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(11) **EP 1 167 667 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.01.2002 Bulletin 2002/01

(51) Int Cl.7: **E05C 9/18**

(21) Application number: **01830389.1**

(22) Date of filing: **13.06.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **30.06.2000 IT BO000385**

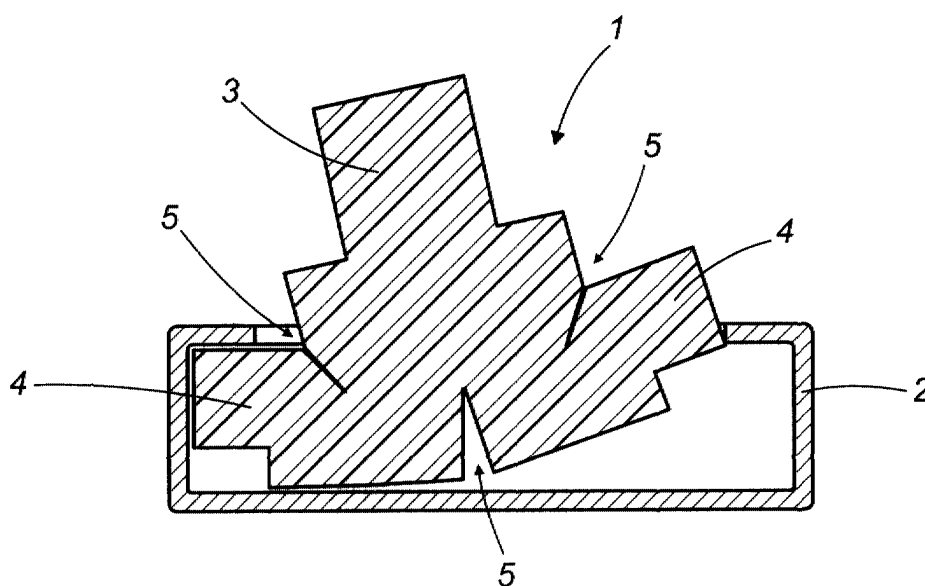
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(54) **Fitting element for a window or a door and assembling method**

(57) An element for making control mechanisms to operate mobile door or window frames with perimetric guide channels (2) in them, comprises a body (3) and at least two tongues (4) connected to the body (3), and designed to engage the guide channels (2) and to be moved from a disengagement position in which they are

in line with the body (3) to an engagement position in which they protrude laterally from the body (3). The invention also relates to a method by which a set of elements for making mechanisms used to operate mobile door or window frames can be assembled in a direction substantially perpendicular to the direction in which the channel (2) extends.

FIG. 1



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Description

[0001] The present invention relates to an element for making mechanisms to operate mobile door or window frames, the element being of the type comprising a body and at least two tongues connected to the body and designed to engage matching guide channels.

[0002] The present invention also comprises a method for assembling a set of elements for making mechanisms used to operate mobile window or door frames and being of the type having the characteristics described in the preamble to claim 5.

[0003] It is well known that door and window frames are composed of a fixed section mounted on jambs in a wall delimiting an opening in the wall, and a mobile frame hinged to the fixed frame.

[0004] In the case of metal frames, the mobile frame comprises a plurality of profiled sections, generally four, forming the edges of the door or window.

[0005] A handle operated to open the door or window, and one or more locking elements operated by the handle to lock or unlock the window, are connected to the mobile frame.

[0006] Windows that can be opened in two different ways represent a particular field of application. The first is the traditional way in which the mobile frame turns around a vertical axis. The second way is tilt and turn in which the mobile frame also rotates around a horizontal axis (bottom hung window). In windows of this kind, which can be opened in two ways, selecting elements operated by the handle are connected to the mobile frame for selecting the opening method desired.

[0007] Besides the locking elements and opening method selecting elements, the prior art also includes elements which connect the handle, locking elements, selecting elements and the frame to each other.

[0008] In the jargon of the trade, the selecting elements, locking elements and connecting elements are collectively referred to as hardware.

