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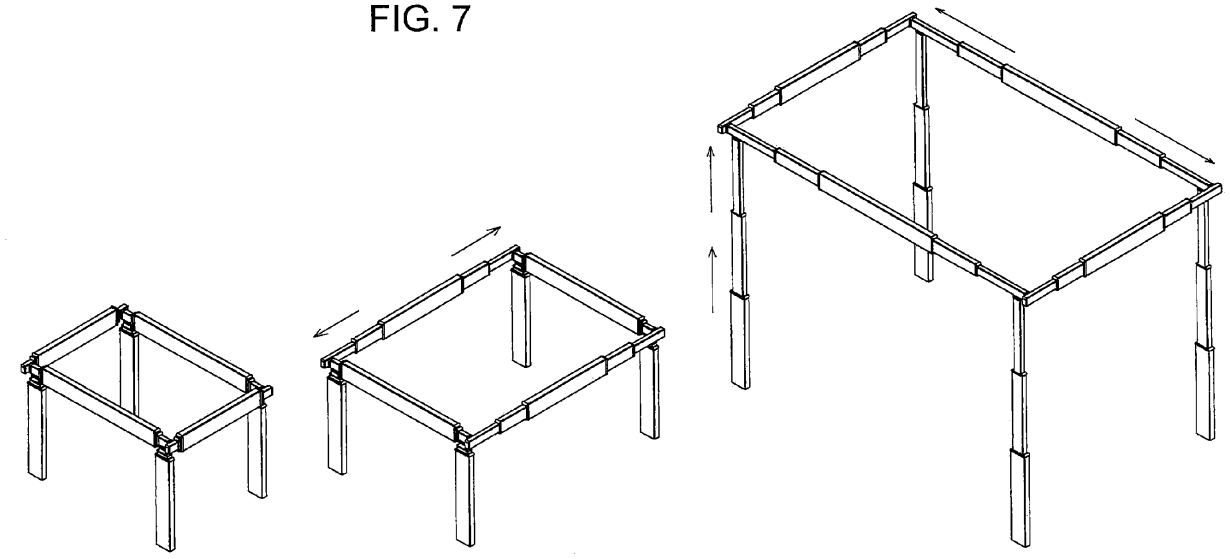
(54) **Modular bearing construction for making structures such as pergolas, roofs, domes, tunnels and the like**

(57) A modular bearing construction for making structures such as pergolas, roofs, domes and tunnels, characterized in that said construction comprises a plurality of telescopic extensible elements made of an extruded profiles, said construction comprising bayonet couplings and a hinge coupling to connect beams and purlines at a cross point thereof.

FIG. 7



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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a modular bearing construction, particularly designed for making structures such as pergolas, roofs, domes, tunnels and the like.

[0002] The modular construction constituting the subject matter of the present invention has been specifically designed for supporting or bearing full or fractional covering structures, either of a fixed or a variable and removable type.

SUMMARY OF THE INVENTION

[0003] The aim of the present invention is to provide such a modular bearing construction which may be easily assembled and disassembled.

[0004] Within the scope of the above mentioned aim, a main object of the invention is to provide such a modular bearing construction which, in a disassembled condition thereof, occupies a small space to facilitate transport thereof.

[0005] Another object of the present invention is to provide such a modular bearing construction which may be easily and quickly made starting from aluminium or other extrudable materials.

[0006] Yet another object of the present invention is to provide such an operatively flexible modular construction allowing to make a lot of different grid surface patterns, including either longitudinal parallel or cross beams, as well as orthogonally crossing, chessboard or lozenge crossing beams.

[0007] Another object of the present invention is to provide such a modular bearing construction which has self-bearing structural properties.

[0008] Yet another object of the present invention is to provide such a modular bearing construction which, owing to its specifically designed constructional features, is very reliable and safe in operation.

[0009] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a modular bearing construction, for making structures such as pergolas, roofs, domes, tunnels, and so on, characterized in that said construction comprises a plurality of telescopic extensible elements made of an extruded profiled or section material, and coupled to one another by dedicated coupling means.

[0010] Said construction comprises moreover bayonet couplings, with a dovetail pattern, comprising two portions to be plugged into one another and locked to one another, fixed both at the head portion and the side faces of said elements.

[0011] Said elements allow to make beams and pillars to be coupled and fixed under flat lattice or grid surfaces, by a U-fork capital consisting of two L like portions, and being fixed on the top of the pillars.

[0012] Said modular bearing construction further comprises a hinge coupling to connect beams and purlines at a cross point thereof, even if the two planes formed thereby are not parallel.

[0013] Said lattice or grid surface is adapted to bear on a wall side by a bearing system in which two or more hook elements, coupled by plugs to said wall, support in cooperation a round bar to be introduced or plugged-in from the top to the bottom and then locked herein.

[0014] Said round bar supports a number of beams and purlines latched to said round bar by an upward to downward movement provided by a said hook element arranged on the top of the profiled elements, at a reversed position from the wall mounted hook elements.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative, example in the accompanying drawings, where:

Figure 1 is a cross-sectional view showing a plurality of different profiles or contours of the modular bearing construction according to the present invention;

Figure 2 shows those same profiled or section members of figure 1 and some complementary elements, in a perspective view, such as slides or anti-friction elements;

Figure 3 is a further perspective view showing those same profiles or profiled cross-members;

Figure 4 is yet another broken-away perspective view, showing a profile or section member in an extending operating step thereof;

Figure 5 is yet another perspective view of said profile in an extension step thereof;

Figure 6 shows a use of said profiled or contoured section members plugged-in into one another to increase their strength as they are used as a pillar or a beam;

Figure 7 shows a possible manner for making assemblable flat constructions and patterns, which may be expanded to enlarge their surfaces and contained volume;

Figure 8 shows a use of section members having a progressively decreasing size to provide aesthetically improved constructions;

Figure 9 shows clamping systems for clamping beams to purlines of said modular bearing construction;

Figure 10 shows a "X" element having a multiple dovetail cross-section pattern;

Figures 11, 12 and 12bis show a head clamping to the section or profile members by the above "X" element through clamping holes "Y";

Figures 13 and 14 show a steel plate "P" screw coupled to one or more of section members of a type (A), (B), (C), to provide a single block;
Figure 15 shows two possible embodiments of shoe covering elements operating for clamping to a floor a plurality of pillars having different constructions;
Figures 16 and 17 show a use of the show covering elements, having a "L" configuration or pattern;
Figure 18 shows wall clamping systems of a prior conventional type;
Figures 19 and 20 show a clamping system for clamping to a wall the modular bearing construction according to the present invention;
Figure 21 shows several possible patterns or embodiments of the hook elements "G" arranged to be head clamped to the profiled or section members (A), (B) and "C";
Figure 22 is yet another perspective view of a clamping system for clamping to a wall the modular bearing construction according to the present invention;
Figure 23 shows a round bar or rod to clamp twin pitch roof constructions;
Figure 24 shows assembling brackets for assembling a "T" strut beam on a corresponding ground or bearing beam "D";
Figure 25 shows a "U"-shape capital of the modular bearing construction according to the present invention;
Figure 26 shows an embodiment in which a beam is supported and locked by a throughgoing pin, on a single "L"-shape element assembled on the head of a single pillar, and wherein two "L"-shape elements are clamped, shoulder against shoulder, to engage and support two beams locked by a throughgoing pin;
Figure 27 shows a quick hinge clamping or connection using a clamping hinge and pin "K" system;
Figure 28 shows the quick hinge and "K" pin clamping block;
Figure 29 shows "W"-shape end portions designed for mounting at the head portions of aluminium extruded tubular section members;
Figure 30 shows further "W"-shape end portion being used as rotary movement preventing members in articulated connections;
Figure 31 shows "V"-shape plug elements, made of a plastics material, to be mounted on the head portions of aluminium extruded tubular section members; and
Figure 32 shows further clamping fittings, made of an aluminium, steel or other material, by a molding or extruding process.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] With reference to the number references of the above mentioned figures, the modular bearing construction, specifically designed for making structures such as pergolas, roof, domes, tunnels and the like, according to the present invention, comprises a plurality of profiled or section members A, B, C and D having rounded corners, and including section portions, indicated by the reference letters a, b, c, d, e, f, with reference to figure 2, meeting different operating functions.

[0017] The letter a shows an area for engaging thereon the telescopic extensible elements or section members.

[0018] The letter b shows a strengthened region for supporting side clamping screws for clamping the "X" attachment or fitting element shown in figure 12.

[0019] The letter c shows an area for engaging therein anti-friction slide elements.

[0020] The letter d shows a channel for receiving self-threading screws, used for clamping to the head portion of the profiled or section members further fittings specifically dedicated thereto, the "X" attachments or fittings, shown in figure 12, the hinge connections or joints "K" shown in figure 28, the floor clamping plates "P" shown in figure 13 or the wall clamping plates "G" shown in figure 22, the "U" capitals shown in figure 25, the end portions "F" shown in figure 29, the further reducing fittings and other conventional fixtures, shown in figure 31.

[0021] The letter e shows a space for an anti-friction bearing.

[0022] The letter f shows a chamber and slot assembly supporting the curtain carriages.

[0023] The profiled or sections A, B, C shown in figures 1 and 3 have inner and outer dimensions adapted to be easily threaded into one another, as shown in figures 4 and 5.

[0024] Said profiled or section members may have any desired pattern and size.

[0025] The section members A, B, C and D shown in figures 1, 3 and 4, threaded into one another, form a telescopic coupling system.

[0026] This pattern provides a plurality of operating advantages, that is:

1) a less size for facilitating transport of the modular bearing construction;
2) a section may operate as a core for a corresponding section member to improve or increase the strength thereof, as they are used either as a pillar or a ground or bearing beam (figure 6);
3) it is possible to make a beam, by using a combination of inventive section members, thereby increasing the flexural strength of the construction, starting from the end portions thereof toward its central part (figure 6);
4) it is possible to easily and quickly make mutually engageable structures and architectural patterns, which may be easily expanded to enlarge the bearing surface and inner volume (figure 7);
5) a use of progressively decreasing side section members to make aesthetically improved or "richer" patterns (figure 8).

[0027] Prior clamping systems for clamping beams to purlines are shown in figure 9:

a) encompassing shoe elements,
b) U-shape show elements,
c) Plug-in shoe elements,
d) bearing shoe elements.

[0028] The modular bearing construction according to the present invention has overcome very important aesthetic and practical problems of conventional system, and, moreover, the inventive modular bearing construction may be assembled without the need of using skilled assembling operators at the assembling place.

[0029] Moreover, the present invention allows to greatly reduce the use of clamping tools, while providing a true pre-assembled pergola construction.

[0030] In fact, in the end assembling operation, it is necessary to merely clamp only cylindric screws, of a headless type, which are already built-in in the inventive modular bearing construction.

[0031] Figure 10 shows the clamping or attachment element "X" with a bayonet or dovetail coupling pattern.

[0032] Said element "X" has a multiple dovetail cross section allowing, by using a same reversed or upturned "X" element, to form a fixed joint attachment with a perfect side plug-in connection.

[0033] The element "X" is provided with a plurality of clamping holes "Y", to be quickly and easily clamped to the head portions of respective section members A, B, C as shown in figures 1 and 2.

[0034] That same element "X" may also be mounted on a side of the section member, as is shown in figure 12, to provide flat lattice or grid surfaces including a plurality of either parallel or orthogonally crossed beams, which may be easily fixedly clamped by using a constructionally simple recessed head wrench, as is shown in figure 12bis.

[0035] This allows to achieve great construction savings, and to easily manage the piece store, since the "dovetail" insert element "X" is made by extruding a single section member, which may be easily coupled and fitted to all the extruded tubular section members.

[0036] A clamping system for clamping to a floor the modular bearing construction according to the present invention will be hereinafter disclosed.

[0037] The steel plate "P", shown in figure 13, screw coupled to one or more of the A, B, C section members of figure 1, provides therewith a single clamping block.

[0038] This clamping block, the so-called "shoe" is clamped to a floor by suitable clamping plugs, so as to operate as a core for the larger cross-section profiled elements operating as pillars for the construction shown in figure 14.

[0039] The show covering elements shown in figure 15 are so designed as to cover stainless steel shoes which, as aforesaid, are used for clamping to a floor several types of pillars pertaining to the modular bearing construction according to the present invention.

[0040] By way of an example, figure 15 shows two possible "L" and "M" embodiments or patterns.

[0041] The "L" element is used for covering the stainless steel shoe operating for coupling two intermediate section members to one another, and to clamp or lock the latter on the floor.

[0042] The above shoe cover element may be omitted while eliminating a portion thereof owing to suitable cut preset arrangements.

[0043] This will allow to engage optional "H"-shape guides which may be preferably arranged flush with the floor, to improve a use of the so-called "fall" curtains, as shown in figure 16.

[0044] Said shoe covers and shoes are made with similar pattern, but different dimensions, depending on the section member sides and use.

[0045] For example, the shoe covering element "S" shown in figure 14, is designed for covering its respective shoe to clamp to the floor an intermediate section member as the latter is used as a single pillar, but it may also be used as a finishing element for a large contour section member as the latter is used as a coating for the intermediate side section member or as a reducing fittings in telescopic systems, as shown in figure 17.

[0046] According to a characterizing aspect of the present invention, an attachment or clamping assembly to clamp the inventive modular bearing construction to the wall is herein provided.

[0047] More specifically, the clamping system for clamping to a wall the inventive modular bearing construction is very advantageous with respect to prior clamping method, such as the clamping shoes, "U" cradles or saddles and the like, which have the drawback that they cannot be relocated, or easily assembled, since their positions may coincide with non compatible structural elements, and moreover they have a non compatible aesthetic pattern, as shown in figure 18.

[0048] The wall clamping system according to the present invention provides to use, instead of conventional beam bearing shoes, two or more hook elements "G" fixed to a wall by clamping plugs and optional plastics material spacer elements.

[0049] Said hook elements "G" shown in figure 19 operate independently from one another and, accordingly, they are so arranged as to be perfectly clamped to a wall, while preventing from interfering with existing tubes, electric lines, steps and so on.

[0050] Two or more wall-clamped hook elements "G" are precisely arranged on a same axis since they are connected to one another by a round bar or rod "O" which may be threaded therethrough by a movement from upward to downward, and then being locked by a locking jaw "N" including a plurality of built-in clamping screws, as shown in figures 19 and 20.

[0051] Said hook elements "G" are also adapted to be clamped to the head portion of respective profiled or section members (A), (B) and (C), with a downward directed

opening and different patterns as shown in figure 21.

[0052] Said rod or bar "O" has a bar length adapted to engage and support the lattice construction "R", and ending with said hook elements "G" thereby the latter may be easily assembled to the bar or rod by engaging it from upward to downward.

[0053] Moreover, said round bar or rod "B" allows the lattice structure "R" to slide along said bar or rotate thereabout, in order to allow a preferred position thereof to be easily selected.

