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

(11) EP 2 333 197 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
22.04.2015 Bulletin 2015/17

(51) Int Cl.:
E04F 15/024 *(2006.01)*

(21) Application number: **10192189.8**

(22) Date of filing: **23.11.2010**

(54) **Gasket for the head of support columns of raised floors**

Dichtung für den Kopfteil von Stützsäulen für Doppelböden

Joint pour la tête des colonnes de support de faux-planchers

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

(30) Priority: **26.11.2009 IT MI20090381 U**
18.03.2010 IT MI20100074 U

(43) Date of publication of application:
15.06.2011 Bulletin 2011/24

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(56) References cited:
GB-A- 2 378 457
US-A- 5 791 096
US-A1- 2005 166 483

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EP 2 333 197 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention refers to a gasket for the head of supporting columns of raised floors.

[0002] In the building sector, it has been known for a long time to make raised floors, also called "elevated" or "floating" floors, in which the ground surface is supported at a certain height from the floor slab or floor, so that between the intrados of the ground surface and the extrados of the floor slab or floor is defined interspace.

[0003] Such an interspace, in the field also known as "technical area", is used for receiving services and/or systems.

[0004] A raised flooring is made up of a series of modular panels that rest on a supporting structure that is at a certain height, that can generally be adjusted, and that, in turn, rest on the floor slab or floor. The panels simply rest on the supporting structure so as to be able to be removed through lifting, for example with the help of suction cups, to access the "technical area" or to provide for their replacement.

[0005] The load-bearing structure, which transmits the loads from the panels to the floor slab, consists of a plurality of columns and of possible cross-members or stringers that connect the columns in pairs.

[0006] Normally the columns consist of a height-adjustable stem that, generally, consist of a threaded bar coupled with a sleeve or with a tube and provided with an adjustment nut. The stem is provided, at the lower end, with a base for resting on the floor slab and, at the upper end, with a resting head for the panels.

[0007] Both the base and the resting head generally consist of a load plate or plate, circular or quadrangular, obtained through pressing and blanking of sheet metal.

[0008] In order to improve the stability and rigidity of the load-bearing structure and increase the load-bearing capability of the entire system it is known to connect the columns in pairs through respective stringers or cross-members generally consisting of structural shapes with square or rectangular section and internally hollow or having a "C" or "M"-shaped section.

[0009] Currently, the cross members are directly coupled with the resting heads of the columns through snap coupling or through resting and screwing.

[0010] US5.791.096 discloses a raised floor supporting structure comprising a circular base, an upright having a bottom end mounted on the circular base and an upper end and a head having the form of a bracket and coupled to the upper end of the upright. The bracket has four coupling portions respectively disposed at the four sides and having each a respective upright pin. Each of the four coupling portions receives the channel-like coupling end of a respective stretcher. At the channel-like coupling end of each stretcher a hole receiving the respective upright pin is provided.

[0011] In the case of snap coupling, the perimeter edge of the resting head of each column has four pairs of notches arranged 90° apart from one another. The notches of each pair are rectilinear, parallel to one another and arranged symmetrically with respect to a middle axis of the head and they extend from the edge towards the centre of the head itself. The end flanks of a cross-member insert into the notches of each pair.

[0012] The head portion defined by the notches of each pair and the corresponding portion of the end of the cross-member that couples with it have grooved profiles that engage with each other.

[0013] In order to increase the stability and rigidity of the coupling it is also known to fix the ends of the cross members, already snapped onto the resting heads of the columns, with screws.

[0014] In the case of resting and screwing, the resting heads of the columns are cross-shaped, on the arms of which the ends of the cross members are directly rested. The ends of the cross members thus rested are then fixed to the respective arms through screws.

[0015] As it is known, the installation of a raised flooring is carried out by arranging, on the floor slab, the columns to the nodes of a lattice the mesh of which has dimensions equal to those of the panels, i.e. typically of 600x600mm. After having adjusted the height of the columns and fixed, if foreseen, the cross-members, the single panels are installed, which are rested on the heads of the columns so as to close the mesh of the lattice. Each panel thus rests on four columns arranged at its vertices.

[0016] It is also known to arrange so-called "gaskets", having the function of both sealing against air and dust, and of sound-proofing, on the resting heads or, in the case in which they are foreseen, on the cross members. With particular reference to gaskets arranged on or at the resting heads, they can also act as centring element for installing the panels. Known gaskets, indeed, consist of small plates of plastic that are fastened onto the resting heads of the columns and that have a possible cross on the upper face that acts as a reference and spacer for the corners of four panels resting on the same column.

[0017] US2005/0166483 discloses a cap for pedestal adapted to support a raised floor and comprising a bottom surface for contracting the head plate of said pedestal and a top surface presenting a plurality of ribs for locating said floor panels. Said ribs are arranged so as to form four channels crossing at right angles one another at the centre of the cap. Each channel is adapted to locate and stabilize the end portion of a respective stringer. The stringers are fastened to the cap and to the underlying head plate by means of screws passing through holes defined in the end portion of each of said stringers and in the underlying cap and coupled in a corresponding threaded hole defined in said head plate.

[0018] Such state of the art has some drawbacks concerning in particular the manufacturing and the installation of the columns connected with cross members and gaskets.

[0019] Indeed, in the case in which the cross members are coupled with the resting heads of the columns through snap-coupling or through resting and screwing, it is nec-

essary to work, through pressing, blanking and/or bending, the resting heads themselves and use special structural shapes to make the cross members, with a consequent increase in the production costs of such elements. Moreover, given the type of coupling, for every type of column it is necessary to use just the corresponding cross members.

[0020] In the case in which the cross members are directly rested on the resting heads of the columns and screwed into them, the installer is obliged to centre every single cross-member on the respective resting head and hold it in position until the respective screw is inserted.

[0021] Installation is therefore long and laborious.

[0022] Moreover, in known systems, the cross members, if foreseen, couple directly with the resting head of the columns and, when the cross members and the columns are both made from metal and particularly in the case in which they are not screwed together, in use, due to the intermittent action due to trampling, they tend to undergo sliding that, even if of low intensity, generates noise.

[0023] Added to this is the fact that the gaskets are subsequently fastened onto the resting heads or, if foreseen, onto the cross members. Also in this case, if the resting heads and the cross members have a particular configuration and shape, it is necessary for the gaskets to be shaped and configured in a corresponding manner.

[0024] The purpose of the present invention is to avoid the drawbacks of the prior art.

[0025] In particular, the purpose of the present invention is to provide a gasket for the head of support columns of raised floors that makes it possible to simplify the manufacturing of the resting heads and of the corresponding cross members.

[0026] Another purpose of the present invention is to provide a gasket for the head of support columns of raised floors that makes it possible to simplify and reduce the installation times of the floors themselves.

