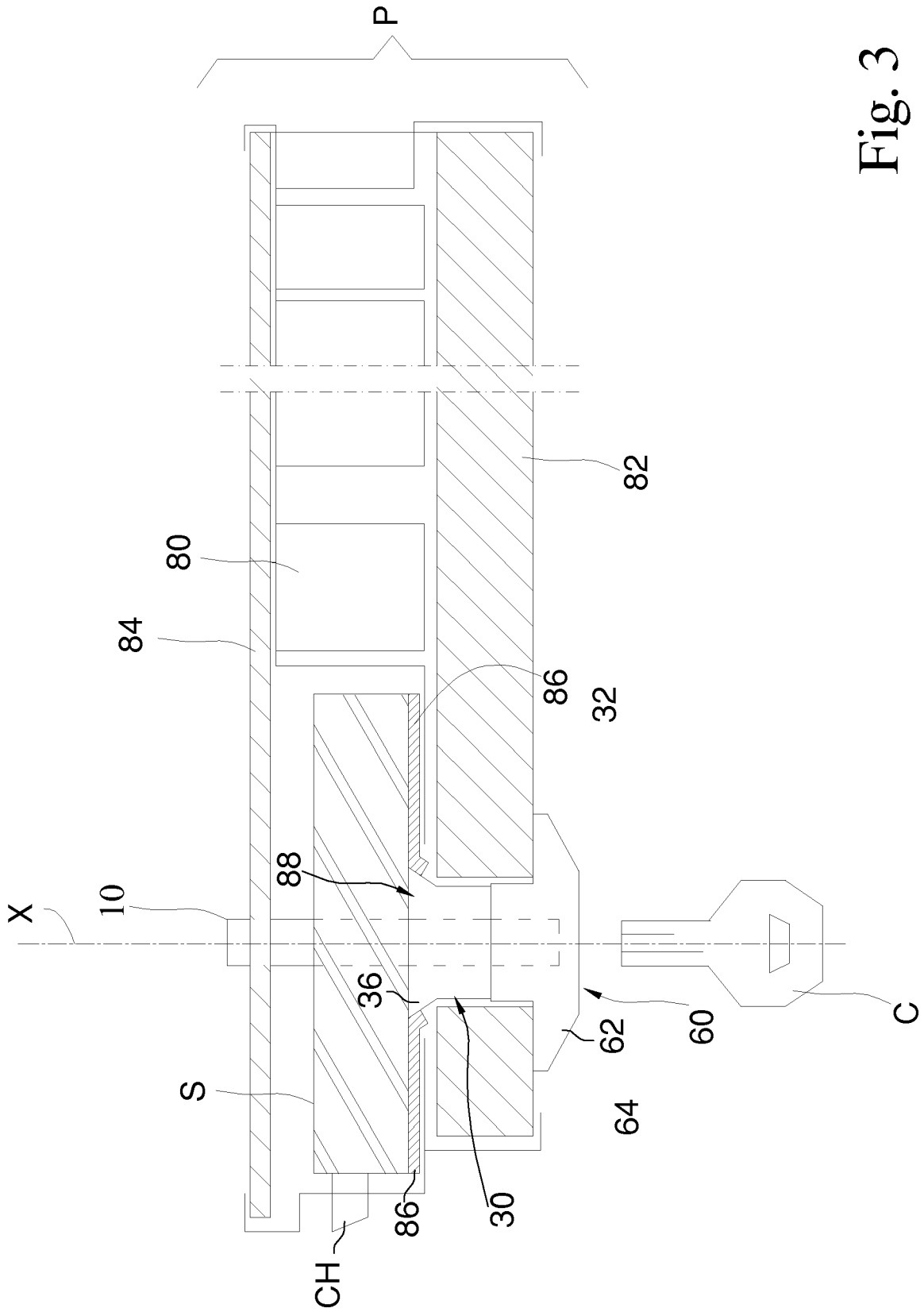


Fig. 3

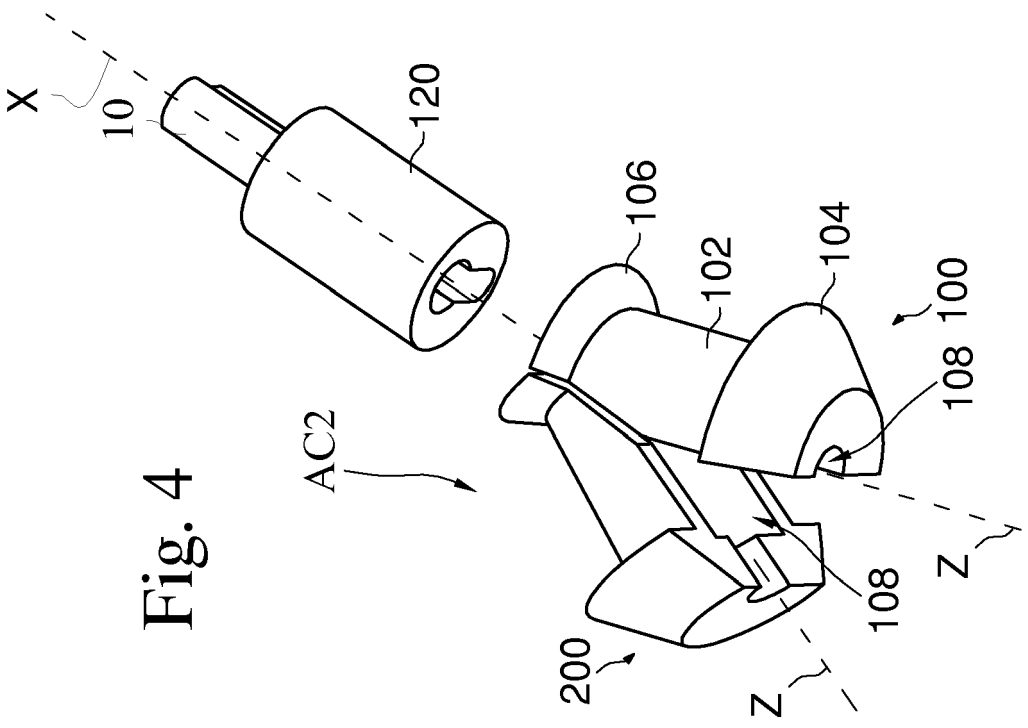


Fig. 4

