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(54) **DISPLAY STAND AND METHOD FOR DISPLAYING FURNITURE**

(57) A display stand (100) for displaying furniture, comprising at least one storeroom (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) and a support frame (110) adapted to mount templates on it (121, 131, 141, 151, 161), characterized in that the support frame (110) and at least one storeroom (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) move relative to each other, and additionally the display stand (100) is equipped with mechanisms for moving the templates (121, 131, 141, 151, 161) between the storeroom (120, 125, 130, 135, 140, 145, 150, 160) for templates (121, 131, 141, 151, 161) and the support frame (110).

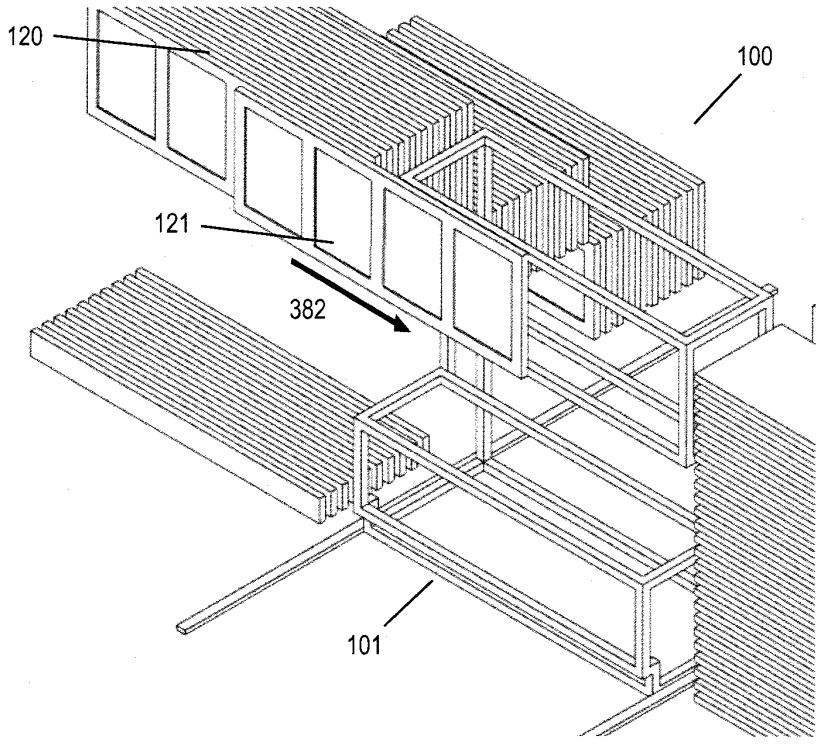

Fig. 3b

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Description

[0001] The subject of the invention is a display stand and method for displaying furniture, in particular kitchen furniture.

[0002] Display stands for visualisation of arrangements are used to display the offer of furniture stores.

[0003] A patent EP 2 531 063 discloses a device and a method for displaying furniture, in particular displaying wooden decorative elements, using a projector. The image from the projector is displayed on furniture surfaces prepared in an appropriate arrangement. The furniture surfaces are adapted to the best possible rendering of designs and elements displayed by the projector which gives an illusion of changes in elements veneer. The device is characterised in that at least one projector is equipped with a control unit which allows for choosing a group of decorative elements displayed on furniture surfaces.

[0004] The U.S. patent number US 6 216 890 discloses a device for displaying floor/ceiling tiles or similar flat items which uses two columns located on the sides of the display. The columns store stacked tiles, whereas the platform placed between the columns allows transporting the tiles from one column to the other. In the central part of the display, between the columns, there is a wall connecting the columns with an image showing the possible arrangement. The installed lighting makes it possible to evaluate the tiles in different lighting conditions.

[0005] The U.S. patent application US2013325670 discloses a shower door assembly display used for selecting a door frame and a glass pane for a shower enclosure provided with storage compartments with those two elements. The door frames and the glass panes of shower enclosures are mounted in sliding panels. Pulling out one panel with a door frame and one panel with a shower enclosure glass pane enables visual evaluation of a given combination by the user. The selection of a door frame is independent of the selection of a shower enclosure glass pane.

