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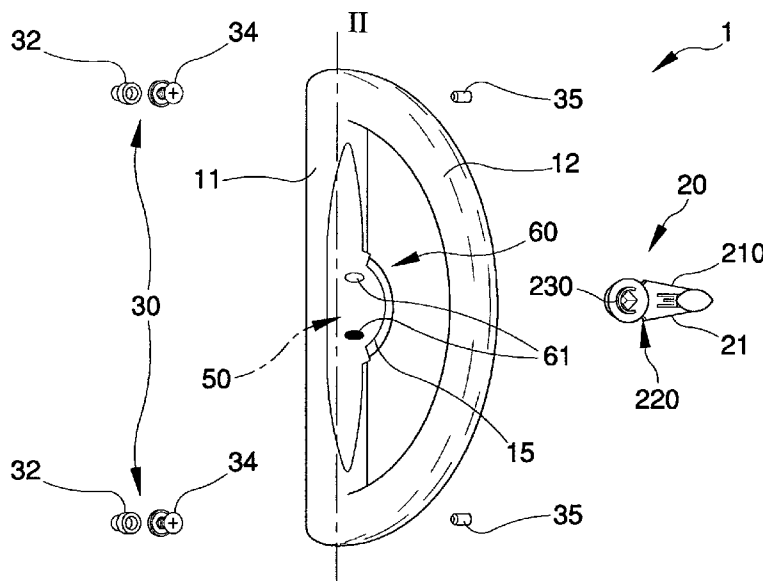
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(54) Title: HANDLE



(57) Abstract: A handle (1) for a leaf (2) provided with a locking device (50) suitable to selectively connect in a substantially rigid manner the leaf (2) to a respective frame (3); the handle (1) comprising a handgrip (12) provided with a base (11) integrally couplable to a flat face of the respective leaf (2), a control device (20) carried by the base (11) and interfaceable with the locking device (50) to switch selectively the locking device (50) between respective closing and opening operative positions of the leaf (2); an anchoring device (30) (330) for coupling the handgrip (12) to the leaf (2); the control device (20) and the anchoring device (30) (330) being coupled to the base in a manner that is stable, selectively releasable and reassemblable at will, in order to allow maintenance operations safeguarding the functionality of the control device and of the anchoring device (30) (330).

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HANDLE

DESCRIPTION

The present invention relates to a handle. More in particular, the present invention relates to a handle for leaves, preferably sliding leaves. More in particular, the present invention relates to a handle for leaves, preferably sliding leaves, provided with a control member for controlling a locking device.

BACKGROUND TO THE INVENTION

In the field of hardware for windows, doors and the like, with particular reference to sliding doors and leaves, the use of handles provided with a control member is well known, this control member being manually operatable and suitable to reversibly switch a chain or a locking device from and towards a closing operative position in which the sliding leaf is fixed with reference to the respective frame. Examples of these handles can be traced in patent literature as from the early 1960s, while some more recent embodiments are described in the documents US5092144, US2004/0079123 or US6945572 belonging to different United States manufacturers specialising in the field of hardware for windows, doors and the like. In use, the aforesaid solutions have proved to be effective, but all present the disadvantage of comprising a significant number of mechanical components, even of small dimensions, and are therefore characterized by considerable complexity in installing the handle, with consequent costs for the final user in terms of time and expense. To overcome this problem, attempts have been made to produce simplified handles, comprising a limited number of components, which are pre-assembled during the manufacturing phase in order to reduce installation times and expenses for the final user. An example of this type of handle is the "VERSUS" model by the French manufacturer SOTRALU, in which a control lever carried in a freely rotatable manner by the handle presents

a toothed end thereof to control the longitudinal motion of a rack. This rack can for instance be connected to one or more rods for movement of a chain or a plurality of chains of a multipoint locking device. The "VERSUS" handle is
5 extremely compact and simple to install, but it presents two disadvantages: firstly, the "toothed lever + rack" control mechanism is not universal and can only be used in combination with a limited number of closing devices, typically manufactured by SOTRALU; moreover, the need to
10 pre-install economically the control mechanism and the anchoring device for anchoring to the leaf, through a permanent assembly solution, together with the impossibility of decoupling and subsequently recoupling these components without damaging them, and thus leaving no trace of this
15 operation, makes operations to paint and customise the external appearance of the handle impossible, both prior to the first installation and for overhauling after a more or less prolonged use. In fact, the painting processes, especially those performed with powder paint which require
20 subsequent baking, tend to clog the slot, inside which the control lever moves, and, even after residual paint has been removed, prevent correct operation of the control mechanism. For this reason the installer or final user cannot make use of industrial painting processes and is obliged to make do
25 with the limited range of colours proposed by the manufacturer. This disadvantage is clearly a severe constraint when wishing to construct modern architectural complexes characterised by a particular search for aesthetics and/or by a given integration between the
30 lighting conditions of the surrounding environment and the colours of the building materials used.

In view of the above description, the problem of producing a handle for sliding leaves which is provided with a manually actuated control member for controlling a
35 respective locking device has not currently been solved in a

satisfactory manner; this represents an interesting challenge for the applicant which has set for itself the objective of producing a handle of the type described above, which can be completely customised using the common
5 industrial painting techniques, for instance powder painting, without this jeopardising correct operation of the control device associated with the handle.

In view of the situation described above, it would also be desirable to have available a handle of the type
10 described above which can be associated with a wide range of locking devices for leaves and which is characterised, besides by a pleasant aesthetic appearance, above all by being extremely simple to install, in order to reduce costs in terms of time and expense for the final user.

In fact, a handle for sliding leaves provided with a control member for controlling the respective locking
15 device, which is characterised by the possibility of being completely customised and by being extremely simple to construct and install, could allow to overcome the typical
20 drawbacks of the prior art described above and to define a new standard for these types of handles.

SUMMARY OF THE PRESENT INVENTION

The present invention relates to a handle. More in particular, the present invention relates to a handle for
25 leaves, preferably sliding leaves. More in particular, the present invention relates to a handle for leaves, preferably sliding leaves, provided with a control member for controlling a locking device.