[0009] Hardware also includes elements such as drive blocks, closure rods, support rods, brackets, corner drives, angular stop arms, strikers or keepers and pawls.

[0010] This type of hardware can be divided into two different groups: a first group of elements designed to be fitted in a perimetric track made in the edge of the mobile frame and a second group comprising elements designed for connection to the handle, or to elements in the first group inserted in the tracks.

[0011] The present invention relates to the first group of hardware elements and reference will therefore be made below to only this type of element.

[0012] The track for the hardware element is composed of a number of suitably shaped guide channels, each extending along an outer edge of the mobile frame. The guide channels are, in turn, formed by two opposing protrusions made in the profile forming the edge of the mobile door or window frame.

[0013] Each element is composed of a body and at least two tongues protruding laterally from the body and designed to engage the channels.

[0014] Door and window frames are assembled on site by the installation technician. In the case of metal frames, the mobile frame is constructed from a single profile section with a continuous guide extending along its outer edge. The four pieces making up the edges of the mobile frame are cut from the profile (bar/extrusion) at angles of 45° and then fitted to each other.

[0015] In this way, the track for the elements, comprising the four straight tracks extending along the four edges of the mobile frame, also extend uninterruptedly around the corners.

[0016] According to prior art, the first step in assembling the elements is to create insertion areas at the joints between the channels.

[0017] This is achieved by cutting off a short section from the end of the channels, thereby removing the corresponding protrusions.

[0018] The elements are then inserted in the various channels in these areas in a direction coinciding with the axis of the corresponding channel.

[0019] The method described, however, has a number of disadvantages.

[0020] Firstly, the assembly operations require a great deal of time. The installer must first arrange the various elements in the correct order and then carefully fit each into the small space made, one at a time.

[0021] Furthermore, since the various elements can only be inserted in the channels one at a time, it is essential that they be inserted in the right order; if the installer makes a mistake, omitting an element or inserting one in the wrong position, the only way to correct the mistake is to remove the element in question from the channel, as well as all those inserted after it. This takes a considerable amount of time and hence increases the cost of assembling the structure.

[0022] Another disadvantage is that a section of the channels has to be removed in order to make the channels accessible; this operation not only increases the time taken to assemble the frame, but can be tricky in that even a small mistake can damage parts of the frame.

[0023] Replacing damaged parts of a frame inevitably leads to increased costs.

[0024] Another difficulty arises when the window constructed in the manner described has to be repaired. In this case, when a damaged element has to be replaced, all the elements between the one to be replaced and the opening giving access to the channel must be removed and then reinserted in the right order, in the same way as when a mistake is made during assembly.

[0025] Against this background, the present invention has for its basic object to provide an element used to make mechanisms to operate mobile door or window frames that overcomes the above mentioned disadvantages.

[0026] Another object of the present invention is to provide an element for making mechanisms used to operate mobile door or window frames which can be installed rapidly.

[0027] In particular, the aim of this invention is to provide an element for making mechanisms used to operate mobile door or window frames which allows assembly mistakes to be remedied quickly and easily and which enables the rapid replacement of parts when repairs are carried out.

[0028] Yet another aim of this invention is to provide an element for making mechanisms used to operate mobile door or window frames which does not require any additional operation to be carried out on the mobile frame during installation.

[0029] Another object of this invention is to provide a method for assembling a set of elements for making mechanisms used to operate mobile door or window frames having perimetric guide channels to allow quick and easy installation.

[0030] The above mentioned aims are essentially achieved by an element for making mechanisms to operate mobile door or window frames as described in claims 1 to 4.

[0031] The above mentioned aims are also essentially achieved by a method for assembling a set of elements for making mechanisms to operate mobile door or window frames, as described in claims 5 to 9.