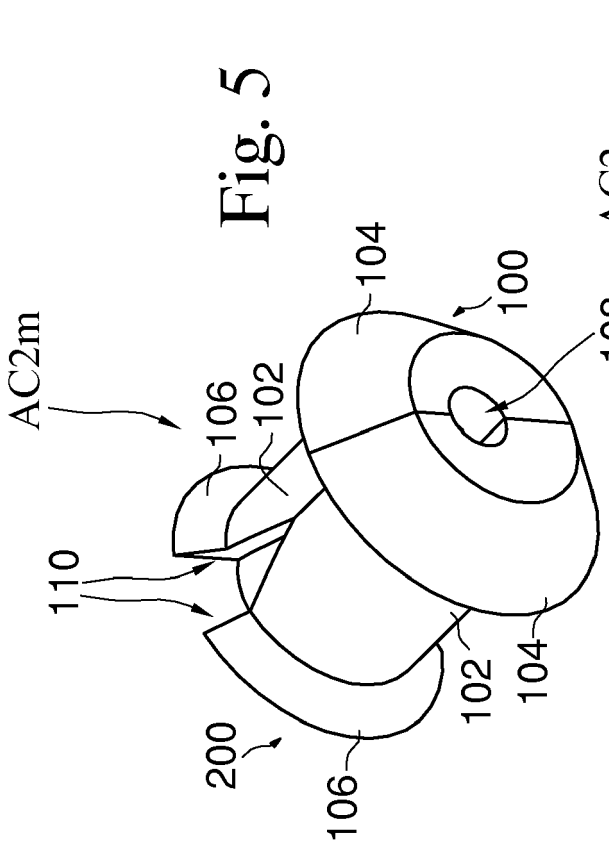


Fig. 5

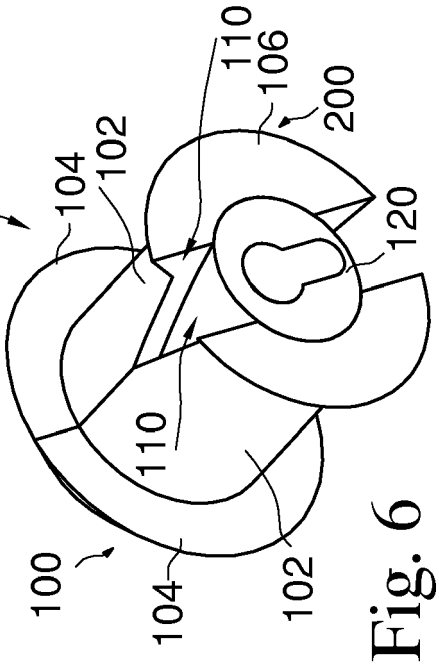


Fig. 6

Fig. 8