An object of the present invention is to construct a
30 handle provided with a handgrip, a control member for controlling a respective locking device of the respective leaf, and an anchoring device, these elements being easily couplable to and decouplable from the handgrip for installation and/or maintenance requirements, so that the
35 handle itself allows the disadvantages described above to be

solved and is suitable to satisfy a plurality of requirements that to date have still not been addressed, and therefore, suitable to represent a new and original source of economic interest and capable of modifying the current market of handles.

According to the present invention, a handle is constructed, whose main characteristics are described in at least one of the appended claims.

A further object of the present invention is to provide a method effectively usable to assemble a handle provided with a control member, for controlling a respective locking device of the respective leaf, and with an anchoring device, in a rapid and extremely simple manner.

According to the present invention a method is provided for assembling a handle, and the main characteristics of this method will be described in at least one of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the handle according to the present invention will be more apparent from the description below, set forth with reference to the accompanying drawings, which illustrate some non-limiting examples of embodiment, in which identical or corresponding parts of the device are identified by the same reference numbers. In particular:

- figure 1 is an exploded perspective view of a first preferred embodiment of a handle according to the present invention;
- figure 2 is a schematic perspective view of figure 1 rotated by 180° relative to the axis II of figure 1;
- figure 3 illustrates in enlarged scale a detail of figure 1 in a side elevation view and in a plan view;
- figure 4 is a cross sectional view of figure 1 with a median plan, in enlarged scale and with some parts removed for the sake of clarity;

- figure 5 illustrates a side portion of figure 1 in enlarged scale and with some parts removed for the sake of clarity;

- figure 6 is a perspective bottom view of a second preferred embodiment of figure 1;

- figure 7 is an exploded view of a lower central portion of figure 6; and

- figure 8 and 9 show two alternative shapes of a particular extracted from figure 6 with parts removed for the sake of clarity.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

In figure 1, number 1 indicates in its entirety a handle for a leaf 2 which is coupled to a respective frame 3 in a given fashion, for instance in a rotatable or slidable manner; the leaf 2 can be associated for instance with a door, with a window or with a wardrobe without this limiting the present invention. With particular reference to figures 1 and 2, the handle 1 is provided with a base 11 suitable to integrally couple to a flat face 4 of the leaf 2 and presenting a handgrip 12 rigidly extending from the base 11. Again with reference to figures 1 and 2, the handgrip 12 can be, preferably but without limitation, arch-shaped and it can connect opposite ends of the base 11 to each other, in such a way as to give the handle 1 an annular shape and therefore be particularly sturdy. The handle 1 is provided with a control device 20, couplable to a respective locking device 50, known and therefore not shown, through which it is possible to connect selectively and in a substantially rigid manner the leaf 2 to the frame 3 by means of the coupling between at least one chain and one projection, both known and therefore not shown. In particular, the control device 20 is suitable to control the respective locking device 50 to switch this latter between a closing operative position and an opening operative position. Furthermore, the control device 20 comprises a switching member 21 that can

be manually operated employing preferably, but without limitation, the same hand that engages the handgrip 12, without this necessarily requiring to release its grip on the handgrip 12. Furthermore, without in any way limiting
5 the generality of the present invention, the switching member 21 can be produced by means of a lever 21 carried in a freely rotatable manner by the base 11 inside a respective first seat 14, and suitable to rotate about a pivot axis 215
10 between two given operative positions which, as will be more apparent from the description below, are respectively associated with the closing operative position and with the opening operative position of the locking device 50. With particular reference to figure 3, the lever 21 presents a
15 second seat 26 positioned in proximity of a first end 25, represented on the right in figure 3, and suitable to house in a rigid and selectively releasable fashion a pin 51 at the pivot axis 215 to control, in use, a respective rotation coaxial with this axis. This pin 51 is associated with the
20 locking device 50 and is suitable to control switching of an operative position of the locking device 50 by means of a given rotation thereof. In particular, the pin 51 presents preferably, but without limitation, a cross section thereof with a substantially square shape and is shape coupled to
25 the lever 21 so that, in view of the above description, it is possible to actuate switching of the closing/opening operative position of the locking device 50 by means of a given rotation of the lever 21. The lever 21 also presents a second end 23, positioned at the opposite side to the first end 25 and to the pin 51, which extends outside the base 11
30 and is suitable to be manoeuvred by the user. With reference to figure 4, it should also be noted that the handle 1 is provided with a coupling device 10 suitable to maintain the lever 21 stably coupled to the respective first seat 14. In particular, the coupling device 10 is positioned between the
35 base 11 and the lever 21 to retain the latter inside the

respective first seat 14 in a stable and freely rotatable manner. This coupling device 10 comprises at least a bilateral elastic first coupling 40 between a first portion 28 associated with the second end 23 of the lever 21 and a
5 second portion 15 of the base 11 delimiting the first seat 14 at the opposite side to the first end 23. In particular, the second portion 15 is shaped as a circular sector concentric with the pivot axis 215 and presents each radial section thereof substantially L-shaped. More in particular,
10 the first portion 28 of the lever 21 is substantially C-shaped for substantially clamping the second portion 15 of the base 11, and presents an L-shaped first element 27 and a wedge-shaped second element 24 mutually opposite and positioned at opposite sides with respect to the second
15 portion 15. Furthermore, the wedge-shaped element 24 is carried by an elastic plate 29 and is therefore suitable to become progressively elastically deformed under the action of the second portion 15 during each step of inserting the lever 21 in the first seat 14 according to a direction
20 substantially perpendicular to the axis 215/to the pin 51. This characteristic of the second element 24 therefore allows the lever 21 to be substantially snap coupled to the base 11 and the bilateral first coupling 40 to be interpreted as an elastic snap first coupling 40.

