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(54) **Fixing system with a sliding device to assemble depth-adjustable base frames adapted to house accessories**

(57) System to realize secondary frames for casings and to house accessories, including a sliding and adjustable multifunctional device (3), preferably realized from a poorly or absolutely non thermal conductor material, consisting of the assembly of a first (4) and a second component (5) having a rectangle shaped body provided with different kinds of projections and grooves suitable for housing and being means for the junction between them, and a third component (6), called the sliding element for spacing and connecting the accessories.
The first and second components allow on their both ends (12,12') to connect longitudinal front and rear members of a secondary frame. By their reciprocal sliding they allow to adjust the distance between the longitudinal members themselves, in order to house any kind of casing.

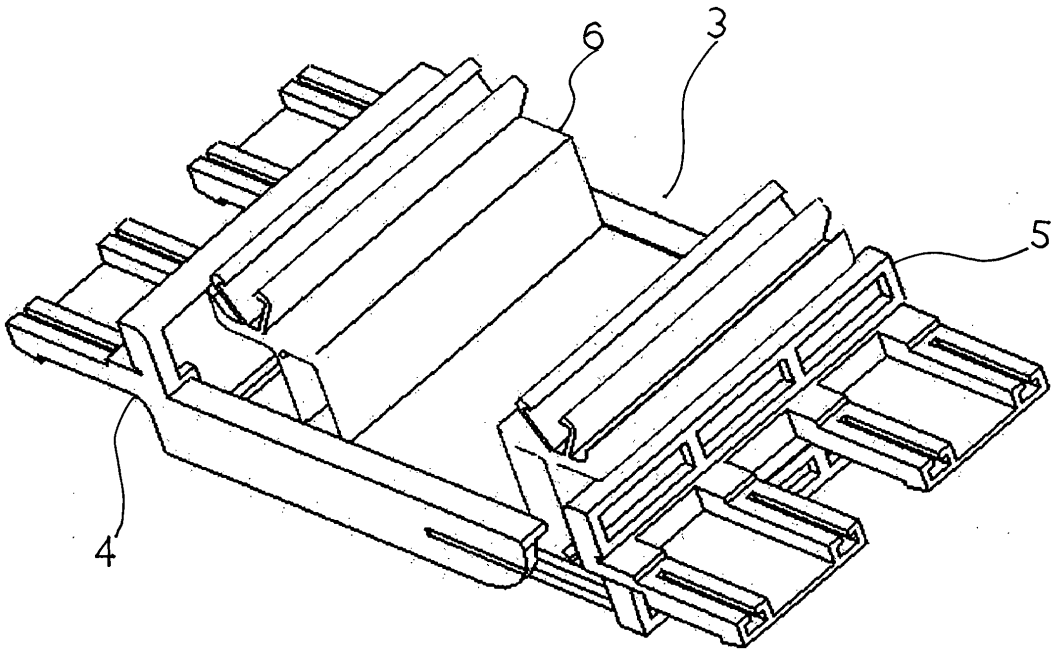


FIG.2

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## Description

Subject of the patent:

**[0001]** This invention refers to a system allowing to build thermal cut secondary frames or countercases, which can be adjusted to any kind of frames, by a kind of release assembly and provided with pre-set points, with easy clamping, it also allows to automatically recover possible lost verticalnesses and is pre-set to possibly house, after the frame setting, accessories to be tightly release, even foldaway, applied, and being built-in the system or adapted to it.

State of the technique

**[0002]** As is known the interface between the masonry and doors or windows it is the so-called countercases or secondary frames that constitutes the skeleton hidden of the frame, jointly bound to the masonry and predisposed to support the following tie of the fixed loom of the window. Naturally different types of frames ask for different types of secondary frames.

**[0003]** In many cases the frame is in unit construction with the shutter system, or correlated by shutter leaf external and from an outlined that the two types of frames it unites, opportunely outdistancing them to the purpose to make space to the handle of the external manufactured article, or, in the case of shutter blind system, of guide blind reasonably outdistanced by the internal frame.

**[0004]** In this case the internal frame usually sets some problem in more in comparison to that outside, for the different thickness of the loom of the manifold frames for inside present on the market, this in operation of the different materials that compose them diversifying them for technical, functional or ornamental performances.

**[0005]** It requires therefore a greater attention to the sizing of the vain one predisposed to welcome it in the secondary frame with the aid of executive details that they are normally elaborated edited by the supplier of the frames.

**[0006]** In by preliminary is furnished therefore for the laying in work, a fit secondary frame realized custom of the five dimensions (width, height, depth inside and external loom, element central spacer), that once walled is able of to welcome jointly and severally internal frame and leaf external shutter or it drives blind, opportunely outdistanced.

Aims and benefits of the invention

**[0007]** Aim of this invention is that of carrying out a system allowing to prepare secondary frames of any thickness, which can be adapted to any kind of internal frame and where it is available, any kind of external shutter system.

**[0008]** Another aim consistent with the foregoing one, is that of carrying out, by the above explained system, secondary frames made from a few parts, which can be easily moved, meant for being rapidly assembled and clamped, by a few rapid operations, even directly in the yard, avoiding weldings by specific plate formings and the use of special equipments.

**[0009]** Another aim consistent with the foregoing ones is that of submitting a system allowing to produce secondary frames meant for being free from any thermal transmission from outside the house towards the inside and viceversa.

**[0010]** Another aim consistent with the foregoing ones is that of submitting a system using a multifunction device, to be applied only on certain points of the secondary frames, connecting and adjusting external longitudinal and transverse members (or even longitudinal members with certain bendings) with the internal ones.

**[0011]** Another aim consistent with the foregoing ones is that of submitting a system allowing to carry out a secondary frame allowing to skimming polyurethan resins between the backs of both "zed" shaped frames already set on the secondary frame itself.

**[0012]** Another aim is that of submitting a system allowing of carrying out secondary frames also allowing the setting of foldaway bulky and unaesthetic optionals, like roller shutter boxes and mosquito net guides or shutter sheets or both.

**[0013]** Another aim consistent with the foregoing ones is that of submitting a system allowing to use special section bars for the above described accessories, such as it is possible an easy release application of them on the special heatless preset point, which can be adjusted and self-moving, meant for connecting and adjusting the distance of all external longitudinal members from the internal ones.

**[0014]** Another aim consistent with the foregoing ones is that of submitting a system allowing the already completed and walled secondary frame, to self-adjust itself during the setting of the internal frames and of the external shutter systems. This can be useful in case of lost verticalnesses, because of clamping faults of the secondary walled frame itself or of the plastering applied or of other unusual phenomena which cannot be kept under control by frame installers.

Description and way of realizing the invention

**[0015]** The assignments, the aims and other characteristics as well as advantages will result evident from the following description and from the enclosed drawings furnished to only indicative aim and not limitative in which:

The fig.1 shows in a three-dimensional sight the general one of a secondary frame formed second the teachings of the present invention;

The fig. 2 shows in a three-dimensional sight the general one of the adjustable multifunctional device of connection ;

The fig. 3 show in a sight in cried by the tall one the

general one of the adjustable multifunctional device of connection;
The fig. 4 show in a sight in cried by the lower part the general one of the adjustable multifunctional device of connection;
The fig. 5; it shows in a sight from the lower part an element of the adjustable multifunctional device of connection ;
The fig. 6 show in a side sight the adjustable multifunctional device of connection;
The fig. 7 show in another side sight the adjustable multifunctional device of connection;
The fig. 8 show in side sight the general one of the adjustable multifunctional device of connection;
The fig. 9 show in a sight in cried by the sliding element, spacing and connecting the accessories;
The fig.10 shows in a sight from the tall one the sliding element, spacing and connecting the accessories;
The fig. 11 show in a side sight, the sliding element, spacing and connecting the accessories;
The fig. 12 show in a sight in side plant, an application of the found related to the assemblage of a mosquito net box;
The fig. 13 show in a sight in side plant, an application of the found related to the assemblage of a side of the guide for mosquito net box;
The fig. 14 shows in an exploded three-dimensional sight the general one of the adjustable multifunctional device with various accessories that can connect to it and also various types of anticipated secondary frame;
The fig. 15 show in a sight in plant and in section various accessories that can connect to adjustable multifunctional device and also various types of anticipated secondary frames.
The Fig.16 shows in a three-dimensional sight the phases of assemblage of the clamps on the body of the post.
The Fig.17 shows in a three-dimensional sight, the clamps.
The Fig.18 shows in a side sight, the clamps.
The Fig.19 shows in a sight in plant, the clamps.