[0032] Further characteristics of the invention and its advantages are apparent from the following detailed description of a number of preferred embodiments, provided purely by way of example and without restriction, of an element for making mechanisms to operate mobile door or window frames with reference to the accompanying drawings, in which:

Figure 1 shows a cross section of a first embodiment of an element for making mechanisms to operate mobile door or window frames while it is being inserted in a guide channel;

Figure 2 shows a cross section of the element illustrated in Figure 1 engaged in the channel;

Figure 3 shows a cross section of a second embodiment of an element for making mechanisms to operate mobile door or window frames while it is being inserted in a guide channel;

Figure 4 shows a cross section of the element illustrated in Figure 3 engaged in the channel;

Figure 5 illustrates a section of the element through the line V - V shown in Figure 3;

Figure 6 shows a cross section of a third embodiment of an element for making mechanisms to operate mobile door or window frames while it is being inserted in a guide channel;

Figure 7 shows a cross section of the element illustrated in Figure 6 engaged in the channel.

[0033] With reference to the accompanying drawings,

the numeral 1 denotes in its entirety an element for making mechanisms to operate mobile door or window frames according to the present invention and the numeral 2 denotes a guide channel made in the mobile frame of the door or window.

[0034] The element 1 comprises a body 3 and at least two tongues 4 connected to the body 3, one on each side, and designed to engage the channel 2.

[0035] Advantageously, if the element 1 has an elongated shape, more than one pair of tongues 4 can be fitted in different transverse sections of the body 3; alternatively, only two, elongated tongues 4 can be provided.

[0036] In a first embodiment (illustrated in figures 1 and 2), at least one portion of the body 3 comprising at least one of the tongues 4 is made of a material with elastic properties, to allow the element 1 to be pressed into the channel 2 in a direction substantially perpendicular to the direction in which the channel 2 extends.

[0037] Advantageously, according to the embodiment illustrated, the body 3 and the tongues 4 are all made of the same elastic material thereby enhancing the elastic properties of the element.

[0038] Notches 5 can also be made in both the body 3 and the tongues 4 for this purpose.

[0039] In a second embodiment (illustrated in figures 3, 4 and 5) at least one of the tongues 4 is capable of moving from a disengagement position (figure 3) in which it is in line with the body 3 to an engagement position (figure 4) in which it protrudes from the body 3, thereby allowing the element 1 to be inserted in and engage the guide channel 2.

[0040] As shown in more detail in Figure 5, at least one of the tongues 4 comprises an engagement portion 6 which is rotatably connected to the body 3 and which is capable of turning from a disengagement position in which it is in line with the body 3, to an engagement position in which at least one of its parts protrudes laterally from the body 3 (illustrated by a dashed line in figure 5).

[0041] The element 1 also comprises operating means 7 connected to the engagement portion 6 and actuated manually to move the engagement portion 6 from the disengagement position to the engagement position.

[0042] The operating means 7 comprise a rod 8 connected at one end to the pivot end of the engagement portion 6, and a handgrip 9 keyed to the other end of the rod 8.

[0043] According to the embodiment illustrated, the engagement portion 6 comprises both the tongues 4, and the engagement portion 6 protrudes laterally from the body 3 on both sides. In this way, both the tongues 4 can be moved and protrude from the body 3 when the engagement portion 6 is moved into the engagement position.

[0044] In a third embodiment (illustrated in figures 6 and 7) at least one of the tongues 4 is capable of moving from a disengagement position (figure 6) in which it is

in line with the body 3 to an engagement position (figure 7) in which it protrudes from the body 3, thereby allowing the element 1 to be inserted in and engage the guide channel 2.

[0045] According to the embodiment illustrated, the moving tongue 4 is slidably connected to the body 3, and capable of moving transversally with respect to the body 3, from a disengagement position in which it is in line with the body 3 to an engagement position in which it protrudes from the body 3.

[0046] The element 1 also comprises operating means 7 connected to the tongue 4 and actuated manually to move the tongue 4 from the engagement position to the disengagement position.

[0047] The operating means 7 comprise a lug 10 connected perpendicularly to one end of the tongue 4, passing through the body 3 and designed to be actuated manually at the other end.

[0048] According to this embodiment, the element 1 also advantageously comprises at least one spring 11 acting on the tongue 4 in order to keep the tongue 4 in the engagement position and to prevent any stress being exerted on the operating means 7 during manual operation.

