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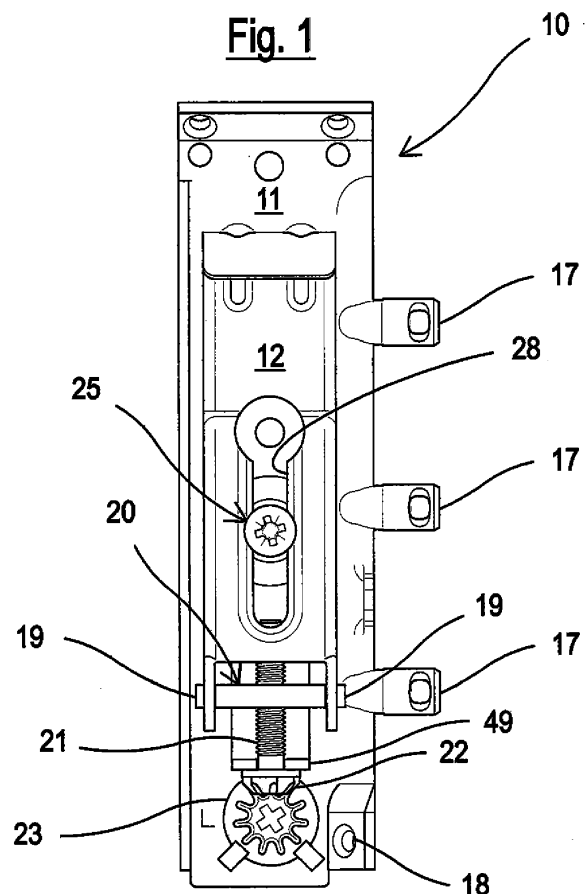
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(54) **SUSPENSION FITTING FOR WALL CUPBOARD INCORPORATING AN ANTI-DISENGAGEMENT FUNCTION**

(57) A hanging-bracket device (10) for wall cupboards incorporating an anti-disengagement function comprising, in combination: a fixing plate (11) to a shoulder (13) of a wall cupboard (14), a hooking element (31) of the hanging bracket (10) to a bearing element (32) fixed to a wall (30), adjustment kinematic mechanisms in depth and in height (in horizontal and in vertical) of the hooking element (31) with respect to the plate (11) being provided between the plate (11) and the hooking element (31), wherein the hooking element (31) is positioned at the end of an articulated arm (12), by means of pins (19), to the plate (11), wherein the arm (12) has a stop (33) suitable for being positioned beneath said bearing element (32) fixed to a wall (30), acting when the wall cupboard (14) containing said hanging-bracket device, is positioned in use on the respective wall (30).



## Description

**[0001]** The present invention relates to a hanging-bracket device for wall cupboards incorporating an anti-disengagement function. In particular, this device is of the concealed and adjustable type, with a system for fixing a wall cupboard to a shoulder.

**[0002]** It is known that hanging-bracket devices, also more commonly called concealed wall-cupboard attachments, are used for fixing wall cupboards or parts of the same to a wall.

**[0003]** This type of hanging-bracket device can be of the type described in EP 1.008.316 and DE 201 03 728 and essentially comprises a metal plate, in a single elongated piece, possibly having a series of fixing pins that extend from a side thereof. The plate is destined for being fixed to the shoulder of the cupboard, and possibly also to the upper wall (top). An articulated arm extends from the plate upwards, said arm having, at its free end, a hooking element which is destined for being freely engaged with a rod, i.e. complementing the hooking element, fixed to the wall with a dowel, or in any case to a bearing element suitable for this purpose.

**[0004]** Furthermore, the position of the arm can be adjusted, both in depth and in height, with respect to the plate by means of appropriate kinematic mechanisms and maneuvering screws accessible from inside the furniture or otherwise.

**[0005]** In this way, the position of the wall cupboard can be adjusted, both in depth and in height, obviously within certain limits, after the cupboard has been fixed to the wall, by engaging the hooking elements of the arms of the hanging brackets with the bearing rod, or with another equivalent bearing element, fixed to the wall.

**[0006]** When the wall cupboard is hung to a wall, using the above-mentioned device, the weight of the same creates a force on the articulated arm that tends to rotate the same hanging bracket causing it to be positioned parallel to the wall.

**[0007]** If an upward force is accidentally generated, such as, for example, an accidental thrust beneath the cupboard thus hung, the cupboard will tend to become disengaged and fall, thereby causing danger.

**[0008]** Examples of these hanging brackets are described and illustrated in WO 2004/032681 and WO 2009/077828. In these patents, the arm articulated to the plate provides, in a portion beneath the hooking element, a sloping portion of wall. If an upward thrust is generated on the furniture, this sloping portion of wall can even facilitate the disengagement of the hooking element of the arm from the support fixed to the wall.

**[0009]** For this purpose, various systems have been developed that try to ensure that the furniture, once hung with the hanging-bracket device of the type indicated above, does not become disengaged for any reason, unless with a deliberate intervention.

**[0010]** These known systems, however, currently require particular additions to the hanging-bracket device,

some of which must actually be activated, once the wall cupboard equipped with the hanging-bracket device has been positioned on the wall in an operational position.