**[0016]** With reference to the drawings, are pointed out with (1) the posts and with (2) the crossbeam of the secondary frame; mediate between the vertical post and crossbeam a adjustable connection device (3) preferably realized from a poorly or absolutely non thermal conductor material. The device consisting of the assembly of three components especially conformed. A first (4) and second component (5) having a rectangle shaped body provided with different kinds of projections and grooves suitable for housing and being means for the junction between them and a third component (6). In particular the body (4) is provided with a side wall (7) with holding edges (8), a longitudinal crack in proximity of his free extremity (9) for the insertion of a grapevine of lock of the excursion, a transverse wall of the line end (10), and sliding guides (11); two equal rectangular cantilever surfaces (12) starting from the wall (10), each of them provided, in its end and lower part, of a sawtooth anchor (13) and along its side edges, with connection sites (14), for the insertion of kinds of longitudinal members for realizing the secondary frame.

**[0017]** The component (4) and (5) have an equal shape such as they can connect to each other sliding onto each other on the guides realized on their surfaces. In particular the body (5) is provided with a side wall (7') with holding edges (8'), a transverse wall of the line end (10'), and sliding guides (11'); two equal rectangular cantilever surfaces (12') starting from the wall (10'), each of them provided, in its end and lower part, of a sawtooth anchor (13') and along its side edges, with connection sites (14'), for the insertion of kinds of longitudinal members for realizing the secondary frame.

**[0018]** Within the space formed by the union of the two components (4) and (5) the third sliding component (6) is set, it consists of a flat quadrangular (15) base on which and along the two sides of it, a hollow rectangular shaped section bar (16) is realized, on its top it is extended on its side by a cantilever wing (17) which on its free end changes its direction and bends upwards (18). On this wing a V shaped section bar is fixed (19) having free furtherly inward bent ends (20).

**[0019]** The components (4) and (5), once they have been made integral in the shop, that is by placing two screws between them, after having suitably distanced them, allow, along their two ends, (12) and (12') of connecting the longitudinal (upright and transverse) members of the false frame, external and internal respectively, by their insertion in points distanced from each other about 500 or 700 millimetres. It is obvious that components (4) and (5), with their reciprocal sliding, allow to fix the desired distance between longitudinal members, as a function of the frame and blind sections. Moreover, since longitudinal members are not welded on their corners, but being joined with little squares inserted in their tubular structure, can be moved disassembled within the yard.

**[0020]** Therefore the finished secondary frame is universal, that is it is suitable for being applied to any kind of frame and since it is made from a few and small parts which can be assembled without using any screws and equipments, the fixing clamps to the wall included, it could also be moved in disassembled parts in order to be assembled in the yard.

**[0021]** The three components (4), (5), and (6) once they have been assembled, represent the multifunction connecting sliding device (3) which is the core of this invention. The general compactedness of the finished secondary frame is guaranteed by the insertion, between the two longitudinal members, on points distanced 500 or 700 millimetres from each other, of more than one complete multifunction devices (3), so determining a system with a new kind of assembly, carried out according to preset points.

**[0022]** The three components (4), (5) and (6) which make the multifunction connecting sliding device (3) are all preferably made from plastic material or from any non thermal conductor material, guaranteeing a thermal cut of the product between the external side and the internal side of the secondary frame; this feature, combined with low emission frames and glasses, allow to obtain a perfectly insulated living space, from the glass to the clamping in the wall, not touched by any contact point of the internal frame with the spacing section bar and the leaf blind or roller shutter guide.

**[0023]** Between the frames and the central spacing body two millimetres on each side remain uncovered, this in order to preserve the thermal cut between the internal frame and the external blind, once the spacing little card (43) or its substitute accessory has been inserted, if needed a rubber weather strip (21) eliminates any gap between the parts.

**[0024]** The possibility of skimming polyurethan resins also by both zed shaped frames already set on the false frame, avoids screwing the spacer on the leaf blind i the yard, and building the internal frame with the even frame, which is to be finished at the end of the setting, with a wire cover. In this way polyurethan foam must be injected from within the house, for the presence between the frame and the blind, of the spacer which has been already screwed on it. The application of a wire cover, which has the function of covering and hiding the foam injection site, is an operation to be carried out most carefully in the yard, at the end of setting and which needs the use of an electric cutting-off machine and various tools, an operation which is expensive and time consuming.

**[0025]** The system being subject of this patent allows to avoid such a complex process, the injection of the foam takes place between the frames before the release application of the spacing cover little cards, both the simple one (spacing little card) or accessory holder, as for example the mosquito net box with little button sheet (46), the mosquito net box with sheet without little buttons (47), the guide for mosquito net box with little buttons (48), theguide for mosquito net box without little buttons (49). The third central component (6), sliding between the two components (49 and (5), represents the spacing element between frames, which is also the connecting base for the accessories, the latter to be inserted after sealing with polyurethan foams between the frames, the closure with a special release spacer of the central space between both casings, can be replaced by the preferred accessory; in the case of Fig.12 the accessory is represented by a mosquito net box and/or shutter sheet. In order to connect it, in this case we have used an extension body (22). The accessory is dap connected, by inserting a V shaped body (23) in the sites (24) and (25) represented by the wings (26) and (27) of the section bar.

**[0026]** In Fig. 13 the assembly of a mosquito net guide is showed, in this case the assembly procedure is the same but since the dimensions are smaller, we have not used the extension body (22).

**[0027]** Particularly in Fig.15 two versions of boxes (46) and two versions of mosquito net guides (48) and (49) are schematically given; a version characterized by (46) and (48) adapted to house the net with fastening little buttons and the other (47) and (49) adapted to house mosquito nets without side fastening little buttons. However, in the functional central part, both solutions have the classical shape of universally recognized boxes and guides in the most varied shapes, varying from manufacturer to manufacturer of mosquito net systems, and that for underlining that the invention characterizes itself for having on both sides, additional little wings for the extension of width thickness of accessories, which are provided with simple dap junctions at their ends which can be more or less extended.

**[0028]** The different foldaway bulky optionals, such as boxes and mosquito net guides and/or shutter sheets, not excluding other types of them as lighting systems, micro-ventilation systems etc., can be foldaway applied because the central component (6) is such shaped as to have a recessing enough capable of containing any accessories which can be inserted between the internal frame and the existing external shutter system.

**[0029]** The above said additional little wings extending the width of the accessories, provided with simple dap junctions (24) and (25) and preset to house the V shaped body existing on the central sliding part (6) or on in its possible additional extension (22) allows an easy release application on the preset heatless adjustable and self-moving point. The above-said little wings have two bent dentils (28) and (29) which function as dap sites purposedly meant for their release anchor to the multifunction body or to its extension element to be used when it is not convenient or in case it is not possible to extend the insertion sites on the accessory.

**[0030]** Possible faults in the wall, as for example misalignments, lost verticalness of the secondary frame as a consequence of clamping faults in the wall or of the not careful enough application of the plaster or of other phenomena which cannot be foreseen or kept under control by the frame installer, can be easily automatically recovered, due to the effects of the adjustable device (6). For example, when the external wall is out of verticalness or the secondary frame is not perfectly perpendicularly walled, the blind is perpendicularly set further from the wall than what expected, being sure that the internal frame and the spacer or the accessory set in its place will automatically adapt themselves to the new arrangement, following the line of the blind.

**[0031]** As above said, we have thought it necessary to use an extension element (22) made from a low conductor material (plastic or polyammide reinforced glass fiber) to connect possible bulkier and more unasthetic accessories, such as mosquito net boxes and/or shutter sheets, this in case it is not convenient to extend the connection feet (28) and (29) with which the accessory is provided. The extension element consists of a specially shaped little section bar, it in particular consists of a lower

hollow part which is triangle shaped (30) and of an upper part being a shaped open V section bar (31) with free ends furtherly bent inward.

**[0032]** The parts suitable for housing and firmly supporting the junction of frames being set, can be preferably manufactured as longitudinal members made from extruded aluminium, even if it will possible to manufacture them from iron steel, PVC, wood or any other material suitable for supporting both frames and the easy junction clamps (41).

**[0033]** The external longitudinal member, preset to house the leaf blind, will be not used in case no external shutter system is provided, it is replaced in case roller shutters are used, in order to allow the application of a special shutter guide supported by another element set in the place of the lacking longitudinal member.

