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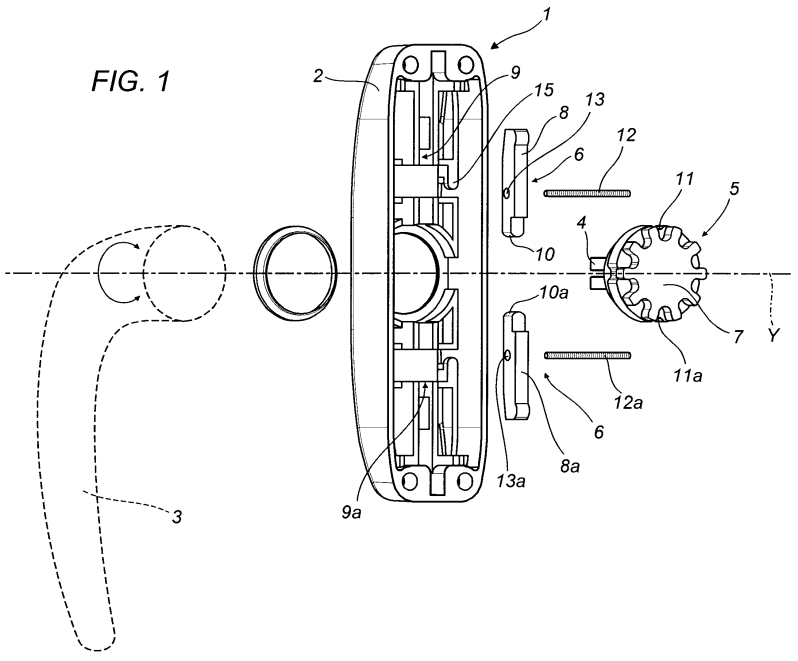
(54) A handle for doors and windows

(57) A handle for doors or windows comprising: a handle body (2) applicable to the door or window frame; a handgrip (3) for turning a spindle (4) housed in the handle body (2) from a first to a second position and vice versa; operating means (5) engageable with a device for closing the door or window and mobile between the two positions; means (6) for stabilising the position of the handgrip (3), positioned in the handle body (2) and operating on a pinion (7) associated with the spindle (4) in such a way as to stop the handgrip (3) at the two positions; the means (6) comprising a slider element (8) which runs in a respective channel (9) made in the handle body (2) and which has an end head (10) designed to engage one of a plurality of reference indentations (11) made around the outer edge of the pinion (7); a leaf-spring-like elastic element (12) for actuating the slider (8), fitted inside the handle body (2) and acting on the slider (8) in such a way as to cause the slider (8) to retract, thereby moving the head (10) away from the indentation (11), when the pinion (7) is turned, and to cause the slider (8) to advance when the head (10) engages another indentation (11).

FIG. 1



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Description

[0001] The present invention relates to a handle for doors and windows.

[0002] At present handles for doors and windows, in particular doors and windows with frames made of metal, wood, synthetic materials or the like are divided into two main categories: handles for "exterior" units (doors, French windows, windows) and handles for "interior" units (for example, doors separating communicating rooms).

[0003] The most widely used handles for exterior units are handles of the Cremone type which comprise a handle body (normally prismatic in shape, with or without rounded edges and with central protruding bush for coupling with the handgrip). The handgrip protrudes from one side of the handle body, while the means for actuating the device that closes the door or window protrude from the other side of the handle body.

[0004] Several different Cremone handle designs have been developed from this basic structure (such as, for example, patent EP-446.566, patent IT-1.285.897 and utility model IT-234.079, all in the name of this Applicant) in order to adapt the Cremone handle to different types of door and window units: bidirectional (right- or left-hand turning) or multipurpose handles, handles with locking handgrip, handles for bottom- or top-hung windows, handles for tilt and turn doors or windows, with safety lock. Another example is the need to use the handle on outward opening door and window units, where it is essential for the external dimensions of the handle to be limited in height without reducing the efficiency and reliability of the other functions mentioned above, as in the solution adopted by this Applicant in patent application EP-1.036.899.

