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(54) FRAMEWORK FOR FURNITURE CONTAINERS

(57) The present invention relates to a modular framework for supporting and containing bottoms and containers such as trays, boxes or accessory holders of furniture. The framework was designed so as to be particularly versatile thanks to a simple and functional structure capable of facilitating the assembly thereof. The invention also relates to furniture containers and a piece of furniture comprising such framework and container.

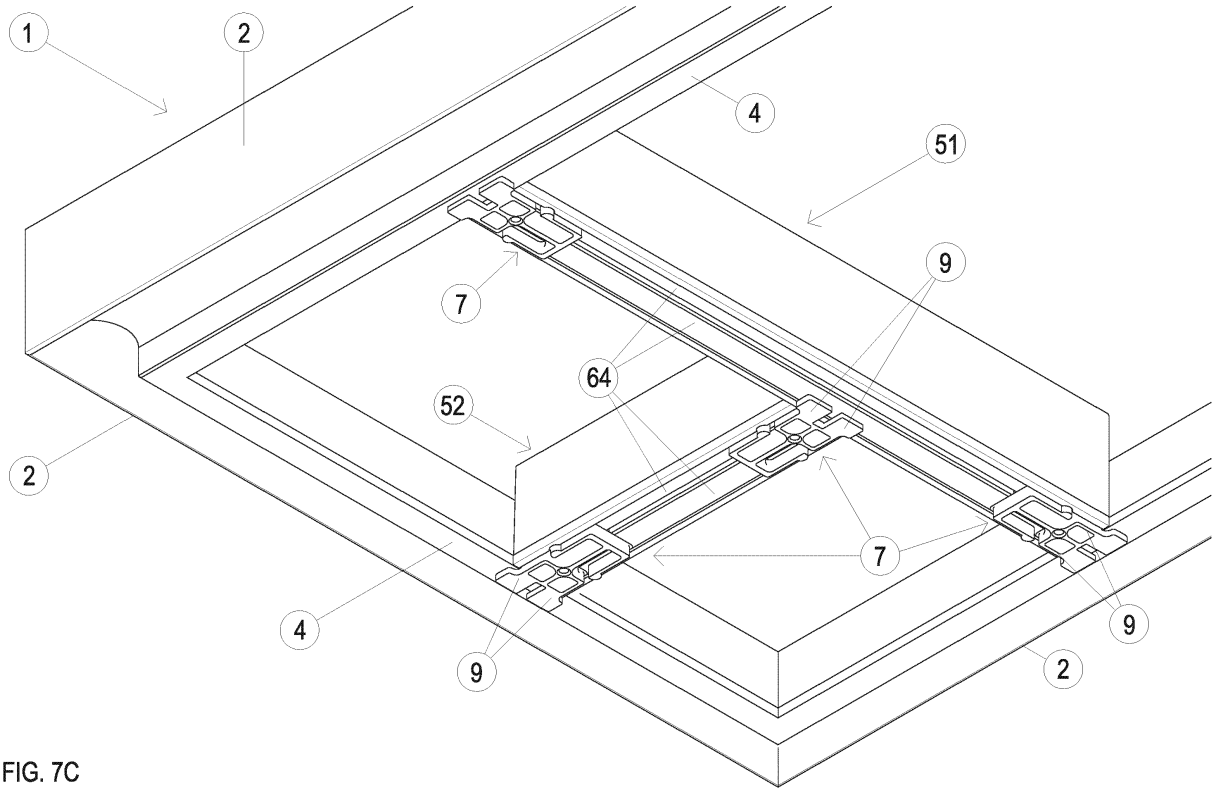

FIG. 7C

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a modular framework for supporting and containing bottoms and containers such as trays, boxes or accessory holders of furniture. The framework was designed so as to be particularly versatile thanks to a simple and functional structure capable of facilitating the assembly thereof. The invention also relates to furniture containers and a piece of furniture comprising such framework and container.

STATE OF THE PRIOR ART

[0002] In the furnishing industry, various structures and forms of furniture, such as bedroom, bathroom or kitchen furniture, comprising containers such as drawers and accessory holders variously and slidably mounted by means of guides in the compartment of the furniture itself, have been known for a long time.

[0003] A particular type of system for supporting said containers consists of a generally rectangular-shaped framework whose four sides are four bars, preferably made of aluminium, each provided with a vertical wall and with a horizontal edge facing toward the space delimited by the framework. Two of said parallel sides are then provided with means for engaging to corresponding sliding guides mounted inside a compartment of a piece of furniture to allow the extraction thereof, in an entirely conventional manner.

[0004] Thanks to the presence of the aforementioned horizontal edge, it is possible to place one or more bottoms, trays or boxes in the space delimited by said framework so as to constitute a container for garments, clothing items, clothing accessories, toilet articles, bottles, phials, kitchen objects or other objects that need to be kept in a piece of furniture or shelf in general.

[0005] This structure advantageously allows to exploit a container in a very versatile way without being constrained to standards. As a matter of fact, the boxes/bottoms that are placed on the framework can have various dimensions, depending on the needs or preferences. Furthermore, production costs are considerably reduced given that producing only one framework and the boxes/bottoms separately avoids more complex production operations, operations for assembling a framework bottom with different partitions to be fixed whenever required depending on the partitioning of the spaces in the container.

[0006] Despite the aforementioned undoubted advantage, the structure of the containers however requires a rather diversified warehouse because it is necessary to have so many boxes ready to create the required composition of the container. Thus, besides having drawbacks related to production costs, the management of such a warehouse is without doubt laborious.

SUMMARY OF THE INVENTION

[0007] The technical problem underlying the present invention is thus that of designing a framework for furniture containers provided with a structure that is capable of avoiding laborious assembly operations, that is very versatile and that at the same time does not need to have a warehouse complex to manage in order to meet various production needs.

[0008] Such problem is solved by a framework for furniture containers provided with a simple structure with few easy-to-assemble components.

[0009] Therefore, a first object of the present invention is a framework for furniture containers.

[0010] A second object is a furniture container comprising said framework.

[0011] A third object is a piece of furniture, shelf or furnishing accessory comprising a container according to the invention.

BRIEF DESCRIPTION OF THE FIGURES

[0012] Further characteristics and advantages of the framework of the invention will become more apparent in the following description of some embodiments provided purely by way of non-limiting example, with reference to the following figures, wherein:

- figure 1 represents a schematic and axonometric view of a framework for furniture, according to the prior art;
- figure 2 represents a schematic and axonometric view of the framework of figure 1 with a partition element according to the invention;
- figure 3A represents a schematic, axonometric bottom view of an end portion of the partition element of figure 2;
- figure 3B represents a schematic, axonometric top view of the end portion of figure 3A;
- figure 4A represents a schematic, axonometric bottom view of a locking element of the partition element of figure 2;
- figure 4B represents a schematic, axonometric top view of the locking element of figure 4A;
- figure 5A represents a schematic axonometric view of the locking element of figure 4 in a first assembly step on the partition element of figure 2;
- figure 5B represents a schematic bottom view of a second step for assembling the locking element of figure 4 on the partition element of figure 2;
- figure 5C represents a schematic bottom view of a third step for assembling the locking element of figure 4 on the partition element of figure 2;
- figure 6A represents a schematic axonometric view of the framework of figure 1 with the partition element of figure 2 in an operative position;
- figure 6B represents a schematic axonometric bottom view of the framework with the partition element

of figure 6A;

- figure 6C represents a schematic axonometric bottom view of the framework with the partition element of figure 6B locked on the framework;
- figure 7A represents a schematic axonometric view of a framework with several partition elements according to an embodiment of the invention;
- figure 7B represents a schematic axonometric bottom view of a detail of the framework of figure 7A with the locking elements of two partition elements partially active;
- figure 7C represents the view of figure 7B with all the locking elements active;
- figure 8 represents a schematic axonometric view of a framework with several partition elements according to a second embodiment of the invention;
- figure 9 represents a schematic view of the framework of figure 8 with several bottoms partially assembled;
- figure 10A represents a schematic axonometric bottom view of a framework portion with a partition portion and - in exploded view - means for locking the partition on the framework, according to a further embodiment of the invention;
- figure 10B represents a schematic view of figure 10A with the locking means mounted;
- figure 11A represents a schematic axonometric bottom view of a portion of a first partition element with a portion of a second partition element and - in exploded view - locking means, according to a still further embodiment of the invention;
- figure 11B represents a schematic view of figure 11A with the locking means mounted;
- figure 12A represents a schematic axonometric bottom view of a portion of a first partition element with a portion of a second partition element and - in exploded view - locking means, according to a still further embodiment of the invention;
- figure 12B represents a schematic view of figure 12A with the locking means mounted;
- figure 13A represents a schematic axonometric bottom view of a portion of a first partition element with a portion of a second partition element and - in exploded view - locking means, according to a still further embodiment of the invention;
- figure 13B represents a schematic view of figure 13A with the locking means mounted.

DETAILED DESCRIPTION OF THE INVENTION

[0013] With reference to figure 1, a framework for furniture containers or shelves is generally indicated with number 1. The framework 1 is quadrilateral-shaped, preferably generally rectangular, whose four sides are four bars 2 each provided with a vertical wall 3 and a horizontal edge 4 (only two edges are represented in figure 1) facing toward the inner space delimited by the framework so as to form an L-shaped section. Preferably, the framework is made of aluminium.

[0014] Advantageously, the framework 1 comprises at least one element for partitioning said inner space of the framework and a pair of locking elements each mounted on one end of said at least one partition element so as to take an operative position for the reversible locking of the partition element on the horizontal edge 4 of two opposite bars 2 of the framework or on one edge of the framework at one end and on another partition element at the other end or even between two partition elements.

[0015] In figure 2, reference number 5 indicates an element for partitioning the inner space of the framework, according to a preferred embodiment of the present invention. In particular, the partition element 5 extends rectilinear along an axis X-X in the form of a side wall and it comprises a longitudinal wall 6 provided with a first free edge 60 and a second edge 61, opposite, longitudinal and preferably parallel, and a third edge 62 and a fourth edge 63 of two opposite ends. From the second edge 61 there extends integrally, generally orthogonally to the wall 6 and from both faces thereof, a longitudinal protrusion 64 so as to form a T-like cross section of the partition element, as better shown in figure 3A.

[0016] Furthermore, the second edge 61 has a longitudinal groove 65 which covers the entire extension thereof. Preferably, then, the second edge protrudes longitudinally with respect to the protrusions 64 so as to create a sort of step or support 66 (figure 3B).

[0017] In addition, each protrusion 64 forms a corresponding sliding guide 67 for a locking element (figure 3A), as described below. Preferably, such guide 67 consists of the U-like folding of the longitudinal end of each of said protrusions 64. It should also be observed that each guide 67 has a notch 68 for reversible engagement with said locking element sliding on said guides, as explained hereinafter. The U-like folding also creates a seat 69 or channel in which at least one part of the locking element is housed so as to be able to slide on said partition element without protruding in a cumbersome manner therein.

[0018] Figures 4A and 4B show an embodiment of a locking element 7 according to the invention. This element is substantially a plate which extends along a rectilinear axis Y-Y and it is such to slidably engage the seat 69 of the partition element 5. Preferably, it has a first face 70 (figure 4B), a second face 71 (Figure 4A) opposite said first face, two sides 74, a first end 72 and a second end 73, each of said ends having a surface 75 orthogonal to said first and second faces.

