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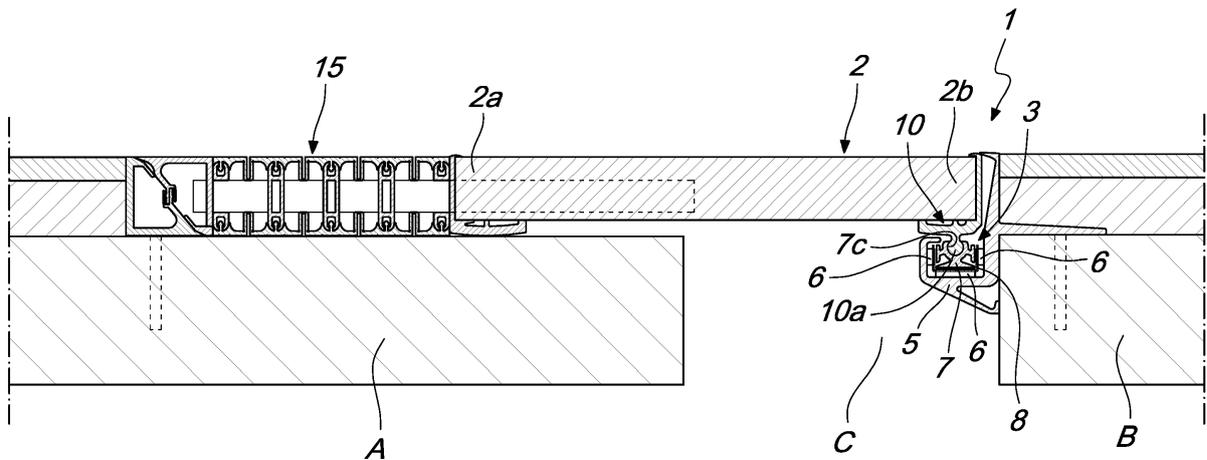
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(54) **STRUCTURAL JOINT**

(57) A structural joint that can be placed at a break in continuity between two structural elements (A, B) and which comprises at least one slab (2) covering a gap (C) which is interposed between the mutually opposite margins of the structural elements (A, B). A first end limb (2a) of the slab (2) is associable with the first structural element (A) on the opposite side of the gap (C); a second end limb (2b) of the slab (2), opposite the first limb (2a), is associable with the second structural element (B) by way of means of slideable coupling, along a main direction of movement (D), which is parallel to the mutually opposite margins of the structural elements (A, B).

The means of slideable coupling comprise a slider (3) which is coupled to the second end limb (2b) and is at least partially accommodated in a guiding track (4) defined by a surbase (5) which is anchorable in a cantilever fashion to the second structural element (B). Between the slider (3) and the track (4) there are interposed rolling elements (6), in order to allow the sliding of the slider (3) and of the slab (2) in said track (4) as a consequence of relative movements of the first structural element (A) with respect to the second structural element (B) along the main direction (D).



*Fig. 1*

## Description

**[0001]** The present invention relates to a structural joint.

**[0002]** As is known, the term "structural joint" identifies a break in continuity between two coupled elements, whether they are two modules of a same structure (a building, a bridge, or another work of civil engineering) or an element of the structure and the foundations or the adjacent works.

**[0003]** The break in continuity is for example provided in order to allow the thermal dilation of the constructions involved, and/or in order to allow movements and oscillations thereof, with respect to the surrounding elements.

**[0004]** Furthermore, a technique of constructing buildings is becoming increasingly common which offers seismic isolation, which is obtained by decoupling the movement of the ground from that of the buildings, by way of conveniently distributed disconnections.

**[0005]** In this manner, the building (which in such case is referred to as an isolated structure) can withstand seismic events even of great intensity, and it is precisely for this reason that seismic isolation is employed especially for structures such as hospitals, airports, firefighter barracks, etc., for which it is essential to ensure full operational availability even under emergency conditions.

**[0006]** When the interruption affects a walkable surface (floor surfaces, road coverings, escape routes, corridors, bridges), the structural joint obviously has to allow the transit of persons and means of transport. With reference for example to isolated structures, this is evidently made necessary in order to allow the transit of persons and of means of transport even after the seismic event (and after any oscillations of the isolated structure with respect to the foundations and to the surrounding constructions).

**[0007]** Thus structural joints are known which comprise a slab, which is arranged to cover the gap (of variable width, as a function of the requirements) that keeps the structural elements of interest spaced apart: the gap allows expansions and relative movements between the elements, while on the overlying slab persons and means of transport can transit, thus ensuring the continuity of the walking surface.

**[0008]** Thanks to various contrivances, the slab can move both parallel to the direction identified by the gap, and at right angles to it (but still along the walking surface), while always keeping the condition of substantially covering the gap unchanged (and without interfering with the structural elements connected by the slab proper).

**[0009]** When a movement in the perpendicular direction occurs, the covering is maintained by way of bellows elements, which connect one side of the slab to one of the two structural elements, and which extend or contract when the slab follows the distancing or approaching movements of the element, thus allowing transit.

**[0010]** The possibility of moving in the direction parallel to that identified by the gap is instead obtained by secur-

ing a profiled member to the opposite side of the slab from the side affected by the bellows elements.

**[0011]** The profiled member is provided in a downward region with a rib with a transverse cross-section of shape matching that of a guiding track, which is oriented in the direction identified by the gap in that it is supported in a cantilever manner by a subbase anchored to the adjacent structural element.

**[0012]** Thanks to the shape coupling thus obtained, in the event of a seismic event the slab can thus move parallel to the gap thanks to the rib, which slides along the track without prejudicing the continuity of the walking surface.

**[0013]** Such implementation solution is not however devoid of drawbacks.

**[0014]** In fact it must be noted that gaps can extend for several meters and more (consider for example the transverse dimensions of a bridge, or the width of the point of discontinuity that needs to be anticipated at the access entryway to a building, when transit has to be ensured to public vehicles such as ambulances or fire engines).

**[0015]** Especially in such context, minimal deformations or expansions of the track (and/or of the rib) are thus sufficient to compromise the correct operation of the joint: in such conditions, the slab will not in fact slide in an optimal manner, and often, conversely, an actual seizure will arise, with evident negative consequences.

