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(54) Concealed-type support arrangement for brackets, shelves and the like

Verborgene Stützanordnung für Konsole, Regalbrette und Ähnliches

Agencement de support de type dissimulé pour des consoles, étagères et similaires

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(56) References cited:
DE-B3-102004 025 126

EP 1 844 682 B1

Description

[0001] The present invention relates to a concealed-type support arrangement for brackets, consoles, shelves and the like.

[0002] Disclosed in the French patent publication no. FR 2 701 520 there is a mounting device, in particular for the attachment of shelves to a wall, which comprises a planar mount bracket intended for fastening to a wall and provided, to such purposes, with buttonhole-like slits designed to enable the shelf to be adjusted vertically by means of screws. Such planar bracket defines an engagement edge that extends perpendicularly relative to the plane of the same bracket and is provided with a slot. The device further comprises an L-shaped plate that is associated to the bracket with the help of the slot and has a shorter length than the slot itself. This plate is adapted to engage a support shank provided in a substantially perpendicular manner on the bracket.

[0003] The position of the plate and, as a result, the support shank is adjustable in a direction extending parallel to the plane of the bracket along the length of the slot. The torque generated by the weight of the support shank acts on the plate so as to immobilize, i.e. retain the same plate in the desired position, whereas - in view of enabling the plate to be displaced translationally and the position of the support shank to be adjusted along the plane of the mounting bracket - a force is required to be applied upon the shank, which must be such as to be at least adapted to countervail, i.e. overcome the torque generated by the weight of the support shank.

[0004] The above-cited plate further comprises two dowels, which - by acting upon the bracket - exert a force onto the plate, thereby causing it to open out relative to the same bracket so as to correspondingly adjust the inclination of the support shank relative to the plane of the bracket.

[0005] This prior-art device, as it has been described above, has a major drawback in that, for the support arm to be adjusted horizontally, the need arises for quite complicated an operation to be performed that practically does not allow the position of the same support arm to be accurately, i.e. finely adjusted along the mounting bracket to any adequate extent.

[0006] For the position of the support arm to be adjusted horizontally, the need in fact arises for the shelf, or the like, to be removed from the related support arm and an appropriate force to be exerted upon the shank so as to counterbalance, and overcome, the torque generated by the weight of the same shank, so as to cause the plate to disengage and be displaced along the slot into the desired position. Thereupon, the shelf must be mounted in place again and the adjustment be checked for adequateness, wherein it can be most readily understood that such operation has to be repeated, i.e. performed again and again until an adequate adjustment is eventually achieved.

[0007] Another major drawback generally encountered in the above-cited prior art lies in the fact that adjusting the inclination of the support shank relative to the mounting bracket has to be performed by actuating both dowels correspondingly. This implies a lot of time being required to complete the operation, actually, and further results in an inadequately accurate, scarcely reproducible adjustment being generally obtained, since the possibility for the two dowels to be actuated in exactly the same manner certainly is a most unlikely occurrence.

[0008] In addition, owing to such two dowels being provided to extend perpendicularly relative to the mounting bracket, for them to be able to be actuated the need arises for the shelf to be completely removed off the related support shank, the dowels to be actuated, the shelf to be mounted back on the support shank, the just performed adjustment to be checked for adequateness, and the whole procedure to be possibly repeated until the desired adjustment is eventually achieved.

[0009] It is therefore an object of the present invention to provide a concealed-type support arrangement for brackets, consoles, shelves, and the like, which is effective in doing away with the drawbacks and disadvantages of prior-art devices of the kind as described above.

[0010] Within this general object, it is a purpose of the present invention to provide an arrangement of the above-indicated kind, in which the adjustment of the support shank relative to the mounting bracket can be done in a simple, quick and most effective manner.

[0011] Another purpose of the present invention is to provide an arrangement of the above-indicated kind, which is simple in construction, reliable in practical use, and capable of being manufactured at fully competitive costs.

[0012] According to the present invention, these aims, along with further ones that will become apparent from the following disclosure, are reached in an arrangement incorporating the features as defined and recited in the claims 1 et seq. appended hereto.

[0013] Features and advantages of the present invention will anyway be more readily understood from the description of a preferred, although not sole embodiment that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a perspective exploded view of an arrangement according to a first embodiment of the present invention;
- Figure 2 is a perspective view of the arrangement shown in Figure 1, as viewed in the assembled state thereof and with an upper portion of the mounting bracket removed for enhanced visibility of the interior of the housing body;
- Figure 3 is a top cross-sectional view of the arrangement shown in Figure 1;
- Figure 4 is a side cross-sectional view of the arrange-

ment shown in Figure 1, as viewed with the arm 3 in the first extreme, i.e. end position thereof, in which it extends horizontally relative to the wall;

- Figure 5 is a side cross-sectional view of the arrangement shown in Figure 1, as viewed with the arm 3 in the second extreme, i.e. end position thereof, in which it is slightly inclined upwards relative to the horizontal direction;

- Figure 6 is a perspective view of the arrangement shown in Figure 1, as viewed in a state in which it is attached to the wall and the related shelf is duly mounted thereon;

- Figure 7 is a perspective exploded view of an arrangement according to a second embodiment of the present invention;

- Figure 8 is a perspective view of the arrangement shown in Figure 7, as viewed in the assembled state thereof and with an upper portion of the mounting bracket removed for enhanced visibility of the interior of the housing body;

- Figure 9 is a top cross-sectional view of the arrangement shown in Figure 7;

- Figure 10 is a side cross-sectional view of the arrangement shown in Figure 7, as viewed with the arm 4 in the first extreme, i.e. end position thereof, in which it extends horizontally relative to the wall;

- Figure 11 is a side cross-sectional view of the arrangement shown in Figure 7, as viewed with the arm 4 in the second extreme, i.e. end position thereof, in which it is slightly inclined upwards relative to the horizontal direction;

- Figure 12 is a front cross-sectional view of the arrangement shown in Figure 7, illustrating the serrations of the movable member 6 and the housing body 7 in detail;

- Figure 13 is a perspective view of the arrangement shown in Figure 7, as viewed in a state in which it is attached to the wall and the related shelf is duly mounted thereon.

[0014] With preference to the Figures 1-6, the concealed-type support arrangement for brackets, consoles, shelves, and the like according to a first embodiment of the present invention - as indicated generally at 201 in the Figures 1-6 - comprises a longitudinal mounting bracket 202 adapted to be attached to a wall, a transverse support arm 203 capable of being inserted in a receptacle provided in a shelf 204, adjustment means for adjusting the position of the support arm 203 relative to the mounting bracket 202.

[0015] The shelf support arrangement further comprises a movable member 205 accommodated in a housing body 206 defined by the mounting bracket 202 and provided with a threaded bore 207 to rotatably engage a corresponding threaded portion 208 of the arm 203, coupling means 209 to block, i.e. firmly retain the arm 203 in the bracket 202 transversally relative thereto, a threaded member 210 engaging said movable member 205 and adapted to cooperate with the housing body 206 to longitudinally guide, i.e. translationally displace said movable member 205 within the housing body 206 so as to adjust the longitudinal position of the arm 203 along the bracket 202, guide means 211 provided in said housing body 206 and adapted to cooperate with said movable member 205, via said threaded portion 208 thereof, said arm 203 is adapted to cause said movable member 205 to slide transversally along said guide means 211 so that said movable member 205 rotates about a longitudinal axis C, thereby adjusting the inclination of the support arm 203 relative to the mounting bracket 202.

[0016] The mounting bracket 202 is comprised of an elongated body that extends in a longitudinal direction A running parallel to the wall to which the mounting bracket 202 is due to be attached, wherein said elongated body is provided - at each end portion thereof - with a slot-like perforation 212 for the bracket 202 to be able to be secured to the wall by means of appropriate screws 213. Such slot-like perforations 212 are so shaped as to enable the vertical position of the bracket 202 and, as a result, the support arm 203 to be adjusted relative to the screws 213 fitted into the wall, so as to have the vertical position of the shelf 204 adjusted accordingly.

[0017] The mounting bracket 202 forms integrally therewith, i.e. in a single-piece unitary construction with the same bracket, the above-indicated housing body 206, which defines a cavity adapted to accommodate the movable member 205. The housing body 206 protrudes from the attachment wall, and is adapted to be received in an appropriate receptacle provided within the thickness of the shelf, when the mounting bracket 202 is mounted in position against the wall.

[0018] On a front portion thereof, the mounting bracket 202 is provided with a front slot-like aperture 214, through which access can be gained into the threaded bore 207 of the movable member 205 to let the threaded portion 8 of the support arm engage said bore. The slot-like aperture 214 is so shaped as to further enable the arm 203 to displace longitudinally and be inclined according to the related adjustment needs. The arm 203, as associated to the movable member 205 and the mounting bracket 202, extends in a transversal direction B running perpendicular to the wall which the longitudinal mounting bracket 202 is due to be attached to.

[0019] In an advantageous manner, the threaded bore 207 is a through-bore, so that an end portion 215 of the arm 203 is capable of extending throughout the movable member 205 to eventually protrude therefrom so as to

rotatably engage the coupling means 209.

[0020] The coupling means 209 comprise an abutting member 216, which is constituted by a washer in the particular embodiment being discussed, and which is adapted to rotatably receive the end portion 215 of the arm 203 and position itself into abutment against the body of the mounting bracket 202 in correspondence to a receptacle 217 opposing the slot-like aperture 214. The coupling means 209 further comprise an interference member 218, which is constituted by a kind of snap ring in the particular embodiment being discussed, and which is adapted to engage a groove 219 provided on the end portion 215 of the arm 203, as well as to come into contact with the abutting member 216 to prevent the end portion 215 of the arm 203 from sliding or displacing transversally relative to the abutting member 216 and, as a result, to retain the arm 203 transversally relative to the mounting bracket 202.

[0021] Advantageously, the abutting member 216 is capable of sliding longitudinally along the receptacle 217 provided in the mounting bracket 202 so as to allow the arm 203 to displace longitudinally along the same bracket 202, whereas the interference member 218, which is elastically deformable, allows the end portion 215 to be inclined relative to the abutting member 216 and, as a result, the arm 203 to be inclined relative to the bracket 202.