[0006] The European patent number EP 2 881 905 discloses a self-service parcel terminal used to store parcels of different sizes and equipped with mechanisms for loading and unloading parcels, weighing parcels as well as storing them. The self-service terminal can handle postal parcels or be used as a mailbox, vending machine or storage locker for storing parcels. Transport of parcels inside the terminal is carried out by using a gripping mechanism and a lift system which allows to move parcels in groups or as single items between the slot for delivering parcels and the shelves for parcels.

[0007] German patent application DE 19 853 848 discloses a solution to display kitchen furniture which consists of a module. The said module comprises two vertical and perpendicular to each other walls as well as a moving element which can move parallel to one of the walls. At least one fixed wall has a support strip from which cabinets with appropriate suspending elements can be suspended.

[0008] The U.S. patent US 7'000'786 discloses a rotating display system for the visualisation of various combinations of structural elements used in the kitchen and bathroom, such as cabinets, countertops, backsplashes, floor tiles and wall tiles. The rotating display system includes a rotationally mounted cabinet display, a rotationally mounted countertop display (above the cabinet display) and a rotationally mounted backwash (back panel) display (above the countertop display). The user can rotate each of the displays individually, creating combinations of elements from each display.

[0009] The gist of the invention is a display stand for displaying furniture including at least one storeroom with templates and a support frame adapted to mount the templates on it. The stand according to the invention is characterised in that the support frame and at least one storeroom with templates move with respect to one another. Moreover, the display stand is equipped with mechanisms for moving the templates between the storeroom for templates and the support frame. The obtained display stand allows displaying a large number of combinations of furniture elements in a relatively small space.

[0010] Furthermore, the stand according to the invention is characterised in that it includes at least two storerooms with templates whereby the templates in the first storeroom are oriented perpendicularly to the templates in the second storeroom. The obtained stand allows displaying both cabinets' fronts (doors) and furniture countertops.

[0011] Furthermore, the stand according to the invention is characterised in that it has at least three storerooms with templates whereby the storerooms are located on the opposite sides of the support frame. The obtained stand occupies a small area and allows displaying a large number of combinations of elements.

[0012] Furthermore, the stand according to the invention is characterised in that the support frame is adapted to move on guiding rails relative to the storerooms with templates. Replacing the display elements requires a relocation of the support frame that has relatively small weight which reduces energy consumption.

[0013] Furthermore, the stand according to the invention is characterised in that the storeroom with templates is adapted to move relative to the support frame. A storeroom for elements arranged in a basically horizontal plane (countertops), through vertical placement of elements, can occupy a small area.

[0014] Furthermore, the stand according to the invention is characterised in that the mechanism moving the templates is a set of rollers mounted on the support frame on which rails which are mounted to the templates move. The energy consumption related to moving templates is reduced and the durability of guiding elements of the support frame and the templates is increased.

[0015] Furthermore, the stand according to the invention is characterised in that it is equipped with a controller

unit, user interface and actuators adapted in such a way that they control the movement of the support frame and storerooms as well as the loading of templates onto the support frame/unloading of templates from the support frame to the storerooms. This makes it possible to control fully the process of preparing the stand and display.

[0016] Furthermore, the gist of the invention is a method for displaying furniture whereby, information on the desired combination of templates is entered by means of a user interface, the support frame is slid to the loading position. This makes it possible to load the templates from the storerooms with templates onto the support frame. The templates from the storerooms with templates are loaded onto the support frame and then the support frame is slid to the display position. The obtained method allows displaying a large number of combinations of furniture elements in a relatively small area.

[0017] Furthermore, the method according to the invention is characterised in that the templates are loaded onto the support frame with the smallest possible number of movements and/or the shortest path of the support frame. This reduces the energy consumption required to prepare a display.

[0018] The main advantage of an automated stand according to the invention is the ability to display a large number of possible arrangements of kitchen furniture elements in a very small area. Each combination is created at the request of the user or according to a model in the device's memory and thus there is no need to assembly a large number of only selected combinations at the destination. The prepared fronts and countertops in the storerooms may be quickly replaced in the system's storerooms which allows adapting the store's offer without a long break to change the display.

[0019] An additional advantage of the invention is the fact that during the change of arrangement, the user does not have to change his position and he can even have a rest on the couch. The user may remain in the same place. The comfort experienced by the user has an impact on his perception of the quality of service.