**[0016]** Moreover, it seems evident that with more modestly dimensioned implementation solutions, correct operation still relies on an optimal shape coupling between the rib and the track, which is very difficult to ensure and maintain over time, but which however is required, in view of the specific application requirements and of the criticality of the solution in question.

**[0017]** The aim of the present invention is to solve the above mentioned problems, by providing a structural joint that allows mutual movements between the connected structural elements, while still ensuring the continuity of the walking surface.

**[0018]** Within this aim, an object of the invention is to provide a structural joint that allows movements of one of the structural elements connected with respect to the other, in a direction parallel to that identified by the gap created between those elements.

**[0019]** Another object of the invention is to provide a structural joint that ensures a high reliability of operation, even for gaps of large dimensions, by allowing relative movements of even great extent.

**[0020]** Another object of the invention is to provide a structural joint that ensures a high reliability of operation, even in the event of transit of heavy vehicles on the walking surface identified by the connected structural elements.

**[0021]** Another object of the invention is to provide a structural joint in which the slab arranged to cover the gap can move freely without interfering with the surrounding structures, even on the margins of said gap.

**[0022]** Another object of the invention is to provide a

structural joint that can be easily implemented using elements and materials that are readily available on the market.

**[0023]** Another object of the invention is to provide a structural joint that is low cost and safely applied.

**[0024]** This aim and these and other objects are achieved by a structural joint that can be placed at a break in continuity between two structural elements and which comprises at least one slab covering a gap which is interposed between the mutually opposite margins of the structural elements, a first end limb of said slab being associable with the first structural element on the opposite side of the gap, a second end limb of said slab, opposite said first limb, being associable with the second structural element by way of means of slideable coupling, along a main direction of movement, which is parallel to the mutually opposite margins of the structural elements, characterized in that said means of slideable coupling comprise a slider which is coupled to said second end limb and is at least partially accommodated in a guiding track defined by a surbase which is anchorable in a cantilever fashion to the second structural element, between said slider and said track there being interposed rolling elements, for the sliding of said slider and of said slab in said track as a consequence of relative movements of the first structural element with respect to the second structural element along the main direction.

**[0025]** Further characteristics and advantages of the invention will become better apparent from the description of five preferred, but not exclusive, embodiments of the structural joint according to the invention, which are illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a side elevation view of the structural joint according to the invention in the first embodiment, cross-sectioned along a plane at right angles to the gap;

Figure 2 is a greatly enlarged detail of the structural joint in Figure 1, in a perspective view and cross-sectioned as in Figure 1;

Figure 3 is an exploded view of the detail in Figure 2;

Figure 4 is a greatly enlarged detail of Figure 1;

Figure 5 is a greatly enlarged detail of the structural joint according to the invention, in the second embodiment, in a side elevation view and cross-sectioned along a plane at right angles to the gap;

Figure 6 is a greatly enlarged detail of the structural joint according to the invention, in the third embodiment, in a side elevation view and cross-sectioned along a plane at right angles to the gap;

Figure 7 is a side elevation view of the structural joint according to the invention in the fourth embodiment, cross-sectioned along a plane at right angles to the gap;

Figures 8 to 10 are side elevation views of the structural joint according to the invention in the fifth embodiment, cross-sectioned along a plane at right an-

gles to the gap, in various operating configurations.

**[0026]** With reference to the figures, the reference numeral 1 generally designates a structural joint, which can be arranged at a break in continuity between two structural elements A, B.

**[0027]** It should thus be noted from this point onward that the structural joint 1 can connect any structural elements A, B, according to the specific requirements, while remaining within the scope of protection claimed herein.

**[0028]** The two structural elements A, B can therefore form part of the same structure (a building, a bridge, or other civil engineering construction), although in the preferred use the joint 1 according to the invention is intended for isolated structures, and thus at breaks in continuity between a building (the isolated structure) and the surrounding foundations, in order to decouple the movement of the building from that of the ground.

**[0029]** In any case, the structural joint 1 according to the invention comprises at least one slab 2 for covering a gap C interposed between the mutually opposite margins of the structural elements A, B.

**[0030]** The gap C allows expansions and relative movements between the structural elements A, B, while on the overlying slab 2 persons and means of transport can transit, thus ensuring the continuity of the walking surface. So, in an isolated structure, the gap C can be provided along the perimeter of the building, in order to withstand minor or major seismic events (and therefore the oscillations of the ground or of the foundations), while the slab 2 can be arranged along the transit entry points, in order to allow persons and means of transport to enter and exit even in the event of an earthquake.

**[0031]** A first end limb 2a of the slab 2 can be associated with the first structural element A on the opposite side of the gap C; in turn, a second end limb 2b of the slab 2, opposite the first limb 2a, can be associated with the second structural element B by way of means of slideable coupling, along a main direction of movement D which is parallel to the mutually opposite margins of the structural elements A, B and is therefore, effectively, identified by said gap C.

**[0032]** For the purposes of the scope of protection claimed herein, and with further reference to the previously mentioned preferred use, it should be made clear from this point onward that the choice of the structural element A, B to be associated with the isolated structure is immaterial: the first structural element A can thus be part of the structure or be part of the foundations or of the surrounding ground, as a function of the specific requirements (and obviously the same can be said for the second structural element B).

**[0033]** More generically, it is emphasized that each structural element A, B can be chosen at will, while remaining within the scope of protection claimed herein.

**[0034]** According to the invention, the means of slideable coupling comprise a slider 3 coupled to the second end limb 2b. The slider 3 can in fact be defined by the

second end limb 2b or, as in the embodiments which will be described hereinafter, it can be a separate component, coupled to the slab 2 at the second end limb 2b.

**[0035]** In any case, the slider 3 is at least partially accommodated in a guiding track 4 defined by a surbase 5 that can be anchored in a cantilever arrangement to the second structural element B.

**[0036]** Interposed between the slider 3 and the track 4 are rolling elements 6: as a consequence of relative movements of the first structural element A with respect to the second structural element B along the main direction D (or in any case parallel to it), the slider 3, resting on the rolling elements 6 (and/or in contact with them), and the slab 2, can thus slide, in an optimal manner, in the track 4.