[0022] Of course, the coupling means 209 allow the arm 203 to rotate about its own axis, so that the threaded portion 208 of the arm 203, when the latter is rotated, acts upon the threaded bore 207 to thereby drive the movable member 205 into displacing transversally, so as this will be described in greater detail further on.

[0023] The threaded member 210 is linked to the interior of the housing body 206 in a fixed longitudinal position, i.e. is retained longitudinally relative to the bracket 202, so as to be able to engage an internally threaded bush 220 of the movable member 205, and drive in this way the movable member 205 into moving, i.e. displacing longitudinally within the housing body 206.

[0024] Anyway, the threaded member 210 is free to slide transversally within the housing body 206 and to rotate about its own axis jointly with the movable member 205.

[0025] The threaded member 210 comprises a head 221 that is secured longitudinally in a transversally extending guide member 222 provided in the housing body 206 and defined by a pair of parallel edges 223 that retain such head longitudinally, while allowing it to both slide transversally along the guide member 222 and rotate on itself.

[0026] An aperture 224, which is specially provided in the body of the mounting bracket 202 to such purpose, allows access to be gained to the head 221 of the threaded member 210 for it to be able to be actuated by means of a tool. Screwing the threaded member 210 in and out causes the movable member 205 to slide, i.e. displace longitudinally within the housing body 206 and, as a result, the arm 203 to displace longitudinally relative to the mounting bracket 202, owing to the arm 203 being firmly joined with the movable member 205.

[0027] The abutting member 216, which is engaged by the end portion 215 of the support arm 203, is caused by the same arm 203 to displace in the longitudinal direction A, so as to slide along the receptacle 217 of the mounting bracket 202.

[0028] The support arm 203 is firmly retained against the body of the mounting bracket 202 transversally by the coupling means 209, but is free to rotate about its own axis. Therefore, when the support are 203 is rotated by a user to adjustment purposes, this will cause - owing to the screw-nut screw coupling existing between the threaded portion 208 of the arm 203 and the threaded bore 207 of the movable member 205 - the movable member 205 to displace in the transverse direction B.

[0029] The guide means 211 provided in the housing body 206 are adapted to partially rotate the movable member 205 about the longitudinal axis C while the movable member 205 itself is displacing transversally, so as to cause the arm 203 to incline relative to the mounting bracket 202.

[0030] In the embodiment being described by way of illustrative example, the guide means 211 comprise at least one inclined plane or, more preferably, a pair of inclined planes provided in the housing body 206 in proximity of the front slot-like aperture 214 of the mounting bracket 202. These inclined planes are adapted to cooperate with the movable member 205, and in particular with concavely contoured surfaces 225 provided thereon, so that the movable member 205, when moving transversally towards the front slot-like aperture 214, is able to slide along the inclined planes so as to be rotated by as wide an angle as great the displacement of the movable member 205 is, thereby enabling the support arm 203 to be finely adjusted owing to the support arm itself being firmly associated to the movable member 205 to move jointly therewith.

[0031] The movable member 205 is capable of sliding transversally within the housing body 206 between a first extreme, i.e. end position, in which the support arm 203 extends horizontally from the bracket 202 when the latter is attached to the wall, and a second extreme, i.e. end position, in which the support arm 203 is inclined upwards by a greatest possible angle relative to the bracket 202.

[0032] Displacing the movable member 205 transversally to any intermediate position therebetween will of course enable a corresponding different angle of inclination of the support arm 203 to be obtained relative to the bracket 202.

[0033] Fully apparent from the above description is therefore the ability of the present invention to effectively reach the aims and advantages specified hereinbefore, by providing an arrangement enabling the position of the support arm to be adjusted in a simple, quick and effective manner through the actuation of the threaded member 210 and the corresponding rotation of the arm 203.

[0034] In a most advantageous manner, any adjustment of the position of the support arm 203 can be performed without any need arising for the supported shelf to be completely removed from the support arm itself, since it is sufficient for the same shelf to be just slightly spaced apart, i.e. moved away from the mounting bracket for the threaded member to be able to be actuated and, as a result, the arm adjusted accordingly.

[0035] With reference to the Figures 7-13, the concealed-type support arrangement for brackets, consoles, shelves, and the like according to a second embodiment of the present invention - as indicated generally at 301 in the Figures 7-13 - comprises a longitudinal mounting bracket 302 adapted to be attached to a wall 303, a transverse support arm 304 capable of being inserted in a receptacle provided in a shelf 305, adjustment means for adjusting the position of the support arm 304 relative to the mounting bracket 302.

[0036] The shelf support arrangement further comprises a movable member 306 accommodated in a housing body 307 defined by the mounting bracket 302 and provided with a threaded bore 308 to rotatably engage a corresponding threaded portion 309 of the arm 304, coupling means 310 to block, i.e. firmly retain the arm 304 in the bracket 302 transversally relative thereto.

[0037] A first longitudinally extending serration 311 is provided on said movable member 306 so as to be adapted to cooperate with a second longitudinally extending serration 312 provided inside said housing body 307 for the longitudinal position of the movable member 306 within the housing body 307 and, as a result, the arm 304 along the mounting bracket 302 to be able to be adjusted.

[0038] Guide means 313 are provided in said housing body 307 so as to be adapted to cooperate with said movable member 306; said arm 304, through said threaded portion 309 thereof, is adapted to cause said movable member 306 to slide transversally along said guide means 313 so that said movable member 306 is rotated about a longitudinal axis C, thereby adjusting the inclination of the support arm 304 relative to the mounting bracket 302.

[0039] The mounting bracket 302 is comprised of an elongated body that extends in a longitudinal direction A running parallel to the wall 303, which the mounting bracket 302 is due to be attached to, wherein said elongated body is provided - at each end portion thereof - with a slot-like perforation 314 for the bracket 302 to be able to be secured to the wall 303 by means of appropriate screws 315. Such slot-like perforations 314 are so shaped as to enable the vertical position of the bracket 302 and, as a result, the support arm 304 to be adjusted relative to the screws 315 fitted into the wall, so as to have the vertical position of the shelf 305 adjusted accordingly.

[0040] The mounting bracket 302 forms integrally therewith, i.e. in a single-piece unitary construction with the same bracket, the above-indicated housing body 307, which defines internally a cavity 316 adapted to accommodate the movable member 306. The housing body 307 protrudes from the attachment wall 303, and is adapted to be received in an appropriate receptacle provided within the thickness of the shelf 305, when the mounting bracket 302 is mounted in position against the wall.

[0041] On a front portion thereof, the mounting bracket 302 is provided with a front slot-like aperture 317, through which access can be gained into the threaded bore 308 of the movable member 306 to let the threaded portion 309 of the support arm 304 engage said bore. The slot-like aperture 317 is so shaped as to further enable the arm 304 to displace longitudinally and be inclined according to the related adjustment needs. The arm 304, as associated to the movable member 306 and the mounting bracket 302, extends in a transversal direction B running perpendicular to the wall 303, which the longitudinal mounting bracket 302 is due to be attached to, as well as perpendicular to the axis A, along which the body of the mounting bracket 302 extends.

[0042] In an advantageous manner, the threaded bore 308 is a through-bore, so that an end portion 318 of the arm 304 is capable of extending throughout the movable member 306 to eventually protrude therefrom so as to rotatably engage the coupling means 310.

[0043] The coupling means 310 comprise an abutting member 319, which is constituted by a washer in the particular embodiment being discussed, and which is adapted to rotatably receive the end portion 318 of the arm 304 and position itself into abutment against the body of the mounting bracket 302 in correspondence to a receptacle 320 opposing the slot-like aperture 317. The coupling means 10 further comprise an interference member 321, which is constituted by a kind of snap ring in the particular embodiment being discussed, and which is adapted to engage a groove 322 provided on the end portion 318 of the arm 304, as well as to come into contact with the abutting member 319 to prevent the end portion 318 of the arm 304 from sliding or displacing transversally, i.e. along the axis B, relative to the abutting member 319 and, as a result, to positively retain the arm 304 transversally relative to the mounting bracket 302.

[0044] Advantageously, the abutting member 319 is capable of sliding longitudinally along the receptacle 320 provided in the mounting bracket 302 so as to allow the arm 304 to displace longitudinally along the same bracket 302, whereas the interference member 321, which is elastically deformable, allows the end portion 318 to be inclined relative to the abutting member 319 and, as a result, the arm 304 to be inclined relative to the bracket 302.

[0045] Of course, the coupling means 310 allow the arm 304 to rotate about its own axis, so that the threaded portion 309 of the arm 304, when the latter is rotated, acts upon the threaded bore 308 to thereby drive the movable member 306 into displacing transversally, so as this will be described in greater detail further on.

[0046] The movable member 306 comprises a first serration 311 that extends longitudinally along an upper por-

tion of the movable member 306. This first serration 311 is substantially provided by correspondingly machining an upper surface of the movable member 306 so as to form a plurality of projecting teeth following each other in a regular sequence in a longitudinal direction running parallel to the axis A along which the body of the mounting bracket 302 extends, as this is clearly shown in Figures 14,15 and 19.

[0047] In turn, the housing body 307 comprises a second serration 312 provided on an inner surface of the same housing body 307, wherein such second serration 312 is provided so as to extend in correspondence to the first serration of the movable member 306, in a position lying substantially above said first serration 311. Also this second serration 312 of the housing body 307 is formed of a plurality of projecting teeth that follow each other in a regular sequence in a longitudinal direction along the axis A, i.e. the axis along which the body of the mounting bracket 302 extends. The teeth of the two above-cited serrations 311 and 312 are so shaped as to be able to mesh with each other.