[0019] A crest 8 adapted to engage the groove 65 of the edge 61 of the partition element 5 preferably rises from the first face 70, as outlined hereinafter. Preferably, the crest protrudes axially with respect to the surface 75 of the first end 72 with an appendage or tooth 80.

[0020] On the other hand, two appendages 9 extend axially from the second face 71 to the first end 72 so as to form a sort of support plane 90 parallel to the face itself and separated from the aforementioned appendage 80

of the crest 8. In this manner, a space 91 for engagement with an edge of the framework 1 or an edge of another spacer element is defined, as described below. Preferably, the two appendages 9 have a protuberance 92 (figure 4A) moving away from the axis Y-Y to increase the extension of said plane 90.

[0021] A pair of elastic arms 10 extend axially from the second end 73 toward the first end 72 (figure 4A). The free end 11 of said arms is rounded moving away from the element.

[0022] The sides 74 of the locking element 7 each comprise a protruding edge 12 (only one is shown in figure 4B) for the slidable engagement with a corresponding guide 67 of a protrusion 64 of the partition element 5, as explained hereinafter.

[0023] As shown in figures 5A-5C, the locking element 7 is inserted at one end of the partition element 5 on the side of the second end 73 thereof so that the crest 8 is inserted into the groove 65 and the edges 12 engage the guides 67 respectively of the wall 6 and of the protrusion 64 of said partition element 5 (figure 5A). Once inserted, the locking element is made to slide inside the partition element forcing the elastic arms 10 to bend approaching each other. As a matter of fact, thanks to the rounded shape of the ends 11 thereof, the arms exceed the point of insertion into the aforementioned guides (figure 5B).

[0024] Thanks to the rounded complementary shape of the notches 68 of said guides 67, it is possible to slide the locking element 7 so that the rounded ends 11 exceed the notches so as to carry the two appendages 9 flushed or slightly recessed with respect to the protrusions 64. In this position, the locking element is in a first position corresponding to the inoperative position (figure 5C).

[0025] The aforementioned operations are also repeated at the other end of the partition element 5.

[0026] At this point, the partition element is ready to be mounted on the framework 1.

[0027] As shown in figures 6A and 6B, the partition element 5 thus designed is positioned inside the space delimited by the framework, causing the step-like portion 66 thereof of the second edge 61 of each end to rest on two opposite edges 4 of the framework. In this resting position, the locking elements 7 are disengaged from the edges 4 of the framework given that, as explained previously, the first end 72 is flushed or recessed with respect to the protrusions 64 of the partition element.

[0028] Now, it is sufficient to move the locking elements 7 toward the respective edges 62, 63 of the partition element 5 until the appendage 80 of the crest 8 abuts against the wall 6 of the partition element and simultaneously the aforementioned space 91 is not engaged by the edge 4 of the framework, the latter also abutting against the aforementioned surface 75 of the first end 72 of the locking element 7. It should be observed that this locking position of the partition element on the framework is guaranteed by the engagement that occurs between the rounded ends 11 of the locking element and the notches 68 of the guides 67 of the partition element (figure 6C). In this position, the locking element is in a second position corresponding to the operative position.

[0029] Should it be required to move the partition element or disassemble it, it will be sufficient to force the locking element in the opposite direction, i.e. pushing it inwards so as to release the engagement with the edge 4 of the framework.

[0030] As shown in figures 7A-7C, according to a particular embodiment of the invention, the framework 1 comprises a plurality of first partition elements 51 mounted as explained previously transversely to the framework and parallel to each other, and a second partition element 52 longitudinally to the framework so as to be locked at one end on an edge of the framework and at the other end on a bar of a first transversal partition element, in the same manner as described above.

[0031] It is thus clear that in this manner it is possible to create compartments inside the framework at will, composing depending on specific needs or preferences the desired distribution basically without limits and particular constraints. For example, as shown in figure 8, the framework may be divided into the compartments indicated by the diagram.

[0032] At this point, a container 100 such as the one for example shown in figure 9 can be created quickly and easily, simply by positioning bottom elements 13 resting on the edges and/or protrusions that delimit each compartment 14.

[0033] According to a variant embodiment, as shown in figures 10A-10B and 11A-11B, the framework and the partition elements correspond to those described previously and they are thus indicated using the same reference numbers. On the contrary, the locking element 700 differs in that it does not slide along the bar from a first inoperative position to a second operative position, i.e. locking as previously described.

[0034] As a matter of fact, this locking element 700 is a plate adapted to be mounted on each of the ends of a partition element 5. In particular, the plate comprises a first portion 701 adapted to engage the space 69 delimited by the folding of the aforementioned protrusions 64 of the partition element, and a second portion 702 adapted to engage the edge 4 of the framework 1 (10B) or a protrusion 64 of another partition element (figure 11B).

[0035] A sort of step 703 which is such as to form an abutment against the edge 4 of the framework (figure 10B) or the protrusion 64 of another partition element (figure 11B) is formed between the first portion 701 and the second portion 702. As a matter of fact, the plate 700 can also be reversibly fixed in said space 69, for example by means of a screw 704 which passes through a hole 705 obtained on the first portion 701 and it is screwed into the groove 65 of the partition element 5.

[0036] In particular, it should be observed that the second portion 702 protrudes longitudinally with respect to the protrusion 64 of the partition element 5 so as to define with the step 66 a space similar to the space 91 of the locking element 7 described previously and adapted to

house the edge 4 of the framework 1 or a protrusion 64 of another partition element.

[0037] A further locking element 770 (figures 12A-12B and 13A-13B) can be represented by a plate similar to the one described previously but constrained to the end of the partition element so as to rotate with an axis orthogonal to the protrusions 64. With this configuration, the plate can be rotated so as to be oriented transversely to the longitudinal axis of the partition element to allow the resting on two opposite edges 4 of the framework 1 or between one of said edges and another partition element or between two partition elements; in other words, the plate takes a first position representing an inoperative position. Thus, in order to lock the partition element it is sufficient to rotate the plate so as to move a second portion thereof to a position such to define, with the end of the partition element, the aforementioned space for engagement with an edge of the framework or an edge of another partition element.

[0038] As shown in the figures, the plate 770 comprises a first face 771 for engagement with the partition element 5 and a second face 772 opposite to said first face, a first edge 773 for engagement with the framework or a partition element and a second edge 774 for locking in the seat 69. A disc 775 for rotating the plate is preferably provided for on the first face 771, while a tooth 776 for reversibly locking the rotation of the plate is provided for at the second edge 774. Like previously, a hole 704 for engaging a fixing screw 705 on the partition element 5 passes through the plate.

[0039] Figures 12B and 13B show the plate 770 in the operative position. As a matter of fact, thanks to the disk-like element 775 housed in the seat 69 of the partition element, the plate rotates by 90° as indicated by the dashed arrow moving the first edge 773 under the edge 4 of the framework 1 or under a protrusion 64. Simultaneously, the tooth 776 is elastically snap-engaged in the seat 69, thus locking the plate in the operative position. In order to release it, it is sufficient to force the plate in the opposite direction, overcoming the resistance of the step against the seat 69.

[0040] A further object of the present invention is a furniture container comprising the aforementioned framework.

[0041] A still further object is a piece of furniture comprising a framework and a container as described above.

[0042] In the light of the above, it is clear that the limits and drawbacks of the frameworks for furniture containers or shelves of the prior art were overcome.

[0043] As a matter of fact, the structure of the aforementioned framework is very simple given that it consists of a conventional framework and several partition elements provided with locking elements which can be easily mounted according to various geometries on the framework. This avoids the complication of producing containers of various shapes and dimensions to meet many needs or preferences.

[0044] The bottoms of the compartments forming the containers are then much easier to produce with respect to the already designed container.

[0045] The warehouse both for the partition elements and the bottoms is consequently considerably easier to manage and less bulky with respect to a warehouse full of preformed containers.

[0046] It should also be borne in mind that the mounting of the containers on the frameworks is very simple and rapid, thus not to significantly affecting the machining.

[0047] In addition, the simplicity of the pieces and of the elements with which the partition elements are made allows to keep the production costs low.

[0048] The great versatility with which it is possible to compose the compartments and the containers at any moment through simple operations allows to offer a unique product in the furnishing industry.

[0049] The framework and the container according to the present invention can be subjected to numerous variants without departing from the scope of protection as defined in the attached claims.

[0050] For example, the framework with the partition elements may preferably be made of aluminium, but may also be made of wooden material, plastics materials possibly reinforced with carbon fibres or glass fibres, other metals or metal alloys.

[0051] The particular shape described above with reference to the locking elements can be modified still maintaining the possibility of sliding on the partition element so as to form a stop on the inner edge of the framework. Basically, the end of the partition element and the locking element cooperate so as to form a sort of fork with at least one portion capable of sliding in order to engage and disengage with the aforementioned edge.

[0052] In addition, the locking element can generally be represented by any clip-like element that slides locking with a reversible snap-engagement on the partition element. Such clip can be kept in the operative position, i.e. protruding so as to define the space for engagement with, for example, the edge of the framework, by an elastic element such as a spring and can be pushed into the retracted, i.e. inoperative position, with the simple gesture of a finger to allow the positioning of the partition element without hindrances.

[0053] Shapes and colours of these elements can vary at will without modifying the functionality described above. There can also be countless finishes in that the bottoms can be made of wood, plastic, glass, metal, possibly covered with cloth, velvet with drawings and colours at will.

Claims

1. Framework (1) for furniture containers having a general quadrilateral shape, whose four sides are four bars (2), each provided with a wall (3) and an edge (4), extending orthogonally with respect to said wall and it is faced toward the inner space delimited by

the framework itself so as to form an L-shaped section, **characterised in that** it comprises at least one element (5) for partitioning said inner space of the framework, having a T-shaped section and ends formed as a step (66), and a pair of locking elements (7;700;770) mounted each on one of said ends of said at least one partition element so as to alternately take an inoperative position wherein the locking element is retracted with respect to said end and a reversible locking operative position wherein the locking element covers said step-like end thus forming a space (91) for engagement with the edge (4) of two opposite bars (2) of the framework (1), or on a bar (2) of the framework at one end and on another partition element (5) at the other end, or to engage between two partition elements.

2. Framework (1) according to claim 1, wherein the partition element (5) comprises a longitudinal wall (6) extending along a longitudinal axis (X-X) and it has a first edge (60) and a second edge (61) opposite and longitudinal, a third edge (62) and a fourth edge (63) of two opposite ends, two longitudinal protrusions (64) for engagement with said locking element (7;700;770) extend from the second edge (61) orthogonal to the wall and retracted with respect to the third (62) and fourth (63) edges so as to form said step (66) of abutment onto an edge (4) of the framework (1) or onto a protrusion (64) of another partition element, and a seat (69) of said locking element (7;700;770).

3. Framework (1) according to claim 2, wherein said locking element (7) is a plate extending along a rectilinear axis (Y-Y) so as to slidingly engage said seat (69) of the partition element (5).

4. Framework (1) according to claim 3, wherein said protrusions (64) of said partition element (5) comprise two U-like foldings so as to form corresponding guides (67) for engaging protruding edges (12) of said locking element (7).

5. Framework (1) according to claim 4, wherein said plate (7) comprises a pair of elastic arms (10) axially extending from a second end (73) thereof toward a first end (72) thereof, the free end (11) of said arms being rounded to form a reversible snap-engagement with a notch (68) obtained on each guide (67).