25 The coupling device 10 can also comprise a second shape coupling 41 between the lever 21 and the base 11; this second coupling 41 is suitable to cooperate with the first coupling 40 to maintain the lever 21 stably coupled to the base 11. In particular, the second coupling 41 comprises a
30 substantially wedge-shaped third element 22 carried by the lever 21 at the first end 25 thereof, and a third seat 17 obtained in the base 11 and shaped in a manner conjugated to the third element 22 for shape coupling thereof. This third seat 17 is concentric with the axis 215 to allow coaxial
35 coupling between the lever 21 and the pin 51. In this

regard, it should be noted that both the bilateral elastic first coupling 40 and the second shape coupling 41 are suitable to guide respective second and first ends 23 and 25 of the lever 21 along respective substantially circular and concentric trajectories, whose geometrical centres are located on the axis 215. Furthermore, without in any way limiting the generality of the present invention, the second portion 15 can present a groove 19 suitable to be shape coupled to the wedge-shaped second element 24, in such a way as to guide the latter along a further substantially circular trajectory whose geometrical centre lies also in this case on the axis 215. Therefore, in view of the above description, the coupling device 10, provided with at least an elastic snap first coupling 40, is suitable to couple the switching member/the lever 21 to the base 11 in a manner that is stable, selectively releasable and reassemblable at will in order to allow maintenance operations safeguarding, at the same time, the functionality of the coupling between the base 11 and the switching member/the lever 21. Furthermore, again in view of the above description, the coupling device 10 is suitable to maintain the switching device/the lever 21 stably coupled to the base 11 in a freely rotatable manner about the pivot axis 215 so that the switching member/the lever 21 can control a respective coaxial rotation of the pin 51.

In addition, with particular reference to figures 3 and 4, the lever 21 can present a circular collar 230 which is positioned at an opening of the second seat 26 on the side of the base 11 and is housed inside the base 11 in a respective substantially cylindrical fourth seat 18. The collar 230 presents an internal diameter exceeding any transverse dimension of the pin 51 and both the collar 230 and the respective cylindrical fourth seat 18 are coaxial with the axis 215. It should be noted that the presence of the collar 230 and of the respective fourth seat 18 is not

strictly necessary for correct operation of the control device 20, as the coupling device 10 is sufficient to maintain the lever 21 stably coupled to the base 11 in a freely rotatable and axially fixed manner; on the other hand, the presence of a further rotating coupling between the collar 230 and the respective fourth seat 18 allows greater stability to be given to the coupling between the lever 21 and the base 11 and also allows the strains acting on the first and second couplings 40 and 41 to be reduced, so that they can benefit from a greater operating life. With particular reference to figure 4, it should also be noted that the cylindrical fourth seat 18 can present a depth even much greater than the height of the collar 230 in such a way as to house, with wide clearance, a possible third end 52 of the pin 51 extending beyond the second seat 26. In particular, the pin 51 is coupled to the respective second seat 26 in a stable and selectively releasable manner by the fact that the second seat 26 presents on the inside thereof a retaining device 42 for retaining the pin 51 which can comprise, by way of example and without in any way limiting the present invention, a security dowel, which transversely engages the pin 51 and locks it by friction against the lateral walls of the second seat 26, or elastic ribs positioned inside the second seat 26 in a substantially longitudinal manner to laterally engage the pin 51, or at least one elastic sealing ring positioned transversely to the pin 51 and suitable to engage a respective perimeter thereof to retain it stably inside the second seat 26.

With reference to figure 2, it should be noted that the first seat 14 is substantially shaped as a circular sector cut off on the side of the respective centre. This first seat 14 is concentric with the axis 215 and is radially delimited by two first sides 16, which delimit an angle α of given width, the vertex of which lies in an eccentric position with respect to the axis 215. In particular, the

first seat 14 is shaped so that the first sides 16 are suitable to act as an abutment for respective second sides 210 of the lever 21. More in particular, with reference to figure 3, the second sides 210 present concave sections 220 positioned in proximity to the second seat 26 and shaped so as to give the lever 21 the possibility of rotating inside the first seat 14 by an angle of a width substantially identical to the angle α .

Furthermore, the handle 1 presents at least one signalling unit 60 for signalling the operative position of the locking device 50 so that each user can, observing the handle 1 with a simple glance, realise the effective current operative position of the respective leaf 2, and in particular whether the lever 21 is suitable to maintain the locking device 50 in the respective closing or opening position. This signalling unit 60 can, by way of example and without in any way limiting the present invention, be produced by at least one label 61 associated with a respective operative position of the lever 21 inside the first seat 14. More in particular, the handle 1 preferably presents a signalling device always referenced with the number 60 and comprising a pair of labels 61 visually distinguishable; these labels are associated with two different operative positions of the lever 21, which will in turn be associated with respective closing and opening operative positions of the locking device 50, and therefore positioned on the base 11 at opposite sides relative to the axis 215.

With particular reference to figure 5, the handle 1 is stably coupled to a flat face 4 of the leaf 2 by means of at least one pair of anchoring devices 30 positioned along the base 11 preferably, but without limitation, in a symmetrical manner with respect to the first seat 14 and therefore to the lever 21. In particular, each anchoring device 30 comprises a cap 32, axially perforated, shaped similarly to

a rivet 32, and therefore indicated hereafter with this term. Each anchoring device 30 also comprises a body 34 preferably, but without limitation, presenting an intermediate third portion 37, bilaterally delimited by
5 respective end fourth portions 38 and presenting with respect thereto a cross section of reduced dimensions. In view of the above description, each body 34 is substantially shaped similarly to an hourglass and presents a thread at the base of a respective fourth portion 38, represented at
10 the bottom with reference to figure 5, to screw couple to a respective rivet 32, which is in turn rigidly connected to the respective flat face 4 and presents a central hole provided with a respective axial thread. Furthermore, each body 34 is stably housed inside a respective fifth seat 33
15 obtained in the base 11 so that it is not visible from the outside. If necessary this fifth seat 33, generally but without limitation obtained through a blind hole, can also extend inside the handgrip 12, should the distance between the fifth seats 33 require this. Coupling between each body
20 34 and the base 11 is stable and mechanically releasable; for instance, and without in any way limiting the present invention, this coupling can be secured by means of a security dowel 35 which is housed in a threaded hole 36 communicating with the fifth seat 33 to transversely engage
25 the respective body 34 and constrain it rigidly inside the respective fifth seat 33. In particular, each security dowel 35, engaging the intermediate third portion 37 of a respective body 34, acts as a wedge to retain the respective body 34 in its seat exerting alternatively or in combination
30 a transverse action on this intermediate third portion 37 or an axial action on the end fourth portions 38 of the body 34.

