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(54) **ANCHORING DEVICE FOR PANELS**

(57) An adjustable anchoring device (1D) for the wall assembly (M) of coating panels (P), comprising an anchoring plaque (2D) to a panel (P) and a coupling (15D) for anchoring to a wall (M), said device (1D) comprises a slide (5D) sliding linearly with respect to said plaque (2D), in a first direction, said coupling (15D) being at least partially associated with said slide (5D) and movable with respect to said plaque (2D) in at least a second direction, substantially perpendicular with respect to said first direction.

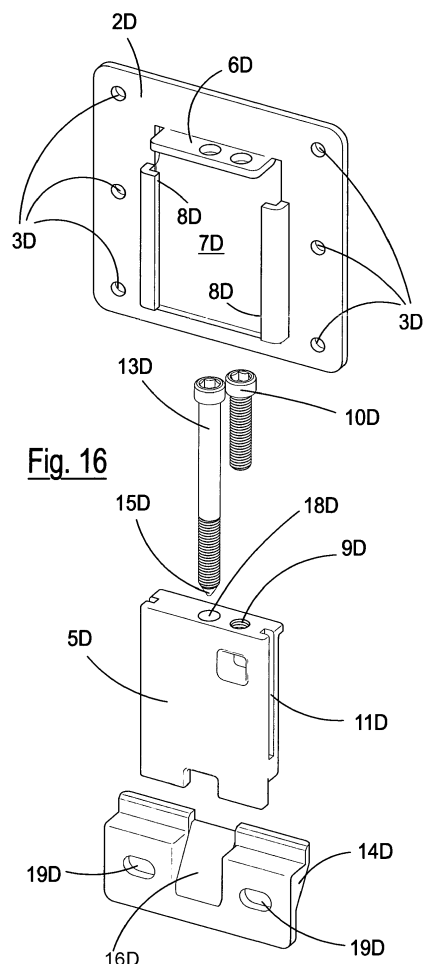


Fig. 16

Description

[0001] The present invention relates to an adjustable anchoring device for the wall assembly of coating panels.

[0002] A further object of the present invention relates to a coating panel equipped with at least one adjustable anchoring device according to the present invention.

[0003] These adjustable anchoring devices are typically used for the wall assembly of wooden coating panels, for example for "boiseries" or the like, which are hung parallel to the wall, in vertical.

[0004] Once these panels, supported by said adjustable anchoring devices, have been prepared, they must be correctly positioned (registered in position), and this leads to the necessity of availing of a fine regulation and anchorage.

[0005] Devices such as those described, for example, in European patent application EP2199488 in the name of LEO-NARDO S.r.l. have been conceived for effecting the regulations of panels.

[0006] This device has a possibility of vertical regulation, which can be obtained with a screw which moves a slide thus allowing the vertical movement of the panel with which the device is coupled.

[0007] Although this type of regulation is effective, it has limits, however, when the panel is assembled on walls which are not perfectly vertical and/or when adjacent panels must be aligned, which can be arranged on non-straight or aligned portions of the same wall.

[0008] Other devices are also known, in some ways similar, which allow a plurality of regulations but which can only be used in the case of wall cupboards destined for being hung onto a wall.

[0009] These devices can in fact be used with panels destined for being visibly assembled on walls, such as in the case, for example, of panels destined for the production of "boiseries".

[0010] What is specified above mainly derives from the fact that these devices, assembled between the rear panel of the wall cupboard and the wall, can only be regulated by having access to the regulation screws through an access opening (to insert a screwdriver or spanner) which must be available for this purpose in the rear panel (or lining) of the wall cupboard.

[0011] The presence of this opening is only acceptable in the case of a wall cupboard, as when the latter is closed, it is not visible, but it is unacceptable in all cases in which the panel is to be visibly assembled on the wall so as not to jeopardize the end-result.

[0012] Furthermore, these devices are produced so as to be anchored onto the side shoulders of wall cupboards, as the lining of the latter does not have a sufficient thickness for supporting the weight of the wall cupboard itself; these devices are consequently conformed so as to be positioned in contact with the shoulder of the wall cupboard and discharge the load on the latter.

[0013] These devices are consequently not suitable in the case of panels that must be hung, visibly, on a wall,

substantially parallel to the wall itself.

[0014] The present invention proposes to solve these and other drawbacks by providing an adjustable anchoring device for the wall assembly of a coating panel which can be fixed directly to the panel, without having to perforate the latter in the front.

[0015] This objective is achieved by an adjustable anchoring device for the wall assembly of coating panels produced according to the first of the enclosed claims.

[0016] Further advantageous characteristics are object of the enclosed dependent claims which should be considered as being an integrant part of the present description.

[0017] The idea at the basis of the present invention is to provide an adjustable anchoring device for the wall assembly of coating panels which has the possibility of being regulated according to various directions, without having to perforate the front of the panel in order to have access to the regulation organs.

[0018] In this way, it is advantageously possible to regulate the panel in an extremely versatile way, as a plurality of adjacent panels can be easily positioned and aligned.

[0019] For embodying this idea, the device, object of the present invention, advantageously comprises a plaque destined for being fixed to the panel to be fixed to the wall and a first slide which can be moved linearly with respect to the plaque to regulate the vertical position of the panel; said first slide comprises in turn regulation means of the position of the coupling of the device.

[0020] The movements of the first slide and horizontal regulation means of the panel are advantageously obtained by means of regulation screws with an axis parallel to each other and parallel to the panel when assembled on a wall, so that the position of the panel can be regulated, both vertically and horizontally, by acting on the same side of the device, without the necessity of front holes on the panel.

[0021] Other characteristics and further advantages will appear more evident from some embodiment examples of the invention with reference to the enclosed figures, in which:

- figure 1 to figure 15 are views of a device not part of the present invention;
- figure 16 is an exploded view of an embodiment of a device according to the present invention;
- figure 17 is a sectional view of part of the device of figure 16;
- figure 18 is a raised front view of the device of figure 16;
- figure 19 is a sectional view of the device of figures 16 to 18 in an assembled condition;
- figure 20 is a perspective view of the device of figures 16 to 19 in an assembled condition on a panel.

[0022] In the following description four different examples of the adjustable anchoring device of the present

invention will be discussed.

[0023] With reference to all of the enclosed figures, the examples of the device 1A, 1B, 1C, 1D presented hereunder all have the characteristic of comprising an anchoring plaque 2A, 2B, 2C, 2D to a panel P and a coupling 12A, 12B, 12C, 15D for fixing to a wall M.

[0024] Each device 1A, 1B, 1C, 1D also comprises a slide 5A, 5B, 5C, 5D which slides linearly with respect to the plaque 2A, 2B, 2C, 2D in a first direction F, whereas the coupling 12A, 12B, 12C, 15D is at least partly associated with the slide 5A, 5B, 5C, 5D and can be moved with respect to the latter in at least a second direction F1 substantially perpendicular with respect to the first direction.

[0025] In this way, a regulation of the panel P is obtained according to two directions F, F1 perpendicular to each other, specifically, vertical (in height) and horizontal (in depth), overcoming the drawbacks of the known art described above.

[0026] In general, each plaque 2A, 2B, 2C, 2D of the various examples described in detail hereunder comprises fixing holes 3A, 3B, 3C, 3D for fixing to a panel P, and sliding rails 8A, 8B, 8C, 8D; each slide 5A, 5B, 5C, 5D comprises sliding guides 11A, 11B, 11C, 11D destined for cooperating with the respective rails 8A, 8B, 8C, 8D to guide the sliding of the slide 5A, 5B, 5C, 5D in the first direction, preferably in a vertical direction in an assembled condition, this direction being substantially perpendicular to the axis of the fixing holes 3A, 3B, 3C, 3D.

[0027] Again generically speaking, the various examples of the device 1A, 1B, 1C, 1D comprise regulation means for controlling the sliding of the respective slide 5A, 5B, 5C, 5D with respect to the plaque 2A, 2B, 2C, 2D and these means preferably comprise: a threaded seat 9A, 9B, 9C, 9D situated in said slide 5A, 5B, 5C, 5D, a corresponding fin 6A, 6B, 6C, 6D integral with the plaque 2A, 2B, 2C, 2D which extends perpendicularly to the rails 8A, 8B, 8C, 8D and a regulation bolt 10A, 10B, 10C, 10D cooperating with the corresponding fin 6A, 6B, 6C, 6D and with the threaded seat 9A, 9B, 9C, 9D to effect the sliding of said slide 5A, 5B, 5C, 5D in the first direction.

[0028] In all of the examples discussed, each device 1A, 1B, 1C, 1D comprises activation means for controlling the movement of the coupling 12A, 12B, 12C, 15D in the second direction; these activation means generally comprise an actuation bolt 13A, 13B, 13C, 13D at least partly housed in the slide 5A, 5B, 5C, 5D and arranged parallelly to the regulation bolt 10A, 10B, 10C, 10D.

[0029] In this way, the horizontal and vertical movement of the panel can be advantageously regulated by acting on only one side, and without having to create additional visible holes on the panel itself.

[0030] As can be seen, the first two embodiment examples have the same characteristic that the coupling is a hook 12A, 12B linearly movable along the second direction only, following an activation of the actuation bolt 13A, 13B.

[0031] The third and fourth examples, on the other hand, have the common characteristic that the activation

of the coupling in the second direction F1 is obtained thanks to tilted planes with respect to said first direction F which slide and cooperate with each other.

[0032] Observing the examples of the figures in more detail, a first example of this embodiment is provided in the enclosed figures 1 to 5; these illustrate a first embodiment of the adjustable anchoring device 1A for the assembly of a coating panel P on a wall M.

[0033] The device 1A comprises a plaque 2A equipped with fixing holes 3A destined for receiving screws 4A for fixing to the panel P, as shown in the assembled configuration of figure 5.

[0034] The plaque 2A comprises a corresponding fin 6A and an opening 7A whose facing side edges 8A form the sliding rails of the slide 5A, which can be moved linearly along said rails 8A thanks to the guides 11A situated at the sides of the slide 5A.