**[0034]** The shutter guide exactly consists of a double upturned U shaped section bar such as the shutter guide (32) and the site (33) can house a supporting element inserted in it (34) from the mosquito net guide site (if it has been set).

**[0035]** The support (35) results to be larger in sixe in case the shutter guide (32) is set at the level of bulky accessories, such as mosquito net boxes and/or shitter sheets with little buttons (46) or without (47). Both lower supports are provided with grooves such as to be inserted in the guides (14) or (14').

**[0036]** The longitudinal members fixing the internal frame and that of the external leaf blind must not be necessarily equal to each other, because in case different frames are to be set, or they need a special assembly procedure, other kinds of longitudinal members can be used.

**[0037]** Special longitudinal members are also provided with built-in hinge junctions, in order to allow the direct application of the shutter on the longitudinal member of the secondary frame itself. The hinge junctions on the longitudinal members can belong to any commercial line of leaf blinds, as for example those made from aluminium of the European air gap series, or R40, or R50 or other series, this technique could make it possible to not use the frame in the manufacturing of this product.

**[0038]** Two sections are schematically shown, one (37) is named as being without leaf and the other one (38) is named as being with leaf. As you can see all sections for longitudinal members are characterized by an angle arm (39) with a free sawtooth end (40) and a site for the clamp insertion (41).

**[0039]** Of course the above said arm can have different angles or bendings in other versions, as well as further extensions. The wings on the accessories can also be bent with their junction feet more or less long or bent, for example, if it were convenient, in order to not resort to the spacing elements connecting the bulky accessories (22), which on the other hand, in other cases could be manufactured in a different length, shape and connection site. So the multifunction sliding connection device (3) can also admit different shapes. In all these cases the idea described in this submitted patent is referred to.

**[0040]** The secondary frame can be prepared in the yard for its setting; the setting operation takes place in this way: on a suitably prepared wall the secondary frame is fixed, it is assembled with the components (4), (5) and (6), by the help of easy junction clamps (41), preset to be fixed without screws, to the secondary frame in which Fig.16 shows the insertion procedure in its site (42), and by cement to the wall. Then the fixed frame of the external casing and the fixed frame of the internal casing, are fixed by screws.

**[0041]** At this point, within the middle space between the two casings, the preferred accessory is added.

**[0042]** The spacing device connecting the accessories, provided, if necessary, with an extension body, is suitable for housing and keeping many kinds of accessories specifically manufactured to be installed on it, such as mosquito net boxes, mosquito net guides, a grill cover to space the frames. A spacing cover has also been realized as a rectangular section (43) having a wing (44) on both sides with a trailing dentil providing a dap site (45).

## Claims

1. System and means to realize secondary frames for casings and to house accessories, including: a sliding and adjustable multifunctional device(3) preferably realized from a poorly or absolutely non thermal conductor material, consisting of the assembly of a first (4) and second component (5) having a rectangle shaped body provided with different kinds of projections and grooves suitable for housing and being means for the junction between them and a third component (6), the sliding element, spacing and connecting the accessories, they allow on their both ends (12) and (12') to connect, according to preset points spaced 500 or 700 millimetres from each other, longitudinal front and rear members (upright and traverse) respectively of a secondary frame, then by their reciprocal sliding they allow to adjust the interdistance between the longitudinal members themselves, in order to house any kind of casing.

2. System and means to realize secondary frames for casings and to house accessories, as to claim 1) **characterized by** the fact that the component (4) and (5) have an equal shape such as they can connect to each other sliding onto each other on the guides realized on their surfaces, and each component is in particular provided with a side wall (7) or (7') with holding edges (8) or (8'), a transverse wall of the line end, and sliding guides (11) or (11'); two rectangular cantilever surfaces (12) or (12') starting from the wall (10) or (10'), each of them provided, in its end and lower part, of a sawtooth anchor (13) or (13') and along its side edges, with connection sites

(14) or (14'), for the insertion of kinds of longitudinal members for realizing the secondary frame.

**3.** System and means to realize secondary frames for casings and to house accessories, as to claims 1) and 2) **characterized by** the fact that within the space formed by the union of the two components (4) and (5) the third sliding component (6) is set, it consists of a flat quadrangular (15) base on which and along the two sides of it, a hollow rectangular shaped section bar (16) is realized, on its top it is extended on its side by a cantilever wing (17) which on its free end changes its direction and bends upwards (18); on this wing a V shaped section bar is fixed (19) having free furtherly inward bent ends (20).

**4.** System and means to realize secondary frames for casings and to house accessories, as to claims 1), 2) and 3) **characterized by** the fact that section bars for accessories have on their sides, starting from the angle, an extension wing (26) and (27) having two bent dentils (28) and (29) providing a dap site.

**5.** System and means to realize secondary frames for casings and to house accessories, as to claims 1), 2), 3) and 4) **characterized by** the fact that the external longitudinal member, preset to house the leaf blind, is not used in case no external shutter system is available, or it is replaced in case roller shutters are used, by a oller shutter guide, supported by another element, fixed in the guides (14) or (14') in the place of the lacking longitudinal member, by grooves (36) realized on the lower surface; the roller shhutter guide particularly consists of a double upturned channel, in order to provide the guide for the roller shutter (32) and the site (33) to house as for clamping a supporting element (34) on the side of the mosquito net guide (if it has been set); the support (35) results to be larger in size for its setting on the side of the mosquito net.

**6.** System and means to realize secondary frames for casings and to house accessories, as to one or more precedent claims **characterized by** the fact that longitudinal members provided with junctions for hinges, in order to allow only the setting of the leaf of any commercial line of leaf blinds, such for example the European air gap ones made from aluminium, R40, R50, particularly two section bars have been realized, one (37) called as being with ledge and the other (38) called as being without ledge.

**7.** System and means to realize secondary frames for casings and to house accessories, as to precedent claims **characterized by** the fact that the section bars for longitudinal members are **characterized by** an angle arm (39) with a free sawtooth end (40) and a site (42) for the insertion of the clamp (41), or in other versions, it can have an angle or a bend.

**8.** System to realize secondary frames for casings and to house accessories, as to precedent claims **characterized by** the fact that the secondary frame can be prepared in the yard for setting; the setting procedure takes place as follows: on a suitably prepared wall the secondary frame is fixed, it is assembled with the components (4), (5) and (6), by easy junction clamps (41) preset to be fixed in the site (42) without screws, to the secondary frame, and with cement to the wall; then they are fixed by screws, on the secondary frame, the fixed frame of the external casing and the fixed frame of the internal casing; at this point, in the middle space between the two casings the preferred accessory is release added on the sliding body (6), the latter can self-place itself as an effect of the sliding body (6) between (4) and (5).

**9.** System and means to realize secondary frames for casings and to house accessories, as to claim 1), 2) and 3) **characterized by** the fact that the sliding device, spacing and connecting the accessories (6), provided, if necessary, with an extension body (22) made from a low conductor material and consisting of a first hollow lower triangle shaped part (30) and by the remaining upper part consisting of an open V section bar (31) and with free furtherly inward bent ends (32), is suitable for housing many kinds of accessories purposedly manufactured to be set on it, such as mosquito net boxes and guides, and/or shutter sheets, light systems, a spacing rectangular section cover (43) having on both sides a wing (44) as an extension, with a trailing dentil providing a dap site (45).

**10.** System to realize secondary frames for casings and to house accessories, as to precedent claims **characterized by** the fact that the wings on the accessories can also bend downwards and/or connect themselves to the sliding device (6) with a dap site of any shape, and the spacing and connecting element of accessories (6) can also have any kind of connection site.

