(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 786 676 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
08.10.2014 Bulletin 2014/41

(51) Int Cl.:
A47B 96/06 *(2006.01)*

(21) Application number: **14160572.5**

(22) Date of filing: **18.03.2014**

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

(30) Priority: **03.04.2013 IT PN20130018**

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(54) **Fastening device for furniture shelves or wall shelves**

(57) The present invention refers to a fastening device (1) for furniture shelves or wall shelves comprising: an L-shaped body member (2) for supporting a shelf (R), said body member (2) being connectable to an inner surface of a piece of furniture (F) or to a wall, and a fixing element (4) associable with said body member (2), said fixing element (4) being movable between a raised position and a lowered position. In particular, said fixing element (4) is rotatably associated with said body member (2) to move between said raised position and said lowered position, a locking element (5) comprising locking means (50) being slidably associated with said fixing element (4) and movable between an unlocking position and a locking position, wherein said fixing element (4) is in the lowered position.

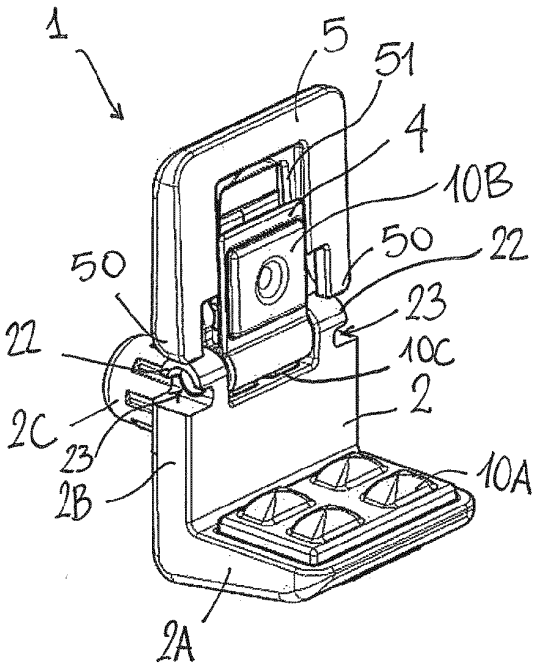


Fig. 2A

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Description

TECHNICAL FIELD OF INVENTION

[0001] The present invention refers to a fastening device suitable to fasten a shelf to the inside surface of a furniture piece or to a wall. The present invention also refers to a method of fastening a shelf to a furniture piece or to a wall.

BACKGROUND OF THE INVENTION

[0002] Furniture pieces are generally made in the form of parallelepiped bodies that define an enclosed holding space in which are arranged horizontal shelves on which objects, food items, clothing, etc., can be placed. The access to said enclosed space is allowed through one or more doors.

[0003] Well-known fastening devices suitable to be connected to the sides of a furniture piece at a desired height and having a support portion on which to arrange the shelf are used to fasten the shelves in the enclosed space of a furniture piece.

[0004] Said support portion can be made in different manners: for example, it could consist of a "peg" upon which is simply set down the lower face of the shelf. However, this type of fastening device is unsuitable in the case of glass or crystal shelves, because even a slight vibration could cause them to separate from the fastening device.

[0005] Moreover, for safety reasons it is required that when the shelf is installed in place it cannot be removed by sliding it horizontally; clearly, the device described above does not meet this condition.

[0006] Known alternative fastening devices have a C-shaped support portion, in which the shelf is inserted in a sliding movement. A possible solution to comply with the above-stated safety requirement is to apply a pair of rubber pads on the facing surfaces of said device; in this manner, when the shelf is installed, the shelf can be "sandwiched" tightly between said pair of rubber pads, for example by turning an adjusting screw, and thus preventing the removal of the shelf in a horizontal movement.

[0007] Unlike the previously illustrated fastening devices, the main advantage of this last type of device is the fact that the furniture piece can be carried with the shelves already installed, without fearing that shocks or vibrations could cause the separation and the consequent falling out of the shelf.

[0008] On the other hand, this type of device has a considerable disadvantage: In order to install or remove a shelf, it is necessary to insert it into or extract it from the support portion exclusively by sliding it horizontally, after first loosening any adjusting screw. This operation can be complicated if the furniture piece is provided in the front with closing doors hinged to the sides of the furniture piece. In fact, even when the doors are open, they can interfere with the outward sliding movement of the shelf, thus preventing or complicating its insertion or removal.

[0009] Finally, there are on the market fastening devices for furniture pieces in which the installation and removal of the shelf can be carried out by vertically laying down or lifting the shelf. One example of such devices is described in the patent document EP2151176, which illustrates a fastening device consisting of two distinct pieces, in particular a support body provided internally with engaging means, and a fixing element in the shape of an upturned L and provided with a rack portion.

[0010] The fixing element is suitable to be inserted vertically on the support body, engaging its rack portion with the engaging means of the support body, until the flat portion positions itself at a height equal to the thickness of the shelf; locking means are then provided to press the engaging means and the rack portion and to fasten them in their reciprocal position.

[0011] The advantage offered by this device lies in the fact of making it possible to easily and rapidly install and remove the shelves, even in the presence of doors hinged to the furniture piece.

[0012] However, in this case too it is not advisable to transport the furniture pieces with the shelves already fastened in place: in fact, although the furniture pieces are provided with locking elements, the vibrations generated during transportation result in jolts of the shelf in a vertical direction, which in effect coincides with the direction in which the fixing element is unlocked. Thus, in case of malfunction or of inaccurate installation of the locking element, these vertical movements of the shelf lead to the rack portion becoming progressively disengaged from the corresponding engaging means, resulting even in the complete detachment and the consequent falling out of the shelf.

[0013] Moreover, such a device is rather complicated to fabricate and, since it is sold in two separate pieces, the fastening operations can be difficult and impractical for the user.

SUMMARY OF THE INVENTION

[0014] The main objective of the subject matter of the invention is to overcome the drawbacks of the prior art by devising a fastening device, in particular for shelves on furniture pieces that allows an easy installation/removal of the shelf but that at the same time offers guarantees of safety by preventing the accidental detachment of the shelf, even if subjected to vibrations during transportation.

[0015] In the scope of the above objective, one purpose of the present invention is to realize a fastening device that is simple and intuitive to use.

[0016] A further purpose of the present invention consists of providing a fastening device for shelves that does not require the use of tools to carry out the installation of the shelf.

[0017] Another purpose of the present invention is to

manufacture a fastening device, in particular for shelves of furniture pieces, that can be marketed in a single piece so that it can be made even more practical for the user to use.

[0018] One not least important purpose is to devise a fastening device for shelves of furniture pieces that is easy to manufacture and that can be made with the usual known plants, machinery and equipment.

[0019] The above objective and purposes, and others that will become more evident later, are achieved by a fastening device for shelves of furniture pieces as defined in claim 1 and by a process of fastening a shelf by means of said fastening device as defined in claim 10; further characteristics are defined in the subsequent dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The advantages and characteristics of the invention will become evident from the following specification, given by way of non-limiting example, with reference to the enclosed figures, wherein:

- figure 1 is an exploded view of a fastening device for shelves of a furniture piece according to the present invention;
- figures 2A, 2B and 2C illustrate, in perspective views, three operating phases for using a fastening device according to the present invention;
- figures 3A and 3B illustrate respectively, in side views, a fastening device according to the present invention in an unlocked position and in a locked position;
- figures 4A and 4B are views in cross section of the fastening device seen, respectively, through the E-E plane of figures 3A and 3B;
- figures 5A, 5B and 5C illustrate the phases for fastening a shelf to the side of a furniture piece by means of a fastening device according to the present invention;
- figure 6 is a perspective view illustrating a first variant embodiment of a fastening device according to the present invention;
- figures 7A and 7B illustrate, in exploded views, a second variant embodiment of the invention;
- figures 8A and 8B are perspective views of the fastening device of figures 7A and 7B in the assembled condition;
- figures 9A and 9B illustrate respectively, in views from above, a fastening device according to the second variant embodiment of the present invention in two different operating positions, and
- figures 10A and 10B are cross-sectional views of the fastening device seen along the C-C plane respectively of figures 9A and 9B.

DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

[0021] With reference to the above-mentioned figures, in particular to figure 1, is shown a fastening device 1, also called shelf support, for shelves of furniture pieces according to the present invention. Said device 1 is particularly but not exclusively suitable for fastening glass or crystal shelves. Obviously, to fasten a shelf it is necessary to provide at least one pair of fastening devices 1 according to the invention, and preferably two pairs, to arrange opposite each other on two sides of the furniture piece, at the desired height at which the shelf is to be installed. Moreover, a fastening device according to the invention, suitably dimensioned, is also suitable for fastening a shelf to a wall.

[0022] Hereafter in the present specification may be used terms such as "above", "below", "upper", "lower", "high", "low" or similar terms: the expert in the field will have no difficulty understanding that such terms refer to the orientation of the device in its normal working position, as shown in the accompanying figures.

[0023] A fastening device 1 according to the present invention comprises a support body member 2 formed by a first portion 2A and a second portion 2B, lying respectively when in use on a plane perpendicular to and on a plane parallel to the internal surface of the furniture piece on which the shelf R is to be fastened, for example a side wall F, said portions 2A, 2B being joined so as to lend to said body member 2 a substantially L-shaped form suitable for supporting the shelf R.

[0024] Said body member 2 also comprises a coupling portion 2C through which the device 1 can be joined to the side F: in particular, said coupling portion 2C comprises a body projecting from the surface of said second wall 2B, suitable to be inserted within a blind opening formed on the internal surface of the side F of the furniture piece, at the height where the shelf R is to be positioned. Preferably, since the blind opening is normally a circular bore, said projecting body 2C has a cylindrical shape and may be provided with a plurality of superficial grooves 20 that prevent its rotation, and consequently hinder the rotation of the whole body member 2.

[0025] In a first variant embodiment of the invention, shown in figure 6, said body member 2 can be connected to an internal surface of a furniture piece or to a wall thanks to a fixing element such as a screw; for this purpose, for example, the second portion 2B of said body member 2 can be crossed by a through hole 24 suitable for inserting said fixing element.

[0026] Advantageously, on said first portion 2A of the body member 2, on the surface on which the shelf R will lie, can be provided first retaining means 10A, for example an element of elastomeric material that may be shaped superficially to hinder, by friction, any sliding movements of the shelf R and to guarantee a more secure holding grip thanks to its capacity to deform and expand itself.

[0027] A pair of shoulders 21, lying on the same plane, rises from an edge portion of said second portion 2B; on each of said pair of shoulders 21 is formed a through hole 21 A such as to make it possible to rotatably connect to said body member 2, about a transversal axis X-X, defined for example by a pin 3, a fixing element 4 that is in turn provided with a through hole 40. Advantageously, each of said shoulders 21 also comprises an abutting portion 22, projecting laterally, that defines a corresponding recess 23.

[0028] Said fixing element 4 comprises an articulating portion 4A, crossed by said through hole 40 and suitable to be arranged in the space included between said pair of shoulders 21, and a fork portion 4B formed by a pair of walls facing and parallel to each other that extend from said articulating portion 4A.

[0029] The fixing element 4 rotates about said axis X-X between a raised position, shown in figure 2A, in which it lies on a plane substantially parallel to the side F of the furniture piece, and thus on the same plane defined by said second portion 2B of the body member 2, and a lowered position, shown in figures 2B and 2C, in which it lies on a plane substantially parallel to the plane defined by said first portion 2A and thus, when the shelf R is mounted, lies on the upper surface thereof.

[0030] Second retaining means 10B, such as a second element of elastomeric material having substantially the same function as said first retaining means 10A, can be provided on the external surface of a wall of the fork portion 4B, in particular the one that will be in contact with the upper surface of the shelf R.

[0031] Advantageously, the articulating portion 4A of said fixing element 4, having a substantially cylindrical shape, has a flat portion in the part designed to rest on the body member 2 in the raised position: in this manner, in the absence of external forces, said position can be stably maintained by the fixing element 4.

[0032] Further, on the surface of the body member 2 that comes into contact with the articulating portion 4A when the fixing element 4 is in the raised position may be provided third retaining means 10C, such as for example, one or more elements of elastomeric material, suitable to increase the friction between the two components.

[0033] According to an advantageous characteristic of the invention, the device 1 also includes a locking element 5, slidably connected to said fixing element 4 and comprising locking means 50 configured so as to be able to lock in a non-permanent manner the fixing element 4 in the lowered position, thus preventing its backward rotation around the pin 3 toward said raised position.

[0034] In particular, said locking element 5 is movable between an unlocking position, or first position, in which said locking means 50 allow the rotation of said fixing element 4 (fig. 2B), and a locking position, or second position, in which said locking means 50 prevent the rotation of the fixing element 4 when said fixing element 4 is in the lowered position (fig. 2C).

[0035] With reference to figure 1, said locking element 5 consists of a U-shaped element having a conjugate shape with said fixing element 4. The side arms 5A of said locking element 5 comprise a guide portion 51 suitable to be inserted into the space included between the two facing walls of the fork portion 4B of the fixing element 4 to guide the sliding movement of the locking element 5 between said first and said second position.

[0036] Advantageously, said locking means 50 comprise portions projecting from the free ends of said arms 5A.

[0037] As shown in figures 3A, 3B, 4A and 4B, said locking element 5 is also provided with stop means 51 A, preferably formed by a pair of facing teeth projecting from said guide portion 51 that are suitable to cooperate with a holding element 30 interposed between the two walls forming the fork portion 4B that fills the space defined by them. Said holding element 30 is advantageously made from a material that is capable of developing a sufficient friction with said teeth 51 A. Preferably, said holding element 30 is formed from a thermoplastic polymeric material, such as for example ABS or nylon, or an elastomeric material.

[0038] In particular, when said locking element 5 is displaced between said first and said second position, said stop teeth 51 A slide on the lateral surface of the holding element 30, which is shaped so as to form a first and a second pair of lateral seats 11, 12 respectively facing and suitable to cooperate with said teeth to define the two positions of said locking element 5.

[0039] In particular, when said teeth 51 A are positioned on the first pair of seats 11, the locking element 5 takes on said first position, and consequently the locking means 50 are arranged so as to allow the rotation of the fixing element 4; in addition, said first pair of seats 11 is formed so as to prevent the locking element 5 from being accidentally extracted from the fixing element 4.

[0040] On the other hand, when said teeth 51 A are positioned within said second pair of seats 12, the locking element 5 takes on said second position, in which the locking means 50 are inserted within corresponding recesses 23, formed below abutting portions 22 of the body member 2; in this manner the rotation of the fixing element 4 is prevented.

[0041] To unlock the fixing element 4 so that, by rotating, it can return to the raised position, it is sufficient to displace the locking element 5 so that the teeth 51 leave the second pair of seats 12, slide along the lateral surface of the holding element 30, and settle into said first pair of seats 11.

[0042] Said pair of second seats 12 is suitably shaped so that the teeth 51 A leave the seats when urged by a certain horizontal force applied on said locking element 5, calculated so as to allow a user to intentionally unlock it but preventing it from being unlocked accidentally.

[0043] Thanks to said sliding motion, the locking means 50 move away from the corresponding recesses 23, thus allowing the fixing element 4 to rotate freely.