[0035] The slide 5A also comprises a threaded seat 9A for the regulation means of the position of the same slide 5A, which in this example comprises the bolt 10A.

[0036] The axis of the threaded seat 9A is perpendicular to the corresponding fin 6A, and parallel to the rails 8A and guides 11A for the reasons discussed hereunder.

[0037] The bolt 10A, as shown in figures 4 and 5, cooperates with the threaded seat 9A and with the corresponding fin 6A to cause the movement of the slide 5A with respect to the plaque 2A: when in an assembled condition, in fact, the weight of the panel P ensures that the head of the bolt 10A remains buffered against the corresponding fin 6A; by screwing or unscrewing the bolt 10A in the seat 9A, the position of the slide 5A is therefore varied with respect to the plaque 2A and consequently the vertical position of the panel P.

[0038] More specifically, the slide 5A is also shown in figure 2 and also comprises, in addition to the threaded seat 9A described above, means for actuating the wall coupling, which in this example is the hook 12A cooperating with a T bar fixed to the wall M with pegs, screws or similar items.

[0039] In this example, these actuation means comprise a bolt 13A similar to a worm-screw housed in the slide 5A and rotatably kept in position by a pin 16A. Said pin 16A is inserted in the slide 5A and in the neck 17A of the bolt 13A. The bolt 13A cooperating with a toothed wheel 14A, also housed in the slide 5A and rotatably kept in position by the pin 15A.

[0040] The pin 15A is inserted in the slide 5A and in the neck 18A of the toothed wheel 14A.

[0041] The hook 12A is equipped with a partially threaded body cooperating with a threaded seat inside the toothed wheel 14A. The body 19A has two smooth opposite planes 20 (leveling) sliding inside complementary guiding seats 21A of the hole 22A of the slide 5A. In this way, the body 19A can be moved horizontally in the extraction/insertion direction F1 by the toothed wheel 14A after rotation of the latter when activated by the worm-screw 13A.

[0042] As can be seen in figures 1 and 2, the axes of

the worm-screw 13A and bolt 10A are parallel to each other, so that access by keys or screwdrivers for regulating the panel P can be effected by acting on the same side (in the example shown, from above) with the result of improving the access to the regulations and allowing simplified assembly and regulations, without requiring holes passing through the front of the panel P.

[0043] A second example of the device 1B is shown in figures 6 to 10.

[0044] Analogously to the first example described above, this comprises a plaque 2B equipped with fixing holes 3B.

[0045] The holes 3B are destined for receiving screws 4B which can be seen in figure 10, for fixing to the panel P.

[0046] Analogously to what is described above, the plaque 2B comprises a corresponding fin 6B and an opening 7B whose facing side edges 8B form the sliding rails of the slide 5B, which can be moved linearly along said rails 8B thanks to the guides 11B situated at the sides of the slide 5B.

[0047] The slide 5B comprises a threaded seat 9B for the regulation means of the position of the slide 5B, which in this example again comprises a bolt 10B, the axis of the threaded seat 9B being perpendicular to the corresponding fin 6B and parallel to the rails 8B and guides 11B.

[0048] The vertical regulation is effected analogously to what is described above: in short, the bolt 10B cooperates with the threaded seat 9B and with the corresponding fin 6B to cause the movement of the slide 5B with respect to the plaque 2B; an unscrewing or screwing of the bolt 10B causes a movement of the slide 5B with respect to the plaque 2B and then ultimately a vertical movement of the panel P when the device 1B is in an assembled condition, as shown in figure 9.

[0049] With respect to the example of figures 1-5, in this case, what differs are the actuation means of the coupling to the wall M.

[0050] The latter comprises the hook 12B cooperating with the T bar fixed to the wall with pegs or similar items.

[0051] The hook 12B can be moved with respect to the plaque 2B in a direction perpendicular to the movement of the slide 5B, thus obtaining the desired horizontal and vertical regulations.

[0052] The hook 12B is only coupled with the slide 5B and the actuation means in this case comprise an adjustable knee mechanism.

[0053] The latter in turn comprises the levers 15B, two pawls 14B and the relative pins.

[0054] The pawls 14B have threaded holes 23B which cooperate with the actuation bolt 13B housed, like all the components of the actuation means, in the slide 5B, which is provided with suitable seats for the purpose.

[0055] The hook 12B is connected to the levers 15B, which are joined to it and paired with the pawls 14B, whose threaded holes 23B are engaged with the actuation bolt 13B.

[0056] In this way, the rotation of the bolt 13B moves

the pawls 14B closer and farther away, causing the levers 15B to slope, and determining a consequent horizontal movement of the hook 12B according to F1.

[0057] Also in this case, the threaded seat 9B and that for the actuation bolt 13B are arranged parallelly on the slide 5B, with advantages analogous to those described above with reference to the first embodiment of the invention.

[0058] A third example, also analogous to the first two examples, of a device 1C is shown in figures 11 to 15. The device 1C is substantially analogous to those described above with reference to figures 1-10, except for the actuation means of the hook.

[0059] In short, however, it comprises a plaque 2C equipped with fixing holes 3C destined for receiving screws 4C for fixing the panel P, as shown in the assembled configuration of figure 15.

[0060] Analogously to the other solutions, the plaque 2C comprises a corresponding fin 6C and an opening 7C whose facing side edges 8C form the sliding rails of the slide 5C, which can be moved linearly along said rails 8C thanks to the guides 11C situated at the sides of the slide 5C.

[0061] The slide 5C comprises a threaded seat 9C for the regulation means of the position of the slide 5C, which in this example again comprises a bolt 10C.

[0062] The axis of the threaded seat 9C is perpendicular to the corresponding fin 6C and parallel to the rails 8C and guides 11C, to allow the linear movement of the slide 5C with respect to the plaque 2C by activating the bolt 10C, analogously to what is described above.

[0063] The bolt 10C, in fact, cooperates with the threaded seat 9C and with the corresponding fin 6C to cause the movement of the slide 5C with respect to the plaque 2C; when in an assembled condition, in fact, the weight of the panel P ensures that the head of the bolt 10C remains buffered against the corresponding fin 6C; by screwing or unscrewing the bolt 10C in the seat 9C, the position of the slide 5C is therefore varied with respect to the plaque 2C and consequently the vertical position of the panel P according to the arrow F.

[0064] The wall coupling again comprises a hook 12C which can be moved with respect to the slide 5C by the actuation means of the hook, which are described hereunder.

[0065] Analogously to what is described above, the hook 12C cooperates with a T bar fixed to the wall M with pegs, screws or similar items, as shown in figure 14. In this third example, the actuation means comprise sloping planes 19C whereby the hook 12C is moved with respect to the slide 5C: in this case, unlike the previous examples, the movement of the hook 12C does not develop only in a direction F1 perpendicular to the movement of the slide, but also in a direction F2 parallel to the same.

[0066] The actuation means, in fact, comprise sloping planes which cause the movement of the hook 12C in a tilted direction with respect to the movement of the slide 5C.

[0067] These actuation means comprise, in this example, an actuation bolt 13C positioned parallelly to the regulation bolt 10C and cooperating with a stop 16C integral with the slide 5C and with a threaded seat 20C situated in a framework 17C housed integrally in the slide 5C, which can be moved vertically with respect to the plaque 2C.

[0068] The actuation means also comprise sloping guides 18C situated on said sliding framework 17C and cooperating with said sloping planes 19C integral with the hook 12C.

[0069] The actuation bolt 13C is stationary with respect to the slide 5C due to the stop 16C against which its head is buffered, and its actuation in rotation causes a movement of the hook 12C with respect to the framework 17C.

[0070] This movement involves a sliding of the sloping planes 19C (envisaged on the hook 12C) with respect to the sloping seats 18C (integral with the framework 17C) with a consequent movement of the hook 12C itself in a sloping direction with respect to the axis of the actuation bolt 13C.

[0071] The movement of the hook 12C therefore occurs according to two components: one vertical F, parallel to the movement direction of the slide 5C and not important for the horizontal regulation of the panel P, and one horizontal F1, perpendicular to the movement direction of the slide 5C, which on the other hand, as described above, causes a movement of the panel P in a vertical direction, therefore allowing regulation according to the two axes, with the same advantages discussed above with reference to the previous examples.

[0072] Yet another variant of the device 1D is shown in the enclosed figures 16 to 20.

[0073] This variant 1D differs in various aspects with respect to the three previous ones and not only those relating to the actuation means.

[0074] As far as the vertical regulation according to F is concerned, the device 1D is substantially analogous to those described above; it comprises, in fact, a plaque 2D equipped with fixing holes 3D destined for receiving screws 4D for fixing to the panel P, as shown in the assembled configuration of figure 20.

[0075] Analogously to the other solutions, the plaque 2D comprises a corresponding fin 6D and a seat 7D equipped at the sides with two sliding rails 8D of the slide 5D, which can be moved linearly along said rails 8D thanks to the guides 11D situated at its sides.

[0076] Analogously to what is described above, the slide 5D comprises a threaded seat 9D for the regulation means of the position of the slide 5D, which, in this example, again comprises a bolt 10D.

[0077] The axis of the threaded seat 9D is perpendicular to the corresponding fin 6D and parallel to the rails 8D and guides 11D, to allow the linear movement of the slide 5D with respect to the plaque 2D by actuating the bolt 10D, analogously to what is specified above.

[0078] The bolt 10D, in fact, cooperates with the threaded seat 9D and with the corresponding fin 6D to

cause the movement of the slide 5D with respect to the plaque 2D: when in an assembled condition, in fact, the weight of the panel P ensures that the head of the bolt 10D remains buffered against the corresponding fin 6D and consequently by screwing or unscrewing the bolt 10D in the seat 9D, the position of the slide 5D is varied with respect to the plaque 2D and consequently the vertical position of the panel P, according to F.

[0079] The wall coupling in this case is obtained by an interference between the bolt 13D having a conical tip 15D and a base 14D which can be fixed to the wall M by means of centering slits 19D and suitable pegs.

[0080] The actuation means in this case comprise the same bolt 13D whose conical tip 15D cooperates with a seat having a sloping plane 16D situated on the base 14D.