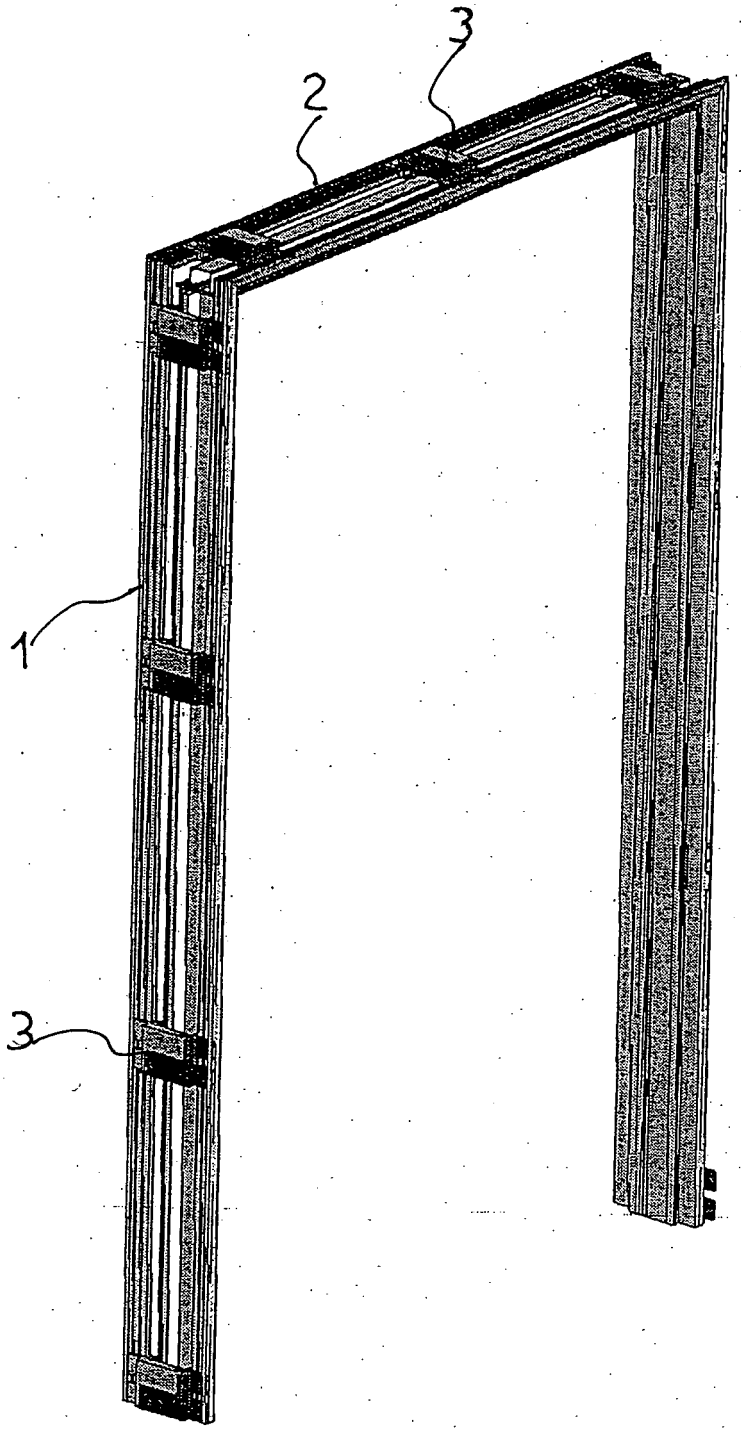


FIG.1

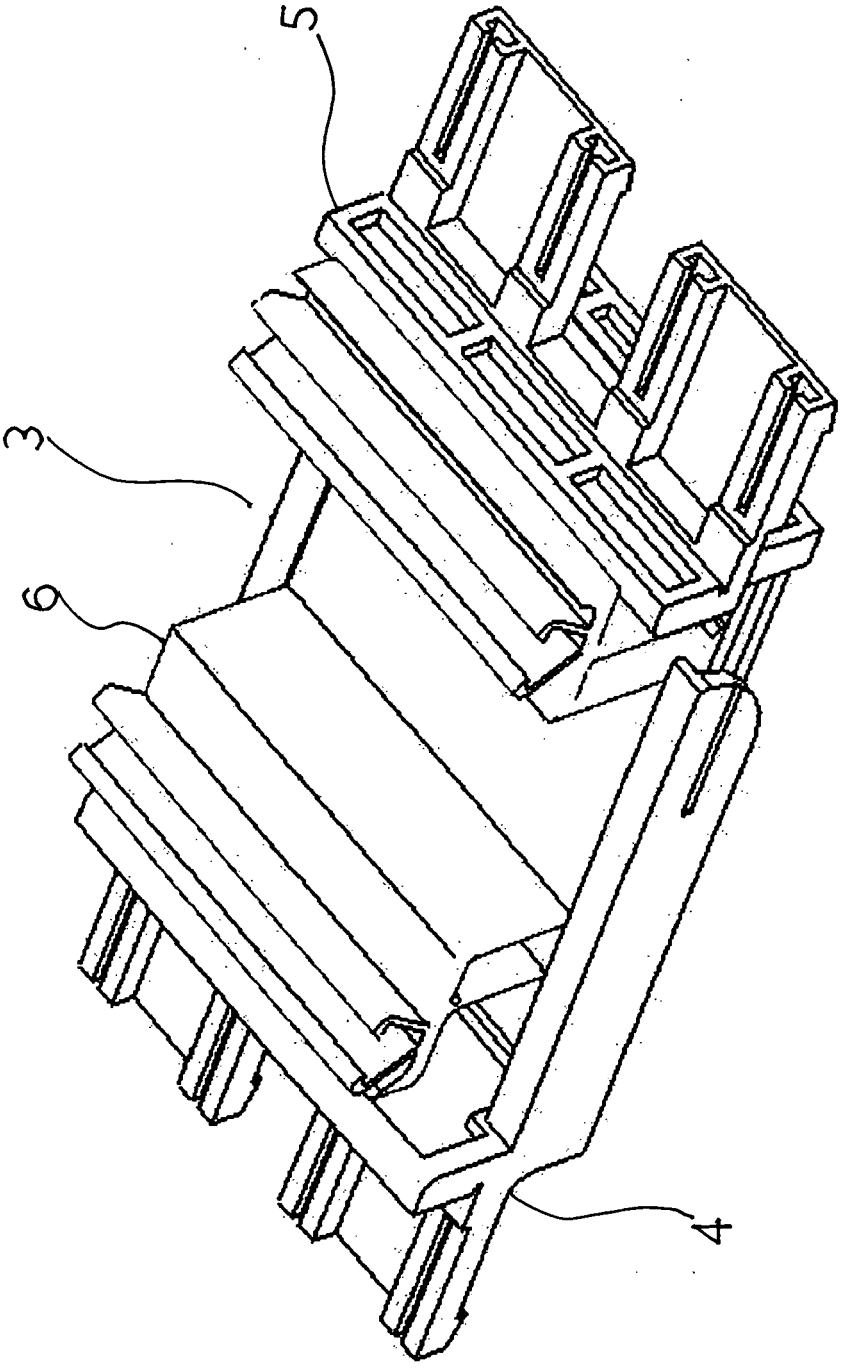


FIG.2

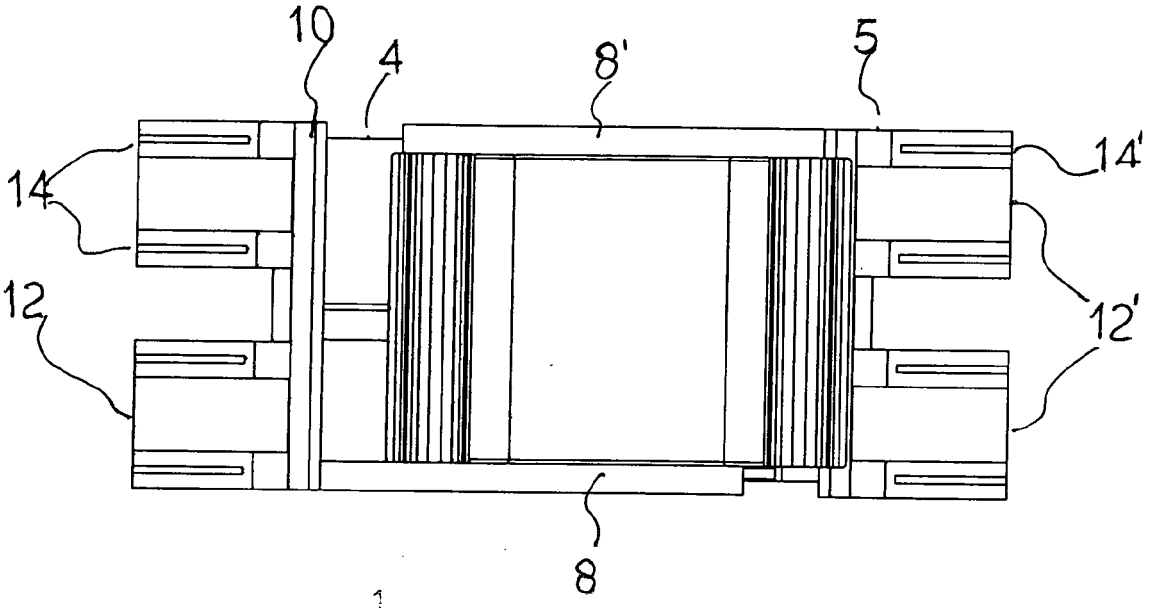


FIG.3

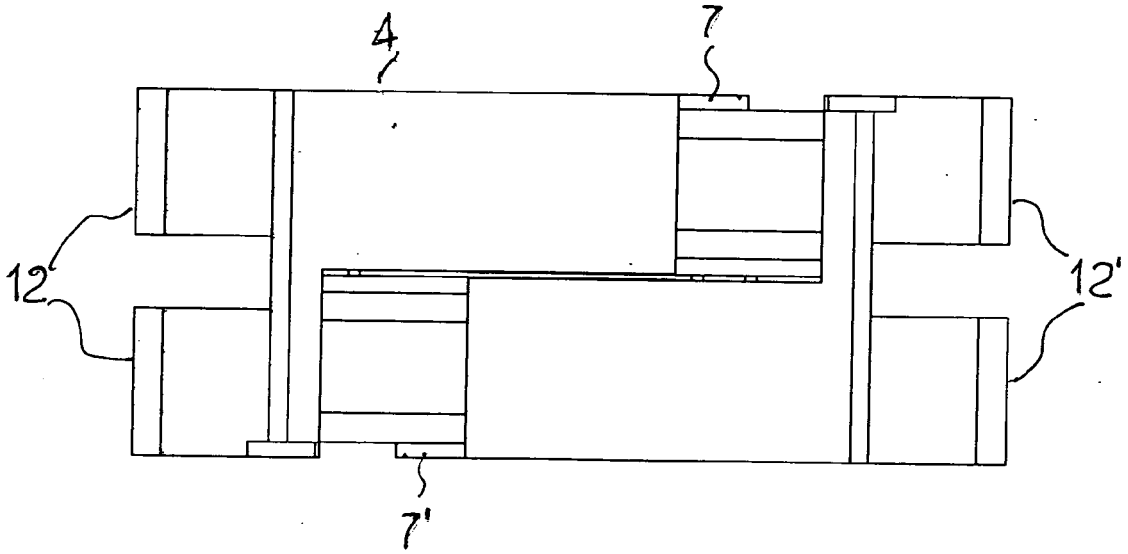


FIG.4