6. Framework (1) according to any one of claims 3 to 6, wherein said plate (7) comprises two appendages (9) axially extending from a first end (72) so as to create with said step (66) of the partition element (5) a space for engagement with the edge (5) of the framework or o protrusion (64) of another partition element or two protrusions of two partition elements, when said plate is in the extracted operative position.

7. Framework (1) according to claim 2, wherein said plate (700) comprises a first portion (701) adapted to engage said seat (69) delimited by the folding of the aforementioned protrusions (64) of the partition element (5), and a second portion (702) adapted to engage the edge (4) of the framework or a protrusion (64) of another partition element.

8. Framework (1) according to claim 7, wherein said plate (770) is rotatably constrained to the end of said partition element (5) so as to be oriented transversally to the longitudinal axis of the partition element or parallel thereto, and it comprises an elastic tooth (774) for reversibly locking the plate into the operative position.

9. Furniture container (100) comprising a framework (1) according to any one of claims 1 to 8 and at least one base (13) resting on said framework.

10. Furniture for fittings comprising a framework (1) or a container (100) according to any one of claims 1 to 9.

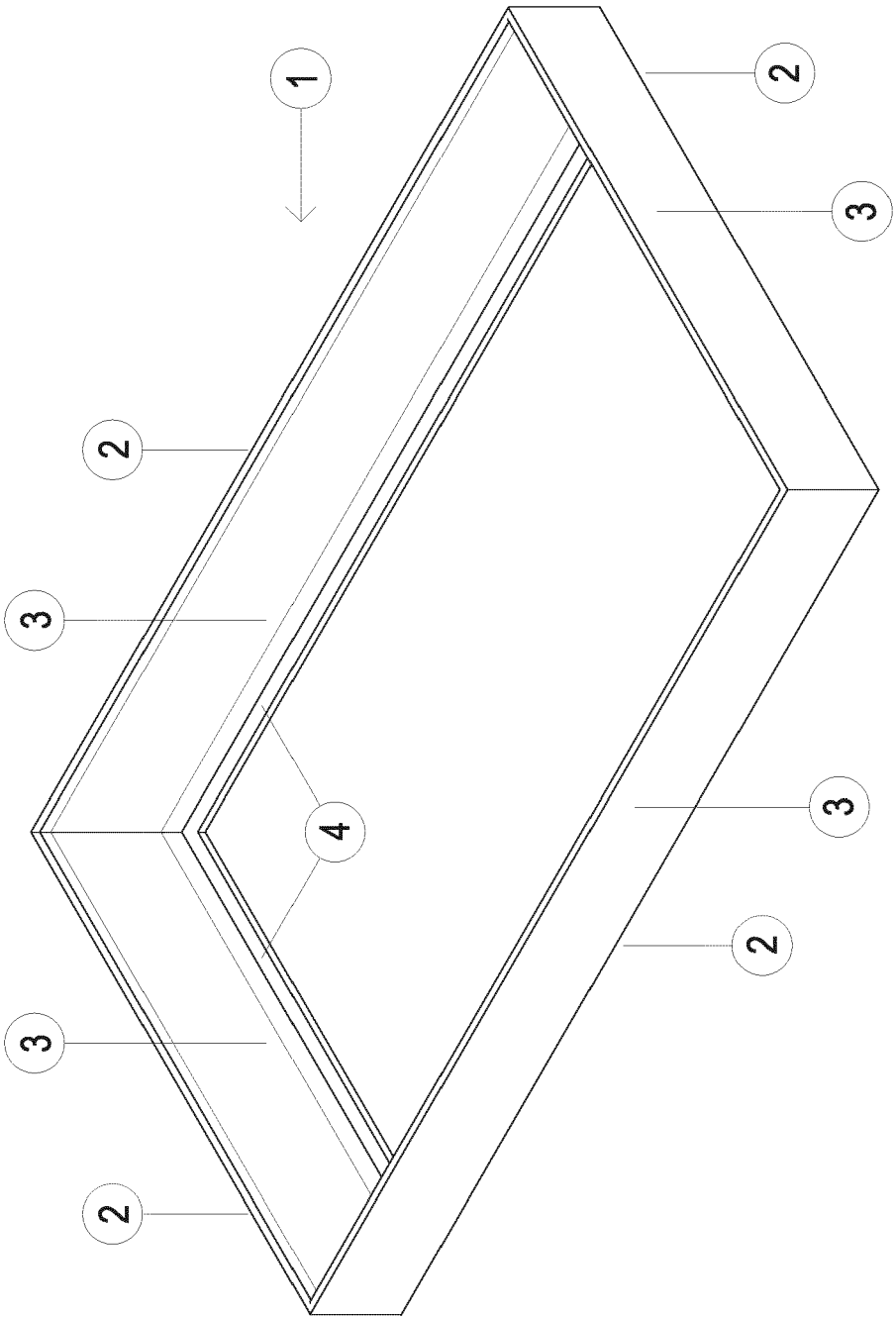

FIG. 1

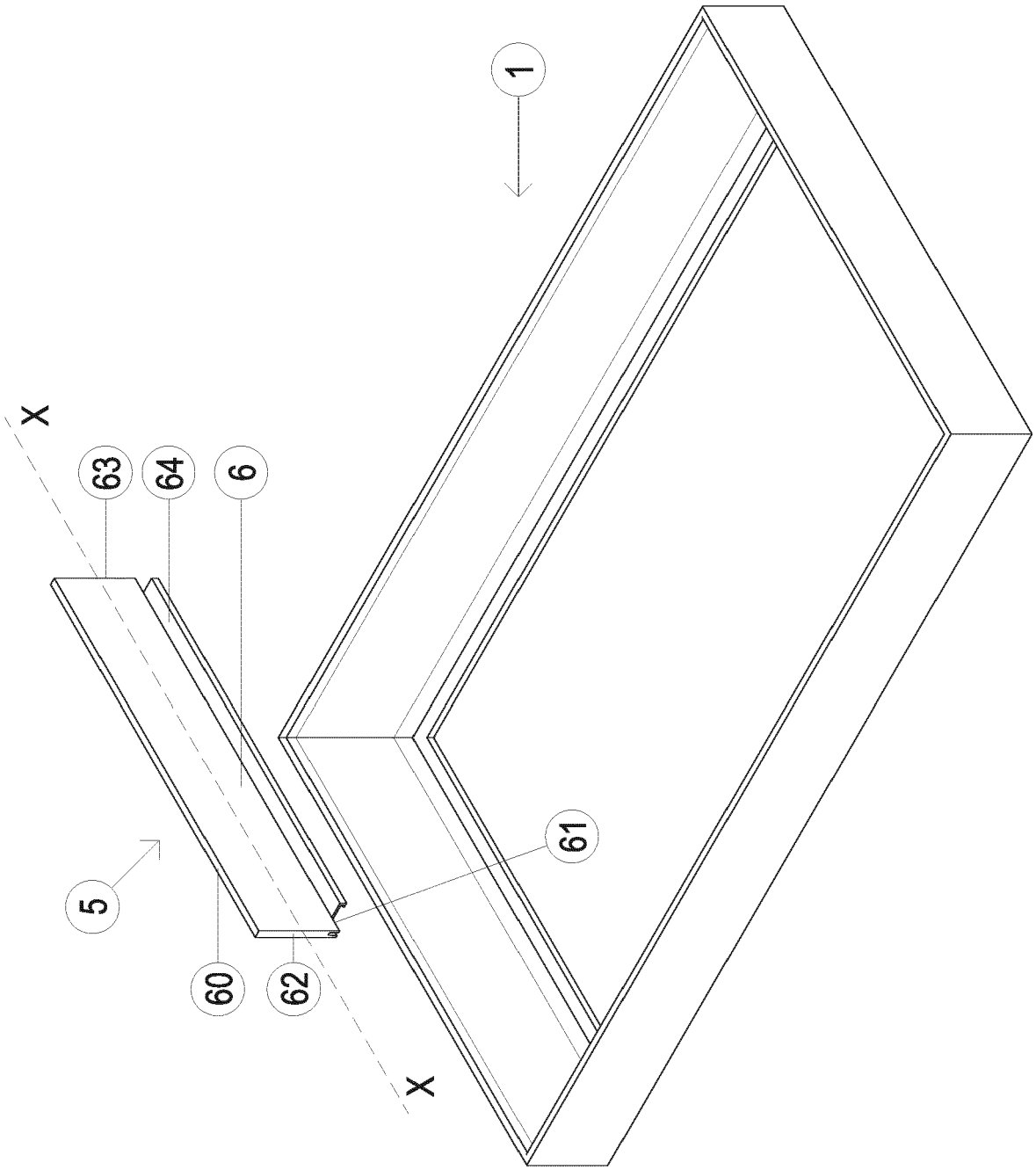

FIG. 2

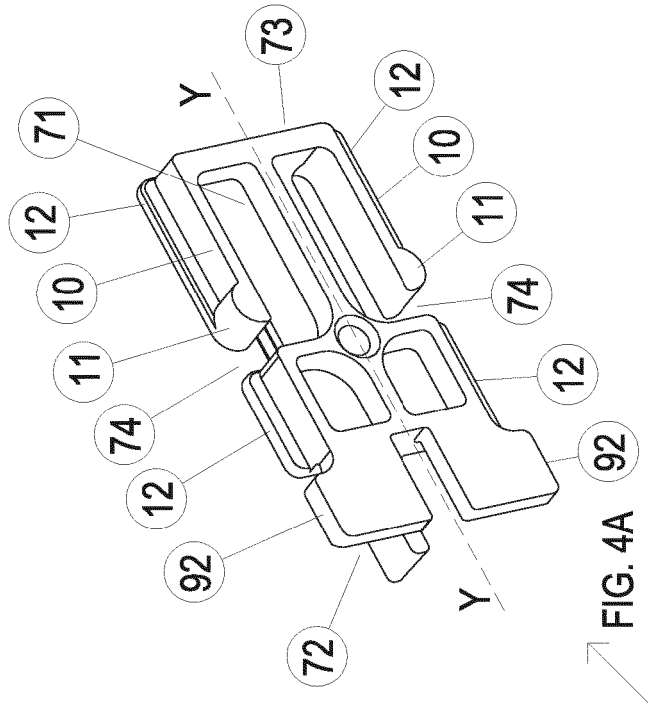

FIG. 4A

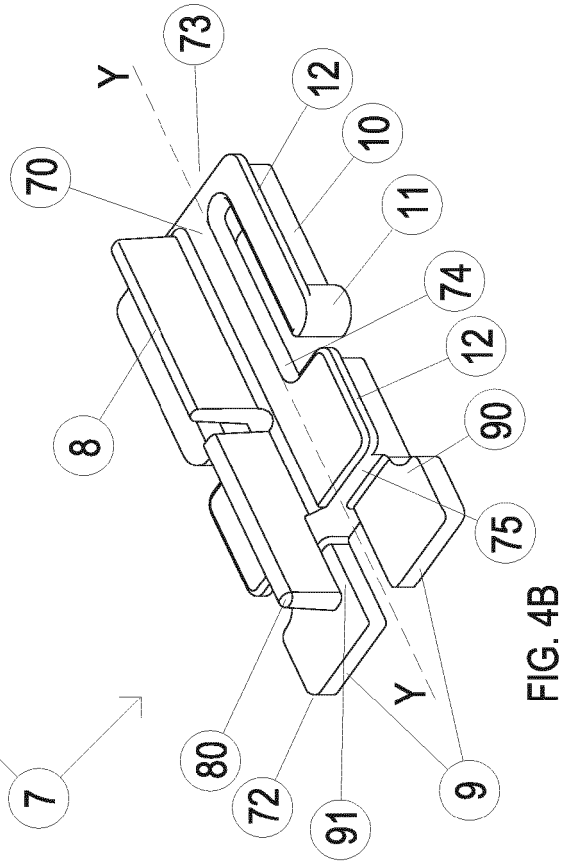

FIG. 4B

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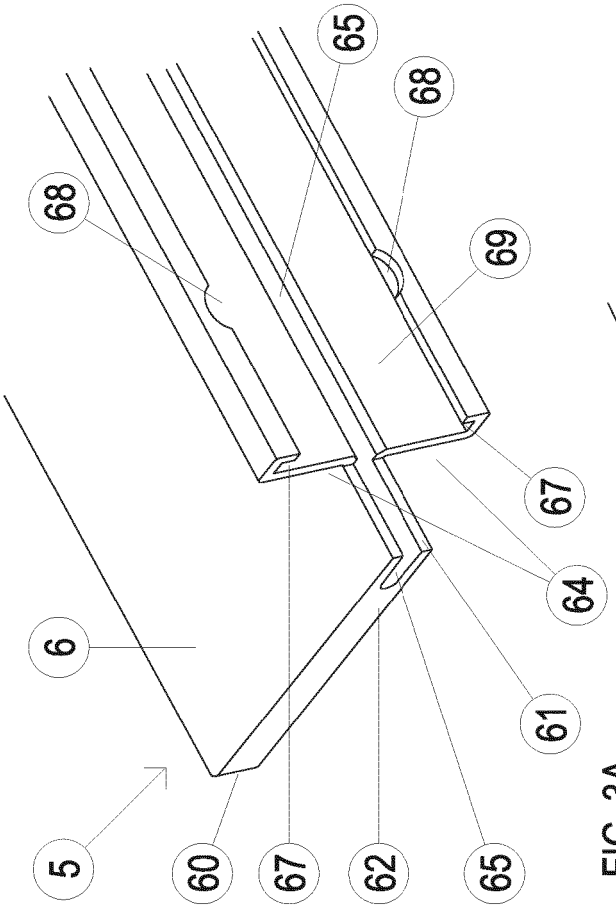