[0005] The commercial popularity of these handles has therefore led to the development of a large number different designs. To these must be added the traditional designs for interior applications which differ from the Cremone handles described above in the technical characteristics of their component elements (the main difference being that the operating elements are recessed in the door frame) which means they cannot be substituted by Cremone handles as known up to now.

[0006] In the above mentioned solutions, therefore, it is very common not only for the basic elements to be diversified but also the technical details such as the means for locking the handle, the devices for controlling the operating units, the position of the handgrip, etc., in accordance with the technical and aesthetic requirements and/or the size of the handle.

[0007] A typical example, of specific relevance to this invention, regards the reference part or parts for stabilising or stopping the handgrip when it reaches the side-hung open, the tilted open or the closed position.

[0008] For this purpose, one of the solutions devised for traditional Cremone handles (again, see patent EP 446.566 to this Applicant) uses a disc retained by a spring housed in a seat defined by the central bush of the handle body. The spring means are fitted coaxially around the spindle, whilst the disk breasts a drive pinion and has a number of indented radial surfaces that match corresponding teeth made on the breasted surface of the pinion in such a way that the handgrip snaps into a stable position as it is turned from a first to a second or other position and vice versa.

[0009] In other types of handle, where the above solution cannot be used on account of the shape and size of the handle body, other solutions have been adopted, including snap positioning means acting on the pinion and fitted directly in the handle body which affords specially made seats for this purpose.

[0010] In one of these solutions, these means comprise at least one pair of elastic elements, positioned on each side of the pinion and affording at least one protrusion or tooth to enable them to snap securely into a fixed position into each of respective reference indentations made at angular intervals around the pinion. Thus, when the handgrip is turned, the tooth is pushed out of one indentation and into the previous or next one to define an open or closed position of the door or window.

[0011] The solution just described, however, is not free of disadvantages, due in particular to the following:

- the constructional complexity of the elastic means and of the related seats to accommodate them;
- the labour-intensive procedures required to fit them to the handle body;
- the low level of reliability over time, given the particular configurations of the elastic means;
- the cost of the elements in relation to the type of product are high and not commensurate with all handle designs.

[0012] The aim of this invention is, therefore, to overcome the above mentioned disadvantages by providing a handle for doors and windows with means for positioning the handgrip that are structurally simple, reliable over time and quick and easy to fit.

[0013] According to the invention, the above mentioned aim is achieved by a handle for doors and windows comprising: a handle body applicable to the door or window frame; a handgrip for turning a spindle housed in the handle body from a first to a second position and vice versa; operating means engageable with a device for closing the door or window and mobile between the two positions; means for stabilising the position of the handgrip, positioned in the handle body and operating on a pinion associated with the spindle in such a way as to stop the handgrip at the two positions; these means comprising a slider element which runs in a respective channel made in the handle body and which has an end head designed to engage one of a plurality of reference indentations made around the outer edge of the pinion; a leaf-spring-like elastic element for actuating the slider, fitted inside the handle body and acting on the slider in such

a way as to cause the slider to retract, thereby moving away from the head and the indentation, when the pinion is turned, and to cause the slider to advance when the head engages another indentation.

[0014] The technical characteristics of the invention, with reference to the above aims, are clearly described in the claims below and its advantages are apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is a perspective exploded view, with some parts cut away in order to better illustrate others, of a handle for doors and windows according to the invention;
- Figures 2 and 3 are scaled-up plan views, from below, with some parts cut away, of the handle of Figure 1 in two different operating configurations. With reference to the accompanying drawings, in particular Figure 1, the handle according to the invention is applicable to doors, windows, French windows of numerous different kinds, whether for interior or exterior applications, which are not illustrated since they are of well-known type and do not fall within the scope of the invention.

