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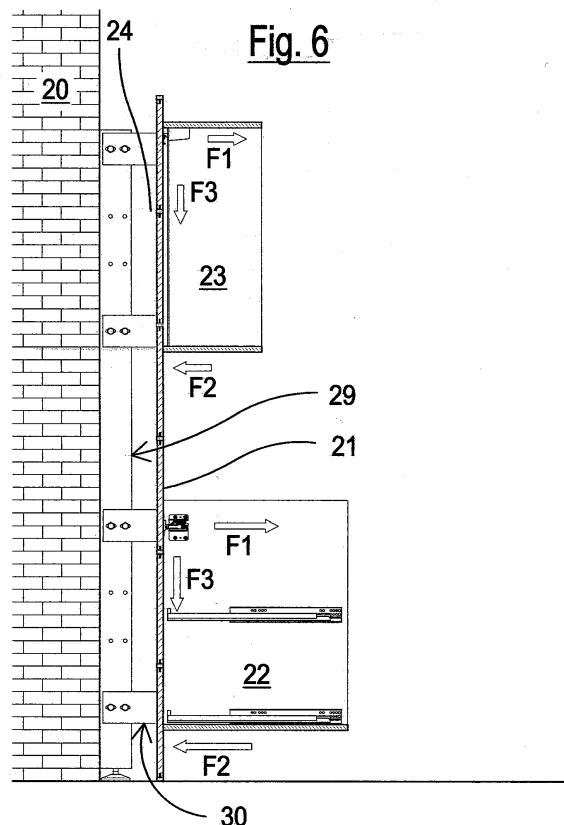
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(54) **ASSEMBLY SYSTEM FOR MOUNTING A WALL-CUPBOARD TO A SUPPORTING STRUCTURE**

(57) An assembly system, by means of wall-brackets (27, 28) hooked to respective plates (25, 26), of a wall-cupboard (22, 23) to a supporting structure consisting of two walls (20, 21): a first rear load-bearing wall (20) and a second front wall (21), interspaced with respect to said

first wall (20) so as to form an interspace (24), characterized in that rigid connection elements (C) are housed in said interspace (24) between said first rear load-bearing wall (20) and said plates (25, 26) which are assembled outside said second front wall (21).



## Description

**[0001]** The present invention relates to an assembly system, by means of wall-brackets hooked to respective plates, of a wall-cupboard to a supporting structure.

**[0002]** More specifically, the present invention relates to an assembly system of a wall-cupboard to a supporting structure consisting of two walls: a first rear load-bearing wall and a second front wall, interspaced with respect to said first wall, so as to form an interspace for housing elements for the rigid connection between said first rear load-bearing wall and said plates.

**[0003]** The meaning intended to be given to the words used herein, is the following.

**[0004]** The term wall-cupboard refers to any type of furniture which cantilever-extends from a supporting structure, at any height from the floor.

**[0005]** The term wall refers to any type of wall or panel, framework or similar, made of any material, on which a wall-cupboard can be assembled.

**[0006]** The term wall-bracket refers to any type of device, visible or hidden, which, fixed to the wall-cupboard, is destined to be hooked to a plate attached to a supporting structure.

**[0007]** Wall-brackets of the known type are described, for example, in European patents EP2219495, EP2303068, EP2299873, EP2421406, to which reference should be made for further clarifications, and which should be considered as being an integral part of the present description.

**[0008]** The term plate to which the wall-bracket is hooked, refers to any type of support (plate, bar, or similar) made of metal or other material, fixed to the supporting structure to which a wall-bracket can be fixed to the wall-cupboard.

**[0009]** Considering the above, as is well-known to skilled persons in the field, the current tendency of interior designers - above all for kitchen projects - is to furnish kitchens entirely with wall-cupboards, whether they be actual "suspended wall-cabinets" at a greater height, or so-called "bases" at a lower height, both cantilever-extending from a supporting wall.

**[0010]** In addition to this tendency, it is now fashionable, mainly for aesthetical reasons, to furnish kitchens with a front wall, interspaced from the load-bearing wall, or rear wall, so as to form an interspace destined for housing connection elements between said rear and front walls.

**[0011]** The supporting structure described above, consisting of two walls: a first rear load-bearing wall and a second front wall, interspaced with respect to the first wall, has raised the technical problem of how to safely assemble the wall-cupboards; in other words, how to unload the entire weight of the wall-cupboards on the rear load-bearing wall alone, leaving the front wall virtually load-free.

**[0012]** The general objective of the present invention is to solve the above technical problem and, according

to the present invention, said technical problem has been solved by preparing an assembly system, by means of wall-brackets hooked to respective plates, of a wall-cupboard to a supporting structure consisting of two walls: a first rear load-bearing wall and a second front wall, interspaced with respect to said first wall, so as to form, with the same, an interspace, characterized in that rigid connection elements are housed in said interspace, between said first rear load-bearing wall and said plates which are assembled outside said second front wall, whereby said second front wall is assembled between said connection means and said plates without being affected by the load of the wall-cupboard.

**[0013]** This objective is also achieved by a system according to the combination of the main claim described above, with one or more of the dependent claims.

**[0014]** The structural and functional characteristics of the present invention and its advantages with respect to the known art will appear even more evident from the following description, referring to the enclosed drawings, which show examples of assembly systems produced according to the innovative principles of the invention itself.

- figures 1, 2 and 3 are perspective and sectional views for illustrating the technical problem the invention proposes to solve;
- figures 4, 5 and 6 are views similar to 1, 2 and 3, illustrating an embodiment of an assembly system produced according to the present invention;
- figure 7 is a perspective view illustrating part of the assembly system of figures 4, 5 and 6;
- figure 8 is a plan section of the assembly system illustrated in figure 7;
- figures 9 and 10 are two sectional views, vertical and plan, respectively, illustrating the assembly system of a so-called "base" wall-cupboard;
- figures 11 and 12 are two views similar to figures 9 and 10, but illustrating the assembly system of a wall-cupboard above a "base" wall-cupboard;
- figure 13 is a perspective view illustrating another possible embodiment of connection elements between rear wall and front wall of the structure of supporting the wall-cupboards;
- figures 14 and 15 are two views, raised and plan, respectively, of the connection elements of figure 13;
- figures 16 and 17 are two sectional views, vertical and plan, respectively, illustrating the assembly system of a "base" wall-cupboard, using the connection elements of figures 13-15; and
- figures 18 and 19 are two sectional views, in vertical and plan, respectively, illustrating a further embodiment of an assembly system according to the invention.

**[0015]** With reference to figures 1-3 of the drawings, 20 and 21 respectively indicate a rear and a front wall of a structure supporting so-called "base" wall-cupboards

22, assembled at a lower height with respect to a floor P, and wall-cupboards 23 assembled at a greater height.

**[0016]** The rear wall 20 can consist, for example, of a wall, whereas the front wall 21 can consist, for example, of panels made of wood, plasterboard, plastic or other materials. The rear wall 20 has a load-bearing function, whereas the front wall 21 has a purely aesthetical function, and also for supporting shelves, and is supported by means of an autonomous supporting system which can be of any type (not shown), independent with respect to the assembly system of the wall-cupboard according to the invention.

**[0017]** Said walls 20, 21 are interspaced between each other, usually parallel to each other, so as to form an interspace 24.

**[0018]** Connection elements C between said supporting wall 20 and supporting plates 25, 26 of the wall-cupboards 22, 23, are housed in said interspace 24.

**[0019]** Wall-brackets 27, 28 fixed to the cupboards 22, 23, must, in fact, be hooked to said plates 25, 26, respectively lower and upper (or to other equivalent supporting means) assembled against the front wall 21. Said plates 25, 26 can also be of the type described and illustrated in European Patent EP2510833, or of another known type.

**[0020]** In this way, opposite forces are generated F1, F2, F3 which, *if not adequately counteracted, tend to tilt the wall-cupboards towards the outside.*

**[0021]** The objective of the invention, as already mentioned, is to provide an assembly system capable of resisting said forces F1, F2 and F3 when the cupboard is loaded, and also, above all with respect to "base" wall-cupboards, when the cupboard is subjected to stress by anomalous loads, such as, for example, by the weight of a person who is forcefully leaning against the cupboard itself.

**[0022]** With reference to figures 4-12, the technical problem indicated above is solved, according to the invention, by rigidly connecting the rear load-bearing wall 20 to the plates 25, 26 by means of rigid connection elements C.

**[0023]** According to a preferred embodiment of the invention, the position of said rigid connection elements C can be regulated with respect to depth.

**[0024]** For this purpose, the rigid connection elements C comprise a first part P1 fixed to the rear load-bearing wall 20 and a second part P2 fixed to the plates 25, 26.

**[0025]** According to a possible embodiment of the invention, more specifically, said rigid connection elements C can consist of a tubular upright 29 (first part P1) and a plurality of "U"-shaped brackets 30 (second part P2) fixed to said upright 29, interspaced at different heights, corresponding to the height of the plates 25, 26.

**[0026]** As can be clearly seen from the drawings, in the example shown, said tubular upright 29 has a square section, but it can have also different sections. Preferably, but not necessarily, the upright 29 rests on the floor P by means of an adjustable foot 31, and is securely

fastened to the rear load-bearing wall 20 by means of dowels 32 (figure 8).

