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(54) **SYSTEM FOR FASTENING SLATS**

(57) The present invention concerns a system (1) for fastening slats (3) to a surface (2), comprising:
a guide (7), having an elongated shape, having a support surface (8) which can be positioned above said surface (2); one or more sliders (13), provided with first locking means (14) to a slat (3), slidingly associated or associable to the guide (7), on the opposite side to the support surface (8), in such a way as to be able to take a desired longitudinal position with respect to the guide (7); spring locking means (35) of the one or more sliders (13), configured to be lockable by friction in a desired longitudinal position with respect to the guide (7), so as to prevent the sliding of said one or more sliders (13) longitudinally to the guide (7) in at least one direction.

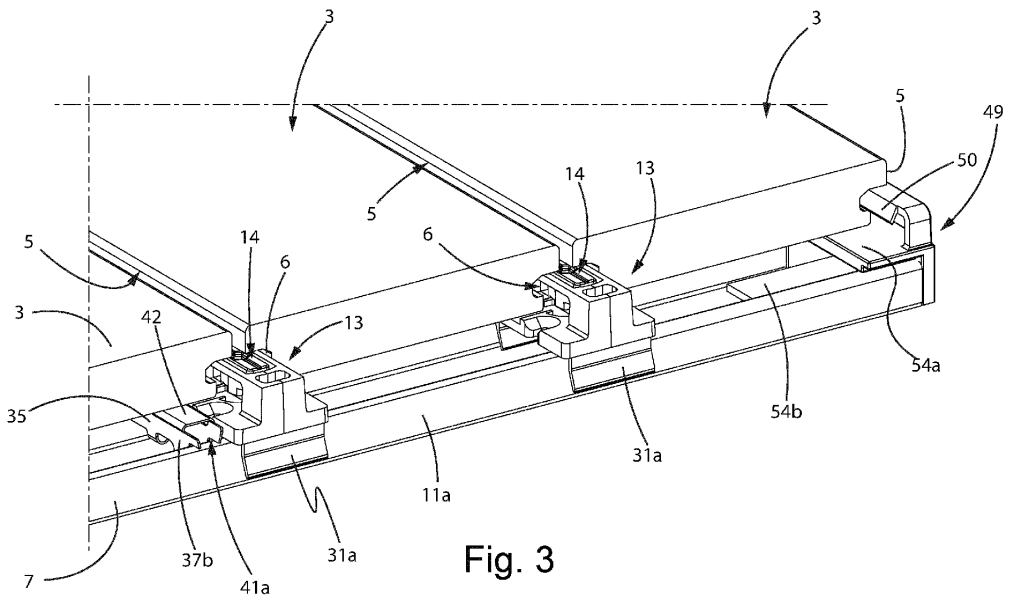

Fig. 3

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Description

[0001] The present invention refers to a system for fastening slats, and in particular to a system for fastening to a preferably but not necessarily flat surface, rectangular or square plan slats which are provided to be arranged two by two flanked and spaced apart from each other, to make, totally or partially, a flooring or a wall or a ceiling.

[0002] In construction, in order to make floorings, it is known to cover surfaces, such as for example a screed or a portion of land, with slats, made of wood or other materials, having a typically square or rectangular plan, which are arranged two by two flanked and spaced apart from each other (generally by a few millimetres) above said surface, until it is generally completely covered.

[0003] The slats can rest directly on the surface to be covered, or they can rest on an intermediate structure (for example a frame and/or a plurality of elongated crosspieces arranged parallel and spaced from each other) which is fastened, for example by means of screws or rivets, possibly with interposition of spacers with adjustable height, to the surface to be covered, and interposed between the same and the slats, so as to define in turn a surface, preferably flat, supporting the slats.

[0004] There are various systems for fastening these slats to a support surface (whether it is the same surface to be covered or the surface of the intermediate structure mentioned above).

[0005] Nowadays, the systems most commonly used for fastening include providing the slats, on their side walls which, with the slats being laid to constitute the flooring, will be facing the side walls of other similar slats, with longitudinal grooves, and stably fastening to the surface to be covered (and/or to the intermediate structure, if present), in the interspaces between two contiguous slats, the locking elements that are inserted in the longitudinal grooves of the slats, preventing them from lifting from the surface to be covered.

[0006] A common known solution provides that, after positioning a first slat on the surface to be covered, one or more locking elements are inserted in a longitudinal groove of the slat, and are fastened to the underlying surface to be covered by means of a screw; the assembly procedure then provides that a second slat is positioned parallel to and spaced from the first one, taking care to position a longitudinal groove of the second slat so as to accommodate the locking element already locked to the first slat and to the surface to be covered. After positioning the second slat, one or more second locking elements can be inserted into the second longitudinal groove and stably fastened to the underlying surface to be covered by means of special screws.

[0007] The procedure for making the flooring then proceeds in this way, by gradually positioning a new slat and one or more new locking elements, until the flooring is made.

[0008] This solution of known type, however, presents the drawback that the procedure for laying the slats, requiring that the various locking elements are fastened with screws after positioning each slat, is rather inconvenient and laborious, and requires a long time of execution.

[0009] In addition, replacing a slat typically requires unscrewing the screws that fasten one or more of the locking elements to that slat, which is in turn inconvenient and laborious, and requires a long time of execution.

[0010] Solutions for fastening slats are also known which comprise installation elements each comprising a support element, such as for example a wooden, metal or plastic crosspiece, to which a plurality of locking elements for slats are immovably fastened, in prefixed positions (generally equally spaced from each other); such support elements are fastened (for example by means of screws, rivets, glue, mortar, etc.) to the surface to be covered with the slats (for example a screed, a masonry or concrete wall, a concrete ceiling, etc.), with the locking elements facing away from said surface, and then the slats are rested with their short side between two contiguous locking elements.

[0011] In some of such known solutions, the locking elements are shaped in such a way to be automatically locked, e.g. snap-fittingly, to the slats when these are positioned between two contiguous locking elements of a same support element.

[0012] In other known solutions, the locking elements are configured in such a way to be locked to the slats that are positioned between a pair of said locking elements upon action on them by a special tool, for example to cause rotation of a part of said locking means.

[0013] An example of such known solutions is described, for example, in Italian patent no. 102019000021711, in the name of the same Applicant.

[0014] However, these known solutions also have some drawbacks; in particular, since the locking elements are fastened to the respective support element in fixed and non-changeable positions, it is not possible to use a same installation element for any measure of slats, but only for slats having a certain width, corresponding to the interspace between two contiguous locking elements fastened to a same support element. This drawback, in addition to entailing high warehouse and logistical costs (since specific installation elements, for the different slats, have to be provided), also involves problems during laying, since a specific installation element cannot adapt to slats whose actual width differs, albeit slightly, from the nominal width that would allow using that specific installation element.

[0015] The main task of the present invention is to overcome the aforementioned drawbacks, and in particular to realize a system for fastening slats to a surface that allows the slats to be fastened easily and quickly, and with relatively short installation times, and that at the same time it can be used with slats of different dimensions.

[0016] As part of this task, another aim of the present invention is to realize a system for fastening slats that

can be produced, stored and transported with relatively low costs.

[0017] These and other aims according to the present invention are achieved by realizing a system for fastening slats to a surface, comprising:

- a guide, having an elongated shape, having a support surface which can be positioned above said surface;
- one or more sliders, provided with first locking means to a slat, slidingly associated or associable to the guide, on the opposite side to the support surface, in such a way to be able to take a desired longitudinal position with respect to the guide,
- spring locking means of the one or more sliders, configured to be lockable by friction in a desired longitudinal position with respect to the guide, so as to prevent the sliding of the one or more sliders longitudinally to the guide in at least one direction.

[0018] It should be noted that the expression "lockable by friction" means lockable by effect of the resulting friction between two surfaces in contact with each other, which are pressed against each other.

[0019] Other advantageous features of the invention are illustrated in the dependent claims.

[0020] The features and advantages of the present invention will be more apparent from the following description, which is to be understood as exemplifying and not limiting, with reference to the appended schematic drawings, wherein:

- Figure 1 is a perspective view of a slatted flooring portion, obtained by means of an advantageous embodiment of the system according to the invention;
- Figure 2 is a side view of the flooring portion of Figure 1;
- Figure 3 is an enlarged detail of Figure 1;
- Figure 4 is a perspective view of an advantageous embodiment of a guide of an advantageous embodiment of the system according to the invention;
- Figure 5 is a front view of the guide of Figure 4;
- Figure 6 is a front view of a detail of some components of an advantageous embodiment of a system according to the invention;
- Figure 7 is a perspective view of a slider of the system of Figure 6;
- Figure 8 is a perspective view of a detail of the system of Figure 6;
- Figure 9 is a plan view of the detail of Figure 8;
- Figure 10 is a side view of a detail of an advantageous embodiment of the system according to the invention, with some slats applied;
- Figure 11 is a perspective view of an advantageous embodiment of spring locking means of an advantageous embodiment of the system according to the invention;
- Figure 12 is a side view of the spring locking means of Figure 11, in which both the non-deformed configuration and, in dashed line, an elastically deformed configuration are highlighted;
- Figure 13 is a perspective view of a detail of an advantageous embodiment of the system according to the invention using the spring locking means of Figure 11;
- Figure 14 is a front view of the detail of Figure 13;
- Figure 15 is a front view of a detail of a further advantageous embodiment of the system according to the invention;
- Figure 16 is a perspective view of the detail of Figure 15;
- Figure 17 is a perspective view of a detail of a further advantageous embodiment of the system according to the invention;
- Figure 18 is a front view of the detail of Figure 17;
- Figure 19 is a perspective view of a detail of a further advantageous embodiment of the system according to the invention;
- Figure 20 is a front view of the detail of Figure 19;
- Figure 21 is a perspective view of a detail of a further advantageous embodiment of the system according to the invention, with a slat applied;
- Figure 22 is a front view of the detail of Figure 21;
- Figure 23 is a perspective view of a detail of a further advantageous embodiment of the system according to the invention;
- Figure 24 is a perspective view of the system of Figure 23, with two slats applied;
- Figure 25 is a perspective view of a detail of a further advantageous embodiment of the system according to the invention;
- Figure 26 is a perspective view of the system of Figure 25 with a slat applied;
- Figure 27 is a perspective view of a further advantageous embodiment of spring locking means of an advantageous embodiment of the system according to the invention;
- Figure 28 is a front view of the spring locking means of Figure 27, in which both the non-deformed configuration and, in dashed line, an elastically deformed configuration are highlighted;
- Figure 29 is a perspective view of a detail of an advantageous embodiment of the system according to the invention using the spring locking means of Figure 27;
- Figure 30 is a perspective view of a further advantageous embodiment of spring locking means of an advantageous embodiment of the system according to the invention;
- Figure 31 is a perspective view of a detail of an advantageous embodiment of the system according to the invention using the spring locking means of Figure 30;
- Figure 32 is a side view, partially in transparency, of a detail of the system of Figure 31, with two slats applied;

- Figure 33 is a perspective view of a further advantageous embodiment of spring locking means of an advantageous embodiment of the system according to the invention;
- Figure 34 is a front view of the spring locking means of Figure 33, applied to a guide, in which both the non-deformed configuration and, in dashed line, an elastically deformed configuration are highlighted;
- Figure 35 is a perspective view of a detail of an advantageous embodiment of the system according to the invention using the spring locking means of Figure 33;
- Figure 36 is a perspective view of an advantageous embodiment of means for closing the guide of a system according to the invention;
- Figure 37 is a front view of the closing means of Figure 36, applied to a guide
- Figure 38 is a perspective view of a further advantageous embodiment of means for closing the guide of a system according to the invention;
- Figure 39 is a perspective view of the closing means of Figure 38, applied to a guide.

[0021] In the accompanying figures, number 1 indicates a system for fastening to an advantageously, but not necessarily flat surface 2, of slats 3, with a rectangular or square plan, which are provided to be arranged two by two flanked and spaced apart from each other, to make, totally or partially, a flooring 4, or a wall, or a ceiling.

[0022] Said slats 3 are preferably made of solid wood, or they may advantageously comprise a plurality of overlapping layers of wood and/or of the plastic and wood composite material known by the initials WPC (wood plastic composite) and/or of another material, for example plastic, held together, for example, by special adhesives.

[0023] The slats 3 illustrated in the accompanying figures advantageously have a parallelepiped shape with a substantially rectangular base.

[0024] In the preferred embodiments illustrated in the accompanying figures, the system 1 is advantageously arranged for fastening slats 3 provided, on at least one side wall 5 thereof, with a longitudinal groove 6.

[0025] The surface 2 to which the slats 3 are fastened can be, for example, a screed, made for example of concrete, or a portion of land, or a masonry or concrete wall, or a concrete ceiling, etc.

[0026] The system 1 comprises one or more guides 7, having an elongated shape, having a support surface 8 which can be positioned above the surface 2.

[0027] In an advantageous embodiment, such as for example that illustrated in Figure 2, the one or more guides 7 can be supported and fastened directly to the surface 2, preferably by means of known fastening means, such as for example screws, rivets, glue, mortar, etc.

[0028] In a further advantageous embodiment, not illustrated, between the one or more guides 7 and the surface 2 above which said one or more guides 7 are positioned, there are spacers, not illustrated, supported or fastened respectively to the surface 2 and to the overlying one or more guides 7.

[0029] In an advantageous embodiment, such as for example that illustrated in the accompanying figures, the one or more guides 7 comprise a profile 9, preferably, but not necessarily metallic, more preferably made of steel or aluminium.

[0030] Alternatively, the profile 9 may be made of wood, extruded plastic, or in the material known as WPC.

[0031] Advantageously, the profile 9 has, in a cross-section, a bottom 10, which comprises the support surface 8, from which two side walls 11a and 11b protrude, from the side opposite to said support surface 8.

[0032] In an advantageous embodiment, such as for example that illustrated in the accompanying Figures 1-6, 8-10, 13-16, 19-26, 29, 32, 39, the profile 9 has an open section, preferably with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section.

[0033] In advantageous embodiments, such as for example those illustrated in Figures 1-6, 8-10, 13-16, 21-26, 29, 31, 32, 37, 39, the free ends 12a and 12b of the two side walls 11a and 11b are folded towards each other, preferably in such a way to be substantially parallel to the bottom 10.

[0034] In a further advantageous embodiment, illustrated for example in Figures 19 and 20, the free ends 12a and 12b of the two side walls 11a and 11b are folded in such a way to be divergent from each other, preferably in such a way to be substantially parallel to the bottom 10.

[0035] In a further advantageous embodiment, illustrated for example in Figures 17, 18, 34 and 35, the profile 9 has a closed section, preferably rectangular or square, in which the bottom 10 and the side walls 11a and 11b constitute three contiguous sides of a rectangle or square.

[0036] The system 1 according to the invention further comprises one or more sliders 13, provided with first locking means 14 to a slat 3, slidingly associated or associable to the guide 7, on the opposite side to the support surface 8 thereof, in such a way to be able to take a desired longitudinal position with respect to said guide 7 itself.

[0037] Advantageously, as will be better explained below, the locking means 14 comprise a base 15, preferably flat, defined in a region of the slider 13 facing, in use, on the opposite side to the guide 7, configured for the positioning superiorly and/or laterally thereto of at least two slats 3 in a laying condition in which said slats 3 are flanked and spaced apart from each other.

[0038] In an advantageous embodiment, the sliders 13 are slidingly locked or lockable to the guide 7 by coupling means which, depending on the shape of the guide 7, can take different embodiments.

[0039] In the advantageous embodiment in which the

guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded towards each other, the coupling means can advantageously comprise, such as for example in the embodiment examples of Figures 1-3, 6-10, 15-16, internal appendages 29a, 29b, protruding from the base 15 in such a way as to be positioned, in use, between the side walls 11a and 11b of the guide 7, in contact with them, respectively, and provided each with a first abutment 30a, 30b, positioned in such a way that, when the slider 13 is coupled with the guide 7, the free ends 12a and 12b of the side walls 11a and 11b are arranged, respectively, between the base 15 and the first abutment 30a and 30b, and in contact with the latter, so as to prevent the slider 13 from being lifted by the guide 7 in the direction of its distancing from the bottom 10.

[0040] In an advantageous embodiment, the internal appendages 29a and 29b are elastic and partially shaped with an inclined plane, so as to facilitate their snap-fit coupling with the respective free ends 12a and 12b; in such an advantageous embodiment, in fact, positioning a slider 13 above the guide 7, and exerting a pressure of said slider 13 towards the bottom 10 thereof, result in the portion with an inclined plane of the internal appendages 29a, 29b to come into contact with the free end 12a, 12b of the respective side wall 11a, 11b, and to be pushed towards the inside of the guide 7 itself by the action of the inclination of the inclined plane that slides on the respective free end 12a, 12b, until the respective first abutment 30a, 30b overcomes said free end 12a, 12b, allowing the internal appendage 29a, 29b to return elastically to an undeformed position, and thus locking to the guide 7 the slider 13, which in said condition can only slide with respect to the latter.

[0041] In advantageous embodiments, such as for example those of Figures 1-3, 6-10, the coupling means also advantageously comprise first external appendages 31a 31b, protruding from the base 15 in such a way as to be arranged, when the slider 13 is coupled with the guide 7, in contact with the external surface of a respective side wall 11a or 11b of the guide 7, preventing said side wall 11a or 11b from deforming towards the outside of the guide 7 itself.