[0081] For this purpose, the bolt 13D is screwed into a seat 18D of the slide 5D, and in an assembled condition, its smooth conical (or truncated-conical) tip is in contact with the seat having a sloping plane 16D of the base 14D.

[0082] When the actuation bolt 13D is rotated (by screwing or unscrewing) its conical tip runs on the sloping plane 16D horizontally moving the plaque 2D with respect to the base 14D and thus obtaining the horizontal regulation according to F1 of the panel P.

[0083] In all of the solutions presented so far, there are other optional characteristics such as, for example, holes for the passage of tools destined for activating the bolts 10A, 10B, 10C, 10D and 13A, 13B, 13C, 13D or similar.

[0084] Other variants or equivalent modifications are also possible, all of which are included in the scope of the present invention.

[0085] The scope of the invention is therefore defined by the following claims.

Claims

1. An adjustable anchoring device (1D) for the wall assembly (M) of coating panels (P), comprising an anchoring plaque (2D) to a panel (P) and a coupling (15D) for anchoring to a wall (M), **characterized in that** said device (1D) comprises a slide (5D) sliding linearly with respect to said plaque (2D), in a first direction, said coupling (15D) being at least partially associated with said slide (5D) and movable with respect to said plaque (2D) in at least a second direction, substantially perpendicular with respect to said first direction.
2. The device (1D) according to claim 1, **characterized in that** said plaque (2D) comprises fixing holes (3D) for fixing to a panel (P) and sliding rails (8D), and wherein said slide (5D) comprises sliding guides (11D), said rails (8D) and said guides (11D) being suitable for cooperating with each other to guide the sliding of said slide (5D) in at least said first direction, said first direction being substantially perpendicular

to the axis of said fixing holes (3D).

3. The device (1D) according to claim 1, **characterized in that** it comprises regulation means (6D,9D,10D) suitable for controlling the sliding of said slide (5D) with respect to said plaque (2D). 5

4. The device (1D) according to claim 2 or 3, **characterized in that** said regulation means comprise: a threaded seat (9D) produced in said slide (5D), a corresponding fin (6D) integral with said plaque (2D) which extends perpendicularly to said rails (8D) and a regulation bolt (10D) cooperating with said corresponding fin (6D) and with said threaded seat (9D) to effect the sliding of said slide (5D) in said first direction. 10 15

5. The device (1D) according to any of the previous claims, **characterized in that** it comprises activation means (13D, 14D, 15D, 16D) suitable for controlling said movement of said coupling (15D) in said second direction. 20

6. The device (1D) according to claim 5, **characterized in that** said actuation means comprise an actuation bolt (13D) at least partly housed in said slide (5D), said actuation bolt (13D) being arranged parallel to said regulation bolt (10D). 25

7. The device (1D) according to claim 6, **characterized in that** said actuation means comprise sloping planes (15D,16D) with respect to said first sliding direction and cooperating with each other to determine the movement of said coupling in at least said second direction. 30 35

8. The device (1C) according to claim 7, **characterized in that** said coupling comprises a base (14D) which can be fixed to a wall (M) and a bolt (13D) with a conical tip (15D), screwed in a seat (18D) of said slide (5D), and wherein said actuation means comprise said bolt with a conical head (13D) and a seat with a sloping plane (16D) envisaged on said base (14D) cooperating with said bolt (13D) with a conical tip (15D), to move said coupling in at least said second direction following a rotation of said bolt (13D) with a conical tip (15D). 40 45