[0015] As shown in Figure 1, the basic components of the handle, which is labelled 1 in its entirety; are the following:

- a handle body 2 applicable to the door or window by customary means which are not illustrated since they do not fall within the scope of the invention;
- a handgrip 3 protruding from one side of the handle body 2 and designed to rotate a spindle 4, which is at least partially housed in the handle body 2, about an axis Y transversal to the handle body 2 itself, from at least a first to a second position and vice versa (the handgrip 3 being drawn with a broken line in Figure 1);
- operating means 5, partially protruding from the other side of the handle body 2, said means being engageable by their free ends with a device for closing the door or window and being mobile between the first and second positions corresponding to at least one open configuration and one closed configuration of the door or window (the protruding part of the operating means is not illustrated since it is of known type and does not fall within the scope of the invention);
- means 6, housed in the handle body 2, for stabilising the position of the handgrip 3 and operating on a pinion 7 associated with the spindle 4; the pinion 7 forms part of the aforementioned operating means 5 and are designed to stop the handgrip 3 at the aforementioned first and second positions.

[0016] Obviously, the positions that can be adopted by the handgrip 3 may be more than two: for example, three in the case of tilt and turn doors and windows, without thereby departing from the spirit of the invention.

[0017] As shown also in Figures 2 and 3, the stabilising means 6 comprise at least the following:

- a slider element 8 positioned in the vicinity of the pinion 7, slidably housed in a respective channel 9 made in the handle body 2 having an end head 10 designed to engage one of a plurality of indentations 11 for referencing the handle positions and made around the outer edge of the pinion 7;
- a leaf-spring-like elastic element 12 for actuating the slider 8 fitted inside the handle body 2 and associated with the slider 8 in such a way as to cause the slider 8 to retract, thereby moving the head 10 away from the indentation 11 by bending the leaf-spring-like elastic element 12 (see arrow F, Figure 2) when the pinion 7 is turned (see arrow F2, Figure 2) and to cause the slider 8 to advance, thanks to the spring action of the leaf-spring-like elastic element 12, when the head 10 engages another indentation 11 (see arrow F1, Figure 3).

[0018] As shown in Figures 1, 2 and 3, the optimum configuration of the stabilising means 6 is that with two slider elements 8 and 8a positioned on opposite sides of the pinion 7 in respective channels 9 and 9a. The elements 8 and 8a have respective end heads 10 and 10a that engage respective indentations 11 and 11a afforded by the pinion 7.

[0019] It follows that the invention also contemplates the provision of two leaf-spring-like elastic elements 12 and 12a, fitted in the handle body 2, for operating the respective slider elements 8, 8a as described above.

[0020] In the preferred, non restricting embodiment illustrated, the pinion 7 has four indentations 11 arranged at equal angular intervals α of 90°; these indentations, labelled 11, 11a, 11b and 11c, are engageable, in opposite pairs, by the aforementioned end heads 10 and 10a and define a firm stop for the handgrip 3.

[0021] Looking more closely at the technical details, each leaf-spring-like elastic element 12 and 12a is associated with the slider element 8 and 8a by a coupling in a through hole 13, 13a made in the slider element 8, 8a in such a way that each leaf-spring-like elastic element 12 and 12a is positioned transversally of the respective slider element 8, 8a.

[0022] More specifically, each leaf-spring-like elastic element consists of a leaf-spring-like helical spring 12, 12a forming a kind of cylindrical pin.

[0023] The ends of each of the leaf-spring-like helical springs 12, 12a rest on two respective protrusions 14 and 15 made on the handle body 2 on each side of each of the channels 9, 9a that slidably houses the respective slider elements 8, 8a.

[0024] More specifically, the two protrusions 14, 15,

for each spring 12, 12a consist of two upturned L-shaped bridges made on the handle body 2 which form two supporting points for the respective leaf-spring-like element 12, 12a and which, together with the slider elements 8, 8a, constitute fastening points for each spring 12, 12a.

[0025] A handle made as described above fully achieves the aforementioned aims thanks to a unit for stabilising the handle positions that has the following positive features:

- constructional simplicity;
- universal applicability, which means it can be fitted to a wide range of handle types without altering the basic structure and design of the handle;
- significantly reduced manufacturing and assembling costs, given the type of parts used to make the handle.