[0049] According to the embodiment illustrated in Figures 6 and 7, both tongues are advantageously slidably connected to the body and operated by operating means.

[0050] The element according to the present invention functions in the following manner.

[0051] To assemble, the element 1 is placed on one of the guide channels 2, in a direction substantially perpendicular to the channel 2. The tongues are then moved until they engage the protrusions in the channel 2.

[0052] In particular, when the element 1 is assembled according to the first embodiment, it is placed on at least one of the protrusions of the channel 2, and then pressed into the channel 2, simultaneously deforming at least one of the tongues 4. Due to the pressure exerted on the element against the guide channel, the tongues 4 are deformed so that the element can be passed through the opening in the guide channel 2. Once the element 1 has been inserted in the channel 2, the tongues 4 are elastically restored to their original shape and engage the channel 2.

[0053] To assemble an element 1 according to the second embodiment, the handgrip 9 must first be operated to turn the engagement portion 6 until it reaches the disengagement position in which the tongues 4 are in line with the body 3.

[0054] The element 1 is then pushed onto the bottom of the channel 2. Next, the handgrip 9 is operated to turn the engagement portion 6 until it reaches the engagement position. In this way, the element 1 engages the channel 2.

[0055] To assemble an element 1 according to the third embodiment, the lugs 10 are first operated, so that

the tongues 4 move into the disengagement position. The element 1 is then pushed onto the bottom of the channel 2. By operation of the spring 11, the tongues 4 return to the engagement position and the element 1 engages the channel 2.

[0056] This invention has a number of important advantages.

[0057] By virtue of the characteristics of the element according to this invention allowing it to be inserted in a channel in a direction substantially perpendicular to the channel, the elements can be fitted in the channel in any order regardless of the position required for the mechanism to operate correctly.

[0058] In this way, elements made according to this invention can be installed rapidly.

[0059] If the operator makes a mistake when installing the mechanism, the mistake can be corrected easily if the elements made according to this invention have been used. Thus, the elements can be extracted from or inserted into the channel without moving those that have already been fitted correctly.

[0060] Maintenance operations involving the replacement of one or more elements can be carried out in the same way.

[0061] Another advantage offered by the installation method according to the present invention, is that the entire mobile frame with the operating mechanisms fitted can be assembled without having to carry out any operation directly on the mobile frame itself.

[0062] The present invention is also simple to construct and the costs of carrying out the invention are not high.

[0063] The invention described can be subject to numerous modifications and variations without thereby departing from the scope of the inventive concept.

[0064] All the details of the invention may be substituted by technically equivalent elements and in practice, the element according to the invention can be made of any material and in any size, depending on requirements.

Claims

1. An element for making mechanisms to operate mobile door or window frames having perimetric guide channels (2) in them, the element being of the type comprising a body (3) and at least two tongues (4) connected to the body (3) and designed to engage the guide channels (2), and being **characterised in that** at least one portion of the body (3) comprising at least one of the tongues (4) is capable of being deformed elastically so that the element can be pressed into one of the channels (2) in a direction substantially perpendicular to the direction in which the channel (2) extends.
2. An element for making mechanisms to operate mo-