[0044] As shown in figures 5A, 5B and 5C, the process for fastening a furniture shelf R or a wall shelf through the use of a fastening device 1 according to the present invention includes the following operations:

a) arranging said body member 2 on a surface of a furniture piece F or on a wall at the desired height, for example by inserting the coupling portion 2C of the body member 2 into the corresponding bore made, for example, on a side F;
b) positioning said fixing element 4 in the raised position;
c) setting the furniture shelf or wall shelf (R) on said body (2);
d) rotating said fixing element 4 from the raised position to the lowered position, and
e) sliding said locking element 5 on said fixing element 4 from said first or unlocking position, to said second or locking position, so that the locking means 50 position themselves in the corresponding recesses 23.

[0045] If the shelf R is to be removed from the furniture piece, it is sufficient to repeat the above operations in reverse sequence: it is thus necessary to displace said locking element 5 from said second position to said first position, making said teeth 51 A slide along the side surface of the holding element 30 so that they pass from said second pair of seats 12 to said first pair of seats 11. In this manner, said locking means 50 move out of the recesses 23, thus leaving the fixing element 4 free to rotate. This operation can be performed manually by the user, if necessary with the help of an appropriate tool, like a screwdriver.

[0046] The fixing element 4 can then be rotated around the axis X-X defined by said pin 3 and thus returned to the raised position; at this point, the shelf R can be easily lifted from the body member 2 and removed from the furniture piece.

[0047] Preferably, said body member 2, said fixing element 4 and said locking element 5 are made of metal and, according to an advantageous characteristic of the invention, said first, second and third retaining means 10A, 10B and 10C and said holding element 30 can be obtained by over-moulding. In addition, advantageously, if the holding element 30 is made of elastomeric material, said second retaining means 10B and said holding element 30 can be made in a single piece, over-moulded on said fixing element 4.

[0048] The fact of using the over-moulding method for the elements of elastomeric material on the metallic fastening device is very advantageous, as it makes it possible for them to be rapidly applied and are then difficult to remove, unlike the devices in the prior art in which the application of the elastomeric elements is done by assembling them, often manually.

[0049] The size of said first and said second retaining means 10A, 10B is established on the basis of the thickness of the shelf R to be fastened to the furniture piece. Thus, advantageously, it is possible to fabricate and keep in stock a single model of the fastening device 1 that can be used to fasten shelves R of different thicknesses.

[0050] With reference to figures 7A, 7B, 8A and 8B, a fastening device 1 is illustrated according to a second variant embodiment of the present invention, which is advantageous because it is simple to fabricate and can be rapidly assembled.

[0051] Advantageously, the pin 3, extending along said axis X-X around which said fixing element 4 can rotate from a raised position to a lowered position, is made integral with said body member 2 and is arranged between said pair of shoulders 21.

[0052] Said fixing element 4 is thus obtained from a pair of facing half shells 44A, 44B that can be coupled by means of first coupling means 35 so that they can be rotatably mounted about said pin 3; said half shells 44A, 44B being configured so that, when coupled, they define said coupling portion 4A, provided with a through hole 40, and said fork portion 4B.

[0053] A holding element 30 is interposed between the half shells 44A, 44B; said second retaining means 10B are connected to said holding element 30, so as to protrude through an opening provided on one of the half shells 44B and contact the upper surface of the shelf R when said fixing element 4 is in a lowered position.

[0054] According to an advantageous characteristic of this second variant embodiment, said pin 3 is provided with at least one pair of projections 3A, suitably shaped, so as to have for example, a "teardrop" cross section (visible in figure 7A), so that, when said fixing element 4 is in the raised position, said projections 3A engage corresponding engagement grooves, advantageously of small depth, formed inside the hole 40 of the articulating portion 4A (as shown in figures 9A and 10A), thus stably holding by interference fit said fixing element 4 in a raised position.

[0055] However, when the user forces the fixing element 4 to rotate, said projections 3A become disengaged from the corresponding grooves, allowing them to pass from the raised position to the lowered position (figures 9B and 10B).

[0056] Further, the coupling portion 2C, possibly provided with surface grooves 20, is connected to a support element 2C', on which can be applied or over-moulded said first retention means 10A; said support element 2C' can be connected, through second coupling means 25, to said body member 2, as can be seen in figures 7A and 7B.

[0057] According to a variant embodiment that is particularly advantageous because it is economical, said fixing element 4 and said body member 2 are made of polymeric material in a single piece; in this case, therefore, the articulating portion 4A can advantageously be formed from a weakened area of the polymeric material, suitable to allow the rotation of said fixing element 4 about said axis X-X, thus without requiring a pin 3.

[0058] Alternatively, said fixing element 4 can be obtained as one piece with said first retaining means 10A; in this case, the first retaining means 10A can be made of polymeric material and can be connected both to the first portion 2A and to the second portion 2B of the body member 2, and extend therefrom to form said fixing element 4. Similarly to the variant embodiment described above, the articulating portion 4A of the fixing element 4 is thus formed in a weakened area of the polymeric material, suitable to allow the rotation of said fixing element 4 about said axis X-X.

[0059] From the above description, it is evident how the present invention achieves the initially foreseen purposes and advantages. In fact, a fastening device 1 is provided that makes it possible to rapidly and immediately install a shelf R on a side F of a furniture piece and remove it therefrom, without requiring the removal of the doors that have been previously hinged on the furniture piece.

[0060] In addition, thanks to the particular configuration of the fastening device 1 and to the sequence of operations for its use, the shelf can advantageously be mounted on the furniture piece before the transportation of the same. In fact, as previously explained, the operations necessary to remove the shelf from the furniture piece are, in sequential order, a translation of the locking element 5 and a rotation of the fixing element 4, which must be performed intentionally by an operator; in fact, any shocks and vibrations that normally occur during transportation and that produce substantially vertical movements of the shelf, cannot in any way cause the accidental opening of the fastening device 1 and the resulting detachment of the shelf R. Consequently, a maximum guarantee is provided against the accidental falling out of the shelf.

[0061] The fastening device 1 of the invention is particularly simple to manufacture and intuitive to use and does not require the use of any particular tools to install a shelf on a furniture piece. As it is marketed in a single piece, that is, with the fixing element 4 and the locking element 5 rotatably connected to the body member 2, the device 1 is also absolutely practical to use.

[0062] Finally, said first and said second retaining means 10A and 10B, when the shelf is installed and the locking element 5 is in the locking position, guarantee a perfect holding grip, and prevent the shelf from being removed by sliding it horizontally.

[0063] Naturally, the present invention is susceptible to many applications, modifications or variants without thereby departing from the scope of patent protection, as defined by the enclosed claims.

[0064] Moreover, the materials and equipment used to implement the present invention, as well as the shapes and dimensions of the individual components, can be the most suitable to the specific requirements.

Claims

1. Fastening device (1) for furniture shelves or wall shelves comprising:

- an L-shaped body member (2) for supporting a furniture shelf (R) or wall shelf, said body member (2) being connectable to an inner surface of a piece of furniture (F) or to a wall;
- a fixing element (4) associable with said body member (2), said fixing element (4) being movable between a raised position, wherein placing the shelf (R) on said body member (2) or removing the shelf (R) from said body member (2) is allowed, and a lowered position, wherein said fixing element (4) is arranged on the upper surface of said shelf (R),

characterized in that

said fixing element (4) is rotatably associated with said body member (2) to move between said raised position and said lowered position, a locking element (5) comprising locking means (50) being slidably associated with said fixing element (4) and movable between an unlocking position, wherein said locking means (50) allow the rotation of said fixing element (4), and a locking position, wherein said locking means (50) prevent the rotation of the fixing element (4) when said fixing element (4) is in the lowered position.

2. Fastening device (1) according to claim 1, wherein said body member (2) comprises a first portion (2A) lying, in use, on a perpendicular plane with respect to the inner surface of a piece of furniture (F) or to a wall, and a second portion (2B) lying, in use, on a parallel plane with respect to the inner surface of a piece of furniture (F) or to a wall, a pair of shoulders (21) rising from an edge portion of said second portion (2B) is provided for articulating said fixing element (4) on said body member (2).