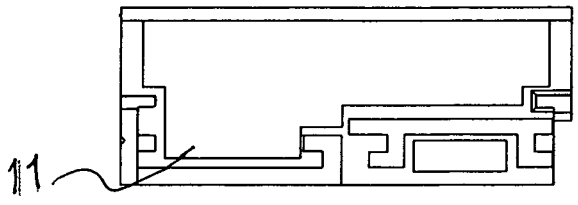


FIG.6

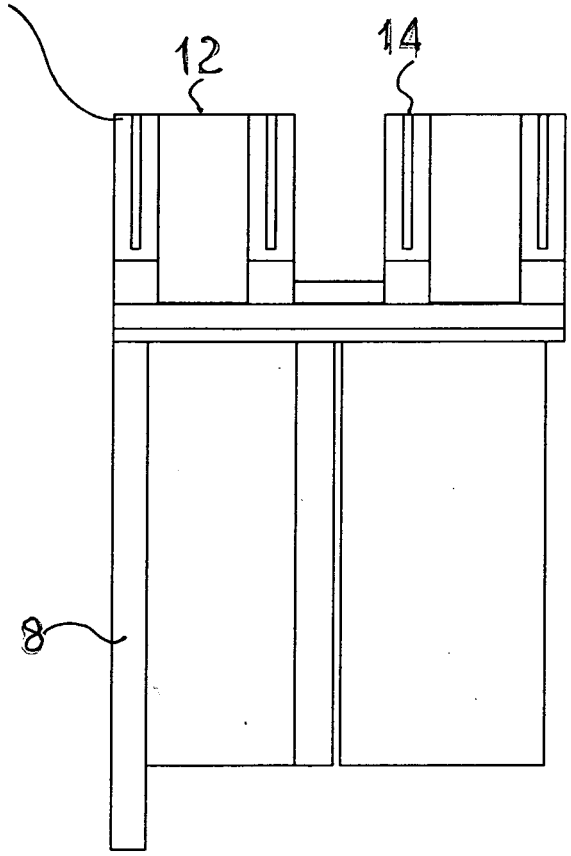


FIG.5

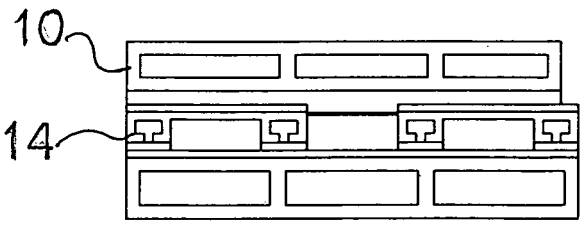


FIG.7

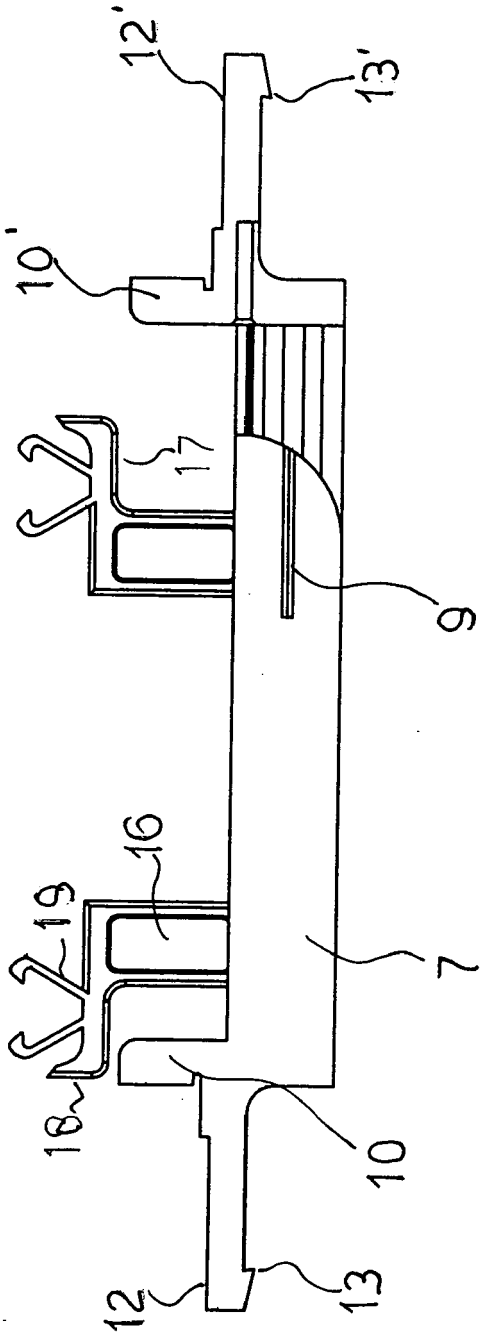


FIG.8