[0027] Another purpose of the present invention is to provide a gasket for the head of support columns of raised floors that makes it possible to soundproof the coupling between cross members and columns.

[0028] These and other purposes according to the present invention are accomplished by making a gasket for the head of support columns of raised floors as outlined in claim 1.

[0029] Further characteristics of a gasket for the head of support columns of raised floors are the object of the dependent claims.

[0030] The characteristics and advantages of a gasket for the head of support columns of raised floors according to the present invention will become clearer from the following description, given as an example and not for limiting purposes, referring to the attached schematic drawings, in which:

- figure 1 shows a schematic and exploded view of a support column and two cross members able to be coupled with it with interposition of a first embodiment of a gasket according to the present invention;
- figure 2 schematically shows the assembly of figure 1;
- figure 3 is a schematic section view according to the plane III-III of figure 2;
- figure 4 shows a schematic and exploded view of a support column and two cross members able to be coupled with it with interposition of a second embodiment of the gasket according to the present invention;
- figure 5 schematically shows the assembly of figure 4;
- figure 6 is a schematic section view according to the plane VI-VI of figure 5;
- figures 6a and 6b schematically show two enlarged details of the gasket of figure 6;
- figure 7 is a perspective view partially in section of the second embodiment of the gasket according to the present invention;
- figure 8 is a perspective view of a third embodiment of the gasket according to the present invention;
- figures 9a and 9b schematically show two possible applications of the third embodiment of the gasket according to the present invention.

[0031] It should be specified that, in the present description, adjectives such as "upper" and "lower" refer to the installed condition of a raised floor.

[0032] It should also be specified that the same reference numerals will be used to indicate the same or analogous elements relative to the three embodiments represented.

[0033] With reference to the attached figures, references numerals 1, 1', 1" wholly indicate a gasket for the head of support columns of raised floors of the type comprising a load-bearing structure consisting of support columns 2, in pairs able to be connected by cross members or stringers 3, and panels, not depicted, intended to be rested on the columns 2 and on the cross members 3.

[0034] The columns 2 can be of the height-adjustable type, as represented in the attached figures, or they can have a fixed height and they have a lower base 4 for resting on the ground and a resting head or upper head 5 usually intended for the panels to rest on and for direct engagement with the cross members 3.

[0035] The cross members 3 generally consist of hollow structural shapes with square or rectangular section of various dimensions and thicknesses.

[0036] For the sake of simplicity of representation, the attached figures represent a single column 2 and the ends of two cross members 3 able to be connected to it, with it being easy for the man skilled in the art to understand that making a raised floor foresees a lattice of columns in pairs connected by cross members.

[0037] The gasket 1, 1', 1" comprises a block 10 that has a lower face 10a, which is intended to be rested on the upper head 5 of the column 2, an upper face 10b,

which is substantially parallel to the lower face 10a and that is intended to act as a rest for the panels of raised floors, and a perimeter edge 10c. The perimeter edge 10c, in the case in which the block 10 is partially hollow, acts as a support for the upper face 10b together with stiffening ribs that are not depicted.

[0038] The block 10 has at least one cavity 11 for housing the end of a cross-member 3, in particular, the block 10 has four cavities 11 arranged 90° apart from one another.

[0039] Each cavity 11 is open at the upper face 10b and at the perimeter edge 10c so as to allow the end of the respective cross-member 3 to be inserted and housed.

[0040] At each cavity 11 are also provided means for holding the end of the respective cross-member 3.

[0041] Each cavity 11 comprises a resting base 11a for the end of the respective cross-member 3, said base having two side walls 11b and a bottom wall 11c rising up from it. Advantageously, the two side walls 11b, at their upper end, have a flaring suitable for facilitating the insertion from above of the end of the cross-member 3 in the corresponding cavity 11.

[0042] The resting base 11a is arranged between the end of the cross-member 3 and the upper head 5 of the column 2, avoiding direct contact between them and thus acting, in use, as an acoustic insulator.

[0043] In the first embodiment of the gasket 1 represented in figures 1-3, the holding means comprise a pin 12 that projects perpendicularly from the resting base 11a of each cavity 11 and that is intended to be inserted into a corresponding hole 32 formed passing through the wall of the end of the respective cross-member 3 intended to rest on the resting base 11a.

[0044] The pin 12 is internally hollow and, in a preferred embodiment, has a frusto-conical shape with the larger base fixedly connected to the resting base 11a.

[0045] Inside the pin 12 it is possible to screw a corresponding fastening screw 31 of the respective cross-member 3. The screw 31 passes through a corresponding hole 30, which is formed in the wall of the end of the cross-member 3 opposite the one in which there is the hole 32 and that is coaxial to the latter, and engages in a hole 50 formed in the upper head 5. The hole 30 has a smaller diameter than the hole 32, acting as a rest for the head of the screw 31.

[0046] The pin 12, as well as holding the end of the cross-member 3 coupled with it, determines the modulus or the pitch between the columns. The upper end of the pin 12 also stays inside the end of the cross-member 3 and acts as a rest for the portion of the wall of the end of the cross-member 3 that surrounds the hole 30 with which the head of the screw 31 engages, when, after screwing, such a portion bends downwards.

[0047] In the second embodiment of the gasket 1' represented in figures 4-7, the holding means comprise, as well as the pin 12, which in such a case acts as a guide and centring element of the end of the respective cross-member 3, determining the modulus or pitch between the various columns, an elastic tongue 13 that is formed on the bottom wall 11c of each cavity 11 and that is suitable for engaging with the end of the respective cross-member 3.

[0048] In particular, the elastic tongue 13 extends in a direction substantially perpendicular to the resting base 11a and has an upper end fixedly connected to the bottom wall 11c and a lower end free and spaced from the resting base 11a by a slit 14.

[0049] Advantageously, the elastic tongue 13 has a gradually increasing cross section from its upper end towards its free lower end. The elastic tongue 13 thus, at its free end, has a holding tooth 15 suitable for inserting into the end of the respective cross-member 3, which is internally hollow.

[0050] The holding tooth 15 at the bottom has an inclined receiving profile suitable for facilitating the engagement with the wall of the structural shape that constitutes the cross-member 3. This allows the end of cross members 3 with the same cross section, but made with sheet metal of different thickness as the latter varies, to be engaged.

[0051] As is clear from figure 6, in assembly configuration, the holding tooth 15 presses and holds the wall of the end of the cross-member 3 that rests on the resting base 11a.

[0052] The holding tooth 15 and its height with respect to the resting base 11a are sized so as to be able to engage cross members 3 made with sheet metal of different thickness, but with the same square or rectangular cross section.