[0054] In operation, during a final positioning, the structure is locked by screwing-on the screws "V" in their respective jaws "N" as shown in figures 22 and 19.

[0055] The round bar or rod "B" can be satisfactorily used as a bearing or ground beam; it connects and supports structures of a two-flap roof, as in the exemplary embodiment shown in figure 23.

[0056] Figure 24 shows prior methods for assembling "T" beams, as bearing or strut elements, on one or more of the pillars:

a) a beam "T" is clamped to the head or side portion of the pillar, by throughgoing screws or pins;
b) the pillar comprises, at the end portion thereof, a cradle bracket, or including a contoured recess, for receiving therein the beam to be screwed on;
c) the beam (or strut) is clamped by clamping screws directly on the current or supporting beam.

[0057] According to the present invention, the "U" fork capital, shown in figure 25, comprises two like or identical elements "L".

[0058] The two like elements "L" are clamped to the head portions of the section members (A), (B) and (C), by clamping screws passing through respective holes "Z".

[0059] The thus assembled two elements "L" are coupled with a mirror-like coupling relationship with respect to one another and are mutually clamped by clamping throughgoing pins.

[0060] Said two elements "L" are coupled without adjustment errors, owing to the provision of respective tooth elements and fixed joints "E".

[0061] The "U" shape fork capital comprises a bearing region "S" having a donkey back curved region, to allow said beams to allow contact said region at an inner point of the pillar cross section to provide a stable system, without backwater regions.

[0062] Each said "U" shape capital further includes a plurality of brackets "Q" to be mounted by a mounting pin to a wall square bar.

[0063] This constituted an alternative system in addition to the above disclosed system.

[0064] According to the present invention, said construction may be made by three making methods, as shown in figure 26.

[0065] According to the first making method, and with reference to the examples shown in figure 24, said composite "U"-shape capital receives in its saddle or cradle portion either the ridge or the ground beam being locked by a throughgoing pin "J" engaged through slot holes "F".

[0066] The second method provides to support and lock said beam by a throughgoing locking pin on a single element "L" mounted at the head or top portion of a single pillar.

[0067] In the third method, the two "L" elements or beams are clamped at their shoulders to receive and support two further beams also locked by a locking throughgoing pin.

[0068] Prior systems for assembling the strut beam "T" on the bearing beam "D" provide to use "U"-shaped brackets or long throughgoing screws, as schematically shown in figure 24.

[0069] According to the present invention, on the contrary, the inventive construction comprises a quick coupling system including a hinge and pin assembly "K" constituting of two twin portions, having two ring elements and two alternating spaces thereby allowing said portions to be introduced into one another to form with the locking pin a complete sleeve, as shown in figure 28.

[0070] Since the hinge and pin quick coupling "K" is constituted by two twin or like portions, it may be either extruded or pressed, by using a single pressing die, thereby providing a great economic savings.

[0071] Since said hinge is designed for rotating about the axis of the sleeve, the quick hinge and pin claming assembly "K" is adapted to change the inclination angle between the portions thereof, as shown in figure 27.

[0072] The quick hinge and pin latching or clamping system, constituted by two twin or like portions, comprises a plurality of holes "Z" adapted to engage therein the clamping screws for clamping the assembly to the profiled elements (A), (B) and (C), thereby it is possible to easily assemble two beams, while achieving a desired inclination with respect to one another.

[0073] Said hinge and pin quick coupling further includes a double scissor assembly "F" cooperating with said sleeve to prevent any jaw torque stress from occurring at the strut "T" ground beam "D" assembly.

[0074] According to the present invention, the strut and ground beams can be quickly and easily assembled, even by an unskilled operator, owing to the provision of the pre-assembled quick couplings "K".

[0075] The assembling operation merely comprises to insert the locking pin into the two parts of the composite hinge, as shown in figure 28.

[0076] The end portions "W" have been specifically designed to be assembled to the head or top portions of the extruded aluminium tubular profiled or section members (A), (B) and (C) as they operate as beams or purlines in the pergola system according to the present invention.

[0077] More specifically the end portions "W" have been specifically designed for use as rotary detent blocks in articulated couplings such that shown in figure 30.

[0078] The end portions "W" are made by a pressed metal material, to any desired size also adapted to ex-

isting profiled or section members (see figure 29), and, as all the other fittings thereinabove disclosed, they may have any desired shape and size.

[0079] The construction according to the present invention further comprises a plurality of plastics material cap plug "V", shown in figure 31, designed for mounting on the head portions of said extruded aluminium tubular profiled or cross section members (A), (B) and (C), to prevent insets and birds from entering said profiled or section member construction.

[0080] In figure 32 are shown a plurality of fittings made of an aluminium, steel or other like material by a pressing or extruding method. By way of an example, are herein shown at least a 90° straight fitting, a 90° curved fitting, a "T" fitting, a cross fitting, a star fitting and an umbrella fitting.

[0081] The profiled or section members (A), (B), (C) and (D) shown in figure 1, having rounded corners, have a series of important characteristics in their cross-section patterns: a, b, c, d, e, f, as shown in figure 2.

[0082] The section a) comprises an area for engaging thereon telescopic profiled elements.

[0083] The section b) is a strengthened region to bear the side clamping screws for clamping the attachment element "X" (figure 12).

[0084] The section c) is an area or region for engaging therein anti-friction slides or elements, as schematically shown in figure 2.

[0085] The section d) is a channel for receiving self-threading screws for clamping to the head portions of the profiled or cross section members further dedicated fittings, the "X" attachments of figure 12, hinge connections or joints "K" of figure 18, floor clamping plates "P" of figure 13, or wall clamping fittings "G" of figure 22, "U" capitals of figure 25, the end portions "F" of figure 29, the reduced fittings and other conventional fittings, as shown in figure 31.

[0086] The section e) is a space for receiving the anti-friction bearing.

[0087] The section f) defines a curtain carriage bearing chamber and slot.

[0088] The profiled or section members(A), (B) and (C) shown in figures 1 and 3 have inner and outer dimensions, to be easily threaded into one another, as shown in figures 4 and 5.

[0089] They may have any desired patterns and size.

[0090] The section or profiled elements (A), (B), (C) and (D), as threaded into one another, form a telescopic system.

[0091] These features provides a plurality of advantages:

1) a less size for facilitating transport of the modular bearing construction;

2) a section may operate as a core for a corresponding section member to improve or increase the strength thereof, as they are used either as a pillar or a bearing beam (figure 6);

3) it is possible to make a beam, by using any combination of inventive section members, thereby increasing the flexural strength of the construction, starting from the end portions thereof toward its central part (figure 6);

4) it is possible to easily and quickly make mutually engageable structures and architectural patterns, which may be easily expanded to enlarge the bearing surface and inner volume (figure 7);

5) a use of progressively decreasing side section members to make aesthetically improved or "richer" patterns (figure 8).

[0092] It has been found that the invention fully achieves the intended aim and objects.

[0093] In fact, the invention has provided a modular bearing construction, for making structures, such as pergolas, roofs, domes, tunnels and the like.

[0094] The inventive modular construction is adapted to support either full or fractional coverings, either mixed or a variable or removable type, which may be sold in a kit, in a partially assembled condition.

[0095] The inventive construction may be easily assembled and disassembled, and is operatively very flexible, since it is constituted by extending telescopic elements coupled to one another by specifically designed connecting systems.

[0096] The inventive construction is adapted to produce continuous lattice surfaces of a flat, corrugated or uneven type.

[0097] The modular construction of the invention is characterized in that it comprises a plurality of beams, purlines and pillars of different dimensions, which may all perfectly threaded into one another to provide a telescopic extending arrangement.

[0098] Yet another advantage of the inventive construction is that said construction has, in a disassembled condition thereof, a very small size to facilitate its transport.

[0099] The construction beams and pillars are made of an aluminium or other material which may be easily extruded or contoured.

[0100] Said beams and pillars may be used either individually or as cooperating sets, which have, though not necessarily, homogeneous cross sections and materials, and one may operate either as a liner or core of the other, thereby providing different approaches depending on the stress applied thereto.

[0101] The elements constituting the beams, purlines and pillars are easily connectable to one another, by arranging them in an overlapping or adjoining condition and also crossing them, by means of a plurality of dovetail pattern bayonet attachments, with a consequent great operating and aesthetic advantage.

[0102] The related attachments of fittings comprise two parts which may be fixedly plugged into one another, and may be easily clamped both at the heat or top portions and on the side surfaces of said elements.

[0103] Thus, by using the above disclosed clamping system, it is possible to provide a lot of different lattice surface patterns, including either longitudinally or cross extending parallel beams, as well as orthogonally crossed, chessboard pr lozenge beams.

[0104] All the constructional elements may be assembled in a very simple assembling manner, since they are already partially pre-assembled and since their further assembly may be quickly and easily performed without errors.

[0105] The thus made flat lattice surfaces are adapted to support any desired types of coverings.

[0106] Furthermore, said flat lattice or grid surfaces may be supported either by individual or coupled beams and pillars, thereby providing truly self-supporting structures.

[0107] Said beams and pillars, moreover, which always constituted by the disclosed same types of profiled or cross section members, may be coupled and clamped under the lattice flat surfaces by using a specifically designed "U"-shape fork capital including two twin or like "L" portions, and being clamped to the head portions of the pillars.

[0108] Yet another advantageous characteristic of the present invention is that of using a hinge coupling or joint allowing to easily and quickly connect beams and purlines at their crossing regions, even if the planes formed thereby are not parallel.

[0109] Moreover, the grid or lattice surfaces may bear on a wall at a side thereof, by using the system according to the present invention, in which two or more hook elements, clamped by plugs to the same wall, support in cooperation a round bar which may be engaged by displacing it upward to downward and then being easily and quickly locked.

[0110] The round bar, in turn, supports a necessary number of beams and purlines, which are latched to the bar by the same type of upward to downward movement.

[0111] This operation is made easily possible owing to the provision of that same hook element, mounted at the head portion of the profiled or section members, at a reversed or upturned position with respect to the wall mounted ones.

[0112] In operation, after having set a proper position and inclination, and by causing the hook elements to easily slide on the round bar, the assembly is quickly and easily locked by built-in locking screws.

[0113] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

Claims

1. A modular bearing construction for making structures such as pergolas, roofs, domes and tunnels, **characterized in that** said construction comprises a plurality of telescopic extensible elements made of an extruded profiled or section material and coupled to one another by dedicated coupling means; said construction comprising bayonet couplings, with a dovetail pattern comprising two portions to be plugged into one another and locked to one another, fixed both at the head portion and the side faces of said elements; said elements allowing to make beams and pillars to be coupled and fixed under flat lattice surfaces, by a U-fork capital consisting of two L like portions and being fixed on the top of the pillars; said construction further comprising a hinge coupling to connect beams and purlines at a cross point thereof even if the two planes formed thereby are not parallel; said lattice surface being adapted to bear on a wall side by a bearing system in which two or more hook elements, coupled by plugs to said wall, support in cooperation a round bar to be introduced from the top to the bottom and then locked herein; said round bar supporting a number of beams and purlines latched to said round bar by a upward to downward movement provided by a said hook element arranged on the top of the profiled elements, at a reversed position from the wall mounted hook elements.

2. A construction, according to claim 1, **characterized in that** said construction comprises rounded corner profiled elements, including differentiated function section portions: a region for engaging therein the telescopic profiled elements; a stiffened region for bearing the side clamping screw of an attachment assembly; an area for engaging therein slides and anti-friction elements; a channel for self-threading screws for providing a top connection to said profiled elements, novel dedicated fittings, said attachments, hinge couplings, clamping plates for clamping to a floor or a wall, capitals, fittings, reducer fittings or other auxiliary elements, a space for an anti-friction bearing; and a curtain carriage bearing space and gap.

3. A construction, according to claim 2, **characterized in that** said profiled elements have such an inner and outer size as to be easily threaded into one another thereby forming a compact telescopic system; one profiled element operating as a stiffening core for the other for use either as a pillar or as a beam; and being thereby, by combining said elements, it is possible to make a beam, thereby increasing the flexural strength starting from the construction end portions toward the central part thereof; said construction allowing to make modular flat structures and architectures, which may be expanded to enlarge their surface and encompassed volume.

4. A construction, according to claim 3, **characterized in that** said bayonet or dovetail coupling comprises a multiple dovetail section allowing, by using a same

overturned element, to form a laterally engageable fixed-joint coupling; said element, including a plurality of holes to be fixed to head portions of said profiled elements; said element being adapted to be mounted, in an adjoining relationship of said profiled elements, to provide flat lattice surfaces including a plurality of parallel and orthogonally crossed beams to be firmly fitted into one another by a recessed fitting key tool; the dovetail insert comprising a single extruded profiled or section element to be coupled to all the extruded tubular section elements.

5. A construction, according to one or more of the preceding claims, **characterized in that** said construction comprises a floor clamping system including a steel plate threaded to one or more profiled elements to form a single block therewith; said plate being coupled to the floor by coupling plugs to operate as a core for an enlarged cross section profiled element operating as a structural pillar arrangement; said construction comprising moreover shoe bodies covering corresponding stainless steel shoe elements for clamping to the floor a plurality of structural pillars.

6. A construction, according to one or more of the preceding claims, **characterized in that** said construction comprises two shoe covering patterns, the first pattern being adapted to cover a stainless steel shoe for coupling and locking two middle profiled elements to the floor, said first shoe covering element including cut arrangements, to house guides to be flush arranged on said floor; the second shoe cover being designed for covering a shoe element to clamp to the floor the middle profiled element to be used as a single pillar, and being also adapted to operate as a finishing end piece for a large profiled element.

7. A construction, according to one or more of the preceding claims, **characterized in that** said construction comprises moreover a wall clamping attachment including two or more hook elements clamped to the wall by clamping plugs and plastics material spacer elements; said hook elements being independent from one another thereby to be arranged at a position facilitating their connection to the wall, so as to bypass obstructing tubes, electric cables and steps and so on; at least two of said hook elements being coupled by a round threaded thereinto by a downward directed movement to always arrange said at least two hook elements on a same locating axis to allow them to be locked by a locking jaw and built-in locking screw assembly; said hook elements being moreover adapted to be clamped to head portions of said profiled elements with a downward directed opening thereof.

8. A construction, according to one or more of the preceding claims, **characterized in that** said bar is designed for engaging and supporting a lattice construction including end portions with said hook elements to be mounted to said bar by a downward directed mounting movement; said round bar allowing said lattice construction to slide therealong or rotated thereabout to allow to select a target assembly position while locking said construction by screwing screws in said locking jaws; said bar operating as a ridge or ground beam coupling and supporting a two pitch roof construction.

9. A construction, according to one or more of the preceding claims, **characterized in that** said construction comprises a plurality of fork capitals; one said fork capital comprising two like elements clamped at the top thereof to said profiled elements by clamping screws passing through screw holes; said two profiled elements being coupled by a mirror coupling pattern and being further fixed to one another by throughgoing fixing pins; said two elements including coupling tooth and plug-in coupling members so engageable as to precisely connect said elements; each said fork capital having a donkey back curved region, to allow said beams to always contact said region at an inner point of the pillar cross-section to provide a stable system, without backwater regions, each said capital further including a plurality of brackets to be mounted by mounting pins to a wall square bar.