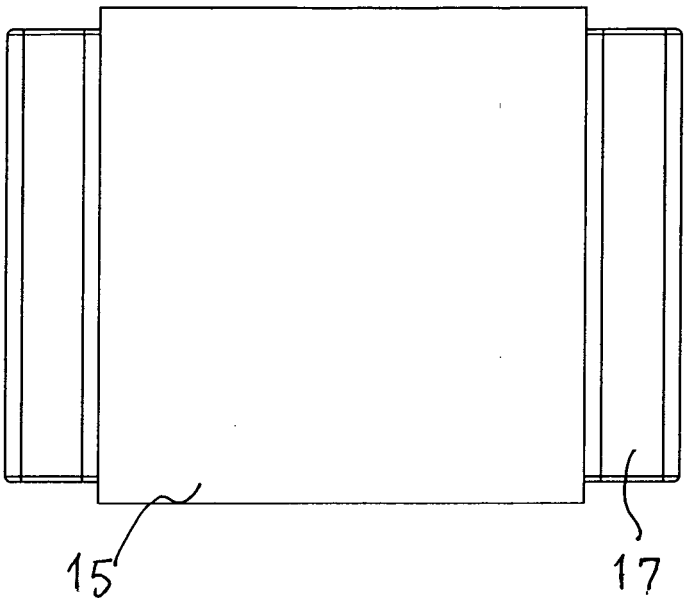


FIG.9

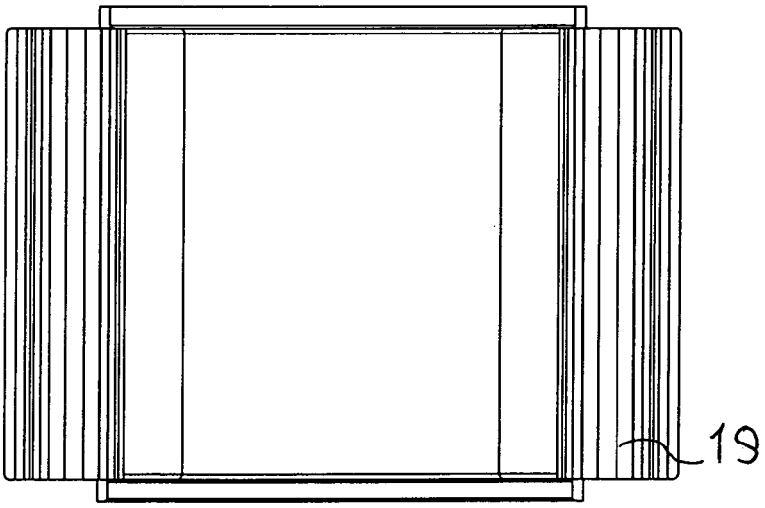


FIG.10

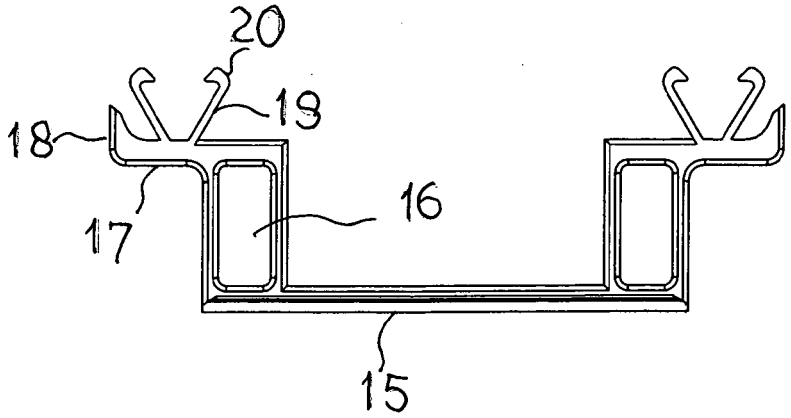


FIG.11

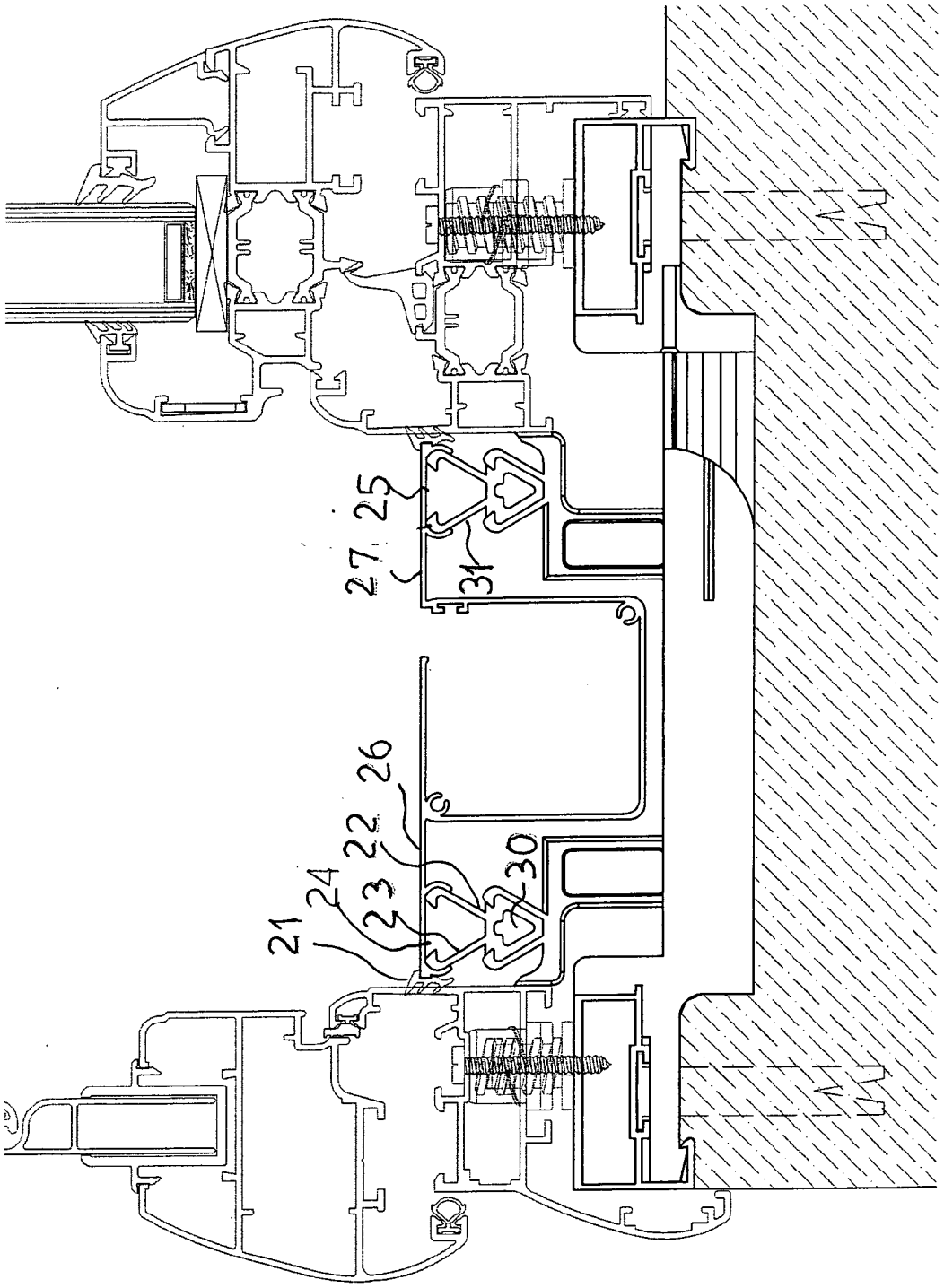


FIG.12