**[0037]** In particular, in the various embodiments proposed in Figures 1 to 6, the slider 3 comprises at least one profiled member 7 which has at least one flat base surface 7a, which can slide on a plurality of mutually parallel rollers, which therefore constitute (in such embodiments) the rolling elements 6.

**[0038]** The rolling elements 6 are transversely distributed at least along the bottom 4a of the guiding track 4 and therefore the profiled member 7 can freely slide on the rollers and therefore with respect to the track 4, in the event of a relative movement along the main direction D (or parallel to it) of the first structural element A (associated with the slab 2 and therefore with the slider 3) with respect to the second structural element B (associated with the surbase 5 and therefore with the track 4), or vice versa.

**[0039]** It should be noted therefore that in a first embodiment the structural joint 1 according to the invention is provided solely with a plurality of rollers 6 which are interposed between the base surface 7a of the profiled member 7 and the bottom 4a of the track 4, as in Figure 6.

**[0040]** In the preferred application of the invention, of which the accompanying drawings give two possible embodiments (the first in Figures 1 to 4 and the second in Figure 5), and which differ from each other only in the shape structure of the components involved, the profiled member 7 also has two flat lateral surfaces 7b, at right angles to the base surface 7a, so that it can be accommodated in a guiding track 4 which has a substantially U-shaped transverse cross-section.

**[0041]** Thus, in such preferred application, between the lateral surfaces 7b and the sides 4b of the U-shaped track 4 further rolling elements 6 are transversely interposed, which are also constituted by rollers, in order to increase the overall resting area (and be able to withstand higher loads).

**[0042]** Conveniently, in the various embodiments described above the structural joint 1 according to the invention comprises a sheet 8, which is interposed between the profiled member 7 (and therefore the slider 3) and the track 4.

**[0043]** The sheet 8 is provided with a plurality of slots 9 which are mutually spaced apart, which effectively de-

fine respective seats for the rollers, thus making it possible to maintain a preset distribution (chosen at the design stage) for these latter components inside the track 4.

**[0044]** In fact, the slots 9 maintain the orientation and the correct mutual distances for the rollers, even during the sliding of the slider 3 on them (or any other stress), by preventing them from inclining, moving and/or touching each other, events which could all compromise the optimal operation of the joint 1 according to the invention.

**[0045]** More specifically, while the sheet 8 is substantially flat in the embodiment in Figure 6, in the preferred application (in the embodiments in Figures 1 to 5), the sheet 8 is folded into a U-shape. Thus, and as can clearly be seen for example from Figure 3, the sheet 8 defines a floor strip 8a, which is interposed between the base surface 7a and the bottom 4a of the track 4, and two wall strips 8b, which are respectively interposed between the corresponding lateral surfaces 7b and the corresponding sides 4b.

**[0046]** Each strip 8a, 8b is provided with respective slots 9, in order to accommodate corresponding rollers and keep them correctly positioned.

**[0047]** Conveniently, and with further reference to the embodiments illustrated up to now, the slider 3 comprises an upper longitudinal member 10 (at least partially L-shaped in the embodiments in Figures 1 to 4 and 6), which is rigidly anchored to the second end limb 2b of the slab 2.

**[0048]** A longitudinal lip 10a extends in a downward region from the longitudinal member 10 (and is therefore oriented in the main direction D, and along the track 4), and has an at least partially curvilinear transverse cross-section.

**[0049]** The shape structure chosen for the lip 10a enables its rotary mating with a groove 7c of matching shape, which is defined in an upward region by the profiled member 7, and therefore allows the oscillation of the longitudinal member 10 and of the slab 2 (about the longitudinal axis of the lip 10a, which effectively coincides with or is in any case parallel to the main direction D), with respect to the profiled member 7 and the surbase 5.

**[0050]** It should be noted that two possible positions assumed by the longitudinal member 10 following the oscillation are shown in dotted lines in Figures 4 and 5, merely for the purposes of example.

**[0051]** In a fourth embodiment, as an alternative to the three described up to now, which is proposed for the purposes of non-limiting illustration of the use of the invention in Figure 7, the slider 3 comprises a profiled beam 11, which is substantially L-shaped and is rigidly anchored to the second end limb 2b of the slab 2.

**[0052]** A longitudinal crest 11a extends in a downward region from the beam 11 and has a transverse cross-section which is at least partially curvilinear (and with a longitudinal axis oriented in the main direction D).

**[0053]** The longitudinal crest 11 a can slide on a plurality of balls, which in this embodiment constitute the rolling elements 6 and are distributed along (the entire

inner surface of) a channel 5a which is of shape at least partially complementary to the crest 11a and is defined by the surbase 5.

**[0054]** In a fifth embodiment, as an alternative to those described up to now, which is illustrated in Figures 8 to 10 without in so doing exhausting the possible embodiments while remaining within the scope of protection claimed herein, the slider 3 comprises a profiled bar 12, which is substantially L-shaped and is rigidly anchored to the second end limb 2b of the slab 2 (in a similar manner therefore to the beam 11).

**[0055]** Interposed between the bar 12 and the track 4 are a plurality of aligned balls (effectively along the main direction D), which in this embodiment constitute the rolling elements 6.

**[0056]** The balls are rotatably coupled in a downward region to the bar 12 and are free to slide in the channel 5a with an at least partially curvilinear transverse cross-section, which is defined in an upward region by the surbase 5.

**[0057]** In particular, in such embodiment the structural joint 1 according to the invention comprises a plate 13 which is retained rigidly by respective mutually opposite protrusions 12a, which extend in a downward region from the bar 12.

**[0058]** The plate 13, which thanks to the protrusions 12a is made integral with the bar 12, is provided with a plurality of mutually spaced apart receptacles 14 for rotatably accommodating the balls.

**[0059]** Whichever embodiment is chosen for the means of slideable coupling (be it one of those described in the foregoing pages, or another, while remaining within the scope of protection claimed herein), the first end limb 2a of the slab 2 is preferably associated with the first structural element A by way of bellows elements 15 (which may be conventional).

**[0060]** Although therefore the possibility is not ruled out of providing structural joints 1 according to the invention in which the only relative movement allowed by the joint 1 is that of translation along the main direction D, preferably, and thanks to the bellows elements 15, the slab 2 can translate integrally with the second structural element B (therefore maintaining the continuity of the walking surface), if relative movements of the latter occur with respect to the first structural element A perpendicularly to the main direction D.