10. A construction, according to one or more of the preceding claims, **characterized in that** said construction may be made by three making methods, in a first method said composite capital receiving in its saddle portion either said ridge or said ground beam being locked by a pin engaged through slot holes; the second method providing to support and lock said beam by throughgoing locking pin on a single element mounted at the top of a single pillar; in the third method the two beams being clamped at their shoulders to receive and support two further beams also locked by a locking throughgoing pin.

11. A construction, according to one or more of the preceding claims, **characterized in that** said construction further comprises a quick coupling assembly, of a hinge and pin pattern, including two like portions having two ring elements and two alternating spaces thereby allowing said portions to be introduced into one another to form with the locking pin a complete sleeve, said two like portions being either extruded portions or pressed portions made by a single pressing die; said hinge and pin quick coupling being adapted to change the inclination angle between said portions; said hinge and pin quick coupling portions including a plurality of holes for engaging profiled element clamping screws to mount the beams with target inclined pattern; said hinge and pin quick

coupling further including double scissors assembly cooperating with said sleeve to prevent any jaw torque stress from occurring at the strut ground beam assembly.

12. A construction, according to one or more of the preceding claims, **characterized in that** said construction comprises a plurality of plastics material cap plug mounted on the head portions of said extruded aluminium tubular profiled or section members, to prevent insects and birds from entering said profiled or section member construction.

13. A construction, according to one or more of the preceding claims, **characterized in that** said construction further comprises a plurality of fittings made of an aluminium, steel or other like material by a pressing or extruding method; said fittings comprising at least a 90° straight fitting, a 90° curved fitting, a T fitting, a cross fitting, a star fitting, and an umbrella fitting.

FIG. 1

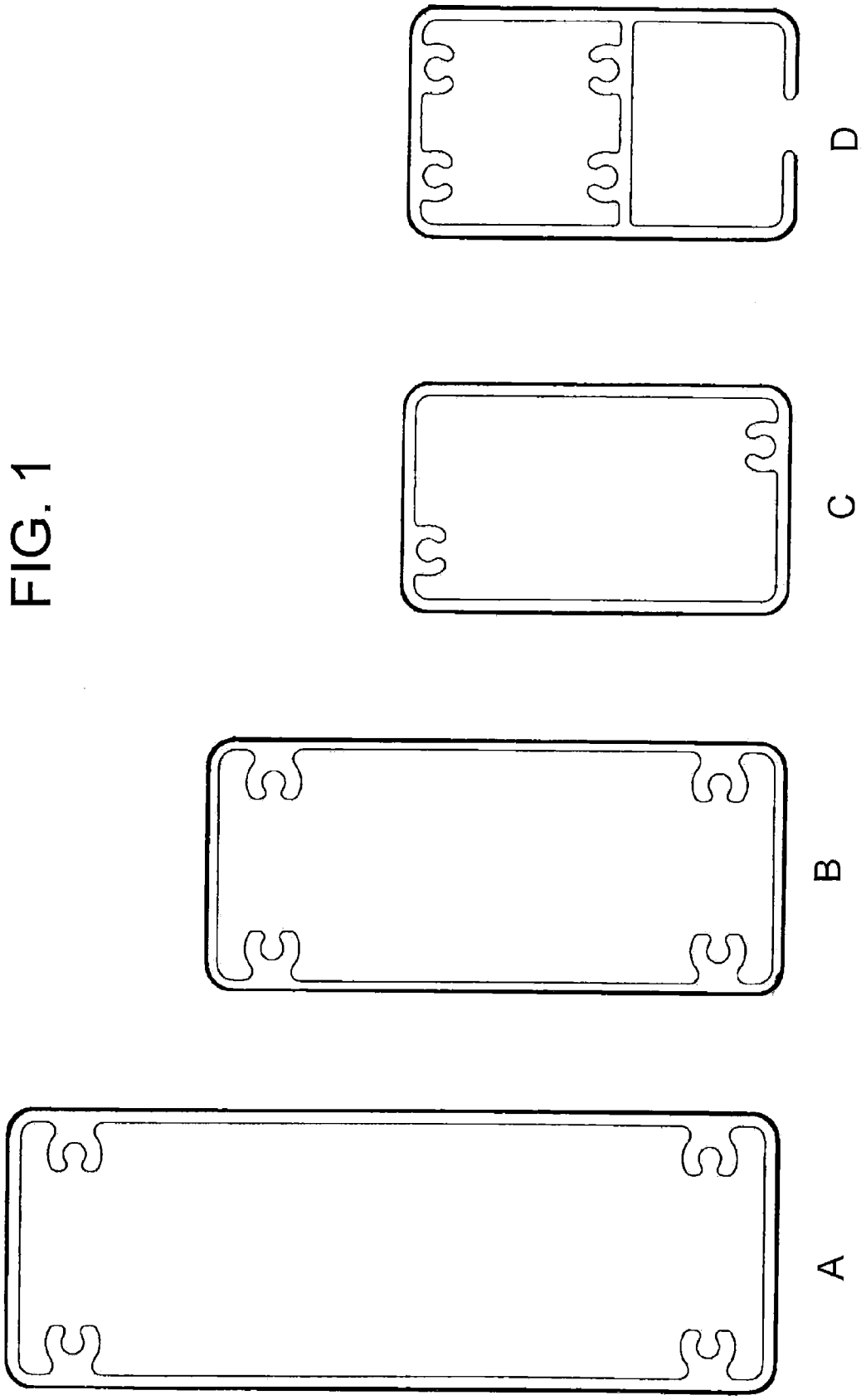


FIG. 2

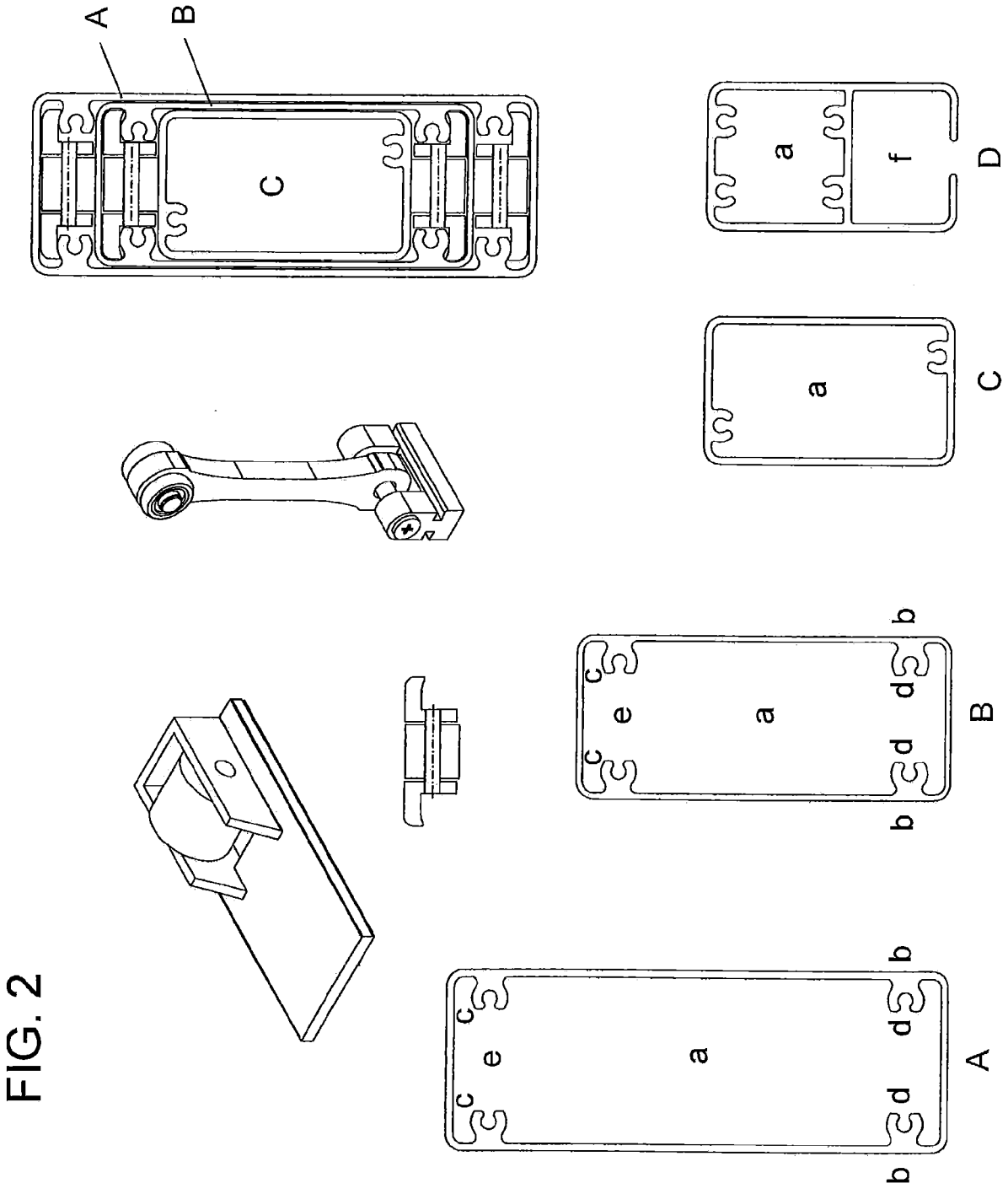
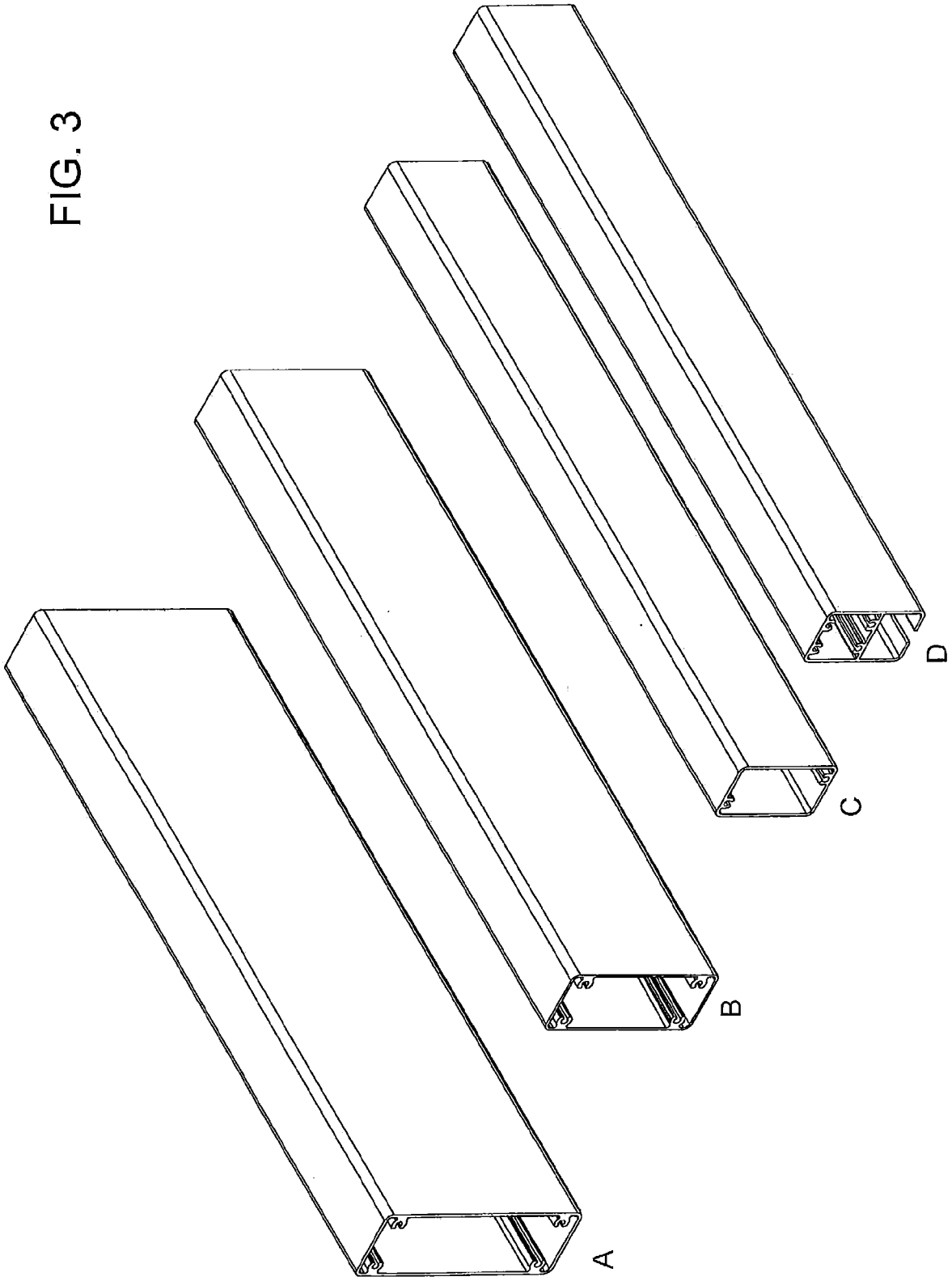