**[0027]** As can be clearly seen from figures 9-12, the brackets 30 are fixed to the upright 29 in an adjustable position, in depth (as indicated by the arrows of figure 8), by means of registration means comprising pairs of bolts 33 passing through elongated slots 34 of the bracket 30 and circular holes 35 of the upright 29. A telescopic coupling is thus formed between the upright 29 and the brackets 30.

**[0028]** As can be clearly seen from figures 9-12 of the drawings, according to the invention, the plates 25, 26 are fixed to the respective brackets 30 by means of screws 36. The screws 36 pass freely through holes 37 of the front wall 21 and are screwed into threaded holes 38 of the bracket 30, thus pushing the respective plates 25, 26 against the front wall 21 which is consequently abutted against the brackets 30, as illustrated in the drawings.

**[0029]** Self-perforating and self-threading crews of the known type can also be used, which do not require the preparation of the pass-through holes 37 and threaded holes 38, through the wall 21 and the upright 29, respectively.

**[0030]** The brackets 30 may also be lacking, and the plates 25, 26 can be directly fixed to the upright 29.

**[0031]** It appears evident how the forces F1, F2 and F3 mentioned above are completely transmitted to the rear load-bearing wall 20, through the kinematic chain consisting of: the plates 25, 26, the screws 36, the bracket 30 and the upright 29, completely releasing the front non-load-bearing wall 21, which is simply abutted against the brackets 30, and which is equipped with its own supporting system (not shown), independent of the assembly system of the wall-cupboards.

**[0032]** The wall-cupboards 22, 23 are hooked to the respective plates 25, 26 in a completely known way, through hooks 39, 40 of the hanging-brackets 27, 28.

**[0033]** Figures 14-17 illustrate a possible alternative embodiment of the invention, in which the rigid connection elements C consist of (instead of the tubular upright 29) a plurality of profiled sections 41, for example, omega-shaped, fixed by means of dowels 42 to the rear wall 20, interspaced at different heights.

**[0034]** As can be clearly seen from the drawings, the brackets 30 are fixed to said profiled section 41 substantially in the same way used for fixing them to the upright 29.

**[0035]** Figures 18 and 19 illustrate a further embodiment of the invention, in which the front wall 21 is not abutted against the brackets 30, but is slightly interspaced from the same by a space S. Also in this way, said front wall 21 is not affected by the forces F1, F2 and F3 which subject the wall-brackets 22, 23 to stress.

**[0036]** For this purpose, distancing bushings are envisaged, or spacers 43, coaxial to the screws 36. As can be clearly seen from the drawings, said spacers 43 act between the brackets 30 and the plates 25, 26 when the

latter are fixed to the same brackets 30.

**[0037]** The term rigid connection elements refers to any structural element, also composite, made of metal or other material, capable of rigidly interconnecting the rear load-bearing wall to the plates on which the panels are hooked.

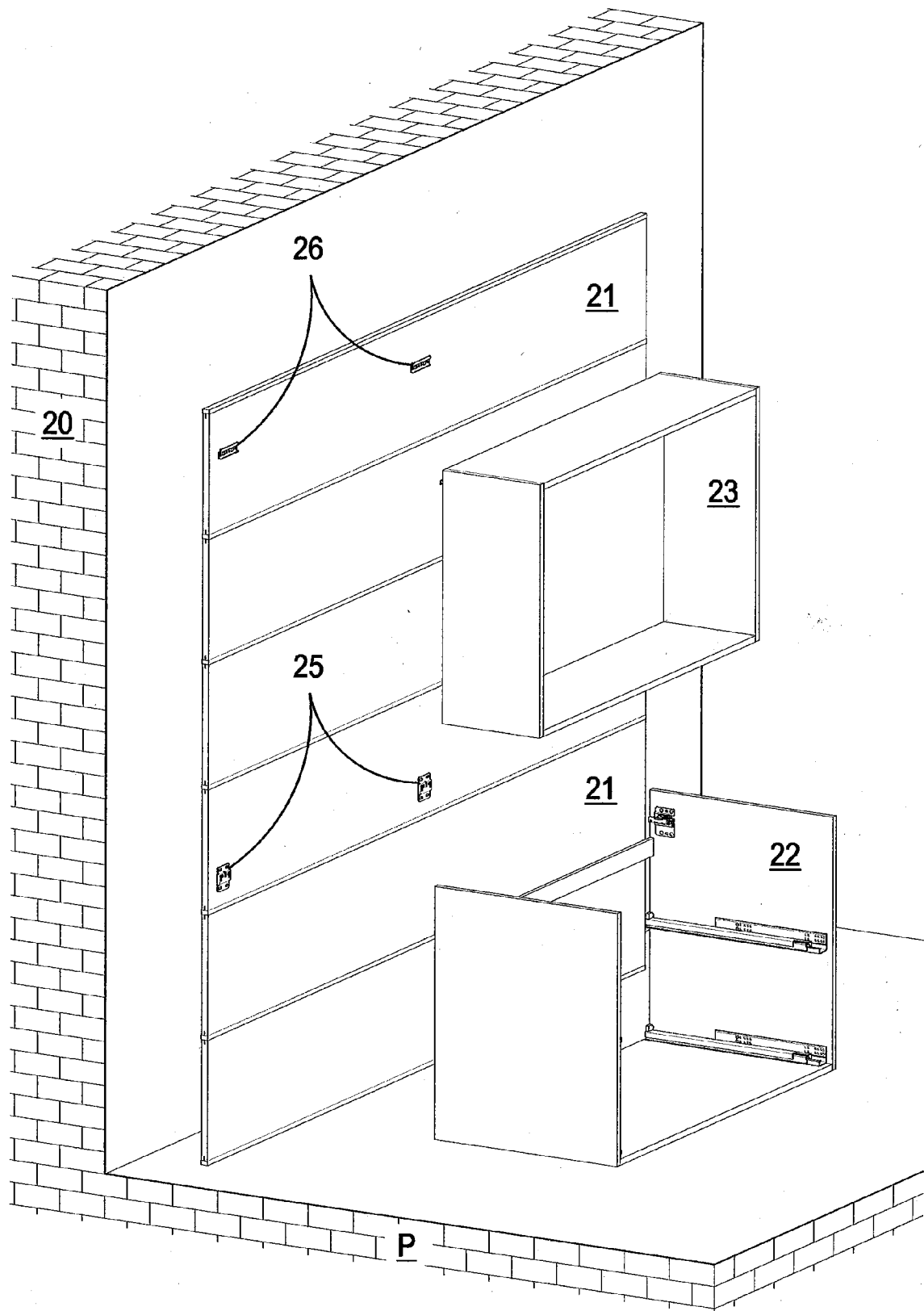
**[0038]** The objective mentioned in the preamble of the description has therefore been achieved.

**[0039]** The protection scope of the patent is defined by the enclosed claims.

## Claims

1. An assembly system, by means of wall-brackets (27,28) hooked to respective plates (25,26), of a wall-cupboard (22,23) to a supporting structure consisting of two walls (20,21): a first rear load-bearing wall (20) and a second front wall (21), interspaced with respect to said first wall (20) so as to form an interspace (24), **characterized in that** rigid connection elements (C) are housed in said interspace (24) between said first rear load-bearing wall (20) and said plates (25,26) which are assembled outside said second front wall (21).
2. The system according to claim 1, **characterized in that** the position of said rigid connection elements (C) can be regulated in depth.
3. The system according to claim 2, **characterized in that** said rigid connection elements (C) comprise a first part (P1) fixed to said rear wall (20) and a second part (P2) fixed to said plates (25,26), said first and second parts (P1,P2) being interconnected so that the position can be telescopically regulated in depth, by means of regulation means.
4. The system according to claim 1, **characterized in that** said rigid connection elements (C) comprise a tubular upright (29) fixed to the rear wall (20) and to said plates (25,26).
5. The system according to claim 1, **characterized in that** said rigid connection elements (C) consist of a tubular upright (29) fixed to the rear wall (20) and a plurality of "U"-shaped brackets (30) fixed to said upright (29), interspaced at different heights, corresponding to the height of the plates (25,26).
6. The system according to claim 5, **characterized in that** said plates (25,26) are fixed to respective brackets (30) by means of screws (36) that pass freely through pass-through holes (37) of the front wall (21) and are screwed inside threaded holes (38) of the bracket (30).
7. The system according to claim 5, **characterized in that** said brackets (30) are fixed to the upright (29) so that the position can be regulated in depth.
8. The system according to claim 1, **characterized in that** said rigid connection elements (C) consist of a plurality of omega-shaped sections (41) fixed to the rear wall (20) interspaced at different heights and anchored to the front wall (21).
9. The system according to claim 1, **characterized in that** said rigid connection elements (C) consist of a plurality of omega-shaped sections (41) fixed to the rear wall (20) interspaced at different heights, brackets (30) being fixed to said sections (41), so that the position can be regulated in depth, to which said plates (25,26) are fixed.
10. The system according to claim 4, **characterized in that** said upright (29) rests on a floor (P) by means of an adjustable foot (31).
11. The system according to claim 4, **characterized in that** said upright (29) has a substantially square section.
12. The system according to claim 1, **characterized in that** said front wall (21) is assembled interspaced by a space (S) with respect to said connection elements (C).
13. The system according to claim 6, **characterized in that** spacers (43) acting between said bracket (30) and said plates (25,26), cooperate with said screws (36).