**[0061]** Operation of the structural joint according to the invention is the following.

**[0062]** As has been seen, the structural joint 1 can be arranged at a break in continuity between two structural elements A, B between which a gap C is interposed, precisely in order to mutually decouple them and allow one of the two structural elements A, B to perform relative movements with respect to the other, while ensuring the continuity of the walking surface above (thanks to the slab 2 and to the other contrivances described).

**[0063]** The presence of the means of slideable coupling in fact allows movements along the main direction

D, while the bellows elements 15 which can be (and preferably are) present also allow translations perpendicularly to such main direction D (but, obviously, parallel to the slab 2).

5 **[0064]** Conveniently, the presence of the rolling elements 6 ensures the possibility of optimal sliding of the slider 3 (and therefore of the slab 2 integrally with the first element A), with respect to the track 4 defined by the surbase 5 (and therefore with respect to the second element B).

10 **[0065]** In fact, the slider 3 can slide on the chosen rolling elements 6 (rollers, balls, spheres, or the like) even in the event of the deformation or deterioration (which are compensated by the rolling elements 6) of the track 4 and of the surbase 5.

15 **[0066]** Thanks to the joint 1 according to the invention, risks of seizing or jams (as conversely often happen when using conventional joints) are thus guarded against, in that the slideable coupling between the slider 3 and the track 4 is not simply obtained by way of mutually complementary shapes (as in conventional joints); therefore, the optimal operation is not compromised by deformations, even slight, or impurities collected in the track 4, since the interposition of the rolling elements 6 which roll on themselves while the slider 3 slides in the track 4 compensates for such drawbacks (which are irremediable with conventional solutions).

20 **[0067]** The operating modes described above, and the advantages obtained, are not, evidently, in any way limited by the dimensions of the components involved or by the extent of the gap C: even in the event of particularly long (or wide) gaps C, the slider 3 can freely slide in the track 4 (for translations even of great extent), by resting on the rollers, the balls or the spheres, which in any case compensate for any deformations and ensure the optimal sliding.

25 **[0068]** The choice of the specific rolling element 6 (and therefore of the embodiment of the structural joint 1 according to the invention) can be made freely, according to the specific requirements.

30 **[0069]** For example, the preferred structural joint 1, provided with rollers 6 arranged as in Figures 1 to 4 (or also the one in Figure 6), thanks to the very high number of rolling elements 6 which can be arranged between the slider 3 and the track 4, offers a resting surface for the profiled member 7 which is particularly extensive (and is obtained from the sum of the contributions of the great number of rollers distributed not only on the bottom 4a of the track 4, but also between the lateral surfaces 7b and the sides 4b).

35 **[0070]** This is of undoubted interest when heavy vehicles are expected to transit on the slab 2, in that the extensive resting surface ensures the ability to support even very heavy loads.

40 **[0071]** It should further be noted that conveniently the surbase 5 is preferably anchored in a cantilever arrangement to the second structural element B: therefore, during its travel parallel to the main direction D the slider 3

never interferes with the second structural element B (still less with the first structural element A) and its vertical space occupation.

**[0072]** Any surrounding structures which may extend vertically from the structural elements A, B (pillars, door posts and entrances, jambs, and the like) never intercept the slider 3 and the slab 2, and do not in and of themselves constitute hazardous stroke limits, which are such as to undesirably limit the permitted extent of sliding, leaving them instead the possibility to freely move.

**[0073]** In addition, in the embodiments in Figures 1 to 6, the choice to provide a slider 3 provided with a longitudinal member 10 coupled to the profiled member 7 at the lip 10a, which is rotatably inserted in the groove 7c, also allows oscillations of the slab 2 with respect to the surbase 5.

**[0074]** A similar result is obtained in the other embodiments described: Figure 7 (in dotted lines) and Figure 9 show different possible positions for the slab 2, which are allowed by the peculiar method of coupling respectively the beam 11 and the bar 12 with the channel 5a, which allows relative oscillations (about an axis that coincides with or is parallel to the main direction D) thanks to the balls or to the spheres.

**[0075]** Finally, it should be noted that the sheet 8 (and incidentally the plate 13) maintains the rolling elements 6 (the rollers or the balls) in the selected position, thus contributing to the optimal operation.

**[0076]** In practice it has been found that the structural joint according to the invention fully achieves the set aim, in that the use of rolling elements interposed between the slider, which is coupled to the second end limb of the slab, and the track, which is defined by the surbase anchorable in a cantilever arrangement to the second structural element, allows mutual movements between the connected structural elements, while still ensuring (with the slab) the continuity of the walking surface.

**[0077]** The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

**[0078]** In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be substituted with other, different characteristics, existing in other embodiments.

**[0079]** In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

**[0080]** The disclosures in Italian Utility Model Application No. BO2014U000068 from which this application claims priority are incorporated herein by reference.

**[0081]** Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of exam-

ple by such reference signs.

## Claims

1. A structural joint that can be placed at a break in continuity between two structural elements (A, B) and which comprises at least one slab (2) covering a gap (C) which is interposed between the mutually opposite margins of the structural elements (A, B), a first end limb (2a) of said slab (2) being associable with the first structural element (A) on the opposite side of the gap (C), a second end limb (2b) of said slab (2), opposite said first limb (2a), being associable with the second structural element (B) by way of means of slideable coupling, along a main direction of movement (D), which is parallel to the mutually opposite margins of the structural elements (A, B), **characterized in that** said means of slideable coupling comprise a slider (3) which is coupled to said second end limb (2b) and is at least partially accommodated in a guiding track (4) defined by a surbase (5) which is anchorable in a cantilever fashion to the second structural element (B), between said slider (3) and said track (4) there being interposed rolling elements (6), for the sliding of said slider (3) and of said slab (2) in said track (4) as a consequence of relative movements of the first structural element (A) with respect to the second structural element (B) along the main direction (D).
2. The structural joint according to claim 1, **characterized in that** said slider (3) comprises at least one profiled member (7) which has at least one flat base surface (7a), which can slide on a plurality of mutually parallel rollers that constitute said rolling elements (6) and are transversely distributed at least on the bottom (4a) of said guiding track (4).
3. The structural joint according to claims 1 and 2, **characterized in that** said profiled member (7) has two flat lateral surfaces (7b), which are perpendicular to said base surface (7a), for its accommodation in a guiding track (4) which has a substantially U-shaped transverse cross-section, between said lateral surfaces (7b) and the sides (4b) of said track (4) there being transversely interposed further said rolling elements (6), which are constituted by said rollers.
4. The structural joint according to one or more of the preceding claims, **characterized in that** it comprises a sheet (8) which is interposed between said profiled member (7) and said track (4) and is provided with a plurality of slots (9) which are mutually spaced apart and which define respective seats for said rollers, in order to maintain a preset distribution of said rollers inside said track (4).