- bile door or window frames having perimetric guide channels (2) in them, the element being of the type comprising a body (3) and at least two tongues (4) connected to the body (3) and designed to engage the guide channels (2), and being **characterised in that** at least one of the tongues (4) is capable of moving from a disengagement position in which it is in line with the body (3) to an engagement position in which it protrudes from the body (3), thereby allowing the element (1) to be inserted into and engage the guide channels (2).
3. The element according to claim 1, **characterised in that** at least one of the tongues (4) is made of an elastically deformable material.
 4. The element according to claim 2, **characterised in that** at least one of the tongues (4) comprises an engagement portion (6) which is rotatably connected to the body (3) and which is capable of rotating from a disengagement position in which it is in line with the body (3), to an engagement position in which at least one of its parts protrudes laterally from the body (3).
 5. The element according to claim 4, **characterised in that** the element also comprises operating means (7) connected to the engagement portion (6) and used to move the engagement portion (6) from the disengagement position to the engagement position.
 6. The element according to claim 5, **characterised in that** the control device (7) comprises a rod (8) connected at one end to the pivot end of the engagement portion (6), and a handgrip (9) keyed to the other end of the rod (8).
 7. The element according to claim 2, **characterised in that** at least one of the tongues (4) is slidably connected to the body (3), the tongue (4) being capable of moving transversally with respect to the body (3) from a disengagement position in which it is in line with the body (3) to an engagement position in which it protrudes from the body (3).
 8. The element according to claim 7, **characterised in that** the element also comprises operating means (7) connected to the tongue (4) used to move the tongue (4) from the disengagement position to the engagement position.
 9. The element according to claim 8, **characterised in that** the operating means (7) comprise a lug (10) connected perpendicularly to one end of the tongue (4), passing through the body (3) and designed to be actuated manually at the other end, and at least one spring (11) acting on the tongue (4) in order to keep the tongue (4) in the engagement position.
 10. A mobile frame for a door or window with perimetric guide channels (2) made in the edge of it to accommodate operating mechanisms, each constituted by an element of the type comprising a body (3) and at least two tongues (4) connected to the body (3) and designed to engage the guide channels (2), the frame being **characterised in that** each element has the characteristics according to claims 1 and 3.
 11. A mobile frame for a door or window with perimetric guide channels (2) made in the edge of it to accommodate operating mechanisms, each constituted by an element of the type comprising a body (3) and at least two tongues (4) connected to the body (3) and designed to engage the guide channels (2), the frame being **characterised in that** each element has the characteristics according to claim 2 and claims 4 to 9.
 12. A method for assembling a set of elements each having a body (3) and at least two tongues (4) connected to the body (3) to make mechanisms for operating mobile door or window frames having perimetric guide channels (2) in them formed by at least two opposing protrusions into which the elements are designed to be inserted, the method being **characterised in that** it comprises the steps of placing each of the elements on one of the channels (2) in a direction substantially perpendicular to the channel (2), and moving the tongues (4) in such a way that they engage the protrusions of the channels (2).
 13. The method according to claim 12, **characterised in that** the step of placing each element on a channel (2) is achieved by resting the element on at least one of the protrusions of the channel (2), and **in that** the step of moving the tongues (4) until they engage the protrusions of the channels (2) comprises a step of inserting the element into the channel by temporarily deforming at least one of the tongues (4).
 14. The method according to claim 12, **characterised in that** the step of placing each element on a channel (2) is achieved by pushing the element onto the bottom of the channel (2), and **in that** the step of moving the tongues (4) until they engage the protrusions of the channels (2) comprises a step of making at least one of the tongues (4) protrude laterally from the body (3).
 15. The method according to claim 13, **characterised in that** the step of making the tongues (4) protrude is achieved by turning an engagement portion (6) that is rotatably connected to the body (3) from a disengagement position in which it is in line with the

body (3) to an engagement position in which at least one of its parts protrudes laterally from the body (3) and engages the protrusions of the channel (2).

16. The method according to claim 13, **characterised in that** the step of making the tongues (4) protrude is achieved by causing at least one of the tongues (4) to slide transversely with respect to the body (3) from a disengagement position in which it is in line with the body (3) to an engagement position in which it protrudes laterally from the body (3) and engages the protrusions of the channel (2).