3. Fastening device (1) according to claim 2, wherein in said raised position said fixing element (4) lies substantially on the same plane defined by said second portion (2B) and in said lowered position said fixing element (4) lies on a parallel plane with respect to the plane defined by said first portion (2A), the passage between said raised position and said lowered position being achieved through a rotation about an axis (X-X) passing through said pair of shoulders (21).

4. Fastening device (1) according to claim 2 or 3, wherein said fixing element (4) comprises an articulating portion (4A) provided with a through hole (40) and adapted to be disposed between said pair of shoulders (21), and a fork portion (4B) formed by a

pair of facing and parallel walls extending from said articulating portion (4A).

5. Fastening device (1) according to claim 4, wherein said fixing element (4) is made in a single piece with said body member (2), said fixing element (4) and said body member (2) being made of polymeric material, said articulating portion (4A) being formed from a weakened area of the polymeric material suitable to allow the rotation of said fixing element (4) about said axis (X-X).

6. Fastening device (1) according to claim 4, wherein said articulating portion (4A) is provided with a through hole (40) suitable to be crossed by a pin (3) extending along said axis (X-X).

7. Fastening device (1) according to claim 6, wherein said pin (3) is made integral with said body member (2), said pin (3) being arranged between said pair of shoulders (21) and being provided with shaped projections (3A) suitable to stably hold, by interference fit, said fixing element (4) in said raised position.

8. Fastening device (1) according to claim 7, wherein said fixing element (4) is obtained from a pair of coupling facing half shells (44A, 44B), configured so as to be rotatably mounted about said pin (3).

9. Fastening device (1) according to any claim from 4 through 8, wherein a holding element (30) is interposed between the two facing walls forming said fork portion (4B), said holding element (30) being adapted to cooperate with stop means (51 A) provided on said locking element (5) when said locking element (5) is moved between said locking position and said unlocking position.

10. Fastening device (1) according to claim 9, wherein said holding element (30) comprises a first and a second pair of side seats (11, 12), facing each other and adapted to cooperate with said stop means (51 A) for defining respectively said unlocking position and said locking position.

11. Fastening device (1) according to any one of claims 4 through 10, wherein said locking element (5) is U-shaped conjugating said fixing element (4), the side arms (5A) of said locking element (5) comprising a guide portion (51) adapted to be inserted in the space between the facing walls of the fork portion (4B) for guiding the sliding movement of the locking element (5) between said unlocking position and said locking position.

12. Fastening device (1) according to claim 11, wherein said locking means (50) comprise projecting portions extending from the free ends of said side arms (5A) and, when in said locking position, are adapted to be inserted inside corresponding recesses (23) obtained below abutment portions (22) projecting laterally from said pair of shoulders (21) when said locking element (5) is in said locking position.

13. Fastening device (1) according to any one of claims 5 through 12, wherein first retaining means (10A) are provided on said first portion (2A) and second retaining means (10B) are provided on the outer surface of said fork portion (4B) adapted to contact the furniture or wall shelf (R), said first and second retaining means (10A, 10B) and said holding element (30) being obtained from an over-moulded elastomeric material.

14. Fastening device (1) according claim 13, wherein said second retaining means (10B) and said holding element (30) are formed in one piece.

15. Method for fixing a furniture shelf (R) or a wall shelf to the inner surface of a piece of furniture (F) or to a wall by means of a fastening device (1) according to claim 1, comprising the following steps:

a) arranging said body member (2) on a piece of furniture (F) or a wall at the desired height;
b) arranging said fixing element (4) in a raised position;
c) placing the furniture shelf (R) or wall shelf on said body member (2);
characterized in that it also comprises the following steps to achieve the fastening of the furniture shelf (R) or wall shelf:
d) rotating said fixing element (4) from the raised position to the lowered position;
e) sliding said locking element (5) on said fixing element (4) from said unlocking position to said locking position.

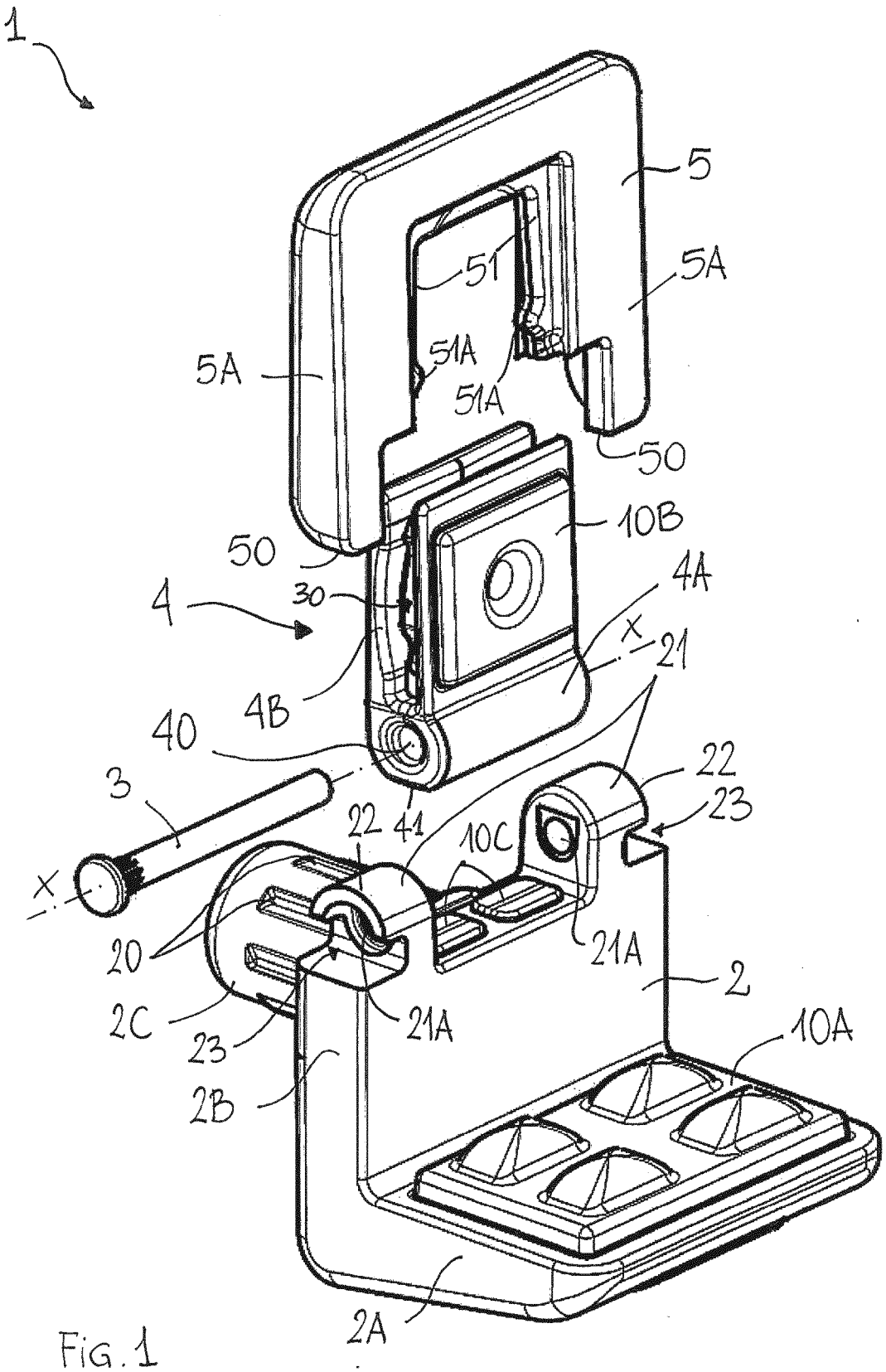

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41
23
10C
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20
21A
2
2C
21A
10A
23
2B
2A