FIG. 3A

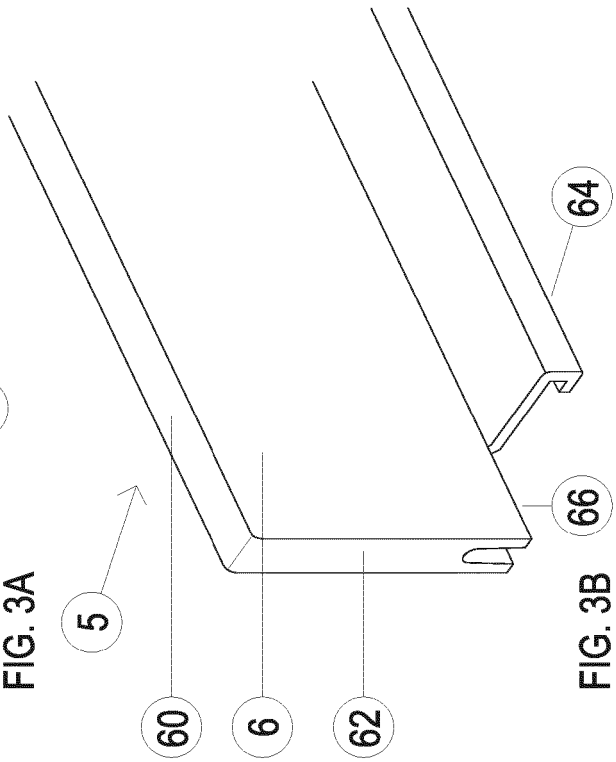


FIG. 3B

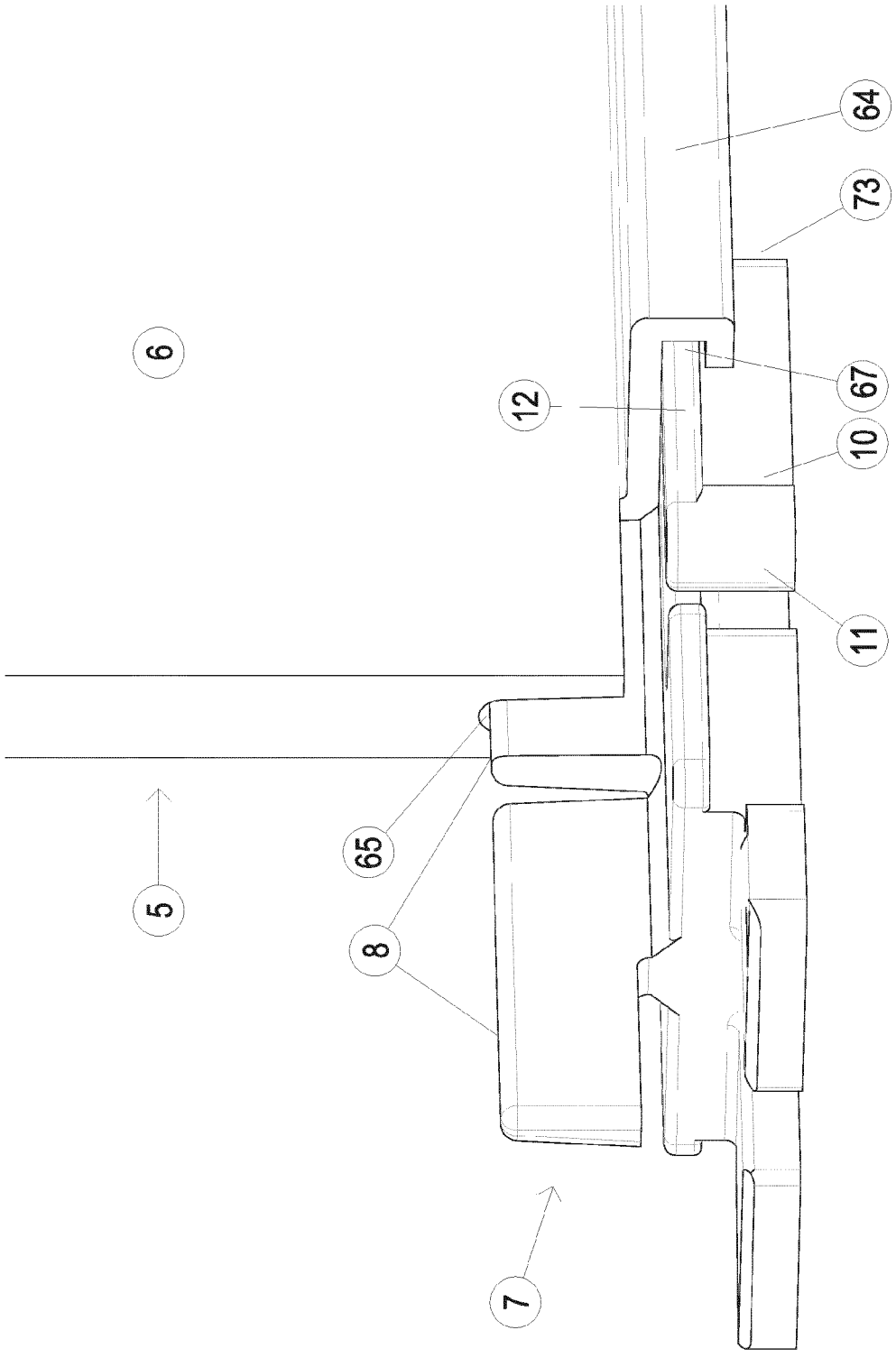


FIG. 5A

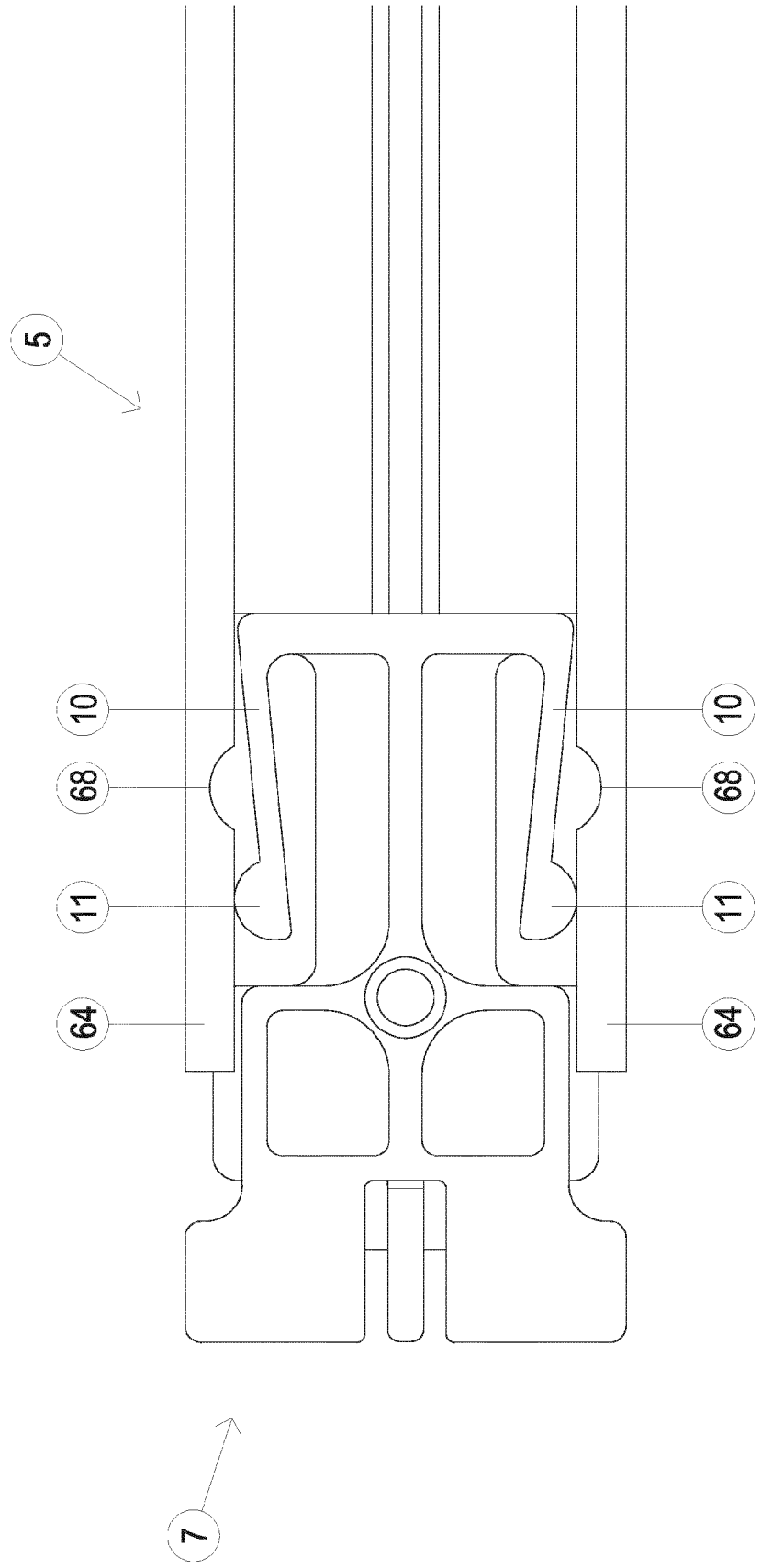


FIG. 5B

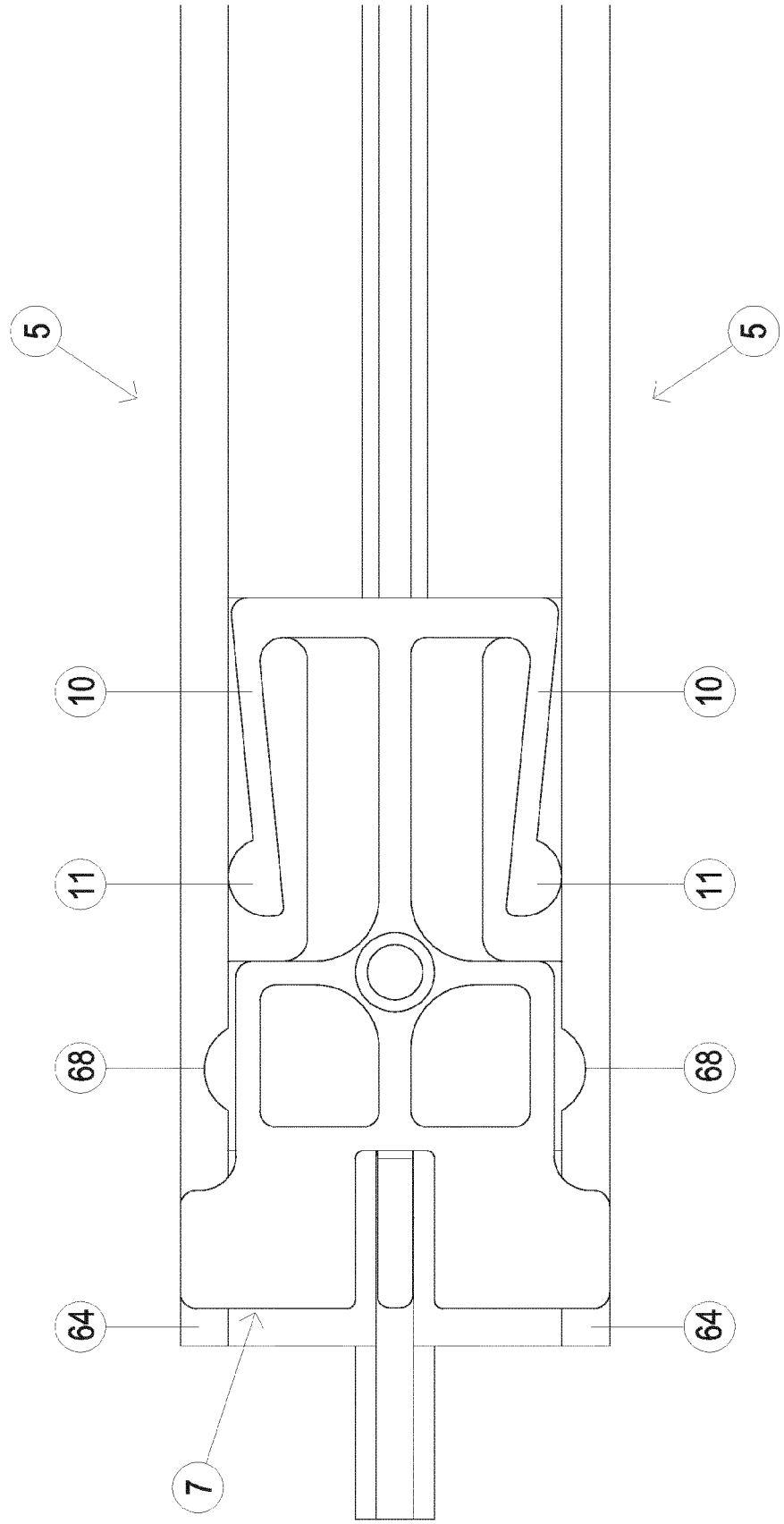


FIG. 5C

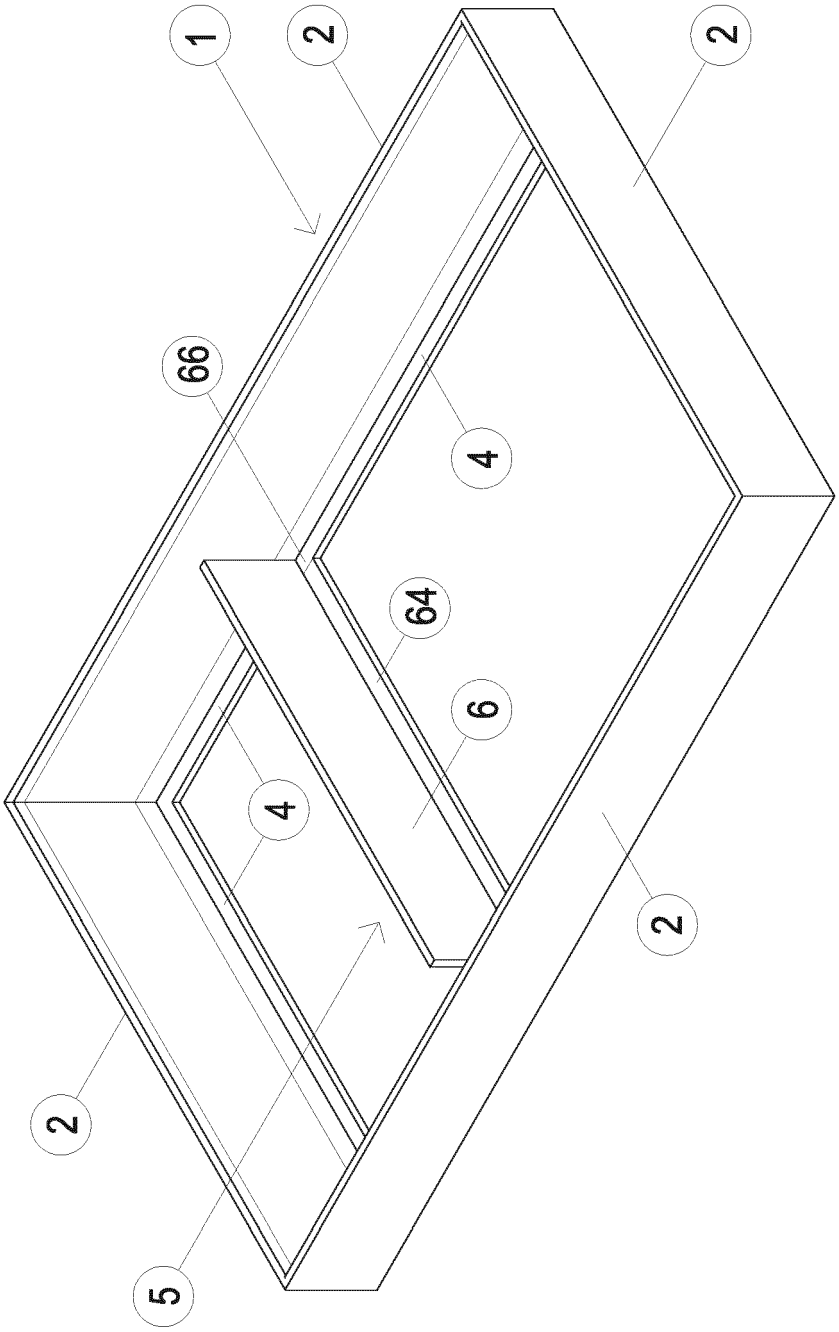


FIG. 6A

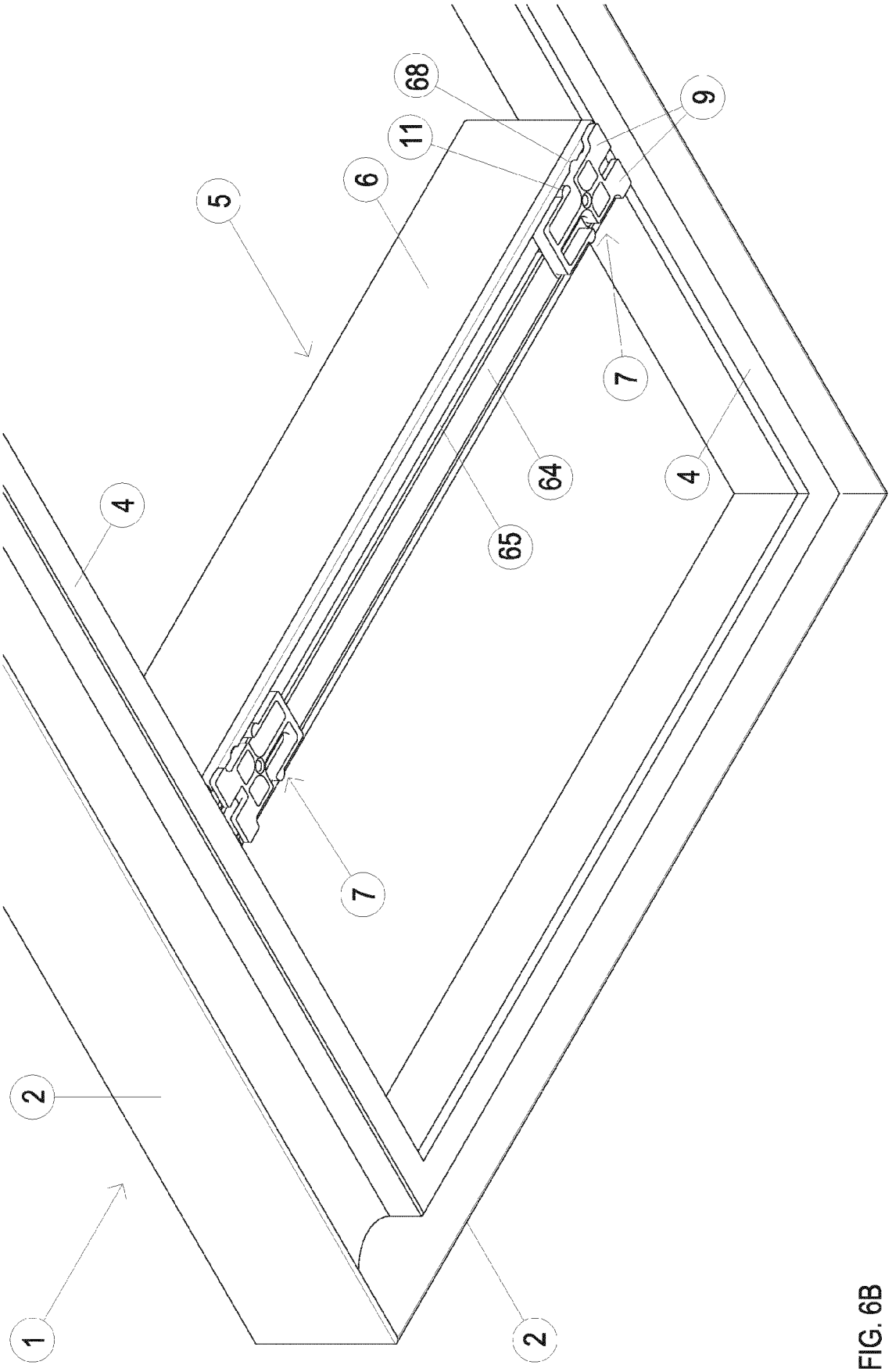


FIG. 6B

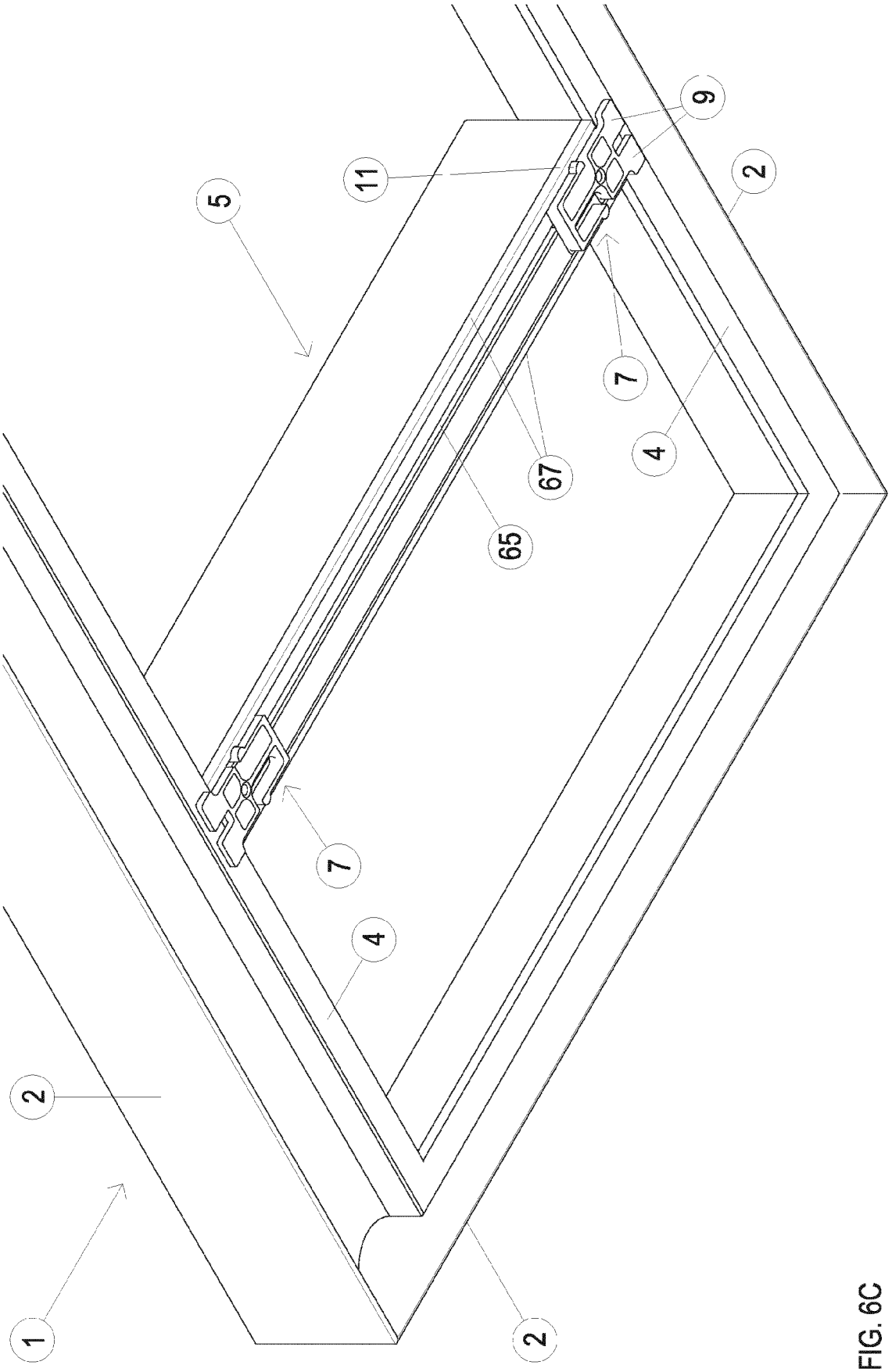


FIG. 6C