The use of the handle is easily understood from the description above and requires no further explanation;
35 nonetheless, it may be advisable to specify some advantages

deriving from the use of this handle. In particular, the handle 1 is predisposed to be coupled to any locking system 50 of the leaf 2 provided with a switching pin 51. In other words, the handle 1 is substantially universal and is suitable to be employed in combination with locking devices 50 manufactured by any operator in the sector of windows, doors and the like, even other than the applicant. Furthermore, the handle 1 is shaped so as to be coupled on both faces 4 of a leaf 2 and, in the case of the leaf 2 presenting a handle 1 on each of the flat faces 4 thereof, both handles 1 can control the same pin 51 by means of the respective switching members 21. Alternatively, only a first handle 1 can be coupled to the locking device 50, whilst the second handle 1 may also not be provided with any switching member 21 and therefore act only as a manoeuvring member. In this second case, the handle 1 can comprise a cap 250 which replaces the lever 21 and is suitable to seal the first seat 14 to prevent dust, rain or other external elements from penetrating the handle 1. This could be particularly useful especially in the case in which the second handle 1 is located on a flat face 4 facing an outside environment.

Furthermore, in view of the above description it is apparent that the presence of the coupling device 10, besides maintaining the lever 21 stably coupled to the respective first seat 14, makes it possible to ensure, especially during the installation phase, that the lever 21 does not accidentally slip out of the base 11, as could instead occur if the coupling between the lever 21 and the base 11 is only stable once the handle 1 is resting against the flat face 4 of the leaf 2. This could occur, for instance, in the case in which the lever 21 presents the pivot portion thereof, comprising the seat 26, substantially flat and therefore stably pivotable only after coupling to the pin 51. Furthermore, it should be specified that the presence of the coupling device 10 allows the handle 1 to be

installed using only one hand, while the other hand can remain free to grip a tool or to perform any other operation simultaneous to the installation of the handle 1.

Lastly, it is apparent that modifications and variants
5 can be made to the handle 1 described and illustrated herein without however departing from the protective scope of the present invention.

However, some aspects of a process to be followed to facilitate assembly of the handle 1 should be specified.
10 This process comprises a step of elastically snap coupling the lever 21 to the base 11 so that the lever 21 is freely rotatable and selectively decouplable. In particular, this step of elastically snap coupling the lever 21 to the base 11 comprises a step of inserting the lever 21 inside the
15 base 11 according to a direction of insertion substantially perpendicular to the axis 215. More in particular, this step of inserting the lever 21 inside the base 11 in turn comprises a step of progressively deforming the second wedge-shaped element 24 of the lever 21 under the action of
20 the second portion 15 of the base 11. Furthermore, and without in any way limiting the present method, the step of elastically snap coupling the lever 21 to the base 11 can be preceded by a step of separately painting the lever 21 and the assembly of the base 11 and of the handgrip 12 to obtain
25 complete customisation of the aesthetic characteristics of the handle 1. This step of painting can preferably be implemented using the industrial powder painting technique and therefore comprise the sub-steps of coating the handle 1 with a given powder paint and the subsequent sub-step of
30 baking the handle 1 at high temperature in a specific oven. Lastly, the present method comprises a step of giving stability to the coupling between the lever 21 and the base 11 by means of inserting a pin 51 inside the respective second seat 26; clearly this step can only be performed
35 following the step of elastically snap coupling the lever 21

to the base 11.

On the other hand, with particular reference to figures 6 and 7, it is possible to illustrate a variant of the handle 1, provided with a handgrip 12 substantially identical to the one described with reference to figures 1-4 and anchoring devices 330, which might become very useful when the installer has the need to match the handgrip 12 directly to a known and not described gear box 500 of the control means 20 of the hardware of the handle 1, mounted internally to the leaf 2, and visible only in figure 6 where it is illustrated by dashed lines. For the sake of simplicity, in this case, the known and not described gear box 500 has been depicted only in figure 6, where it is shaped as a box with two threaded holes 501 close to the its geometrical centre, and to the one of the handgrip 12, and distant one another at a length L. Therefore, the rivets 32 are not necessary at all. Still for the sake of simplicity, the parts and components of this version of handle 1 which remain the same of the version of figures 1-5 will be indicated by the same reference number.

With regard to length L is necessary to say that it is approximately 43 mm long, but it might be advantageously comprised within a range delimited by $1/7$ and $2/5$ the overall length of the handgrip 12 itself or it might approximately measure $1/4$ of the overall length of the handgrip 12 itself. As it is well known, 43 mm is the distance at which the housing holes for housing fasteners of the hardware for sliding leaves of windows, doors and the like are generally arranged, in order to allow installation of control devices/gear boxes 500 provided with rotatable members which need to cooperate with a pin similar to pin 51.

For the sake of practicality, the base 11 is provided with two holes 333 positioned symmetrically and at the opposite sides relative to the switching member 21, and thus

to the respective first seat 14, such as the holes 33 visible in figure 2, but positioned at a close distance L as above mentioned. In particular, in the handle 1 of figure 6 each anchoring device 330 comprises blind holes 333, 5 predisposed to house, with clearance, bushes 400 which present externally a plurality of cylindrical projections 401 and an axial hole 402 for a screw 405 which is usable, as will be more apparent from the description below, for the mechanical coupling of the handle 1 to the threaded holes 10 501 of the gear box 500 carried by the leaf 2. An external diameter of each bush 400 approximates in defect the respective hole 333, and each bush 400 presents at least a pair of annular projections 401 delimiting two by two throats 409 positioned longitudinally adjacent. Each 15 anchoring device 330 comprises, for each hole 333, a threaded blind hole 336, which is obtained in the base 11 in order to be engaged by at least an internal security dowel 411 which engages transversely the periphery of at least one of the two throats 409. In fact, each hole 336 presents 20 longitudinal extension sufficient to be engaged by an external dowel 412, suitable to prevent the first dowel 411 from unscrewing. Furthermore, each hole 336 is accessible frontally from the second end 23 of the lever 21, and is inclined by an angle sufficient to allow easy use of a 25 wrench for tightening the dowels 411 and 412, thus allowing an operator to prevent interferences with the external framework, known and therefore not shown, of the leaf 2 or with a glass sheet, known and therefore not shown, installed on the leaf 2. In particular, this given angle has 30 preferably a width of 7° . Furthermore, the anchoring device comprises caps 415 and 416 which are substantially identical to one another and mushroom-shaped, in order to be housed, respectively, in the holes 336 and avoid access to the dowels 412. In particular, each cap 415 and 416 presents a 35 substantially hemispherical head 417, suitable to act as an

angular abutment for the lever 21. The caps 415 and 416 are made of plastic material of clashing colours: the cap 415 is made of red plastic material, and the cap 416 of green plastic material. In this way, each head 417 is suitable to
5 provide information about an opening or closing operative position of the lever 21.