Fig. 1

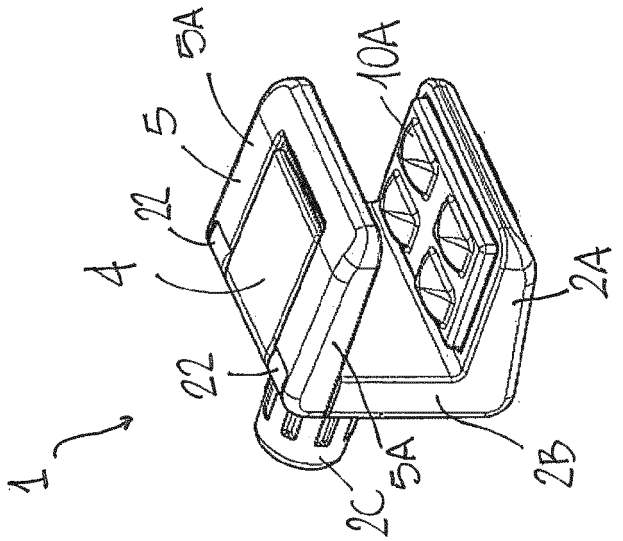


Fig. 2C

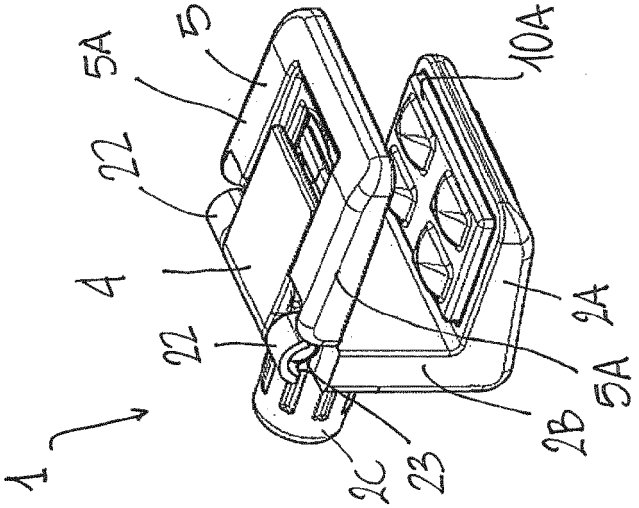


Fig. 2B

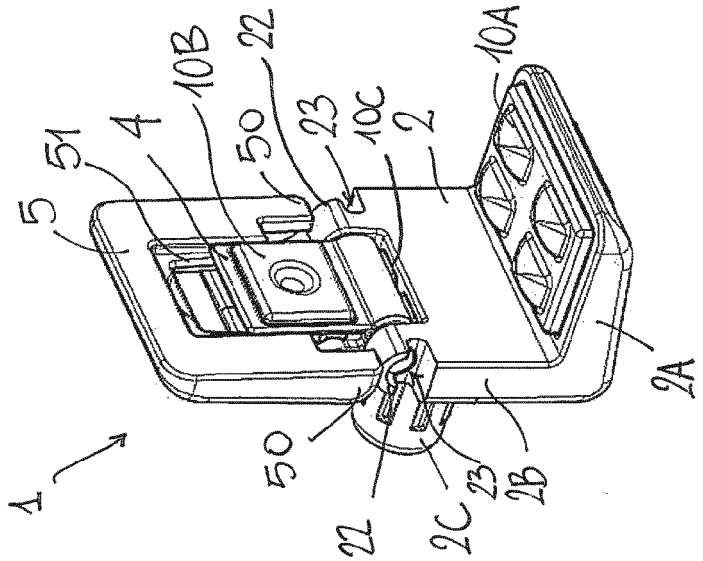


Fig. 2A

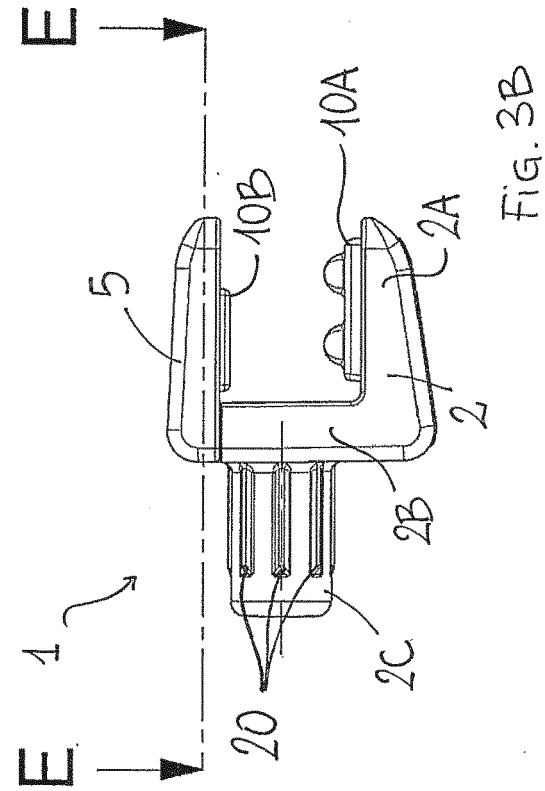


FIG. 3B

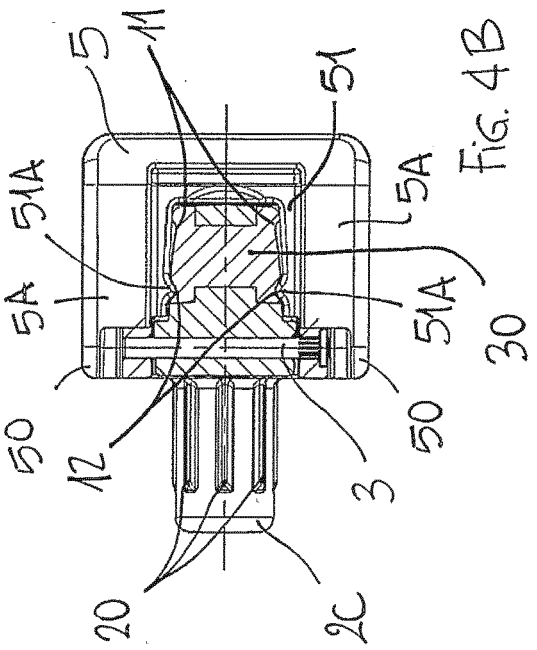


FIG. 4B
SECT. E-E

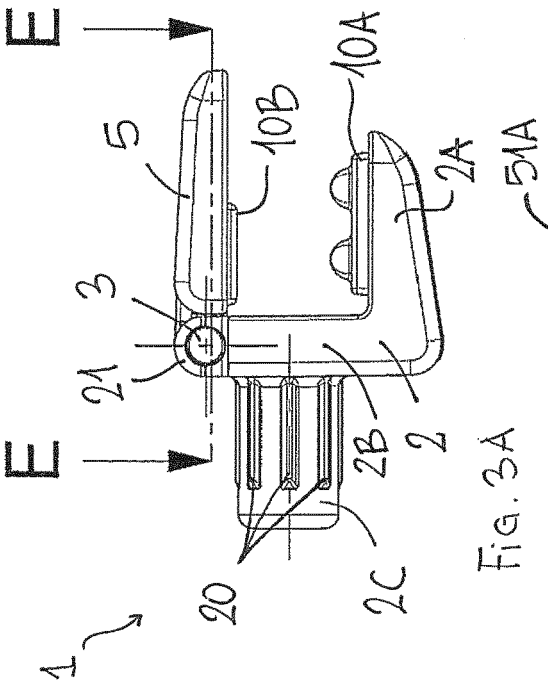


FIG. 3A

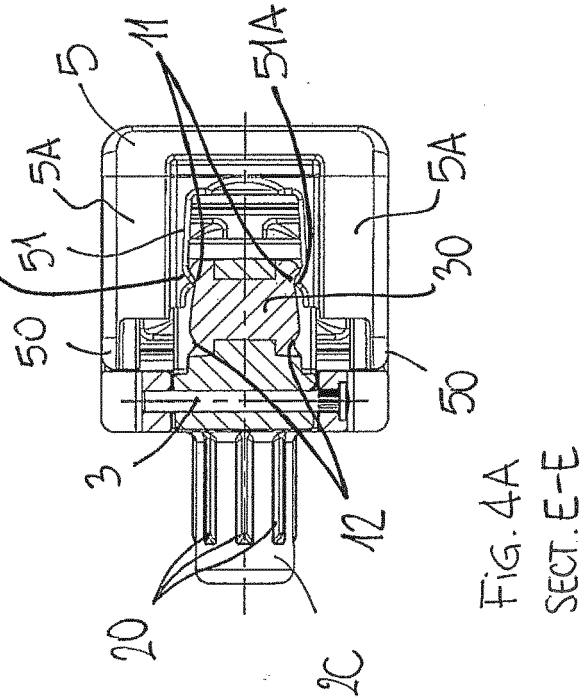