[0053] The second embodiment of the gasket 1' represented in figures 4-7 does not require the fastening of the cross members 3 through screws 31, since the end of the cross-member 3 is held by the elastic tongue 13 and by the pin 12. The application of the screws 31 is in this case necessary only if electrical continuity must be ensured.

[0054] We do not rule out alternative embodiments of the elastic tongue or ones in which the elastic tongue is replaced by one or more tabs that for example project from the upper edge of the side walls 11b and/or bottom walls 11c of each cavity 11.

[0055] At the centre of the block 10 a hole 16 is formed that is open at the upper face 10b or passes through the entire block 10.

[0056] In the second embodiment represented in figures 4-7, each elastic tongue 13, on the side that faces the hole 16, has an engagement element, of the hook type 17, for a manoeuvring tool with which to bend the elastic tongue 13 towards the centre of the hole 16 so as to disengage it from the end of the respective beam 3, in the case in which the latter should be removed.

[0057] The gasket 1, 1' also comprises four projections 18 that are arranged in a cross and that project from the upper face 10b. The projections 18 act as a reference and spacer for the installation of the panels of the floor.

[0058] There are also means for attaching the gasket 1, 1', 1" to the upper head 5 of the column 2.

[0059] Such attachment means consist of a plurality of pins 19 that project from the lower face 10a of the block 10 and that are intended to insert into a corresponding hole 50 formed passing through the upper head 5.

[0060] Usefully, the pins 19, once inserted into the corresponding holes 50, project for a certain section from the lower surface of the upper head 5 and can be "upset" on it.

[0061] For this purpose, the lower end of the pins 19 is closed and made rigid by an appendage, as shown in figure 6a, in order to facilitate the "upsetting" without deforming the pins themselves. In such a figure the pin 19 is depicted before being upset.

[0062] In this way, the gasket 1, 1' , 1" can be fixedly connected to a respective column 2, also in an automated manner, during production, so as to reduce the assembly operations of the raised floors.

[0063] Usefully, the portion of the pins 19 upset on the lower surface of the upper head 5 acts as a cap for the tip of the screw 31, if it is foreseen, protecting the installer from possible lesions. Such a portion, indeed, in the act of screwing in the screw 31, detaches from the gasket and stays anchored in cap form on the tip of the screw, covering it.

[0064] It should be specified that the pins 19 can also be foreseen for the first embodiment of the gasket 1 represented in figures 1-3.

[0065] Figures 8 and 9a-9b depict a third embodiment of the gasket 1" that has two cavities 11 arranged 180° apart from one another and a central channel 110 that is defined between the two cavities 11 and that is arranged at 90° with respect to them.

[0066] Inside the central channel 110 it is possible to insert a cross-member 3 and make it slide along it so that its opposite ends project beyond the gasket 1" in order to be able to fasten to adjacent gaskets or abut against the perimeter walls that define the raised floor.

[0067] Figure 9a schematises a possible use of the third embodiment of the gasket 1" near to perimeter walls. In the prior art, if the distance between the last row of columns 2 and the wall P is less than the dimensions of a covering panel, a further column 2 is arranged near to the wall P and said column 2 is connected to the column of the last row installed and adjacent to it with a section of cross-member 3 suitably cut. By applying the third embodiment of the gasket 1" object of the present invention onto the head of the columns 2 of the last row, on the other hand, it is possible to cover the distance between them and the wall P without the need to arrange further columns.

[0068] Figure 9b represents a further use of the third embodiment of the gasket 1" in order to further rigidify the load-bearing structure of an existing raised floor or one already in use. If, indeed, it is necessary to further rigidify the assembly of columns 2 and cross members 3 connected together for example with gaskets 1' and that support for example a certain panel, it is sufficient, once such a panel has been removed, to arrange one or more columns 2 under two cross members 3, already installed and opposite one another, each of said columns being provided with a gasket 1" according to the third embodiment, so that such cross members 3 insert into the central channel 110 of such gaskets 1" and then connect the latter through further cross members 3a the opposite ends of which are inserted into the cavities 11 of the gaskets 1".

[0069] Such a third embodiment of the gasket 1" thus makes it possible to complete the raised floors near to the perimeter walls without needing to arrange further columns near to the latter or to rigidify load-bearing structures of raised floors already existing or already installed in a quick and simple manner.

[0070] In light of the above description and the attached drawings, the man skilled in the art will easily understand the operation and assembly of the gaskets 1, 1', 1" object of the present invention.

[0071] In order to make a raised floor with load-bearing structure rigidified by cross members, indeed, after having arranged the columns 2 at the nodes of a lattice the meshes of which correspond to the dimensions of the covering panels, the gaskets 1, 1', 1" are mounted on the upper heads 5 of the columns 2, if not already anchored to them in the production step.

[0072] In the case in which it is necessary to connect the columns 2 in pairs through cross members 3 it is sufficient to insert the end of the cross members 3 into the cavities 11 of the corresponding gaskets 1 using the pins 12 as reference and guide.

[0073] In the first embodiment of the gasket 1 represented in figures 1-3, the fastening of the cross members 3 is completed with screwing of the screws 31.

[0074] In the second and third embodiment of the gasket 1', 1" represented in figures 4-9b, the fastening of the cross members 3 takes place at the moment of insertion of the relative ends in the corresponding cavities 11 thanks to the elastic tongues 13 the respective holding tooth 15 of which snap-inserts inside the hollow end of the cross-member 3.

[0075] In this case, as highlighted above, it is not necessary to fix the cross members 3 with the screws 31, thus obtaining a clear saving in time and, therefore, in assembly costs, provided that it is not necessary to ensure electrical continuity.

[0076] The gasket object of the present invention thus has the advantage of simplifying the manufacture of the resting heads of the columns and of the cross members that can be coupled with them. The resting heads of the columns can indeed be of any shape and can consist of flat plates without it being necessary to foresee any notch or shaping in them, which would moreover involve a loss of load-bearing capability, excluding the holes for coupling with the fastening screws or with the pins for anchoring the gasket itself. Similarly, the cross members can consist of hollow structural shapes with rectangular

or square section and they do not require any special shaping or processing excluding the holes for the insertion of the pins that project from the gasket and/or of the fastening screws. It should be noted that, as the load conditions and the load-bearing requirements vary, it is sufficient to vary the thickness of the plates with which the cross members are made, keeping their cross section constant.

[0077] The gasket object of the present invention also simplifies the installation operations of the raised floors also reducing their execution times. This is particularly true in the embodiment with an elastic tongue that, as highlighted above, does not require the application of any fastening screw.

[0078] Finally, it is clear that the invention thus conceived can undergo numerous modifications and variants, all of which are covered by the invention; moreover, all of the details can be replaced with technically equivalent elements. In practice, the materials used can be whatever according to the technical requirements.