[0026] Indeed, the use of a cylindrical leaf-spring-like element combined with a slider arranged in pairs on each side of the pinion confers a high level of reliability over time and permits quick and easy assembling and dismantling of handle parts, all at a reasonable cost that is commensurate with the type of accessory that can be made with the solution according to the invention.

[0027] It will be understood that the invention described may be useful in many industrial applications and may be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. A handle for doors or windows, the handle (1) being of the type comprising:

   - a handle body (2) applicable to the door or window frame;
   - a handgrip (3) protruding from one side of the handle body (2) and designed to rotate a spindle (4), which is at least partially housed in the handle body (2), about an axis (Y) transversal to the handle body (2) itself, from at least a first to a second position and vice versa;
   - operating means (5), partially protruding from the other side of the handle body (2), said means being engageable by their free ends with a device for closing the door or window and being mobile between the first and second positions corresponding to at least one open configuration and one closed configuration of the door or window;
   - means (6), housed in the handle body (2), for stabilising the position of the handgrip (3) and operating on a pinion (7), associated with the spindle (4) and forming part of the aforementioned operating means (5), in such a way as to stop the handgrip (3) at the aforementioned first and second positions, the handle (1) being **characterised in that** the stabilising means (6) comprise at least the following:
   - a slider element (8) positioned in the vicinity of the pinion (7), slidably housed in a respective channel (9) made in the handle body (2) and having an end head (10) designed to engage one of a plurality of indentations (11) for referencing the handle positions, the indentations (11) being made around the outer edge of the pinion (7);
   - a leaf-spring-like elastic element (12) for actuating the slider (8), fitted inside the handle body (2) and associated with the slider (8) in such a way as to cause the slider (8) to retract, thereby moving the head (10) away from the indentation (11) by bending the leaf-spring-like elastic element (12) when the pinion (7) is turned and to cause the slider (8) to advance, thanks to the spring action of the leaf-spring-like elastic element (12), when the head (10) engages another indentation (11).

2. The handle according to claim 1, **characterised in that** the stabilising means (6) comprise at least the following:

   - two slider elements (8, 8a) positioned on opposite sides of the pinion (7) in respective channels (9, 9a) and having respective end heads (10, 10a) that engage respective indentations (11, 11a) afforded by the pinion (7);
   - two leaf-spring-like elastic elements (12, 12a), fitted in the handle body (2), for operating the respective slider elements (8, 8a).

3. The handle according to claim 1 or 2, **characterised in that** each leaf-spring-like elastic element (12, 12a) is associated with the slider element (8, 8a) by a coupling in a through hole (13, 13a) made in the slider element (8, 8a) in such a way that each leaf-spring-like elastic element (12, 12a) is positioned transversally of the respective slider element (8, 8a).

4. The handle according to claim 1, **characterised in that** each leaf-spring-like elastic element consists of a helical spring (12, 12a) forming a kind of cylindrical pin.

5. The handle according to claim 1 or 2, **characterised in that** each the ends of each of the leaf-spring-like elastic elements (12, 12a) rest on two respective protrusions (14, 15) made on the handle body (2) on each side of each of the channels (9, 9a) that slidably houses the respective slider elements (8, 8a).

6. The handle according to claim 5, **characterised in that** the two protrusions (14, 15) consist of two upturned L-shaped bridges made on the handle body (2) which form two supporting points for the respective leaf-spring-like elastic element (12, 12a) and which, together with the slider elements (8, 8a), constitute fastening points for each leaf-spring-like elastic element (12, 12a).

7. The handle according to claim 1 or 2, **characterised in that** the pinion (7) has four indentations (11) arranged at equal angular intervals (α) of 90°; these indentations (11, 11a, 11b 11c) being engageable in pairs by the end heads (10, 10a) and defining a firm stop for the handgrip (3) in the first and second positions.