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Fig. 1

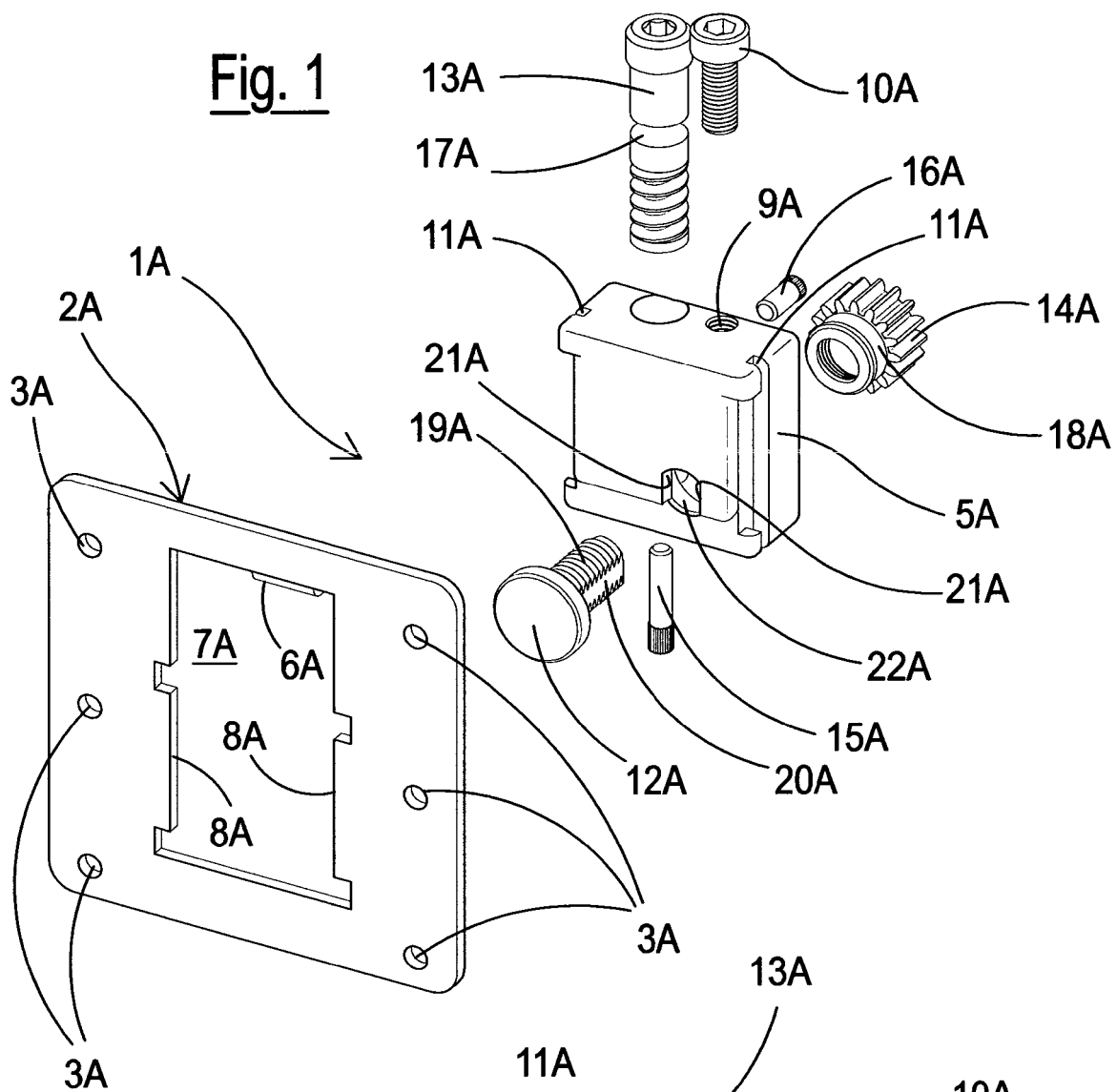


Fig. 2

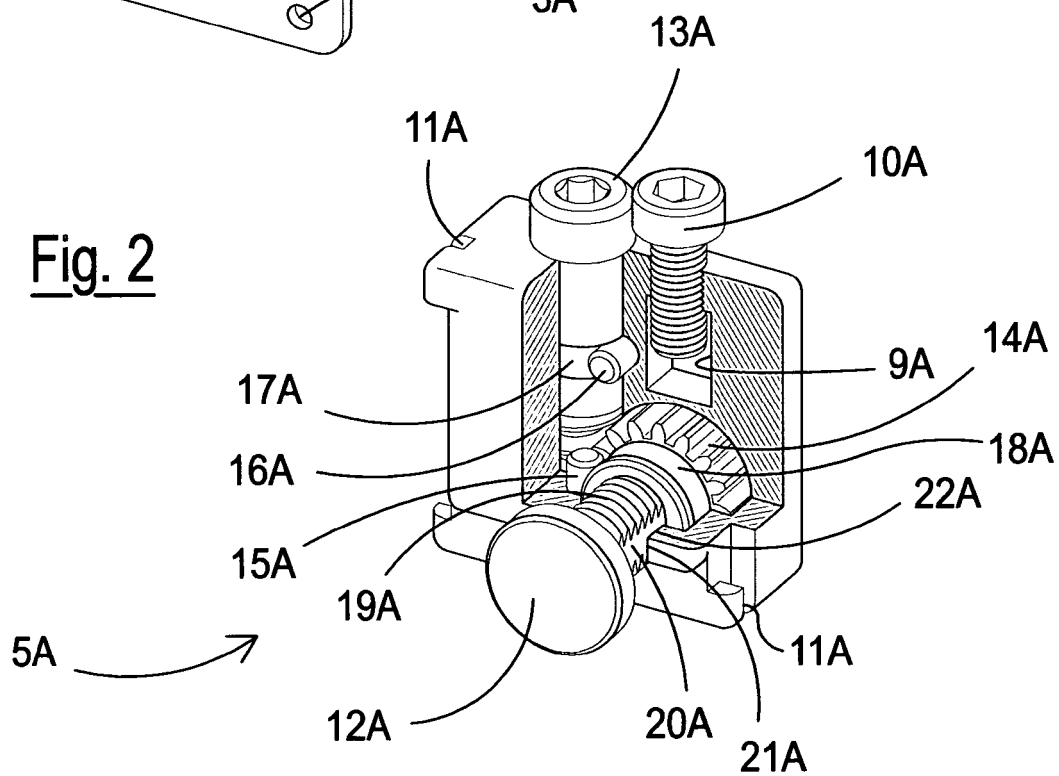


Fig. 3

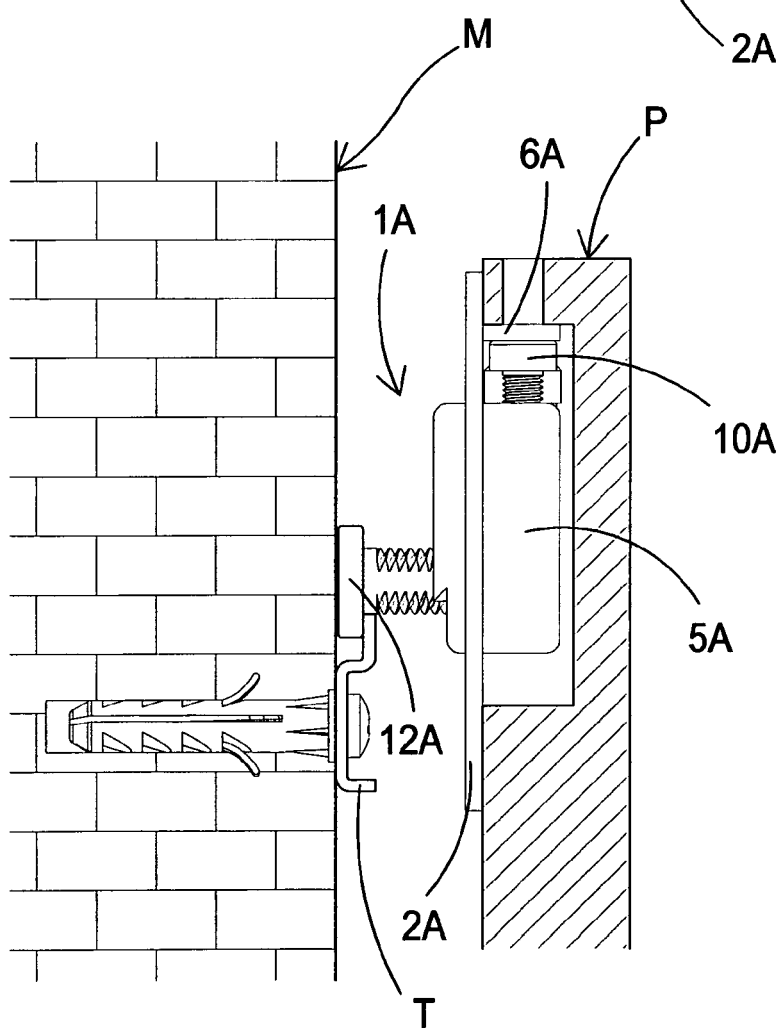
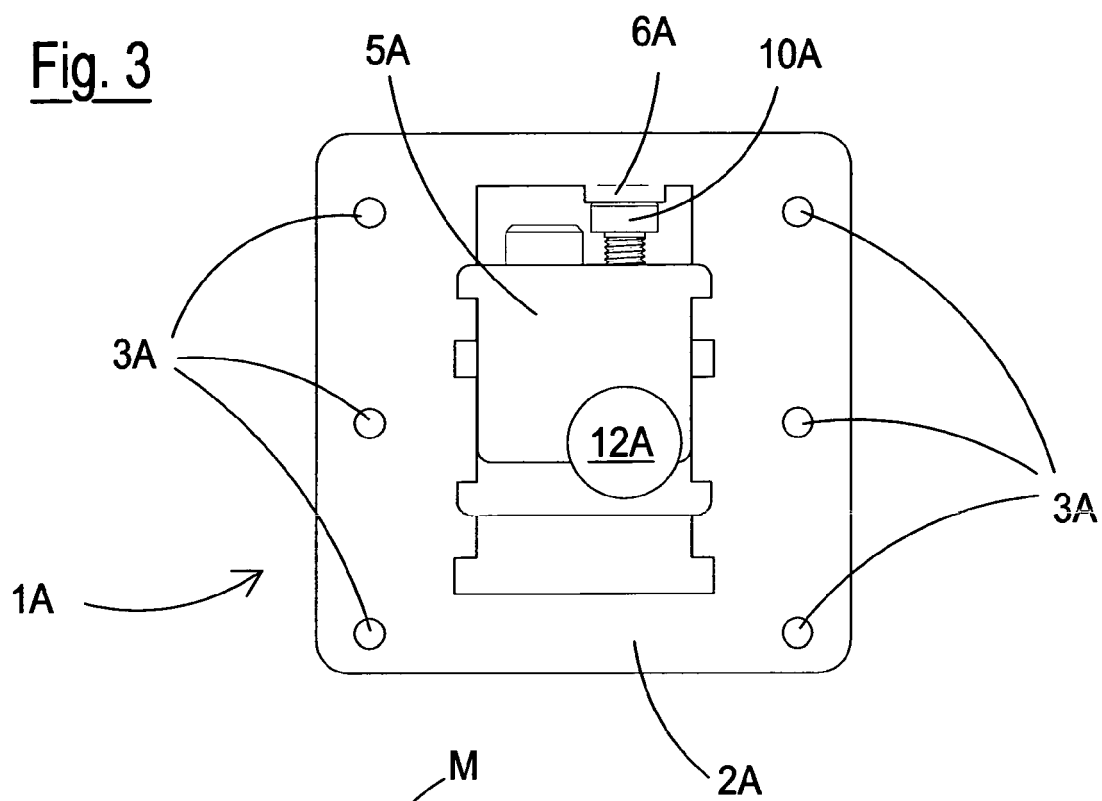