Claims

1. Gasket (1, 1', 1") for the head of support columns of raised floors, comprising a block (10) that has a lower face (10a), which is intended to rest on the resting head (5) of a support column (2) of raised floors, an upper face (10b), that is substantially parallel to said lower face and that is intended to act as a rest for the panels of said raised floors, at least one cavity (11) for housing the end of a cross-member (3), said cavity (11) being open at said upper face (10b) and at the perimeter edge (10c) of said block, and means for holding said end of cross-member (3) that are defined at said cavity (11), said gasket (1, 1', 1") being **characterised in that** said cavity (11) comprises a resting base (11a) of said end of cross-member (3) and that is intended to be arranged between said resting head (5) and said end of cross-member (3), said resting base (11a) having two side walls (11b) and a bottom wall (11c) rising from it, and **in that** said holding means comprise at least one pin (12) that projects perpendicularly from said resting base (11a) and that is intended to be inserted into a corresponding hole (32) formed in said end of cross-member (3) and at least one elastic tab or tongue that is defined at at least one of said side (11b) or bottom (11c) walls and that is suitable for engaging with said end of cross-member (3).

2. Gasket (1, 1', 1'') according to claim 1, **characterised in that** said side walls (11b) near to their upper end have a flaring for the insertion from above of said end of cross-member (3) into the corresponding cavity (11).

3. Gasket (1', 1") according to claim 1 or 2, **characterised in that** said elastic tongue (13) is formed in said bottom wall (11c), it extends in a direction substantially perpendicular to said resting base (11a) and it has an upper end fixedly connected to said bottom wall and a free lower end, and **in that**, at said free end, there is a holding tooth (15) suitable for inserting into said end of cross-member (3), said end of cross-member being internally hollow.

4. Gasket (1', 1") according to claim 3, **characterised in that** said elastic tongue (13) has an increasing cross section from said upper end towards said lower end.

5. Gasket (1', 1") according to claim 4, **characterised in that** said holding tooth on the side facing towards said resting base (11a) has a receiving profile inclined from the top towards the bottom and towards said bottom wall (11c), said receiving profile being suitable for allowing engagement with end walls of cross-members (3) consisting of structural shapes with quadrangular section and internally hollow of equal dimensions and with walls of different thickness.

6. Gasket (1', 1") according to one of claims 3 to 5, **characterised in that** said elastic tongue (13) faces, on the opposite side with respect to that facing towards said cavity (11), onto a hole (16) that is formed at the centre of said block (10) and that is open at said upper face (10b).

7. Gasket (1', 1") according to claim 6, **characterised in that** said elastic tongue (13), on the side facing towards said hole (16), has an engagement element (17) for a manoeuvring tool, suitable for facilitating the disengagement of said elastic tongue (13) from the end of cross-member (3).

8. Gasket (1, 1') according to one or more of the previous claims, **characterised in that** it comprises four projections (18) that are arranged in a cross, project from said upper face (10b) and are suitable for acting as a reference for laying said panels.

9. Gasket (1, 1', 1") according to one or more of the previous claims, **characterised in that** there are four of said cavities (11) and they are arranged 90° apart from one another.

10. Gasket (1") according to one or more of the preceding claims, **characterised in that** it comprises two of said cavities (11) arranged 180° apart from one another and a central channel (110) arranged between said two cavities (11) and at 90° with respect to them, in which said central channel (110) is intended to receive, with the possibility of relative sliding, a cross-member (3) the opposite ends of which

project beyond said gasket (1").

11. Gasket (1, 1', 1'') according to one or more of the previous claims, **characterised in that** said pin (12) is internally hollow so that a fastening screw (31) can pass through it.

12. Gasket (1, 1', 1") according to one or more of the previous claims, **characterised in that** it comprises means for attachment to said resting head (5).

13. Gasket (1, 1', 1'') according to claim 12, **characterised in that** said attachment means comprise at least one pin (19) that projects from said lower face (10a) and that is intended to insert into a corresponding through hole (50) formed in said resting head (5), in the lower end of said pin (19) closed and made rigid by an appendage suitable for facilitating its automated upsetting on the lower face of said resting head (5).

Patentansprüche

1. Dichtung (1, 1', 1") für den Kopfteil von Stützsäulen für Doppelböden, die einen Block (10) umfasst, der eine Unterseite (10a), die dazu vorgesehen ist, auf dem Auflagekopfteil (5) einer Stützsäule (2) für Doppelböden aufzuliegen, eine Oberseite (10b), die im Wesentlichen parallel zu der Unterseite und dazu vorgesehen ist, als Auflage für die Platten der Doppelböden zu dienen, mindestens einen Hohlraum (11) zum Aufnehmen des Endes eines Querträgers (3), wobei dieser Hohlraum (11) auf der Oberseite (10b) und am Umfangsrand (10c) des Blocks offen ist, und Mittel zum Halten des Querträgerendes (3), die bei dem Hohlraum (11) definiert sind, aufweist, wobei diese Dichtung (1, 1', 1") **dadurch gekennzeichnet ist, dass** dieser Hohlraum (11) eine Auflagebasis (11a) für das Querträgerende (3) umfasst, und die dazu vorgesehen ist, zwischen dem Auflagekopfteil (5) und dem Querträgerende (3) angeordnet zu werden, wobei die Auflagebasis (11a) zwei Seitenwände (11b) und eine Bodenwand (11c) aufweist, die von ihr nach oben stehen, und dadurch, dass die Haltemittel mindestens Zapfen (12), der perpendikulär von der Auflagebasis (11a) vorsteht und der dazu vorgesehen ist, in ein entsprechendes Loch (32) eingesetzt zu werden, das in dem Querträgerende (3) ausgebildet ist, und mindestens eine elastische Lasche oder Zunge umfassen, die an mindestens einer von den Seiten- (11b) oder Bodenwänden (11c) definiert und geeignet ist, in das Querträgerende (3) einzugreifen.

2. Dichtung (1, 1', 1") nach Anspruch 1, **dadurch gekennzeichnet, dass** die Seitenwände (11b) nahe ihrem oberen Ende eine Aufweitung zum Einführen von oben des Querträgerendes (3) in den entsprechenden Hohlraum (11) aufweisen.

3. Dichtung (1', 1") nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die elastische Zunge (13) in der Bodenwand (11c) ausgebildet ist, sich in einer im Wesentlichen zur Auflagebasis (11a) perpendikulären Richtung erstreckt und ein oberes Ende, das starr mit der Bodenwand verbunden ist, und ein freies unteres Ende aufweist, und dadurch, dass sich an dem freien Ende ein Haltezahn (15) befindet, der geeignet ist, sich in das Querträgerende (3) einzufügen, wobei das Querträgerende innen hohl ist.