**[0011]** EP 2807954 discloses one of these systems in which a grub screw is added to the hook and is screwed beneath the support once the hanging bracket has been positioned parallel to the wall.

**[0012]** This implies further costs in both the manufacturing phase and also in the assembly phase of the wall cupboard due to the necessity of additional time for their activation.

**[0013]** The general objective of the present invention is to overcome the drawbacks of the known art, by providing a hanging-bracket device for wall cupboards incorporating an anti-disengagement function which, although ensuring a stable and safe fixing of the hanging-bracket device to the wall with time, makes its disengagement, even accidental, impossible, in the sense that it prevents the hanging-bracket device from either partially or totally slipping off the rod, or any other generic hooking element, fixed to the wall.

**[0014]** The above objective is achieved by a hanging-bracket device having the characteristics specified in the main claim and enclosed sub-claims.

**[0015]** The structural and functional characteristics of the hanging-bracket device according to the invention, and its advantages with respect to the known art, will appear evident from the following illustrative description, referring to the enclosed drawings, in which:

- figure 1 is a raised front view illustrating a non-limiting example of a hanging-bracket device according to the invention;
- figures 2 and 3 are raised side views from the two sides of figure 1;
- figure 4 is a view from the back of the device illustrated in figure 1;
- figure 5 is a view from above of the device of figure 1;
- figures 6 and 7 illustrate perspective views of the device of figure 1 from the front and from the back;
- figure 8 shows a sectional view of the hanging-bracket device of figures 1 to 7 when constrained to a wall cupboard and thus constrained is positioned in use on a rod fixed to a wall;
- figures 9 and 10 show similar views to what is shown in figure 8 in subsequent phases illustrating the fixing modes and stable positioning to the wall in an anti-disengagement position.

**[0016]** With reference first of all to all of the figures, the hanging-bracket device according to the invention is indicated as a whole with 10, and consists of the combination of a plate 11, having a substantially elongated rectangular configuration, and an arm 12 articulately constrained to the plate 11, suitable for collaborating with a bearing element such as a support or rod 32 fixed to a wall 30 by means of dowels 27.

**[0017]** The plate 11 is destined for being substantially

fixed to a shoulder 13 of a wall cupboard 14, of which - to simplify the drawing - only an upper edge is illustrated, which is composed of the same shoulder 13, an upper top 15 and a possible rear lining 16.

**[0018]** The partial fixing of the plate 11 to the shoulder 13 is actuated in a known way, by means of a plurality of pins 17 which extend from a side of the same and through further fixing means 18.

**[0019]** The arm 12 is hinged, or articulated, by means of pins 19 to a spindle nut 20 which is screwed onto a screw 21 of the plate 11.

**[0020]** As can be clearly seen from the drawings, the screw 21 is axially constrained to the plate 11, but with the possibility of rotation, extending between two opposite walls 49, one of which is shown.

**[0021]** For this purpose, the head of the screw 21 is composed of a first gear 22 coupled at 90° with a second gear 23, which, on the opposite side to the teeth, has a seat 24 for a maneuvering screwdriver.

**[0022]** It is consequently evident that the rotation of the gear 23 causes, through the gear 22, a rotation of the screw 21 and therefore the translation in one of the two directions of the arrow F1 of the spindle nut 20, and consequently the movement of the arm 12.

**[0023]** This causes a vertical adjustment of the position of the arm 12 with respect to the plate 11.

**[0024]** The position of the arm 12 with respect to the plate 11 can also be horizontally adjusted (in depth), by means of a screw 25 which is screwed onto a seat 26 of the plate 11 itself and is anchored by means of its enlarged head to a vertical slot 28 of the arm 12. The head of the screw has a cross-shaped seat for a maneuvering screwdriver.

**[0025]** Also in this case, it is evident how, by acting on the regulation screw 25, a variation is caused in the angle formed by the arm 22 with the plate 11, and consequently an adjustment in depth of the position of the wall cupboard 14 with respect to a wall 30.

**[0026]** The arm 12 is also provided, at one of its free ends, with a hooking element 31 destined for being hooked to a support or rod 32 fixed to the wall 30 by means of dowels 27.

**[0027]** The kinematic mechanisms for adjustment in height and depth described above for purely illustrative and non-limiting purposes, are of the type known to skilled persons in the field, and may also be different.

**[0028]** Adjustable concealed hanging-bracket devices of the type described above are fixed to the shoulder 13 of the wall cupboard 14 (manually or also automatically), by inserting - with interference - the pins 17 into respective seats of the shoulder 13 (figures 8, 9 and 10).

**[0029]** According to the invention, the arm 12 has a square-shaped form in its intermediate position that defines a stop 33 positioned between an end of the arm shaped as a hooking element 31 and an opposite end of the arm having a box-shaped form where the constraining pins 19 to the spindle nut 20, which is screwed onto a screw 21 of the plate 11, are positioned.

**[0030]** Said stop 33 of the arm 12 is suitable for being positioned beneath the bearing element in the form of a support or rod 32 fixed to the wall 30 when the hanging-bracket device or piece of furniture are arranged in an operational position. Said supporting element 32 preferably provides a protruding portion 34 formed perpendicularly to said wall 30 and suitable for being abutted against said stop 33.