[0048] The movable member 306 is adapted to be moved, i.e. displaced longitudinally within the housing body 307 to select a desired position of the arm 304 relative to the mounting bracket 302. The first serration 311 on the movable member 306 is designed to slide along the second serration 312 on the housing body 307 and be then stopped and retained in the selected longitudinal position by virtue of the torque generated by weight-force of the arm 304 and the shelf 305 mounted on such arm 304. In fact, the torque generated by the weight of the arm 304 causes the teeth of the serrations 311, 312 to engage each other, thereby positively preventing the first serration 311 from slipping or sliding longitudinally on and relative to the second serration 312, and - as a result - immobilizing the movable member 306 within the housing body 307 in the longitudinal position selected by the user. In practice, the user grasps the arm 304 and counterbalances the torque generated by the weight of the arm 304 so as to enable the serrations 311, 312 to disengage each other and, as a result, the movable member 306 to slide longitudinally within the housing body 307. Upon reaching the most suitable longitudinal position of the movable member 306 selected in view of enabling the arm 304 and, ultimately, the shelf 305 to be positioned in the correct manner as desired, the user then lets go of, i.e. releases the arm 304, the weight-force of which will therefore cause the teeth of the serrations 311, 312 to mutually engage by meshing again with each other, thereby immobilizing the movable member 306 longitudinally within the housing body 307 and holding the arm 304 firmly in the selected position thereof.

[0049] The abutting member 319, which is engaged by the end portion 318 of the support arm 304, is adapted to slide along the receptacle 320 of the mounting bracket 302, as moved by the same arm 304 to displace in the longitudinal direction A, when the position of the arm 304 is being adjusted by the user.

[0050] The support arm 304 is firmly retained transversally against the body of the mounting bracket 302 by the coupling means 310, but is free to rotate about its own axis. Therefore, when the support arm 304 is rotated by a user to adjustment purposes, this - owing to the screw-nut screw coupling existing between the threaded portion 309 of the arm 304 and the threaded bore 308 of the movable member 306 - will cause the movable member 306 to displace in the transverse direction, i.e. along the axis B.

[0051] The guide means 313 provided in the housing body 307 are adapted to partially rotate the movable member 306 about a longitudinal axis C while the movable member 306 itself is displacing transversally, so as to cause the arm 304 to incline relative to the mounting bracket 302.

[0052] In the embodiment being described by way of illustrative example, the guide means 313 comprise at least one inclined plane or, more preferably, a pair of inclined planes provided in the housing body 307. These inclined planes are adapted to cooperate with the movable member 306, and in particular with side portions 323 thereof, so that the moveable member 306, when moving transversally towards the front button-like aperture 317, is able to slide along the inclined planes, through the side portions 323, so as to be rotated by as wide an angle as great the displacement of the movable member 306 is, thereby enabling the support arm 304 to be finely adjusted into the desired position, owing to the support arm itself being firmly associated to the movable member 306 to move jointly therewith.

[0053] The teeth of the serrations 311, 312 are provided in such a manner as to enable the movable member 306 to concurrently move, i.e. slide transversally within the housing body 307 and rotate about the axis C.

[0054] Advantageously, the housing body 307 is provided laterally with apertures 324, through which the side portions 323 of the movable member 306 are received so as to allow for free movement of the movable member 306 transversally and related inclination of the arm 304.

[0055] The movable member 306 is capable of sliding transversally within the housing body 307 between a first extreme, i.e. end position, shown in Figure 17, in which the support arm 304 extends horizontally from the bracket 302 when the latter is attached to the wall 303, and a second extreme, i.e. end position, shown in Figure 18, in which the support arm 304 is inclined upwards by a greatest possible angle relative to the bracket 302.

[0056] Displacing the movable member 306 transversally to any intermediate position therebetween will of course enable a corresponding different angle of inclination of the support arm 304 to be obtained relative to the bracket 302.

[0057] Therefore, adjusting the inclination of the support arm 304 requires a user to simply rotate the arm in a given direction, relative to the axis B, to raise, i.e. incline the arm 304 upwards, and rotate the same arm 304 in the opposite direction to bring the arm 304 back into the

horizontal position thereof. For example, as indicated by the arrows shown on the housing body 307 at the sides of the front slot-like aperture, rotating in the clockwise direction will enable the arm to be inclined upwards, while rotating in the counter-clockwise direction will cause the same arm to be moved back into the horizontal position thereof.

[0058] Fully apparent from the above description is therefore the ability of the present invention to effectively reach the aims and advantages specified hereinbefore, by providing an arrangement enabling the position of the support arm to be adjusted in a simple, quick and effective manner through the serrations 311, 312 and the corresponding rotation of the arm 304.

[0059] In a most advantageous manner, any adjustment of the position of the support arm 304 can be performed without any need arising for the supported shelf to be completely removed from the support arm itself, since it is sufficient for the same shelf to be just slightly spaced apart, i.e. moved away from the mounting bracket for the arm 304 to be able to be actuated.

[0060] It will finally be appreciated the materials used in connection with the present invention, as well as the sizing and the shapes of the various component parts, may each time be selected so as to more appropriately meet the particular requirements or suit the particular application.

Claims

1. Concealed-type support arrangement for brackets, consoles, shelves, and the like, comprising a longitudinal mounting bracket (202, 302) adapted to be attached to a wall, a transverse support arm (203, 304) capable of being inserted in a receptacle provided in a shelf (204, 305), adjustment means for adjusting the position of said support arm (203, 304) relative to said mounting bracket (202, 302), **characterized in that** it further comprises a movable member (205, 306) accommodated in a housing body (206, 307) defined by said mounting bracket (202, 302), and provided with a threaded bore (207, 308) to rotatably engage a corresponding threaded portion (208, 309) of said support arm (203, 304), coupling means (209, 310) adapted to block, i.e. firmly retain said support arm (203, 304) in the bracket (202, 302) transversally relative thereto, a threaded member (210) engaging said movable member (205, 306) and adapted to cooperate with said housing body (206, 307) or a first longitudinally extending serration (311) provided on said movable member (306) cooperating with a second longitudinally extending serration (312) provided inside said housing body (307), to guide, i.e. displace said movable member (205, 306) longitudinally within said housing body (206, 307) so as to adjust the longitudinal position of the arm (203, 304) along the bracket (202, 302), guide means (211, 313) provided in said housing body (206, 307) and adapted to cooperate with said movable member (205, 306), said arm (203, 304), through said threaded portion (208, 309) thereof, is adapted to cause said movable member (205, 306) to slide transversally along said guide means (211, 313) so that said movable member (205, 306) is rotated about a longitudinal axis (C), thereby adjusting the inclination of the support arm (203, 304) relative to the mounting bracket (202, 302).

2. Concealed-type support arrangement according to claim 1, wherein said threaded member (210) is linked to the interior of the housing body (206) in a fixed longitudinal position, i.e. is retained longitudinally relative to the bracket (202), so as to be able to engage an internally threaded bush (220) of the movable member (205), and drive in this way the movable member (205) into moving, i.e. displacing longitudinally within the housing body (206).

3. Concealed type support arrangement according to claim 2, wherein said threaded member (210) is free to slide transversally within the housing body (206) and to rotate about its own axis.

4. Concealed-type support arrangement according to claim 3, wherein said threaded member (210) comprises a head (221) that is retained longitudinally in a transversally extending guide member (222) provided in the housing body (206).

5. Support arrangement according to claim 1, wherein said first serration (311) on the movable member (306) is designed to slide along the second serration (312) on the housing body (307) and be then stopped and retained in the selected longitudinal position by virtue of the torque generated by weight-force of the arm (304).

6. Support arrangement according to claim 5, wherein said torque generated by the weight of the arm (304) causes the teeth of the serrations (311, 312) to engage each other, thereby positively preventing the first serration (311) from slipping or sliding longitudinally on and relative to the second serration (312) to thereby immobilize the movable member (306) within the housing body (307) in the longitudinal position selected.

7. Support arrangement according to any of the preceding claims 1-6, wherein said threaded bore (207,308) is a through-bore, so that an end portion (215,318) of the arm (203,304) is adapted to extend throughout the movable member (205,306) to protrude therefrom so as to rotatably engage the coupling means (209,310).

8. Support arrangement according to claim 7, wherein said mounting bracket (202,302) defines a front slot-like aperture (214,317), through which access can be gained into the threaded bore (207,308) of the movable member (205,306) to engage the threaded portion (208) of the support arm (203,304).

9. Support arrangement according to claim 8, wherein said coupling means (209,310) comprise an abutting member (216,319) adapted to rotatably receive the end portion (215,318) of the arm (203,304), said abutting member (216,319) being firmly retained transversally in correspondence to a receptacle (217,320) of the mounting bracket (202,302).

10. Support arrangement according to any of the preceding claims 1-9, wherein rotating the support arm (203,304) about its own axis causes, through the screw-nut screw coupling existing between the threaded portion (208,309) of the arm (203,304) and the threaded bore (207,308) of the movable member (205,306), the movable member (205,306) to displace transversally.

11. Support arrangement according to any of the preceding claims 1-10, wherein said guide means (211,313) comprise at least one inclined plane provided in the housing body (206,307), said movable member (205,306), when moving transversally, being able to slide along said at least one inclined plane so as to be rotated about said longitudinal axis (C) by as wide an angle as great the displacement of the movable member (205,306) is, thereby enabling the support arm (203,304) to be finely adjusted owing to the support arm itself being firmly associated to the movable member (205,306) to move jointly therewith.

Patentansprüche

1. Halteanordnung des verborgenen Typs für Klammern, Konsolen, Ablagen und ähnliches, die eine längliche Montageklammer (202, 302) für die Befestigung an einer Wand, einen sich in der Querrichtung erstreckenden Haltearm (203, 304), der in eine an einer Ablage (204, 305) vorgesehene Aufnahmevertiefung eingesteckt werden kann, und eine Einstellungseinrichtung zum Einstellen der Position des Haltearms (203, 304) relativ zu der Montageklammer (202, 302) umfasst, **dadurch gekennzeichnet, dass** die Halteanordnung weiterhin umfasst: ein bewegliches Glied (205, 306), das in einem durch die Montageklammer (202, 302) definierten Gehäusekörper (206, 307) aufgenommen ist und mit einer Gewindebohrung (207, 308) zum drehenden Eingreifen in einen entsprechenden Gewindeteil (208, 309) des Haltearms (203, 304) versehen ist, eine Kopplungseinrichtung (209, 310) für das Blockieren, d.h. feste Halten, des Haltearms (203, 304) in der Klammer (202, 302) in der Querrichtung relativ zu dieser, ein Gewindeglied (210), das in das bewegliche Glied (205, 306) eingreift und für ein Zusammenwirken mit dem Gehäusekörper (206, 307) ausgebildet ist, oder eine erste sich in der Längsrichtung erstreckende Zahnanordnung (311), die an dem beweglichen Glied (306) vorgesehen ist und mit einer zweiten sich in der Längsrichtung erstreckenden Zahnanordnung (312) in dem Gehäusekörper (307) zusammenwirkt, um das bewegliche Glied (205, 306) in der Längsrichtung in dem Gehäusekörper (206, 307) zu verschieben, um dadurch die Längsposition des Arms (203, 304) entlang der Klammer (202, 302) einzustellen, eine Führungseinrichtung (211, 313), die in dem Gehäusekörper (206, 307) vorgesehen ist und ausgebildet ist, um mit dem beweglichen Glied (205, 306) zusammenzuwirken, wobei der Arm (203, 304) mit seinem Gewindeteil (208, 309) ausgebildet ist, um zu veranlassen, dass das bewegliche Glied (205, 306) in der Querrichtung entlang der Führungseinrichtung (211, 313) gleitet, sodass das bewegliche Glied (205, 306) um eine Längsachse (C) gedreht wird, um dadurch die Neigung des Haltearms (203, 304) relativ zu der Montageklammer (202, 302) einzustellen.