Fig. 1



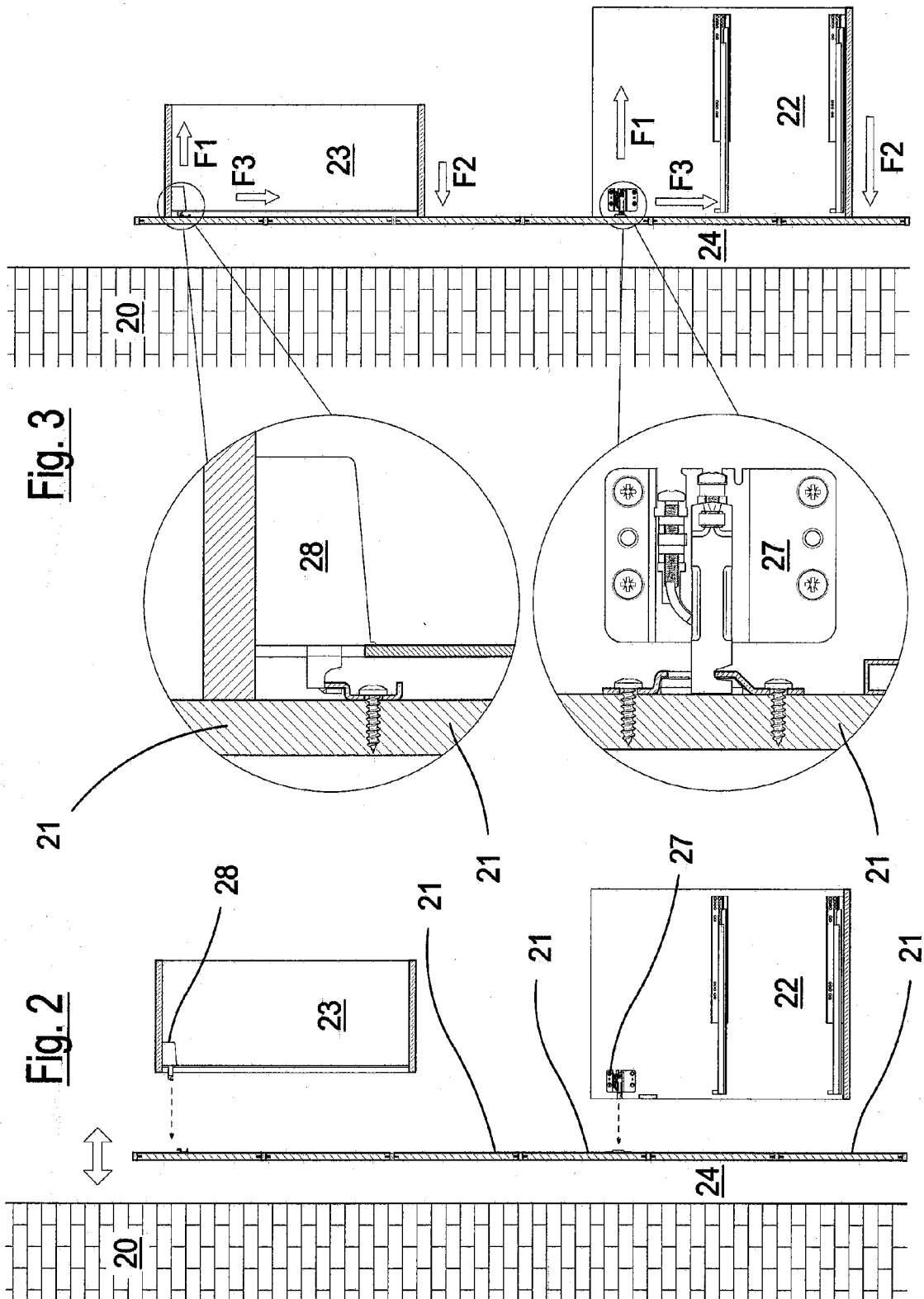
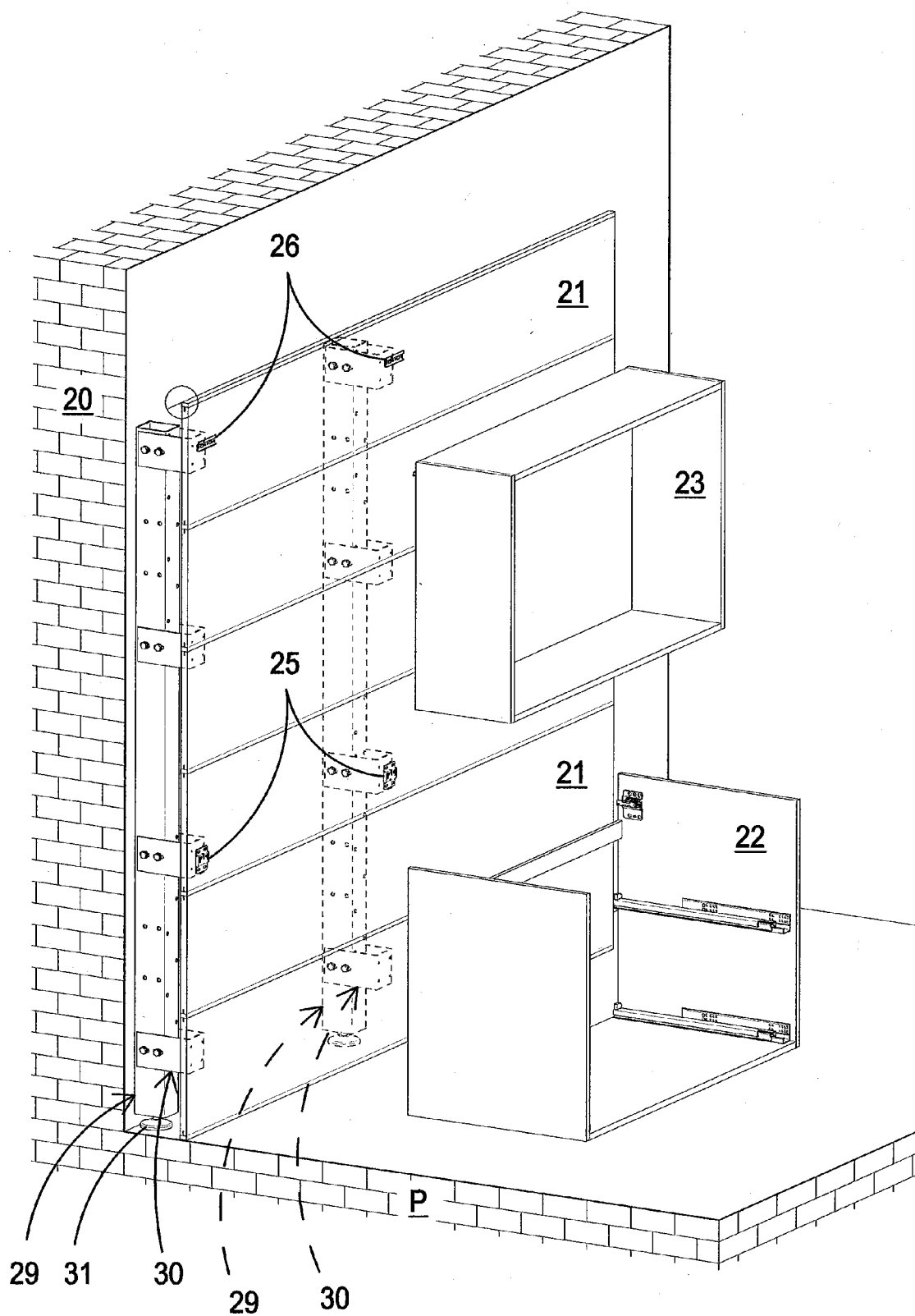