FIG. 4A
SECT. E-E

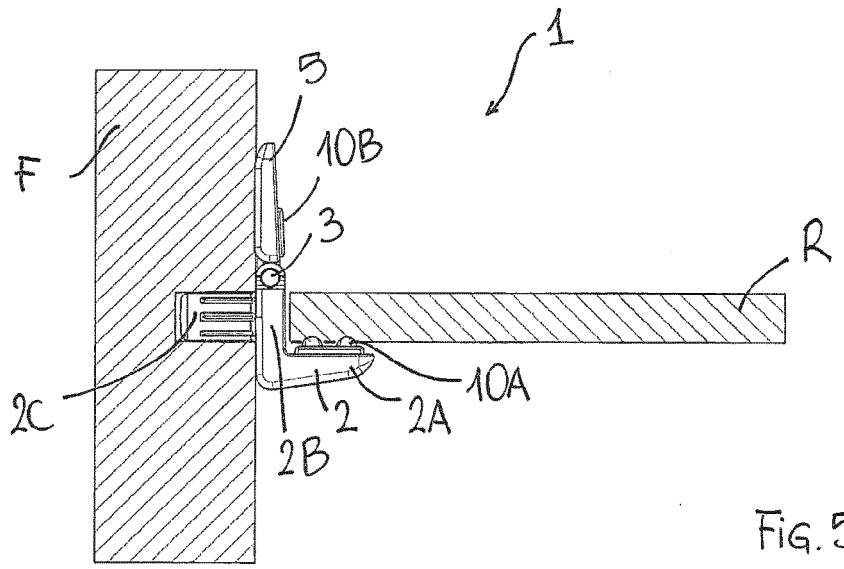


FIG. 5A

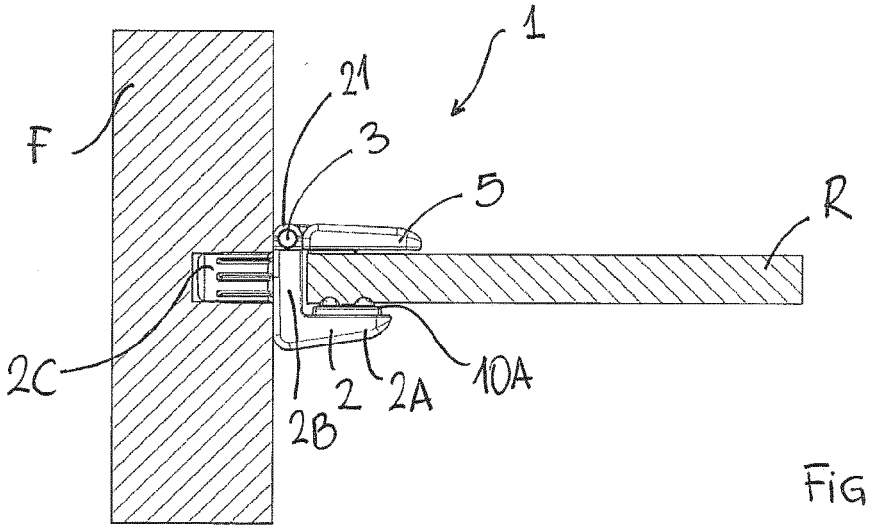


FIG. 5B

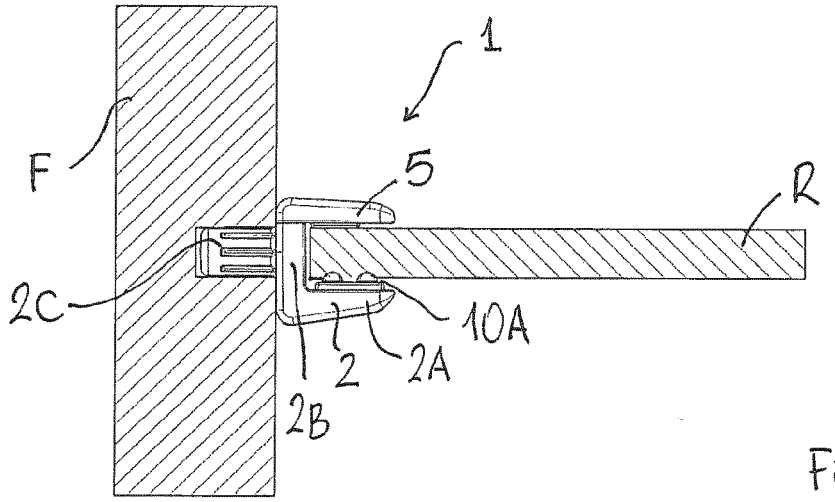


FIG. 5C

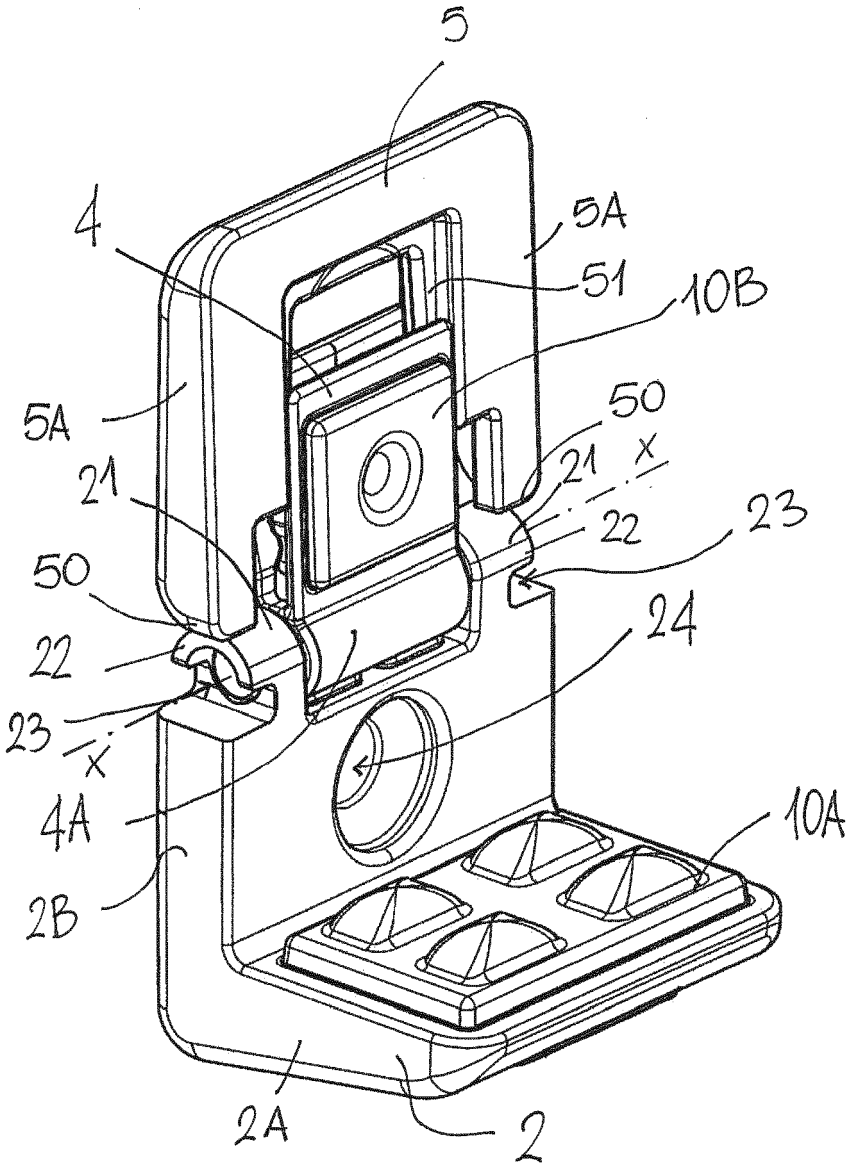


Fig.6

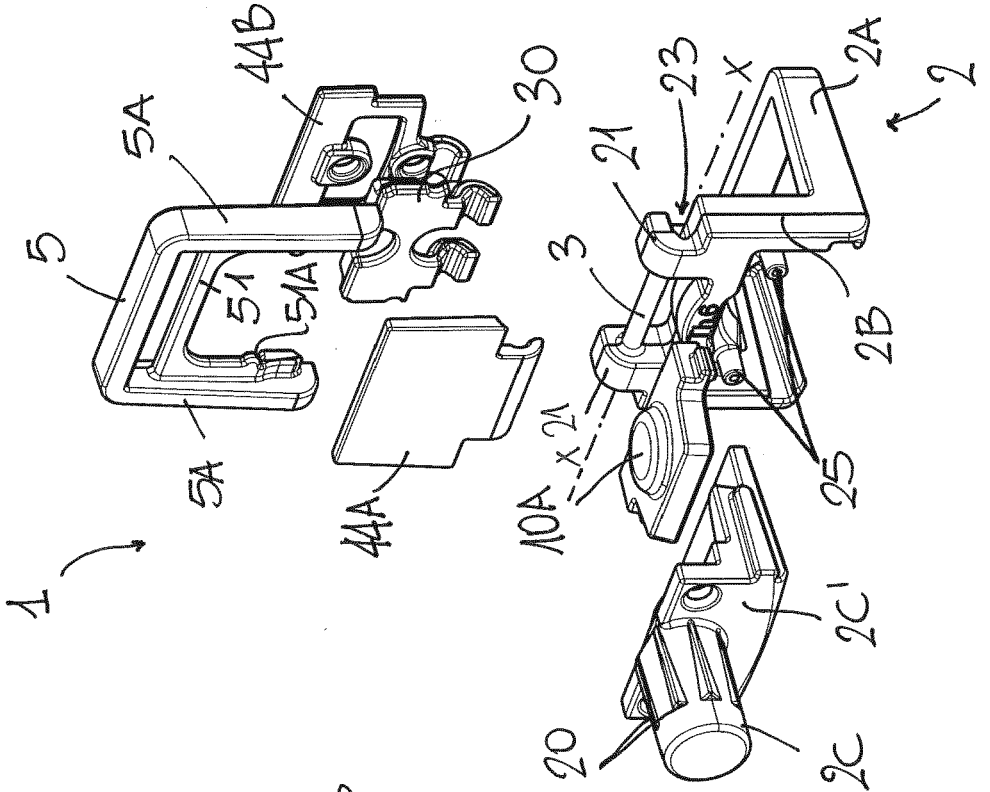

1
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5A
51
51A
44B