5. The structural joint according to claim 4, **characterized in that** said sheet (8) is folded into a U shape, in order to define a floor strip (8a), interposed between said base surface (7a) and said bottom (4a) of said track (4), and two wall strips (8b), which are respectively interposed between corresponding said lateral surfaces (7b) and corresponding said sides (4b), each one of said strips (8a, 8b) being provided with respective said slots (9).
6. The structural joint according to one or more of the preceding claims, **characterized in that** said slider (3) comprises an upper longitudinal member (10) which is rigidly anchored to said second end limb (2b) of said slab (2), a longitudinal lip (10a) extending in a downward region from said longitudinal member (10) and having a transverse cross-section which is at least partially curvilinear, for rotary mating with a groove (7c) of matching shape, which is defined in an upward region by said profiled member (7), in order to allow the oscillation of said longitudinal member (10) and of said slab (2) with respect to said profiled member (7) and to said surbase (5).
7. The structural joint according to claim 1 and as an alternative to claim 2, **characterized in that** said slider (3) comprises a profiled beam (11), which is substantially L-shaped and is rigidly anchored to said second end limb (2b) of said slab (2), a longitudinal crest (11a) extending in a downward region from said beam (11) and having a transverse cross-section which is at least partially curvilinear, and which can slide on a plurality of balls, which constitute said rolling elements (6) and are distributed along a channel (5a) which is of shape at least partially complementary to said crest (11a) and is defined by said surbase (5).
8. The structural joint according to claim 1 and as an alternative to claim 2 and to claim 7, **characterized in that** said slider (3) comprises a profiled bar (12), which is substantially L-shaped and is rigidly anchored to said second end limb (2b) of said slab (2), between said bar (12) and said track (4) there being interposed a plurality of balls which are aligned and which constitute said rolling elements (6), said balls being rotatably coupled in a downward region to said bar (12) and being able to slide freely in a channel (5a) with an at least partially curvilinear transverse cross-section, which is defined in an upward region by said surbase (5).
9. The structural joint according to claim 8, **characterized in that** it comprises a plate (13) which is retained rigidly by respective mutually opposite protrusions (12a) which extend in a downward region from said bar (12), said plate (13) being provided with a plurality of receptacles (14) which are mutually spaced apart, for rotatably accommodating said balls.
10. The structural joint according to one or more of the preceding claims, **characterized in that** said first end limb (2a) of said slab (2) is associated with the first structural element (A) by way of bellows elements (15), for the translation of said slab (2) integrally with the second structural element (B), as a consequence of relative movements of the second structural element (B) with respect to the first structural element (A) perpendicularly to the main direction (D).