Fig. 4

Fig. 5

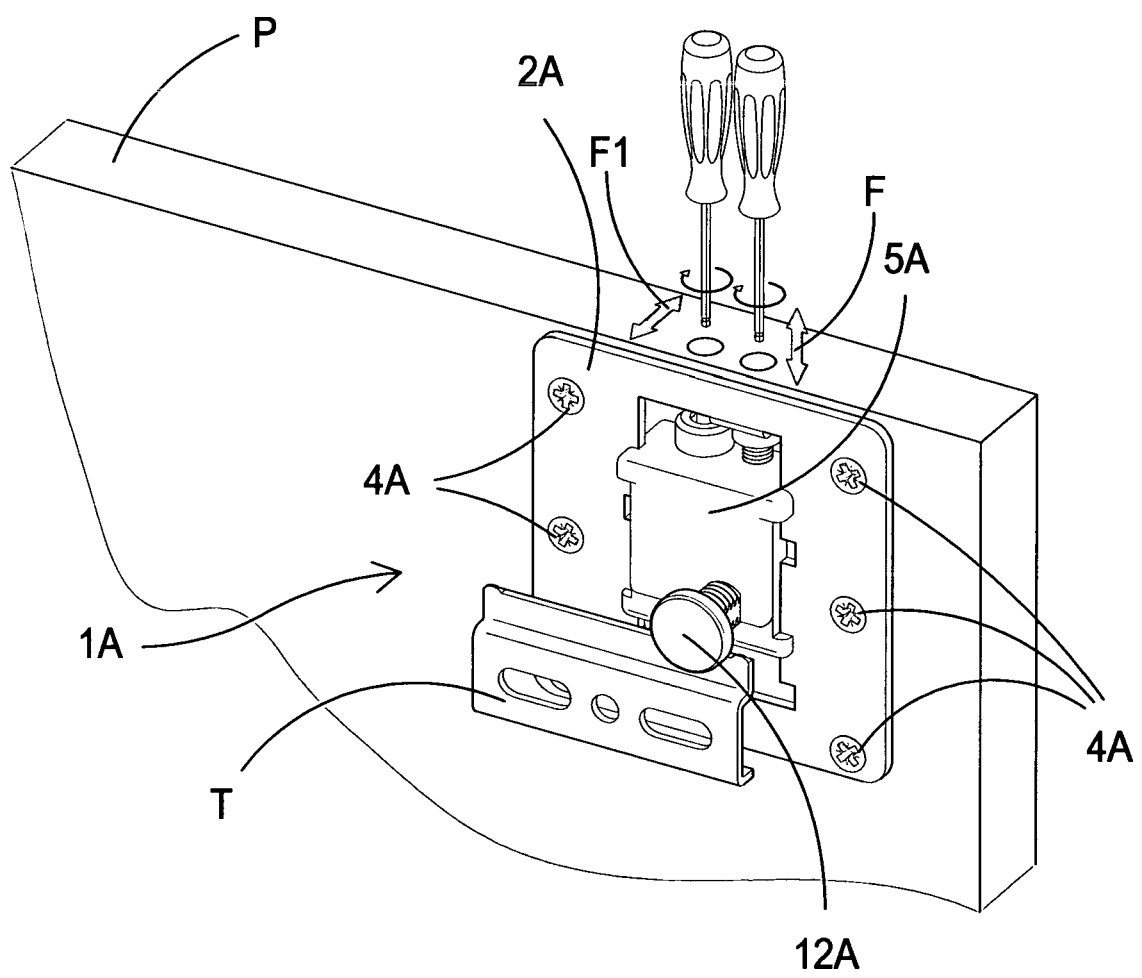


Fig. 6

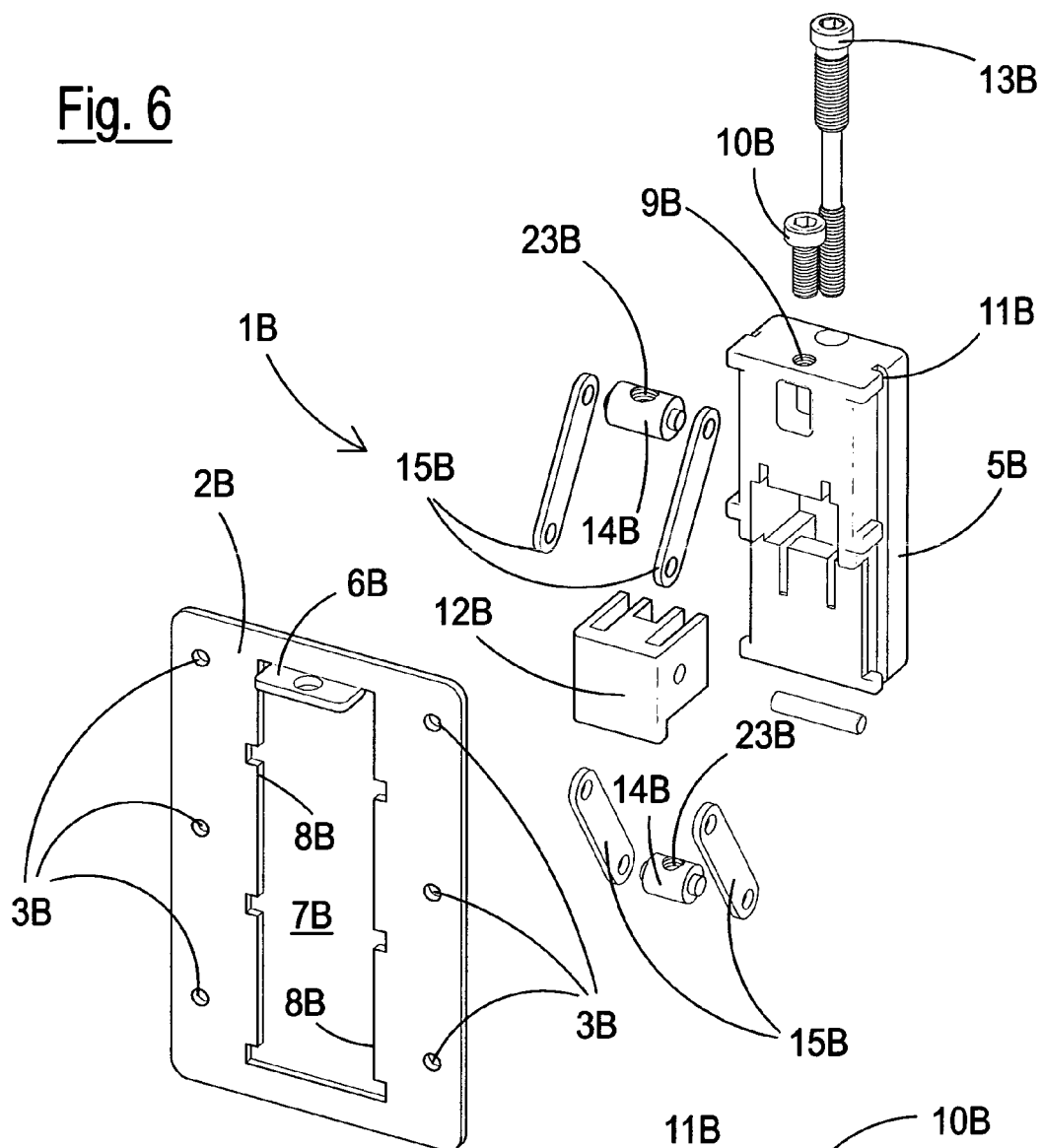
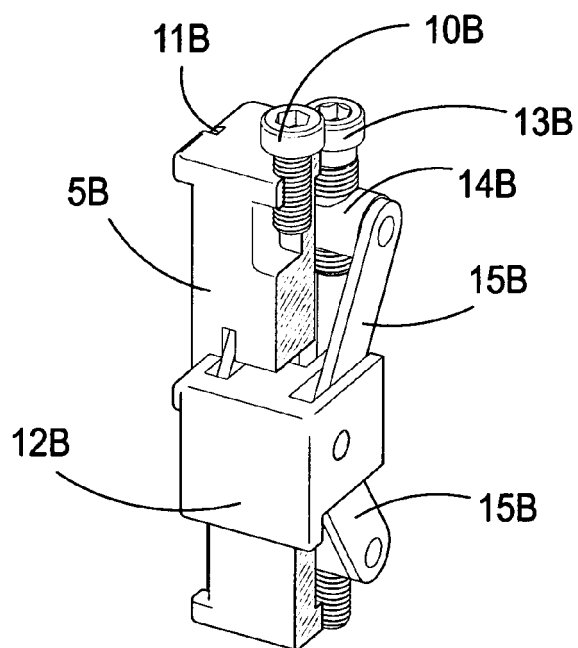


Fig. 7



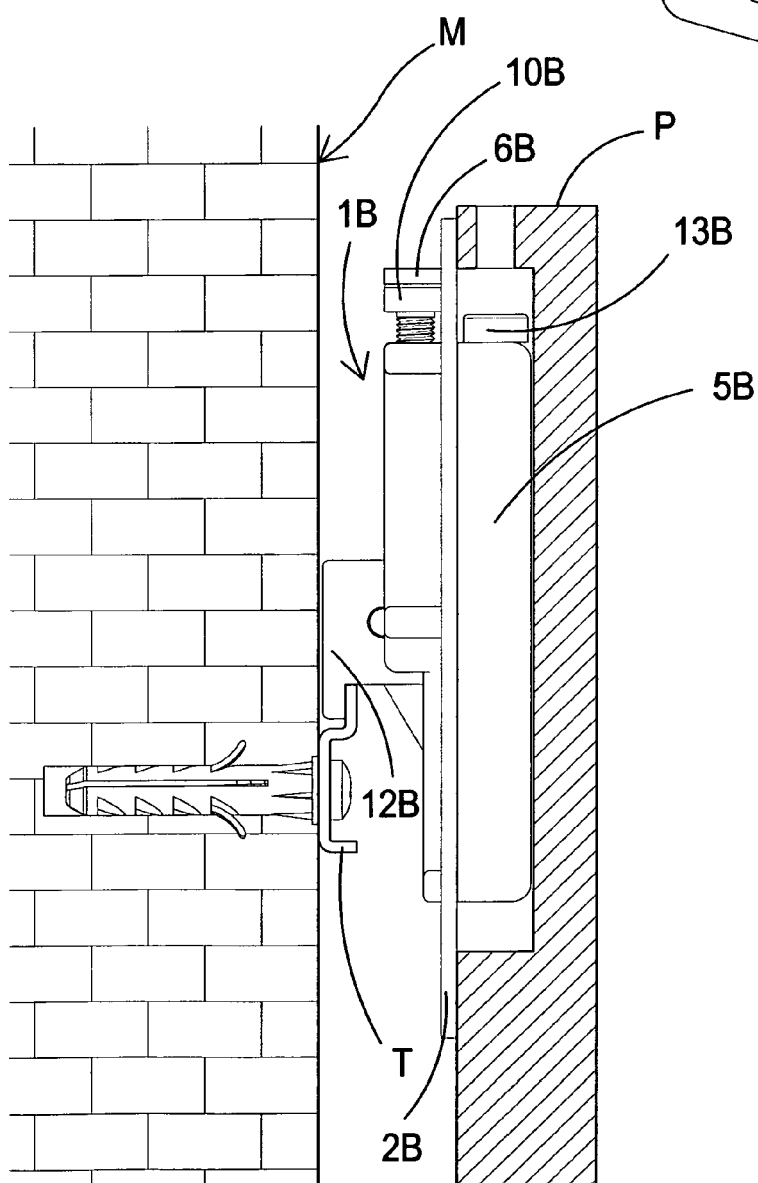
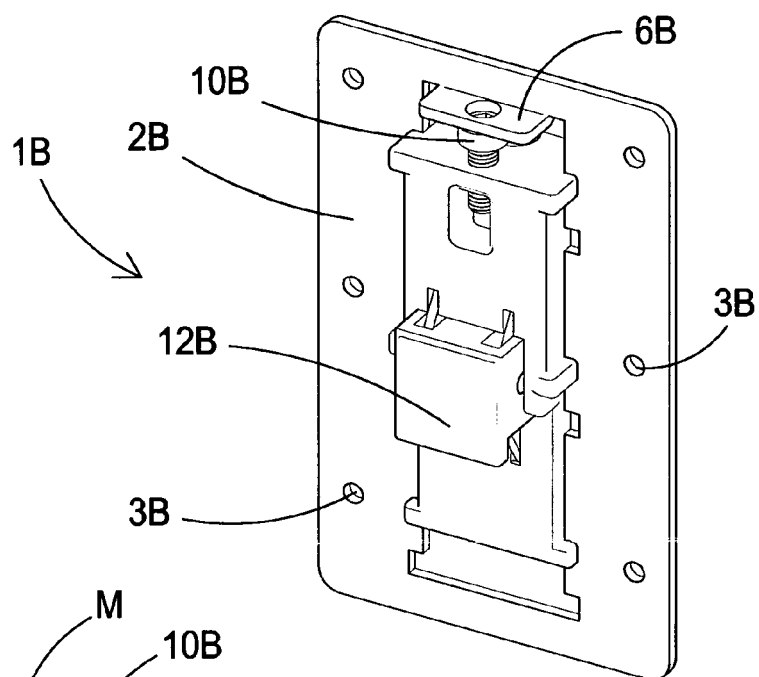
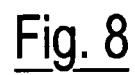