4. Dichtung (1', 1") nach Anspruch 3, **dadurch gekennzeichnet, dass** die elastische Zunge (13) einen vom oberen Ende zum unteren Ende hin zunehmenden Querschnitt aufweist.

5. Dichtung (1', 1") nach Anspruch 4, **dadurch gekennzeichnet, dass** der Haltezahn auf der der Auflagebasis (11a) zugewandten Seite ein von der Oberseite zur Unterseite und zur Bodenwand (11c) hin schräg verlaufendes Aufnahmeprofil aufweist, wobei dieses Aufnahmeprofil geeignet ist, den Eingriff mit Querträgerendwänden (3) zu ermöglichen, die aus strukturellen Formen mit viereckigem Querschnitt und innen hohl mit gleichen Abmessungen und mit Wänden unterschiedlicher Dicke bestehen.

6. Dichtung (1', 1") nach einem der Ansprüche von 3 bis 5, **dadurch gekennzeichnet, dass** die elastische Zunge (13) auf der Seite, die derjenigen, die dem Hohlraum (11) zugewandt ist, entgegengesetzt ist, einem Loch (16) zugewandt ist, das in der Mitte des Blocks (10) ausgebildet ist und das auf der Oberseite (10b) offen ist.

7. Dichtung (1', 1") nach Anspruch 6, **dadurch gekennzeichnet, dass** die elastische Zunge (13) auf der Seite, die zu dem Loch (16) gerichtet ist, ein Eingriffselement (17) für ein Betätigungswerkzeug aufweist, das das Ausrasten der elastischen Zunge (13) aus dem Querträgerende (3) erleichtern kann.

8. Dichtung (1, 1') nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie vier Vorsprünge (18) umfasst, die über Kreuz angeordnet sind, von der Oberseite (10b) vorstehen und als Referenz zum Verlegen der Platten dienen können.

9. Dichtung (1, 1', 1") nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** es vier der Hohlräume (11) gibt und dass sie in einem Winkel von 90° zueinander angeordnet sind.

10. Dichtung (1") nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie zwei der Hohlräume (11), die in einem Winkel von 180° zueinander angeordnet sind, und einen mittleren Kanal (110) umfasst, der zwischen diesen zwei Hohlräumen (11) und in einem Winkel von 90° zu ihnen angeordnet ist, wobei dieser mittlere Kanal (110) dazu vorgesehen ist, einen Querträger (3) mit der Möglichkeit des relativen Gleitens aufzunehmen, dessen entgegengesetzte Enden über die Dichtung (1") herausragen.

11. Dichtung (1, 1', 1") nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Zapfen (12) innen hohl ist, so dass ihn eine Befestigungsschraube (31) durchqueren kann.

12. Dichtung (1, 1', 1") nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zum Befestigen an dem Auflagekopfteil (5) umfasst.

13. Dichtung (1, 1', 1") nach Anspruch 12, **dadurch gekennzeichnet, dass** die Befestigungsmittel mindestens einen Zapfen (19) umfassen, der von der Unterseite (10a) vorsteht und dazu vorgesehen ist, sich in ein entsprechendes Durchgangsloch (50) einzufügen, das in dem Auflagekopfteil (5) ausgebildet ist, wobei das untere Ende des Zapfens (19) von einem Fortsatz geschlossen und versteift wird, der sein automatisiertes Anstauchen auf der Unterseite des Auflagekopfteils (5) erleichtern kann.

Revendications

1. Joint (1, 1', 1") pour la tête de colonnes de support de faux-planchers, comprenant un bloc (10) qui comporte une face inférieure (10a), qui est destinée à reposer sur la tête d'appui (5) d'une colonne de support (2) de faux-planchers, une face supérieure (10b), qui est sensiblement parallèle à ladite face inférieure et qui est destinée à agir comme un appui pour les panneaux desdits faux-planchers, au moins une cavité (11) pour loger l'extrémité d'une traverse (3), ladite cavité (11) étant ouverte au niveau de ladite face supérieure (10b) et au niveau du bord périphérique (10c) dudit bloc, et des moyens pour maintenir ladite extrémité de traverse (3) qui sont définis au niveau de ladite cavité (11), ledit joint (1, 1', 1") étant **caractérisé en ce que** ladite cavité (11) comprend une base d'appui (11a) de ladite extrémité de traverse (3) et qui est destinée à être disposée entre ladite tête d'appui (5) et ladite extrémité de traverse (3), ladite base d'appui (11a) ayant deux parois latérales (11b) et une paroi de fond (11c) montant à partir de celle-ci, et **en ce que** lesdits moyens de maintien comprennent au moins une broche (12) qui fait saillie perpendiculairement à partir de ladite base d'appui (11a) et qui est destinée à être insérée dans un trou correspondant (32) formé dans ladite extrémité de traverse (3) et au moins une patte ou languette élastique qui est définie au niveau d'au moins une desdites parois latérales (11b) ou de fond (11c) et qui est adaptée pour s'engager avec ladite extrémité de traverse (3).

2. Joint (1, 1', 1") selon la revendication 1, **caractérisé en ce que** lesdites parois latérales (11b) comportent, près de leur extrémité supérieure, un évasement pour l'insertion par le haut de ladite extrémité de traverse (3) dans la cavité correspondante (11).

3. Joint (1', 1") selon la revendication 1 ou 2, **caractérisé en ce que** ladite languette élastique (13) est formée dans ladite paroi de fond (11c), elle s'étend dans une direction sensiblement perpendiculaire à ladite base d'appui (11a) et elle a une extrémité supérieure connectée de manière fixe à ladite paroi de fond et une extrémité inférieure libre, et **en ce que**, au niveau de ladite extrémité libre, se trouve une dent de retenue (15) adaptée pour s'insérer dans ladite extrémité de traverse (3), ladite extrémité de traverse étant intérieurement creuse.

4. Joint (1', 1") selon la revendication 3, **caractérisé en ce que** ladite languette élastique (13) a une section transversale croissante de ladite extrémité supérieure vers ladite extrémité inférieure.

5. Joint (1', 1") selon la revendication 4, **caractérisé en ce que** ladite dent de retenue sur le côté orienté vers ladite base d'appui (11a) a un profil de réception incliné du haut vers le bas et vers ladite paroi de fond (11c), ledit profil de réception étant adapté pour permettre un engagement avec des parois d'extrémité de traverses (3) composé de profilés structuraux avec section quadrangulaire et intérieurement creux de dimensions égales et avec des parois d'épaisseur différente.

6. Joint (1', 1") selon une des revendications 3 à 5, **caractérisé en ce que** ladite languette élastique (13) est orienté, du côté opposé par rapport à celui orienté vers ladite cavité (11), sur un trou (16) qui est formé au centre dudit bloc (10) et qui est ouvert au niveau de ladite face supérieure (10b).