2. Halteanordnung des verborgenen Typs nach Anspruch 1, wobei das Gewindeglied (210) mit dem Inneren des Gehäusekörpers (206) an einer fixen Längsposition verbunden ist, d.h. in der Längsrichtung relativ zu der Klammer (202) gehalten wird, sodass es in eine mit einem Innengewinde versehene Buchse (220) des beweglichen Glieds (205) eingreifen kann und auf diese Weise das bewegliche Glied (205) zu einer Bewegung, d.h. Verschiebung, in der Längsrichtung in dem Gehäusekörper (206) antreiben kann.

3. Halteanordnung des verborgenen Typs nach Anspruch 2, wobei das Gewindeglied (210) frei in der Querrichtung in dem Gehäusekörper (206) gleiten und sich um seine eigene Achse drehen kann.

4. Halteanordnung des verborgenen Typs nach Anspruch 3, wobei das Gewindeglied (210) einen Kopf (221) umfasst, der in der Längsrichtung in einem sich in der Querrichtung erstreckenden Führungsglied (222), das in dem Gehäusekörper (206) vorgesehen ist, gehalten wird.

5. Halteanordnung des verborgenen Typs nach Anspruch 1, wobei die erste Zahnanordnung (311) an dem beweglichen Glied (306) vorgesehen ist, um entlang der zweiten Zahnanordnung (312) an dem Gehäusekörper (307) zu gleiten und dann durch das durch das aufgrund des Gewichts des Arms (304)

erzeugte Drehmoment an der ausgewählten Längsposition gestoppt und gehalten zu werden.

6. Halteanordnung des verborgenen Typs nach Anspruch 5, wobei das aufgrund des Gewichts des Arms (304) erzeugte Drehmoment veranlasst, dass die Zähne der Zahnanordnungen (311, 312) ineinander eingreifen, wodurch positiv verhindert wird, dass die erste Zahnanordnung (311) in der Längsrichtung auf und relativ zu der zweiten Zahnanordnung (312) rutscht oder gleitet, um das bewegliche Glied (306) in dem Gehäusekörper (307) an der ausgewählten Längsposition zu fixieren.

7. Halteanordnung des verborgenen Typs nach einem der Ansprüche 1-6, wobei die Gewindebohrung (207, 308) eine Durchgangsbohrung ist, sodass sich ein Endteil (215, 318) des Arms (203, 304) durch das bewegliche Glied (205, 306) erstrecken und von diesem vorstehen kann, um drehbar in die Kopplungseinrichtung (209, 301) einzugreifen.

8. Halteanordnung des verborgenen Typs nach Anspruch 7, wobei die Montageklammer (202, 302) eine vordere, schlitzartige Öffnung (214, 317) definiert, durch die Zugang in die Gewindebohrung (207, 308) des beweglichen Glieds (205, 306) erhalten werden kann, um in den Gewindeteil (208) des Haltearms (203, 304) einzugreifen.

9. Halteanordnung des verborgenen Typs nach Anspruch 8, wobei die Kopplungseinrichtung (209, 310) ein Anstoßglied (216, 319) umfasst, das ausgebildet ist, um den Endteil (215, 318) des Arms (203, 304) drehbar aufzunehmen, wobei das Anstoßglied (216, 319) fest in der Querrichtung in Entsprechung zu einer Aufnahmevertiefung (217, 320) der Montageklammer (202, 302) gehalten wird.

10. Halteanordnung des verborgenen Typs nach einem der Ansprüche 1-9, wobei das Drehen des Haltearms (203, 304) um seine eigene Achse durch die Schraube-Mutter-Kopplung zwischen dem Gewindeteil (208, 309) des Arms (203, 304) und der Gewindebohrung (207, 308) des beweglichen Glieds (205, 306) veranlasst, dass das bewegliche Glied (205, 306) in der Querrichtung verschoben wird.

11. Halteanordnung des verborgenen Typs nach einem der Ansprüche 1-10, wobei die Führungseinrichtung (211, 313) wenigstens eine geneigte Ebene in dem Gehäusekörper (206, 307) umfasst, wobei das bewegliche Glied (205, 306) während einer Bewegung in der Querrichtung entlang der wenigstens einen geneigten Ebene gleiten kann, sodass es um die Längsachse (C) mit einem Winkel gedreht wird, der so groß wie die Verschiebung des beweglichen Glieds (205, 306) ist, um dadurch zu ermöglichen, dass der Haltearm (203, 304) fein eingestellt wird, weil der Haltearm selbst fest mit dem beweglichen Glied (205, 306) assoziiert ist und sich gemeinsam mit diesem bewegt.

Revendications

1. Agencement de support du type dissimulé pour des supports, des consoles, des étagères et similaires, comprenant un support de montage longitudinal (202, 302) adapté pour être fixé à un mur, un bras de support transversal (203, 304) apte à être inséré dans un logement prévu dans une étagère (204, 305), des moyens d'ajustement pour ajuster la position dudit bras de support (203, 304) par rapport audit support de montage (202, 302), **caractérisé en ce qu'**il comprend en outre un élément mobile (205, 306) logé dans un corps de boîtier (206, 307) défini par ledit support de montage (202, 302), et muni d'un alésage fileté (207, 308) pour engager de façon rotative une partie filetée (208, 309) correspondante audit bras de support (203, 304), des moyens de couplage (209, 310) adaptés pour bloquer, c'est-à-dire retenir fermement ledit bras de support (203, 304) transversalement dans le support (202, 302) par rapport à celui-ci, un élément fileté (210) engageant ledit élément mobile (205, 306) et adapté pour coopérer avec ledit corps de boitier (206, 307) ou une première dentelure s'étendant longitudinalement (311) prévue sur ledit élément mobile (306) coopérant avec une seconde dentelure s'étendant longitudinalement (312) prévue à l'intérieur dudit corps de boîtier (307) pour guider, c'est-à-dire déplacer longitudinalement ledit élément mobile (205, 306) dans ledit corps de boitier (206, 307) de manière à ajuster la position longitudinale du bras (203, 304) le long du support (202, 302), des moyens de guidage (211, 313) prévus dans ledit corps de boitier (206, 307) et adaptés pour coopérer avec ledit élément mobile (205, 306), ledit bras (203, 304), à travers ladite partie filetée (208, 309) de celui-ci, est adapté pour amener ledit élément mobile (205, 306) à coulisser transversalement le long desdits moyens de guidage (211, 313) de sorte que ledit élément mobile (205, 306) est mis en rotation autour d'un axe longitudinal (C), ajustant ainsi l'inclinaison du bras de support (203, 304) par rapport au support de montage (202, 302).

2. Agencement de support du type dissimulé selon la revendication 1, dans lequel ledit élément fileté (210) est relié à l'intérieur du corps de boîtier (206) dans une position longitudinale fixe, c'est-à-dire est retenue longitudinalement par rapport au support (202), de manière à pouvoir engager une douille à filetage interne (220) de l'élément mobile (205), et insérer de cette manière l'élément mobile (205) en mouve-

ment, c'est-à-dire se déplaçant longitudinalement à l'intérieur du corps de boîtier (206).

3. Agencement de support du type dissimulé selon la revendication 2, dans lequel ledit élément fileté (210) est libre de coulisser transversalement dans le corps de boîtier (206) et de tourner autour de son propre axe.

4. Agencement de support du type dissimulé selon la revendication 3, dans lequel ledit élément fileté (210) comprend une tête (221) qui est retenue longitudinalement dans un élément de guidage s'étendant transversalement (222) prévu dans le corps de boîtier (206).

5. Agencement de support selon la revendication 1, dans lequel ladite première dentelure (311) sur l'élément mobile (306) est conçue pour coulisser le long de la seconde dentelure (312) sur le corps de boîtier (307) et être ensuite arrêtée et maintenue dans la position longitudinale choisie en raison du couple engendré par la force du poids du bras (304).

6. Agencement de support selon la revendication 5, dans lequel ledit couple généré par le poids du bras (304) amène les dents des dentelures (311, 312) à s'engager les unes dans les autres, ce qui empêche de manière positive la première dentelure (311) de glisser ou coulisser longitudinalement sur et par rapport à la seconde dentelure (312) pour immobiliser ainsi l'élément mobile (306) dans le corps de boîtier (307) dans la position longitudinale choisie.