Fig. 9

Fig. 10

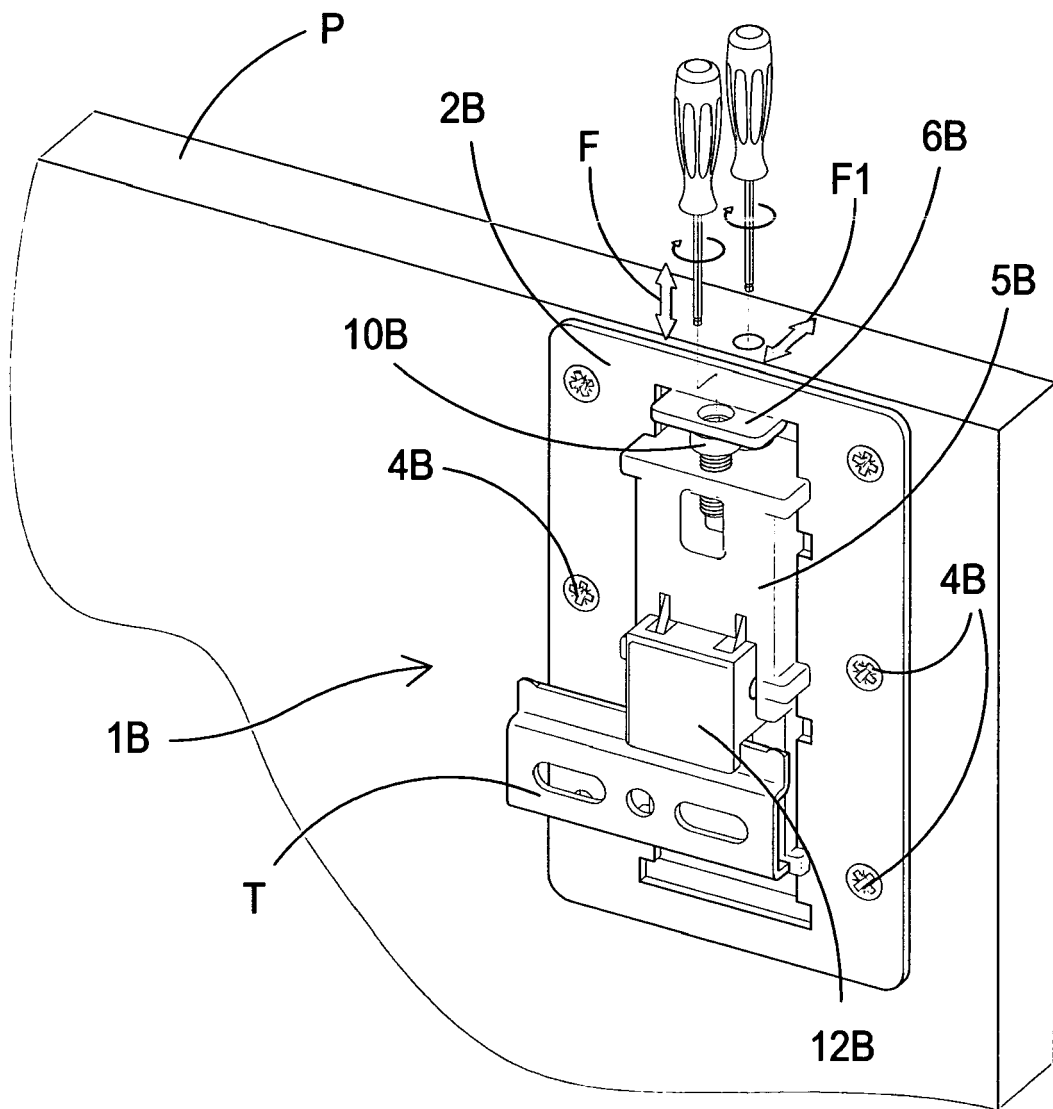


Fig. 11

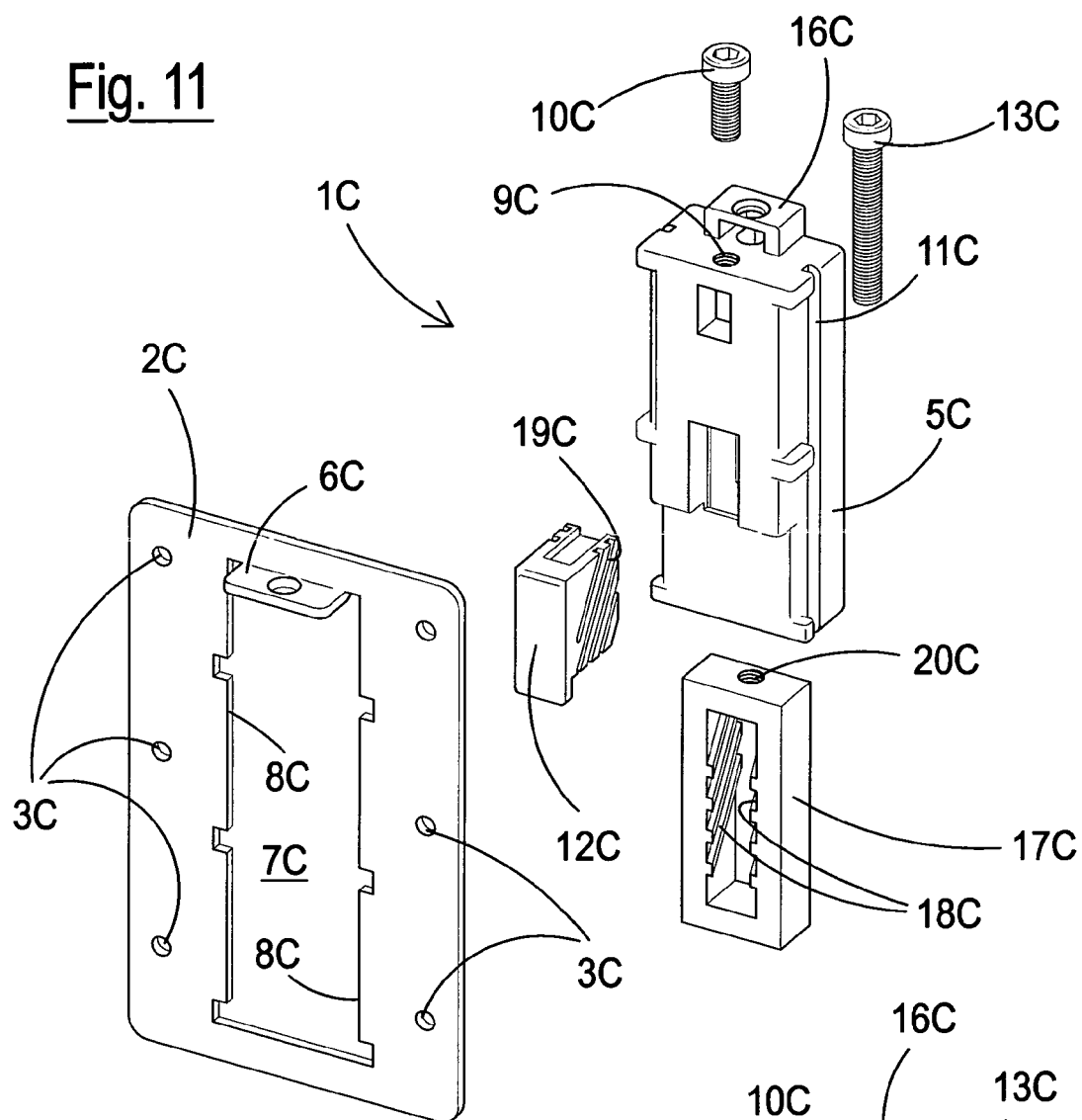


Fig. 12

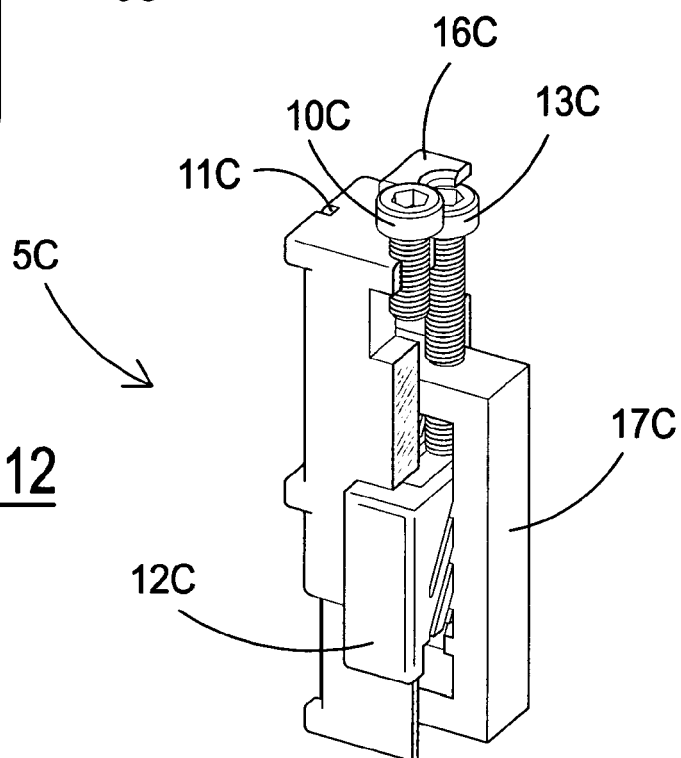