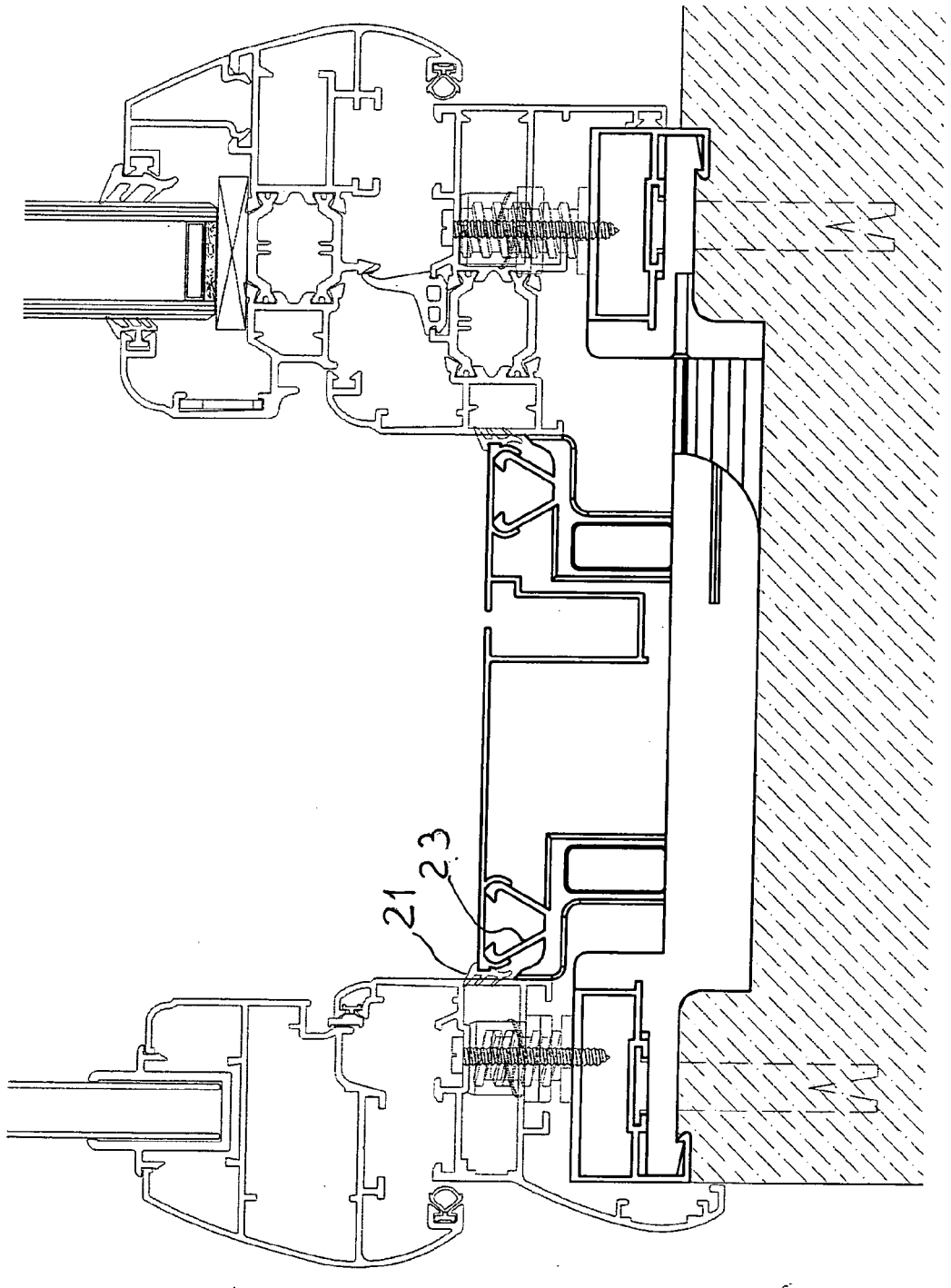


FIG.13

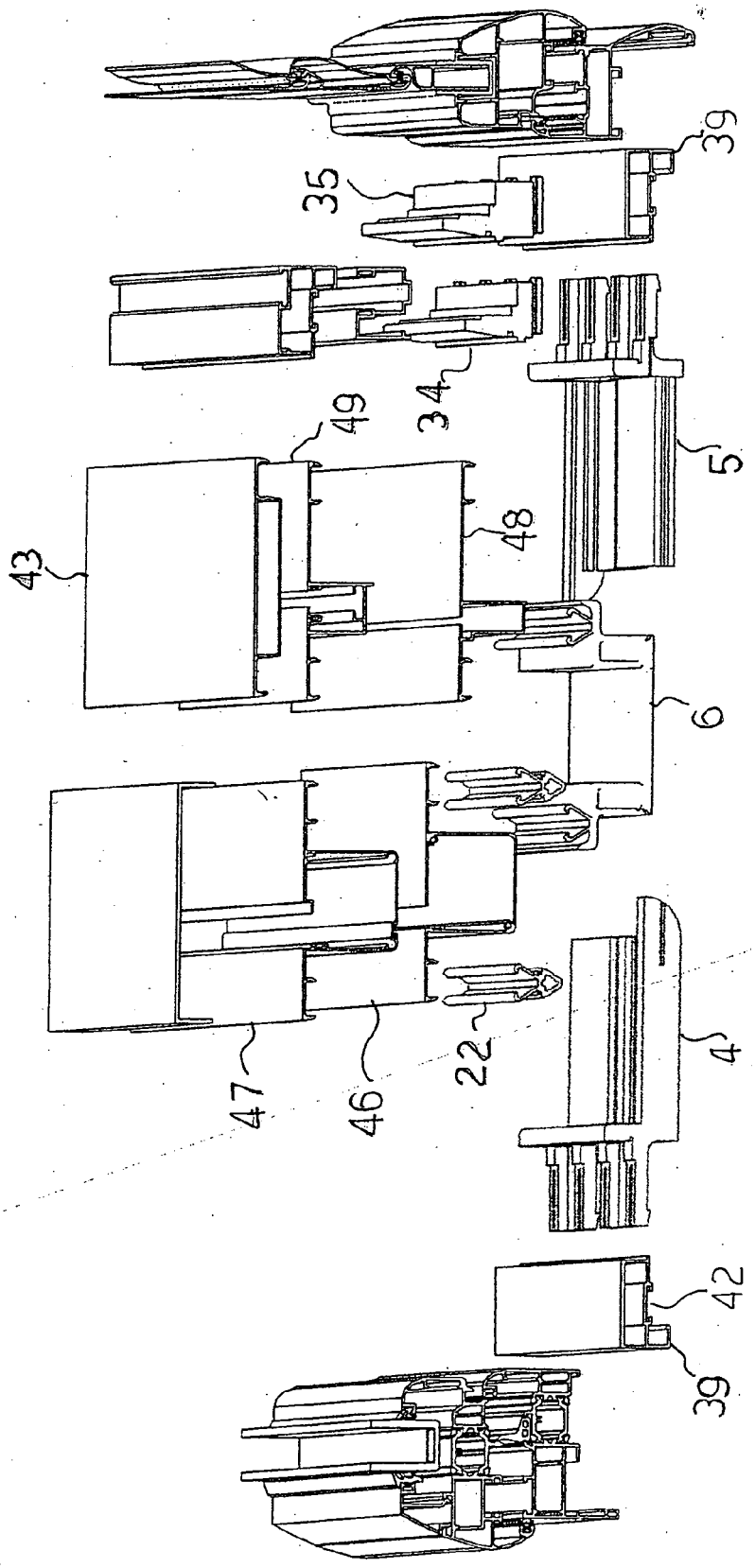


FIG.14

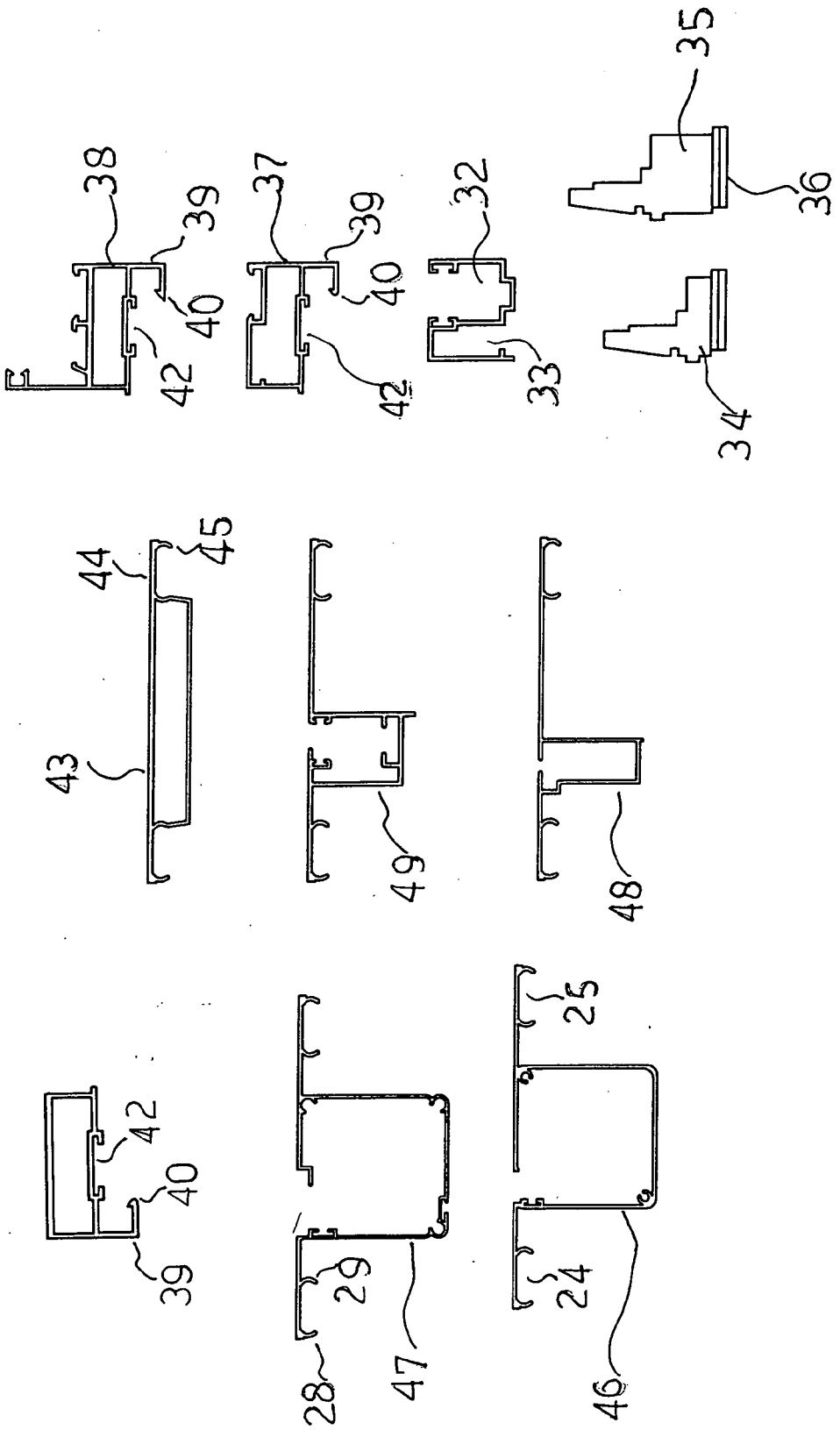
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FIG.15