Therefore, the use of bushes 400 shaped as described above allows the respective screws 405 to be coupled rigidly to the base 11 with the respective longitudinal axis being
10 positioned coaxially with the respective hole 333. It should be specified that the two holes 333 and 336 are substantially communicating. Therefore, installation of the screws 405 inside the axial hole 402 of the respective bush 400 and subsequent insertion of the assembly of these two
15 components inside the respective hole 333 is followed by the use of a dowel 411 which couples tangentially and with a longitudinal axis substantially skew with respect to the screw 405 for determining locking of the bush 400 and, through interference exerted by the dowel 411 between the
20 bush 400 and the screw 405, of the screw 405 with respect to the base 11. Closing the holes 336 by means of the red cap 415 and the green cap 416 allows to provide abutments for the second end 23 of the lever 21, in addition to indicate naturally the opening or closing condition of the handle 1
25 itself.

Proceeding in this way, it is apparent that it is possible to provide the handle 1 with screws available in the market, with clear saving with respect to the use of special screws such as the hourglass-shaped bodies 34.

30 In case the handle 1 had a base 11 shaped with a concavity 110 faced to the flat face 4 of the leaf 2, or in case the base 11 showed projections 111 at its extremities, the action of the two anchoring device 330 would tend to bend elastically at least the central portion base 11. In
35 this case, the screws 405 would be longitudinally stressed

by the base 11 which would prevent screws 405 from being unscrewed, and allow the handgrip 12 to maintain a good fastening with the leaf 2.

In view of the above description, it is apparent that
5 the handle 1 and the respective assembly method allow the technical problem in question to be solved, namely they allow the production of a handle, provided with a control member for controlling the opening and closing mechanism and with an anchoring device, which are easily assemblable and
10 decouplable on the base of the installation or maintenance requirements, without this in any way jeopardising the handgrip 12 and/or leaving traces on it, and thus without damaging the components of the handle 1. Therefore, the handle 1, in both the versions described herein, can be
15 completely customised using common industrial painting techniques, for instance powder painting, without needing to perform subsequent operations prior to assembly of the lever 21, and therefore without jeopardising correct operation of the control device 20 associated with the handle 1 and of
20 the respective anchoring devices 30 or 330.

To conclude, it is important to stress that each anchoring device 30 or 330 allows to accomplish a good coupling of the handle 1 to the flat face 4 of the leaf 2 and to combine anti-rotation capability and easy and correct
25 positioning.

CLAIMS

1. A handle (1) for a leaf (2) coupled to a frame (3) in a slidable or rotatable manner and provided with a locking device (50) thereof comprising at least a coupling member (34) (405) suitable to selectively connect in a substantially rigid manner said leaf (2) to said frame (3); said handle (1) comprising a base (11) integrally couplable to a flat face (4) of said leaf (2); a handgrip (12) rigidly extending from said respective base (11); said handle (1) being characterised by comprising anchoring means (30) (330) suitable to couple integrally said base (11) to said flat face (4) of said leaf (2); said anchoring means (30) (330) comprising at least a first seat (33) (333) obtained in said base (11) and arranged to house a said coupling member (34) (405) in a substantially rigid manner through at least one contrast member (35) (411, 412).

2. A handle according to claim 2, characterised in that said anchoring means (330) comprise at least a bush (400) housed in a said first seat (333) and coaxially engaged by a said coupling member (405); said coupling member (405) being threaded and coupled in a substantially rigid manner to said base (11) by means of a dowel (411, 412) carried transversely by said base (11).

3. A handle according to claim 1 or 2, characterised by comprising control means (20) (500) carried by said base (11) and interfaceable with said locking device (50) to switch selectively said locking device (50) between respective closing and opening operative positions; said control means (20) comprising at least one switching member (21); said base (11) presenting a hole (336) substantially transverse to said respective first seat (33) (333) for each said coupling member (34) (405).

4. A handle according to claim 3, characterised in that said anchoring means (30) (330) comprise a mushroom-shaped member (415, 416) suitable to cooperate laterally with said

switching member (21) to limit the rotation thereof relative to said base (11).

5 5. A handle according to claim 4, characterised by comprising said control means (500) comprising a gear box (500) provided of two threaded holes (501) close distant one another at a determined length (L) round the geometrical centre of the said handgrip (12); each said first seat (333) being predisposed to house a coupling member (405) by means of a bush (400) which present externally at least a
10 cylindrical projections (401).

6. A handle according to claim 4, characterised in that each coupling member (405) comprises a screw (405) and that said determined length (L) is approximately 43 mm long.

7. A handle according to claim 4, characterised in that
15 each coupling member (405) comprises a screw (405) and that said determined length (L) is comprised within a range delimited by $1/7$ and $2/5$ the overall length of the handgrip (12) itself.

8. A handle according to claim 4, characterised in that
20 each coupling member (405) comprises a screw (405) and that said determined length (L) approximately measure $\frac{1}{4}$ of the overall length of the handgrip (12) itself.

9. A handle according to any one of claims 5-7,
25 characterised in that said base (11) is shaped with a concavity (110) faceable to the said flat face (4) of the said leaf (2), so that at least a said screw (405) is in use longitudinally stressed by the said base (11) and is prevented from being unscrewed, and allow the said handgrip (12) to maintain a good fastening with the said leaf (2).

30 10. A handle according to any one of claims 5-7, characterised in that said base (11) shows projections (111) at its extremities, so that at least a said screw (405) is in use longitudinally stressed by the said base (11) and is prevented from being unscrewed, and allow the said handgrip
35 (12) to maintain a good fastening with the said leaf (2).