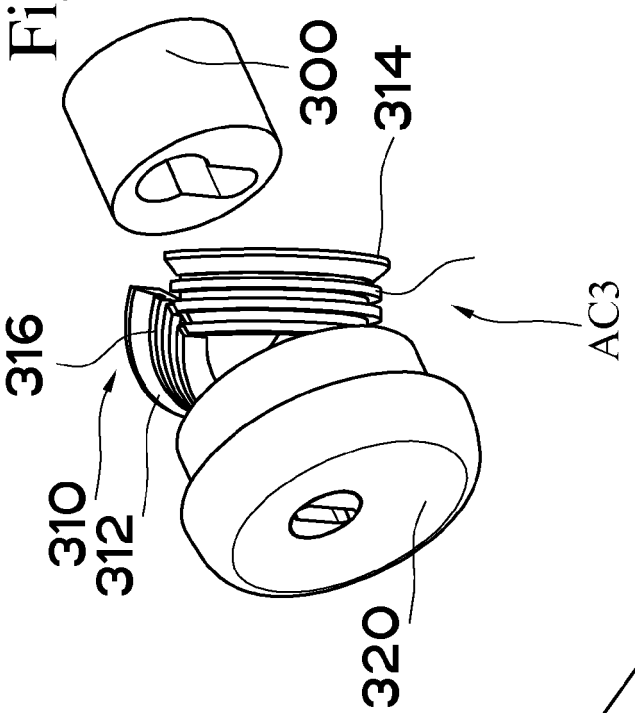


Fig. 7

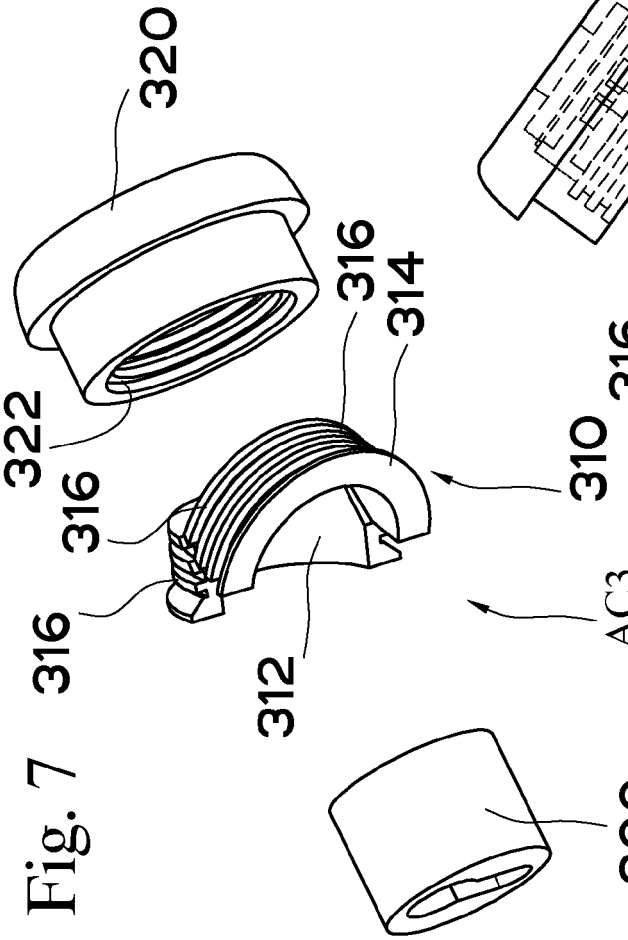
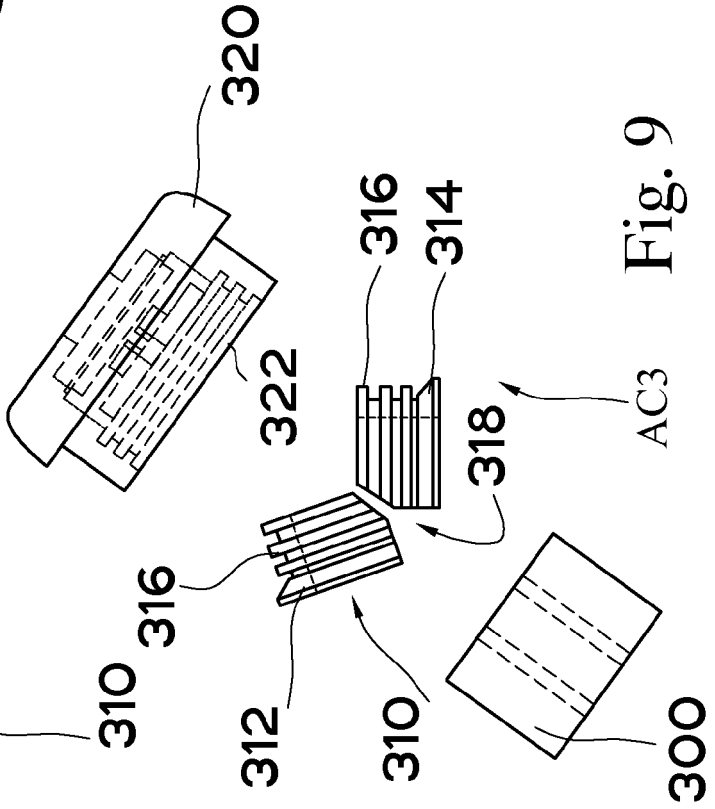