7. Joint (1', 1") selon la revendication 6, **caractérisé en ce que** ladite languette élastique (13), du côté orienté vers ledit trou (16), a un élément d'engagement (17) pour un outil de manoeuvre, adapté pour faciliter le désengagement de ladite languette élastique (13) par rapport à l'extrémité de traverse (3).

8. Joint (1, 1') selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**il comprend quatre saillies (18) qui sont disposées suivant une croix, font saillie de ladite face supérieure (10b) et sont adaptées pour agir comme une référence pour poser lesdits panneaux.

9. Joint (1, 1', 1") selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**il existe quatre desdites cavités (11) et **en ce qu'**elles sont disposées séparées de 90° l'une de l'autre.

10. Joint (1") selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**il comprend deux desdites cavités (11) disposées à 180° l'une de l'autre et un canal central (110) disposé entre lesdites deux cavités (11) et à 90° par rapport à celles-ci, dans lequel ledit canal central (110) est destiné à recevoir, avec la possibilité de coulissement relatif, une traverse (3) dont les extrémités opposées font saillie au-delà dudit joint (1").

11. Joint (1, 1', 1") selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite broche (12) est intérieurement creuse de manière qu'une vis de fixation (31) puisse passer à travers celle-ci.

12. Joint (1, 1', 1") selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour la fixation à ladite tête d'appui (5).

13. Joint (1, 1', 1") selon la revendication 12, **caractérisé en ce que** lesdits moyens de fixation comprennent au moins une broche (19) qui fait saillie à partir de ladite face inférieure (10a) et qui est destinée à s'insérer dans un trou passant correspondant (50) formé dans ladite tête d'appui (5), dans l'extrémité inférieure de ladite broche (19) fermée et rendu rigide par un appendice adapté pour faciliter sa mise en place automatisée sur la face inférieure de ladite tête d'appui (5).