11. A handle according to any one of the preceding claims, characterised by presenting signalling means (60) associated with said base (11) to indicate visually a current operative condition of said locking device (50).

5 12. A handle according to claim 11, characterised in that said signalling means (60) comprise each said mushroom-shaped member (415) (416); each said mushroom-shaped member (415) (416) comprising a cap (415) (416) provided with a head (417) of given colour in order to provide information
10 about an opening or closing operative condition of said switching member (21).

13. A handle according to claim 1, characterised by comprising control means (20) (500) carried by said base (11) and interfaceable with said locking device (50) to switch
15 selectively said locking device (50) between respective closing and opening operative positions; said control means (20) comprising at least one switching member (21); each said coupling member (34) being substantially shaped similarly to an hourglass (34) and is coupled in a
20 substantially rigid manner to said base (11) by means of a dowel (35) carried transversely by said base (11).

14. A handle according to claim 13, characterised in that said anchoring means (30) comprise a respective threaded transverse respective hole (36) obtained in said base (11)
25 to house at least one said respective contrast member (35) suitable to engage transversely a said respective coupling member (34) to stably engage it inside said respective first seat (33).

15. A handle according to any one of claims 13 or 14,
30 characterised in that said anchoring means (30) comprise at least a pair of rivets (32), each of which being carried rigidly by said flat face (4) at said base (11) to be engaged by a said coupling member (35).

16. A handle according to any one of claims 13-15,
35 characterised in that each said coupling member (34)

presents an intermediate third portion (37) bilaterally delimited by respective end fourth portions (38) and presenting with respect thereto a cross section of reduced dimensions; each said security dowel (35) engaging said
5 respective coupling member (34) to exert alternatively or in combination a transverse action on said intermediate third portion (37) or an axial action on said end fourth portions (38).

17. A handle according to any one of claims 13-16,
10 characterised in that said switching member (21) is coupled to said base (11) in a manner that is stable, selectively releasable and reassemblable at will, in order to allow maintenance operations safeguarding the functionality of the coupling between said base (11) and said switching member
15 (21), and so that said base (11) and said switching member (21) can be subjected separately to technological treatments suitable to modify respective aesthetic and/or functional characteristics thereof.

18. A handle according to claim 17, characterised in that
20 said switching member (21) comprises a lever (21) coupled in a selectively releasable and freely rotatable manner to said base (11) in a respective second seat (14), and is provided with a third seat (26) for a pin (51) of said locking device (50), so as to control, in use, a respective rotation
25 thereof.

19. A handle according to claim 18, characterised by comprising coupling means (10) positioned between said lever (21) and said base (11) to maintain said lever (21) coupled to said first seat (14) in a freely rotatable manner with
30 respect to a pivot axis (215) substantially coaxial with said pin (51); said coupling means (10) comprising at least a bilateral elastic first coupling (40) between said lever (21) and said base (11).

20. A handle according to claim 19, characterised in that
35 said first coupling (40) comprises a manoeuvring first end

(23) for operating said lever (21) positioned on the opposite side to said third seat (26) to be accessible to a user; said first end comprising a substantially C-shaped first portion (28) for substantially clamping said base
5 (11).

21. A handle according to claim 20, characterised in that said base (11) presents a substantially circular second portion (15), concentric with said pivot axis (215) and presenting each radial section thereof substantially L-
10 shaped; said first portion (28) comprising an L-shaped first element (27) and a wedge-shaped second element (24) placed opposite to each other and positioned at opposite sides with respect to said second portion (15).

22. A handle according to claim 21, characterised in that
15 said wedge-shaped second element (24) is carried by an elastic plate (29) in such a way as to allow snap coupling of said lever (21) to said base (11).

23. A handle according to any one of claims 19-22, characterised in that said coupling means (10) comprise a
20 second coupling (41), substantially circumferentially shaped with respect to said pivot axis (215); said second coupling (41) being provided with a wedge-shaped third element (22) carried by said lever (21) at the opposite side to said first end (23) and in correspondence of a second end (25)
25 thereof, and with a conjugate fourth seat (17) obtained in said base (11).

24. A handle according to any one of claims 18-23, characterised in that said second seat (14) is substantially
30 shaped as a circular sector cut off on the side of said third seat (26); said second seat (14) being concentric to said pivot axis (215) and being delimited radially by first sides (16), which delimit an angle (α) of given width, the vertex of which lies in an eccentric position with respect to said pivot axis (215).

35 25. A handle according to claim 24, characterised in that

each said first side (16) is counter facing a respective second side (210) of the lever (21) and is suitable to act as an abutment (16) thereof to limit a rotation of said lever (21) about said pivot axis (215); each said second side (210) presenting at least one concave section (220) positioned in proximity to said third seat (26) and shaped so as to give said lever (21) the possibility of rotating inside said second seat (14) by an angle of a width substantially identical to said angle (α) of given width.

10 26. A handle according to any one of claims 18-25, characterised in that said third seat (26) presents retaining means (42) for retaining said pin (51); said retaining means being selectively releasable and comprising alternatively or in combination a security dowel, an elastic sealing ring or elastic longitudinal ribs.

15 27. A handle according to any one of claims 18-26, characterised by being suitable to control any type of said locking device (50) provided with a said pin (51) suitable to switch the operative position of said respective locking device (50) by means of a given rotation thereof.

20 28. A handle according to any one of claims 18-27, characterised in that said pin (51) presents a substantially square cross section.

25 29. A handle according to any one of claims 17-28, characterised in that said technological treatments comprise a step of powder painting mechanical parts followed by a step of baking said previously painted mechanical parts in an oven.

30 30. A method for assembling a handle (1) couplable to a leaf (2) and obtained according to any one of claims 1-29; said handle (1) comprising a base (11), a handgrip (12) and a switching member (21) of respective locking means (50) of said leaf (2) provided with a pin (51); characterised by comprising a step of elastically snap coupling said switching member (21) to said base (11) so that said

35

switching member (21) is freely rotatable and selectively decouplable.