[0042] In the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced apart from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded towards each other, the coupling means may optionally advantageously comprise, such as for example in the embodiment examples of Figures 21-22 and 25-26, one or more appendages with undercut 32 (for example shaped like a dovetail or a mushroom), protruding from the base 15 and shaped and positioned in such a way to be able to be inserted longitudinally in the profile 9, but so as not to be able to be separated therefrom by a displacement in a direction perpendicular to the bottom 10 of the same , as the undercut of such one or more appendages with undercut 32 engages with the free ends 12a and 12b, avoiding the separation.

[0043] In the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded in such a way to be divergent from each other, the coupling means can advantageously comprise, such as for example in the embodiment examples of Figures 19-20, second external appendages 33a, 33b, protruding from the base 15 in such a way as to be arranged, in use, astride the guide 7, and in contact respectively with the free ends 12a and 12b; in such an advantageous embodiment, the second external appendages 33a and 33b are each advantageously provided with a second abutment 34a, 34b, positioned in such a way that, when the slider 13 is coupled with the guide 7, the free ends 12a and 12b of the side walls 11a and 11b are arranged, respectively, between the base 15 and the second abutment 34a or 34b, and in contact with the latter, so as to prevent the slider 13 from being lifted by the guide 7.

[0044] In an advantageous embodiment, the second external appendages 33a and 33b are elastic and partially shaped with an inclined plane, so as to facilitate their snap-fit coupling, with the respective free ends 12a and 12b; in such an advantageous embodiment, in fact, positioning a slider 13 above the guide 7, and exerting a pressure on said slider 13 towards the bottom 10 thereof, result in the portion with an inclined plane of the second external appendages 33a, 33b to come into contact with the free end 12a, 12b of the respective side wall 11a, 11b, and to be pushed towards the outside of the guide 7 itself by the action of the inclination of the inclined plane that slides on the respective free end 12a, 12b, until the respective second abutment 34a, 34b overcomes said free end 12a, 12b, allowing the second external appendage 33a, 33b to return elastically to an undeformed position, thus locking to the guide 7 the slider 13, which in said condition can only slide with respect to the latter.

[0045] Advantageously, the advantageous embodiment in which the coupling means comprise the second external appendages 33a and 33b can also be used in combination with a guide 7 comprising a closed section profile 9, such as for example that illustrated in Figures 17 and 18, in this case providing for third abutments 17a, 17b on the external surface of the side walls 11a and 11b (defined for example by cavities present in said side walls 11a, 11b), shaped and positioned in such a way as to engage respectively with the second abutments 34a and 34b of the second external appendages 33a and 33b, to

prevent the separation of the slider 13 from the guide 7 in a direction perpendicular to the bottom 10 of the guide 7 itself.

[0046] Other configurations for the coupling means are however possible.

[0047] As anticipated, in advantageous embodiments, such as for example those illustrated in the accompanying figures 1-3, 6-10, 15-22, 23-24, 25-26, 29, 31-32, the first locking means 14 to a slat 3 comprise a base 15, preferably flat, defined in a region of the slider 13 facing, in use, on the opposite side to the guide 7, configured for the positioning superiorly and/or laterally to the same of at least two slats 3 in a laying condition, illustrated for example in figures 1-3, 10, 24, 32, in which said slats 3 are flanked and spaced apart from each other.

[0048] In advantageous embodiments, such as those illustrated in figures 1-3, 10, 24, 32, in which the slats have, on two side walls 5 thereof, parallel to each other, the longitudinal grooves 6, the longitudinal grooves 6 of two slats 3 positioned in the aforesaid laying condition are facing each other.

[0049] In advantageous embodiments, such as for example those illustrated in figures 1-3, 6-10, 15-20, 25-26, 29, 31-32, the first locking means 14 also advantageously comprise support means of at least one of two slats 3 positioned superiorly and/or laterally to the base 15 in the laying condition, which are adapted to prevent or limit the bending of said at least one slat 3 towards the base 15.

[0050] Advantageously, said support means comprise at least one bridge structure 22, defined by two legs 23, protruding from the base 15 and spaced apart from each other; said legs 23 are advantageously joined at the top by a crosspiece 24 defining, on the opposite side to the base 15, an abutting surface 24a adapted to be positioned between the base 15 and a portion 26 of one of two slats 3 positioned superiorly and/or laterally to the base 15 in the laying condition, to prevent or limit the deformation of said portion 26 towards the base 15.

[0051] In advantageous embodiments, such as for example those illustrated in the accompanying figures 1-3, 10, 32, in which the slats 3 have the longitudinal grooves 6, the bridge structure 22 can be advantageously configured to be positioned with the abutting surface 24a of its crosspiece 24 inside a longitudinal groove 6 of a slat 3 positioned superiorly and/or laterally to the base 15 in a laying condition.

[0052] Advantageously, such as in the advantageous embodiment examples illustrated in the accompanying figures 1-3, 10, 32, the abutting surface 24a of the bridge structure 22 is configured to abut, when a slat 3 is positioned superiorly or laterally to the base 15 in the laying condition, with the overlying internal surface of the longitudinal groove 6 of said slat 3 into which it is inserted, in order to counteract the deformation of the respective slat 3 towards the base 15 if, for example, a body positioned above the slat 3 exerts a thrust or pressure towards the base 15.

[0053] In a further advantageous embodiment, not illustrated, the abutting surface 24a of the bridge structure 22 is configured to be positioned, when a slat 3 is positioned superiorly or laterally to the base 15 in the laying condition, at a certain distance (for example from 0.5 to 1 mm) from the overlying internal surface of the longitudinal groove 6 of said slat 3 into which it is inserted, so as to be able to come into contact with it only in case of deformation of the same towards the base 15, thus limiting the deformation thereof.

[0054] Preferably, the abutting surface 24a is substantially flat, parallel and spaced from the base 15.

[0055] In advantageous embodiments, such as for example those illustrated in Figures 1-3, 6-10, 15-20, 29, 31-32, the first locking means 14 comprise a rotatable body 16 which is positioned or positionable, when two slats 3 are positioned superiorly and/or laterally to the base 15 in the laying condition, at least partially in the interspace 18 between said two slats 3.

[0056] Advantageously, the rotatable body 16 can be rotated with respect to the base 15 between a retaining position, in which it is locked to the base 15 and to two slats 3 when they are positioned superiorly and/or laterally to the base 15 in the laying condition, and a release position in which, when two slats 3 are positioned superiorly and/or laterally to the base 15 in the laying condition, the rotatable body 16 is not locked to the slats 3, allowing the separation thereof from the rotatable body 16, and therefore from the base 15.

[0057] Advantageously, the rotatable body 16 comprises first means for locking the reciprocal rotation between the rotatable body 16 itself and one end of a tool, not illustrated, such as for example a screwdriver, an Allen wrench, etc., which has an elongated shape such that it can be inserted with one end thereof into the interspace 18 between two slats 3 positioned superiorly and/or laterally to a base 15 in the laying condition.

[0058] In advantageous embodiments, the first means for locking the reciprocal rotation between the rotatable body 16 and the end of the tool are constituted by or comprise a groove 19 obtained in the rotatable body 16, suitable for the insertion of the end of the tool, and shaped in such a way that this end cannot rotate in the groove 19 once inserted therein, so that a rotation of the end of the tool involves the integral rotation of the rotatable body 16. Advantageously, the groove 19 is counter-shaped to the end of the tool.

[0059] In an advantageous embodiment, such as for example that illustrated in Figures 1-3, 6-10, 15-20, 29, 31-32, the first locking means 14 comprise stopping means, not illustrated, adapted to delimit the rotation of the rotatable body 16 with respect to the base 15 between the retaining position and the release position.

[0060] Advantageously, such as for example in the embodiments illustrated in figures 1-3, 6-10, 15-20, 29, 31-32, the rotatable body 16 is obtained as one piece (i.e. as a single body, obtained for example by moulding a plastic or metal material) with the base 15, and is ro-

tatable with respect thereto upon breakage or deformation of joining means between said base 15 and the rotatable body 16, which are obtained as one piece with them.

[0061] Such joining means are for example constituted by or comprise one or more spokes 25, which join, for example, the rotating body 6 with the bridge structures 22 and/or the crosspiece 24.

[0062] In advantageous embodiments, such as for example those illustrated in figures 1-3, 6-10, 15-20, 29, 31-32, the rotatable body 16 is obtained as one piece with the base 15 positioned in its release position, and is rotatable in the retaining position upon breakage or deformation of the aforesaid joining means.

[0063] In a further advantageous embodiment variant, not illustrated, the rotatable body 16 is obtained as one piece with the base 15 positioned in the retaining position, and is rotatable in the release position upon breakage or deformation of the joining means.

[0064] Advantageously, by inserting the aforesaid tool into the groove 19 it is possible to rotate the rotatable body 16 so as to break or deform the joining means, and allow the rotation of the rotatable body 16.

[0065] Advantageously, the system 1 comprises retaining means of the rotatable body 16 configured to prevent the separation thereof from the base 15 when the rotatable body 16 is in the retaining position.

[0066] In advantageous embodiments, such as for example those illustrated in Figures 1-3, 6-10, 15-20, 29, 31-32, the retaining means of the rotatable body 16 are obtained as one piece and/or at least partially coincide with the support means.

[0067] In advantageous embodiments, such as for example those illustrated in figures 1-3, 6-10, 15-20, 29, 31-32, the retaining means of the rotatable body 16 comprise at least one bridge structure 22, and the rotatable body 16 is configured to be arranged, in the retaining position, at least partially between the crosspiece 24 of the bridge structure 22 and the base 15, so that said crosspiece 24 limits the displacement of the rotatable body 16 in the direction going from the base 15 to the crosspiece 24.

[0068] In advantageous embodiments the system 1 comprises further means (not illustrated) for retaining the rotatable body 16 which are configured to prevent the separation thereof from the base 15 even when the rotatable body 16 is in the release position.

[0069] In other advantageous embodiments, such as for example those illustrated in figures 21-24, the first locking means 14 comprise one or more hooks 27, shaped and positioned in such a way to be able to be inserted respectively in the mutually facing longitudinal grooves 6 of two slats 3 when the latter are positioned superiorly and/or laterally to the base 15 in the laying condition, to lock said two slats 3 to the base 15.

[0070] In an advantageous embodiment, such as for example that illustrated in figures 21 and 22, the hooks 27 protrude from the base 15.

[0071] In advantageous embodiments, such as for example those illustrated in figures 21-22 and 23-24, the hooks 27 have a substantially inverted "L" shape, with the first branch of the L substantially perpendicular, in use, to the support surface 8 of the guide 7, and the second branch of the L advantageously parallel, in use, to said support surface 8, and arranged in such a way to be able to be inserted into the longitudinal groove 6 of a slat 3 positioned superiorly and/or laterally to the base 15 in the laying condition, to lock said slat 3 to the base 15.

[0072] In an advantageous embodiment, such as for example that illustrated in figures 21 and 22, said hooks 27 are a plurality, and all have the same shape and the same dimensions.

[0073] In an advantageous embodiment, such as for example that illustrated in figures 21 and 22, said hooks 27 are a plurality, and are arranged aligned according to two parallel rows, in which the hooks 27 of one row are arranged rotated by 180 degrees with respect to the hooks 27 of the other row, so that the hooks 27 of either row can be inserted, respectively, into the longitudinal grooves 6, mutually facing, of two slats 3 when the latter are positioned superiorly and/or laterally to the base 15 in the laying condition, to lock said two slats 3 to the base 15.

[0074] In other advantageous embodiments, the first locking means 14 comprise hooks 27 of different shapes and/or dimensions.

[0075] In advantageous embodiments, such as for example that illustrated in figures 23-24, the base 15 is defined by two or more further hooks on which two slats 3 can be respectively rested in the laying condition.

[0076] In other advantageous embodiments, such as for example that illustrated in figures 25 and 26, the first locking means 14 comprise a block 28, protruding from the base 15 and shaped and positioned in such a way to be able to be inserted respectively in the mutually facing longitudinal grooves 6 of two slats 3 when the latter are positioned superiorly and/or laterally to the base 15 in the laying condition, to lock said two slats 3 to the base 15.

[0077] According to the invention, the system 1 comprises spring locking means 35 of the one or more sliders 13, configured to be lockable by friction in a desired longitudinal position with respect to the guide 7, so as to prevent the sliding of said one or more sliders 13 longitudinally to the guide 7 in at least one direction.

[0078] In advantageous embodiments, such as for example those illustrated in figures 1-3, 8-14, 27-35, the spring locking means 35 are distinct from the one or more sliders 13; in other advantageous embodiments, such as for example that illustrated in figures 23-24, the spring locking means 35 are integrated in one or more sliders 13.

[0079] In advantageous embodiments, such as for example those illustrated in the accompanying figures, the spring locking means 35 are configured to be lockable by friction in a desired longitudinal position with respect to the guide 7 by the action of an elastic force which acts on them following an elastic deformation thereof.

[0080] In advantageous embodiments, such as for example those illustrated in the accompanying figures 1-3, 8-14, 23-24, 27-29, 30-32, 33-35, the spring locking means 35 are configured to be released from the guide 7 by means of an elastic deformation thereof obtained by applying a predefined pressure thereto, and to be locked by friction in a desired longitudinal position with respect to the guide 7, by returning elastically to a non-deformed condition thereof when said predefined pressure ceases.

[0081] In advantageous embodiments, such as for example those illustrated in the accompanying figures 1-3, 8-14, 23-24, 27-29, 30-32, 33-35, the spring locking means 35 comprise a clip 36 which has two arms 37a, 37b connected to each other at a first end 38a, 38b thereof and separated from each other at a second end 39a, 39b thereof; advantageously, said second ends 39a, 39b can be elastically approached or distanced from each other.

[0082] Advantageously, the clip 36 may be made of one of the following materials, or of a combination of one or more thereof:

- PA (polyamide), possibly filled with glass fibres and/or calcium carbonate and/or other minerals and/or wood dust;
- PE (polyethylene), possibly filled with glass fibres and/or calcium carbonate and/or other minerals and/or wood dust;
- PP (polypropylene), possibly filled with glass fibres and/or calcium carbonate and/or other minerals and/or wood dust;
- POM (polyoxymethylene), possibly filled with glass fibres and/or calcium carbonate and/or other minerals and/or wood dust;
- Steel;
- Spring steel.

[0083] In an advantageous embodiment, the clip 36 may for example be made by bending a metal sheet, for example in spring steel, or by extruding an open section metal tubular element, or by moulding a plastic material having a sufficient coefficient of friction.

[0084] In advantageous embodiments, such as for example those illustrated in the accompanying figures 1-3, 8-14, 23-24, 27-29, 30-32, the clip 36 can be released from the guide 7 by elastically approaching the second ends 39a, 39b to each other by applying a predefined pressure to them (for example by a user), and is lockable by friction in a desired longitudinal position with respect to the guide 7 by effect of the reciprocal elastic distancing of the second ends 39a, 39b, when said predefined pressure ceases.

[0085] In other advantageous embodiments, such as for example that illustrated in figures 33-35, the clip 36 can be released from the guide 7 by elastically moving the second ends 39a, 39b away from each other by applying a predefined pressure thereto (for example by a user), and is lockable by friction in a desired longitudinal position with respect to the guide 7 by effect of the reciprocal elastic approach of the second ends 39a, 39b, when said predefined pressure ceases.

[0086] In the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded towards each other, the clip 36 can advantageously present, such as for example in the advantageous embodiment illustrated in figures 1-3 and 8-14, two arms 37a and 37b inclined to each other to define, in a side view, a substantially "V" shape, which are preferably joined to their first ends 38a, 38b at the vertex of said "V", by one or more crosspieces 40.

[0087] Preferably such one or more crosspieces 40 have an arcuate profile.

[0088] Advantageously, the shape and the material in which the one or more crosspieces 40 are made, and preferably also the arms 37a and 37b (which may or may not be made as a single piece with such one or more crosspieces 40), are such as to allow the second ends 39a and 39b of the arms 37a and 37b to be elastically approached to each other by applying a predefined pressure thereto.

[0089] In an advantageous embodiment, such as for example that illustrated in figures 1-3 and 8-14, the clip 36 is advantageously associable with the guide 7 by arranging it in such a way that the second ends 39a and 39 of the arms 37a and 37b thereof can be elastically approached to each other by means of a movement of said second ends 39a, 39b in a longitudinal direction to the guide 7; in such an advantageous embodiment, the clip 36 is advantageously partially insertable between the side walls 11a, 11b of the guide 7, with its side ends respectively in engagement with the free ends 12a, 12b thereof.

[0090] Advantageously, like in the advantageous embodiment illustrated in figures 1-3 and 8-14, the arms 36a, 36b comprise, at their side ends, engaged, in use, with the free ends 12a, 12b, respective first notches 41a, 41b, shaped and positioned in such a way to house inside them respectively one of the free ends 12a, 12b when the clip 36 is inserted between said free ends 12a and 12b.

[0091] Advantageously, the shape of the first notches 41a, 41b and their position in the respective arms 37a, 37b are such that if the second ends 39a, 39b of said arms 37a, 37b are far away from each other by less than a certain distance (for example less than 2 centimetres) the free ends 12a, 12b inserted in the first notches 41a, 41b can freely slide therein (thus allowing the clip 36 to freely slide longitudinally to the guide 7), while if the second ends 39a, 39b of said arms 37a, 37b are far away from each other by more than a certain distance (for example more than 2 centimetres), the perimeter edges of

the first notches 41a, 41b press against the respective free ends 12a, 12b being locked to them by friction.