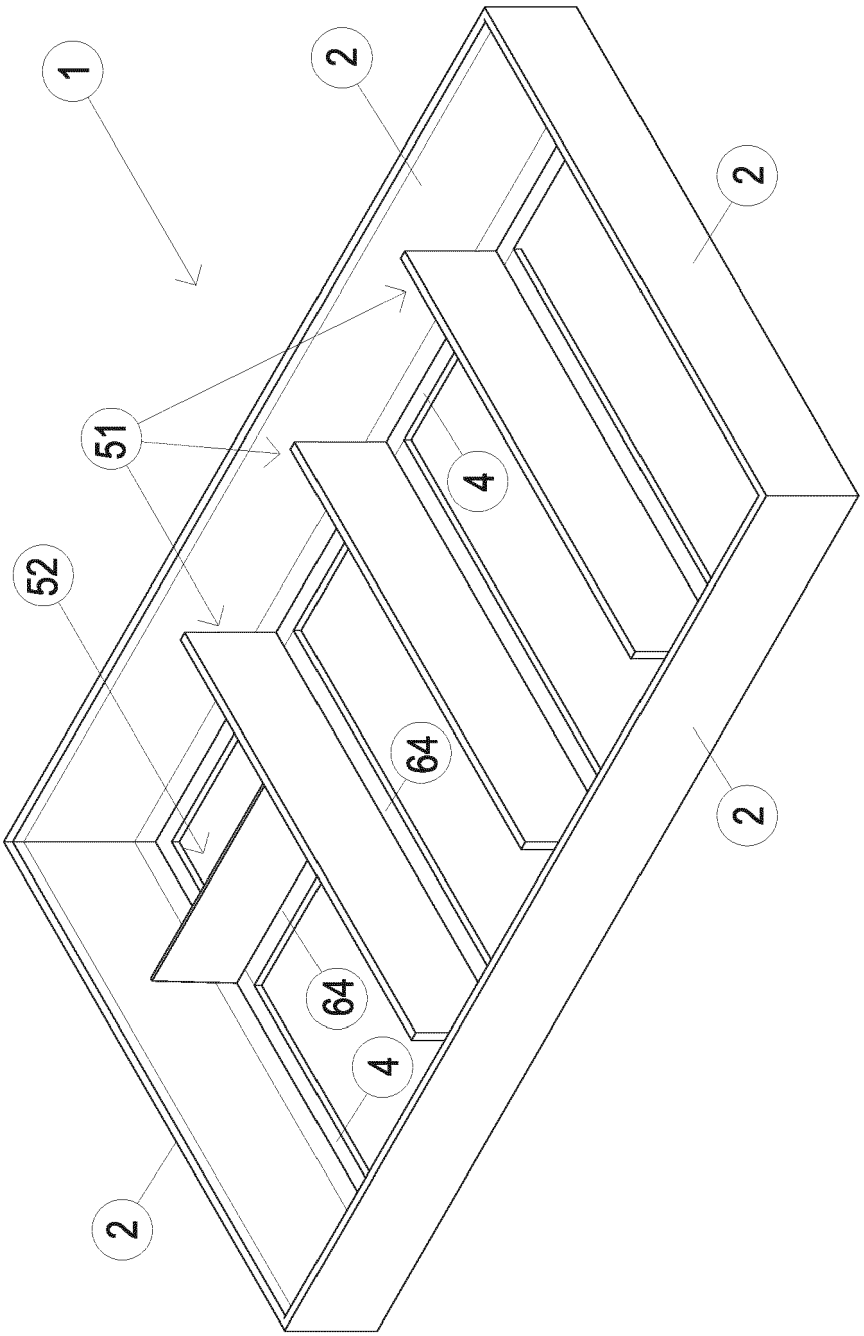


FIG. 7A

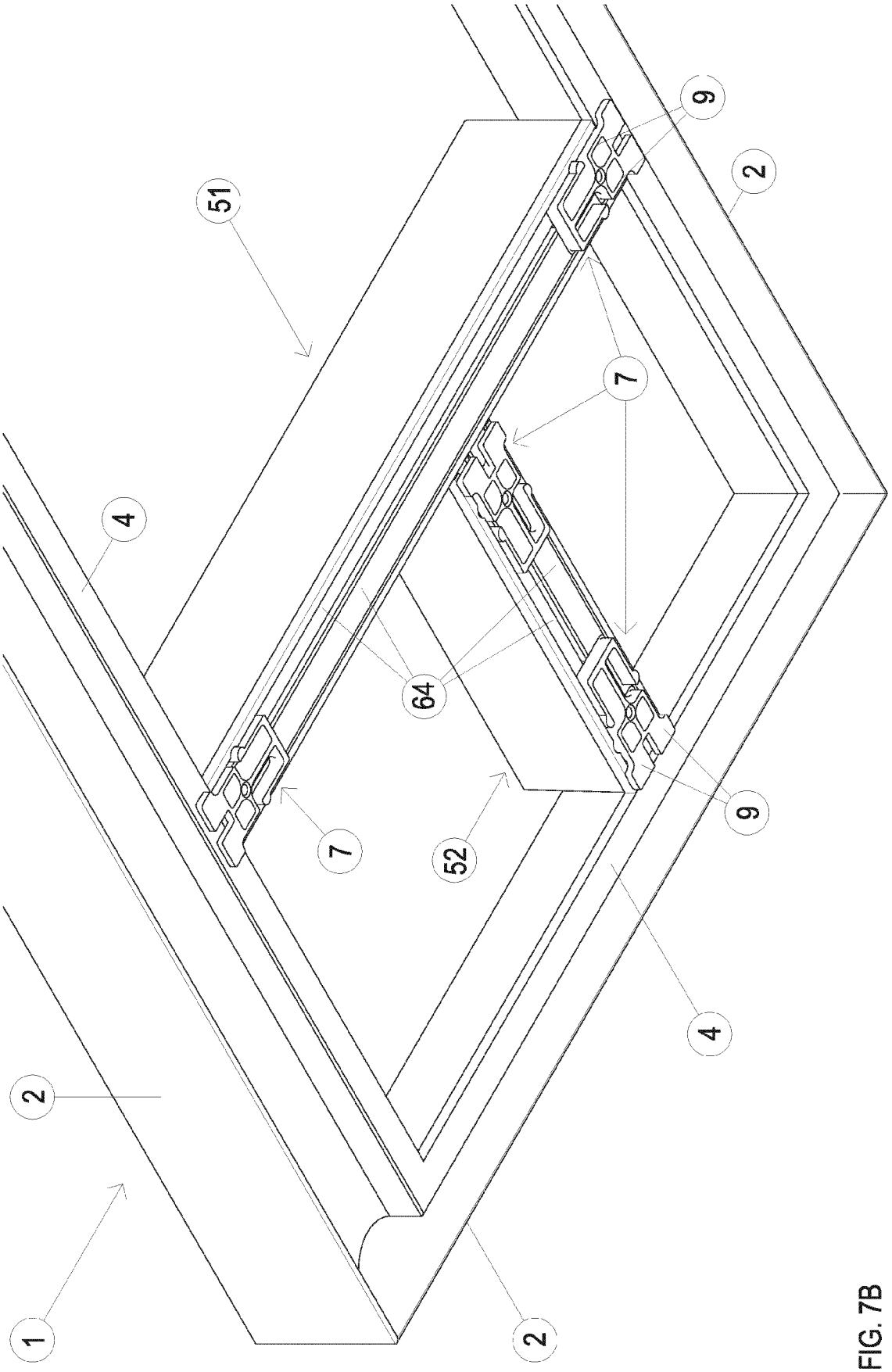


FIG. 7B

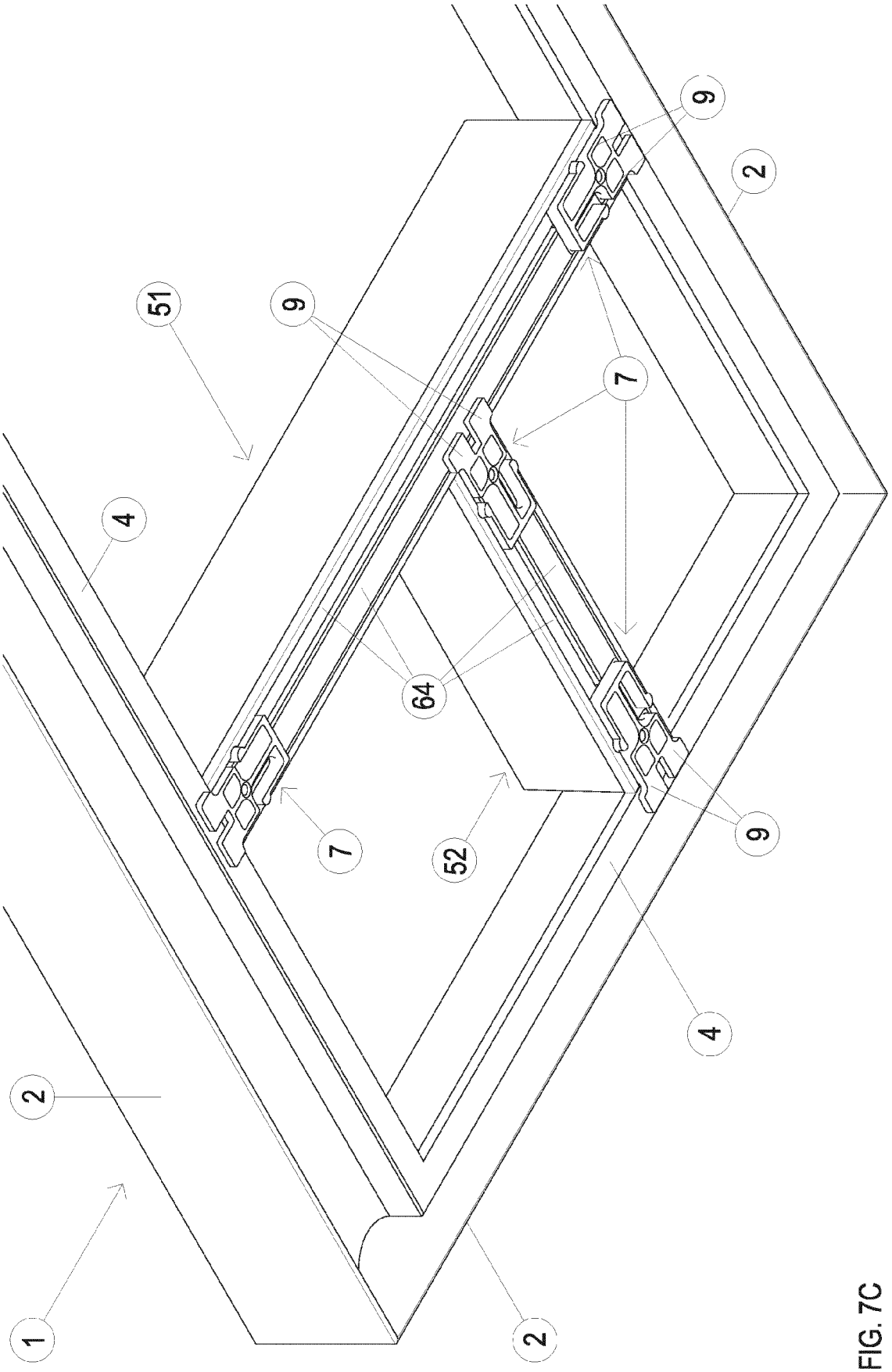


FIG. 7C

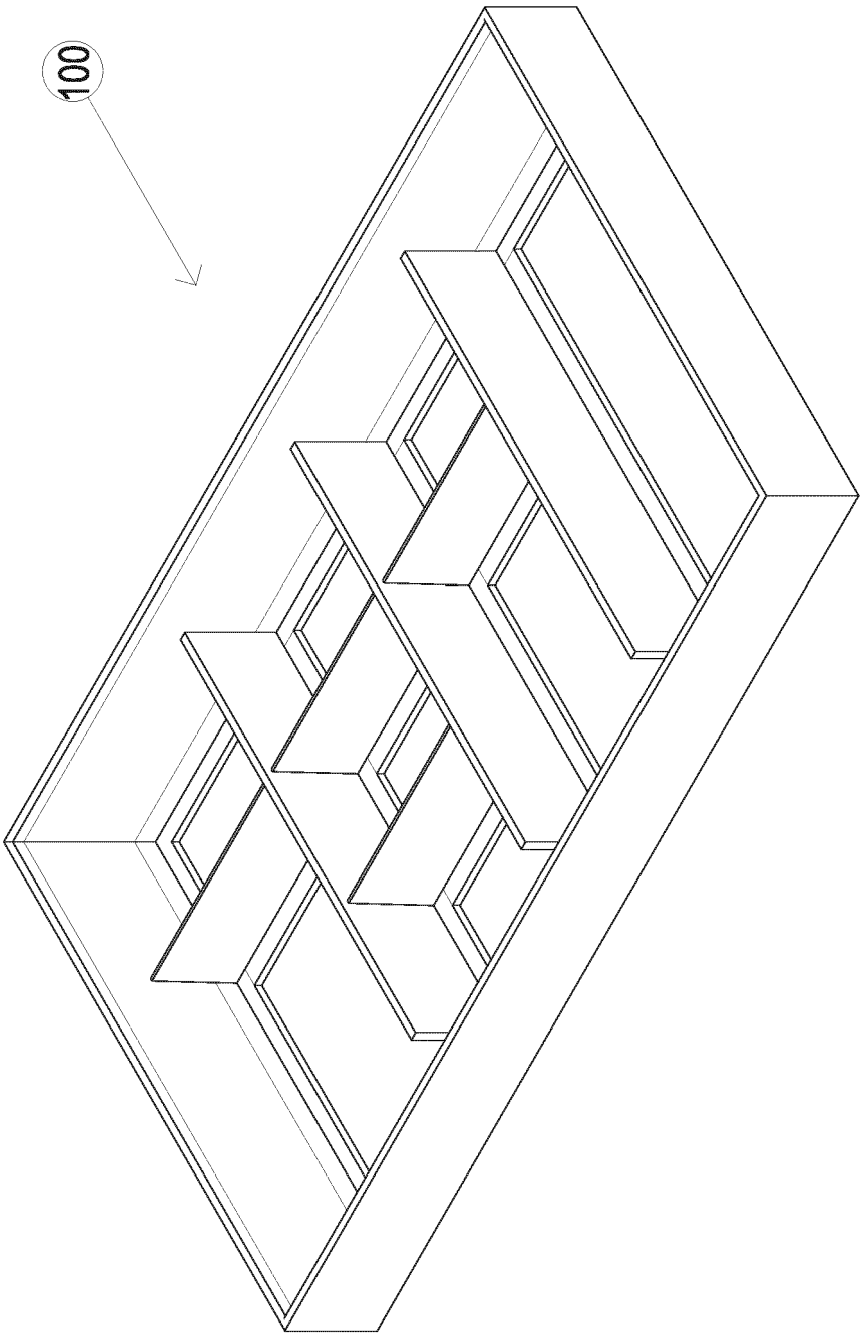


FIG. 8

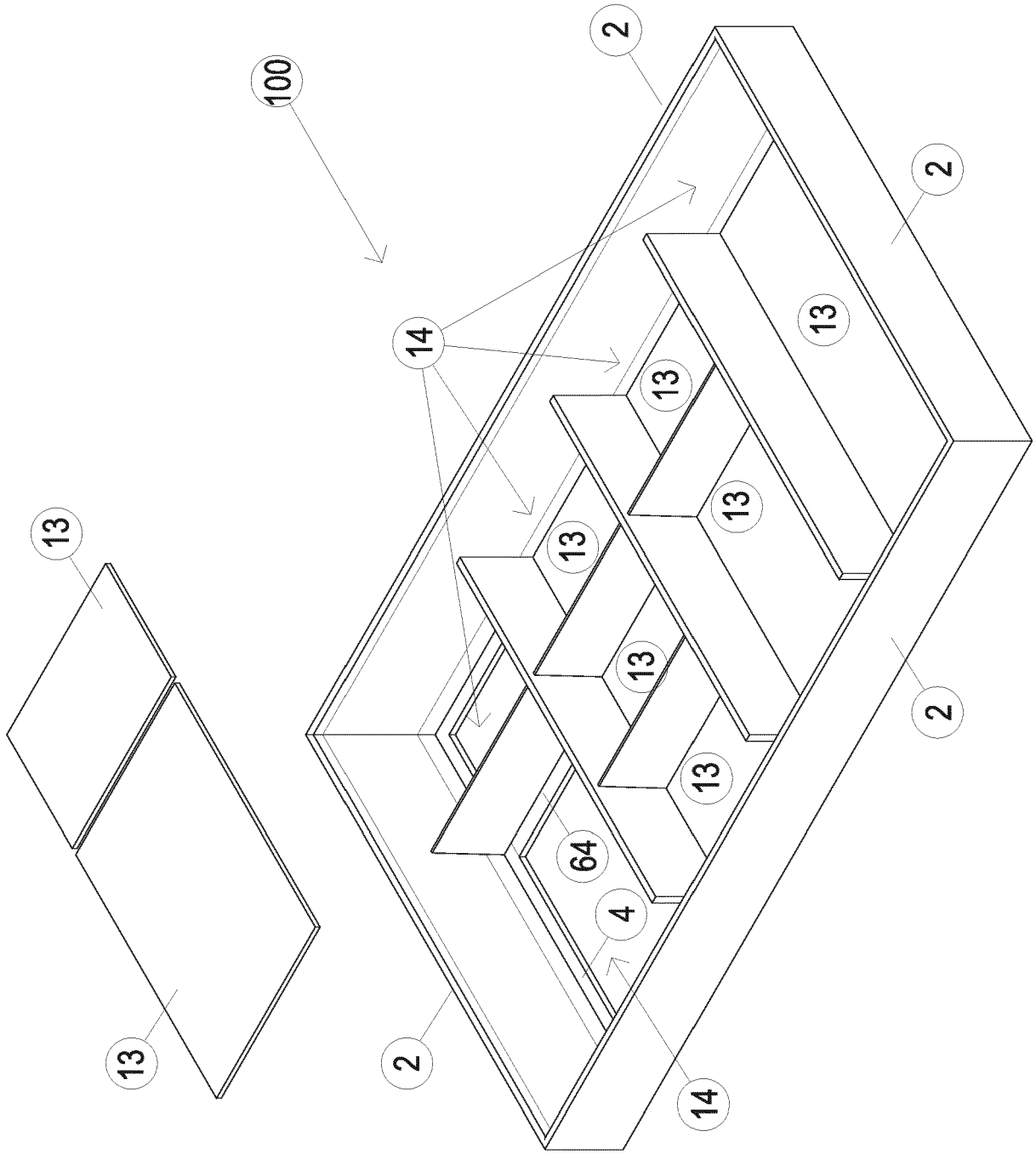


FIG. 9

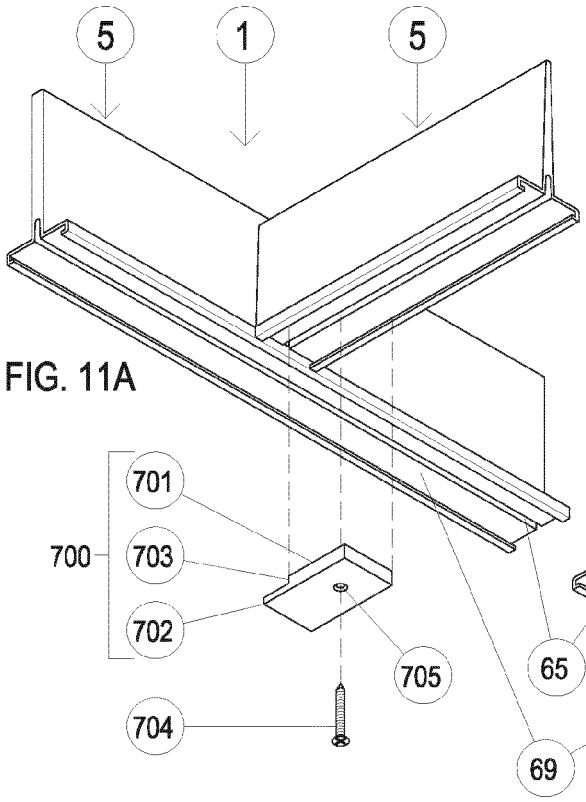


FIG. 11A

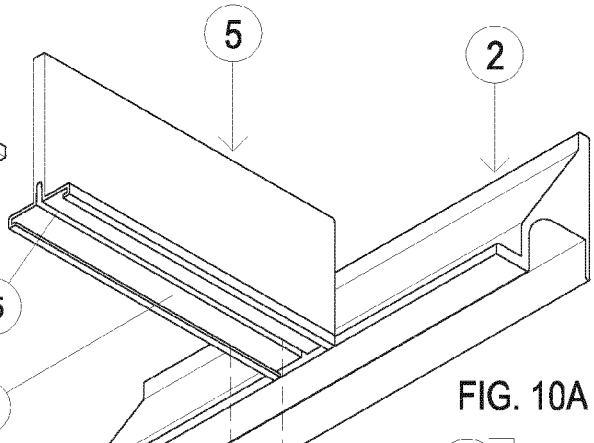