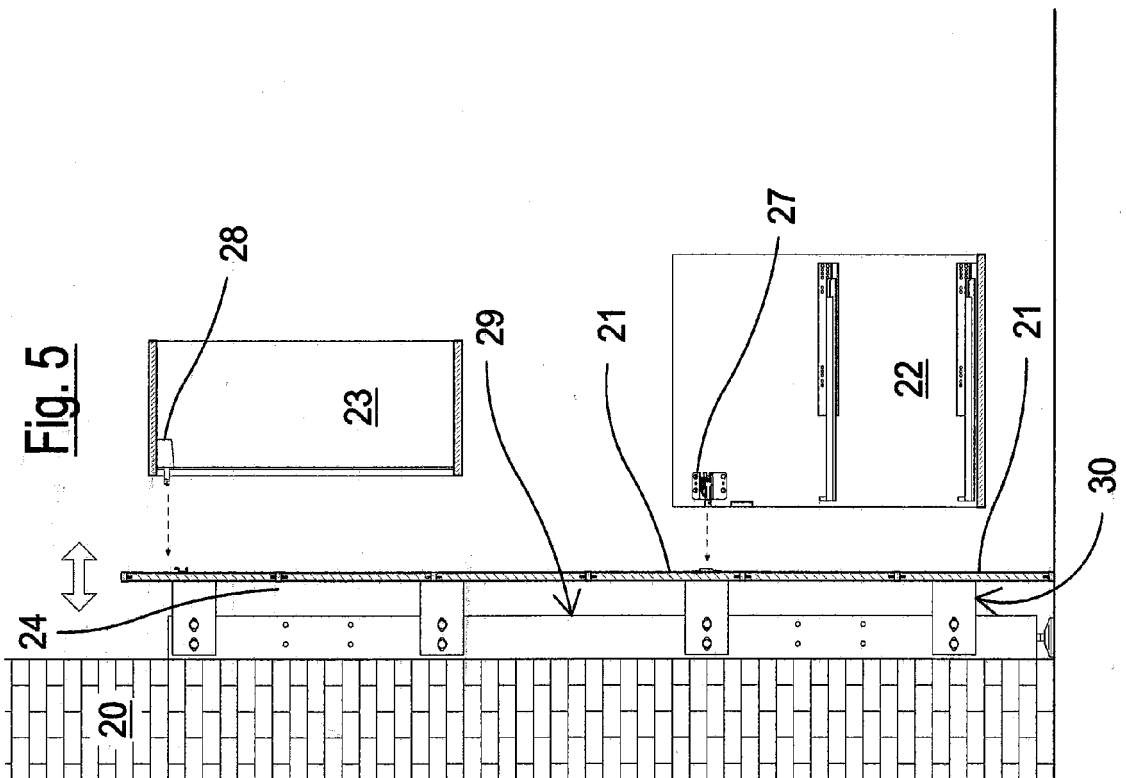
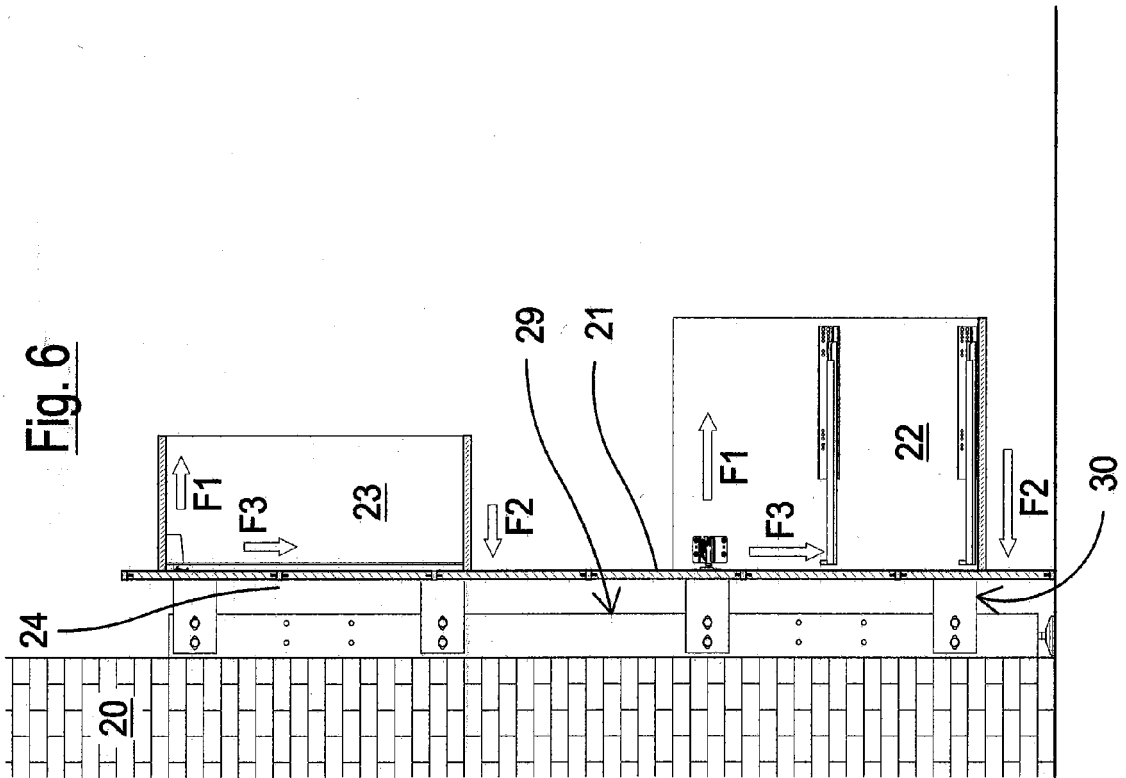
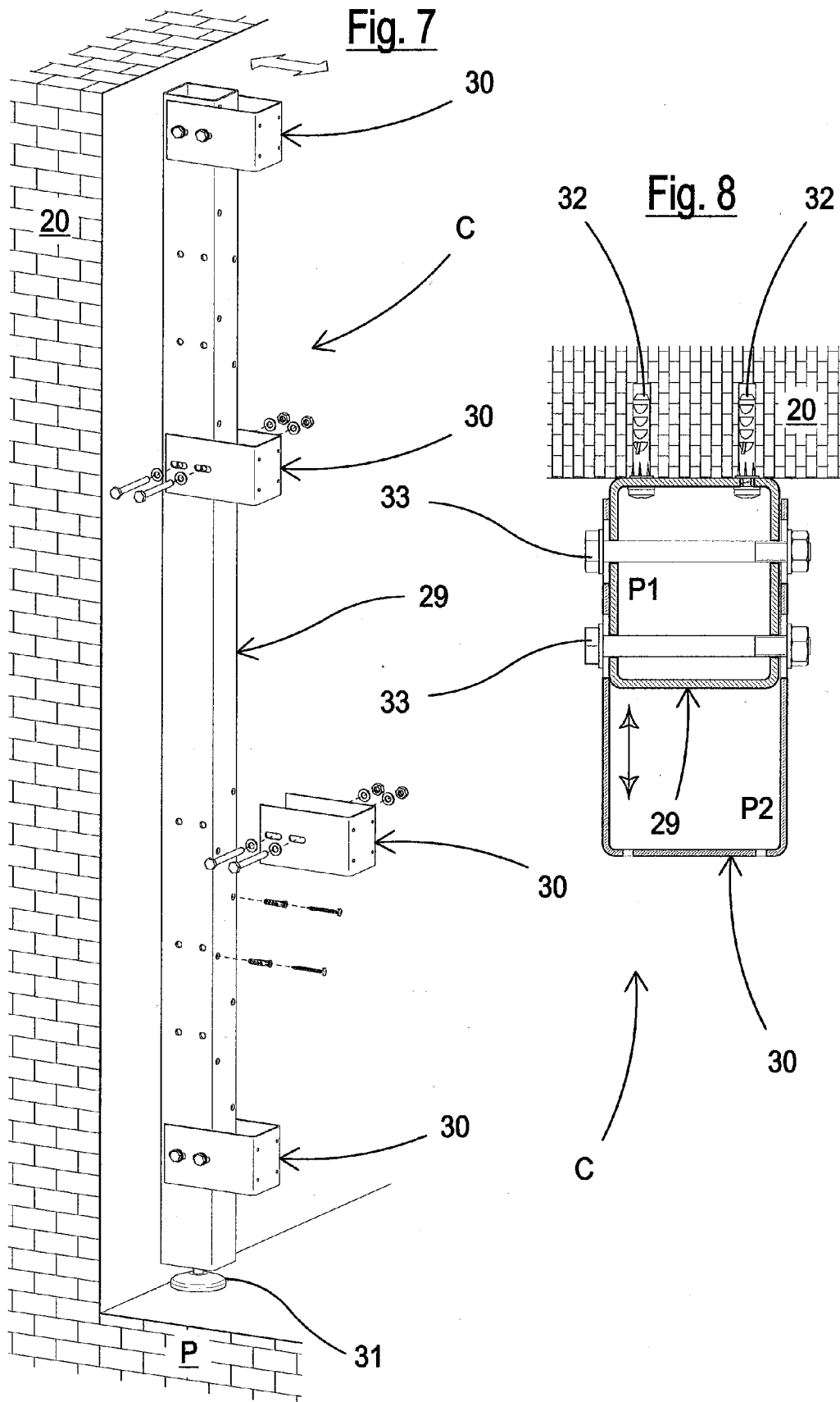