Fig. 13

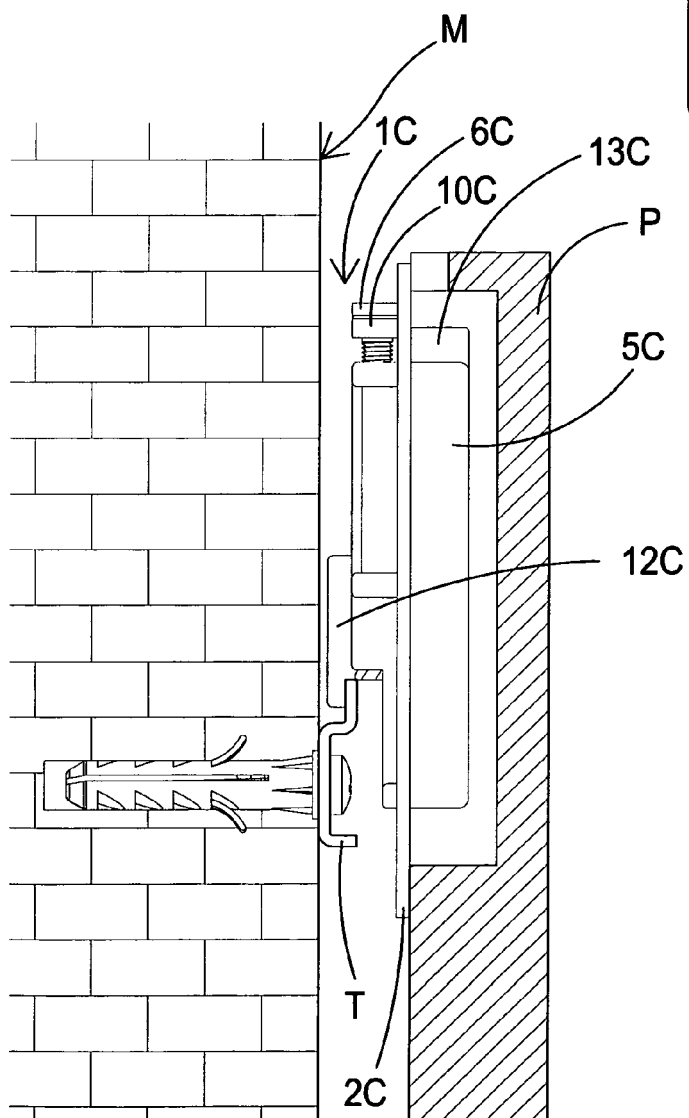
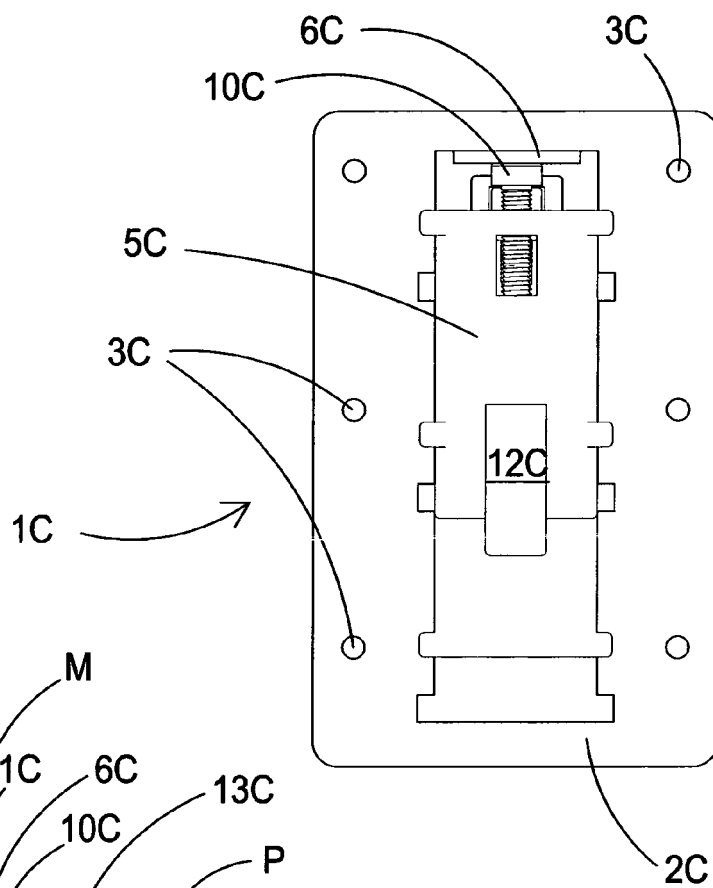
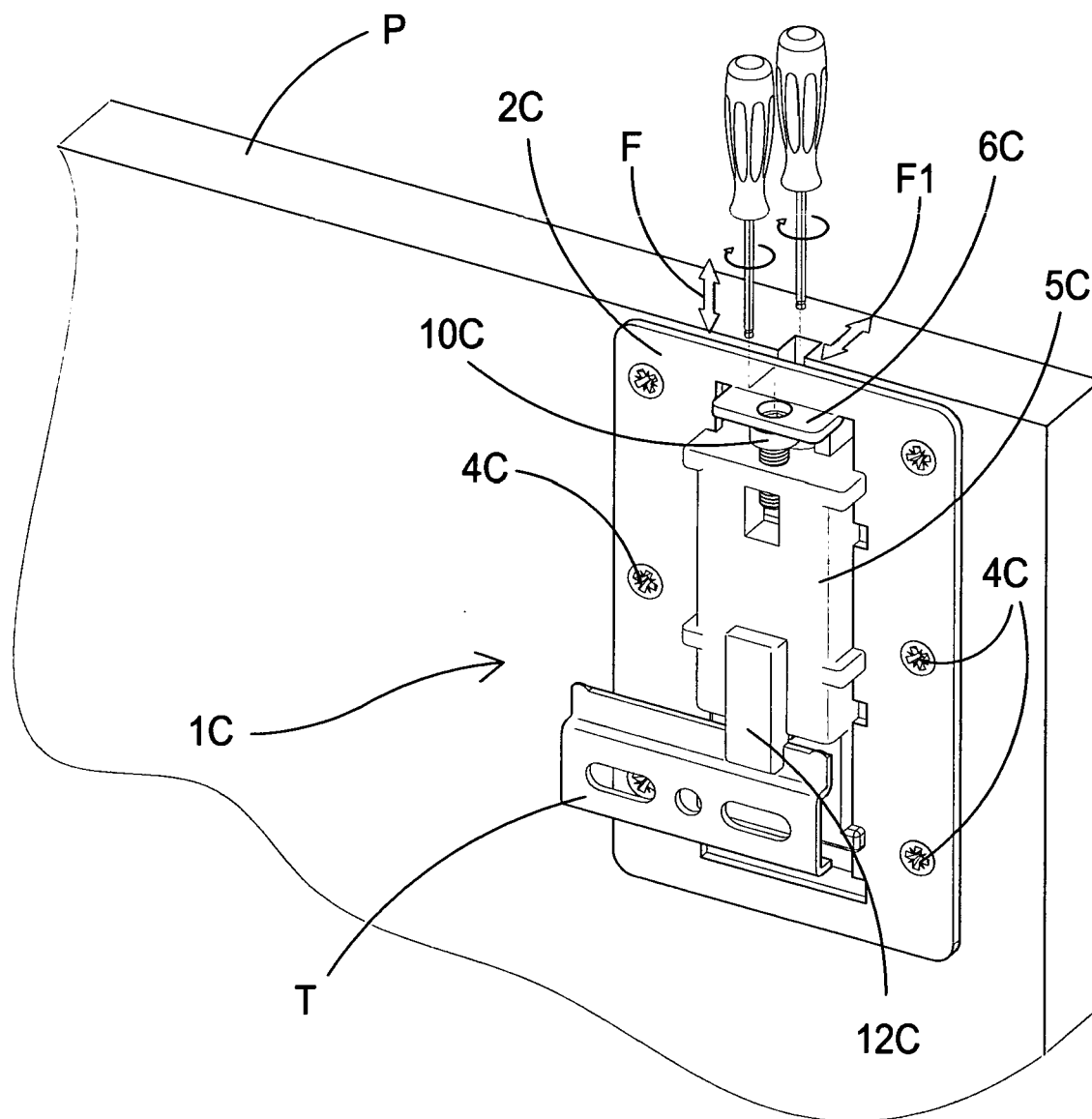