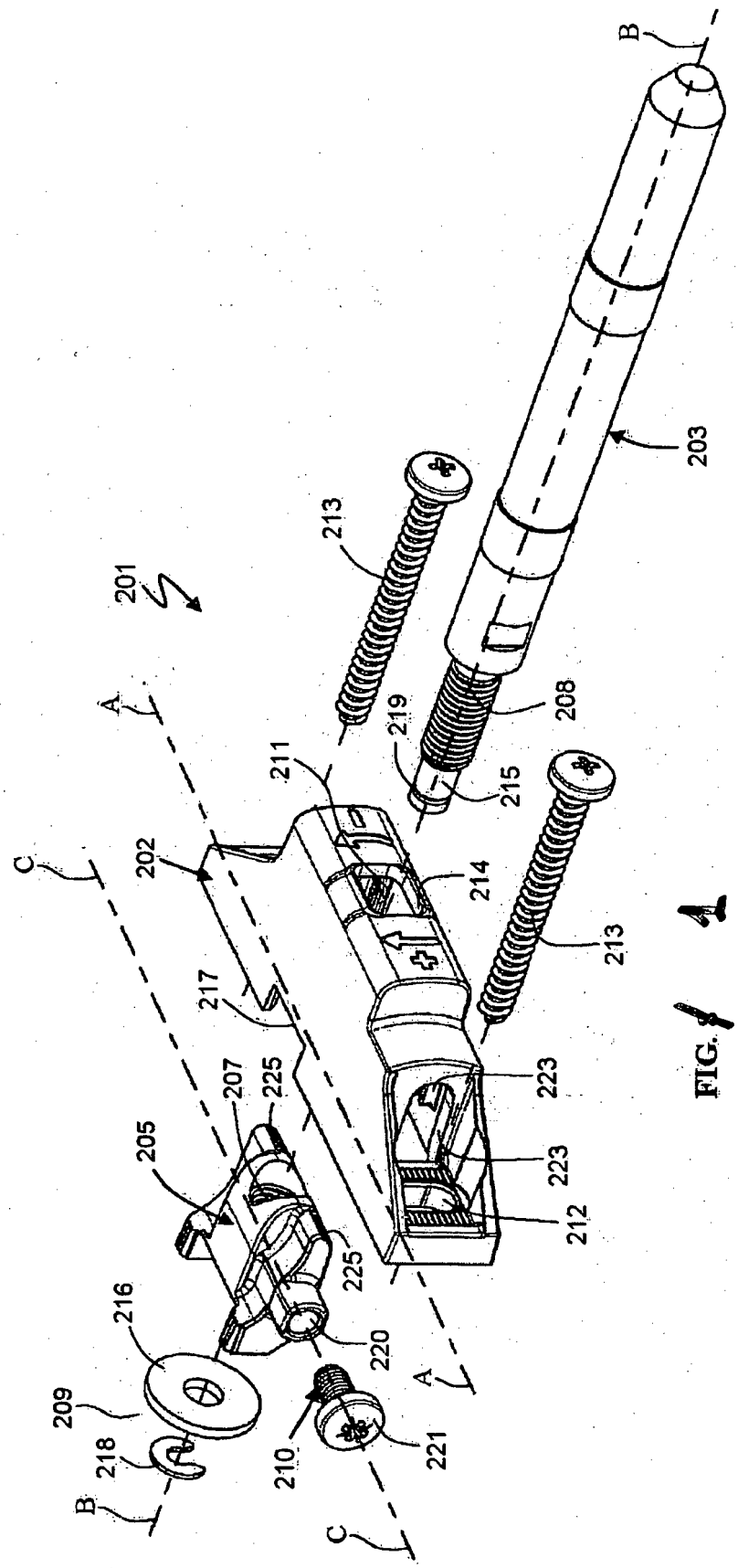
7. Agencement de support selon l'une quelconque des revendications 1 à 6 précédentes, dans lequel ledit alésage fileté (207, 308) est un alésage traversant, de sorte qu'une partie d'extrémité (215, 318) du bras (203, 304) est adapté pour s'étendre à travers l'élément mobile (205, 306) pour faire saillie de celle-ci de manière à engager en rotation les moyens de couplage (209, 310).

8. Agencement de support selon la revendication 7, dans lequel ledit support de montage (202, 302) définit une ouverture avant en forme de fente (214, 317), à travers laquelle on peut accéder à l'alésage fileté (207, 308) de l'élément mobile (205, 306) pour engager la partie filetée (208) du bras de support (203, 304).

9. Agencement de support selon la revendication 8, dans lequel lesdits moyens de couplage (209, 310) comprennent un élément de butée (216, 319) adapté à recevoir en rotation la partie d'extrémité (215, 318) du bras (203, 304), ledit élément de butée (216, 319) étant fermement retenu transversalement dans un logement (217, 320) du support de montage (202, 302).

10. Agencement de support selon l'une quelconque des revendications 1 à 9 précédentes, dans lequel la rotation du bras de support (203, 304) sur son propre axe engendre, à travers la vis-écrou un accouplement de vis existant entre la partie filetée (208, 309) du bras (203, 304) et l'alésage fileté (207, 308) de l'élément mobile (205, 306), l'élément mobile (205, 306) pour se déplacer transversalement.

11. Agencement de support selon l'une quelconque des revendications 1 à 10 précédentes, dans lequel lesdits moyens de guidage (211, 313) comprennent au moins un plan incliné prévu dans le corps de boîtier (206, 307), ledit élément mobile (205, 306), lors du déplacement transversal, pouvant coulisser le long dudit au moins un plan incliné de manière à être entraîné en rotation autour dudit axe longitudinal (C) par un grand angle aussi grand qu'est le déplacement de l'élément mobile (205, 306), permettant ainsi au bras de support (203, 304) d'être ajusté finement dû à ce que le bras de support lui-même étant fermement associé à l'élément mobile (205, 306) pour se déplacer conjointement avec celui-ci.


201
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A
B
C

FIG. 1

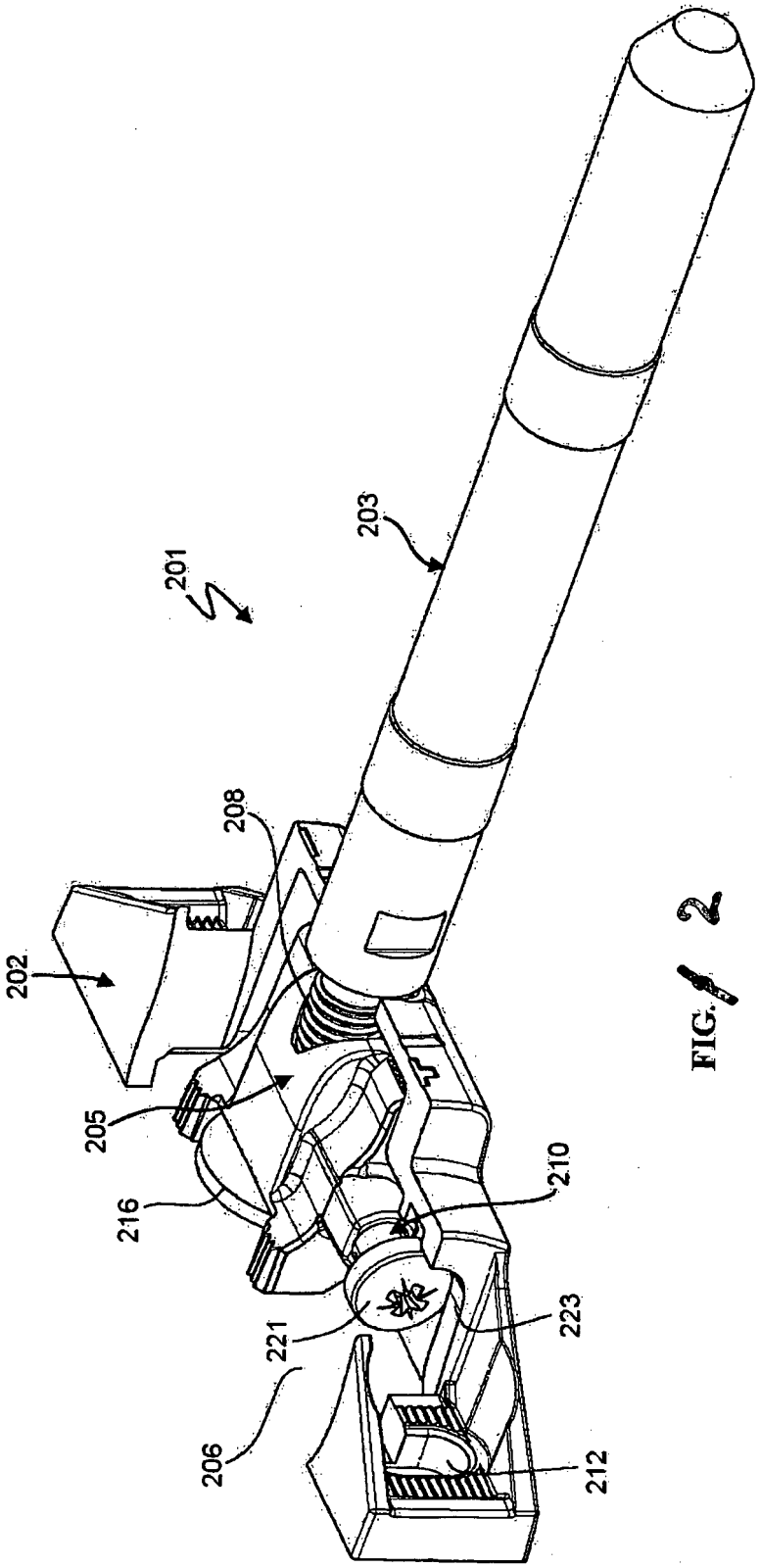
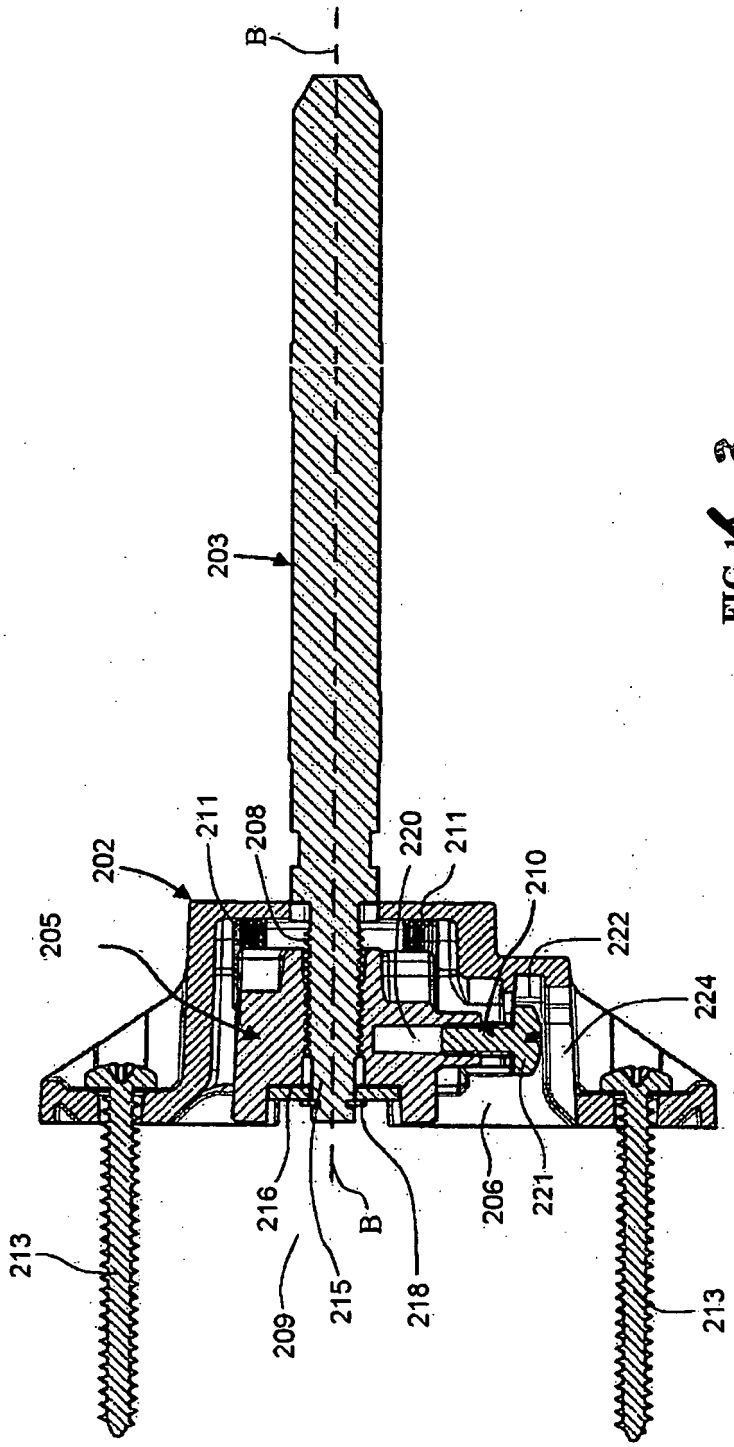