31. A method according to claim 30, characterised in that said step of elastically snap coupling said switching member
5 (21) to said base (11) comprises the step of inserting said switching member (21) inside said base (11) according to a direction of insertion substantially perpendicular to said pin (51).

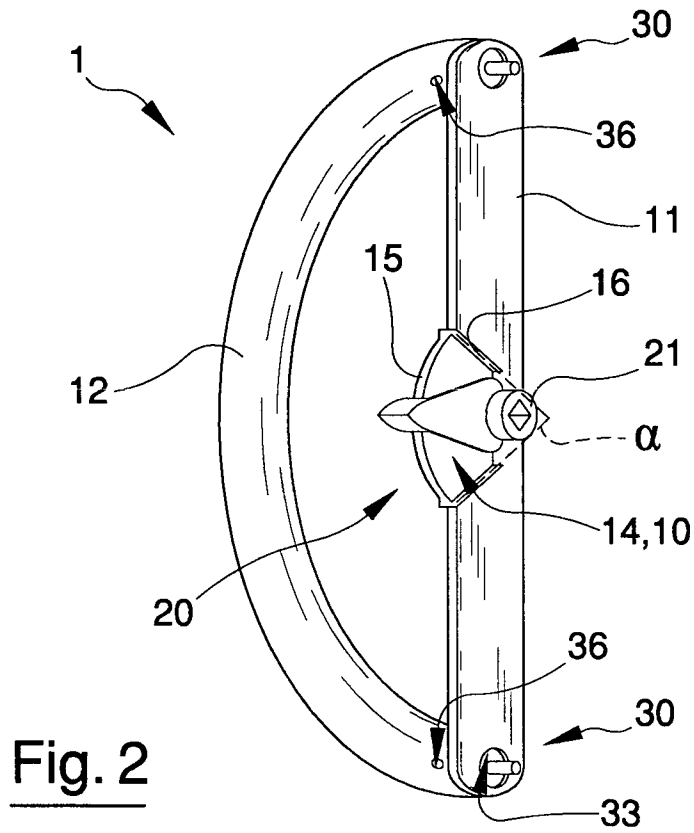
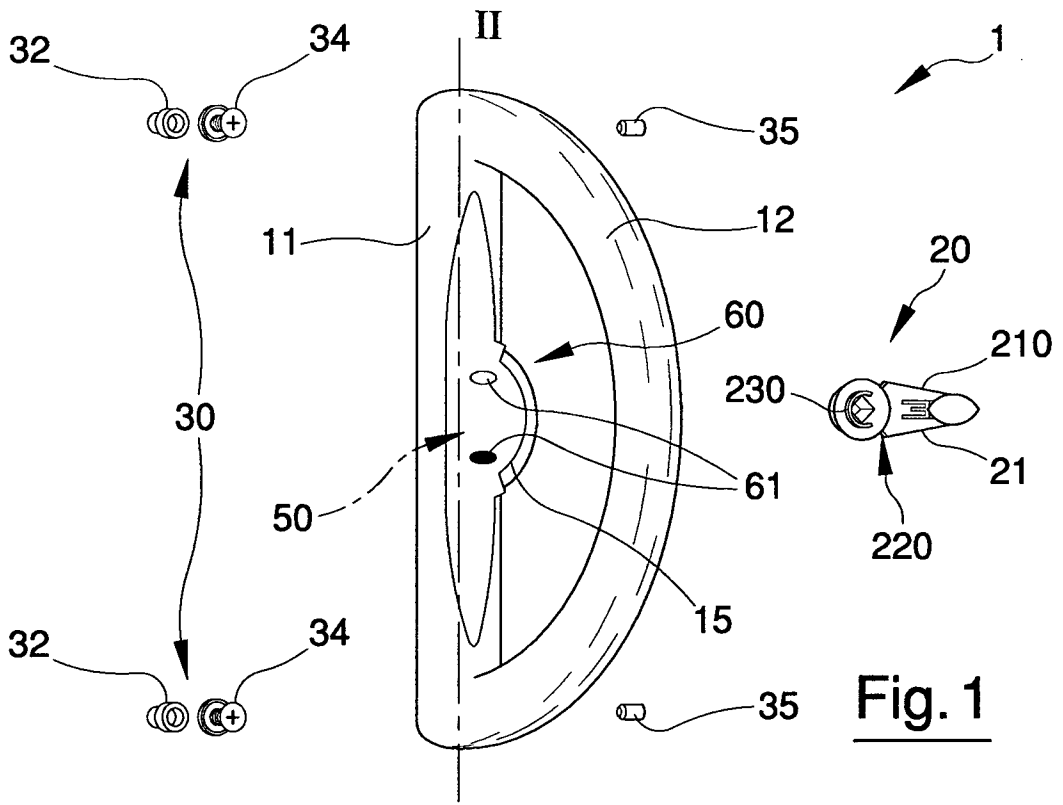
32. A method according to claim 31, characterised in that
10 said step of inserting said switching member (21) inside said base (11) comprises the step of progressively deforming a wedge-shaped element (24) carried elastically by said switching member (21) at an end first portion (28) thereof, through the action of said base (11).

33. A method according to any one of claims 30-32, characterised in that said step of elastically snap coupling said switching member (21) to said base (11) is preceded by the step of separately painting said control member (21) and the assembly of said base (11) and of said handgrip (12) to
20 obtain a complete customisation of the aesthetic and/or functional characteristics of said handle (1).

34. A method according to claim 33, characterised in that said step of painting comprises the sub-steps of coating said handle (1) with a given powder paint and the sub-step
25 of baking said handle (1) at high temperature in a specific oven.

35. A method according to any one of claims 30-34, characterised in that said step of elastically snap coupling said switching member (21) to said base (11) is followed by
30 a step of giving stability to the coupling between said control member (21) and said base (11) by insertion of a said pin (51) inside a third seat (26) of said switching member (21).