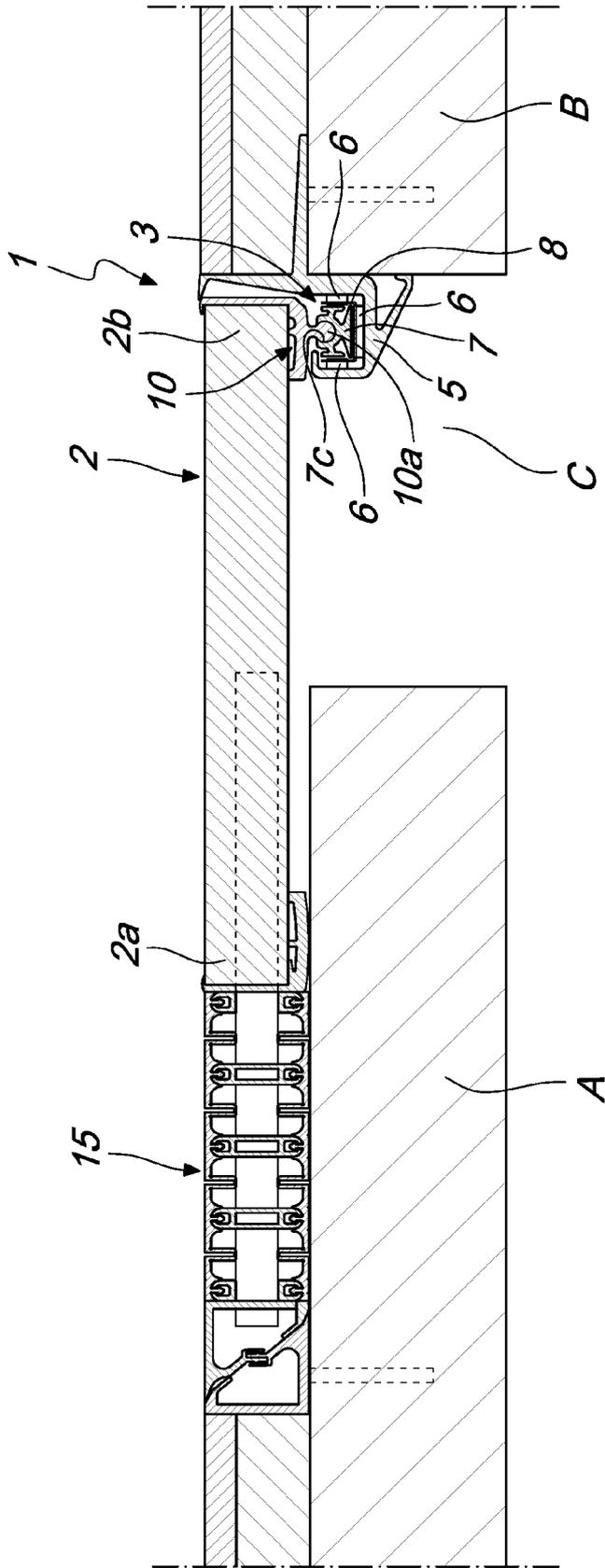


Fig. 1

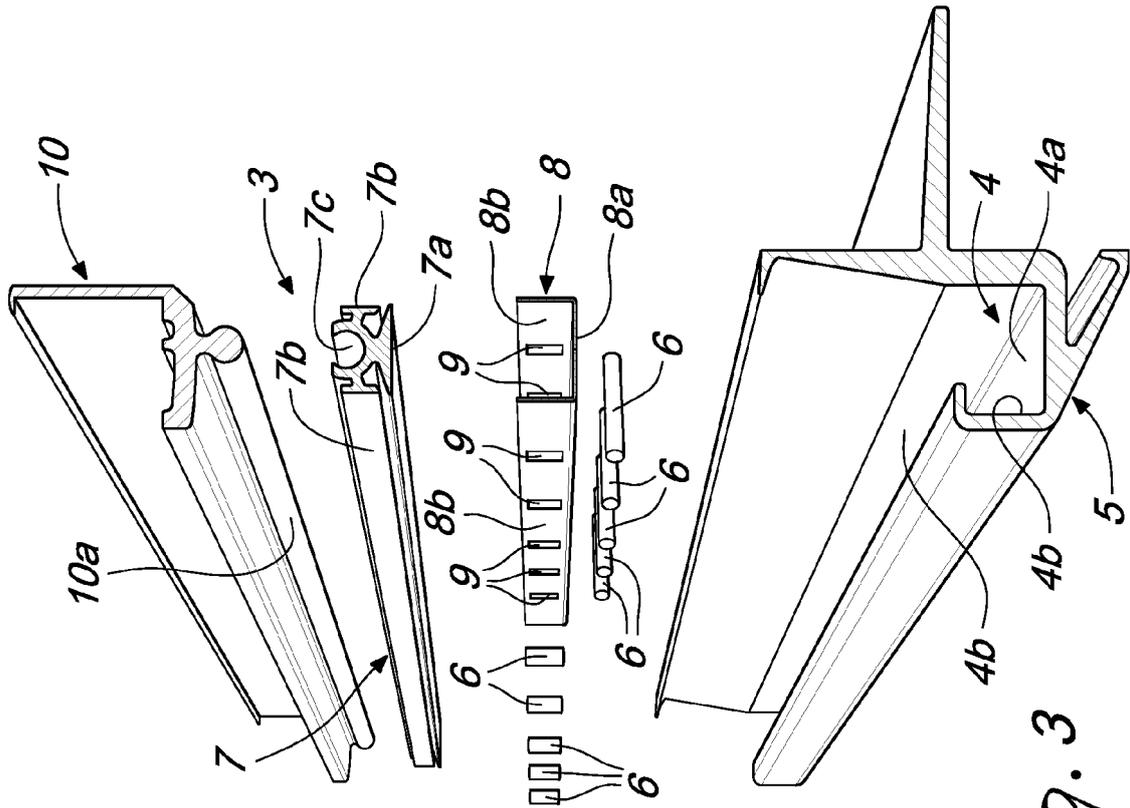


Fig. 3