Fig. 4









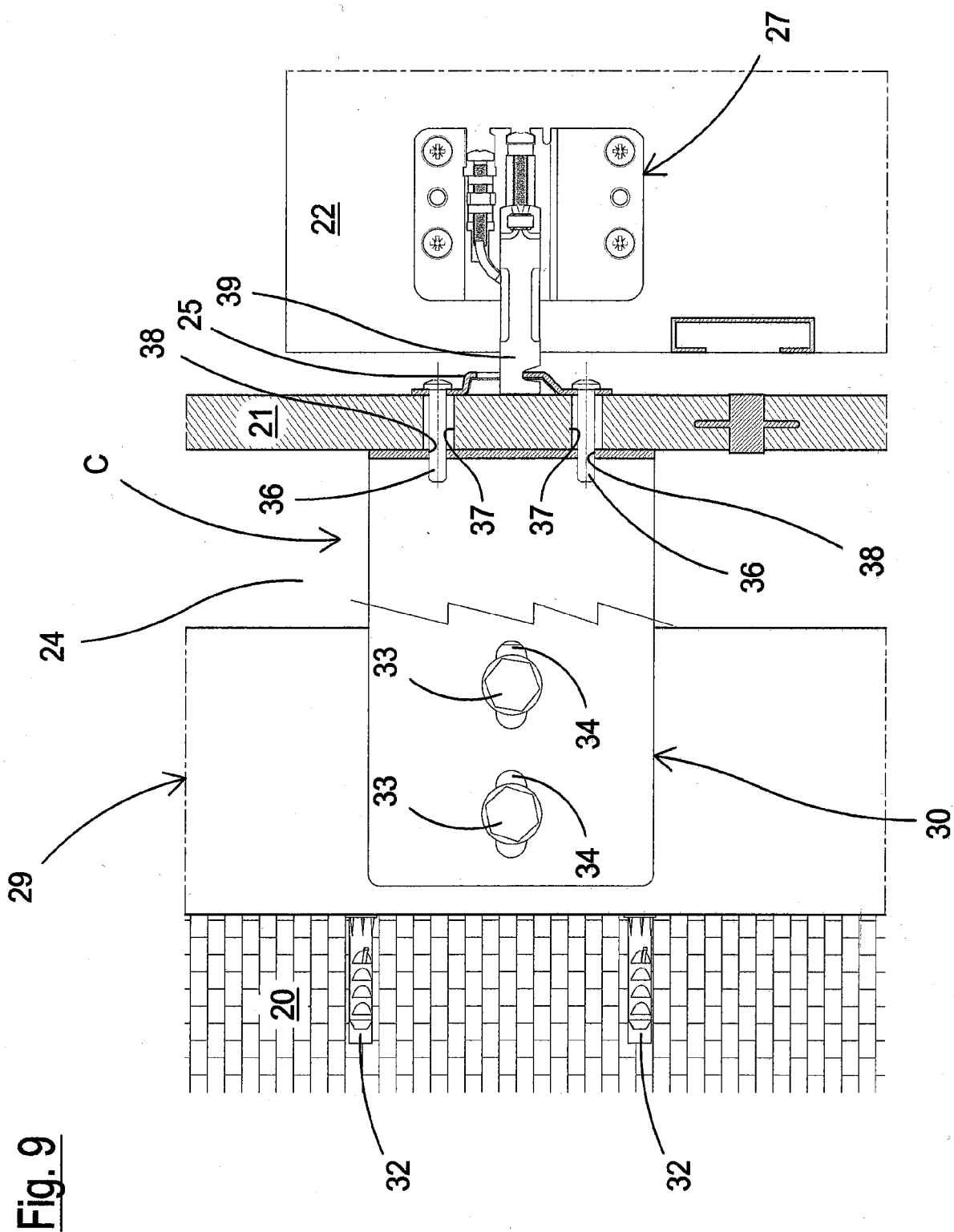
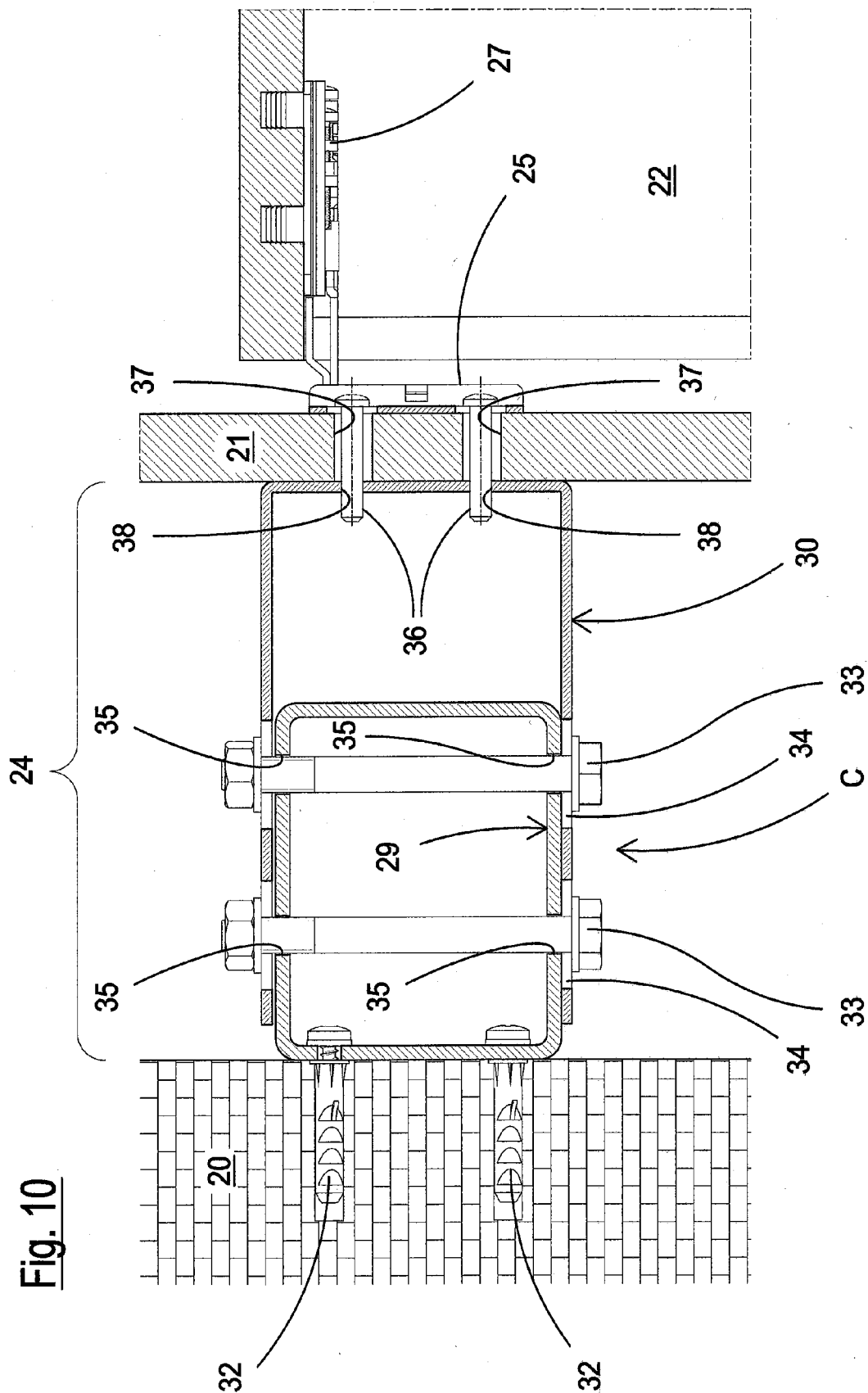
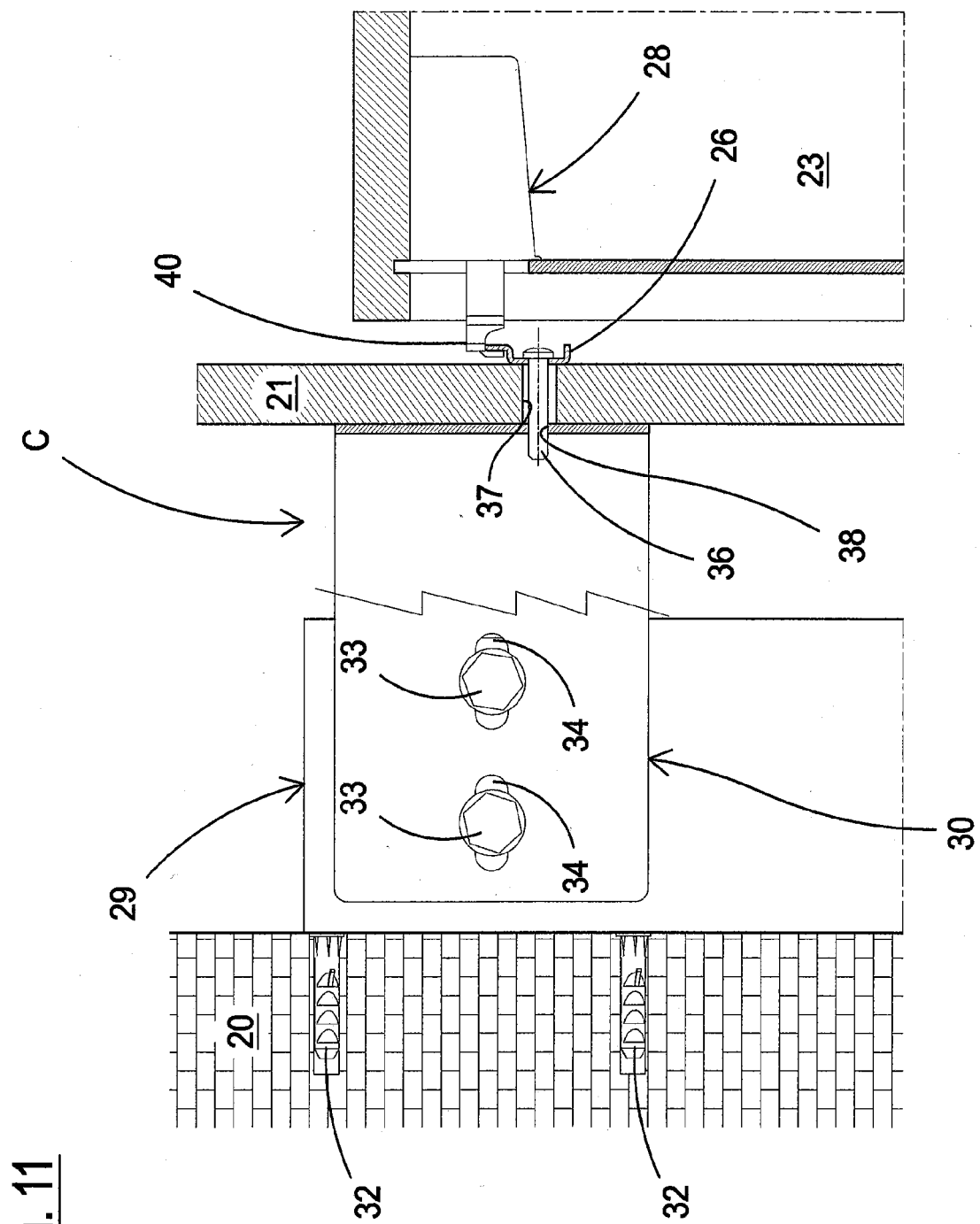
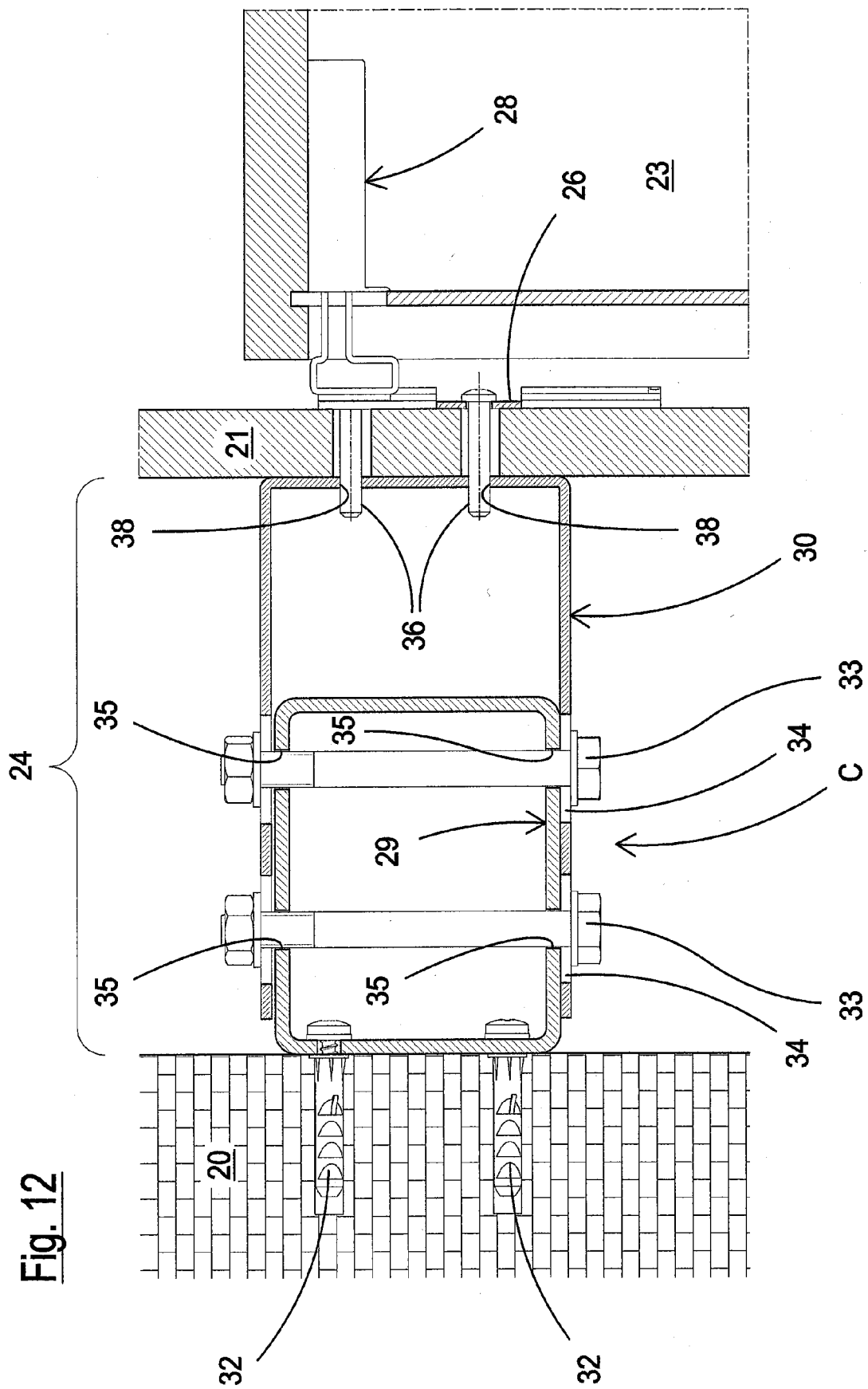