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44A
10A
21
23
X
2A
2
3
2B
25
2C'
20
2C

FIG. 7B

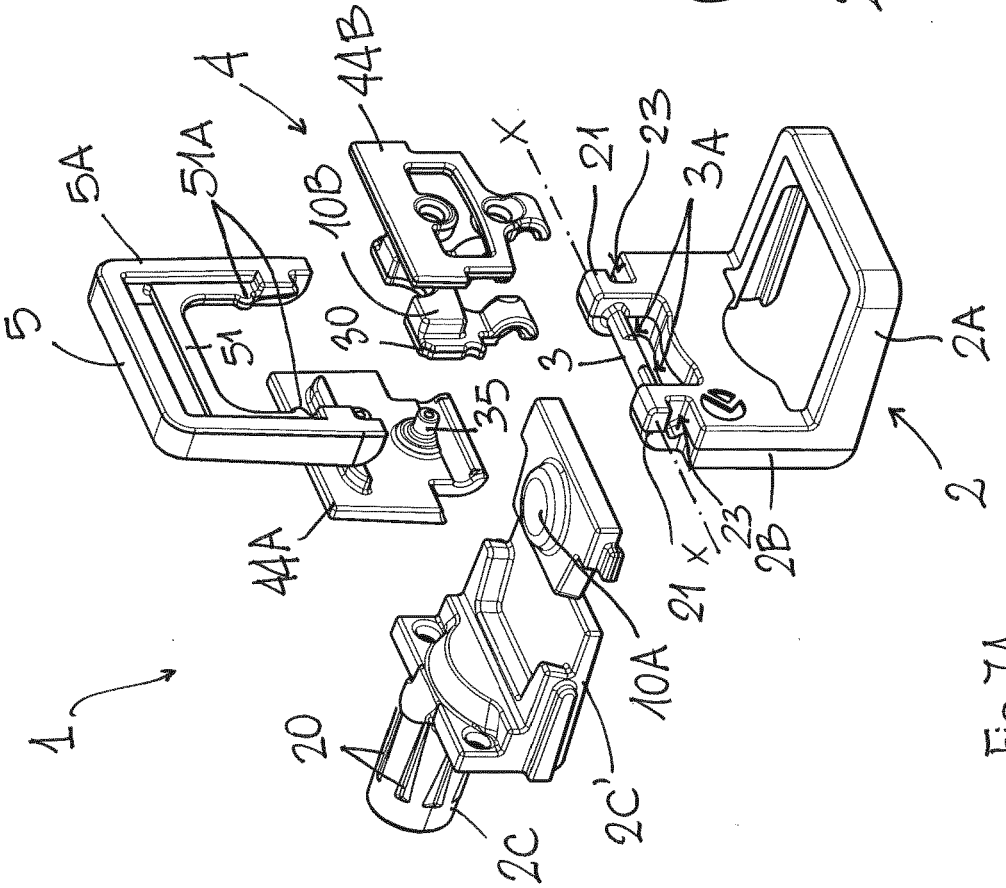

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51A
44B
10B
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2C'
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3A
2A
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2B