Fig. 9



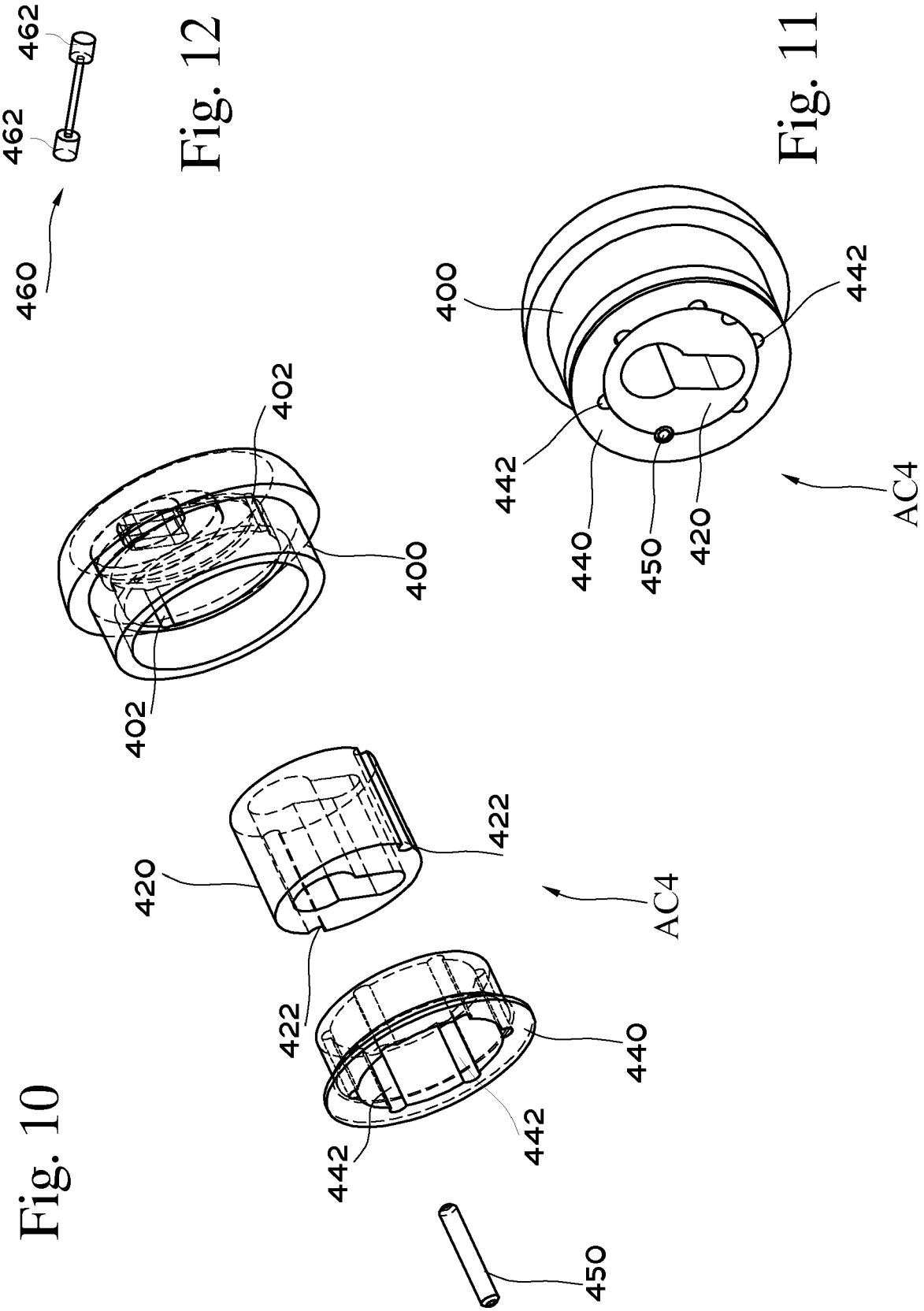


Fig. 10

Fig. 12

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 16 19 0576

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 February 2017	Ansel, Yannick

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