FIG. 2


B
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213

FIG. 3

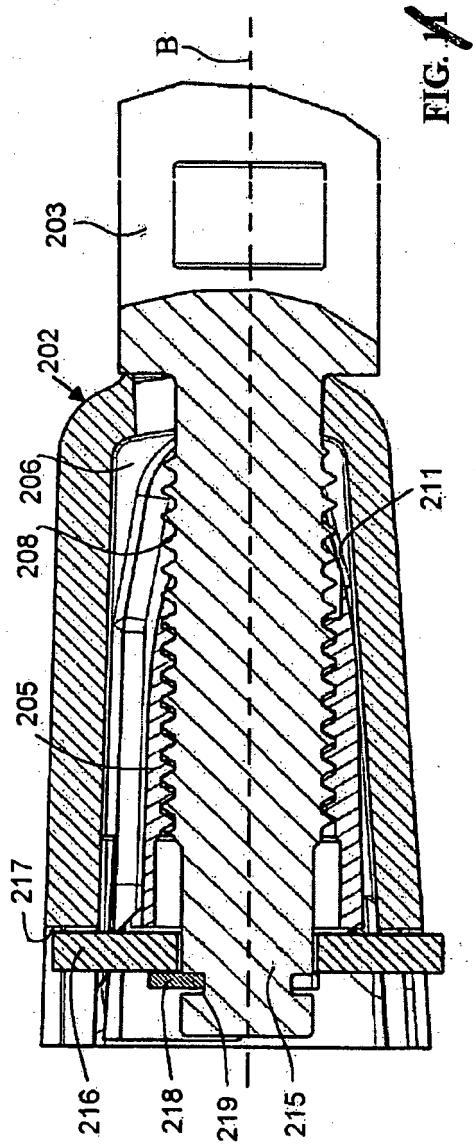
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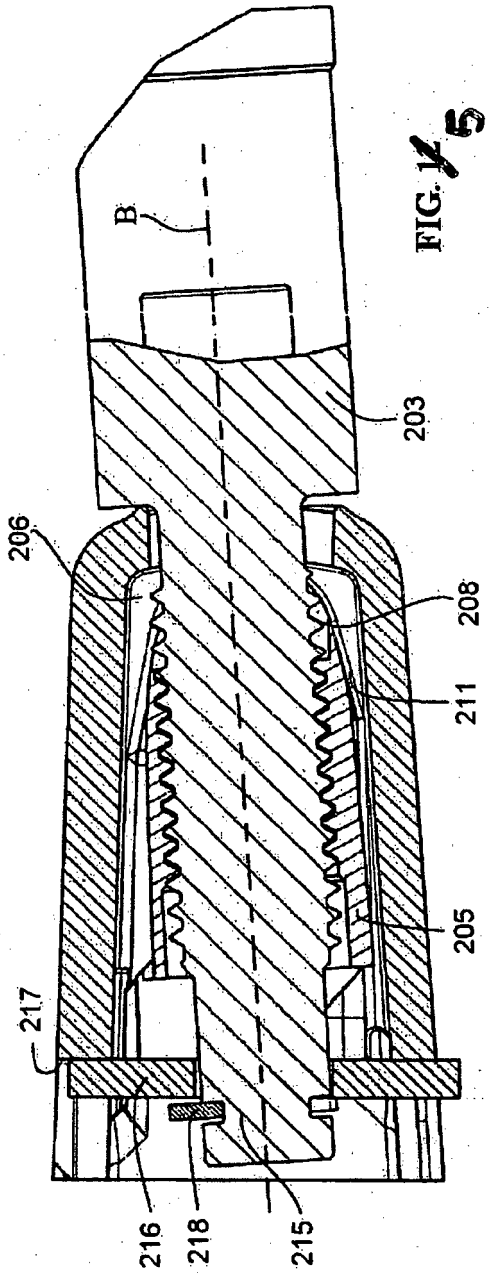
FIG. 4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215

FIG. 5

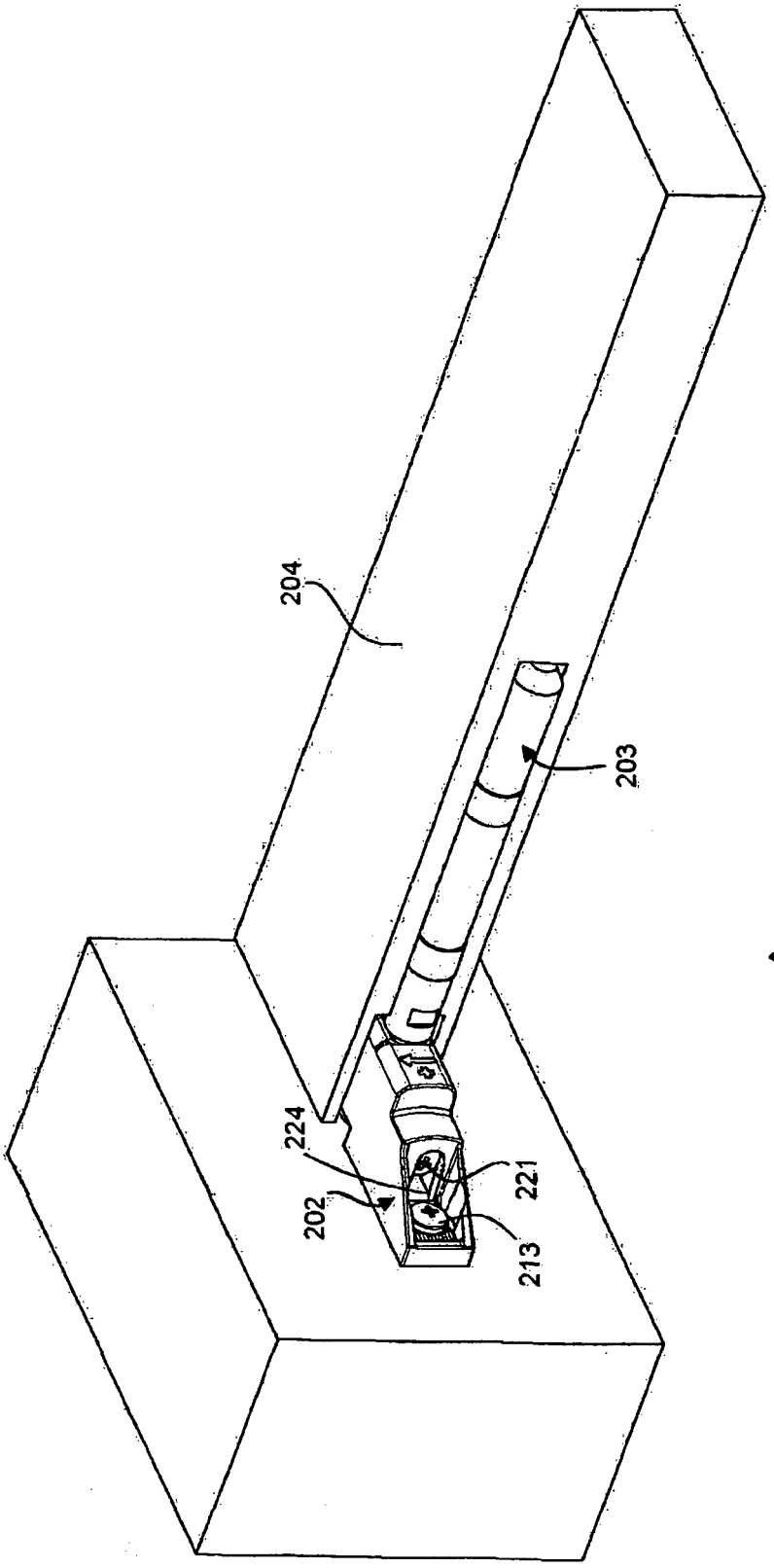
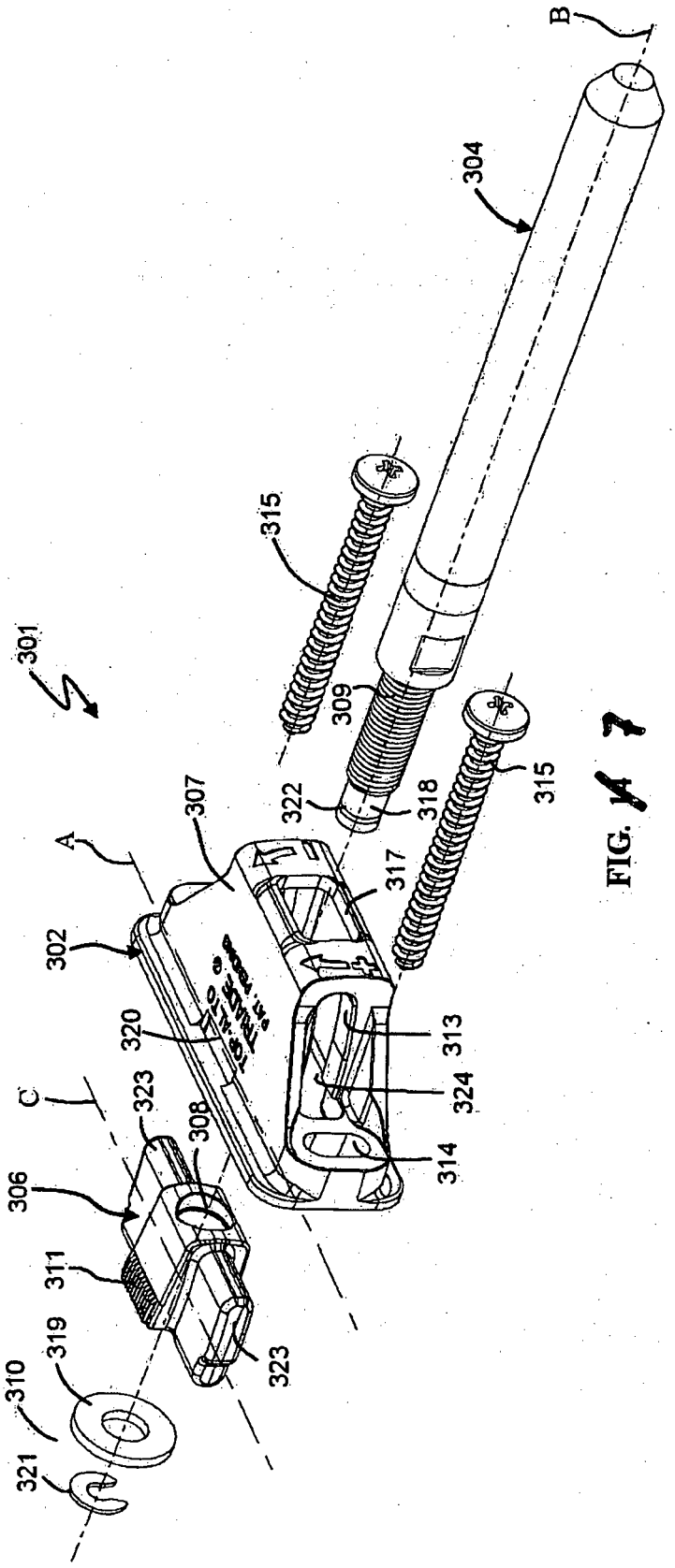