**[0031]** This arrangement creates an extremely stable and precise anti-disengagement system which ensures the stable positioning of the wall cupboard 14 and relative hanging bracket 10 with respect to the rod of the bearing element 32 constrained to the wall 30.

**[0032]** It should be noted how, through the present invention, a hanging-bracket device is defined, having an anti-disengagement function which does not require any additional part as, on the contrary, has so far been necessary.

**[0033]** The functioning of this hanging-bracket device is very clearly shown in figures 8 to 10 which illustrate consecutive phases of the assembly of the wall cupboard 14 containing said hanging-bracket device 10.

**[0034]** Once the hanging-bracket device 10 according to the invention has been firmly fixed to the wall cupboard 14 with the arm 12 rotated forwards and detached from the plate 11, the furniture is moved towards the wall according to an arrow K. Once the end with the hooking element 31 of the arm 12 has been brought above the bearing element in the form of a support or rod 32, fixed to the wall 30, the wall cupboard 14 is lowered according to the arrow H thus hooking the wall cupboard 14 to the wall 30, as shown in figure 9.

**[0035]** At this point, the usual adjustments are effected by inserting a screwdriver G to actuate the relative adjustment kinematic mechanisms.

**[0036]** When this operation has been completed, the wall cupboard 14 is accompanied until it rests on the wall 30 reaching the correct assembly position shown in figure 10.

**[0037]** The present invention is thus utilized as, through this movement, a stable anti-disengagement position of the hanging-bracket device is obtained.

**[0038]** With this movement and positioning of parts, in fact, the stop 33 of the arm 12 is positioned beneath the bearing element in the form of a support or rod 32 fixed to the wall 30.

**[0039]** In particular, as is shown in the example illustrated, the protruding portion 34 of the bearing element in the form of a support or rod 32, as it is perpendicular to said wall 30, is specifically abutted above the stop 33.

**[0040]** It can therefore be seen how, without any additional element or parts to the hanging-bracket device through the arrangement of the stop 33 simply obtained directly in the formation phase of the arm 12, the desired objective is achieved, solving the problem of anti-disengagement.

**[0041]** The objective mentioned in the preamble of the description has therefore been achieved.

**[0042]** The protection scope of the invention is therefore defined by the following claims.

## Claims

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1. A hanging-bracket device (10) for wall cupboards incorporating an anti-disengagement function comprising, in combination: a fixing plate (11) to a shoulder (13) of a wall cupboard (14), a hooking element (31) of said hanging bracket (10) to a bearing element (32) fixed to a wall (30), adjustment kinematic mechanisms in depth and in height (in horizontal and in vertical) of the hooking element (31) with respect to the plate (11), being provided between said plate (11) and said hooking element (31), wherein said hooking element (31) is positioned at the end of an articulated arm (12), by means of pins (19), to said plate (11), **characterized in that** said arm (12) has a stop (33) suitable for being positioned beneath said bearing element (32) fixed to a wall (30), acting when said wall cupboard (14) containing said hanging-bracket device is positioned in use on said wall (30). 10
2. The hanging-bracket device according to claim 1, **characterized in that** said stop (33) is positioned between an end of said arm (12) shaped as a hooking element (31) and an opposite box-shaped end where said arm (12) is articulated, by means of pins (19) to said plate (11). 15
3. The hanging-bracket device according to one or more of the previous claims, **characterized in that** said stop (33) is defined by an intermediate portion of said arm (12) in a square-shaped form. 20
4. The hanging-bracket device according to one or more of the previous claims, **characterized in that** said bearing element (32) fixed to said wall (30) comprises a support or rod (32). 25
5. The hanging-bracket device according to one or more of the previous claims, **characterized in that** said supporting element (32) provides a portion (34) protruding perpendicularly with respect to said wall (30) suitable for being abutted against said stop (33). 30