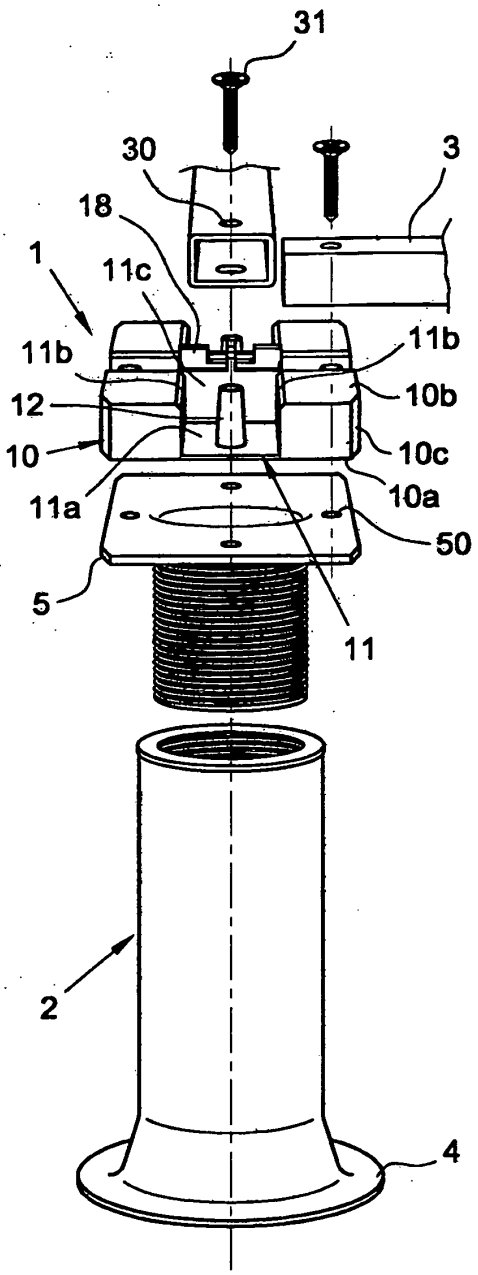


Fig. 1

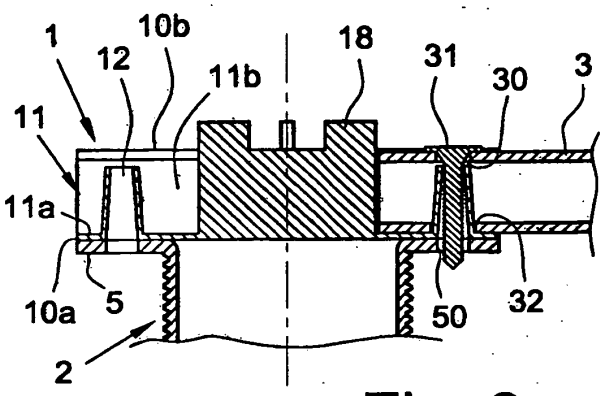


Fig. 3

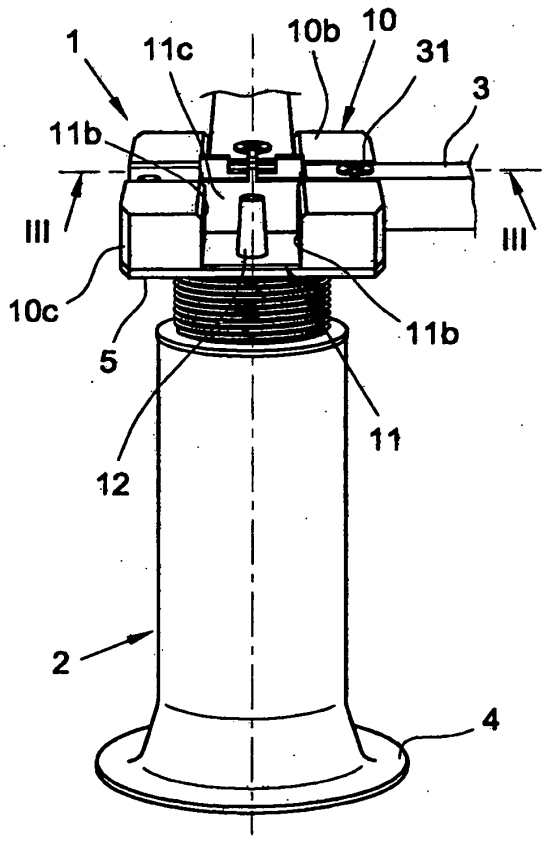


Fig. 2

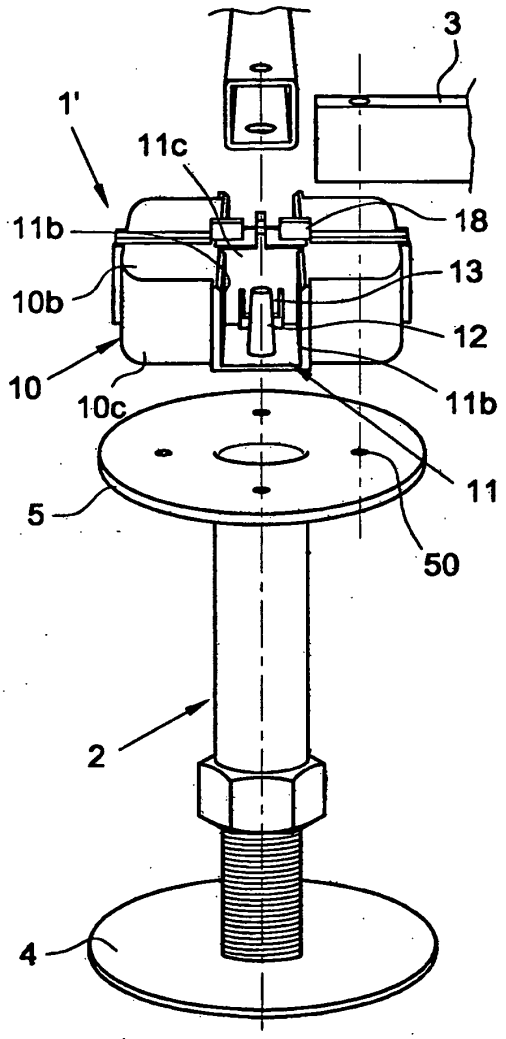
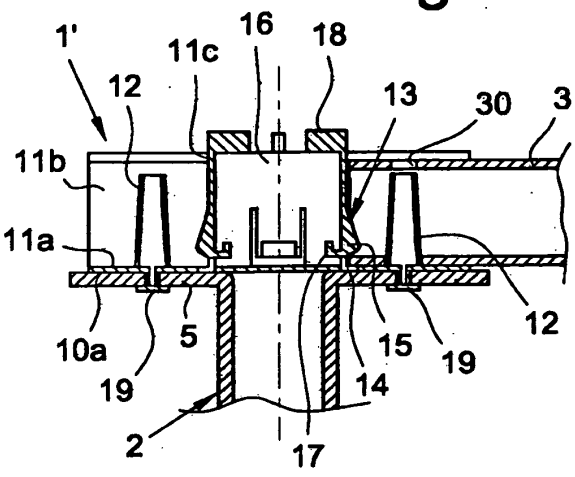