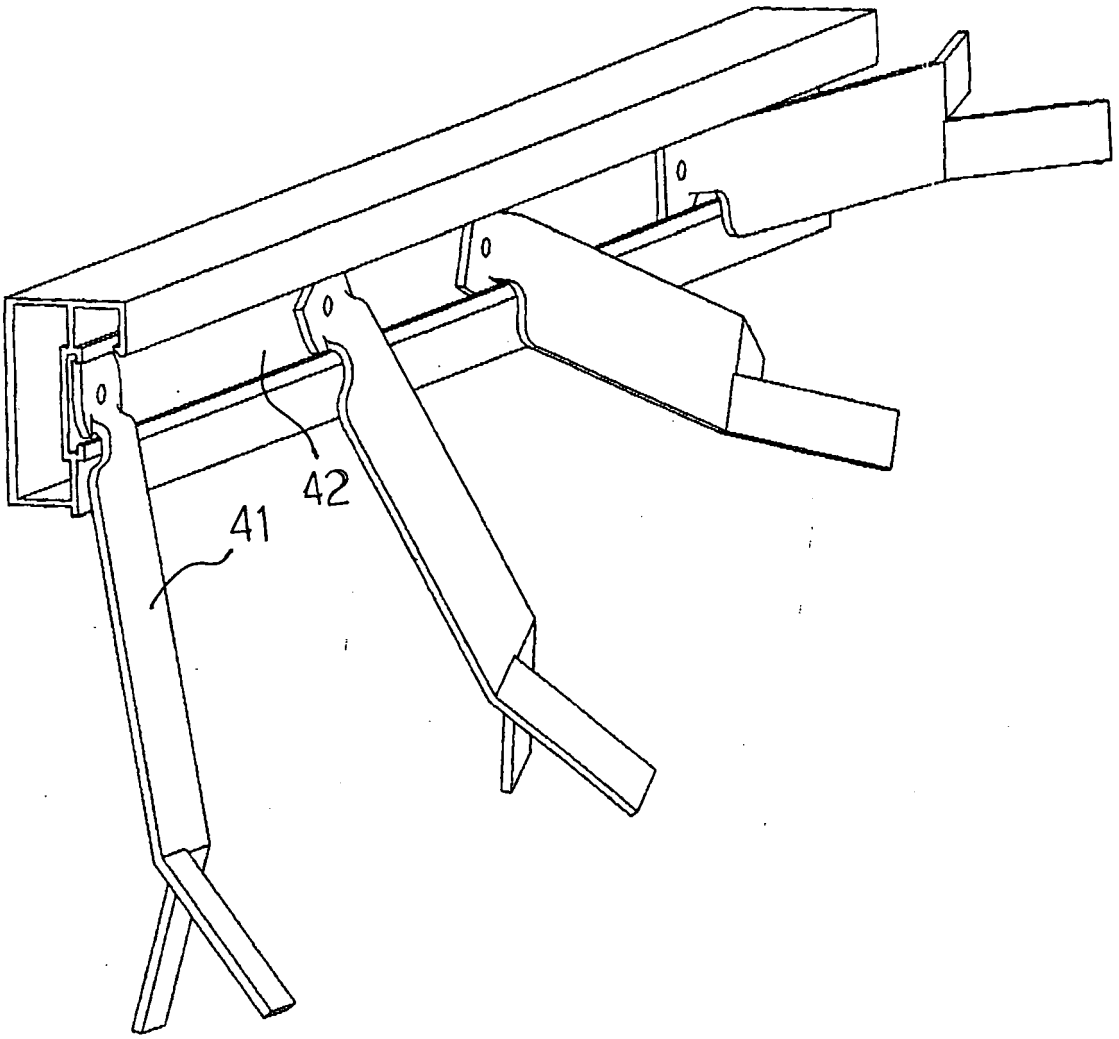


FIG.16

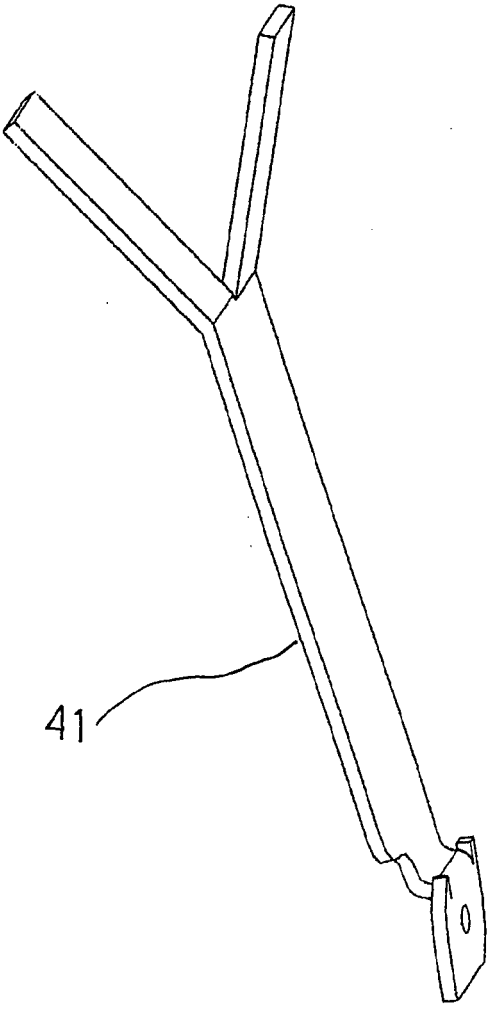


FIG.17

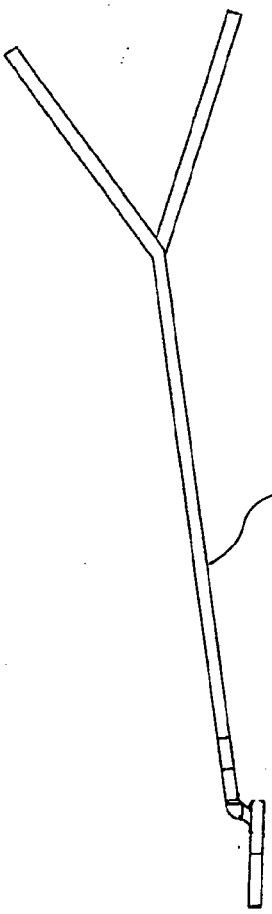


FIG.18

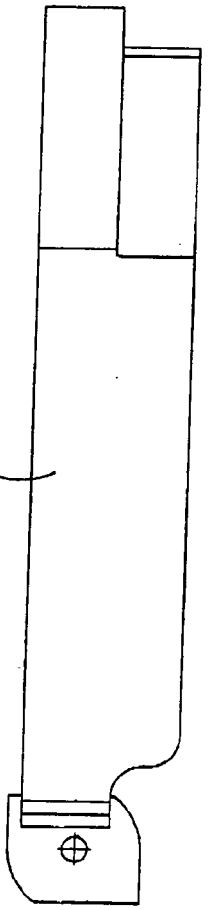

FIG.19

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 07 42 5013

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The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Munich | 22 June 2007 | Tänzler, Ansgar |

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