FIG. 6


B
304
315
301
309
315
307
322
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A
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302
320
313
C
323
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311
319
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FIG. 7

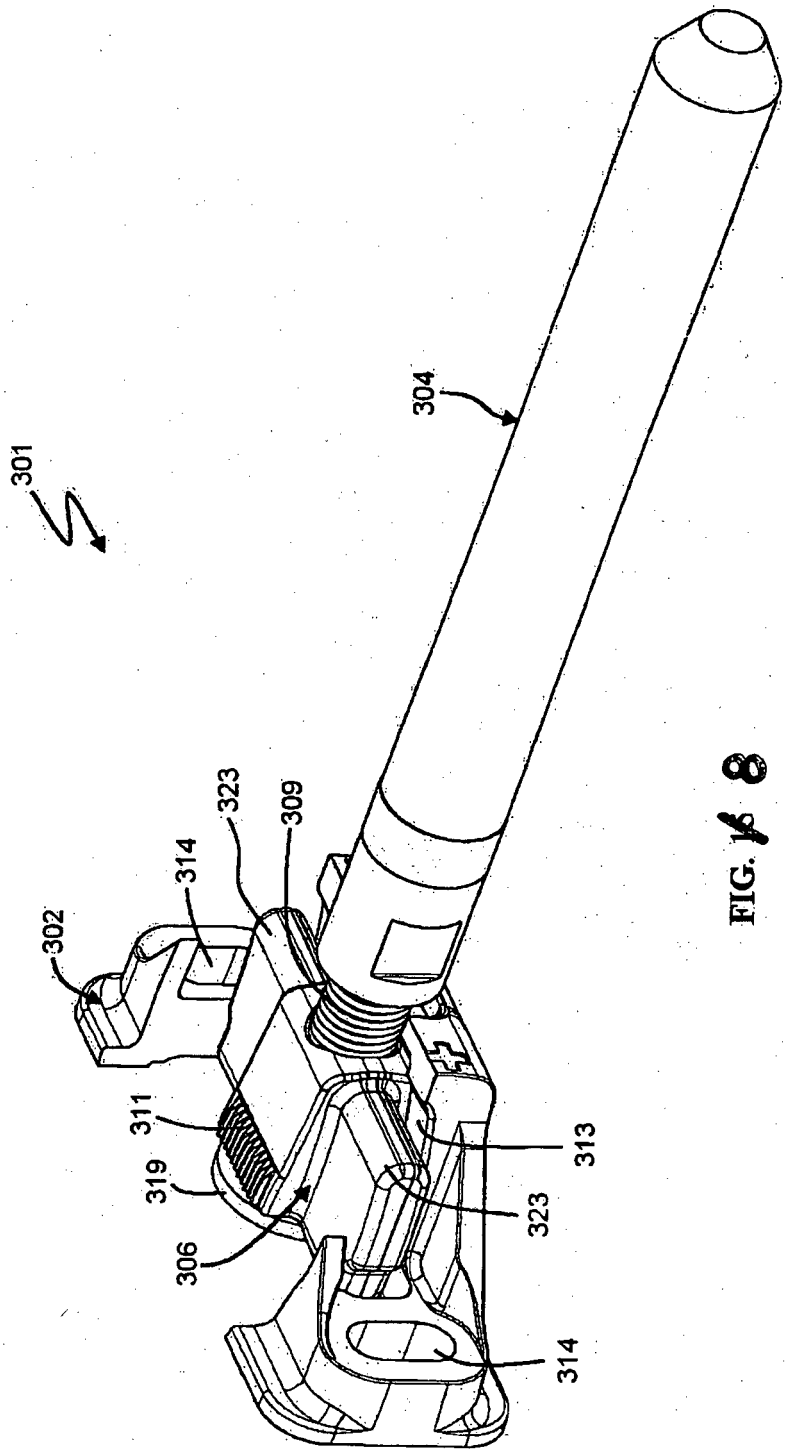


FIG. 8

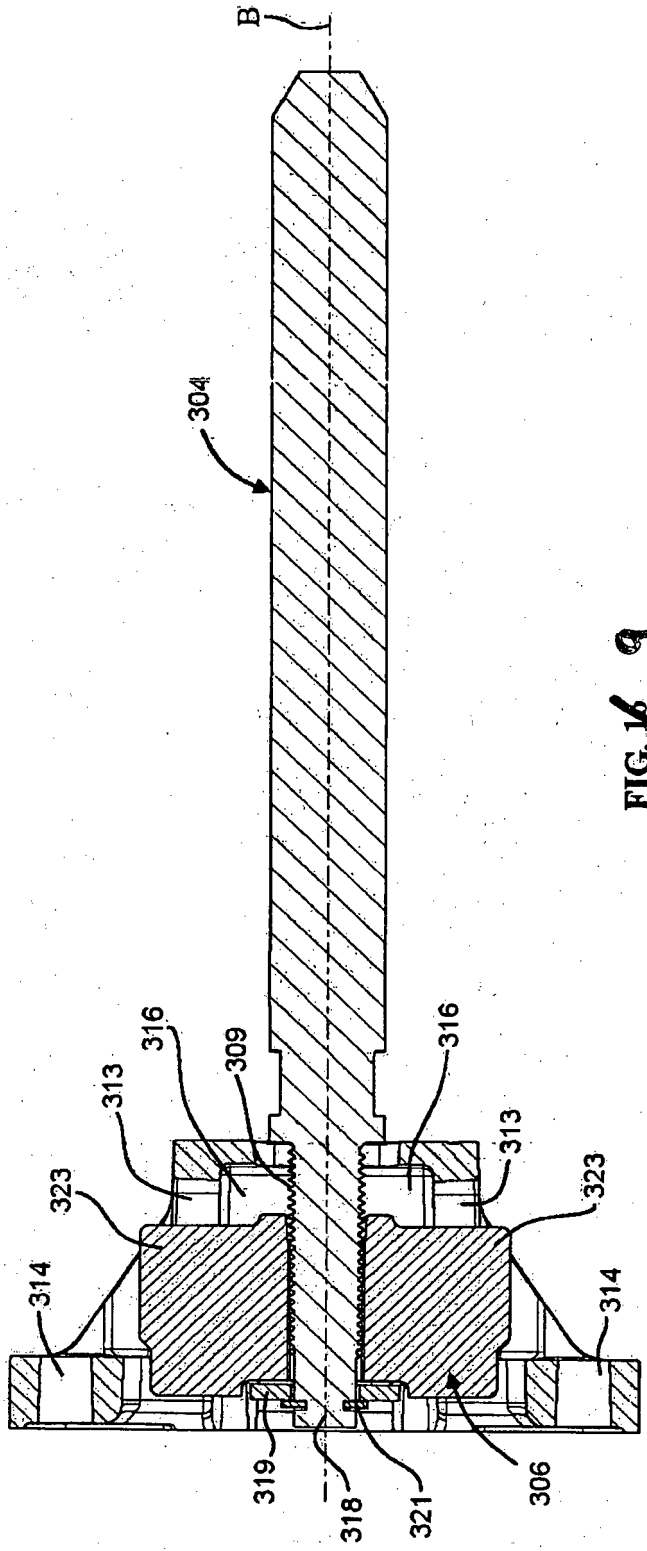
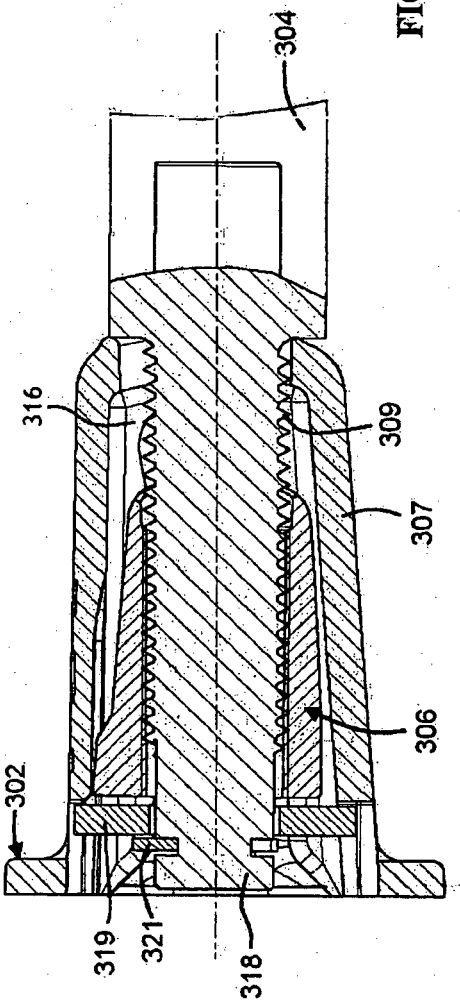