[0092] Advantageously, in such an advantageous embodiment, by exerting a predefined pressure on the second ends 39a and 39b of the arms 37a, 37b in the direction of their reciprocal approach, said second ends 39a and 39b elastically approach each other up to a certain distance (this condition is illustrated for example in figure 12 by means of dashed lines, which represent the clip 36 in a deformed condition) which allows the clip 36 to translate longitudinally with respect to the guide 7; the clip 36 can then be brought close to a slider 13 associated with the guide 7.

[0093] In this condition, by interrupting the pressure on the second ends 39a, 39b of the arms 37a, 37b, said second ends 39a, 39b move elastically away from each other, bringing the perimeter edges of the first notches 41a, 41b of the respective arms 37a, 37b into contact with the free ends 12a, 12b of the guide 7, thus being locked to them by friction; in this condition, therefore, the slider 13 can no longer move longitudinally to the guide 7 towards the clip 36.

[0094] By arranging in the same way a further clip 36 close to said slider 13, on the opposite side to the first clip 36, it is therefore possible to prevent the sliding of the slider 13 longitudinally to the guide 7 in both directions.

[0095] By exerting again a predetermined pressure on the second ends 39a, 39b of the arms 37a, 37b of said clips 36, it is possible to elastically approach said second ends 39a, 39b, allowing, as explained above, the movement of said clips 36, and consequently also of the slider 13, longitudinally to the guide 7.

[0096] In advantageous embodiments, such as for example those illustrated in Figures 1-3 and 8-14, the clip 36 comprises a protrusion 42, which extends from the second end (for example 39a) of one of the two arms (for example the 37a) towards the other arm (for example the 37b), and is positioned and shaped in such a way as to climb over the second end (for example the 39b) of the latter, so that said protrusion 42 comes into contact with a possible slider 13 associated with the guide 7 from the side of said other arm (for example the 37b), before the latter; in this way a possible force pushing said slider 13 towards the clip 36 is first transferred onto the protrusion 42, and from this onto the arm (for example the 37a) from which it protrudes, moving the second end (for example the 39a) of said arm away from the second end (for example the 39b) of the other arm (for example the 37b) and thus increasing the distance between said second ends 39a, 39b, with consequent increase in the force pushing the edges of the first notches 41a, 41b of said arms 37a, 37b against the respective free ends 12a, 12b, which increases the friction between said components and therefore the stability of the fastening of said clip 36 to the guide 7.

[0097] In a further advantageous embodiment, such as for example that illustrated in figures 23-24, a clip 36, preferably, but not necessarily, analogous to that described with reference to figures 1-3 and 8-14, and more preferably devoid of the protrusion 42, can be integrated in a slider 13.

[0098] In this case, the means for coupling the slider 13 to the guide 7 comprise or consist of the clip 36.

[0099] In the advantageous embodiment of figures 23-24, the first locking means 14 comprise one or more hooks 27, protruding respectively from the two arms 37a and 37b of the clip 36 and shaped and positioned in such a way as to be able to be inserted respectively in the mutually facing longitudinal grooves 6 of two slats 3 when the latter are positioned superiorly and/or laterally to the base 15 in the laying condition, to lock said two slats 3 to the base 15.

[0100] Advantageously, in this advantageous embodiment, the hooks 27 have a substantially inverted "L" shape, with the first branch of the L fastened to one of the two arms 37a, 37b, and the second branch of the L advantageously parallel, in use, to the support surface 8 of the guide 7, and arranged in such a way to be able to be inserted into the longitudinal groove 6 of a slat 3 positioned laterally to the clip 36.

[0101] In the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded towards each other, the clip 36, in a further advantageous embodiment thereof (such as for example that illustrated in figures 27-29), can be shaped in such a way to be able to be associated with the guide 7 by arranging it in such a way that the second ends 39a and 39b of the arms 37a and 37b thereof can be elastically approached to each other by means of a movement of said second ends 39a, 39b in a direction perpendicular to the longitudinal axis to the guide 7.

[0102] In the advantageous embodiment illustrated in figures 27-29, the first ends 38a, 38b of the arms 37a, 37b are joined by one or more crosspieces 40, preferably flat.

[0103] Advantageously, in this case, the two arms 37a and 37b have, on their external surfaces, two first recesses 43a, 43b, shaped and positioned in such a way to house inside them respectively one of the free ends 12a, 12b when the clip 36 is inserted between said free ends 12a and 12b. Preferably, the first recesses 43a and 43b are obtained by suitably folding the arms 37a and 37b.

[0104] Advantageously, the clip 36 comprises means adapted to facilitate the compression of the two second ends 39a, 39b in the direction of their mutual approach; in the advantageous embodiment illustrated in figures 27-29, said means advantageously comprise two first fins 44a, 44b, preferably shaped as "inverted L", which protrude, when the clip 36 is fastened to a guide, laterally and respectively from opposite parts to the side walls 11a, 11b thereof, so as to facilitate the compression of

the two second ends 39a, 39b in the direction of their mutual approach. Preferably, the first fins 44a and 44b are obtained by means of a special folding of the respective arms 37a and 37b.

[0105] Advantageously, in the advantageous embodiment illustrated in figures 27-29, by exerting a predefined pressure on the second ends 39a and 39b of the arms 37a, 37b in the direction of their reciprocal approach, said second ends 39a and 39b elastically approach to each other (such condition is illustrated for example in figure 28 by means of dashed lines, which represent the clip 36 in a deformed condition) until the first recesses 43a and 43b are positioned in the region between the free ends 12a, 12b, without coming into contact with them, thus allowing the clip 36 to be able to slide longitudinally to the guide 7; in such condition the clip 36 can then be brought close to a slider 13 associated with the guide 7.

[0106] By interrupting the pressure on the second ends 39a, 39b of the arms 37a, 37b, said second ends 39a, 39b move elastically away from each other, bringing the internal walls of the first recesses 43a, 43b of the respective arms 37a, 37b into contact with the free ends 12a, 12b of the guide 7, and thus being locked to them by friction; in this condition, therefore, the slider 13 can no longer move longitudinally to the guide 7 towards the clip 36. By thus arranging two of such clips 36 close to a slider 13, on opposite parts thereof, it is therefore possible to prevent the sliding of the slider 13 longitudinally to the guide 7 in both directions.

[0107] By exerting a predetermined pressure on the second ends 39a, 39b of the arms 37a, 37b of said clips 36, it is possible to elastically approach said second ends 39a, 39b, allowing again, as explained above, the movement of said clips 36, and consequently also of the slider 13, longitudinally to the guide 7.

[0108] In the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded towards each other, the clip 36, in a further advantageous embodiment thereof (such as for example that illustrated in figures 30-32), can be shaped in such a way as to be lockable by friction in a desired longitudinal position with respect to the guide 7 by effect of an elastic force generated by elastically approaching the second ends 39a, 39b of its arms 37a, 37b to each other.

[0109] Even in the advantageous embodiment illustrated in figures 30-32, the clip 36 is advantageously configured in such a way to be able to be associated with the guide 7 by arranging it in such a way that the second ends 39a and 39b of its arms 37a and 37b can be elastically approached to each other by means of a movement of said second ends 39a, 39b in a direction perpendicular to the longitudinal axis of the guide 7.

[0110] Advantageously, in the advantageous embodiment illustrated in figures 30-32, the clip 36 has an arm 37a engageable with the free ends 12a, 12b of the guide 7, and the other arm 37b engageable with a slider 13.

[0111] Advantageously, the arm 37a engageable with the free ends 12a, 12b of the guide 7, has, at its side ends, second notches 45a, 45b, shaped and positioned in such a way to house inside them respectively one of the free ends 12a, 12b when the arm 37a is positioned between said free ends 12a and 12b.

[0112] Advantageously, in the advantageous embodiment of figures 30-32, the second end 39b of the arm 37b is shaped in such a way to be positionable under a slider 13 locked to the guide 7, elastically bending the second end 39b towards the bottom 10 of the guide 7, and therefore in the direction of its approach to the second end 39a; by elastically bending the second end 39b towards the bottom 10 of the guide 7, it is obtained that the second end 39a of the other arm 37a is elastically pushed in the opposite direction to the second end 39a, and therefore against the free ends 12a, 12b of the side walls 11a, 11b of the guide 7, being locked to them by friction, and thus preventing the slider 13 from being displaced longitudinally towards the clip 36.

[0113] By thus arranging two of such clips 36 close to a slider 13, on opposite parts thereof, it is therefore possible to prevent the sliding of the slider 13 longitudinally to the guide 7 in both directions.

[0114] Advantageously, by exerting a pressure on the arm 37a in the direction of its approach to the arm 37b, the friction between the arm 37a and the free ends 12a, 12b is reduced, allowing the clip 36 to slide longitudinally to the guide 7.

[0115] Advantageously, the second end 39b of the arm 37b engageable with a slider 13 has a reduced side extension with respect to the rest of the arm 37b, and is also preferably inclined with respect to the rest of the arm 37b, in a direction opposite to the other arm 37a; advantageously said second end 39b is, in use, approximately parallel to the bottom 10 of the guide 7.

[0116] In the advantageous embodiment in which the profile 9 has a closed section, preferably rectangular or square, in which the base 8 and the side walls 11a and 11b constitute three sides contiguous of a rectangle or square, and in the advantageous embodiment in which the guide 7 comprises an open section profile 9 with the two side walls 11a and 11b being parallel and spaced from each other, and substantially perpendicular to the bottom 10, so as to define for the profile 9 a substantially "U" section, with the free ends 12a and 12b of the two side walls 11a and 11b folded in such a way as to be divergent from each other, the clip 36 can be advantageously shaped in such a way to be able to be associated astride a guide 7, with the two arms 37a and 37b of such clip 36 which laterally embrace the side walls 11a and 11b of said guide 7, respectively, being locked by friction to the same.

[0117] In an advantageous embodiment, illustrated for example in figures 33-35, the arms 37a, 37b have, on

their internal surface, facing, in use, respectively towards the side walls 11a, 11b of the guide 7, two second recesses 46a, 46b, shaped and positioned in such a way to house inside them respectively a protuberance 47a, 47b protruding respectively from the side walls 11a, 11b of the guide 7 (for example in the case where the guide 7 has a closed section), or one of the free ends 12a, 12b of the guide 7 (in the case where they protrude externally to the guide 7 and diverge from each other) when the clip 36 is positioned astride the guide 7 itself.

[0118] Preferably, the second recesses 46a and 46b are obtained by suitably folding the arms 37a and 37b.

[0119] Advantageously, the protuberances 47a, 47b can be obtained by means of a special fold, obtained, for example during extrusion, in the side walls 11a, 11b of the guide 7.

[0120] Advantageously, in the embodiment illustrated in figures 33-35, the clip 36 comprises means adapted to facilitate the elastic distancing of the two second ends 39a, 39b in the direction of their mutual distancing.

[0121] In the advantageous embodiment illustrated in figures 33-35, said means advantageously comprise two second fins 48a, 48b, protruding from the second ends 39a, 39b and folded, externally to the respective arms 37a, 37b, approximately parallel thereto; advantageously, said second fins 48a, 48b extend up to beyond the first ends 38a, 38b of the arms 37a, 37b, so as to facilitate their gripping in the condition in which the clip 36 is associated with a guide 7.

[0122] Advantageously, but not necessarily, the free ends of the second fins 48a, 48b are folded, towards the outside of said second fins 48a, 48b, until they are approximately parallel to the respective arms 37a, 37b.

[0123] In the advantageous embodiment illustrated in figures 33-35, the first ends 38a, 38b of the arms 37a, 37b are joined by one or more crosspieces 40, preferably flat.

[0124] Advantageously, with reference to the advantageous embodiment illustrated in figures 33-35, with the clip 36 positioned on a guide 7, by exerting a predefined pressure on the free ends of the second fins 48a, 48b in the direction of their mutual approach, due to the particular shape of said second fins 48a, 48b, and of the arms 37a, 37b from which they protrude, the second ends 39a, 39b of said arms 37a, 37b move elastically away from each other (this condition is illustrated for example in figure 34 by means of dashed lines, which represent the clip 36 in a deformed condition), until the second recesses 46a, 46b move away from the respective protuberances 47a, 47b, allowing the sliding of the clip 36 longitudinally to the guide 7.

[0125] By interrupting the pressure, the two second ends 39a, 39b return elastically towards each other, respectively surrounding the protuberances 47a, 47b and pressing against them, thus being locked to them by friction; in this condition the clip 36 cannot move with respect to the guide 7.

[0126] By arranging one of said clips 36 close to a slider 13, it is therefore possible to prevent the sliding of said slider 13 longitudinally to the guide towards the clips 36; by arranging two of such clips 36 close to a slider 13, on opposite parts thereto, it is therefore possible to prevent the sliding of said slider 13 longitudinally to the guide 7 in both directions.

[0127] In a manner analogous to what is illustrated in figures 33-35, a clip with a shape substantially analogous to that illustrated in such figures, but with second recesses 46a, 46b shaped and positioned in such a way to be able to house inside them the free ends 12a, 12b of the side walls 11a, 11b of the guide 7, with the possibility of coming into contact with them to be locked thereto by friction, can be advantageously used in combination with the advantageous embodiment of guide 7 illustrated in figures 19-20.

[0128] In advantageous embodiments, the system 1 according to the invention comprises end of stroke means 49 associated or associable with the guide 7 to prevent the extraction, in the longitudinal direction, of one or more sliders 13 from an end of said guide 7.

[0129] In advantageous embodiments, such as for example those illustrated in figures 36-39, the end of stroke means 49 comprise a box-like body 51 that has a closing wall 52, positionable close to one end of a guide 7 to close it, from which fastening means 53 to the guide 7 protrude; advantageously said fastening means 53 comprise one or more little walls 54a, 54b, 54c, 54d, insertable with pressure, or between which the ends of the bottom 10 and of the side walls 11a, 11b of the guide 7 to which said end of stroke means 49 are associated, can be inserted with pressure.

[0130] In advantageous embodiments, such as for example that illustrated in figures 38 and 39, said end of stroke means 49 comprise second locking means 50 to a slat 3; advantageously, said second locking means 50 comprise a side appendage 55 shaped and positioned in such a way to be able to be inserted into a longitudinal groove of a slat 3 when it is positioned superiorly and/or laterally to the end of stroke means 49.

[0131] In advantageous embodiments, such as for example those illustrated in figures 38-39, the side appendage 55 has an inclined shape, so as to facilitate its snap-fit entry into the groove 6 of a slat 3.

[0132] The operation of the system 1 according to the invention is illustrated below.

[0133] A plurality of guides 7 can be fastened to the surface 2 to be covered, arranging said guides 7 parallel to each other, and distanced at a desired mutual distance; said guides 7 can be fastened directly to the surface 2, for example by means of screws, rivets, glue, mortar, etc., or they can be laid on spacers, not illustrated, provided between said guides 7 and the surface 2.

[0134] At one end of said guides 7, preferably of all the guides 7, advantageously on a same side with respect to a same plane that crosses perpendicularly all the guides 7, respective end of stroke means 49, more preferably provided with locking means 50 to a slat 3, can be

associated.

[0135] Sliders 13 can then be associated with the guides 7, in a desired longitudinal position with respect thereto, and their position can then be longitudinally locked by means of the spring locking means 35, as described above; one or two slats 3 can be associated with each slider 13, thus locking the position thereof with respect to the guides 7.

[0136] The sliders 13 can be brought into the desired position longitudinally to the respective guide 7 before positioning the slats 3, and their position can then possibly be modified, and then again locked longitudinally by means of the spring locking means 35, depending, for example, on the specific dimensions of the slats.

[0137] Alternatively, one or more slats 3 can be positioned on the guides 7, and then one or more sliders 13 can be moved longitudinally to the respective guides 7 until engaging respectively with the various slats 3, after which the position of said one or more sliders 13 can be longitudinally locked by means of the spring locking means 35, thus locking the position of the slats 3 with respect to the guides 7.

[0138] After positioning the desired number of slats 3, and having completely covered the guides 7, further end of stroke means 49 can be applied to the free ends of the guides 7.

[0139] Depending on the specific embodiment of the first locking means 14, it will be possible to fasten the slats 3 permanently or removably.

[0140] The characteristics and advantages of the invention are clear from the description made.

[0141] In particular, thanks to the possibility of freely displacing the one or more sliders longitudinally to the respective guide, so as to adapt their position to the specific dimensions of the slats, and to lock them longitudinally in the desired position thanks to the spring locking means, it is possible to fasten slats of any dimension easily and quickly, and with relatively limited installation times.

[0142] In addition, the possibility of adapting to the specific dimensions of the slats with no need to have dedicated components for the different dimensions, allows to reduce the costs of production, storage and transport compared to the known solutions mentioned.

[0143] Finally, it is clear that the system object of the present invention is susceptible to numerous modifications and variations, all of which are within the scope of the invention; furthermore, all the details can be replaced by technically equivalent elements. In practice, the materials used, as well as their dimensions, can be of any type according to the technical requirements.