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FIG. 1

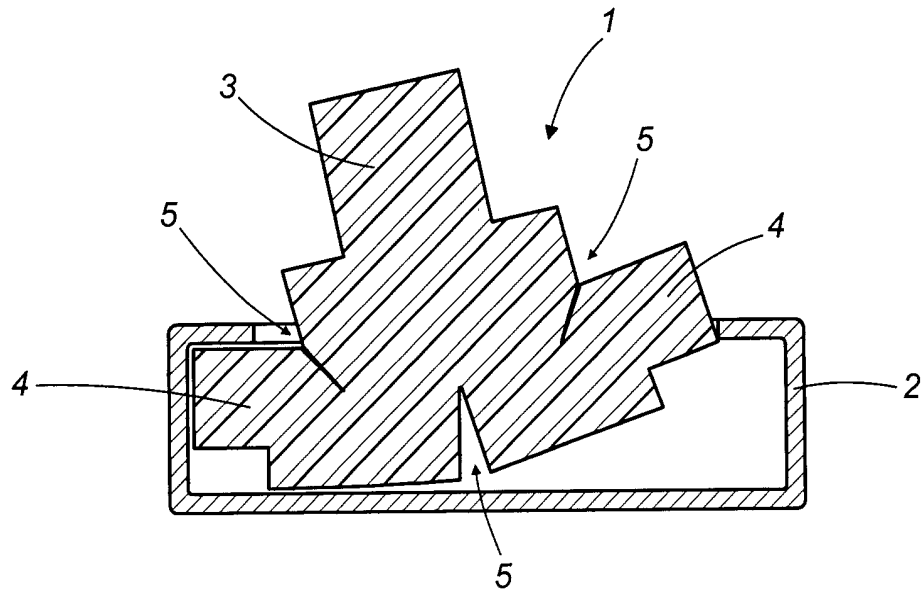
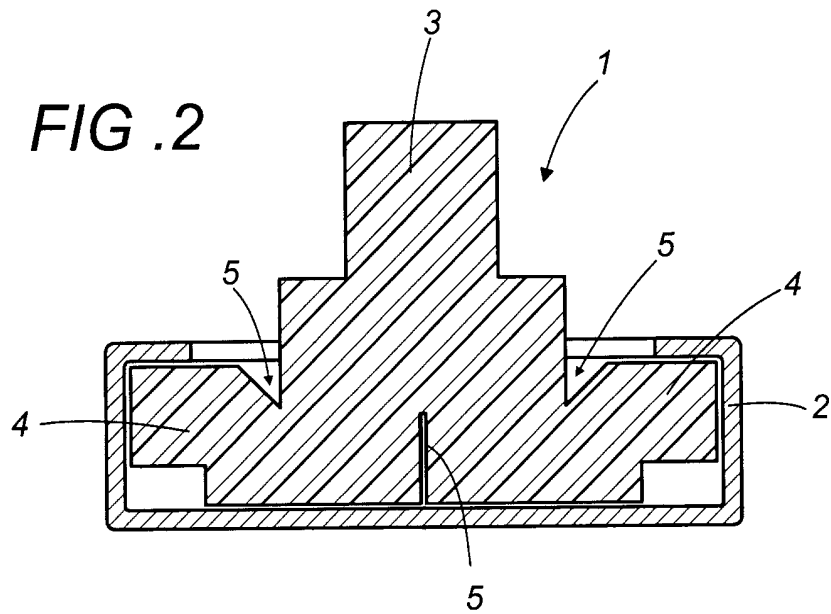