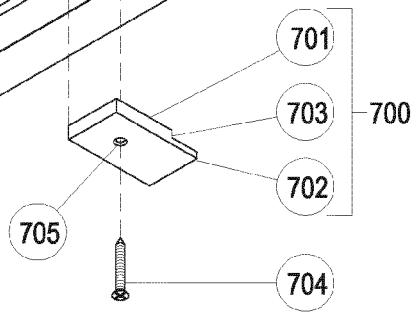


FIG. 10A



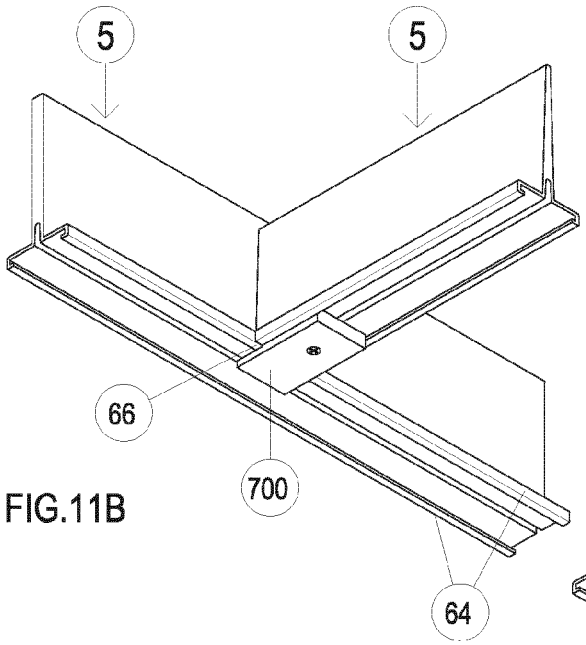


FIG.11B

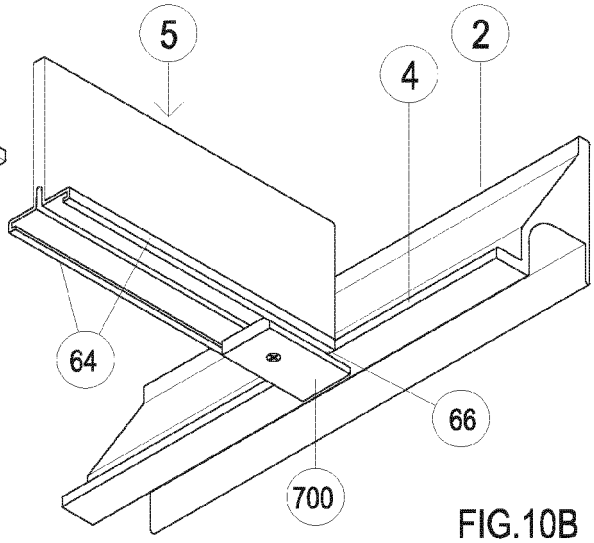


FIG.10B

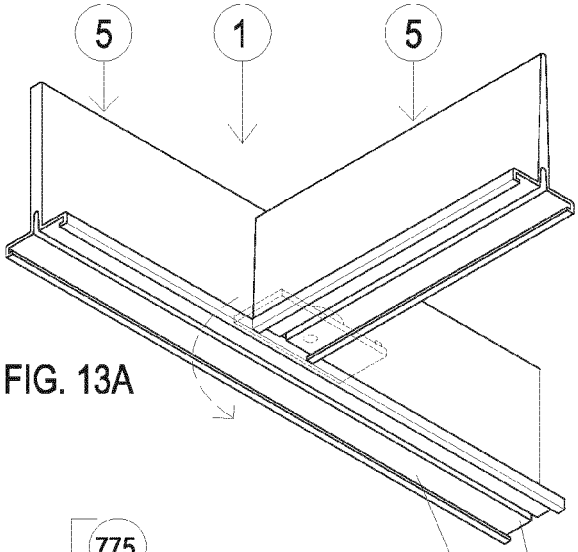
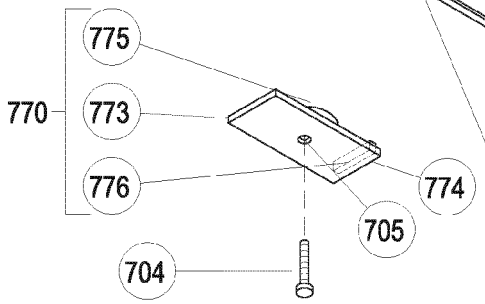


FIG. 13A



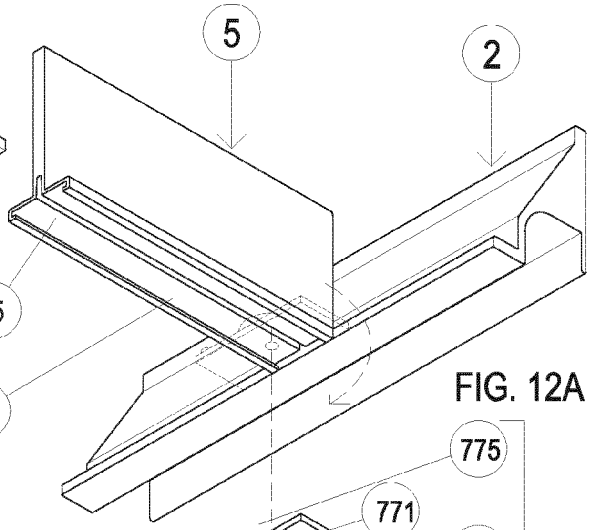
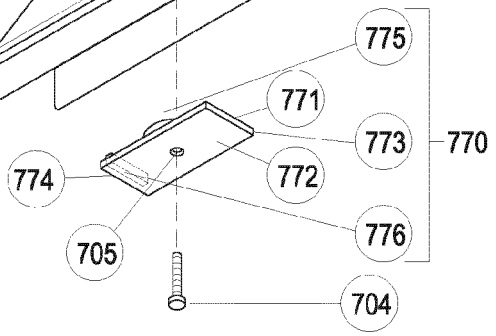


FIG. 12A



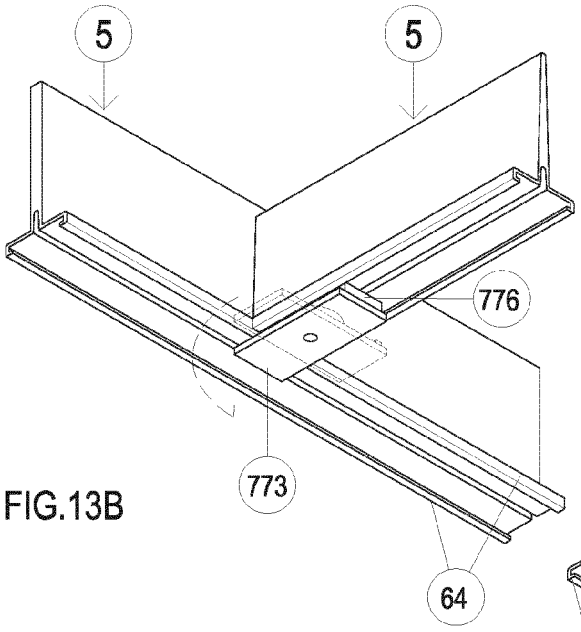