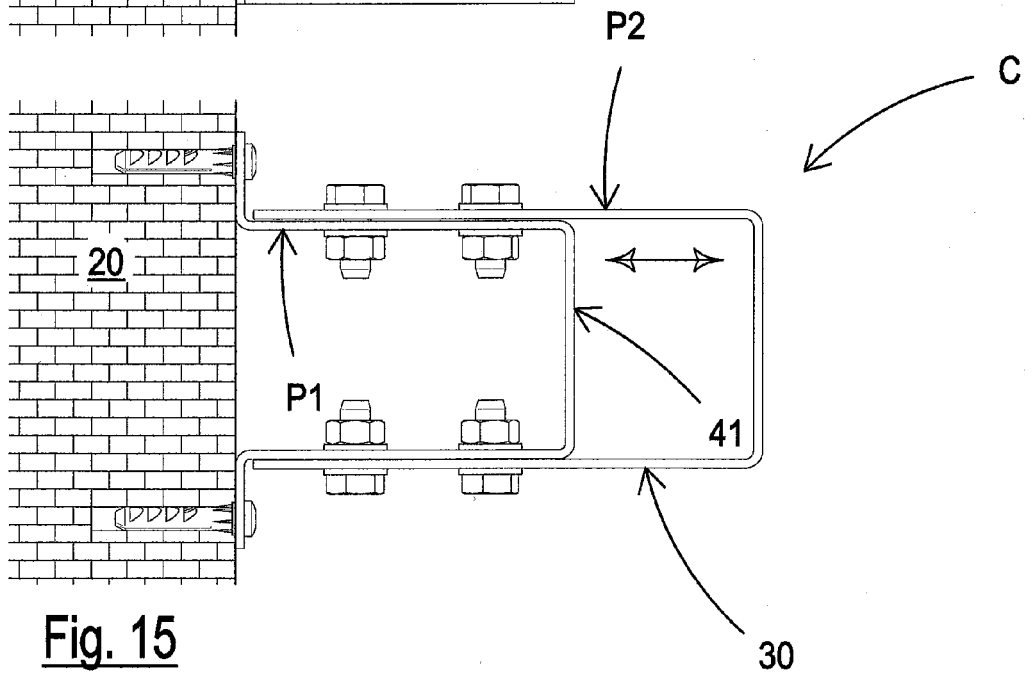
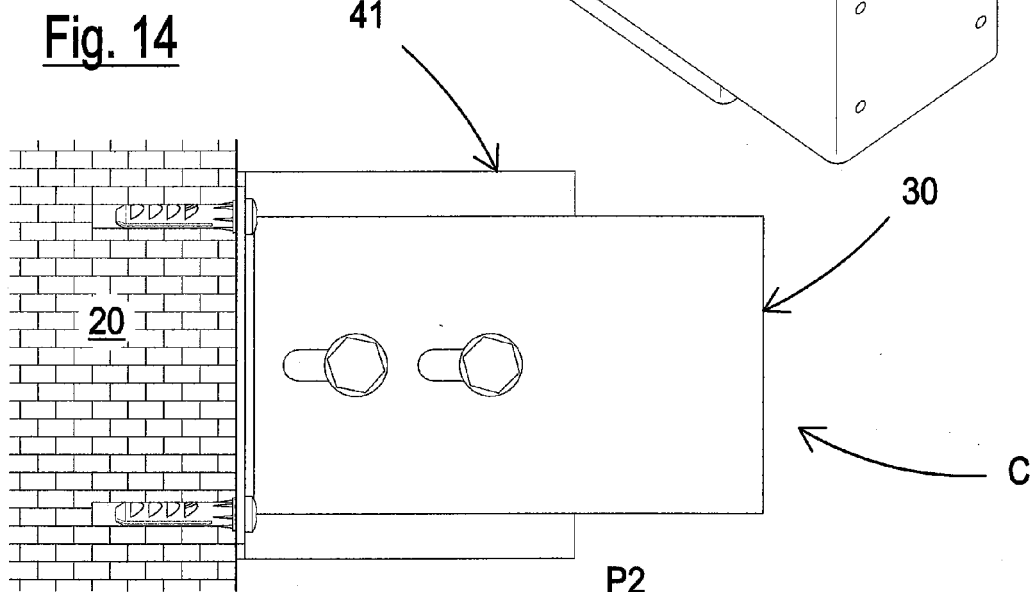
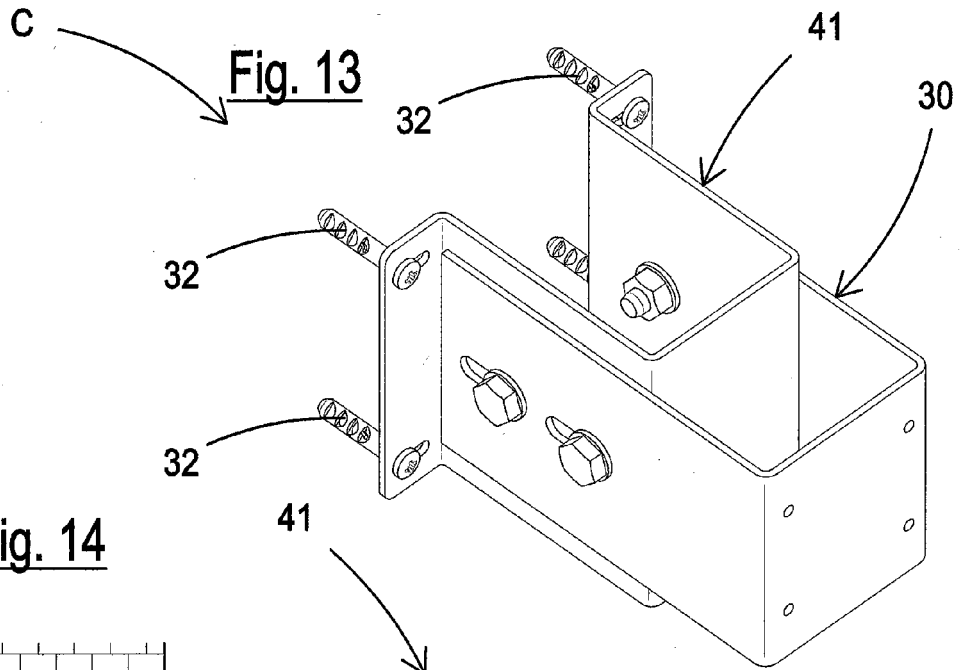
Fig. 10