FIG. 3



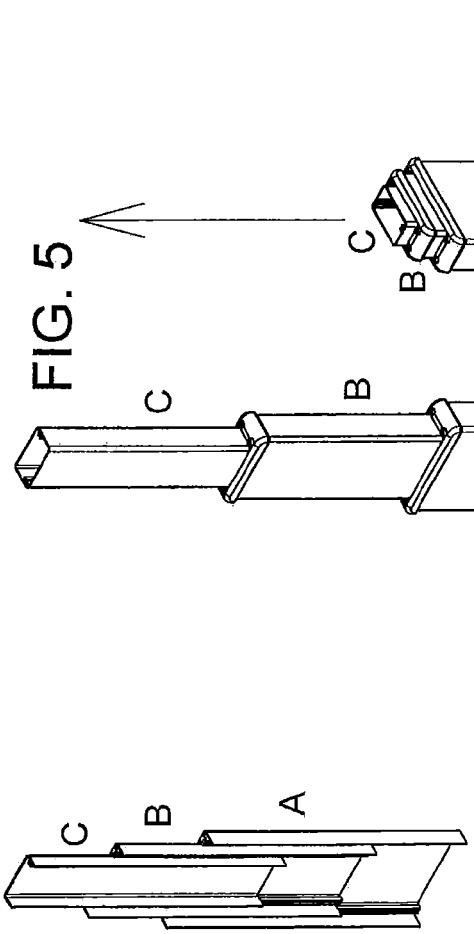


FIG. 4

FIG. 5

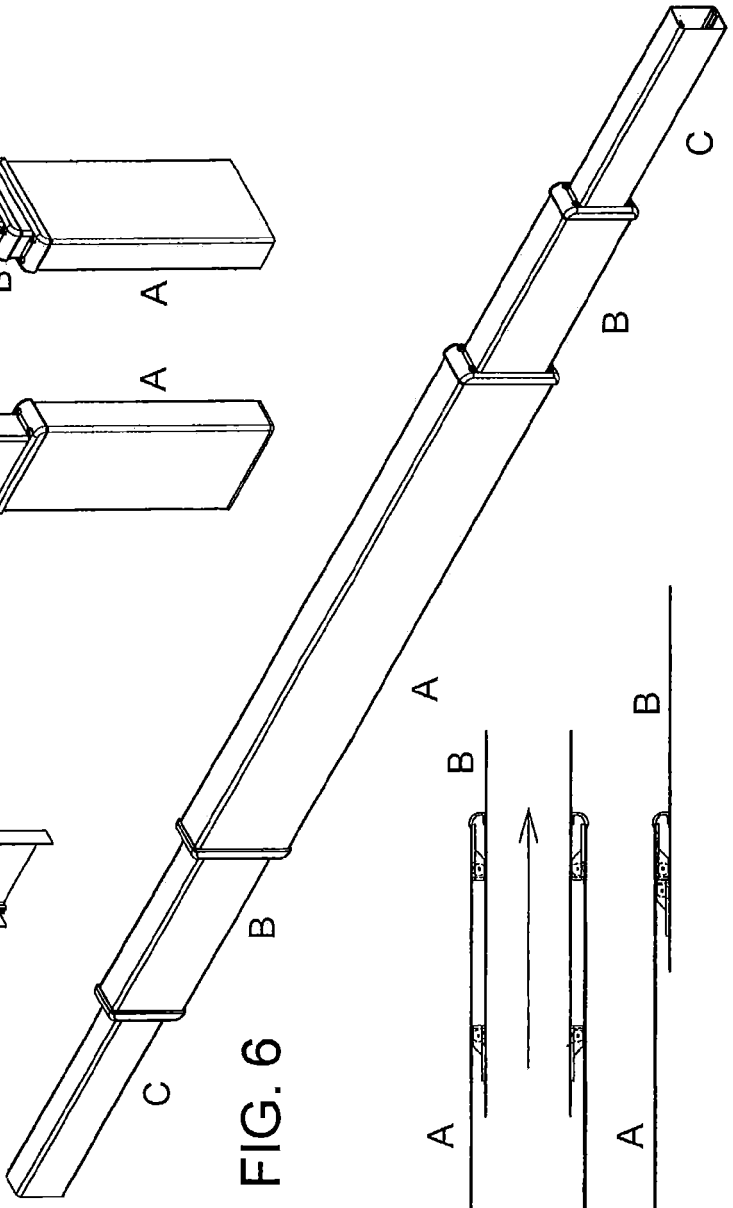


FIG. 6

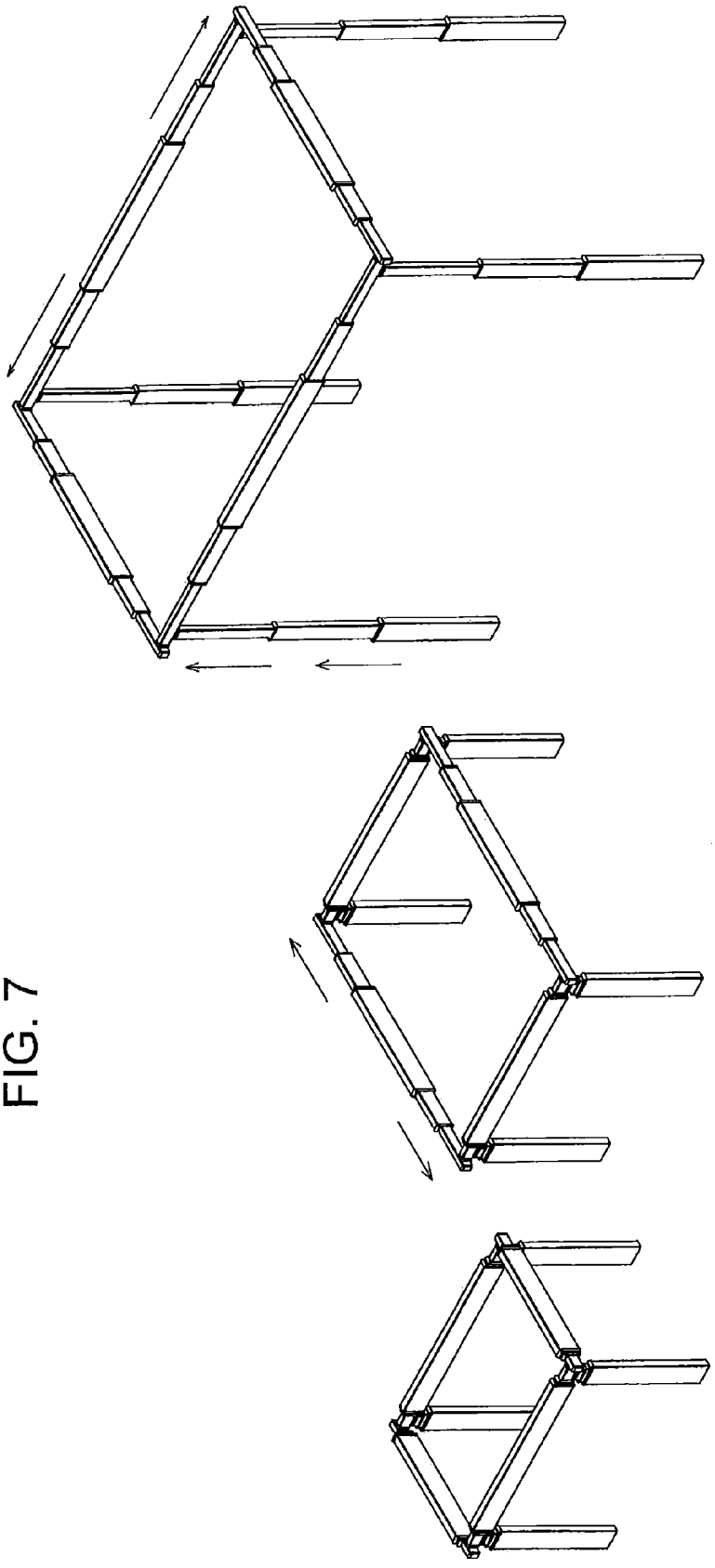


FIG. 7

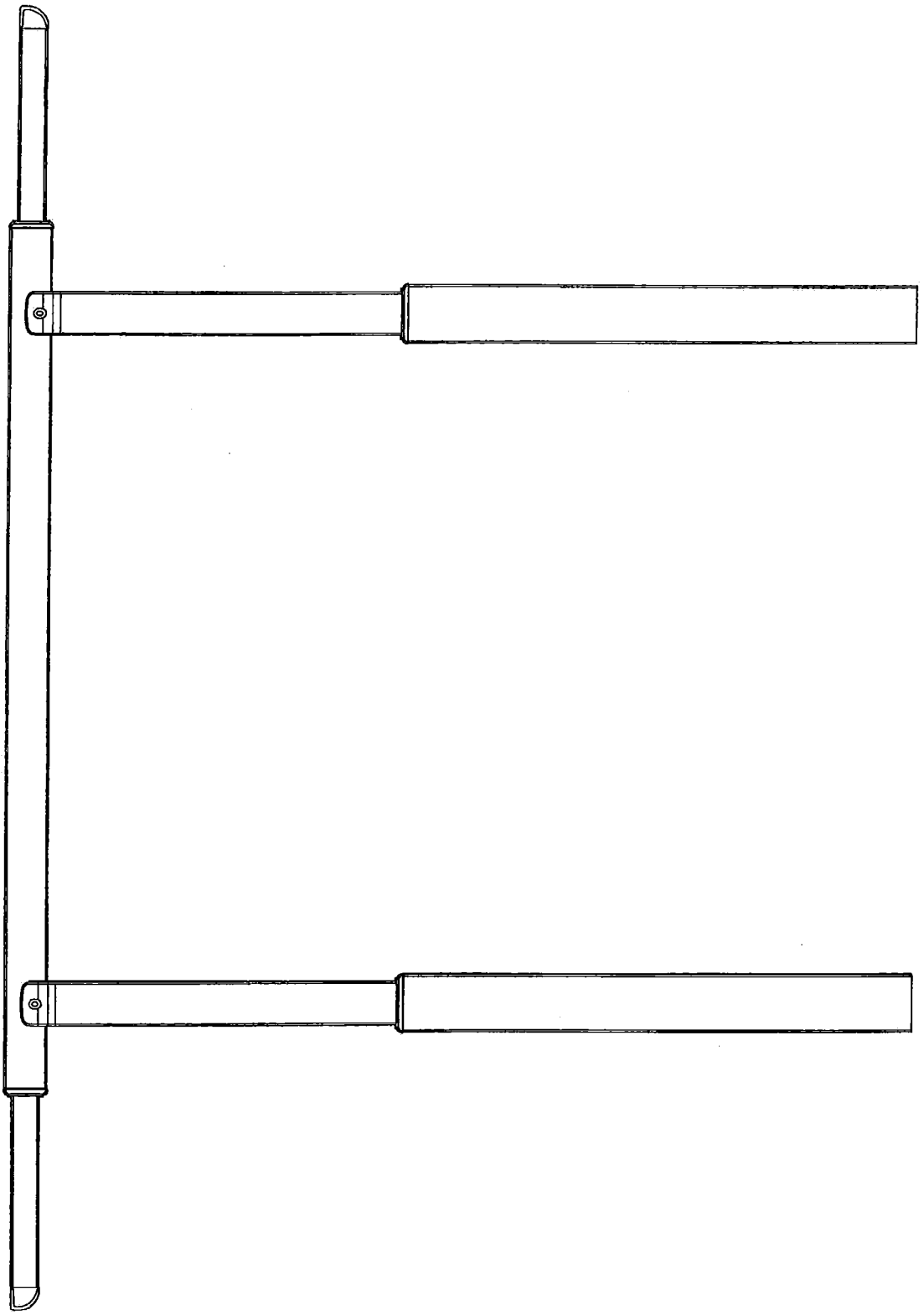
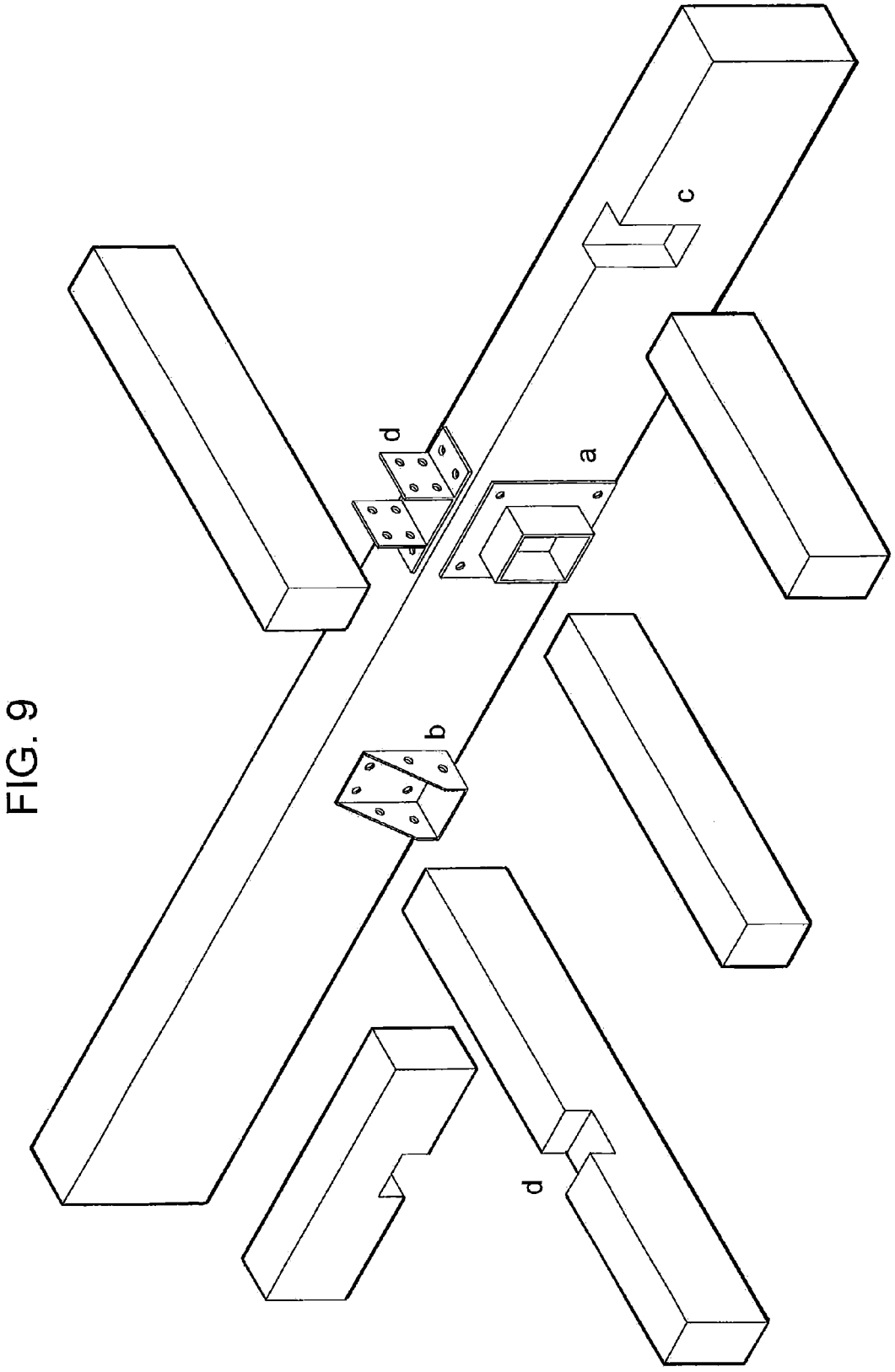