FIG. 2



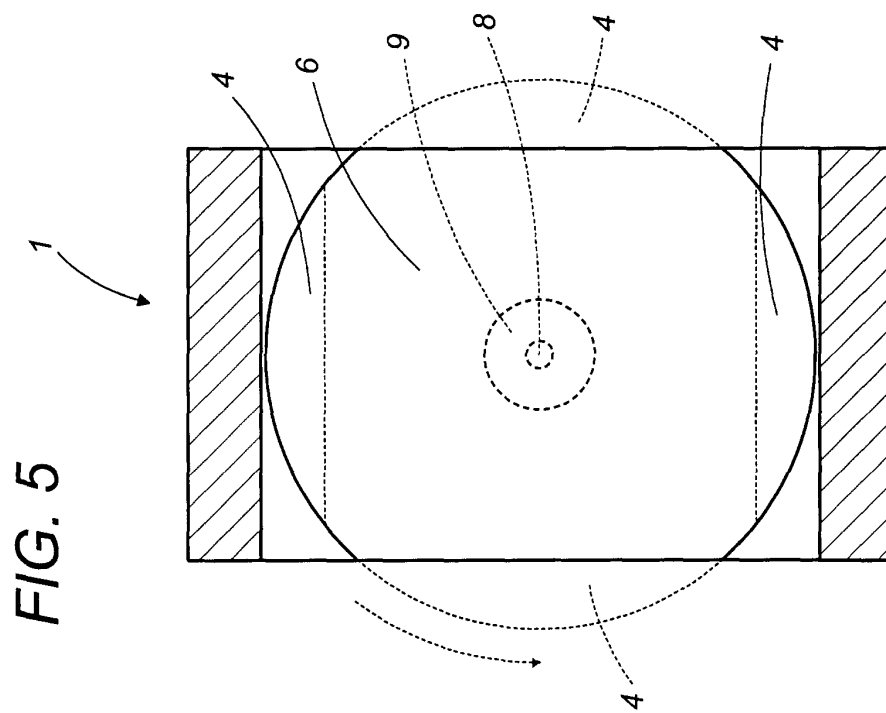
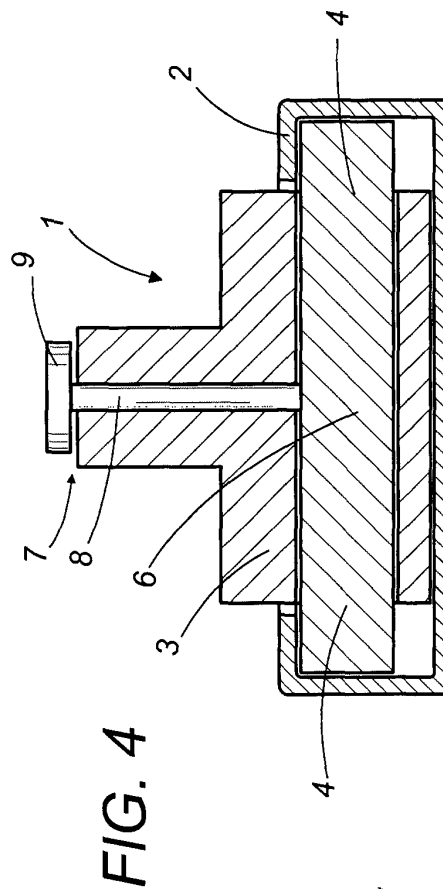
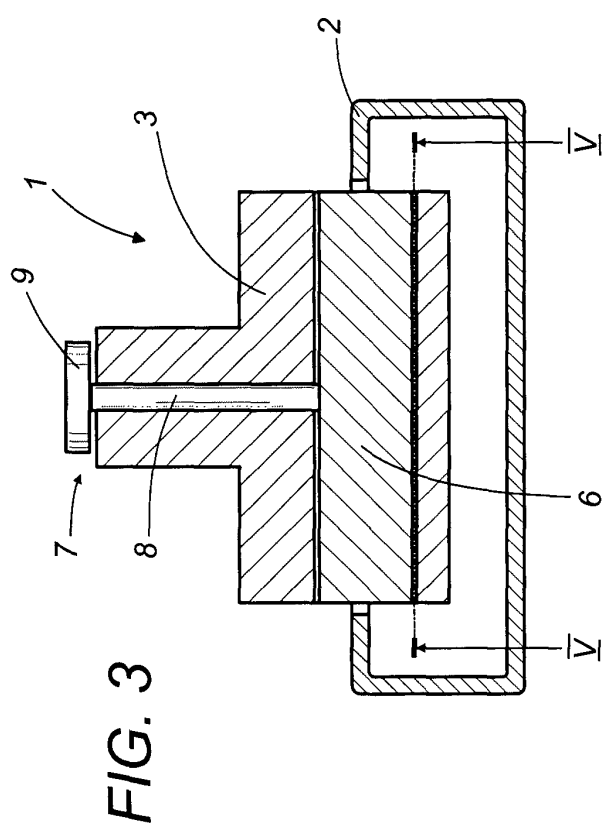