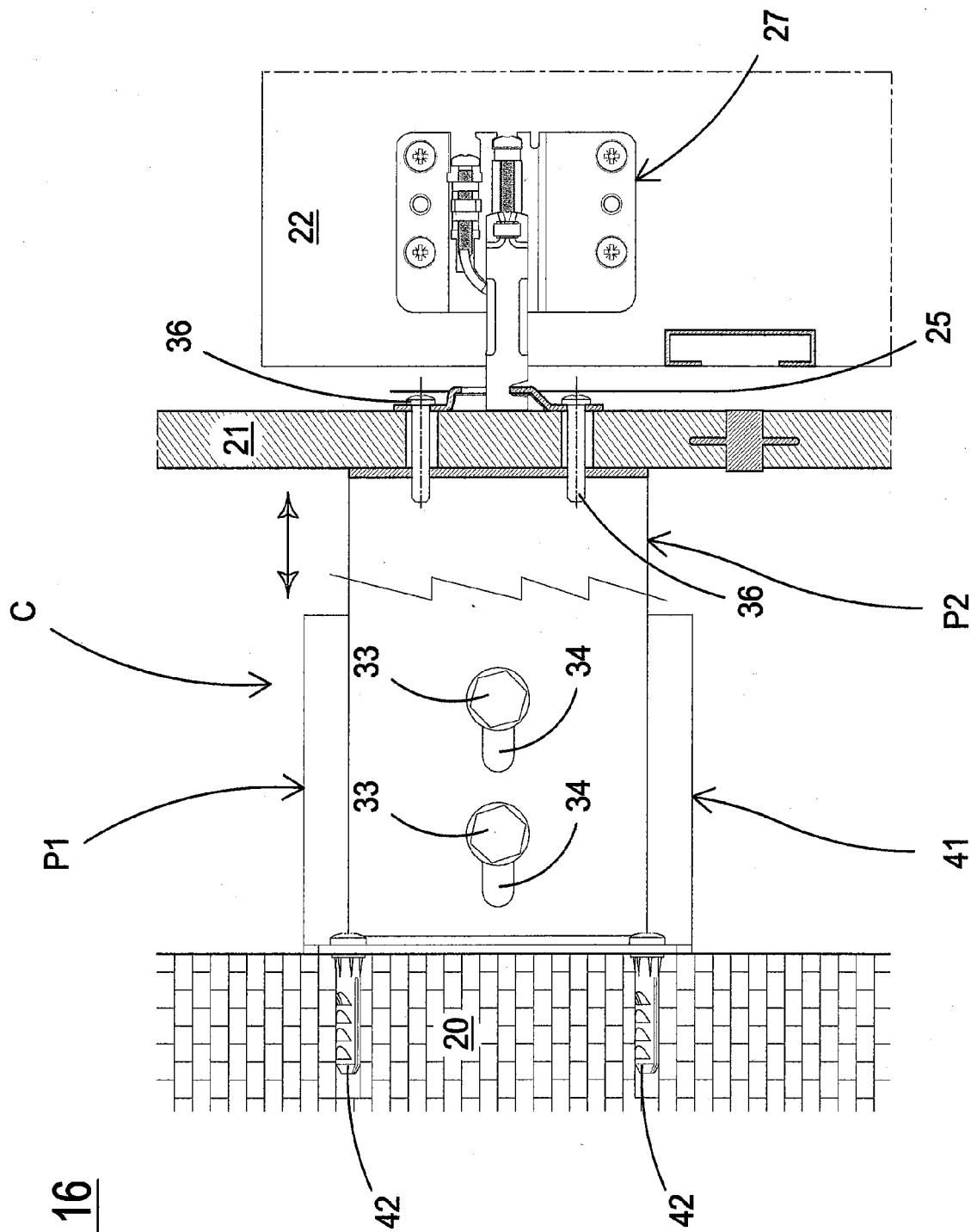


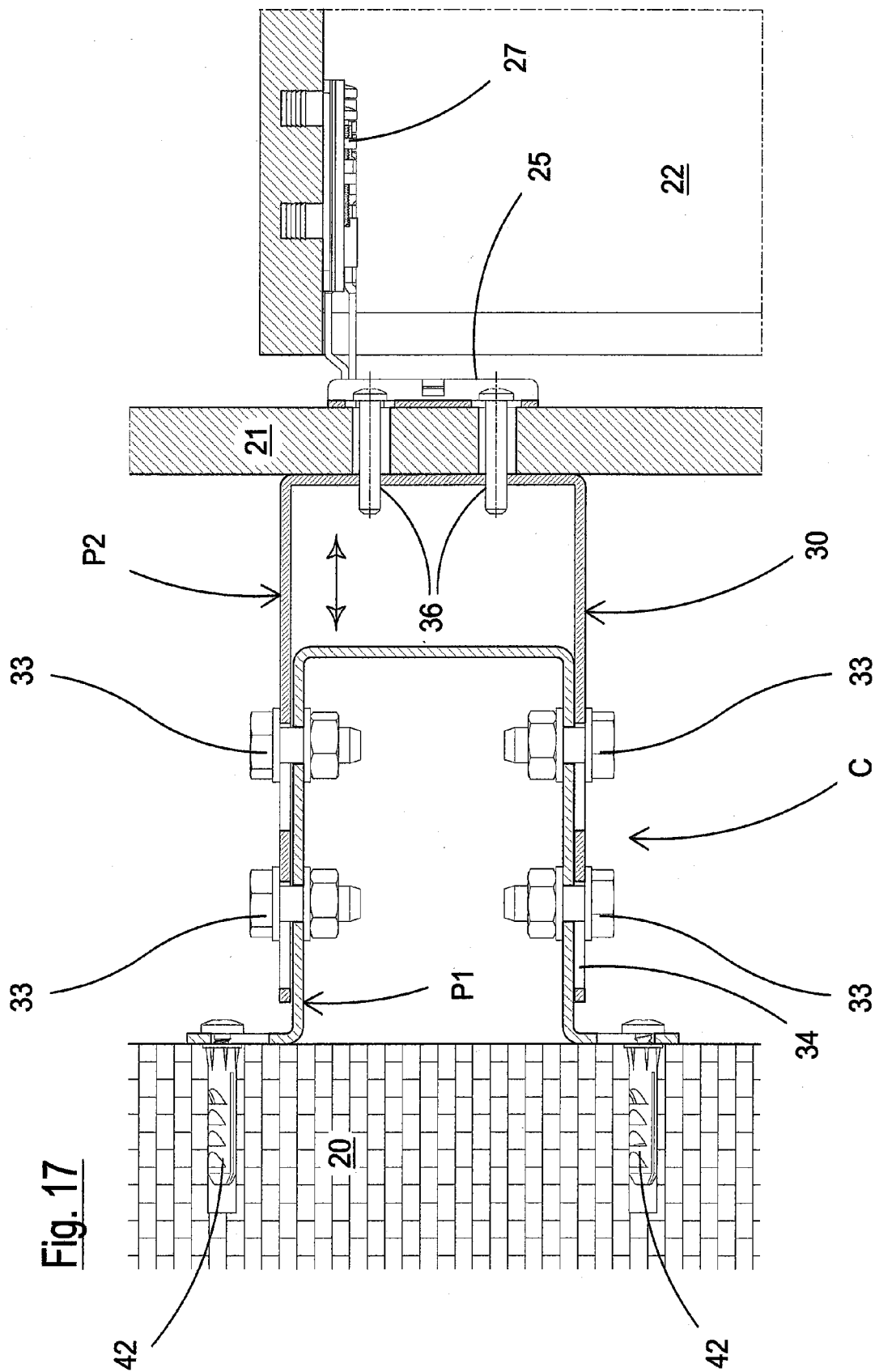


**Fig. 11**

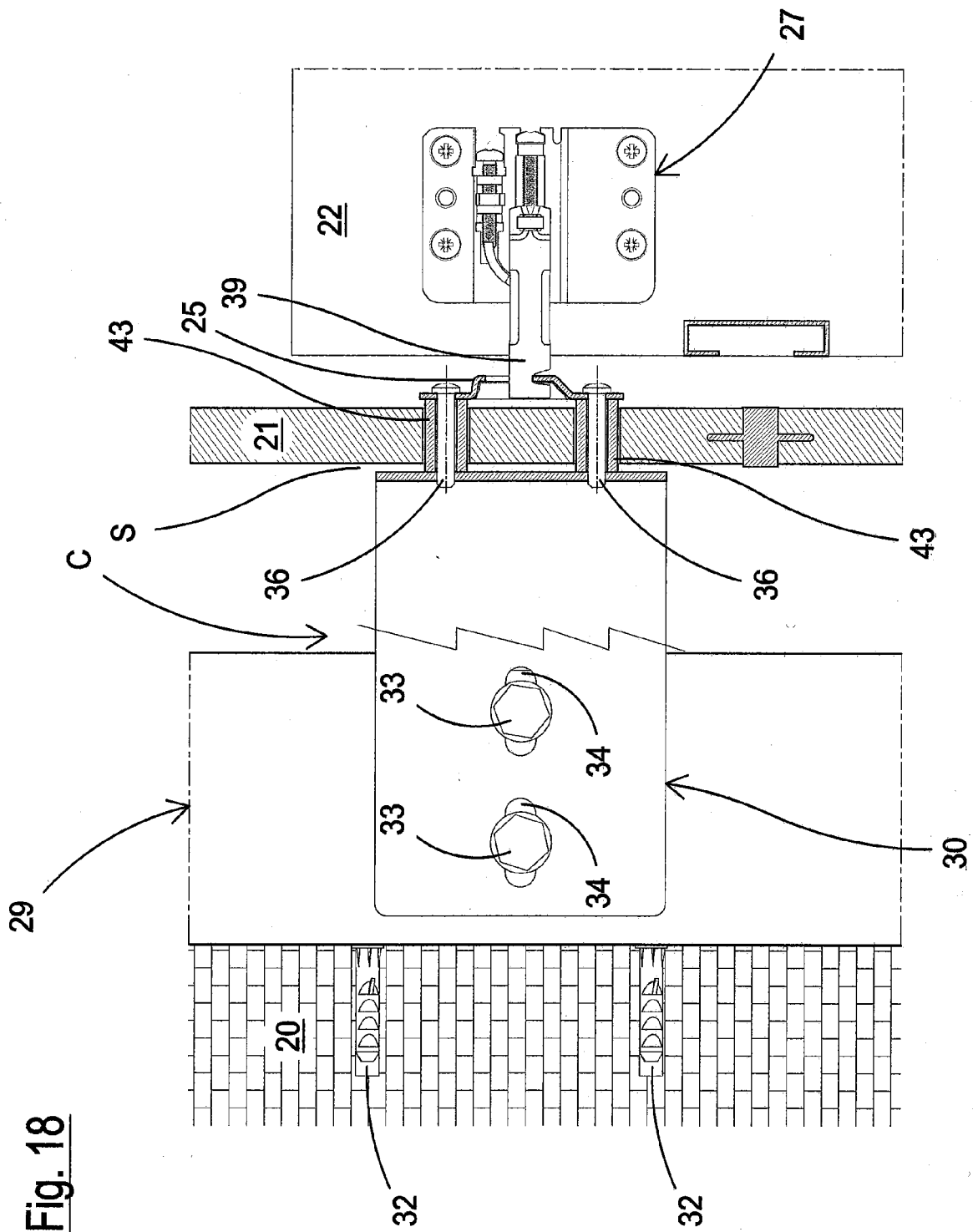




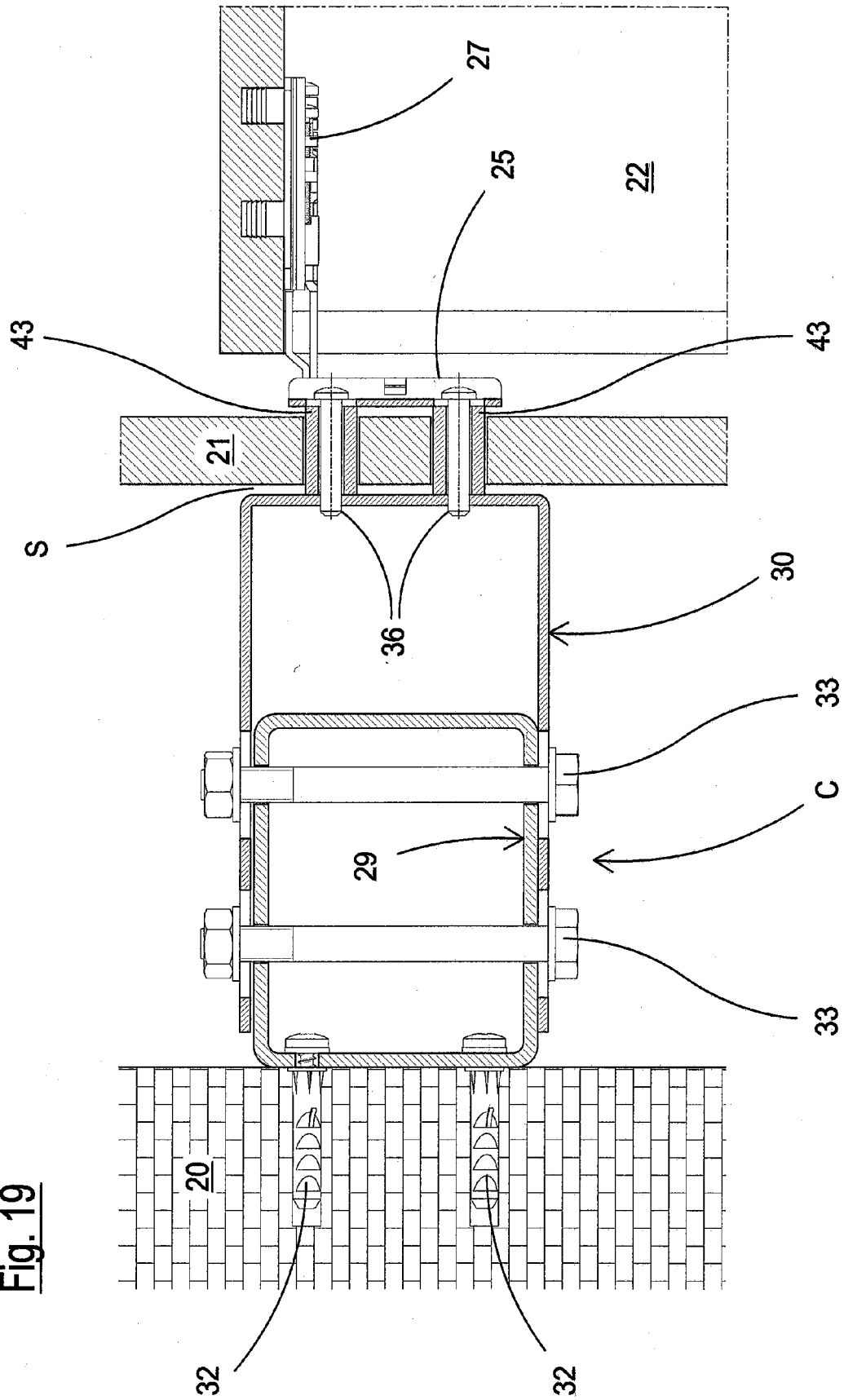








**Fig. 19**





## EUROPEAN SEARCH REPORT

 Application Number  
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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |                                                      |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages         | Relevant to claim                                    | CLASSIFICATION OF THE APPLICATION (IPC) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 2008/265117 A1 (BEAUVAIS)<br>30 October 2008 (2008-10-30)<br>* figures 1-6 *       | 1,4,<br>10-12                                        | INV.<br>A47B95/00<br>E04F13/08          |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 84/02261 A1 (MADSEN)<br>21 June 1984 (1984-06-21)<br>* figures 1-3 *               | 1,4,5,8,<br>11,12                                    |                                         |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DE 42 28 338 A1 (HOEPNER)<br>28 October 1993 (1993-10-28)<br>* figures 1, 6, 7 *      | 1,2                                                  |                                         |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 2010/121687 A1 (LEONARDO SRL)<br>28 October 2010 (2010-10-28)<br>* figures 21-29 * | 1,2                                                  |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |                                                      | TECHNICAL FIELDS SEARCHED (IPC)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |                                                      | E04F<br>A47B                            |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |                                                      |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       | Date of completion of the search<br>22 February 2016 | Examiner<br>Linden, Stefan              |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                       |                                                      |                                         |