FIG. 8

FIG. 9



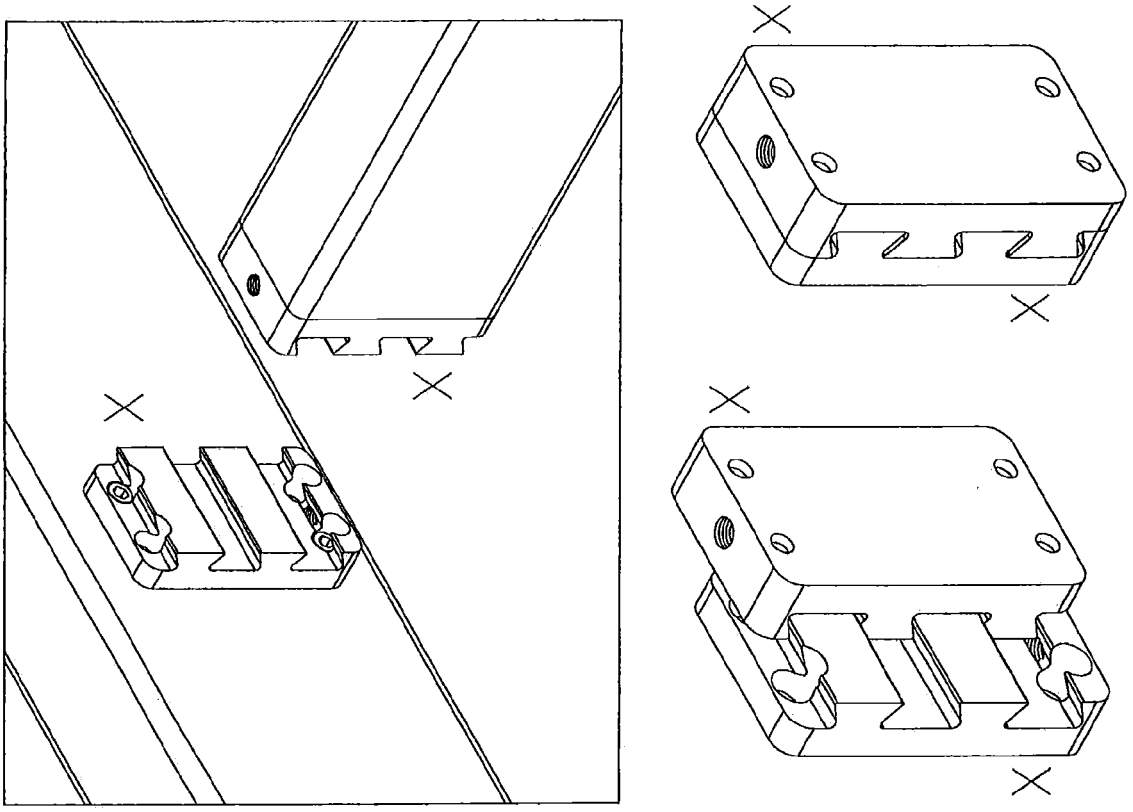


FIG. 10

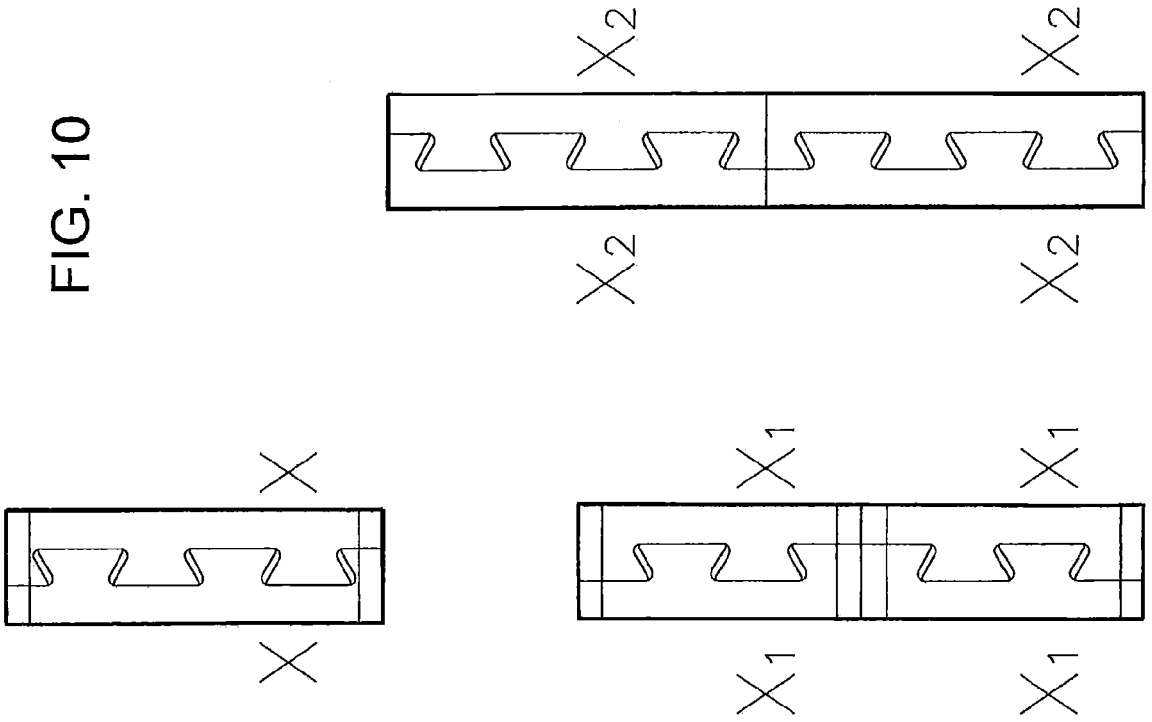


FIG. 11

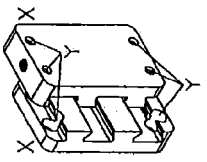


FIG. 12

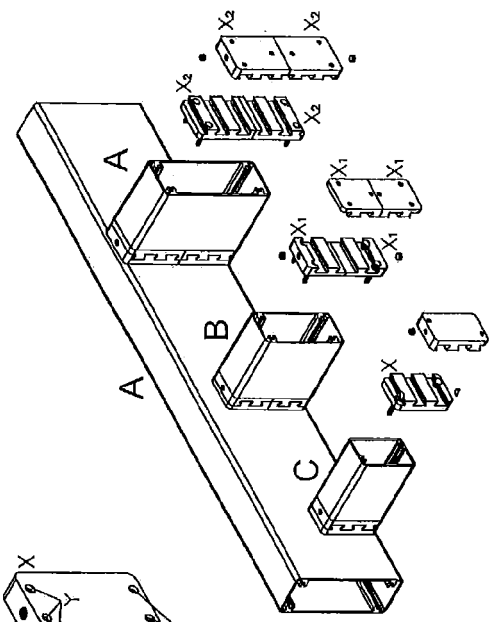


FIG. 12bis

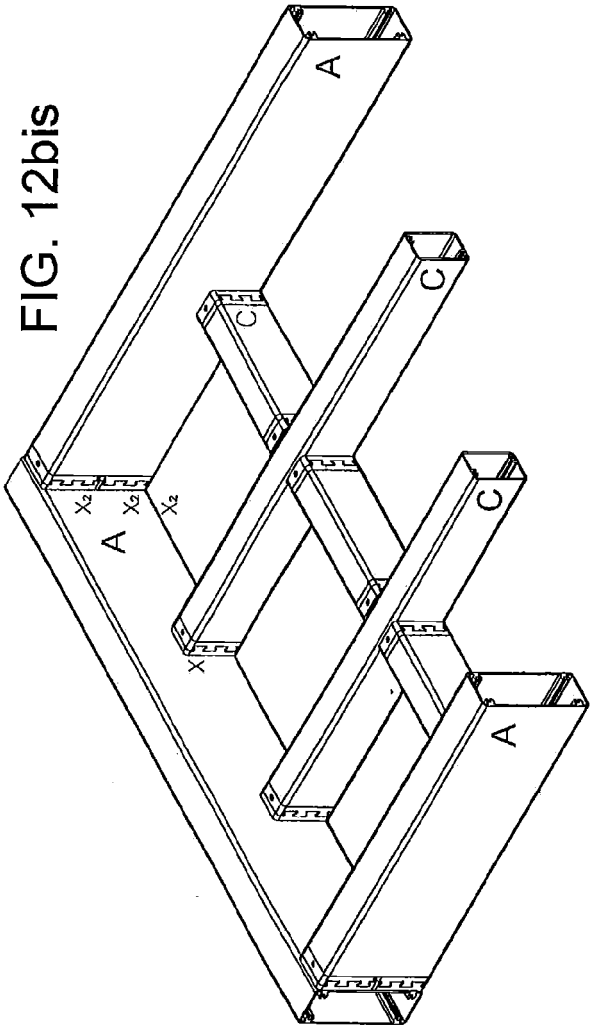


FIG. 14

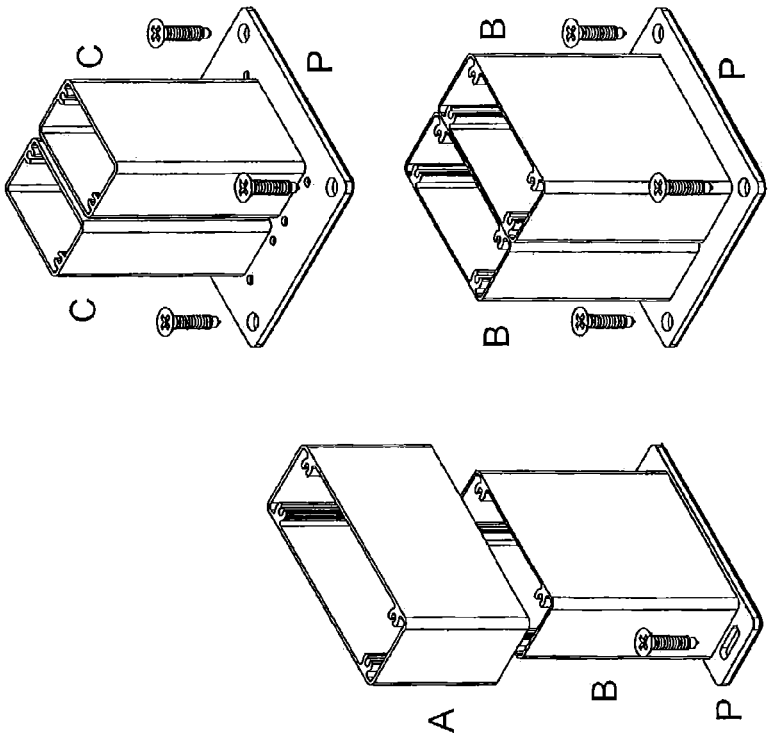


FIG. 13

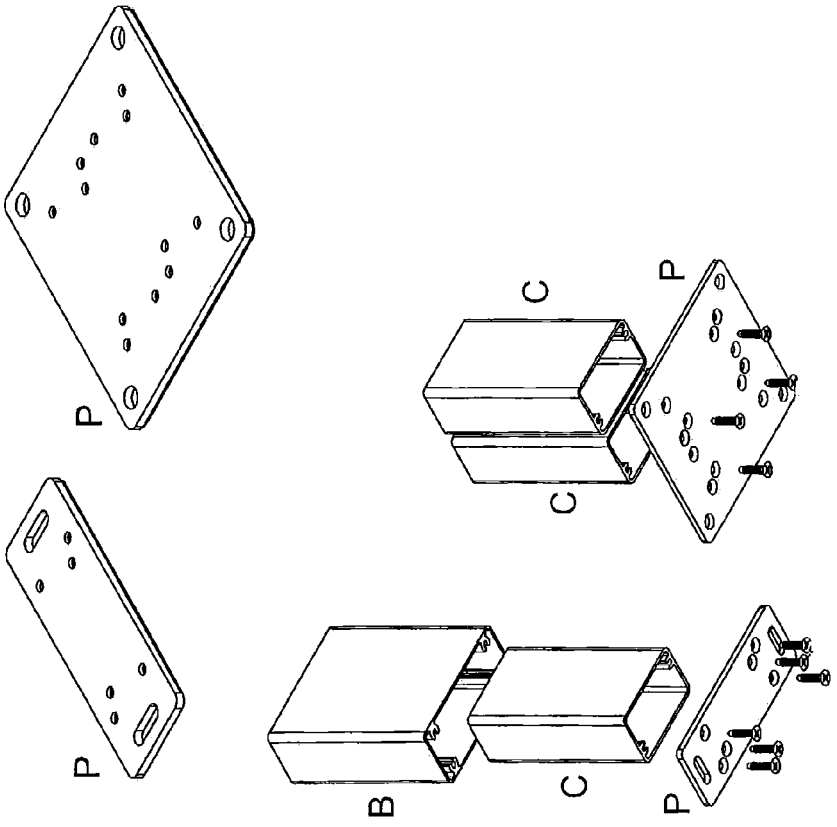


FIG. 17

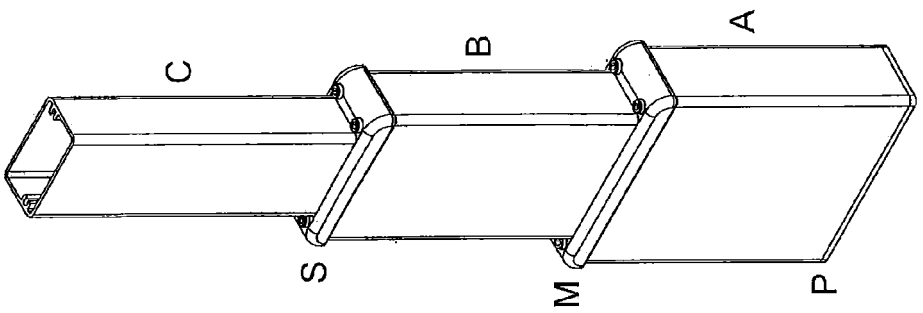


FIG. 16

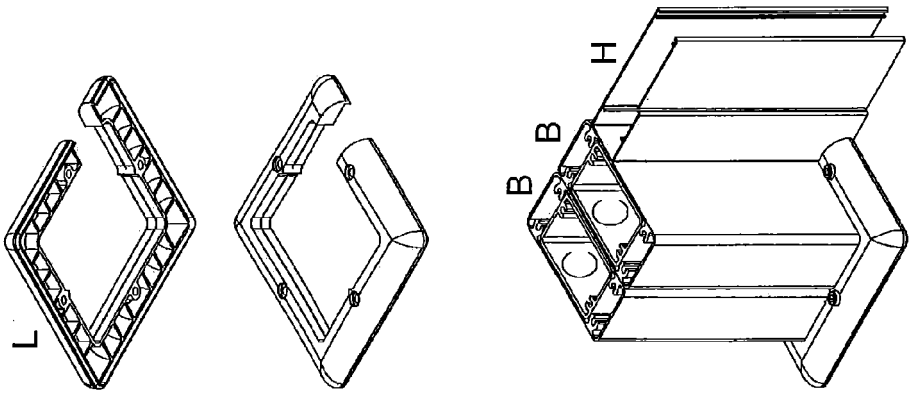
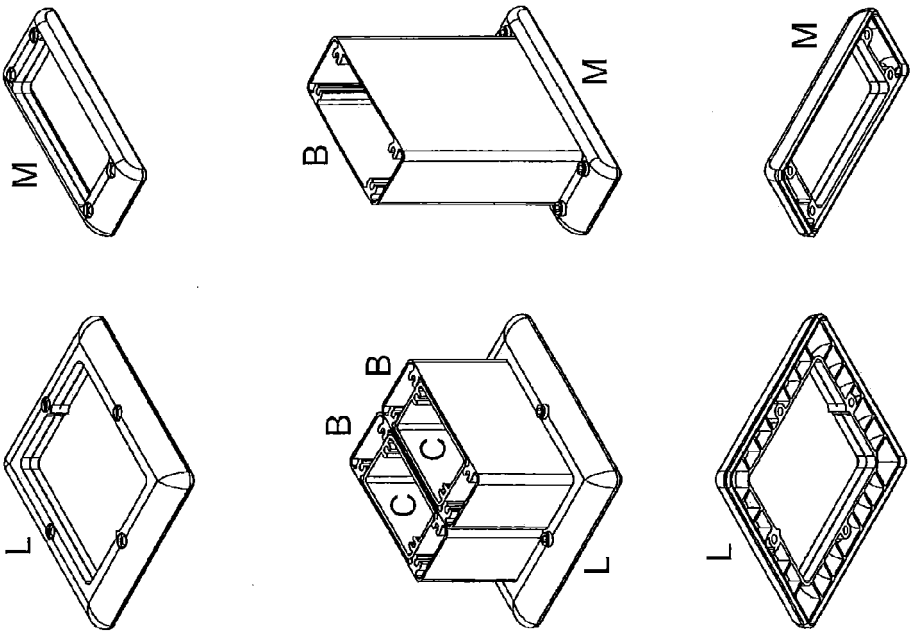