Fig. 4

Fig. 6



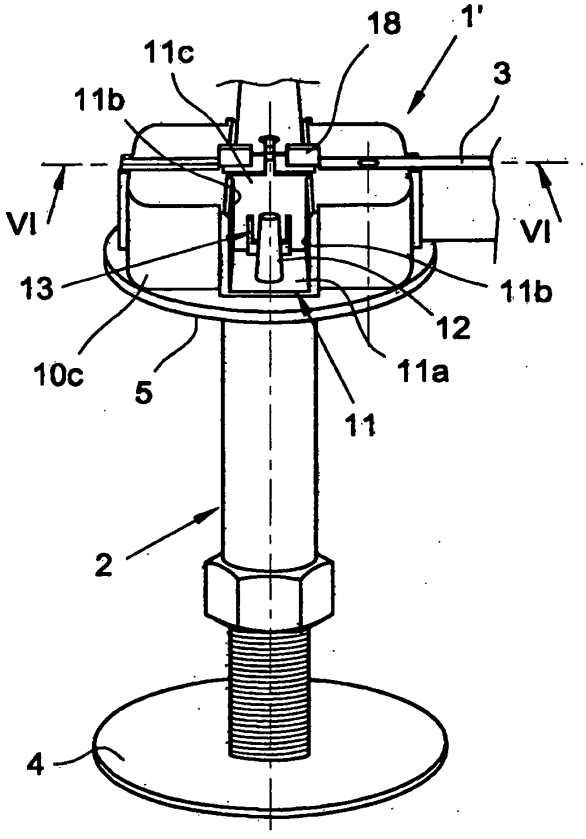


Fig. 5

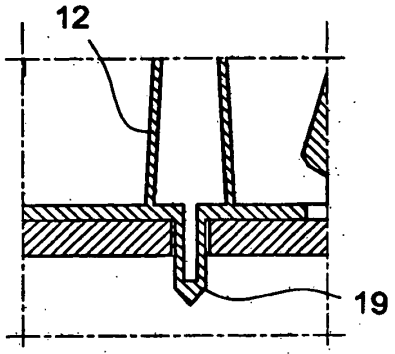


Fig. 6a

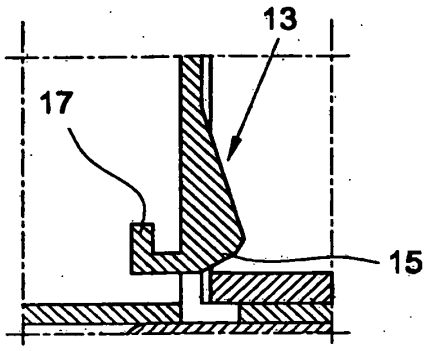


Fig. 6b

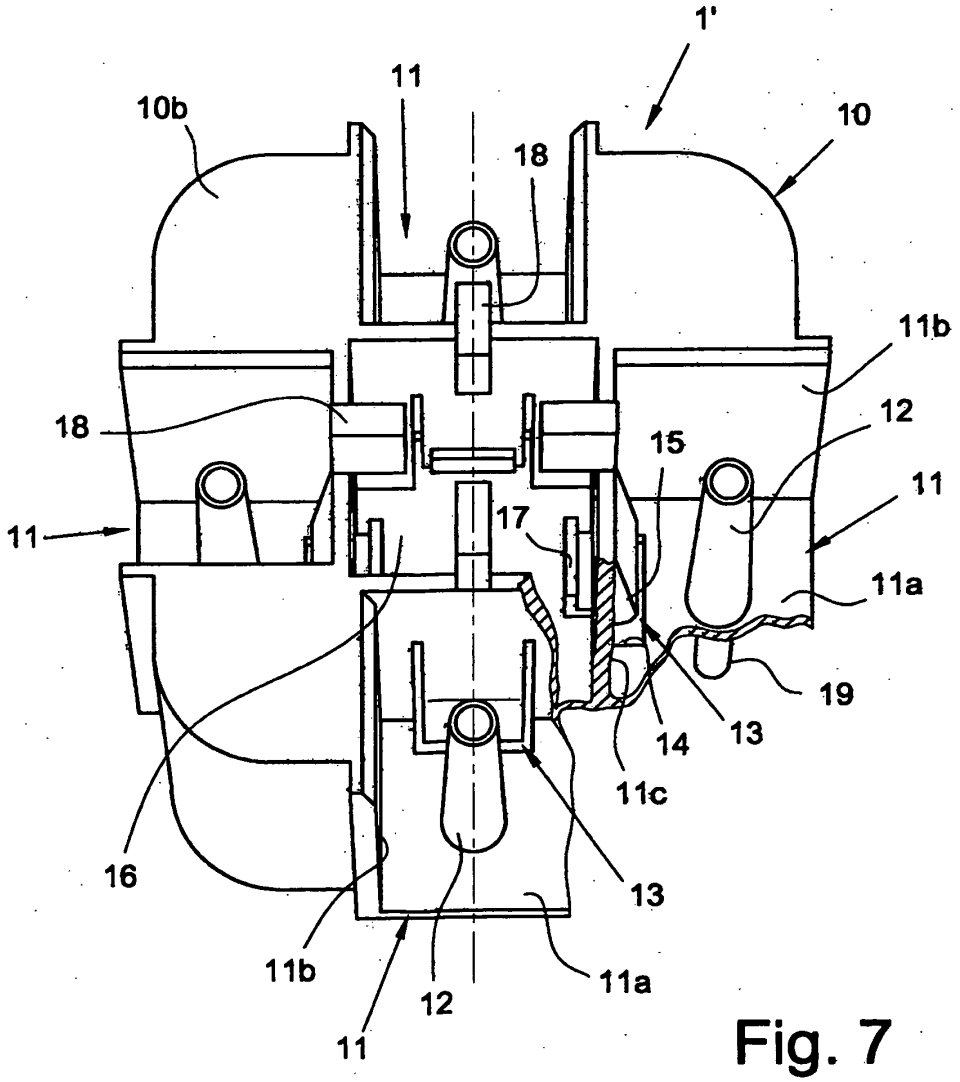


Fig. 7

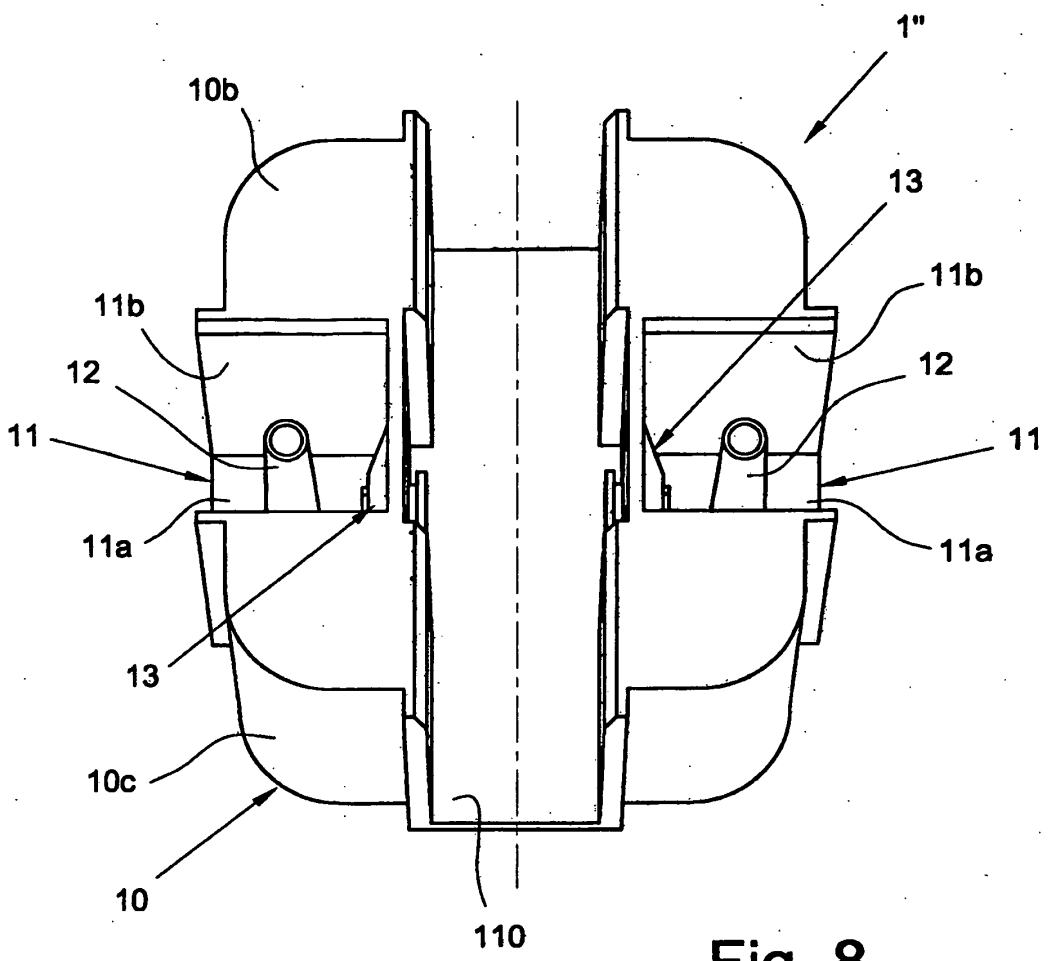


Fig. 8

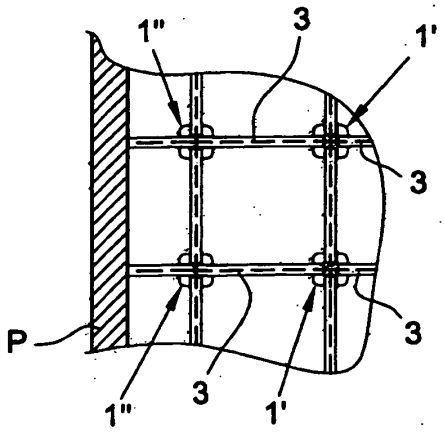


Fig. 9a

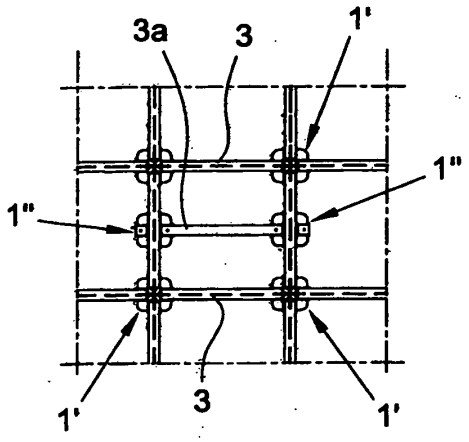


Fig. 9b

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5791096 A **[0010]**
- US 20050166483 A **[0017]**