Claims

1. System (1) for fastening slats (3) to a surface (2), comprising:

- a guide (7), having an elongated shape, having a support surface (8) which can be positioned above said surface (2);
- one or more sliders (13), provided with first locking means (14) to a slat (3), slidingly associated or associable to said guide (7), on the opposite side to said support surface (8), in such a way to be able to take a desired longitudinal position with respect to said guide (7),

characterised by

comprising spring locking means (35) of said one or more sliders (13), configured to be lockable by friction in a desired longitudinal position with respect to said guide (7), so as to prevent the sliding of said one or more sliders (13) longitudinally to said guide (7) in at least one direction.

2. System (1), as in claim 1, wherein said spring locking means (35) are configured to be lockable by friction in a desired longitudinal position with respect to said guide (7), by the action of an elastic force which acts on them following their elastic deformation.

3. System (1), as in claim 1 or 2, wherein said spring locking means (35) are configured to be released from said guide (7) by means of an elastic deformation thereof obtained by applying a predefined pressure thereto, and to be locked by friction in a desired longitudinal position with respect to said guide (7), by returning elastically to a non-deformed condition thereof when said predefined pressure ceases.

4. System (1), as in one or more of the previous claims, wherein said spring locking means (35) comprise a clip (36) which has two arms (37a, 37b) connected to each other at a first end (38a, 38b) thereof, and separated from each other at a second end (39a, 39b) thereof, wherein said second ends (39a, 39b) can be elastically approached or distanced from each other.

5. System (1), as in claims 3 and 4, wherein said clip (36) can be released from said guide (7) by elastically approaching said second ends (39a, 39b) to each other by applying a predefined pressure to them, and is lockable by friction in a desired longitudinal position with respect to said guide (7) by effect of the reciprocal elastic distancing of said second ends (39a, 39b), when said predefined pressure ceases.

6. System (1), as in claims 3 and 4, wherein said clip (36) can be released from said guide (7) by elastically moving said second ends (39a, 39b) away from each other by applying a predefined pressure thereto, and is lockable by friction in a desired longitudinal position with respect to said guide (7) due to reciprocal elastic approach of said second ends (39a, 39b),

when said predefined pressure ceases.

7. System (1), as in one or more previous claims, wherein said spring locking means (35) are integrated in said one or more sliders (13).

8. System (1), as in one or more of previous claims, wherein said guide (7) comprises a profile (9) which has, in a cross section, a bottom (10), which comprises said support surface (8), from which two side walls (11a, 11b) protrude from the side opposite to said support surface (8), with which said spring locking means (35) are engaged or engageable.

9. System (1), as in one or more previous claims, comprising end of stroke means (49) associated or associable with said guide (7) to prevent the extraction, in the longitudinal direction, of said one or more sliders (13) from an end of said guide (7).

10. System, as in claim 9, wherein said end of stroke means (49) comprise second locking means (50) to one of said slats (3).

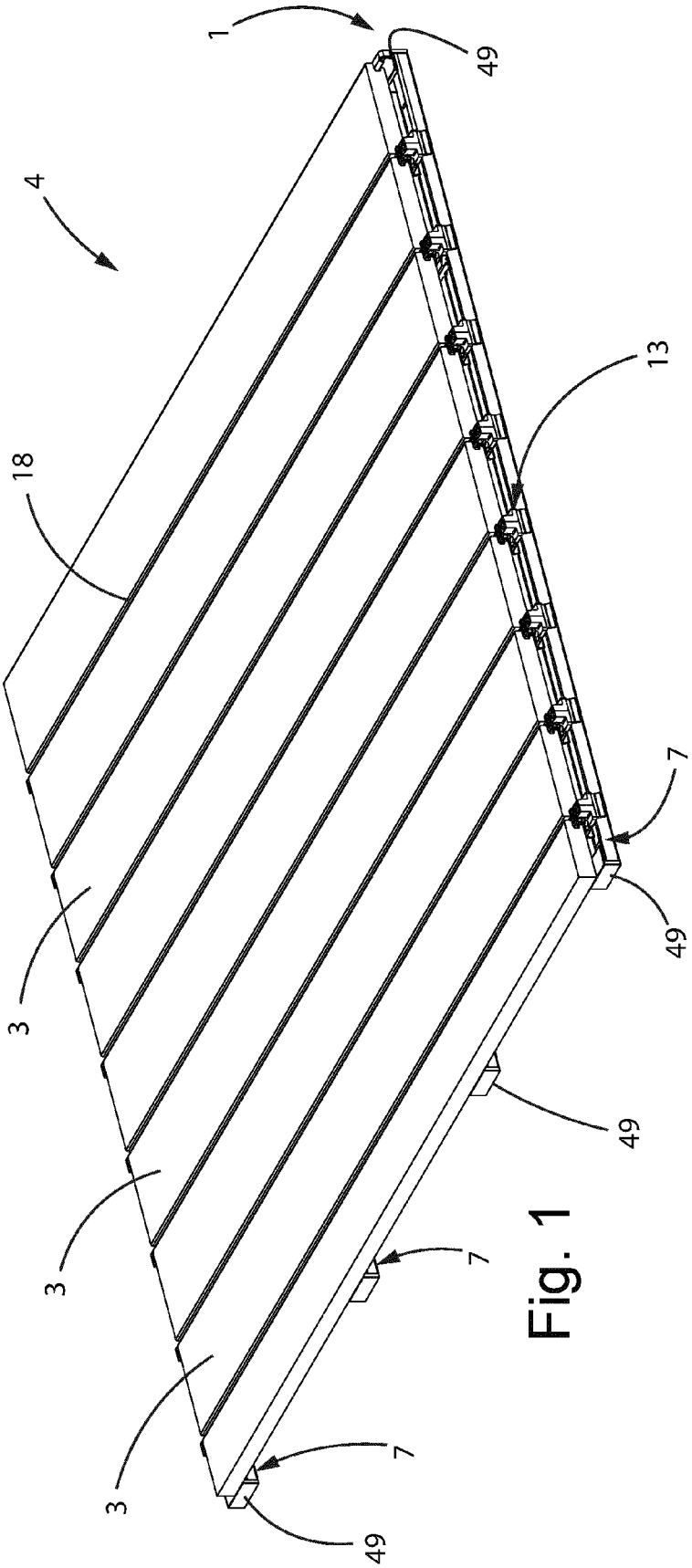


Fig. 1

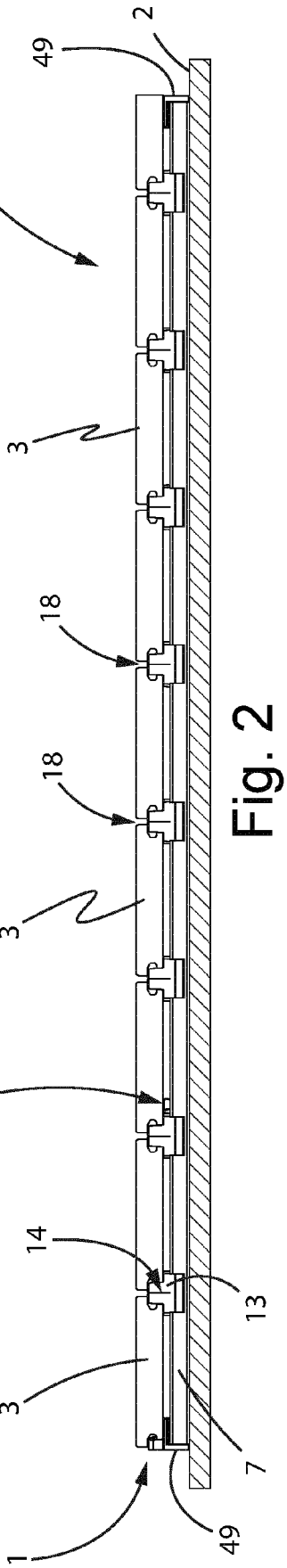
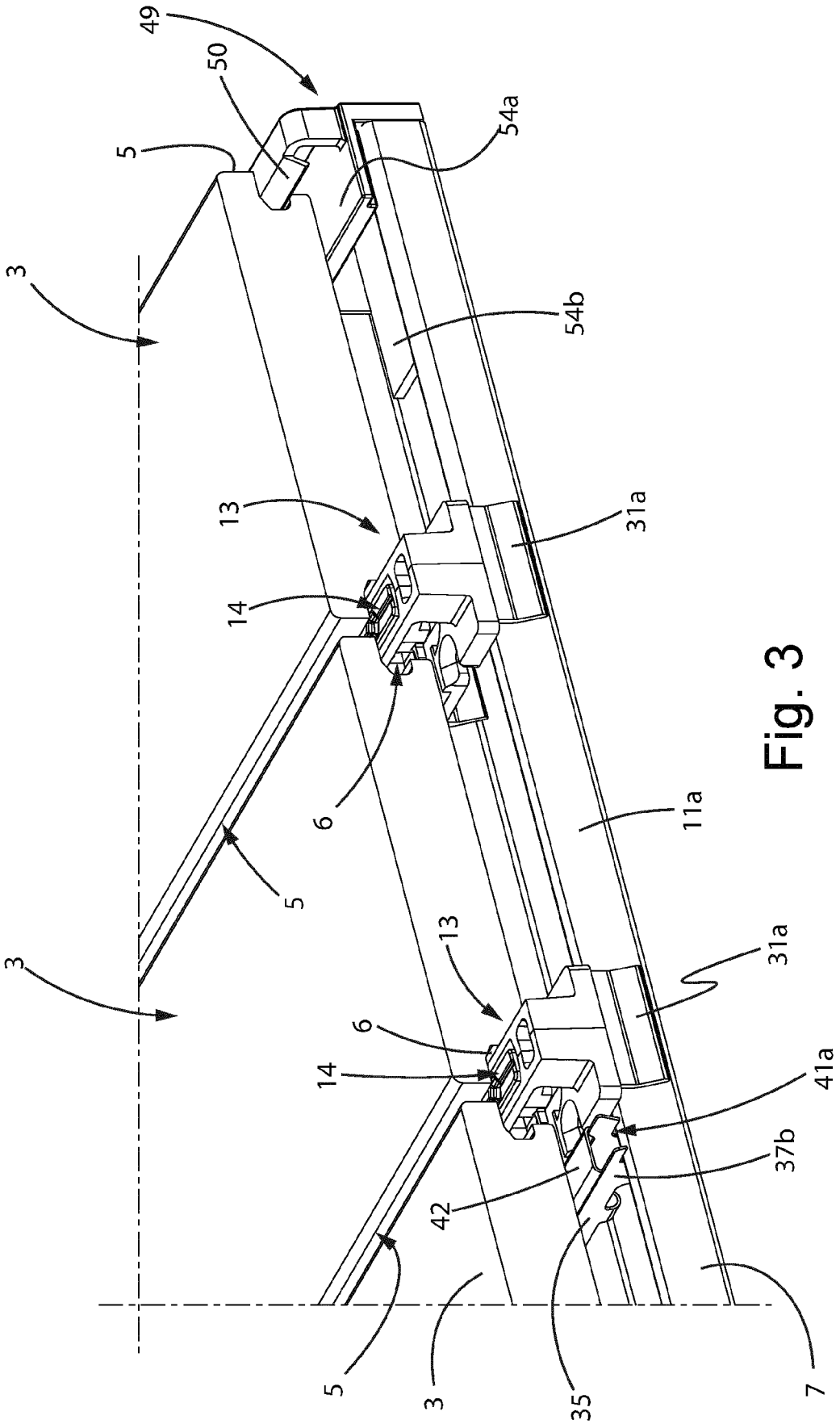


Fig. 2



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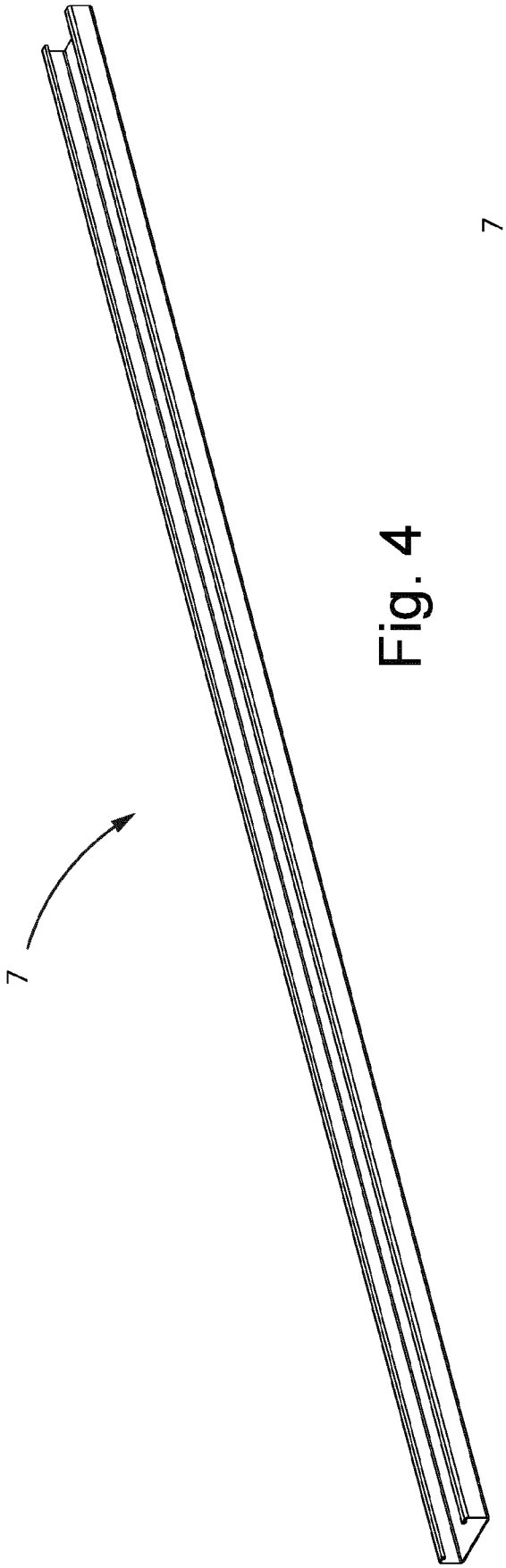

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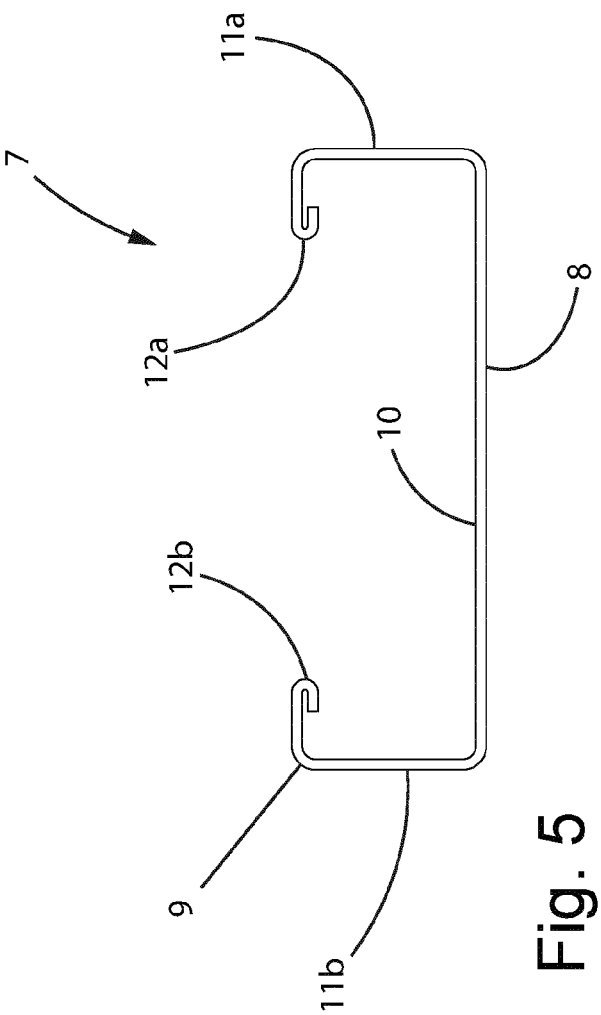