FIG. 15



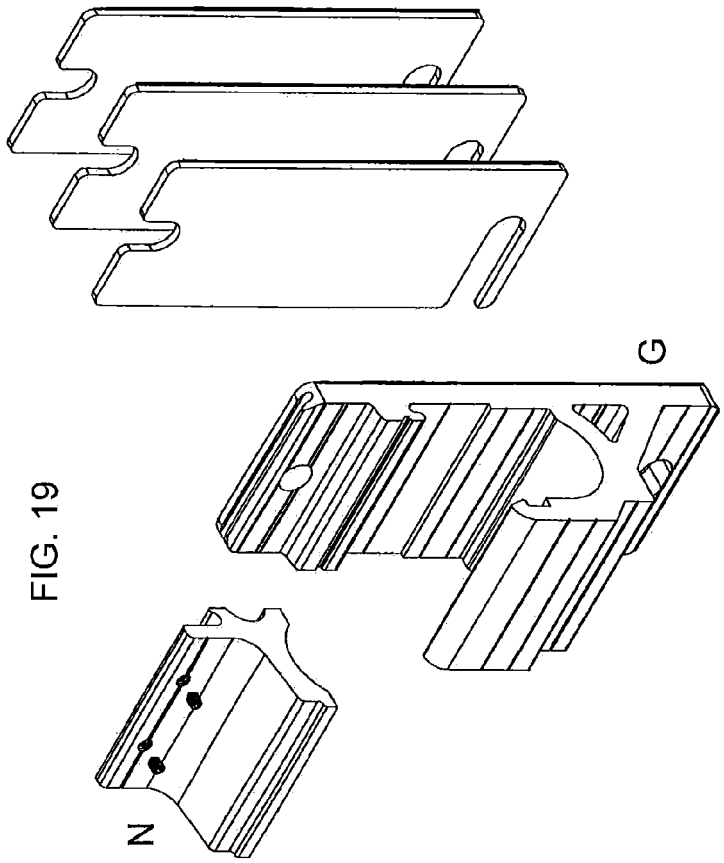


FIG. 19

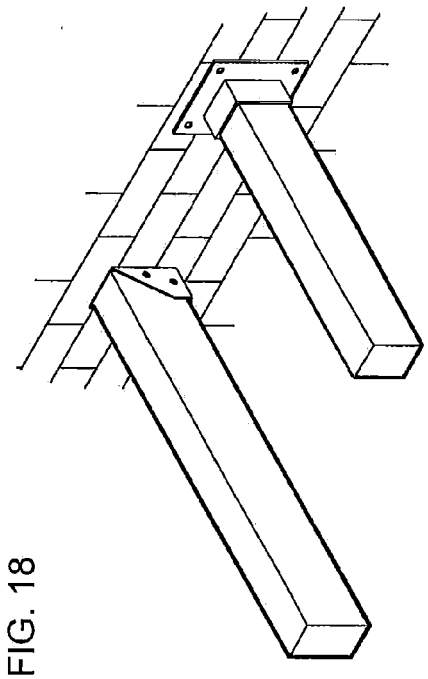


FIG. 18

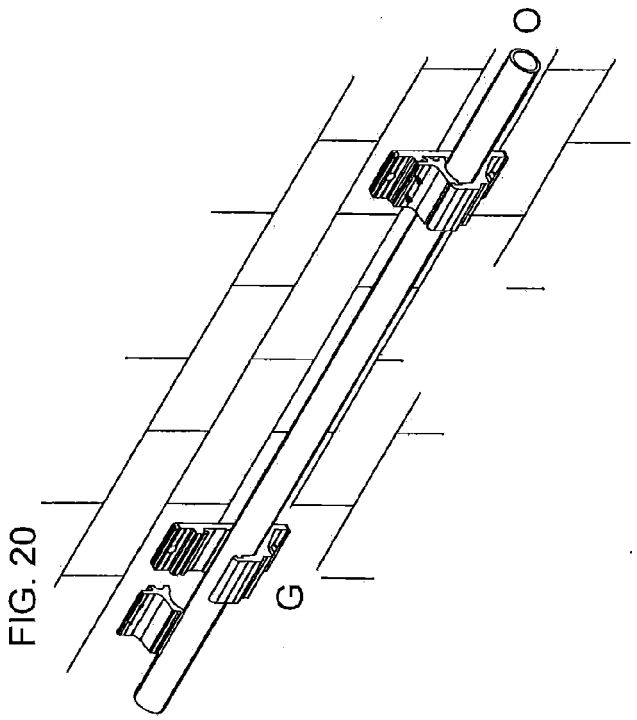


FIG. 20

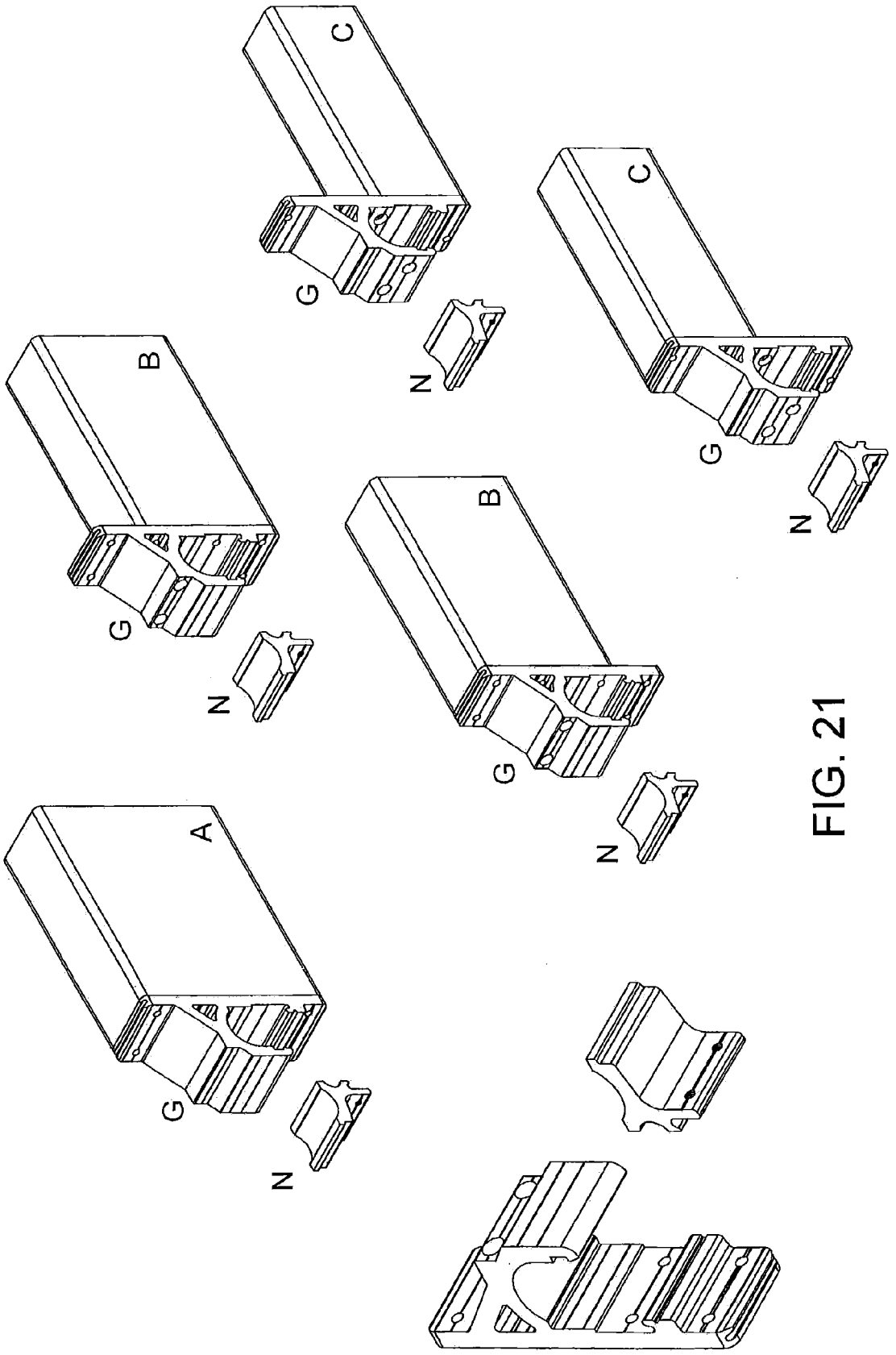
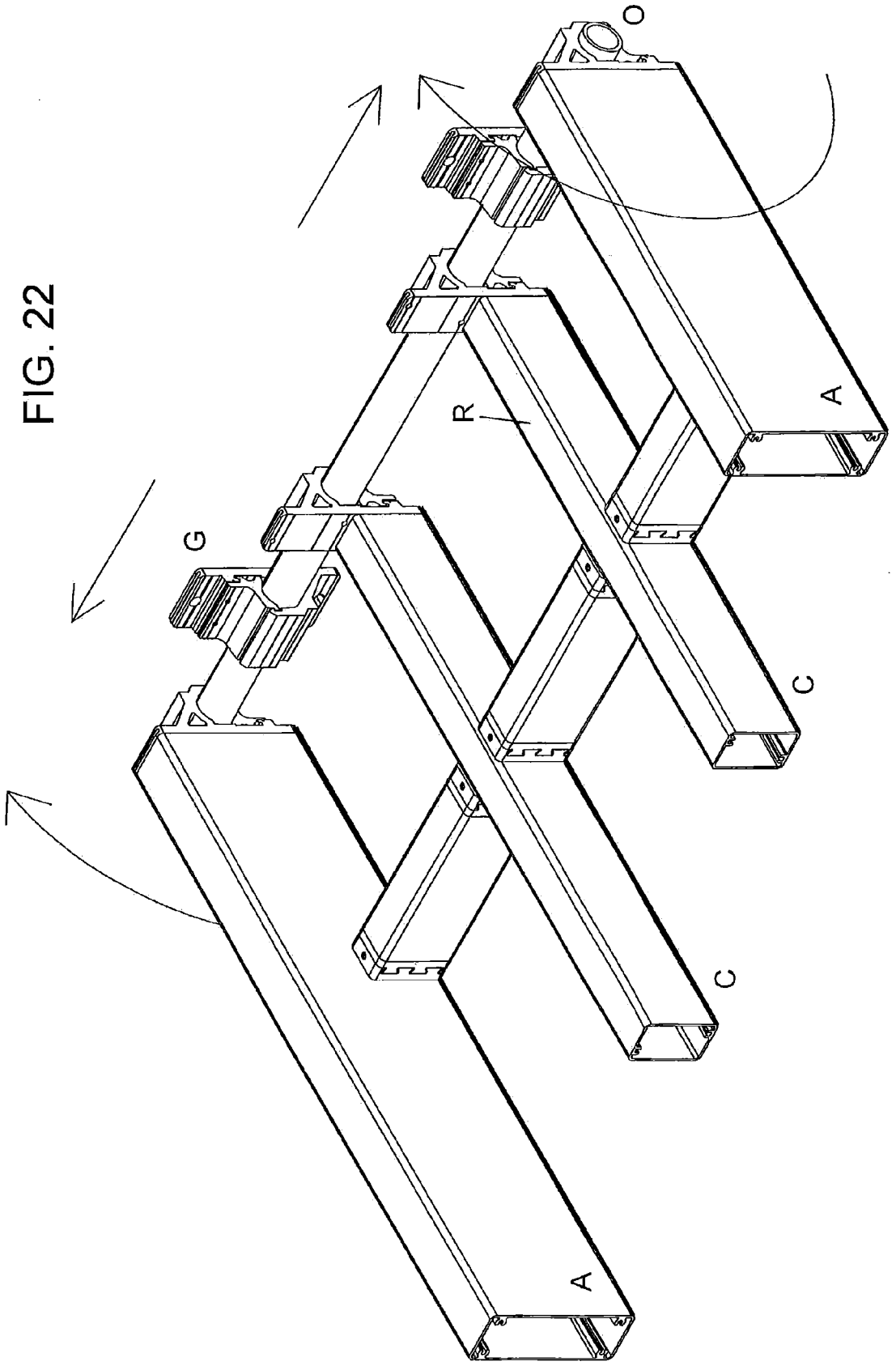