FIG. 7A

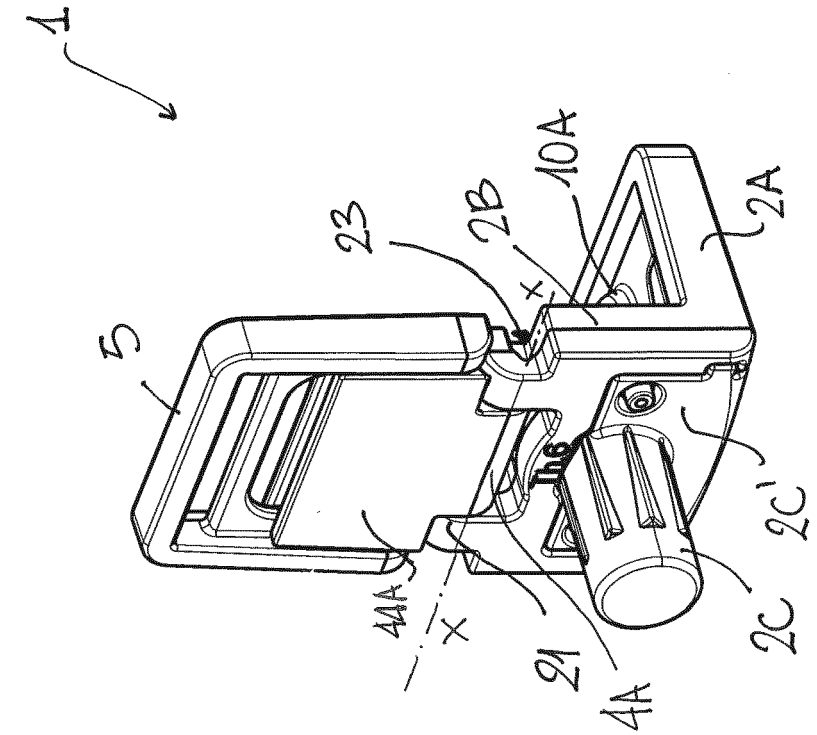


Fig. 8B

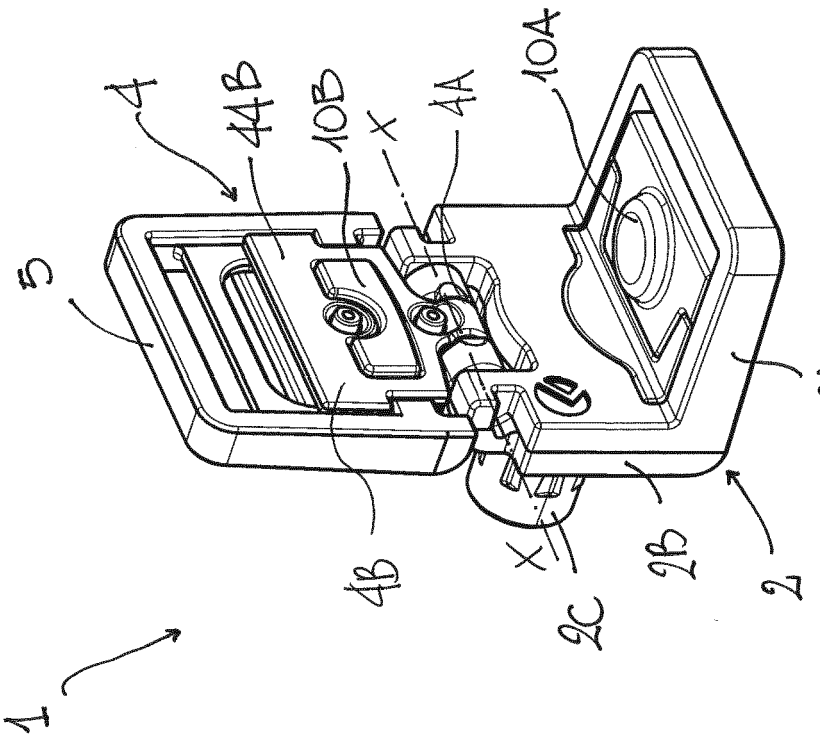


Fig. 8A

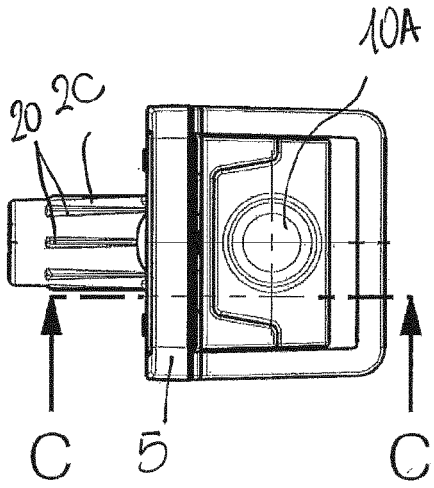


Fig. 9A

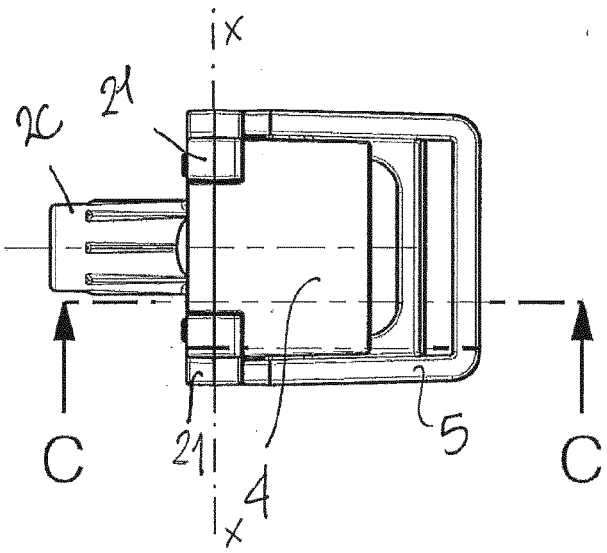


Fig. 9B

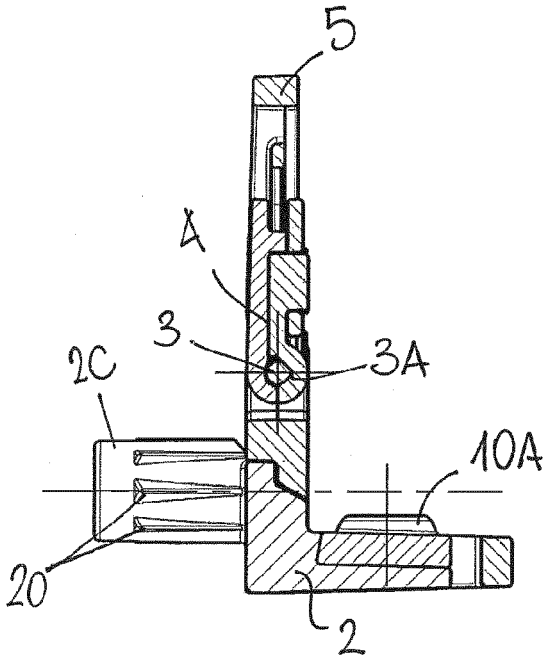


Fig. 10A
SECT. C-C

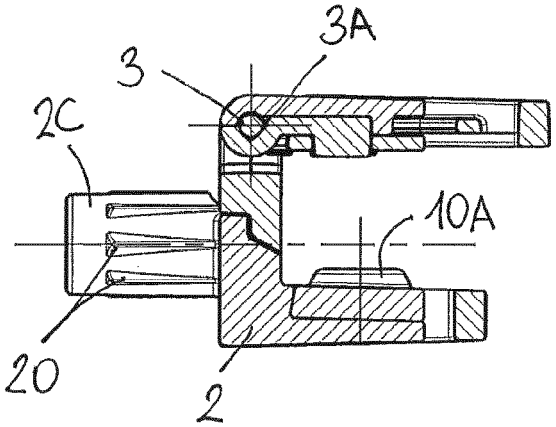


Fig. 10B
SECT. C-C

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EUROPEAN SEARCH REPORT

Application Number
EP 14 16 0572

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 03/068024 A1 (SYSTEM HOLZ SPA [IT]; POZZI ALBERTO [IT]) 21 August 2003 (2003-08-21) * page 3, line 20 - page 7, line 11; figures 1-8 *	1-15	INV. A47B96/06
A	EP 2 151 176 A1 (LIVENZA FERRAMENTA SRL [IT]) 10 February 2010 (2010-02-10) * paragraph [0018] - paragraph [0028]; figures 1-10 *	1-15	
A	JP 2010 088755 A (SHIROKUMA CO LTD) 22 April 2010 (2010-04-22) * figures 1-8 *	1-15	
A	JP 2006 239128 A (NAIGAI KK) 14 September 2006 (2006-09-14) * figures 1-11 *	1-15	
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			A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 July 2014	Vehrer, Zsolt

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24-07-2014

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