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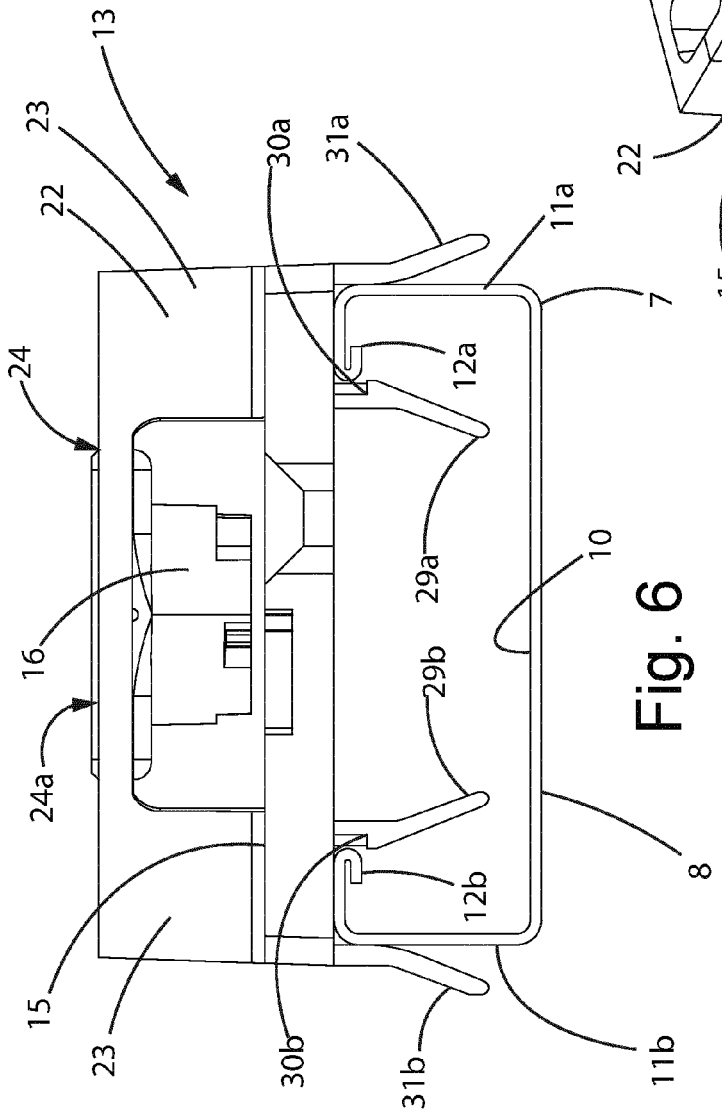
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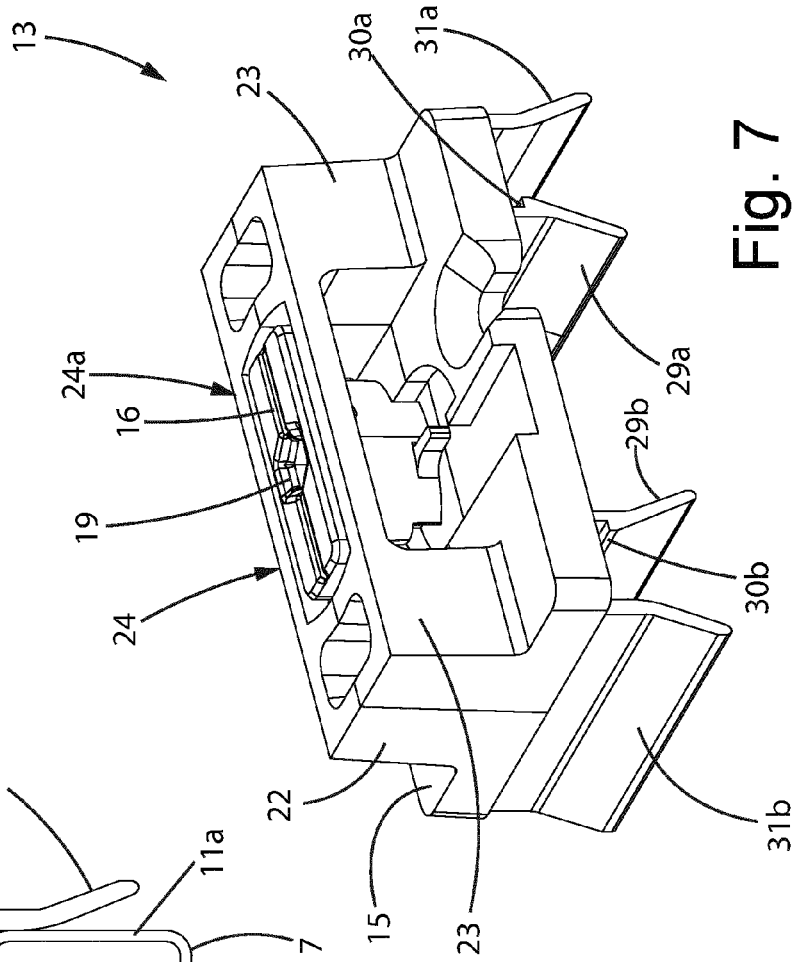
Fig. 6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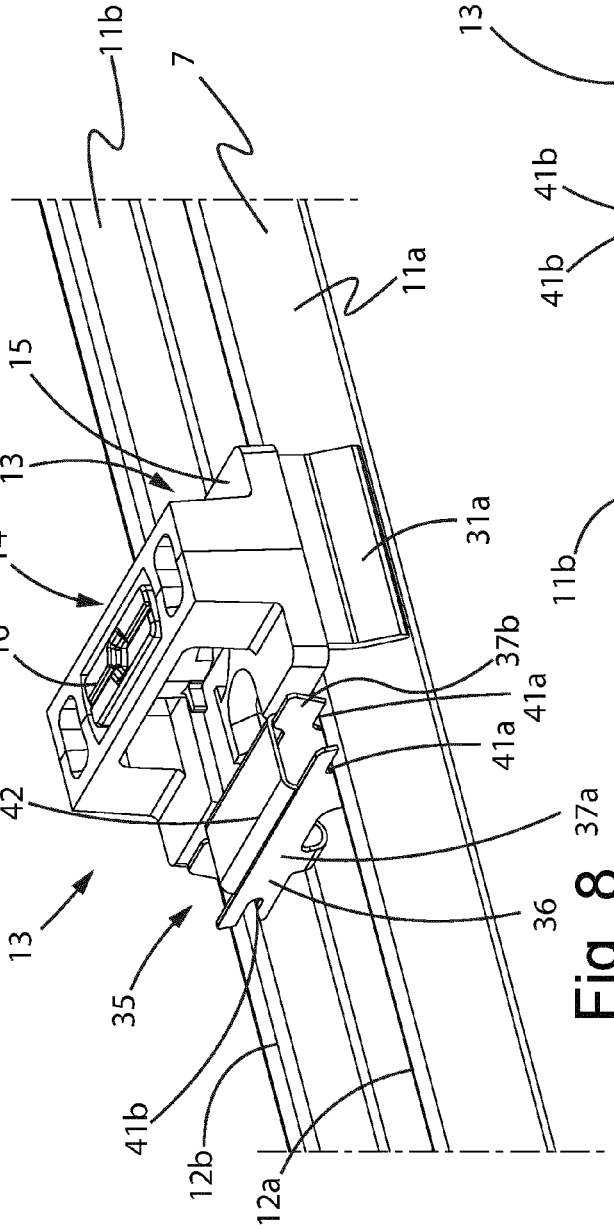
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Fig. 8

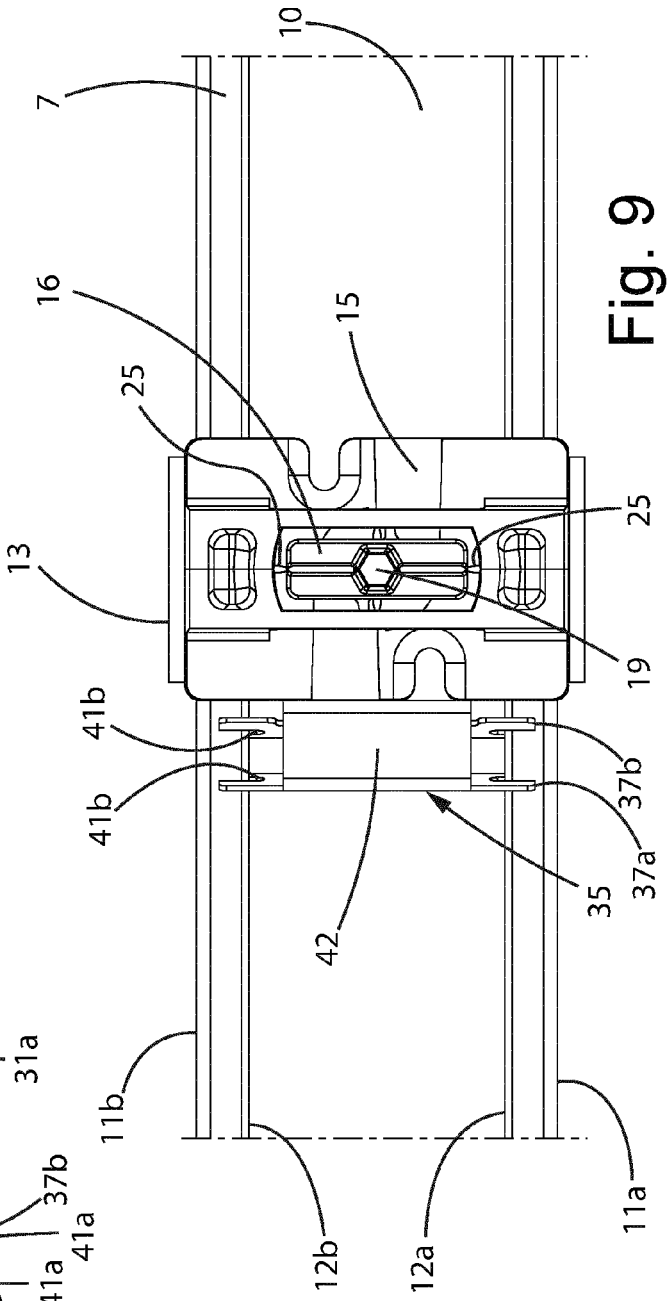
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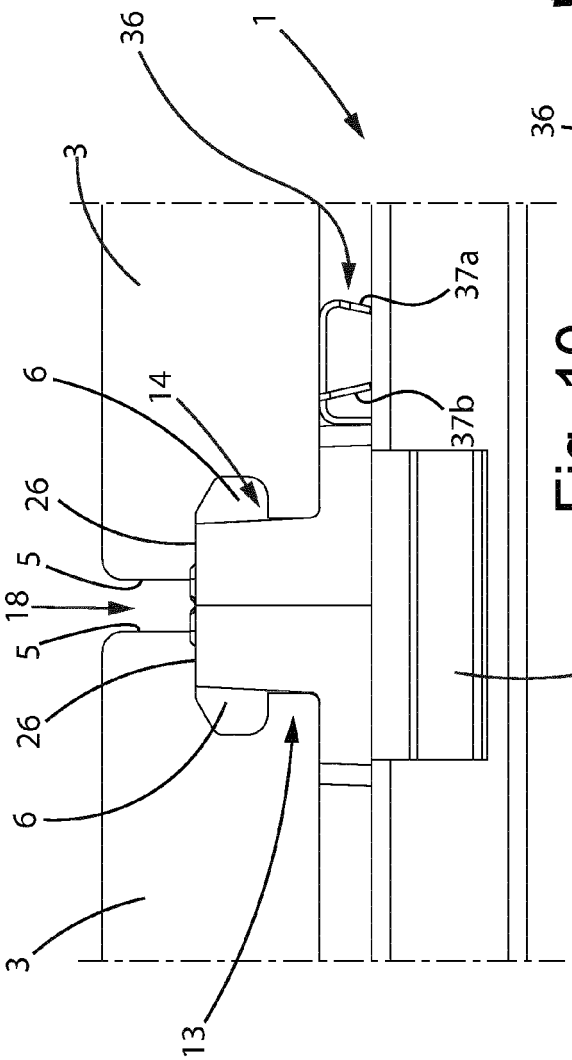
Fig. 9



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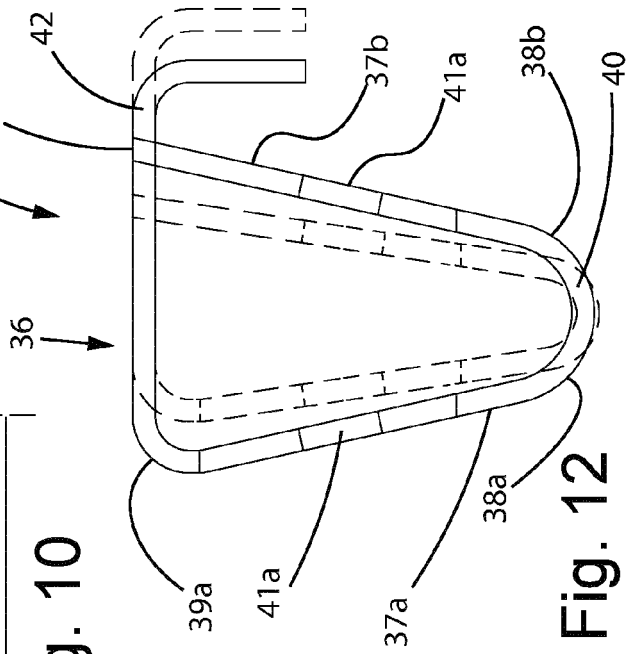

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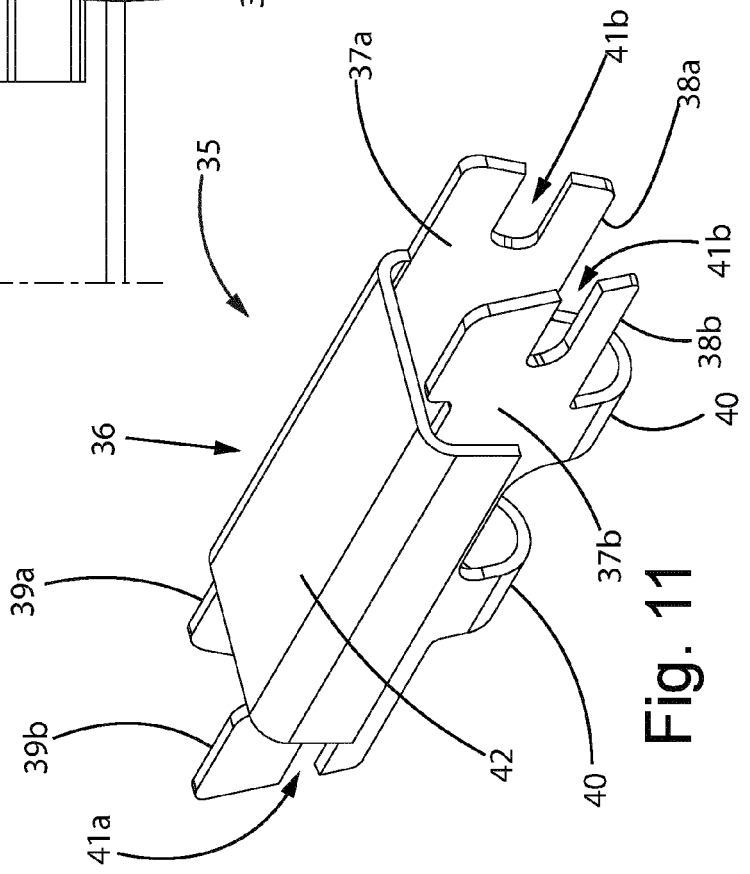

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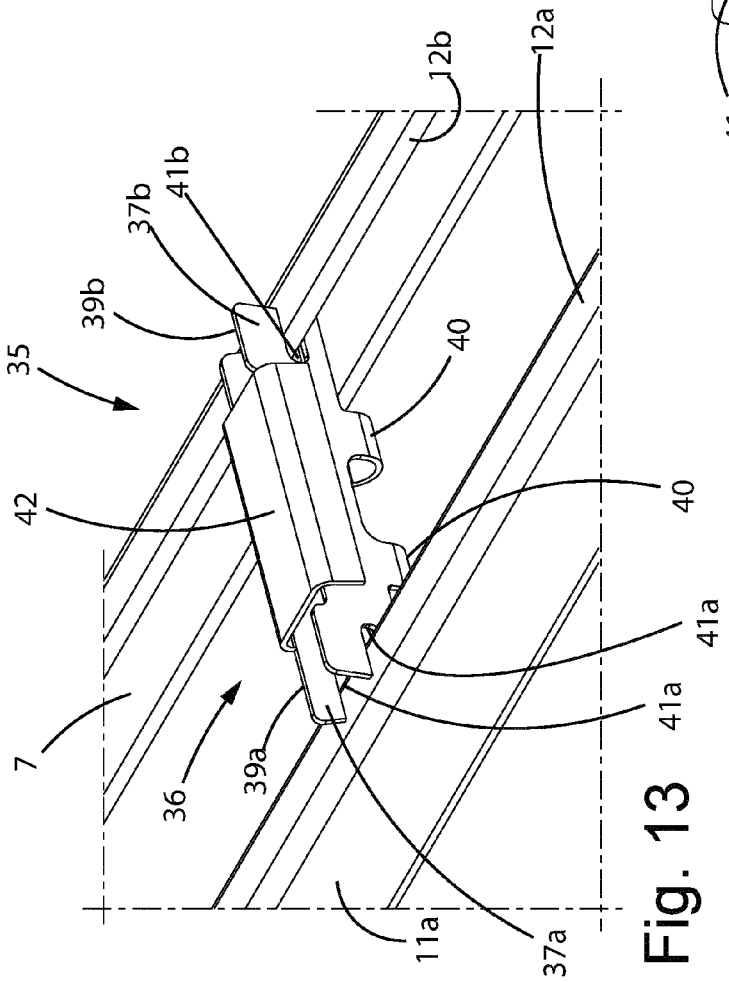
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Fig. 13