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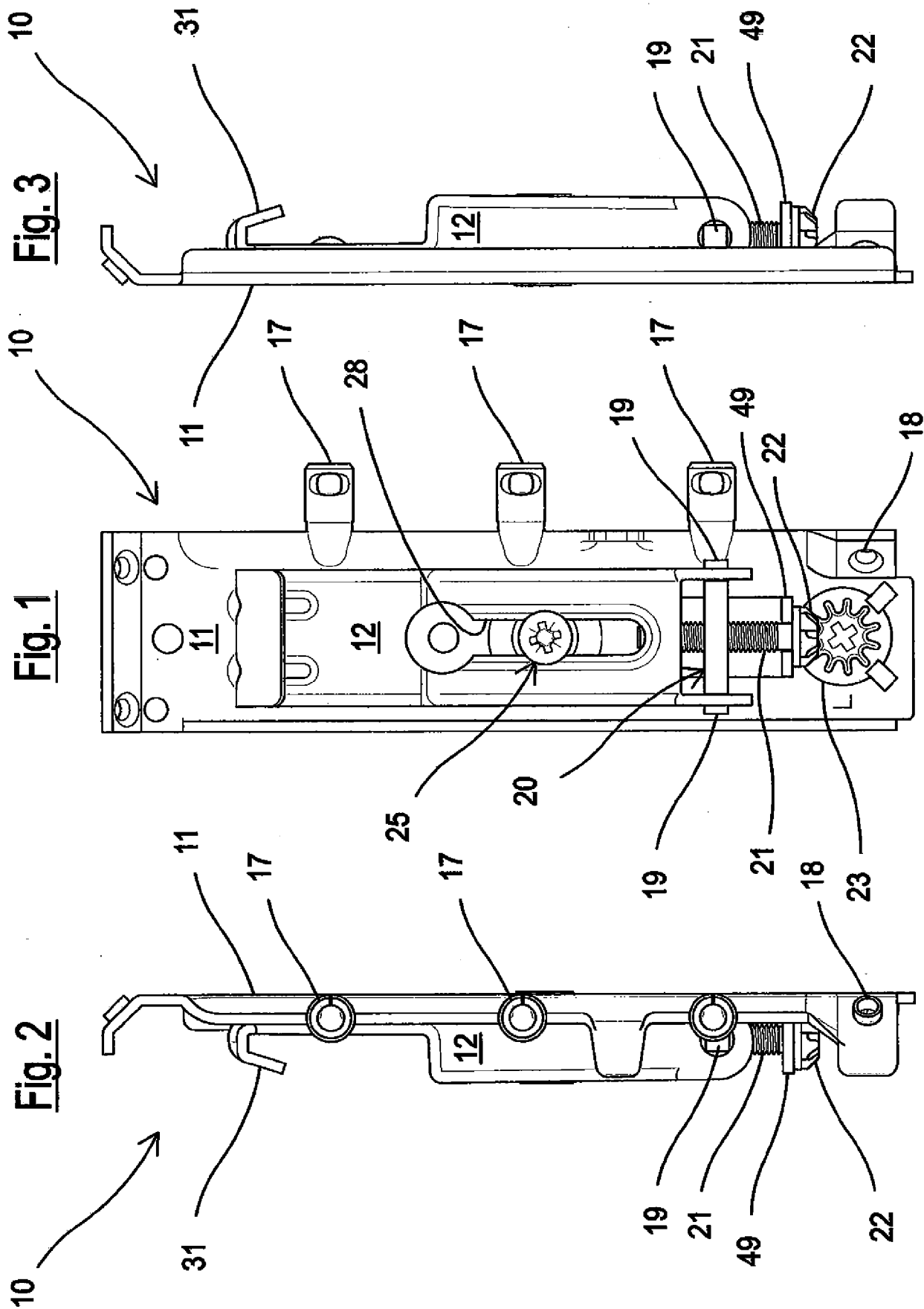