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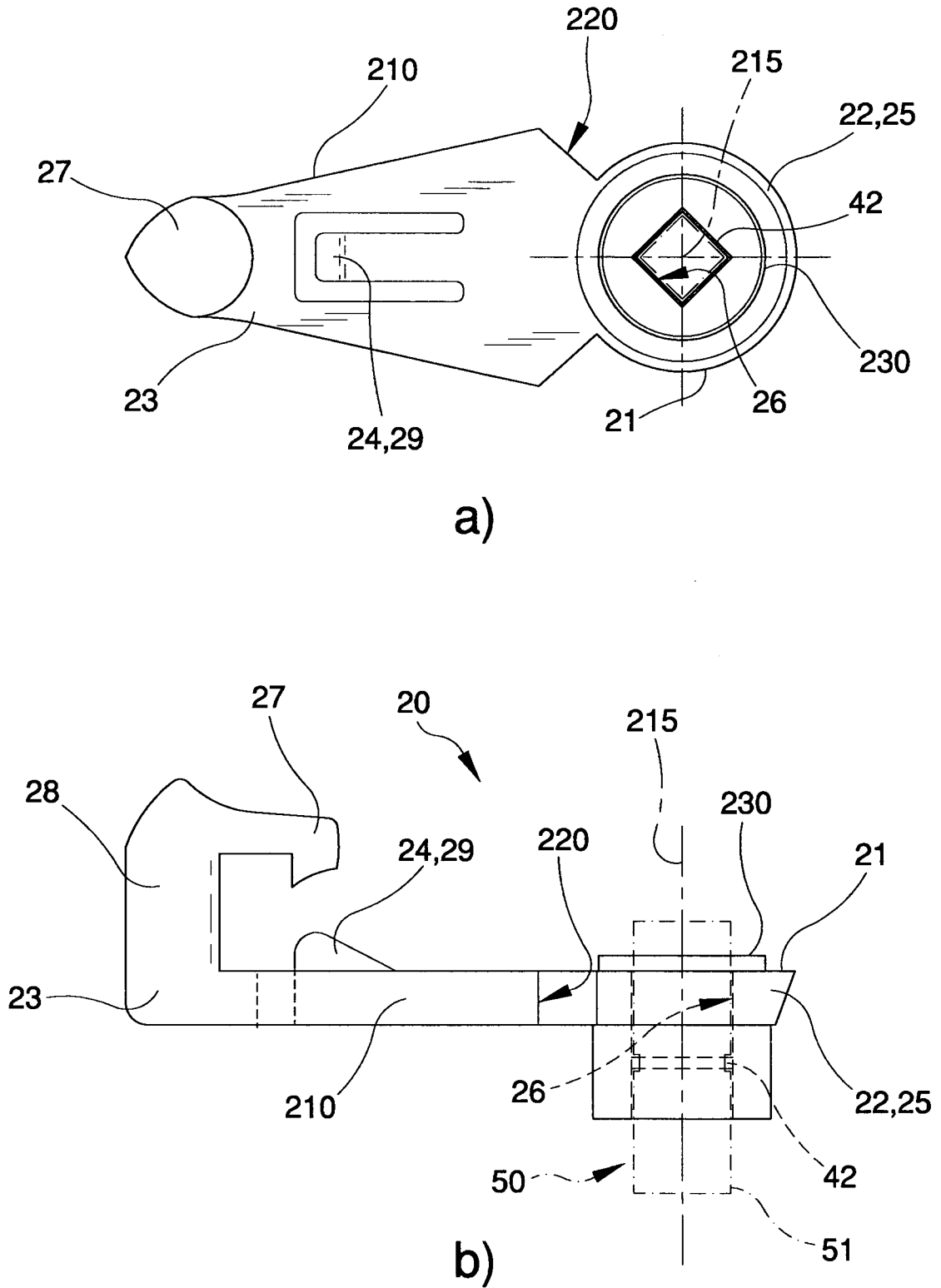


Fig. 3

Fig. 4

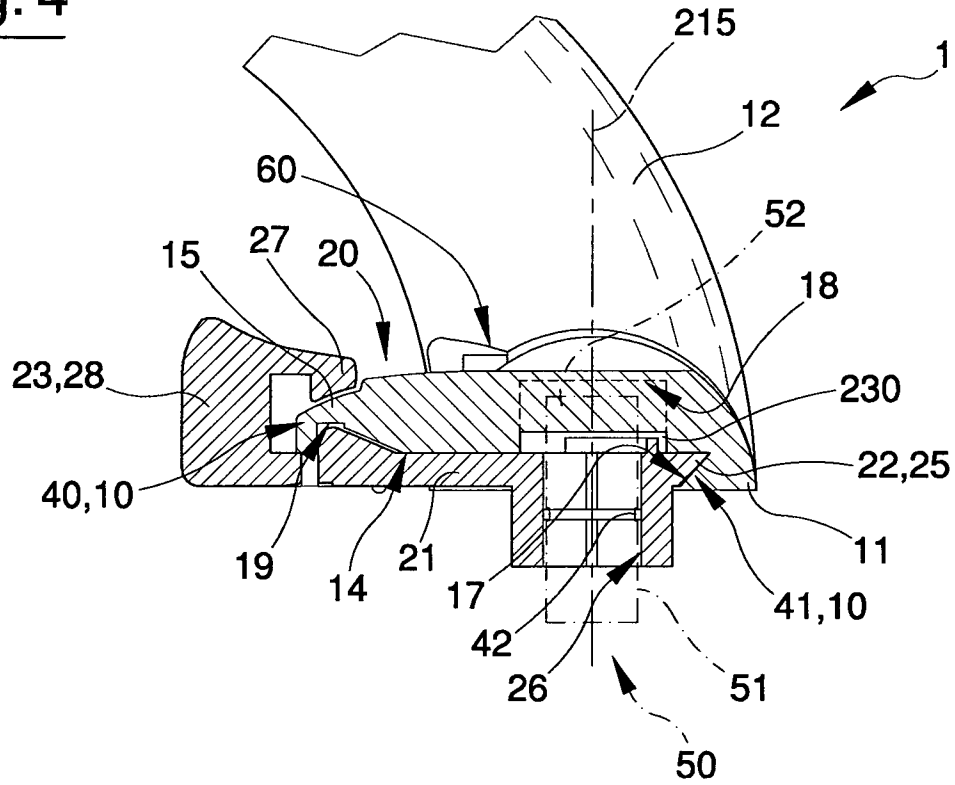


Fig. 5