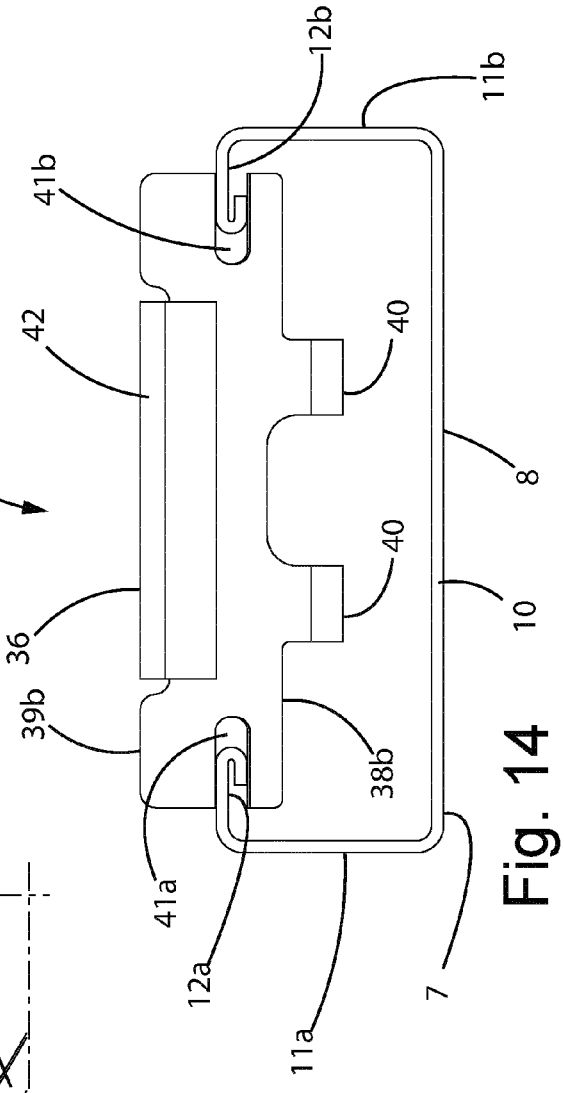
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Fig. 14

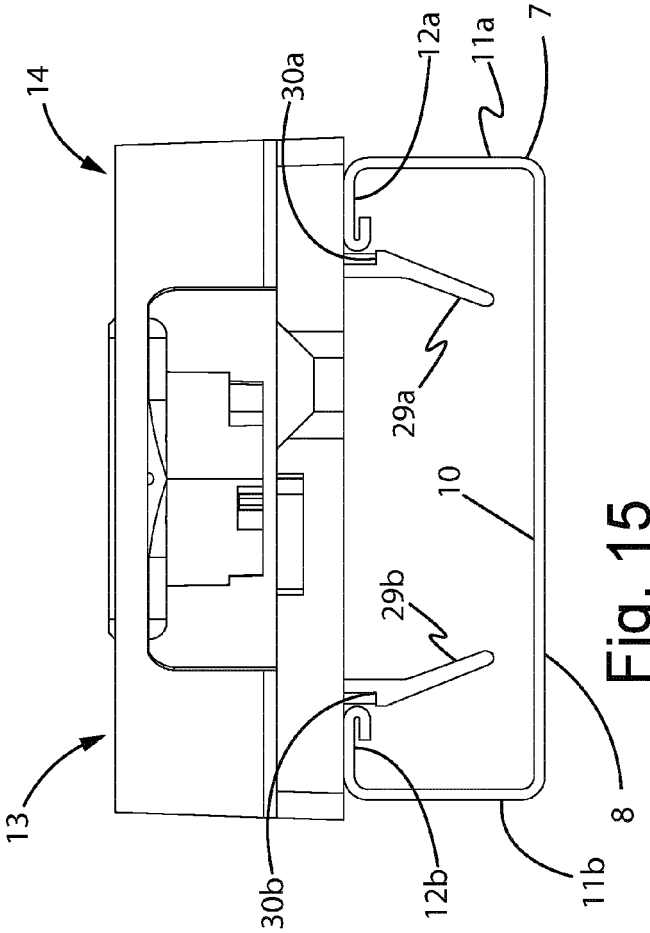
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Fig. 15

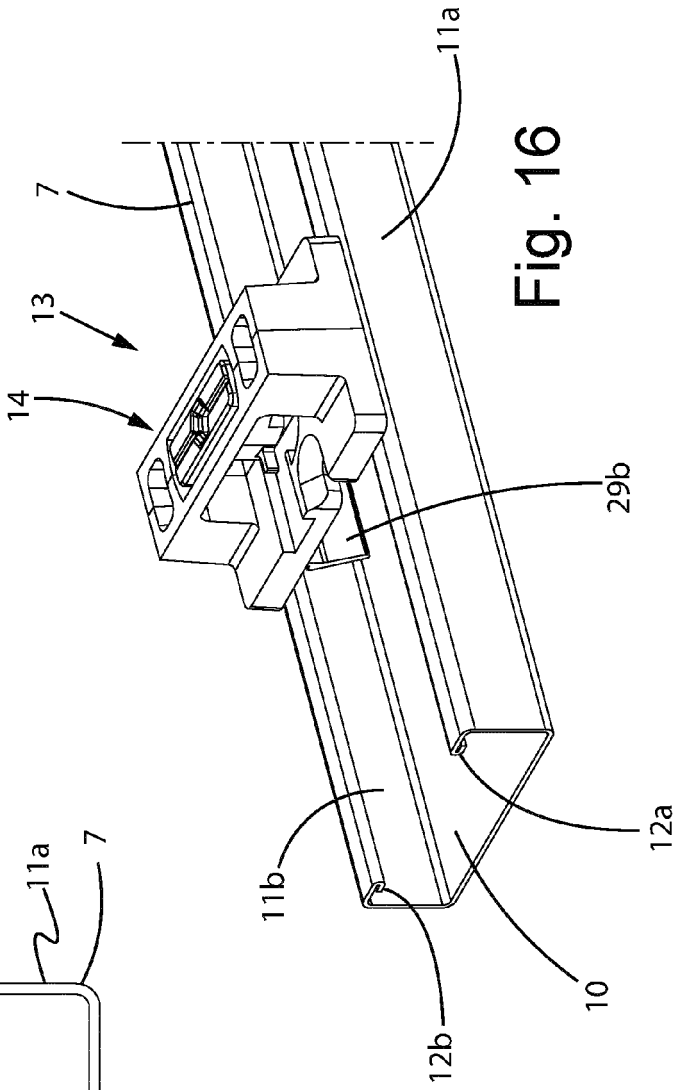
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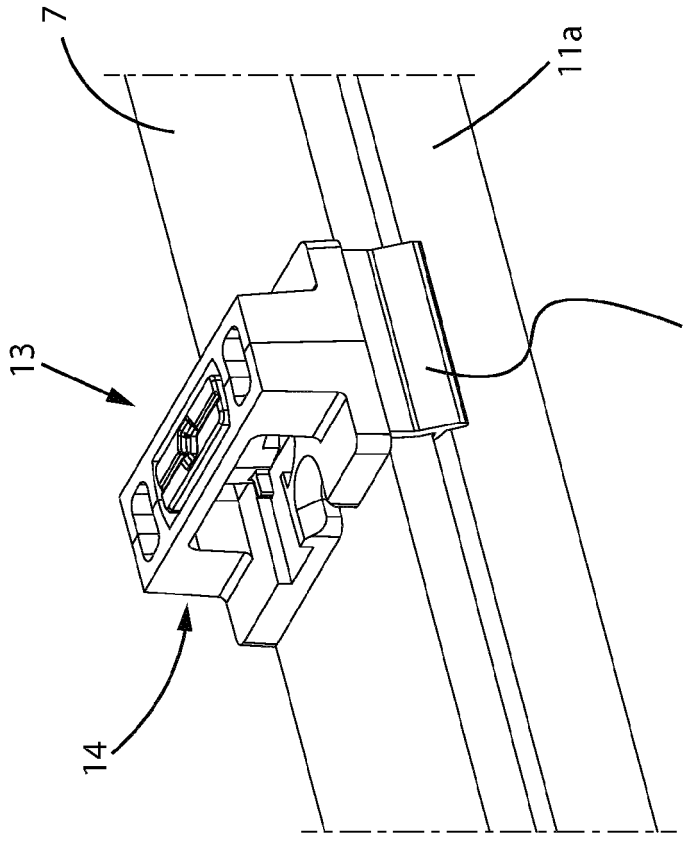
Fig. 16



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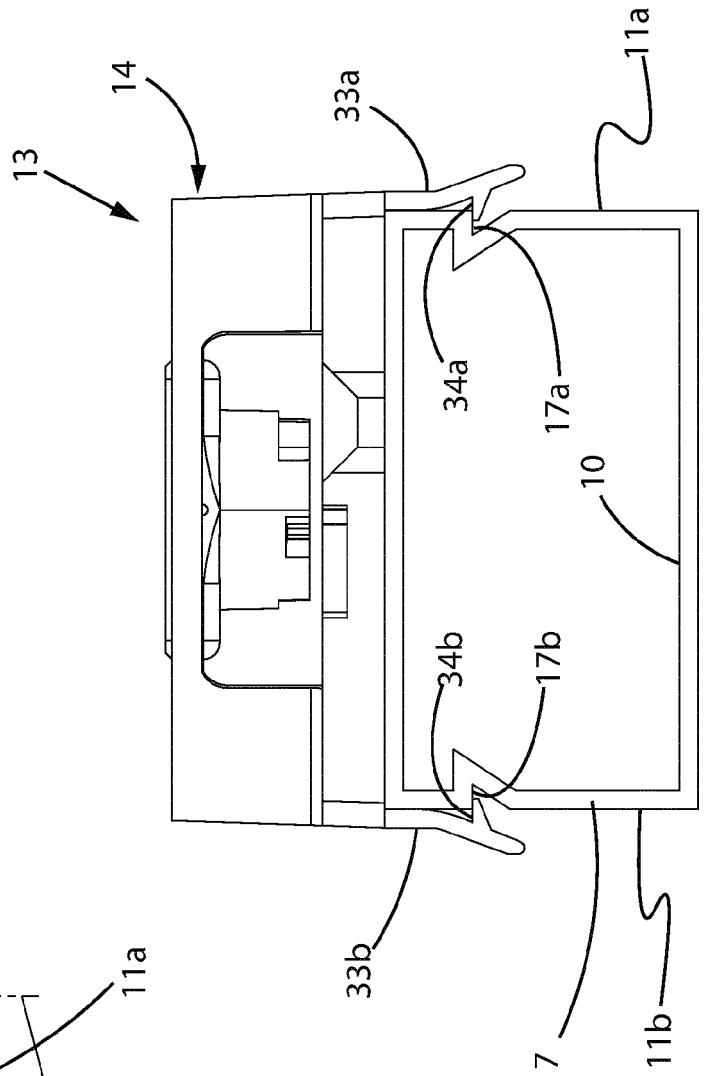

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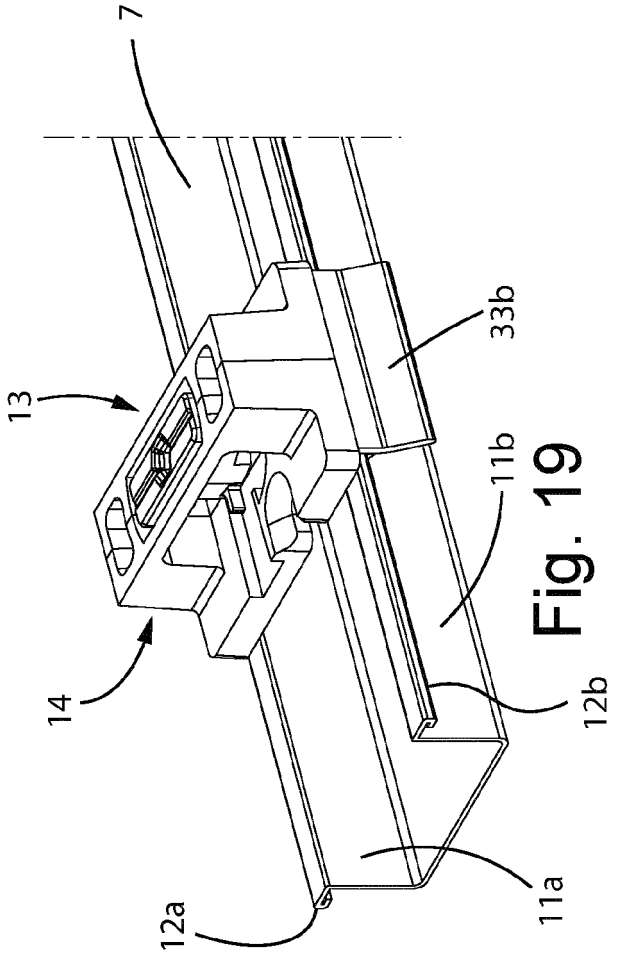

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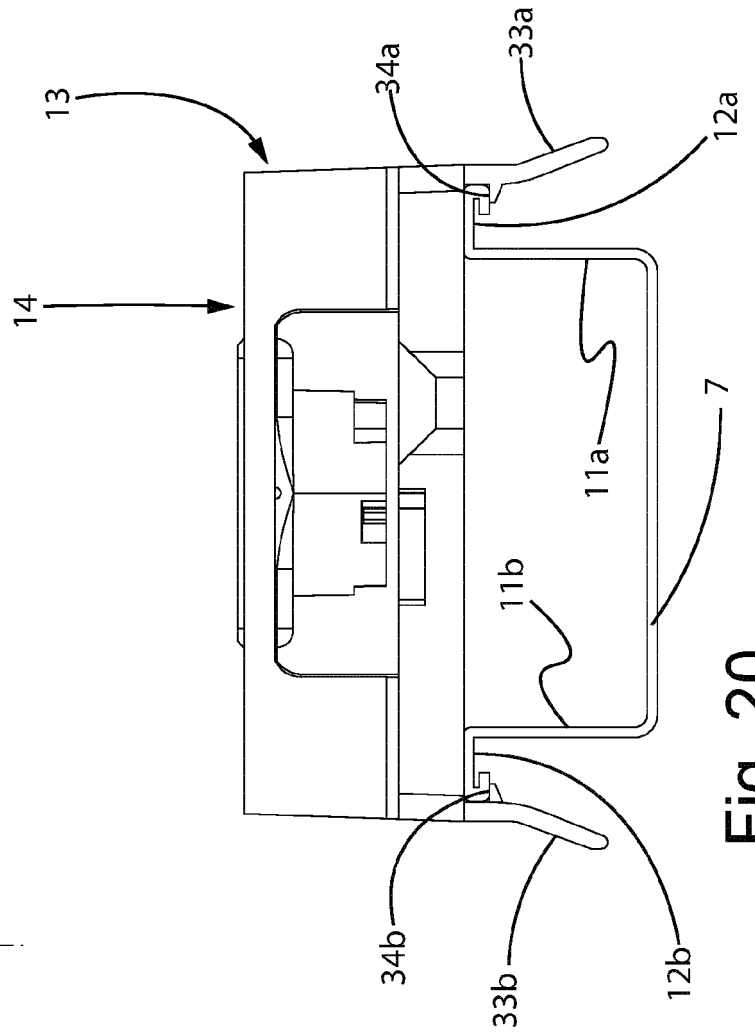

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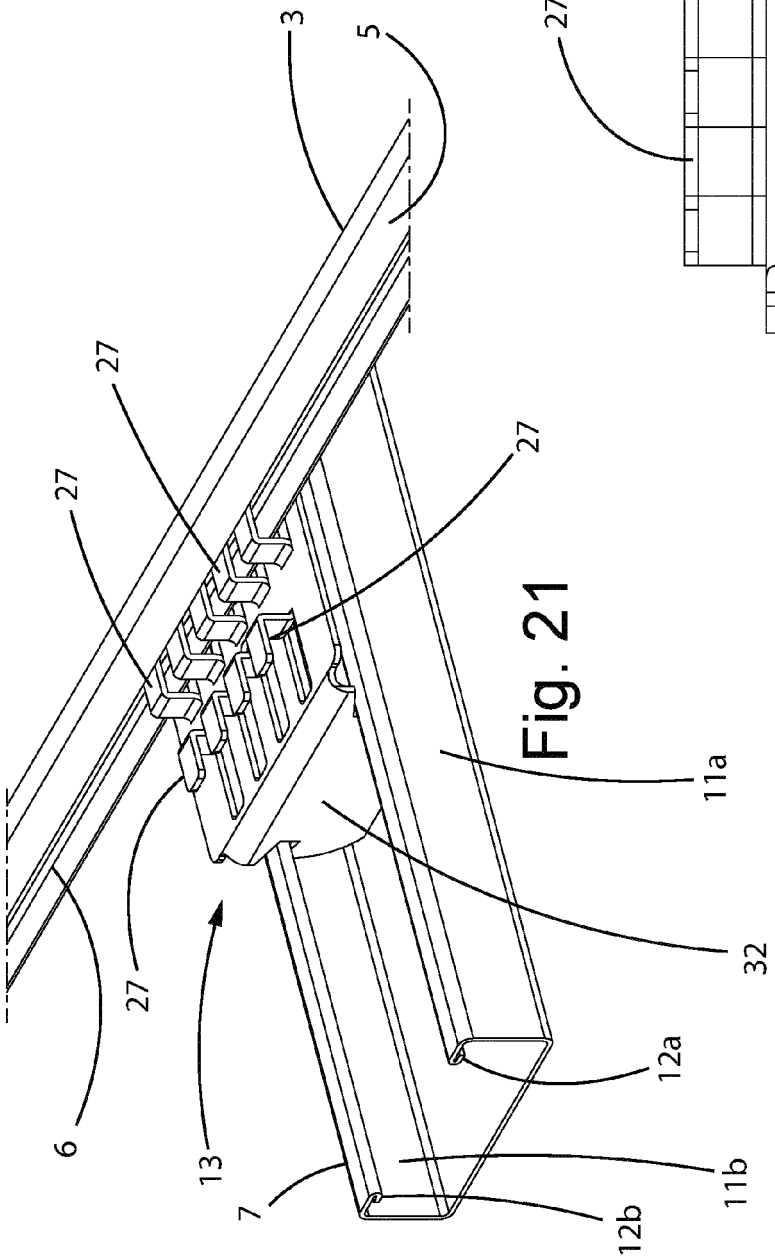
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Fig. 21