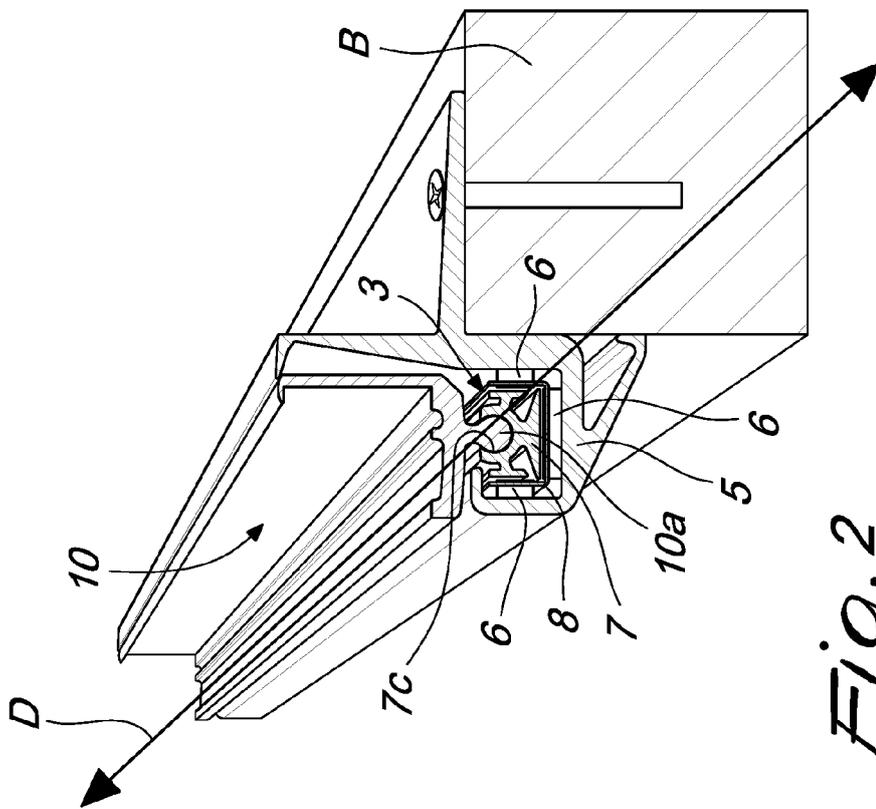
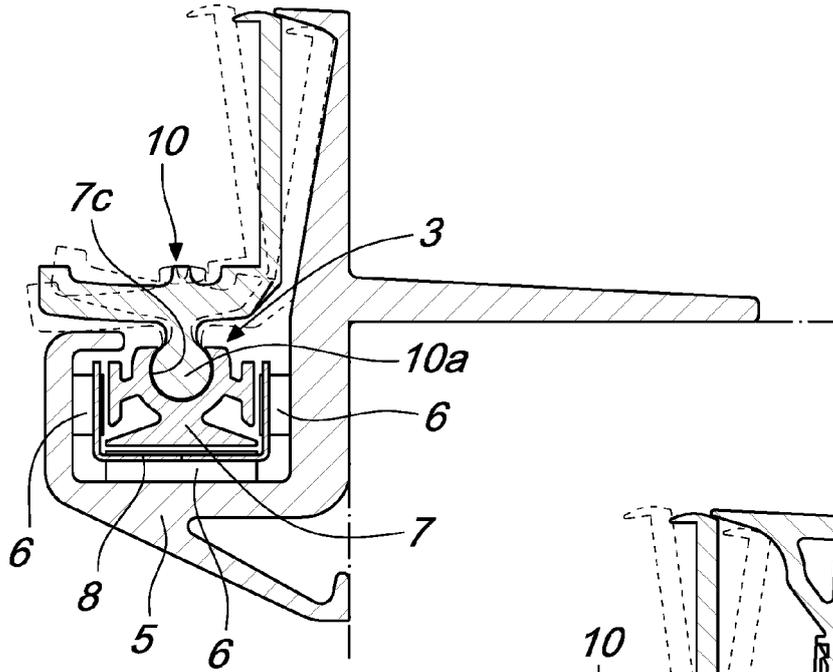
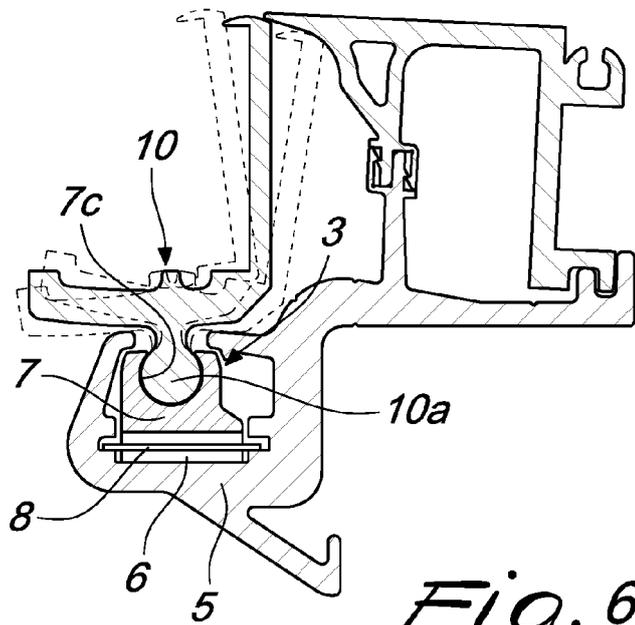