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 18 5037

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)                                                                                                                      | Publication<br>date                                                                                          |
|-------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| US 2008265117 A1                          | 30-10-2008          | NONE                                                                                                                                            |                                                                                                              |
| WO 8402261 A1                             | 21-06-1984          | DE 3390404 C2<br>DE 3390404 T<br>GB 2141619 A<br>NL 8320397 A<br>SE 449822 B<br>WO 8402261 A1                                                   | 15-07-1993<br>10-01-1985<br>03-01-1985<br>01-11-1984<br>25-05-1987<br>21-06-1984                             |
| DE 4228338 A1                             | 28-10-1993          | NONE                                                                                                                                            |                                                                                                              |
| WO 2010121687 A1                          | 28-10-2010          | CN 102413734 A<br>DK 2421406 T3<br>EP 2421406 A1<br>IT 1393831 B1<br>JP 2012524873 A<br>RU 2011141207 A<br>US 2012018602 A1<br>WO 2010121687 A1 | 11-04-2012<br>08-02-2016<br>29-02-2012<br>11-05-2012<br>18-10-2012<br>27-05-2013<br>26-01-2012<br>28-10-2010 |

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- EP 2219495 A [0007]
- EP 2303068 A [0007]
- EP 2299873 A [0007]
- EP 2421406 A [0007]
- EP 2510833 A [0019]