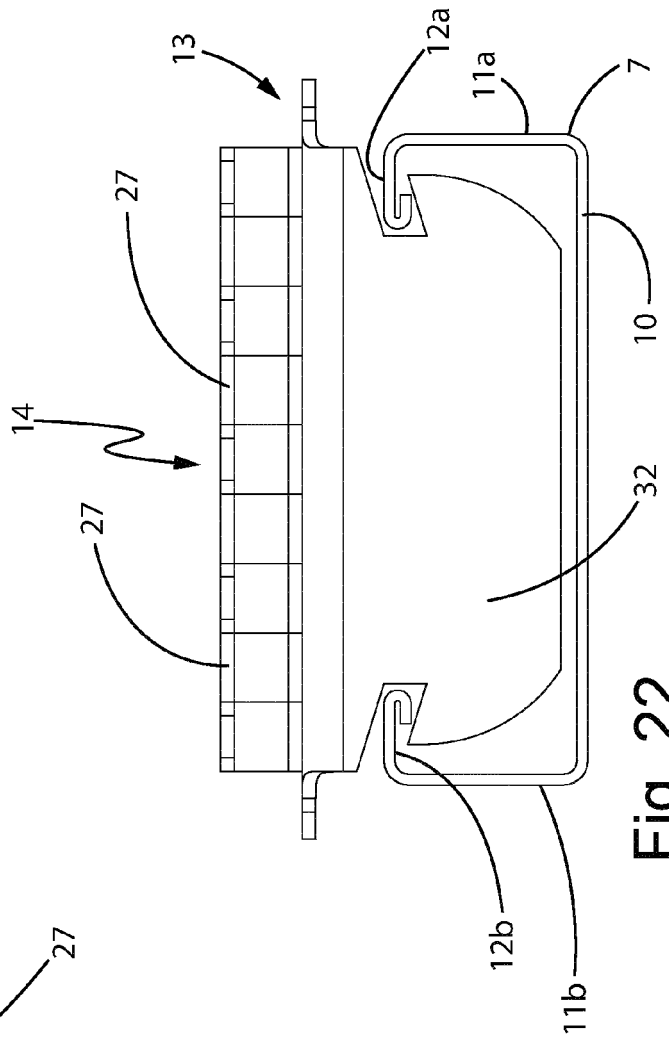
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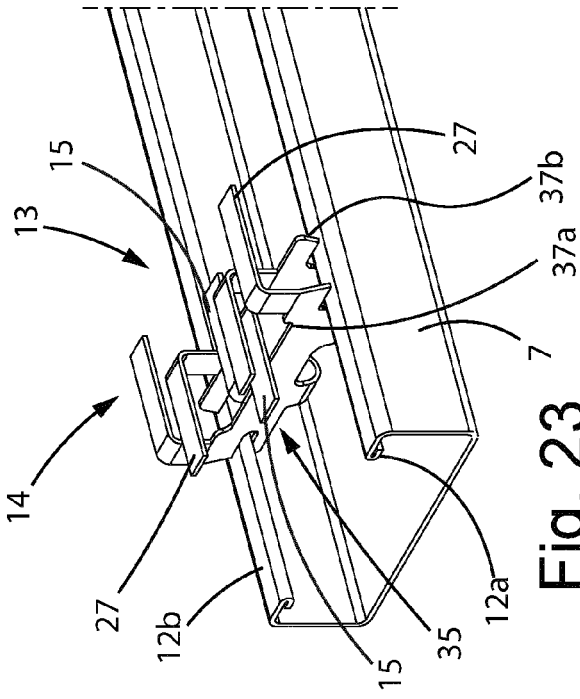
Fig. 22



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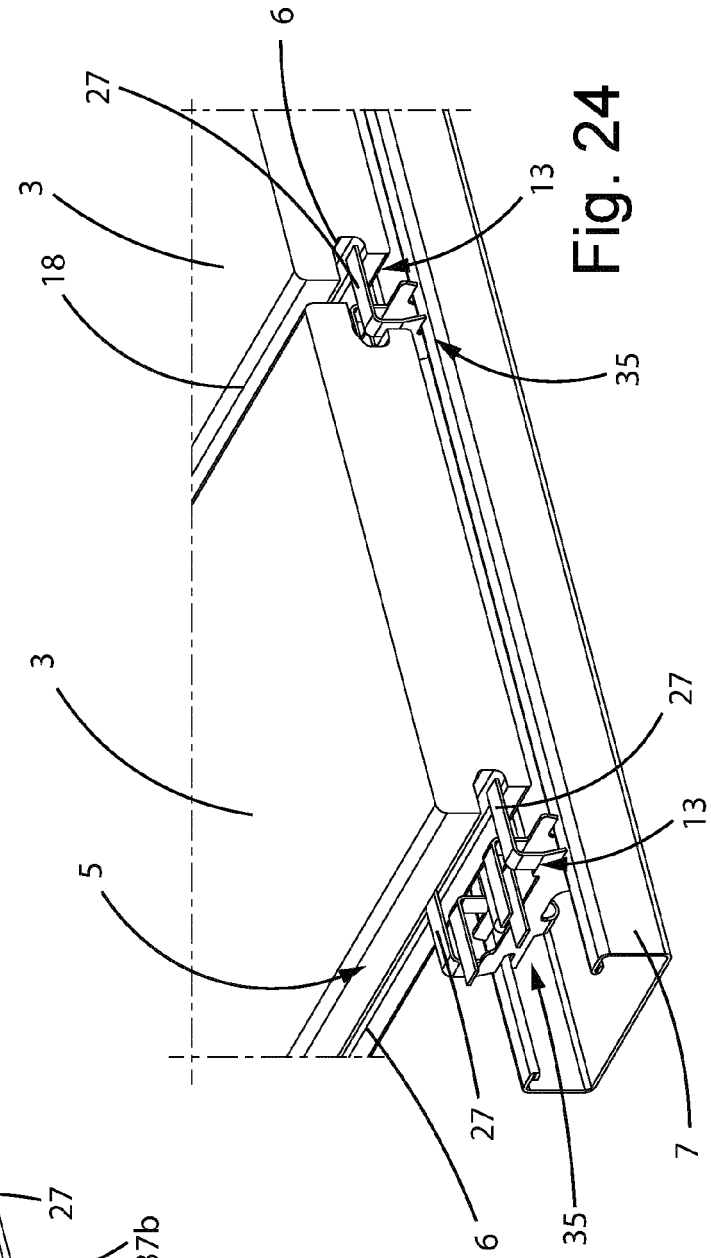

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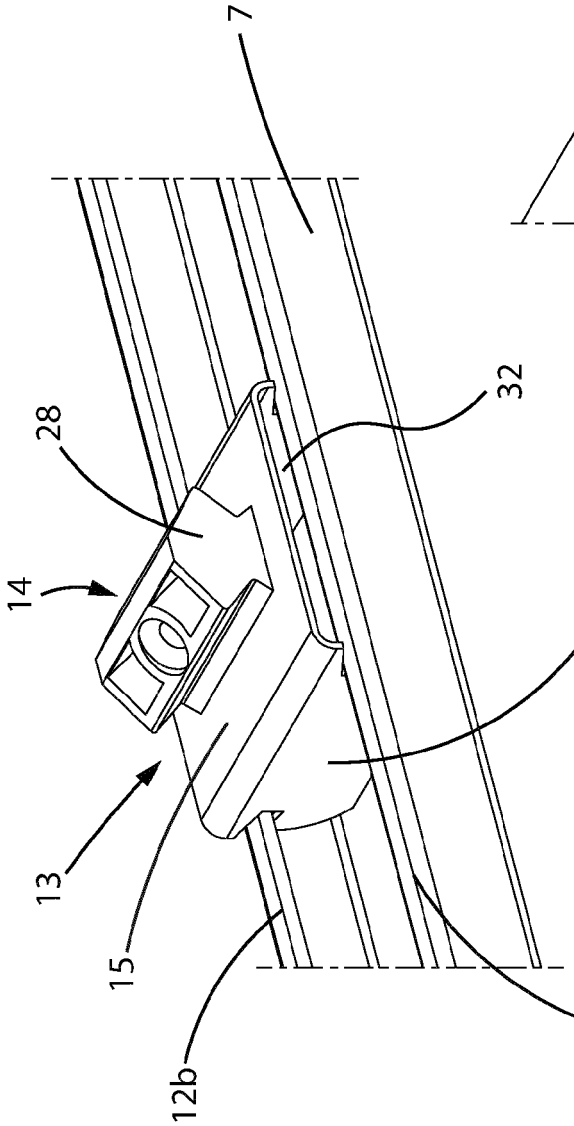

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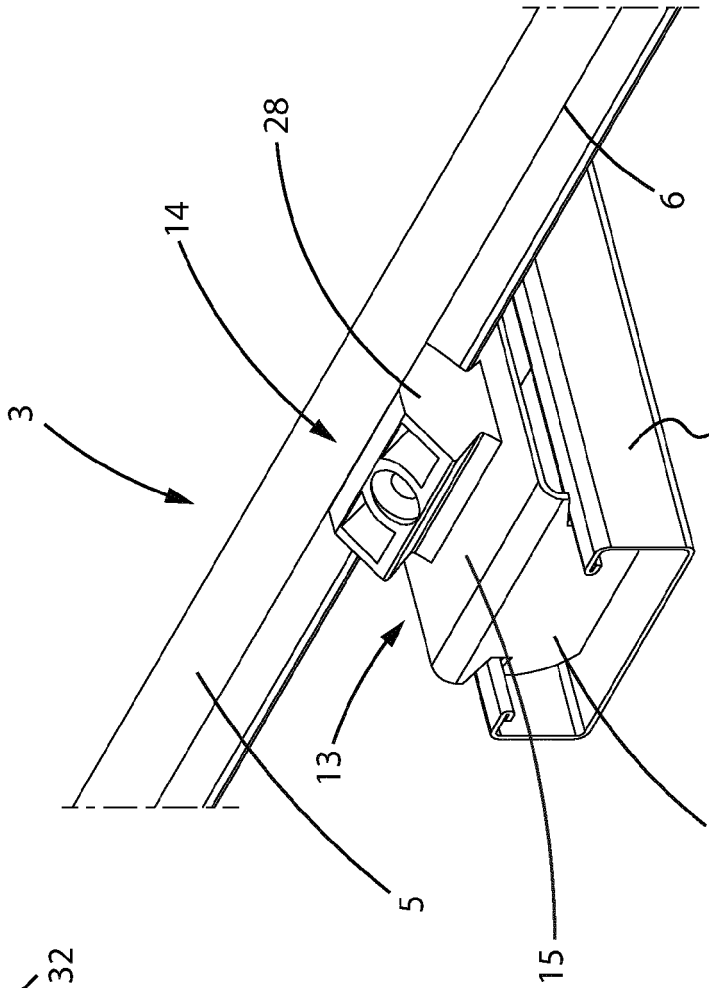

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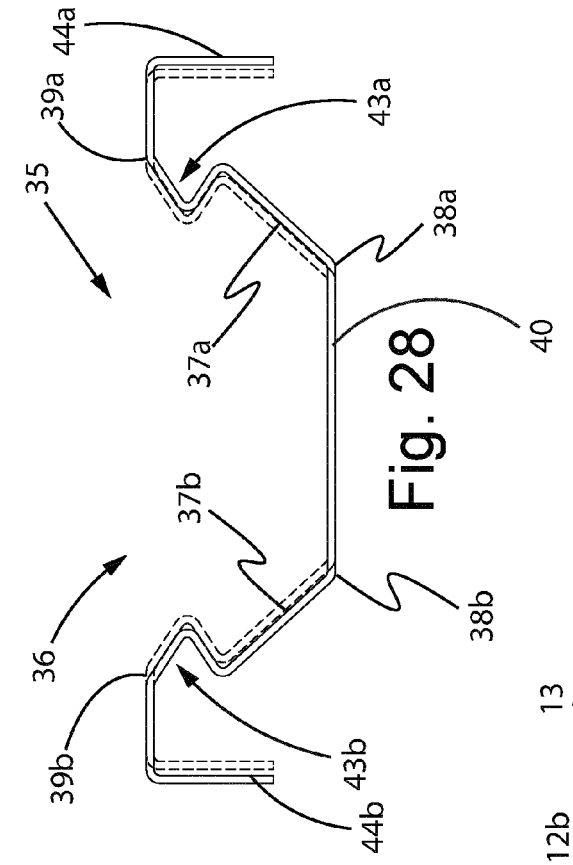

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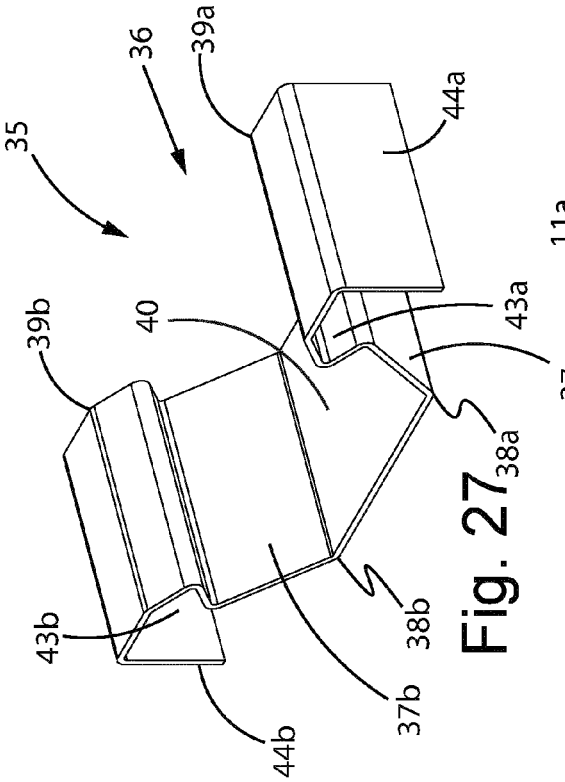

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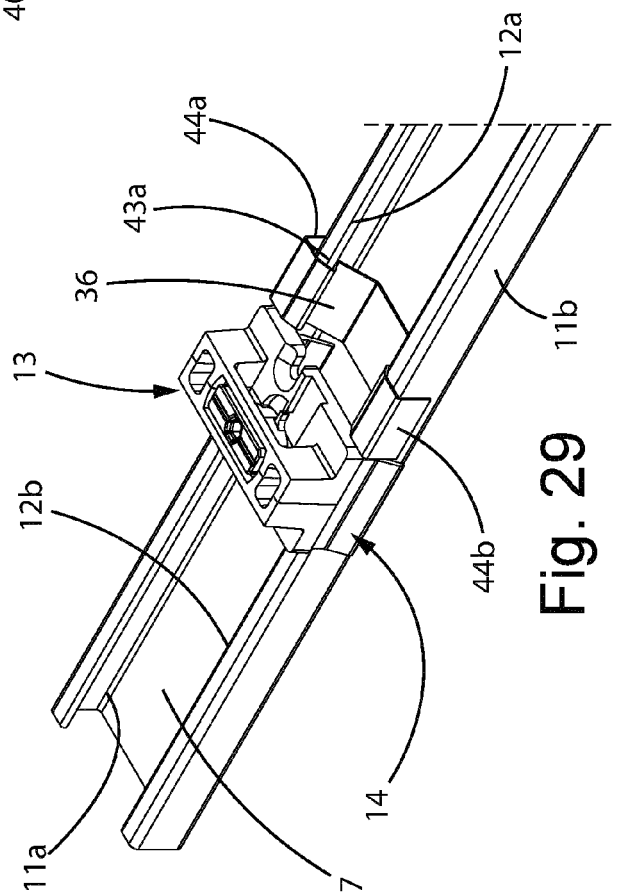

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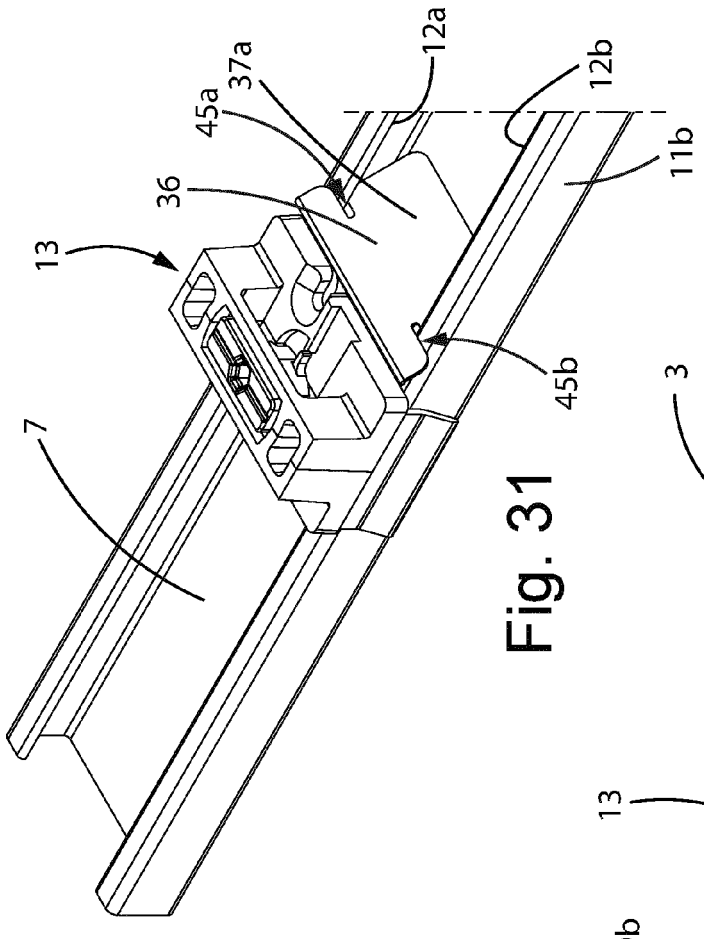