Fig. 4

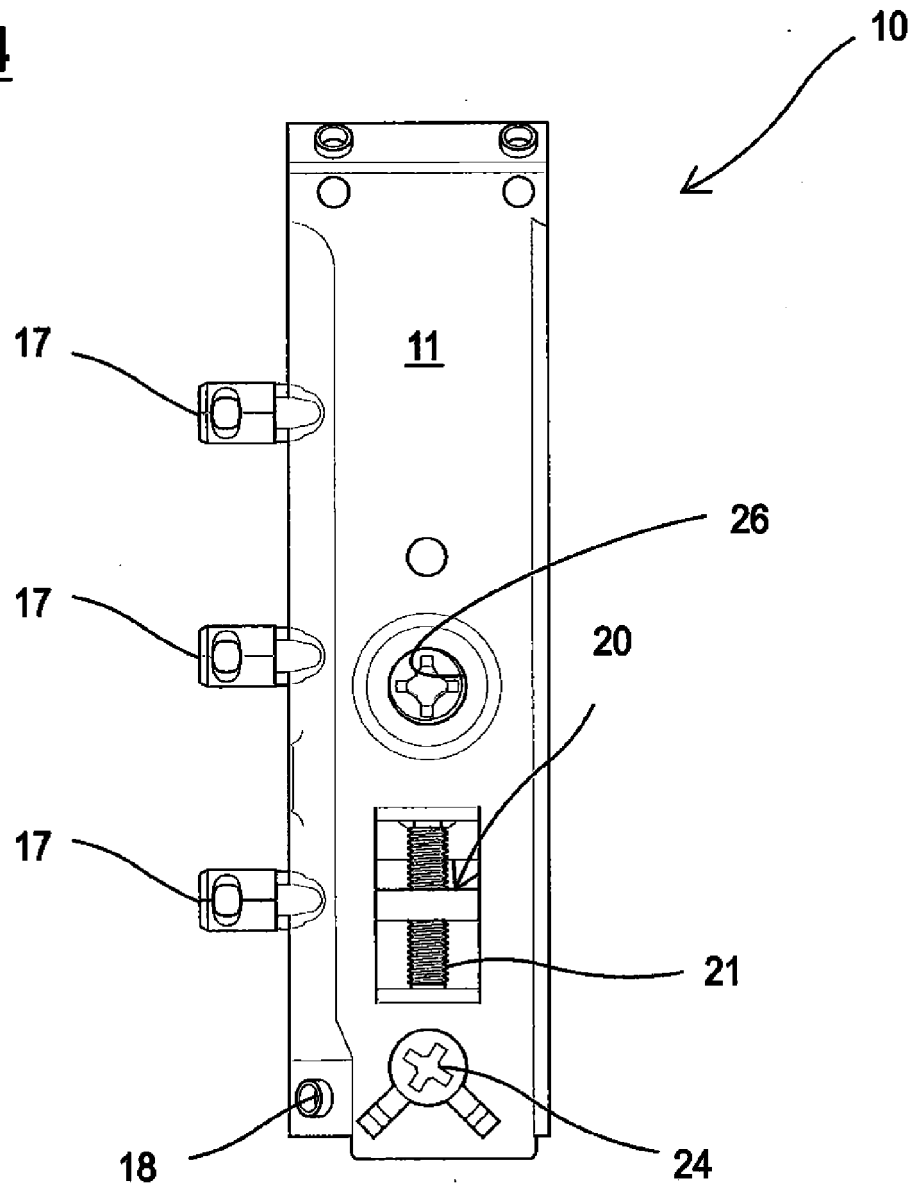
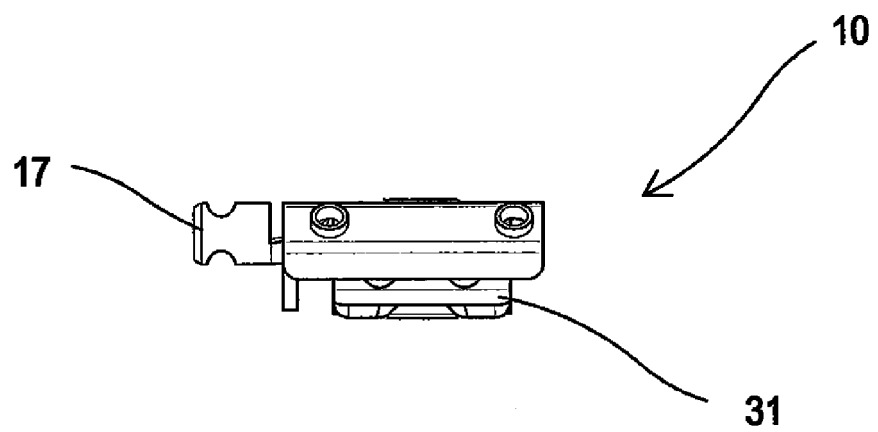
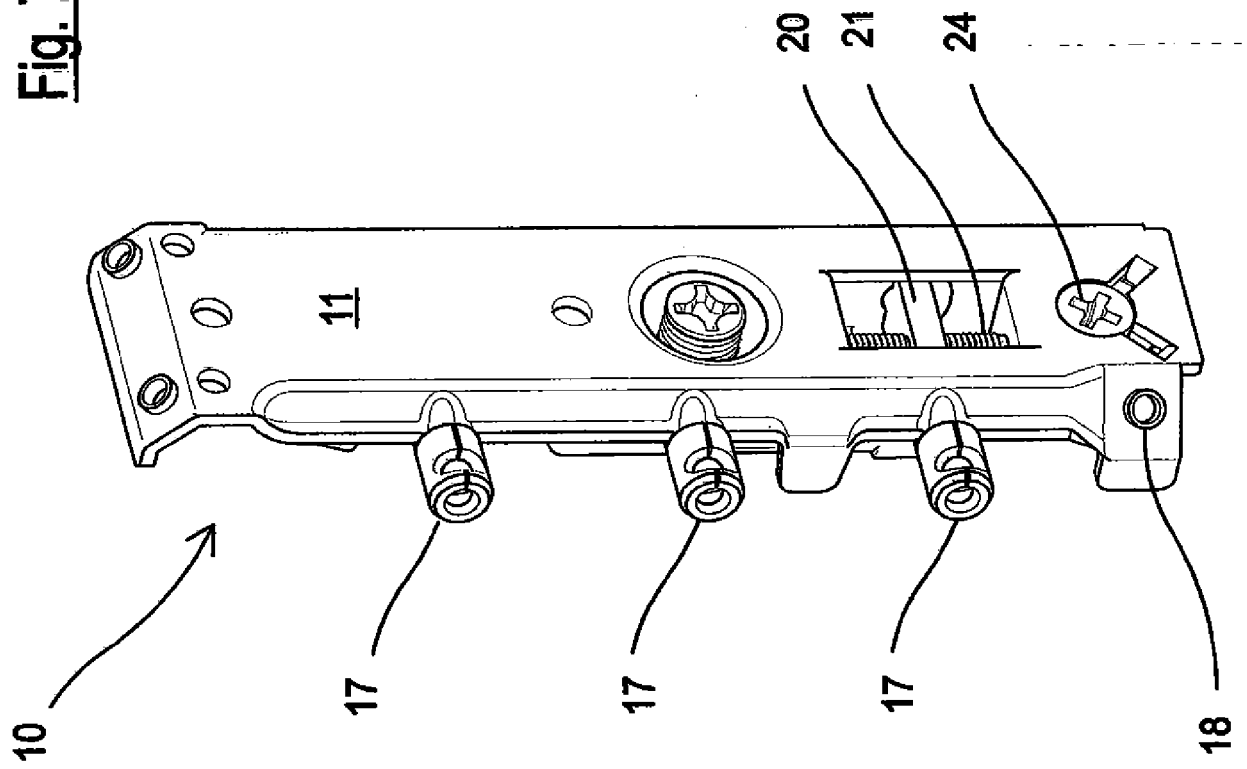