FIG.13B

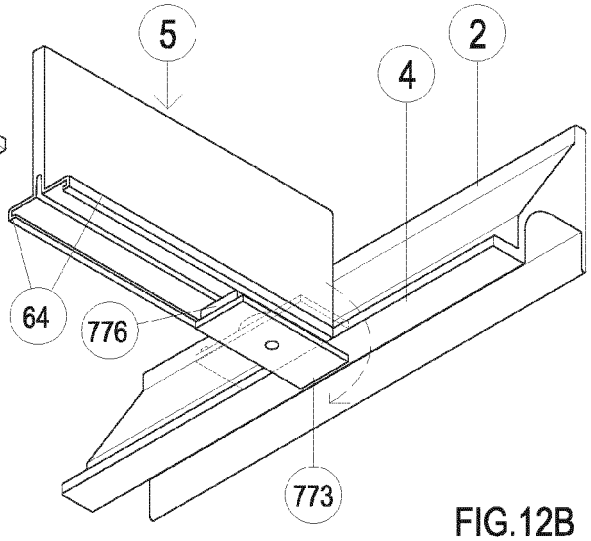


FIG.12B

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EUROPEAN SEARCH REPORT

Application Number
EP 20 16 6841

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 93 02 215 U1 (BOSCH SIEMENS GMBH) 27 May 1993 (1993-05-27) * page 1 - page 7; figures 1-4 *	1-10	INV. A47B88/975
X	CA 1 285 015 C (ALBERTA LTD 275893 [US]; ALBERTA LTD [US]) 18 June 1991 (1991-06-18) * page 1 - page 6; figures 1-9 *	1-10	
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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
The Hague	2 June 2020	Kohler, Pierre

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02-06-2020

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