FIG. 6

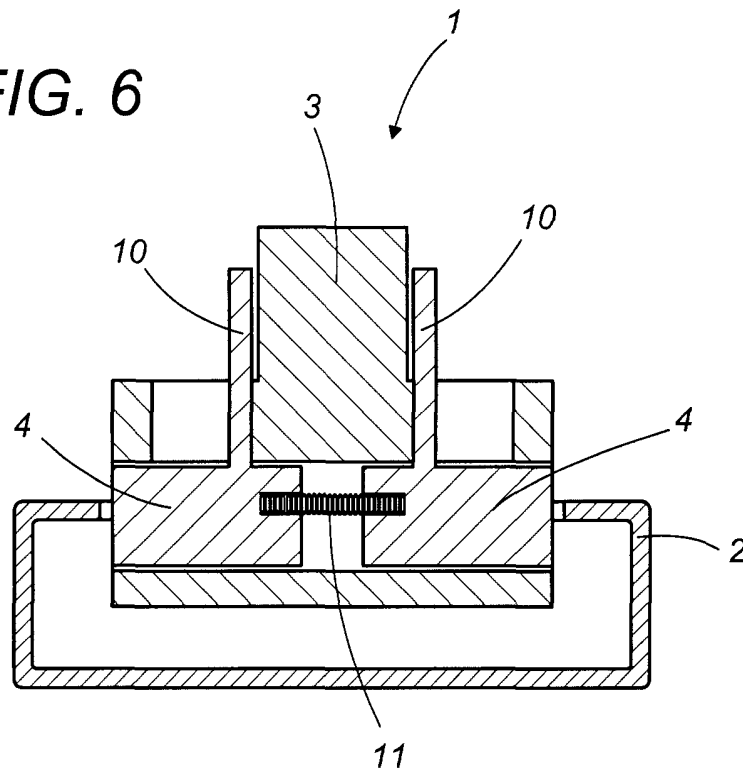
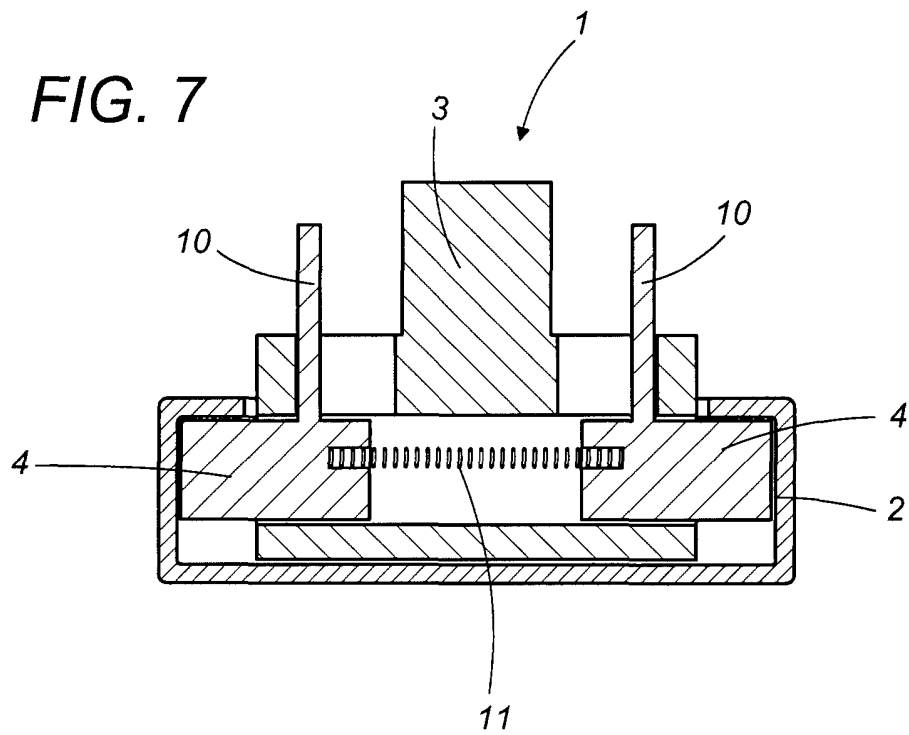


FIG. 7





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EPC FORM 1503 03 82 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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