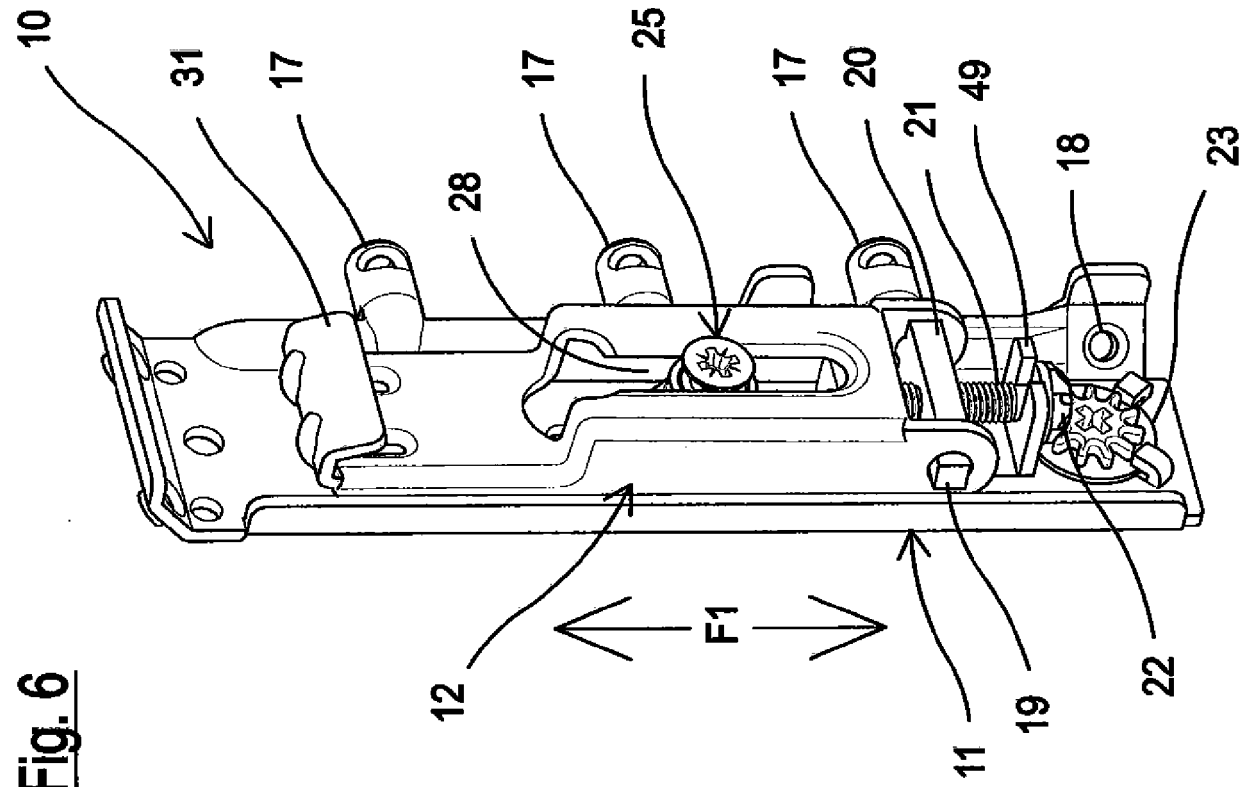
Fig. 5



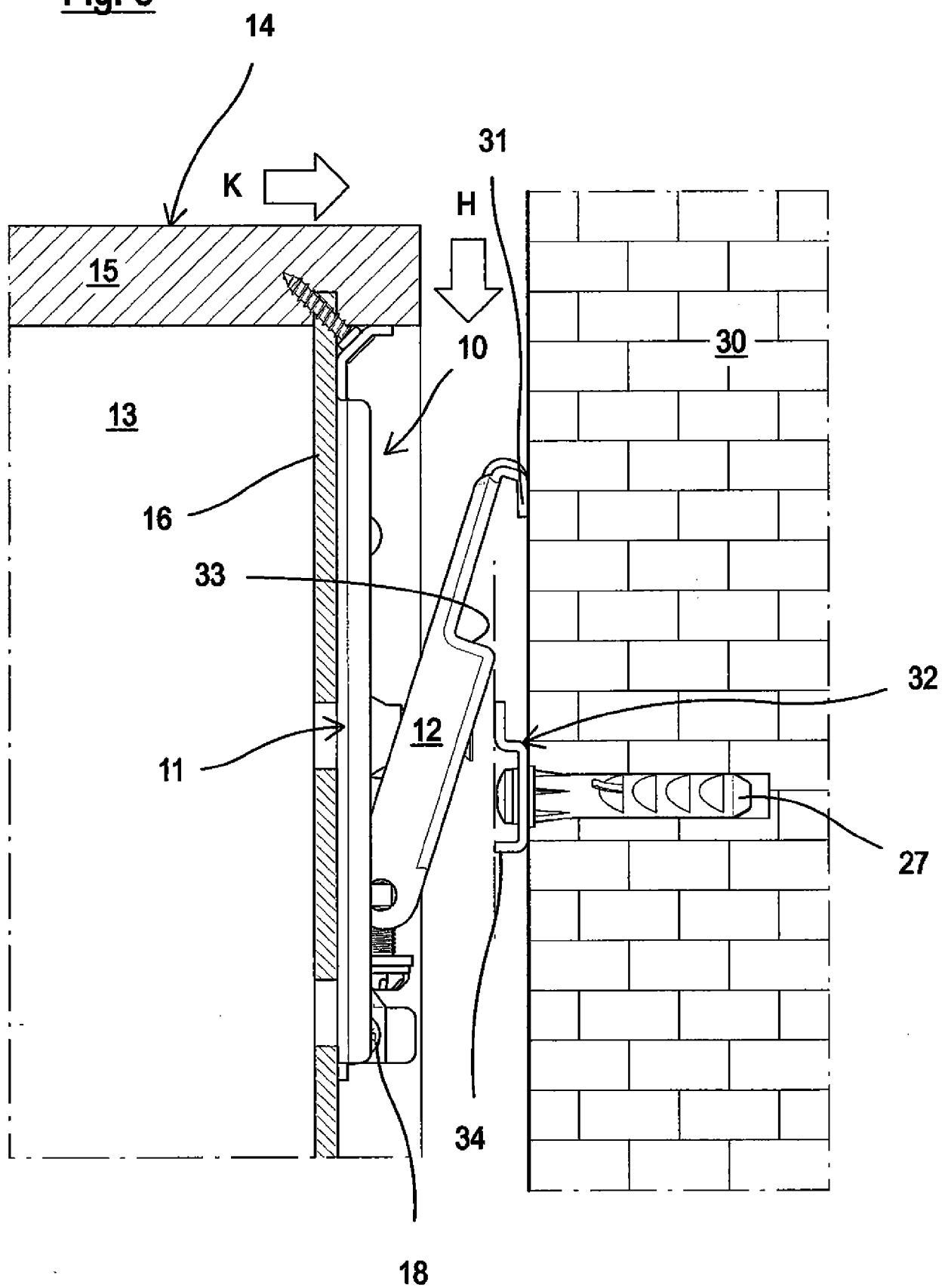
**Fig. 7**



**Fig. 6**

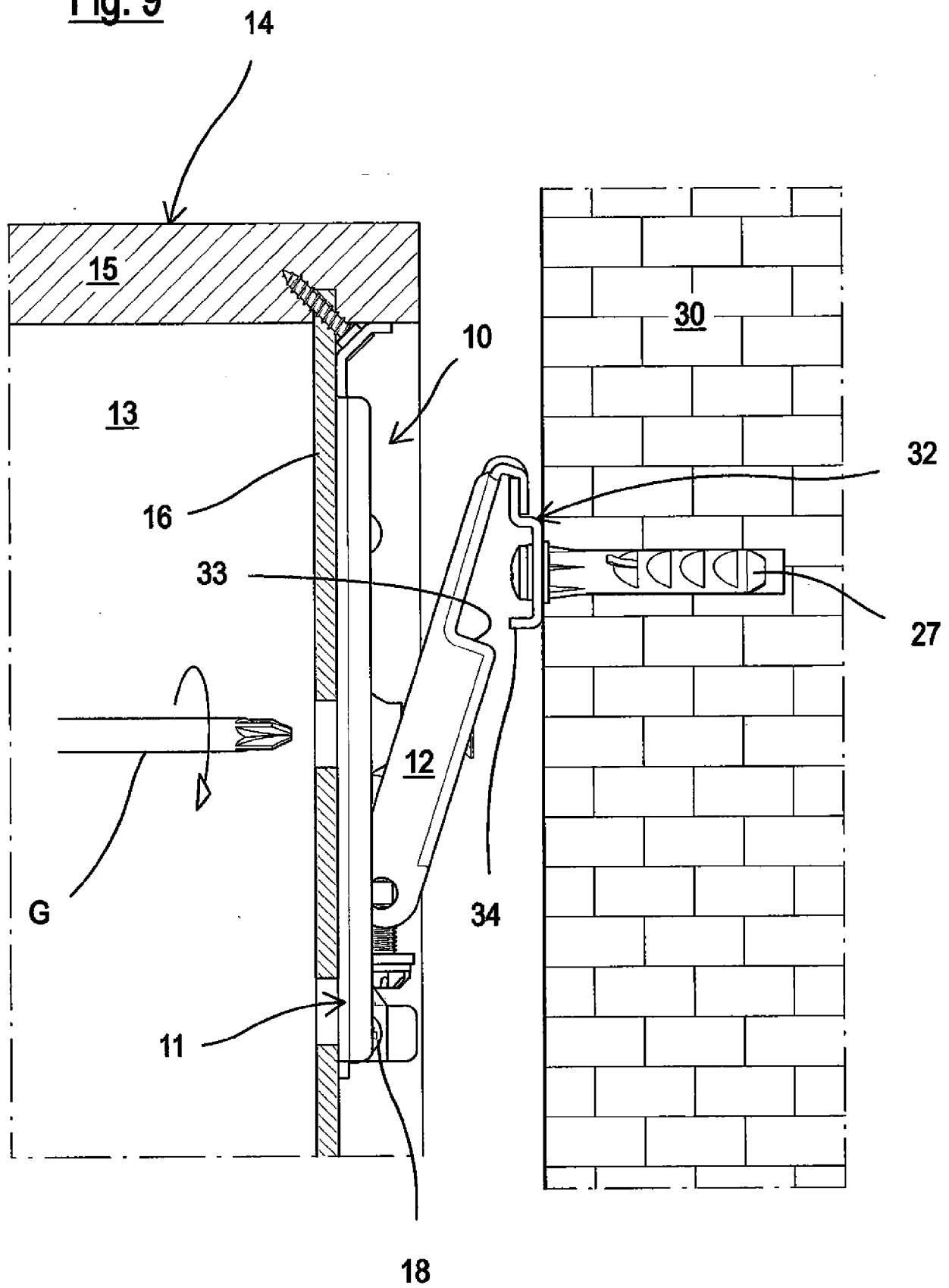