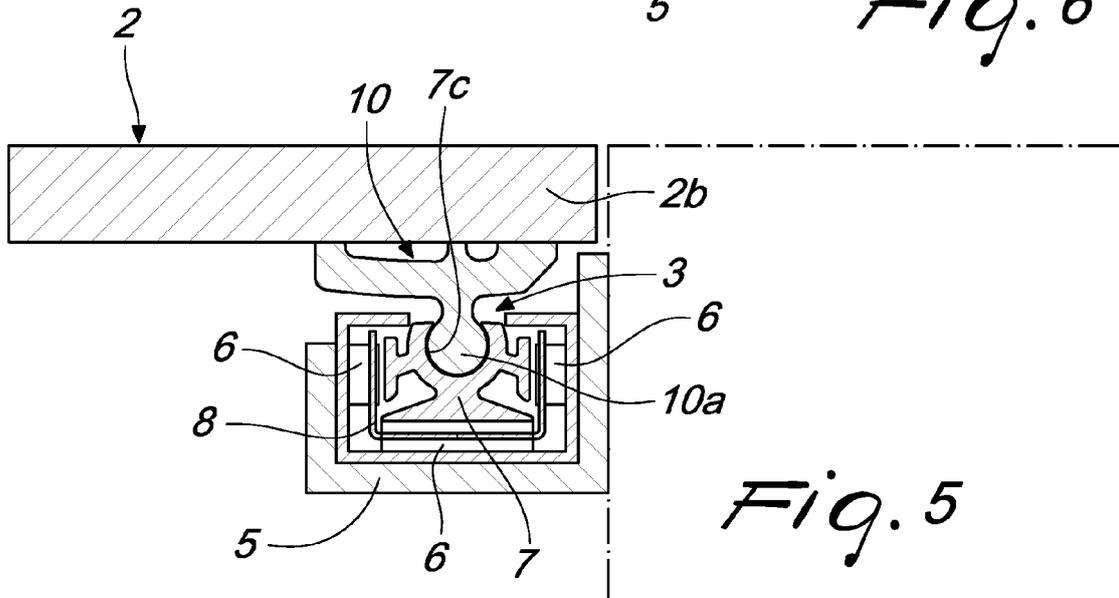
Fig. 2



*Fig. 4*



*Fig. 6*



*Fig. 5*



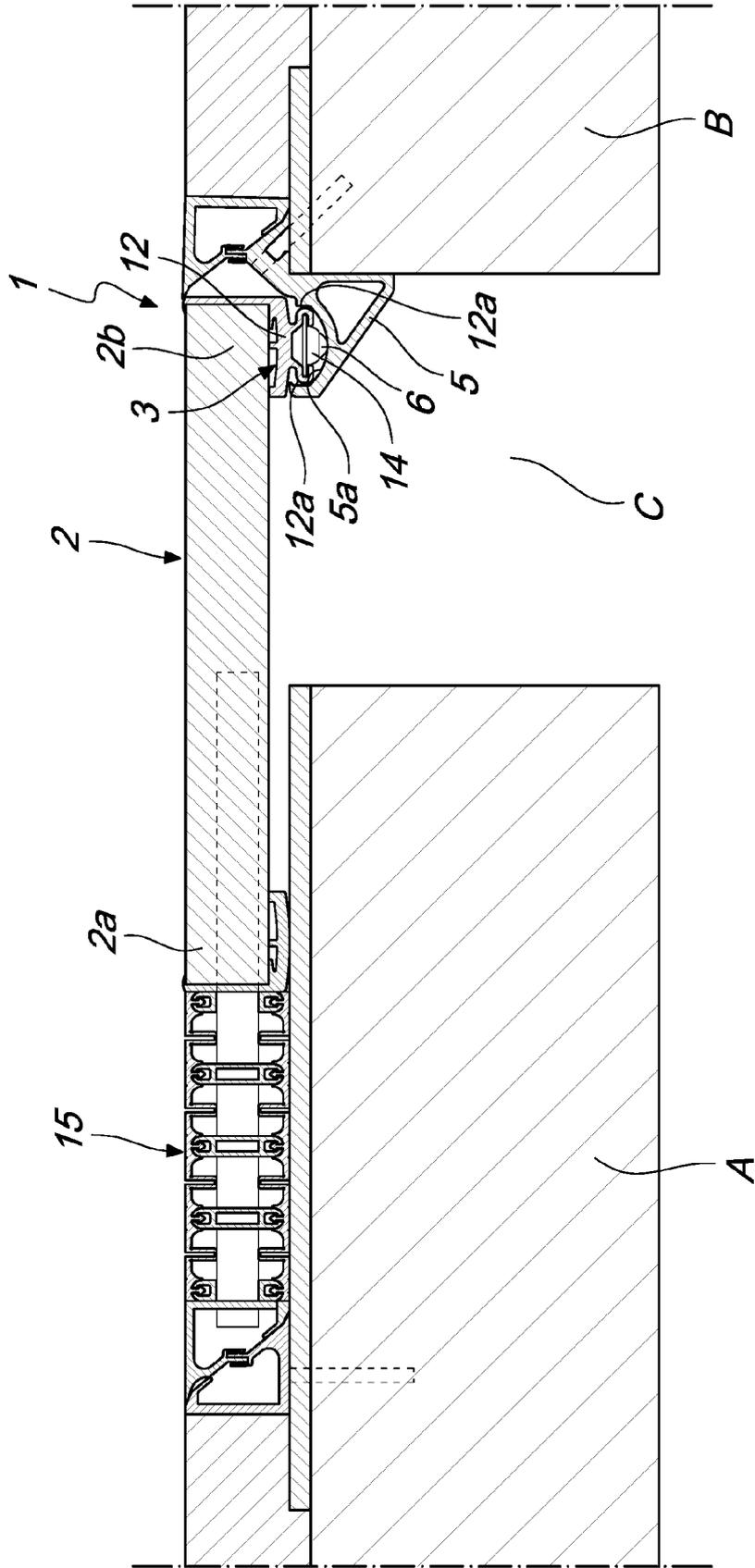


Fig. 8



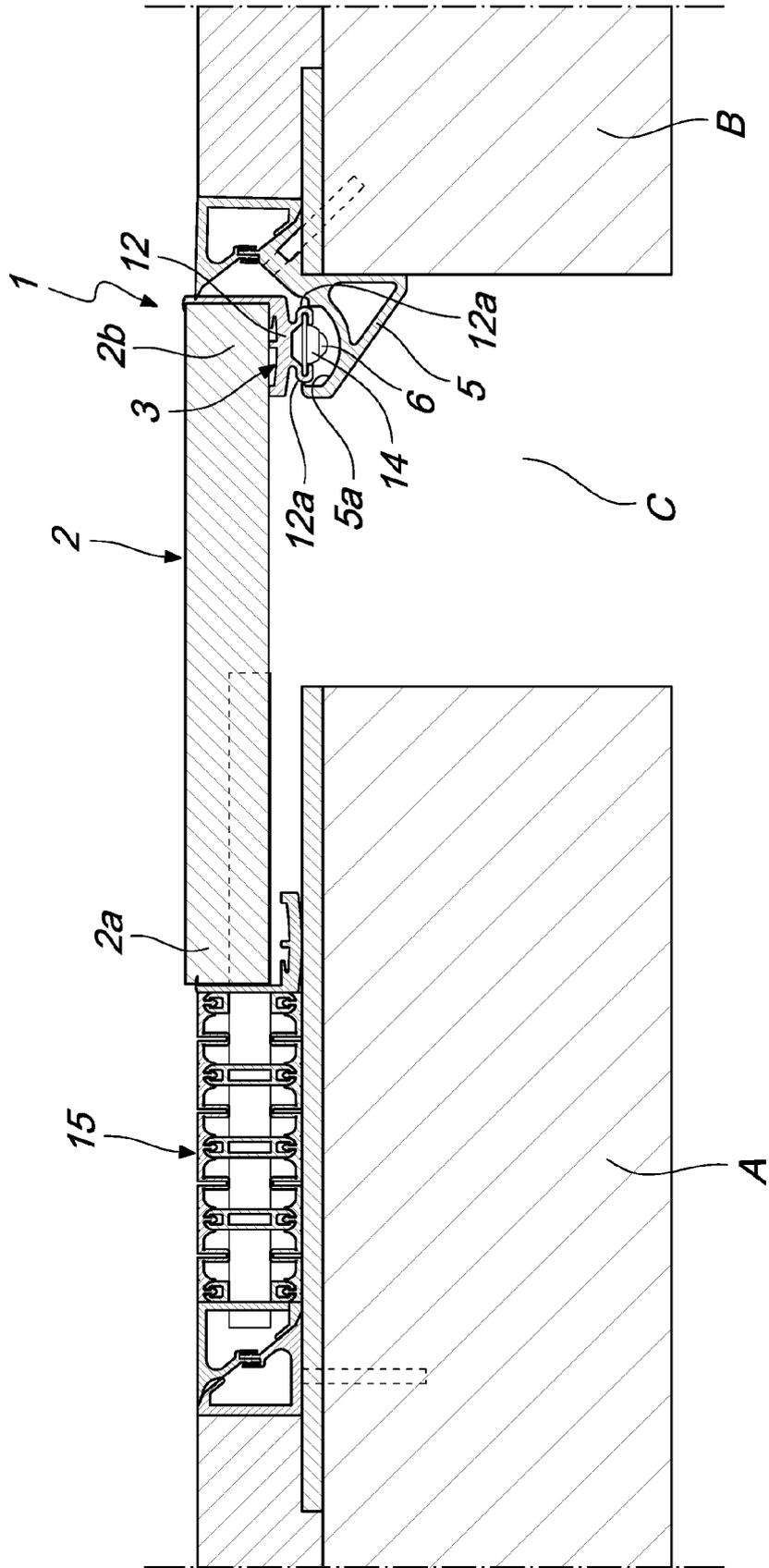


Fig. 10



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