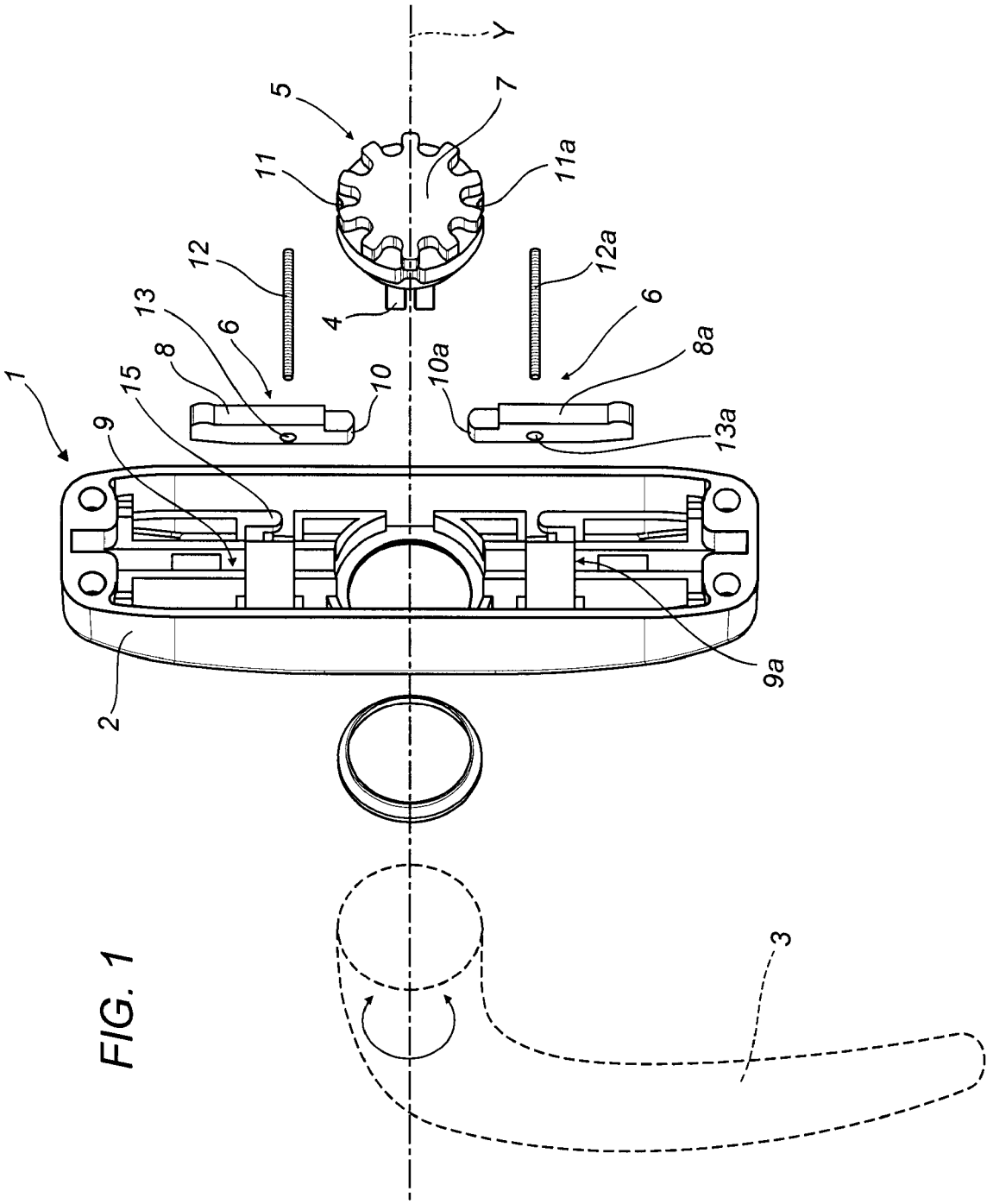


FIG. 1

FIG. 2

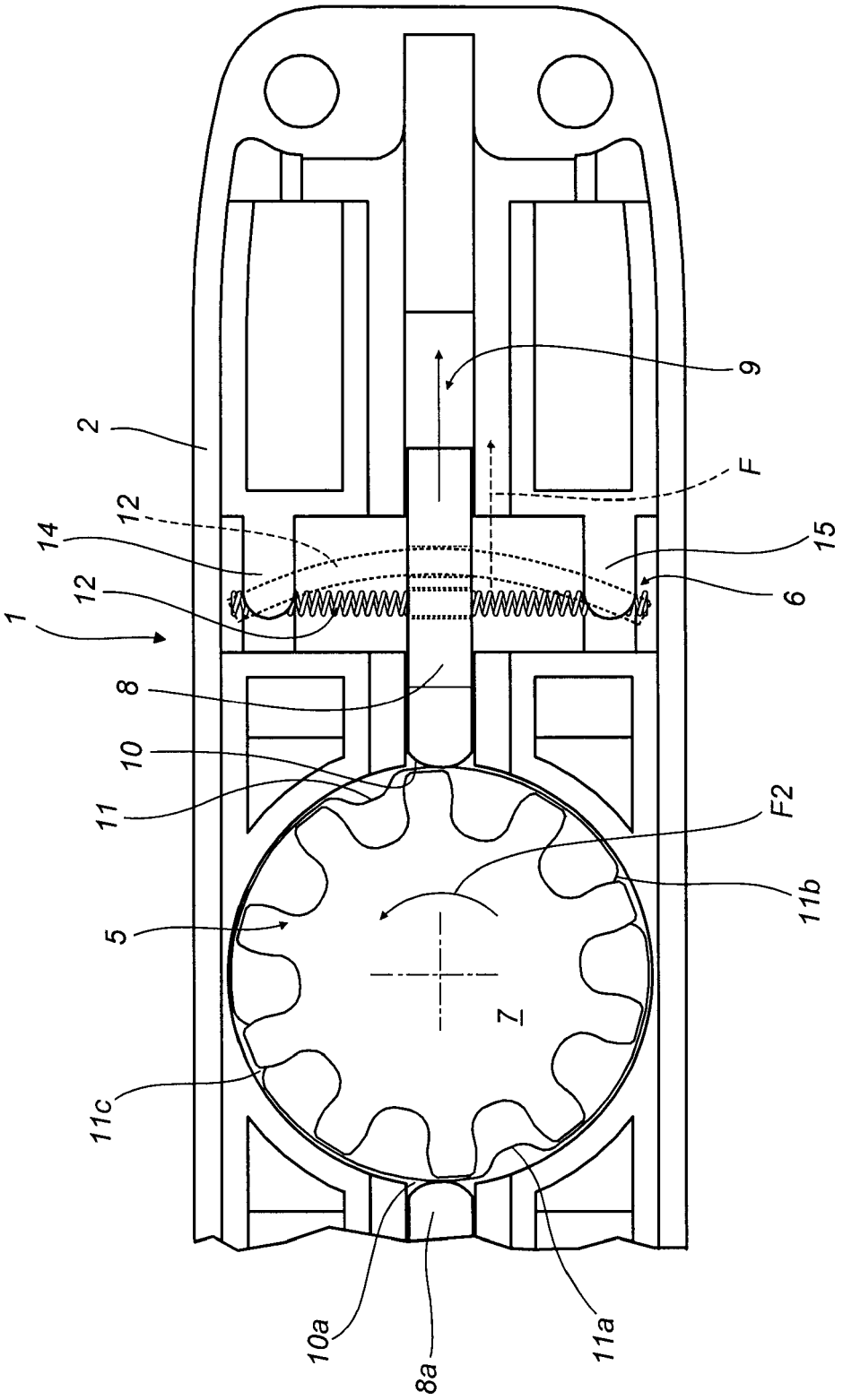
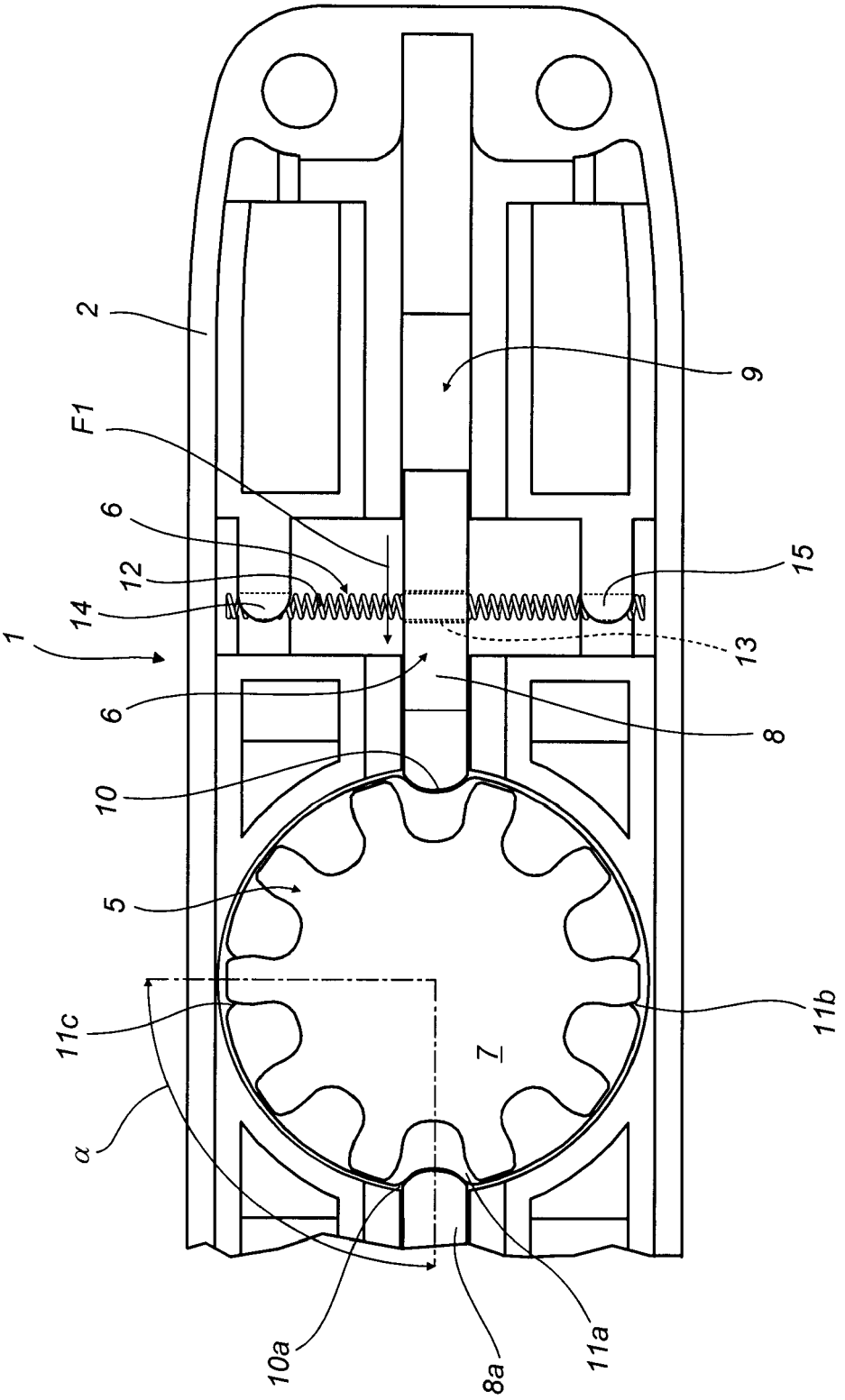


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 9489

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 89 01 938 U1 (GEBRUEDER GOLDSCHMIDT BAUBESCHLAEGE GMBH, 5628 HEILIGENHAUS, DE) 13 April 1989 (1989-04-13) * the whole document *	1	E05B3/06 E05B15/04 E05C9/12
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A	DE 34 02 089 A1 (GEBRUEDER GOLDSCHMIDT BAUBESCHLAEGE GMBH) 1 August 1985 (1985-08-01) * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC) E05B E05C
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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	28 February 2006	Westin, K

CATEGORY OF CITED DOCUMENTS

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