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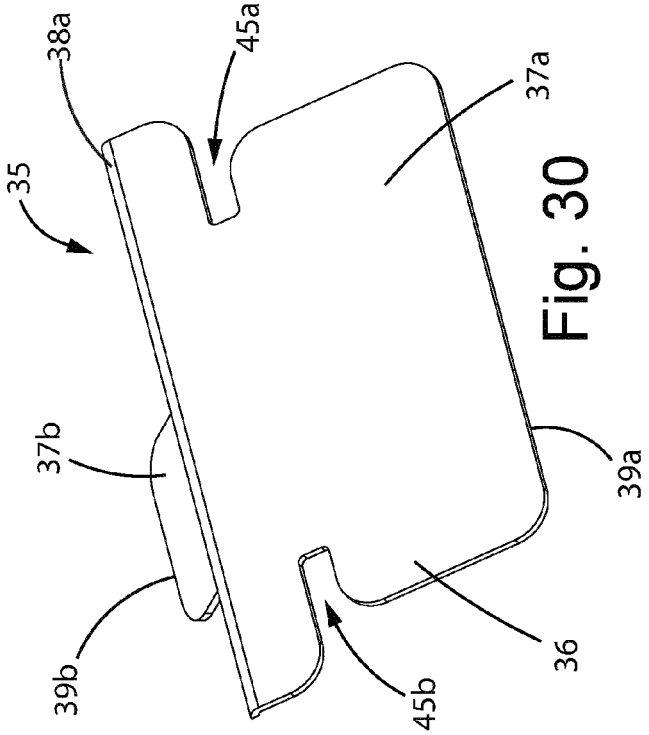

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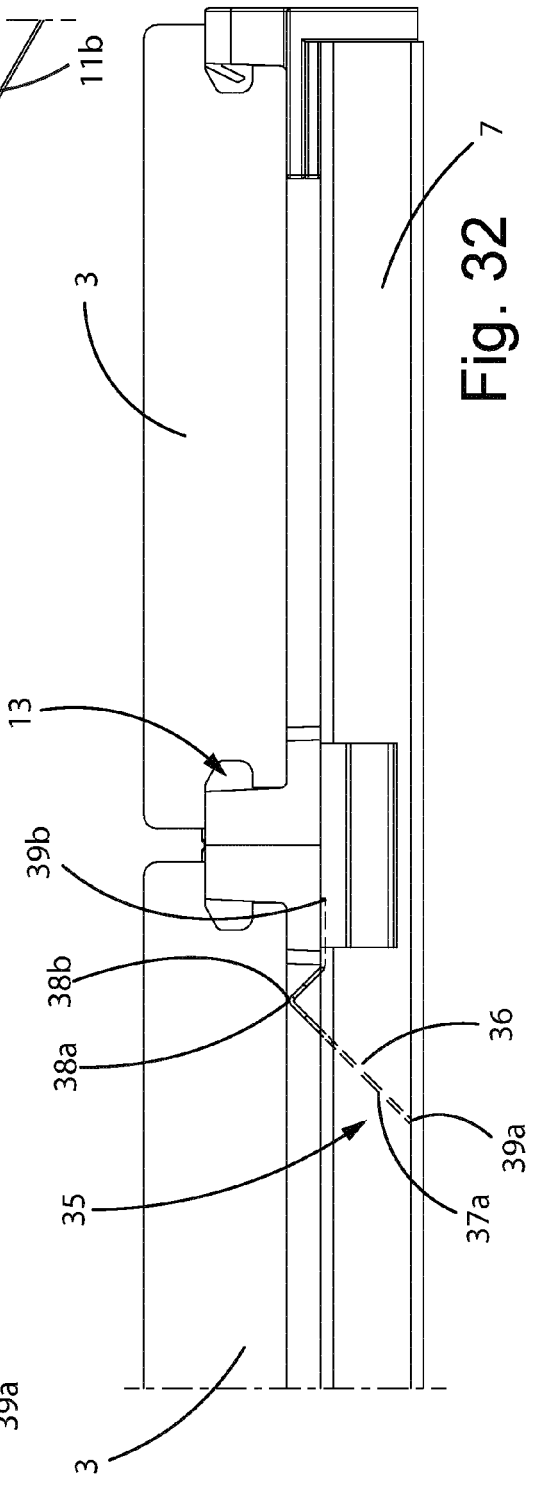

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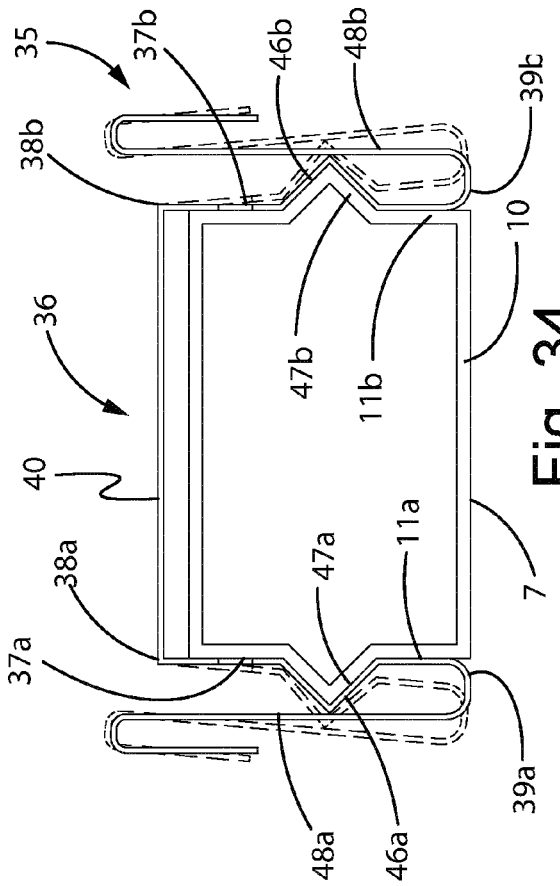

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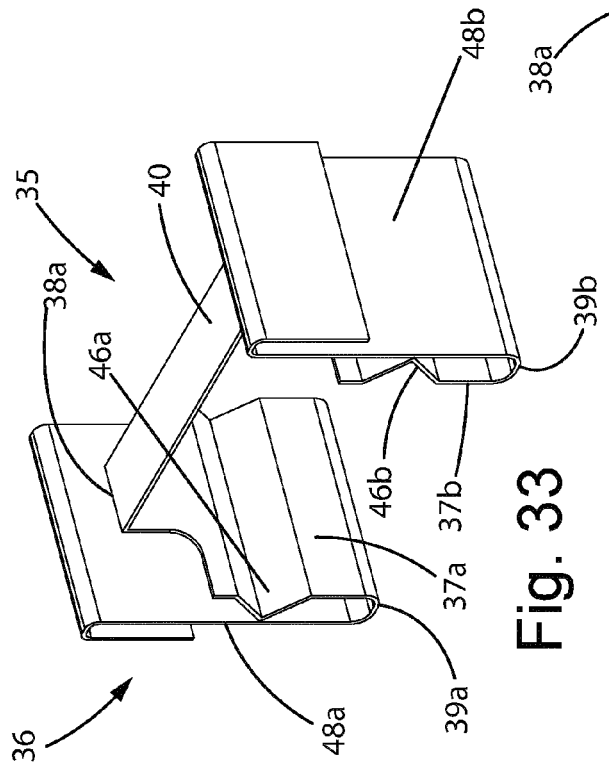
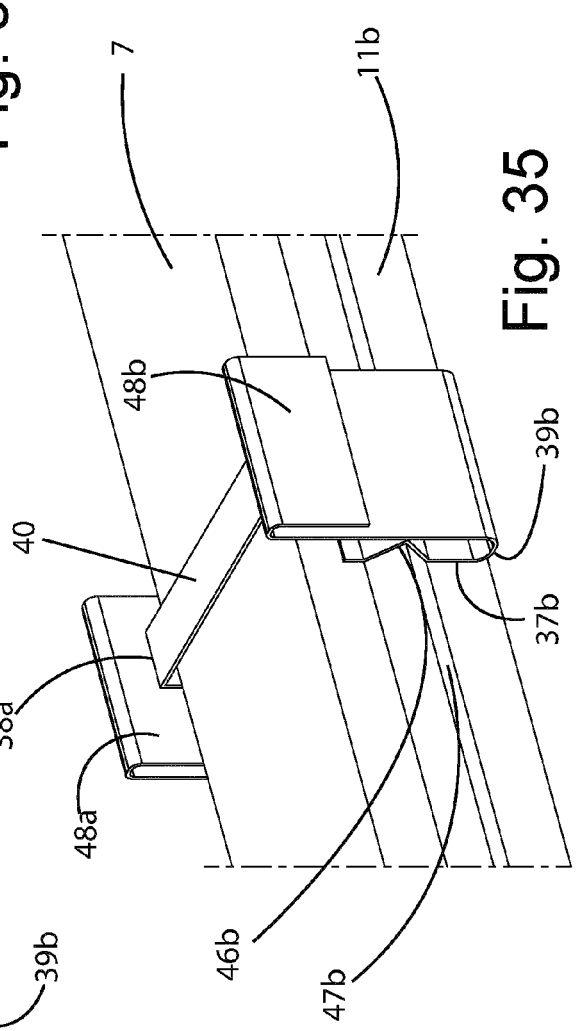


Fig. 33



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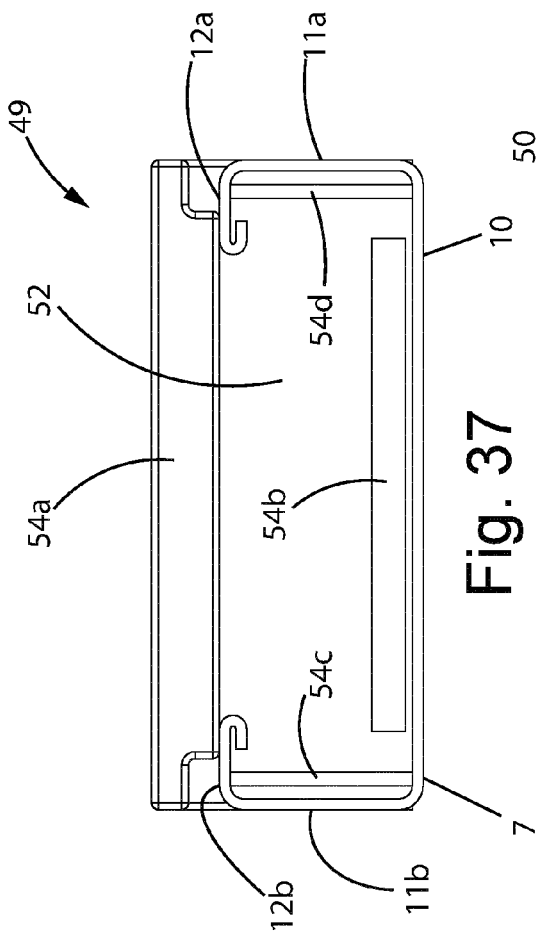

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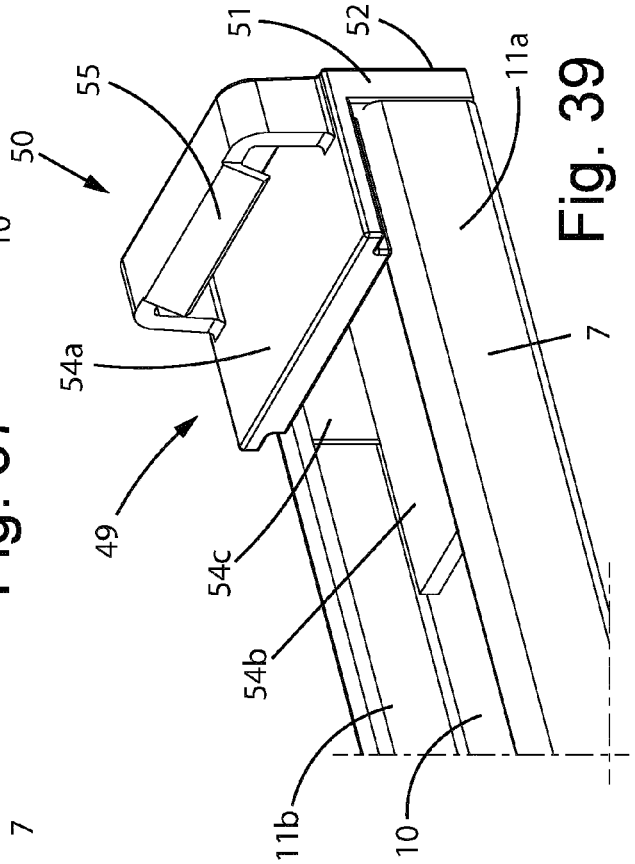

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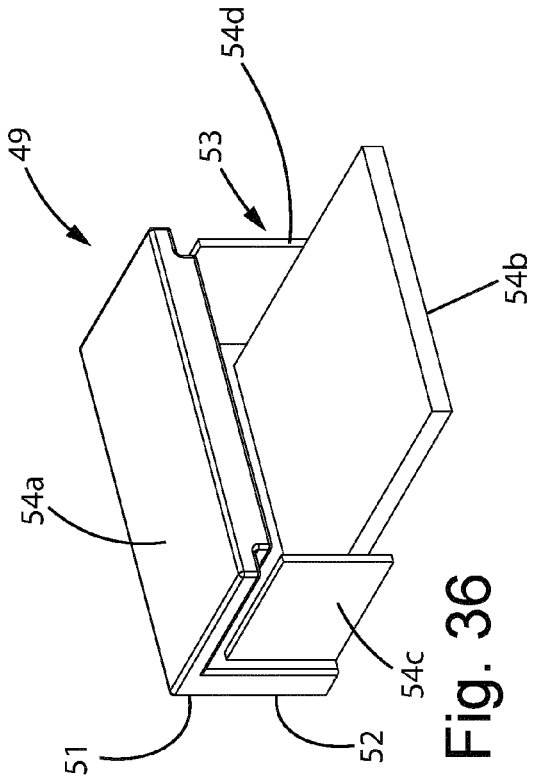

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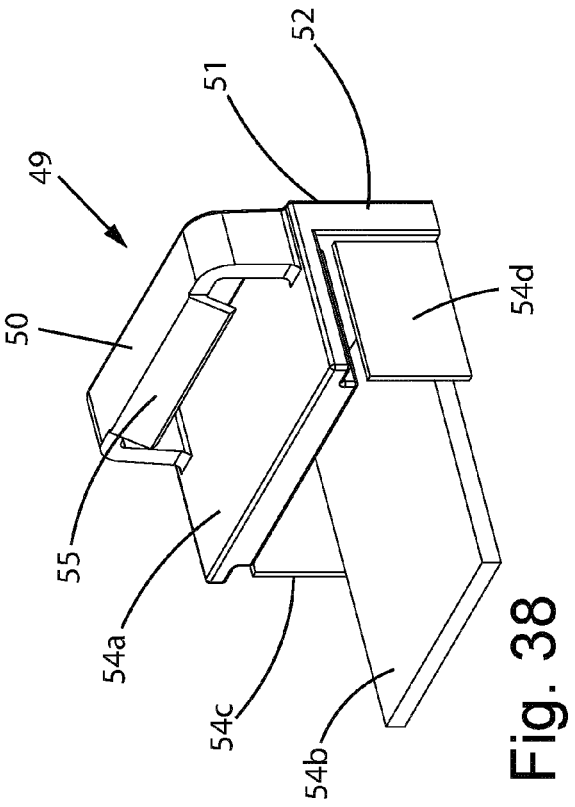

Fig. 38

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EUROPEAN SEARCH REPORT

Application Number
EP 23 16 1507

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 Y	US 2019/211856 A1 (GETSIV STEPHEN [US]) 11 July 2019 (2019-07-11) * figures 1,20-21 * * paragraph [0035] * * paragraph [0046] * * paragraph [0095] - paragraph [0096] *	1-5,7,8 6,9,10	INV. E04F15/024 E04F15/02 E04F13/08
X	DE 20 2020 106783 U1 (MOELLER GMBH & CO KG [DE]) 28 February 2022 (2022-02-28) * figures 15-20 * * paragraph [0046] * * paragraph [0061] - paragraph [0063] * * paragraph [0079] *	1	
Y	WO 2017/130107 A1 (SALAG SP Z O O SP K [PL]) 3 August 2017 (2017-08-03) * figures 5A-5B, 6A-6B * * page 3, line 15 * * page 4, line 5 - line 10 *	6	
Y	EP 3 282 066 A1 (UPM KYMMENE CORP [FI]) 14 February 2018 (2018-02-14) * figure 6 *	9,10	TECHNICAL FIELDS SEARCHED (IPC) E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 April 2023	Estorgues, Marlène

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