FIG. 21

FIG. 22



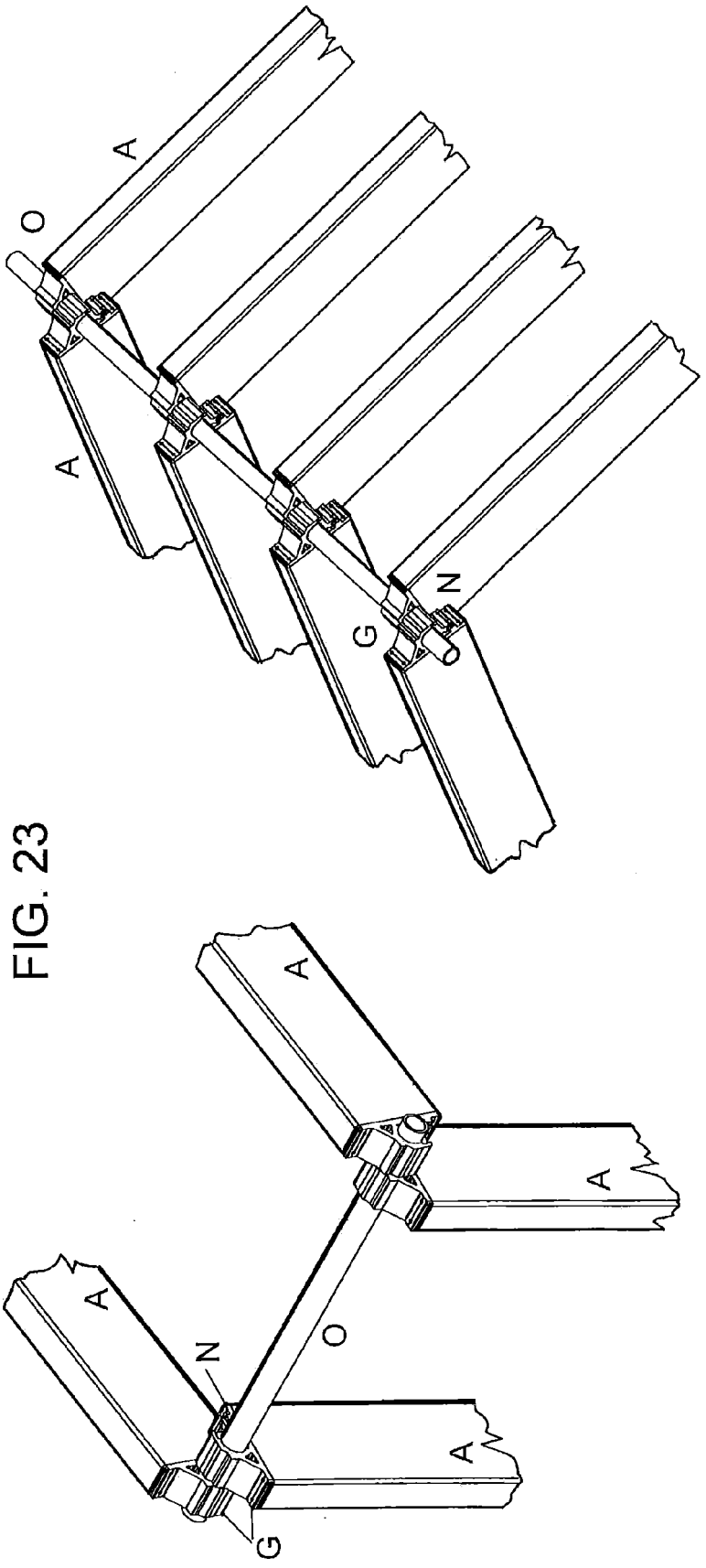


FIG. 23

FIG. 24

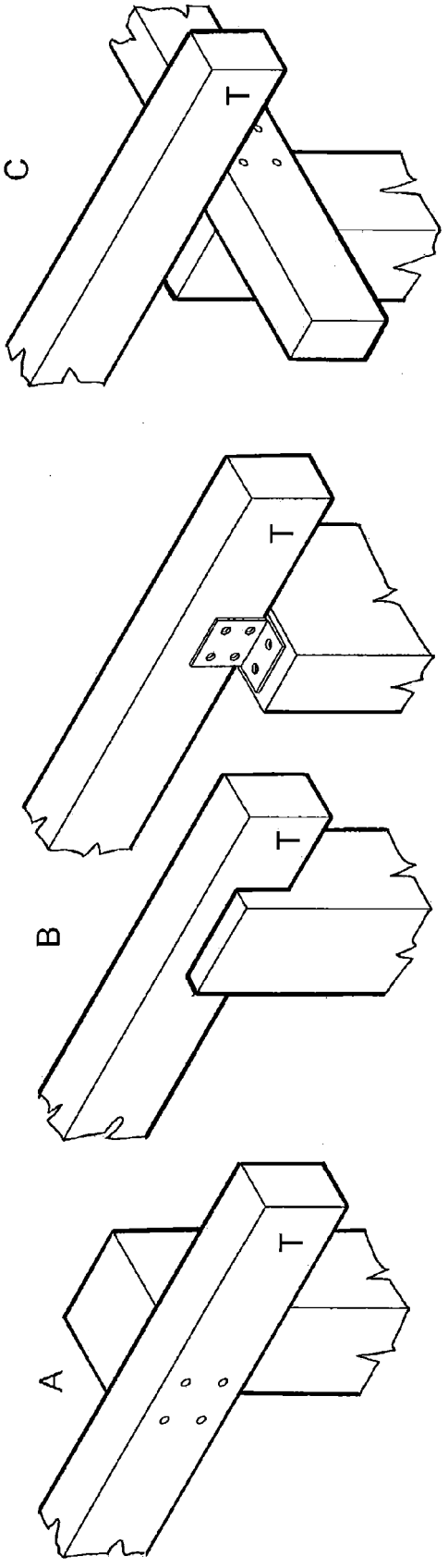


FIG. 25

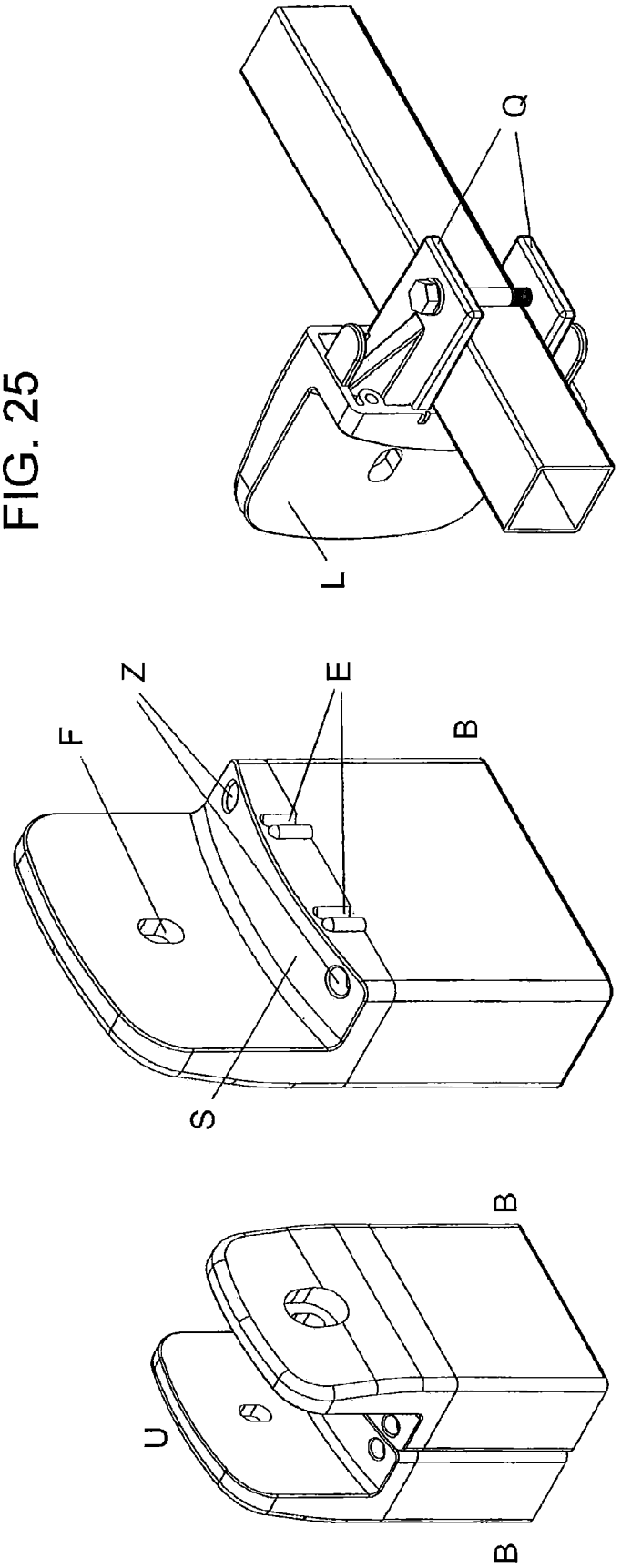


FIG. 26

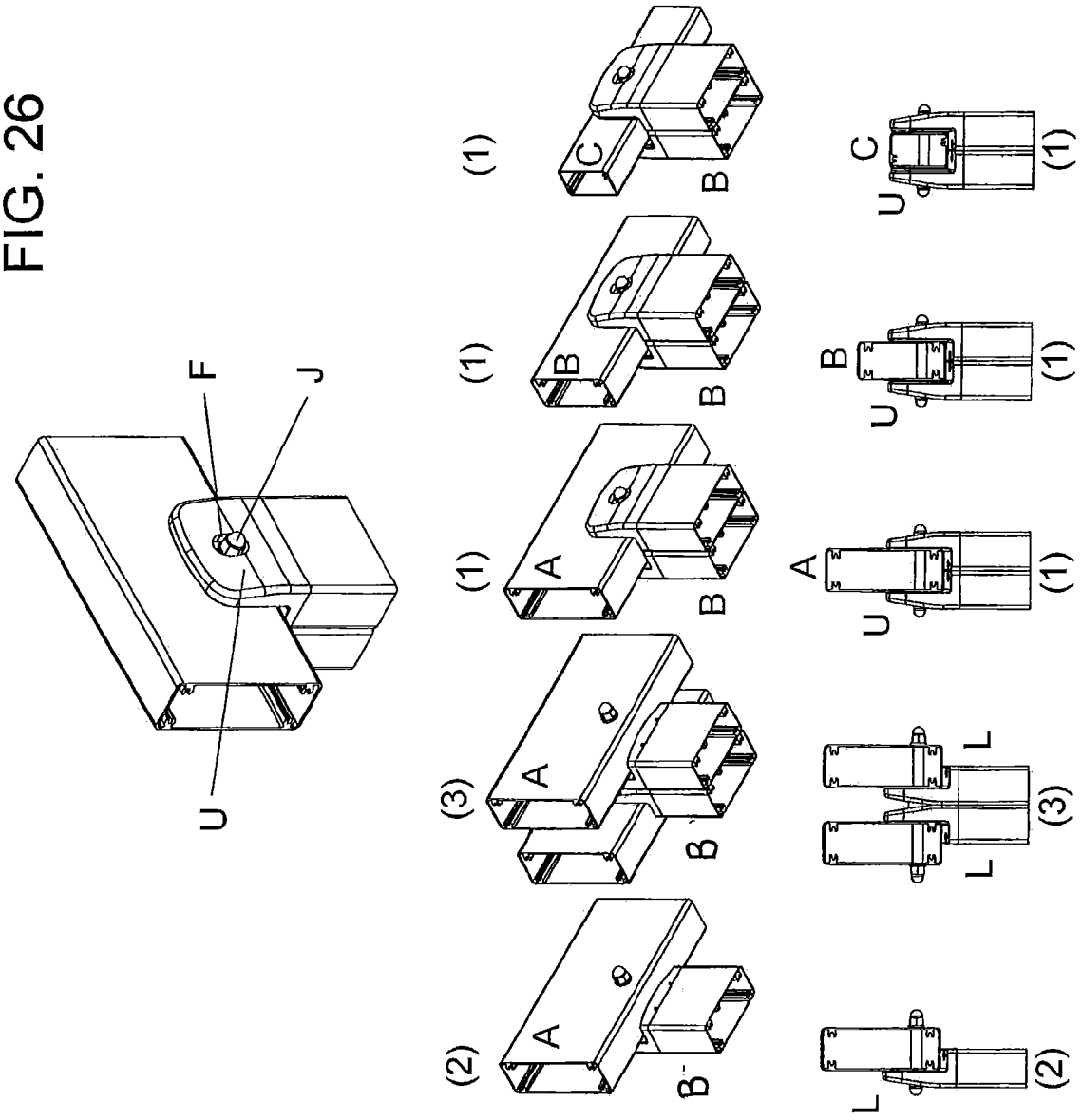


FIG. 27

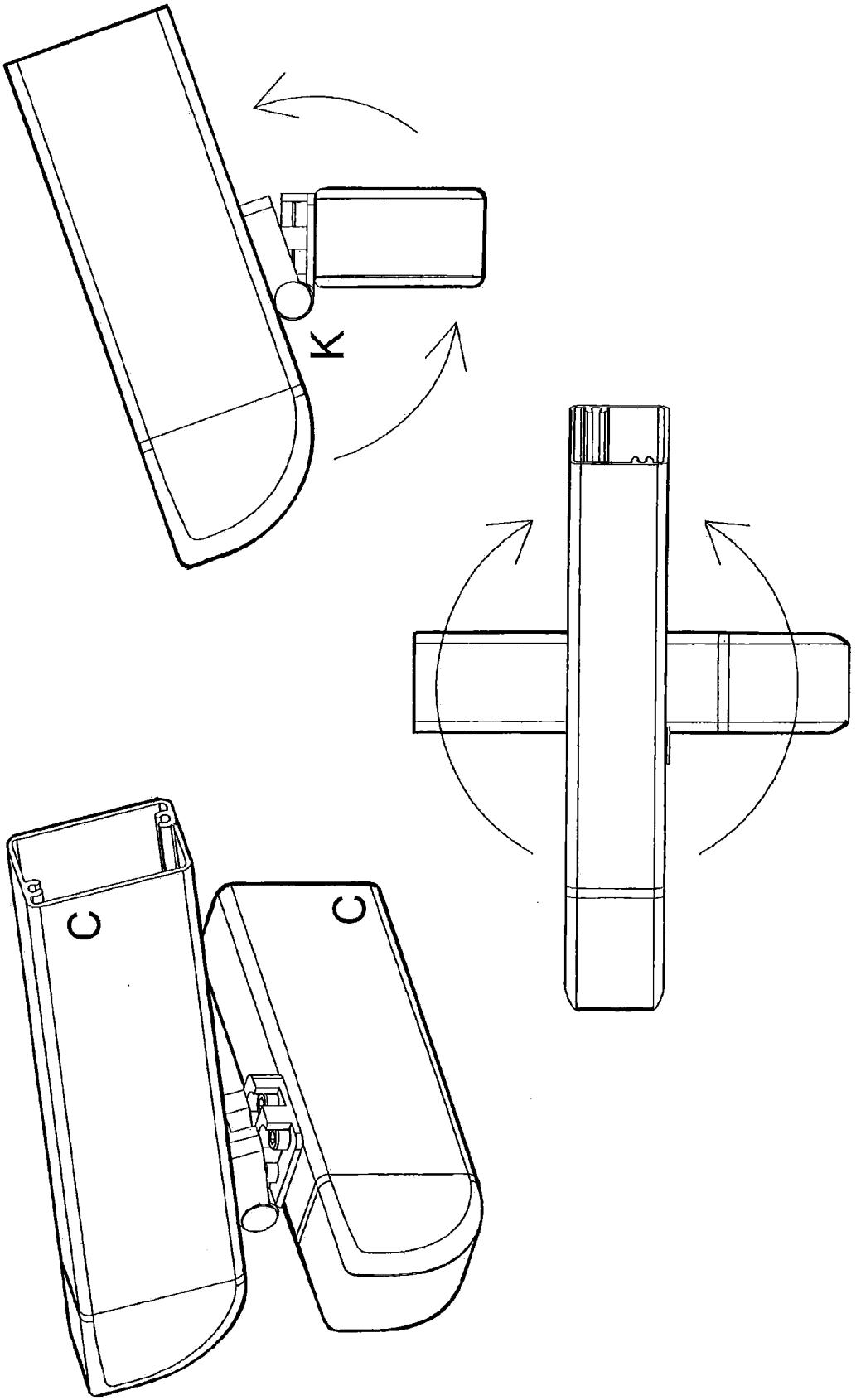