FIG. 19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318

FIG. 10

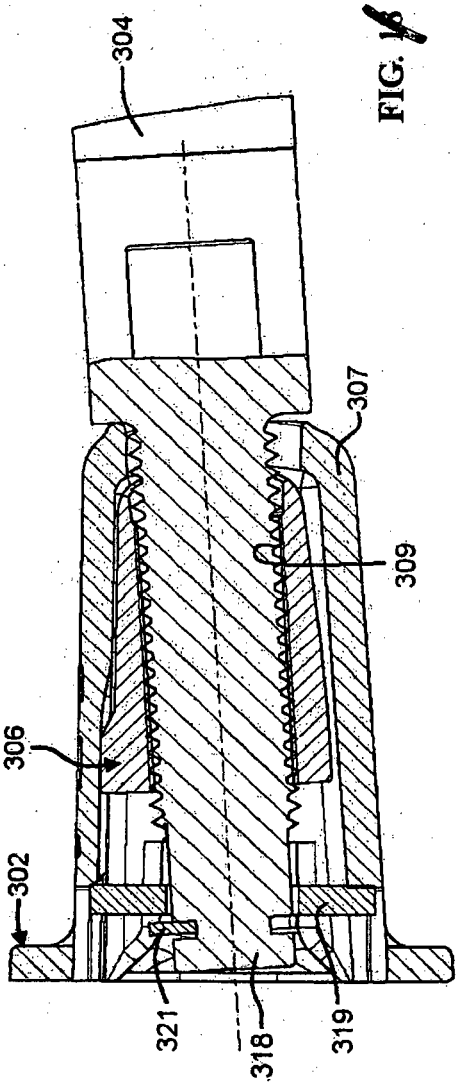
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FIG. 11

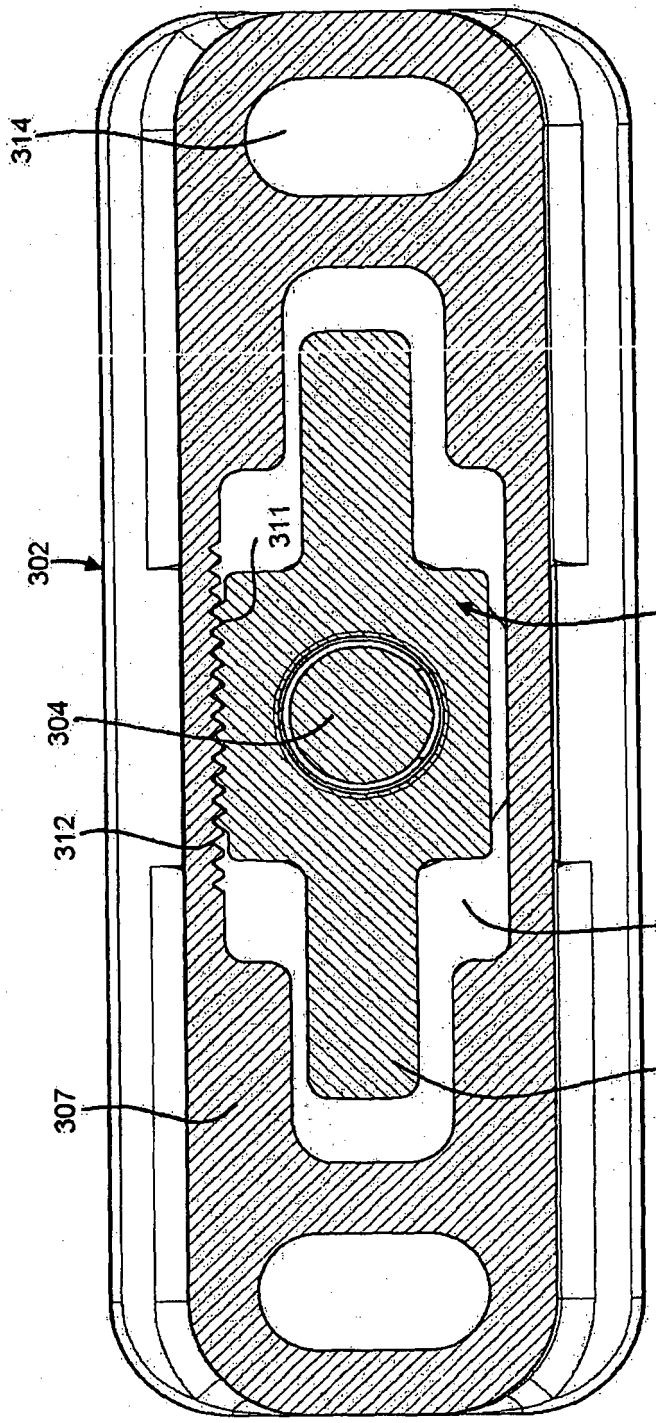

FIG. 12

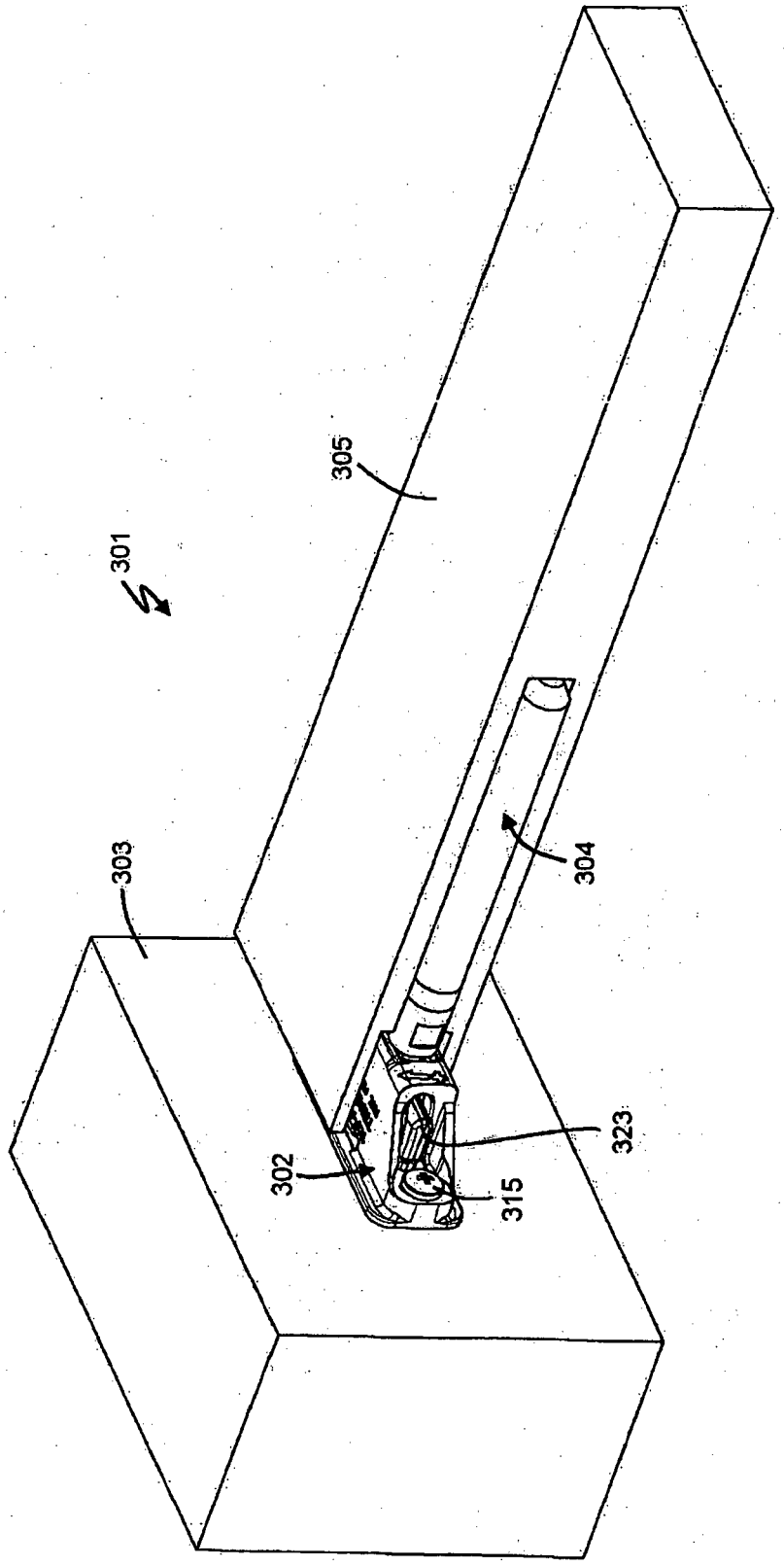

FIG. 13

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 2701520 **[0002]**