Fig. 14

Fig. 15



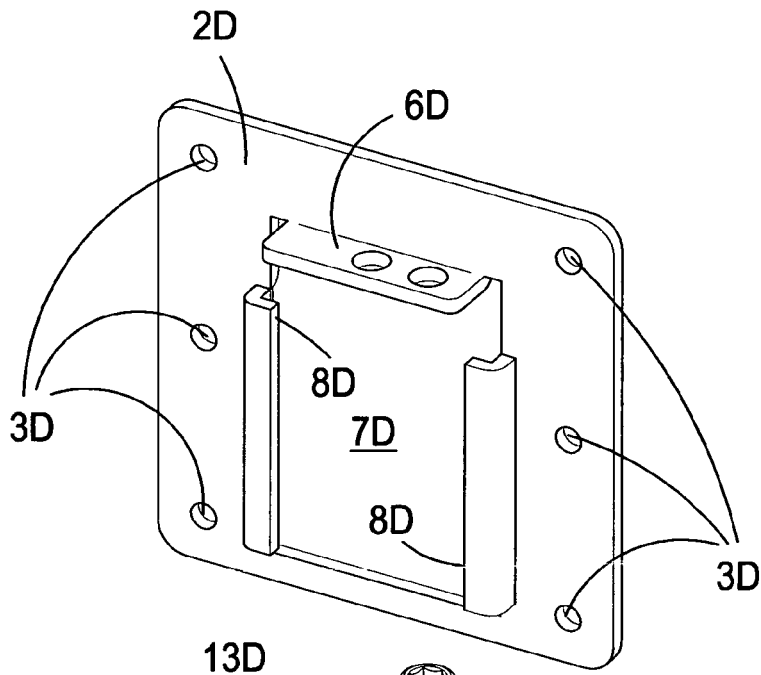


Fig. 16

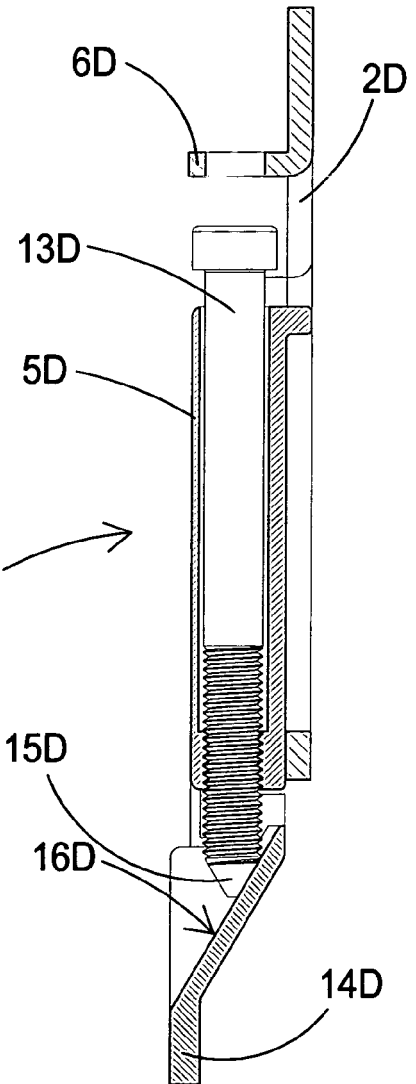
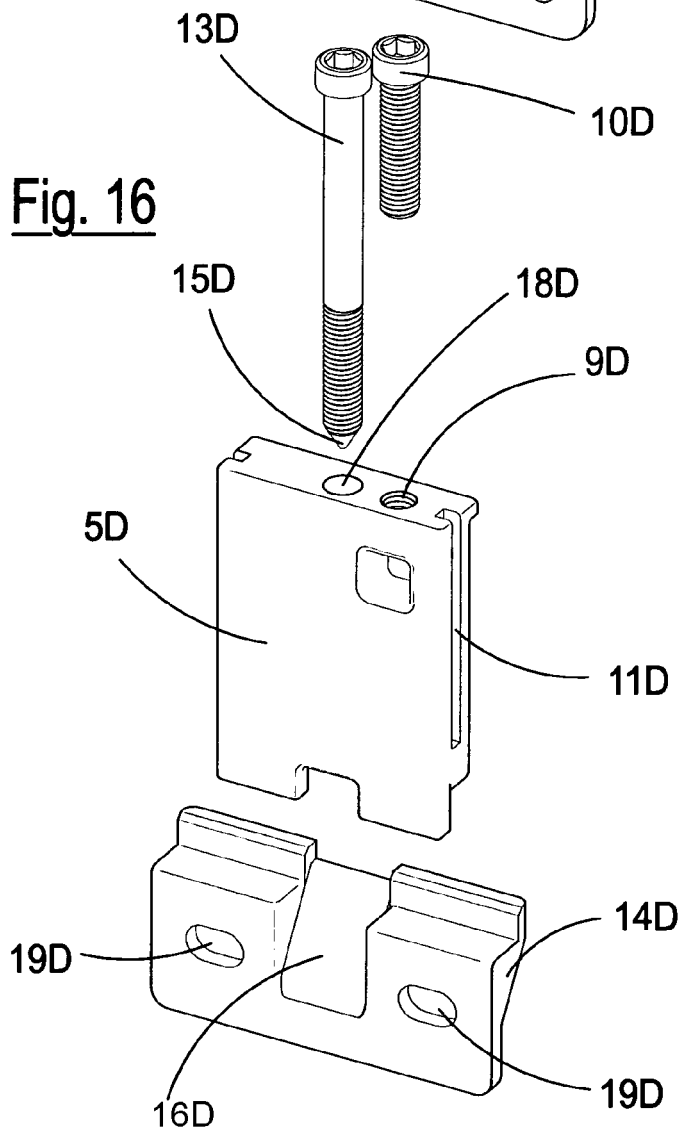


Fig. 17

Fig. 18

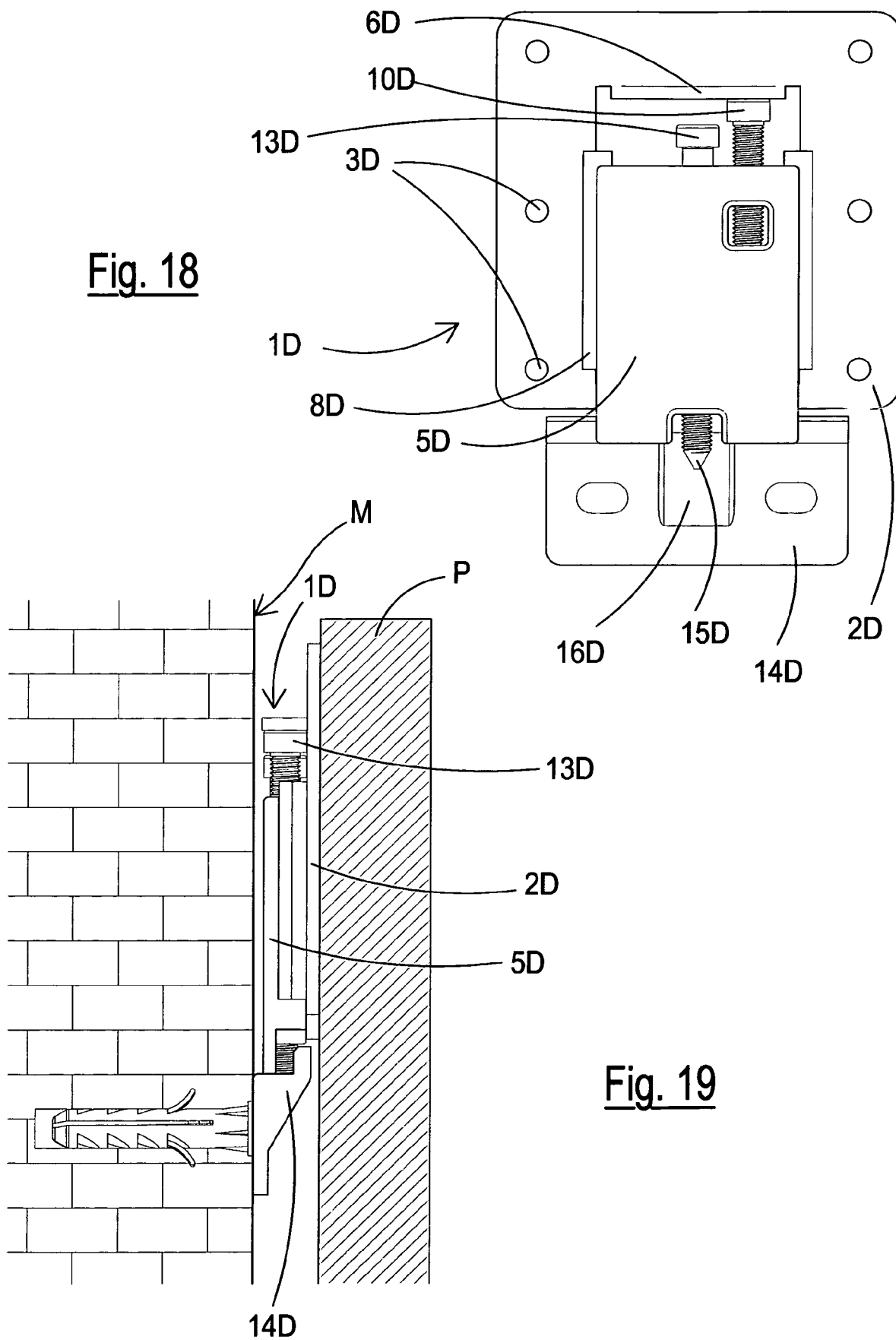
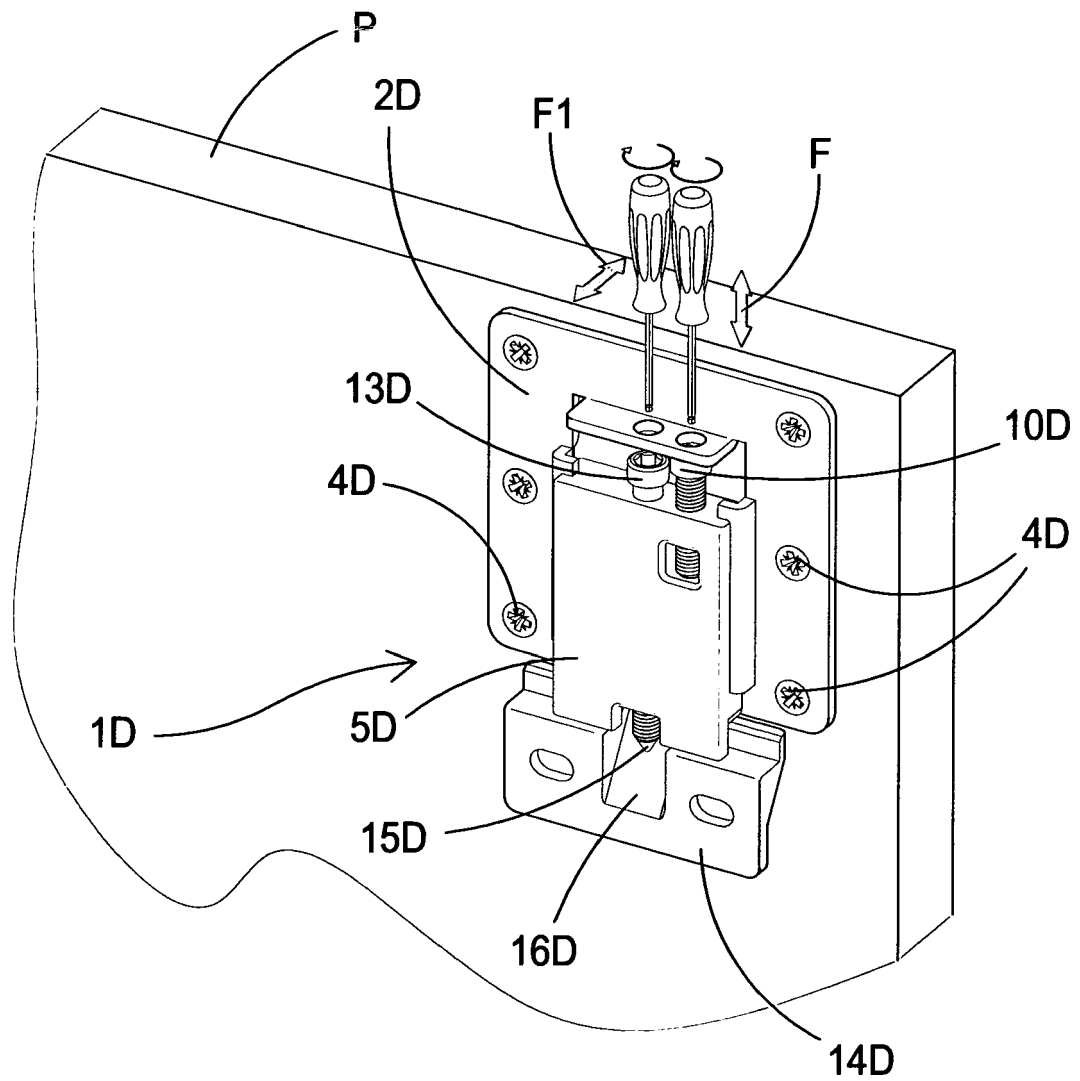


Fig. 19

Fig. 20





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Application Number
EP 17 17 5077

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Place of search Munich		Date of completion of the search 25 September 2017	Examiner Dartis, Daniel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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