FIG. 28

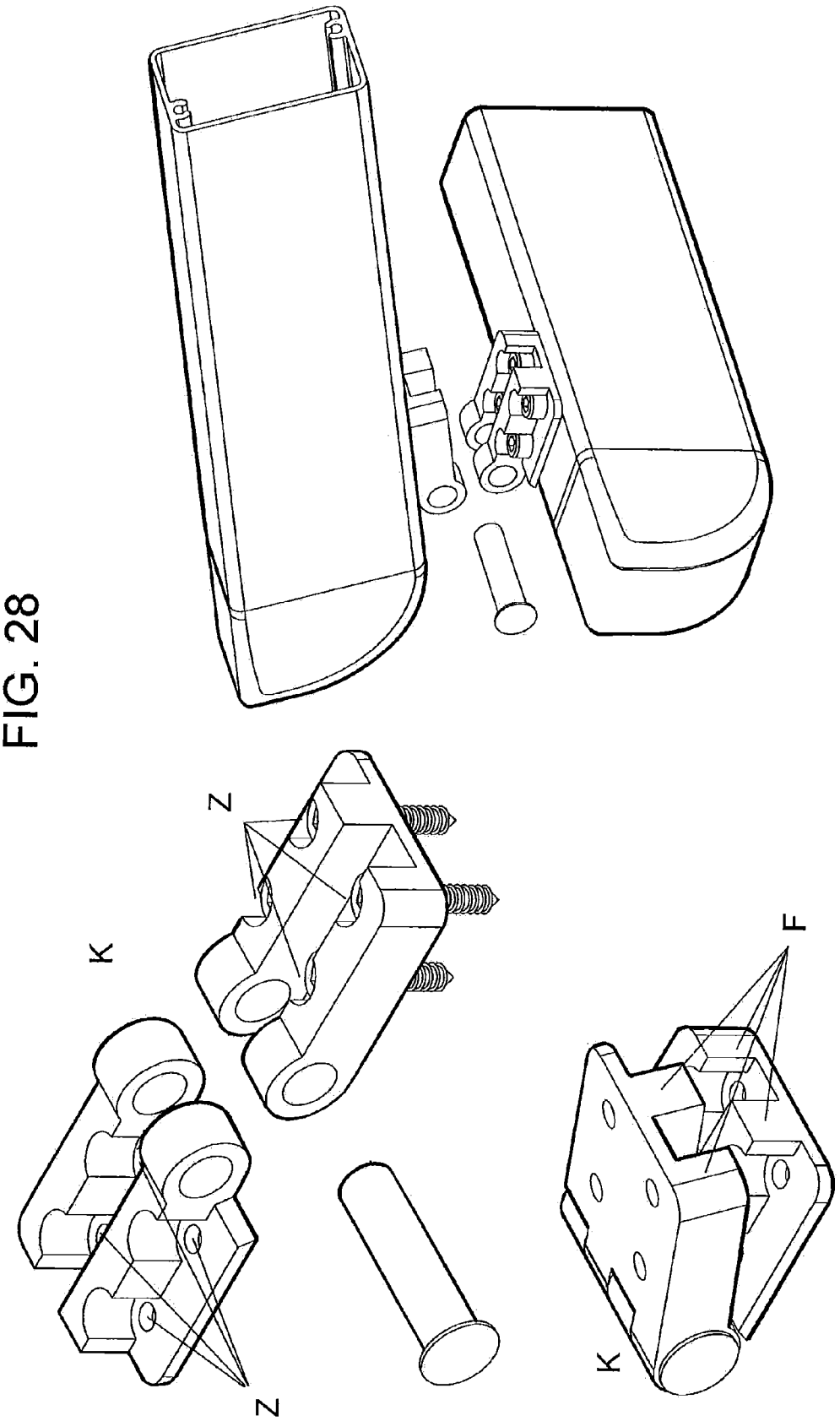
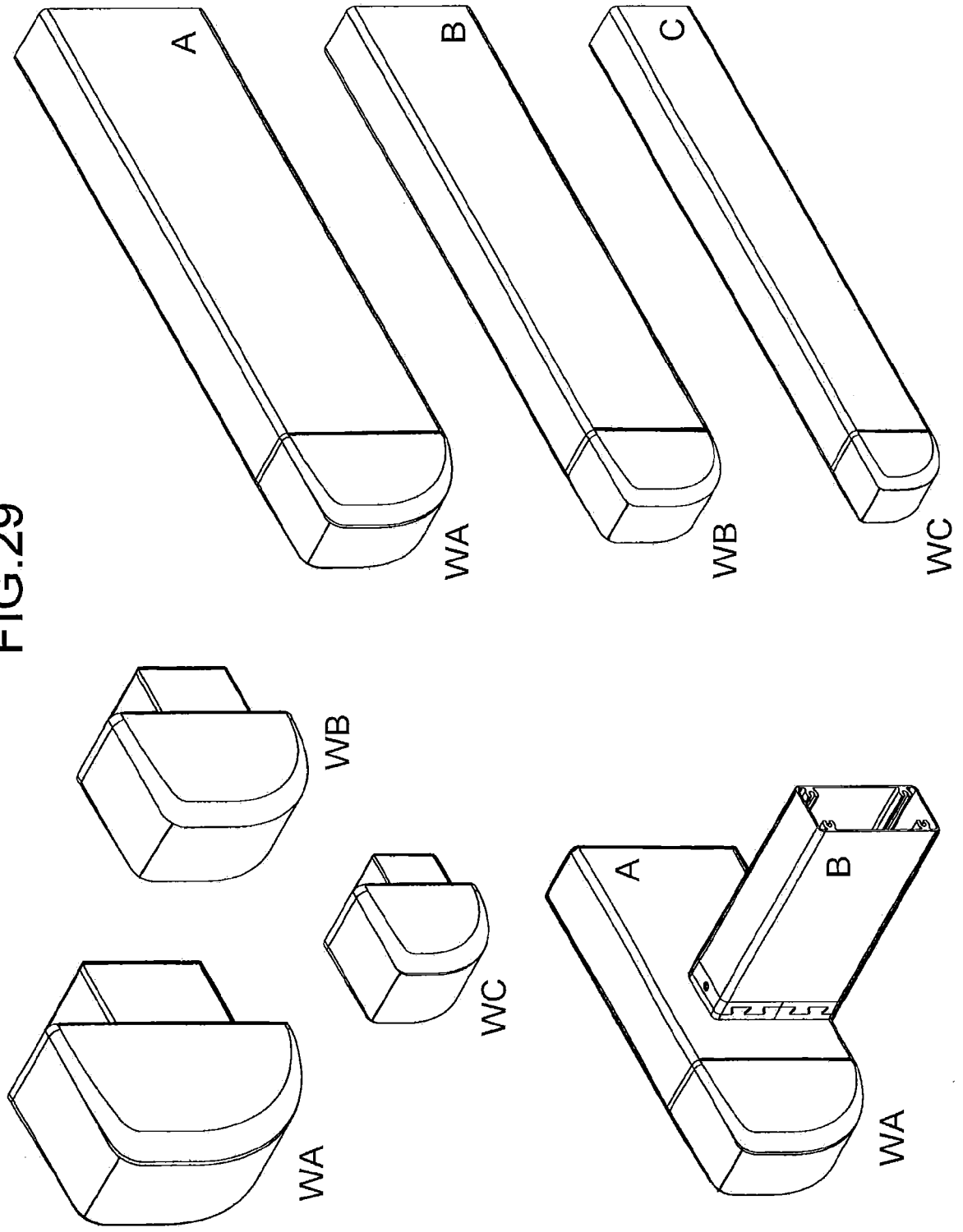
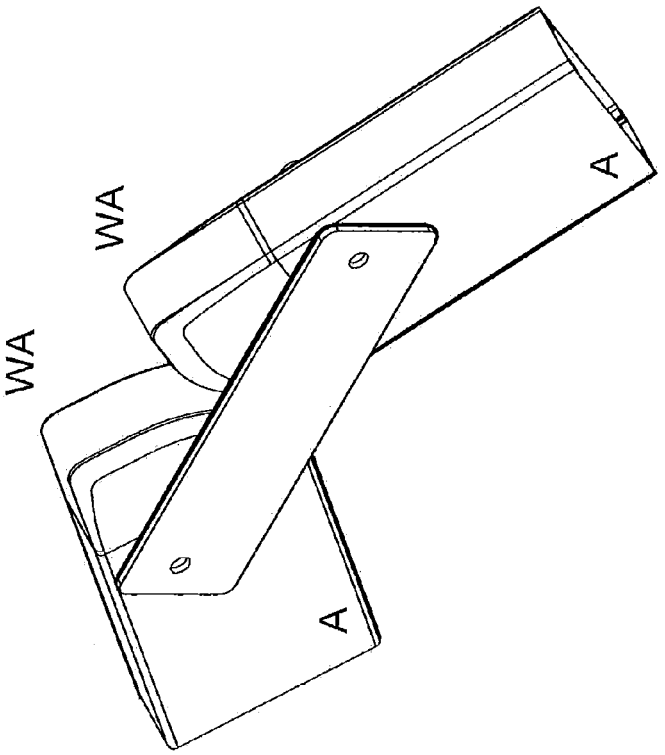


FIG.29





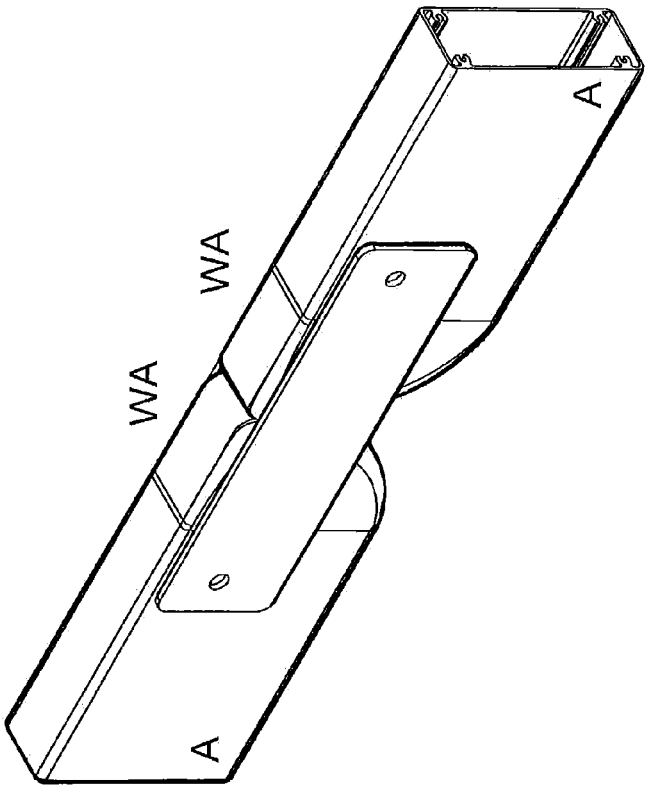


FIG. 30

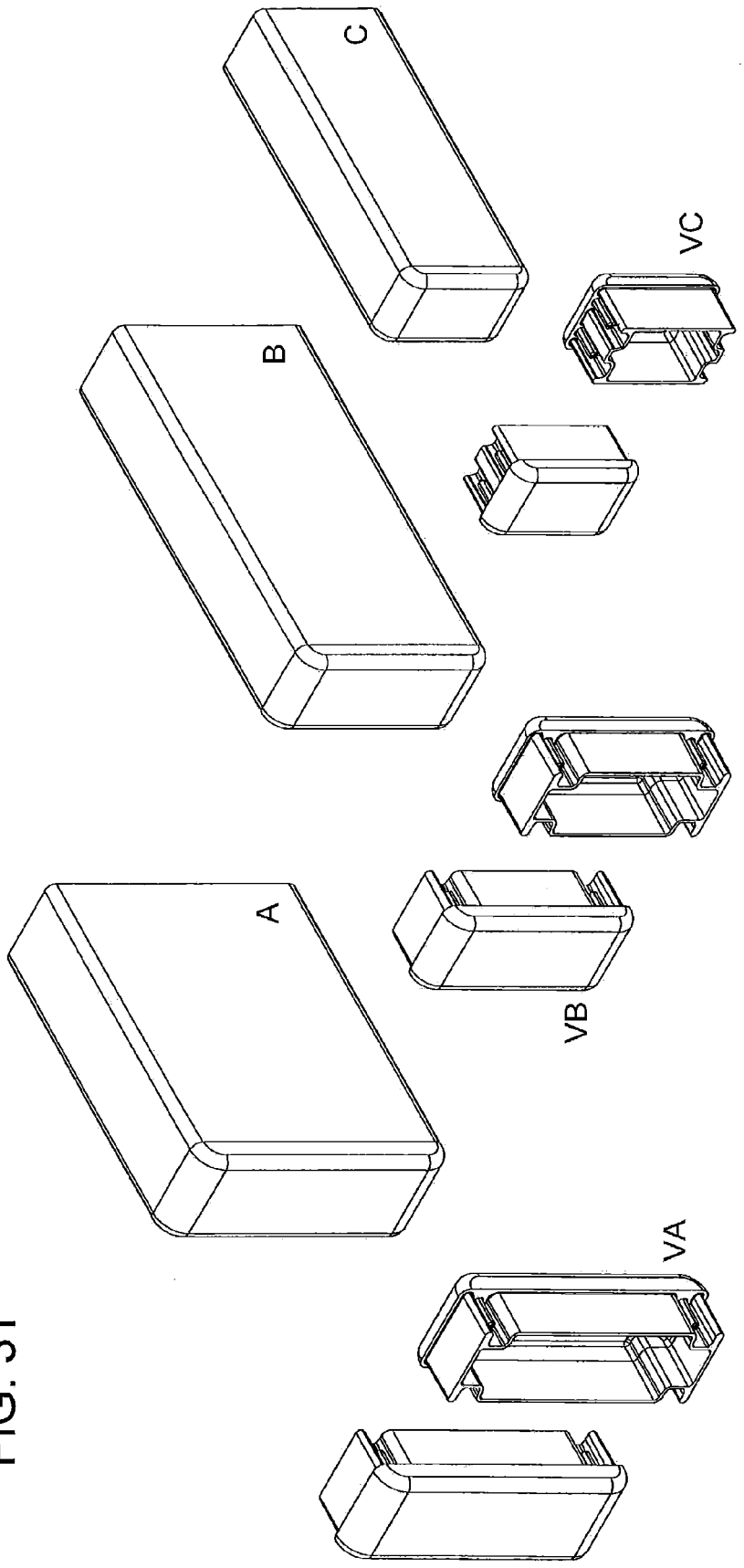


FIG. 31

FIG. 32