**Fig. 8**

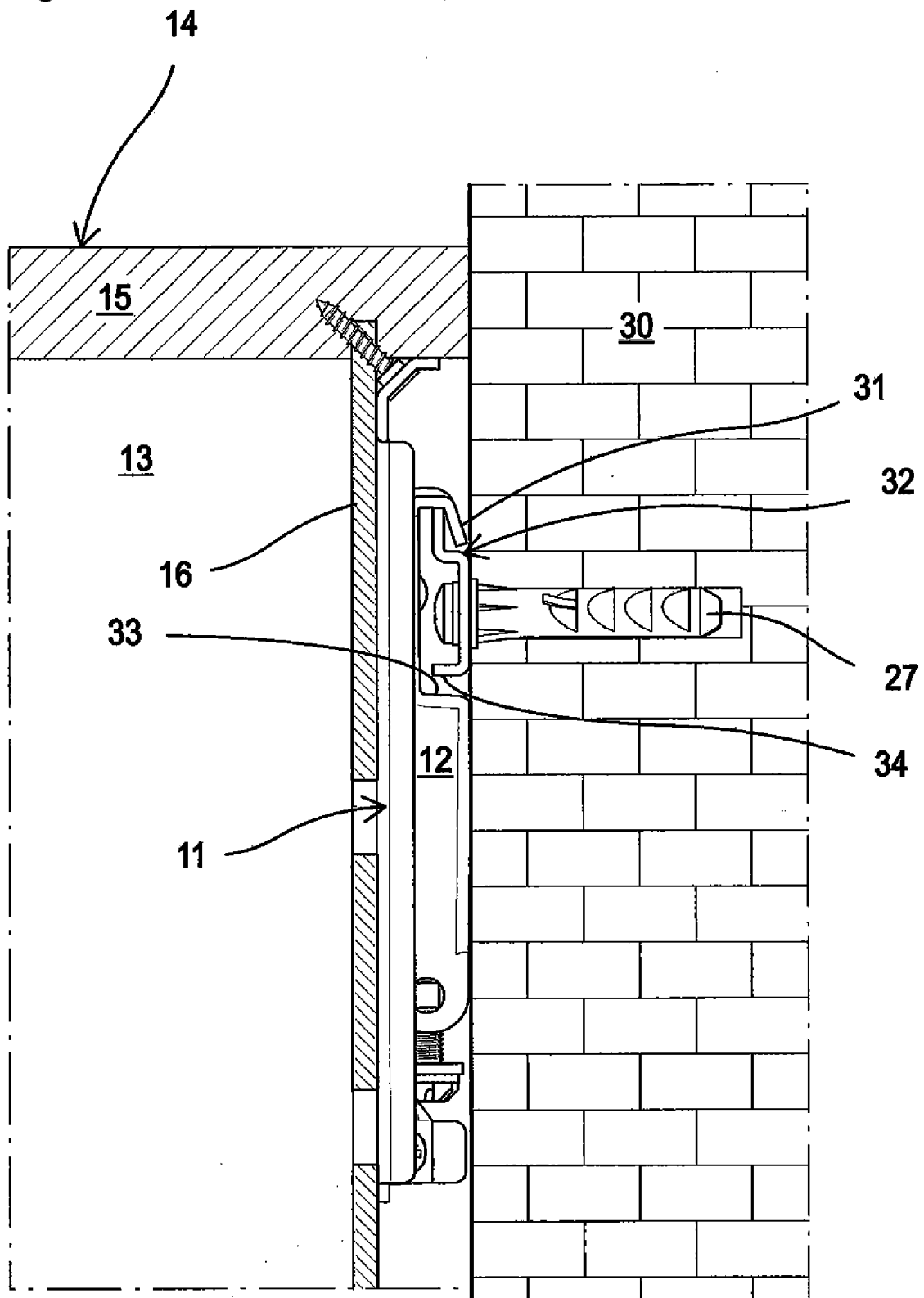




**Fig. 9**



**Fig. 10**





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Application Number  
EP 17 15 1725

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 June 2017	Examiner Linden, Stefan
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