[0020] The automated stand provides synchronisation of form, colour and lighting between the user and the selected item. Synchronisation of these three elements is a necessary condition to create the atmosphere of safety and mental comfort when choosing a combination of furniture.

[0021] The advantageous embodiment of the subject of the invention has been shown in greater detail in the following figures whereby:

Fig. 1a Schematic arrangement of elements of a display stand in the display position.

Fig. 1 b Schematic arrangement of elements of a display stand.

Fig. 2a Connection between the upper cabinets' front and the display frame in the loaded position in the first embodiment of the connection.

Fig. 2b Connection between the upper cabinets' front and the display frame in the loading position in the first embodiment of the connection.

Fig. 2c A close-up view A showing the connection details between the front and the display frame in the first embodiment of the connection.

Fig. 2d Connection between the upper cabinets' front and the display frame in the loading position in the second embodiment of the connection.

Fig. 2e A close-up view B showing the connection details between the front and the display frame in the first embodiment of the connection.

Fig. 3a Schematic arrangement of elements of a display stand in a position allowing loading a model upper cabinets' front.

Fig. 3b Schematic arrangement of elements of a display stand in a position allowing loading an upper cabinet's front during the loading of an upper cabinet's front.

Fig. 3c Schematic arrangement of elements of a display stand in a position allowing loading an upper cabinet's front with the upper cabinet's front loaded.

Fig. 3d Schematic arrangement of elements of a display stand in the display frame position allowing loading a countertop.

Fig. 3e Schematic arrangement of elements of a display stand in the display frame and countertops storeroom position allowing loading a countertop.

Fig. 3f Schematic arrangement of elements of a display stand in the display frame and countertops storeroom position allowing loading a countertop during the loading of a countertop.

Fig. 3g Schematic arrangement of elements of a display stand in the display frame and countertops storeroom position allowing loading a countertop with the countertop loaded.

Fig. 3h Schematic arrangement of elements of a display stand in a position allowing loading a selected model back panel with the selected model back panel loaded.

Fig. 3i Schematic arrangement of elements of a display stand in a position allowing loading a se-

lected model lower cabinets' front with the selected model lower cabinets' front loaded.

Fig. 3j Schematic arrangement of elements of a display stand in a position allowing loading a selected model cabinet base with the selected model cabinet base loaded.

Fig. 3k Schematic arrangement of elements of a display stand during sliding of the frame to the display position.

Fig. 4 Schematic arrangement of elements of a display stand in the display position in the second embodiment.

[0022] Fig. 1a shows an example of arrangement of elements of an automated display stand (100) in the display position (106). The support frame (110) is located in a display opening (103) which is located in the stand's wall (102). The stand (100) has additional screens (104, 105) for covering the display opening (103) during the process of loading/unloading fronts and countertops onto/from the support frame (110). In addition, the stand has been equipped with an element (101) ensuring user's comfort.

[0023] The stand may be equipped with lighting placed both in the display opening (103) and inside the support frame (110). Placement of lighting in the support frame (110) with templates allows illuminating the templates and showing the transparent elements of the templates such as glass panes and openings.

[0024] Fig 1b shows schematically an embodiment of the invention in the form of a display stand (100) comprised of a moving support frame (110) and a set of storerooms (120, 130, 140) for furniture elements which differ in visual aspects, in particular the texture, color, pattern, ornamentation, etc. In the embodiment of the invention, a presented stand allows displaying a standard kitchen furniture unit with five furniture surfaces in any combination. The stand (100) includes eight storerooms with furniture elements, i.e. templates of various furniture elements, in particular five different types of furniture surfaces. The purpose of introducing the stand (100) according to the invention is to enable fast display of any combination of furniture elements and to display them in places where they appear in finished kitchen furniture. Such a solution makes it possible to display to users a finished set composed of templates in different lighting conditions. Moreover, it allows the user to experience more closely the furniture surfaces, among other things, tactilely.

[0025] The stand (100) is constructed from a support frame (110) and storerooms (120, 125) with furniture elements which are the templates of fronts of wall-hung cabinets, storerooms (130, 135) with furniture/decorative elements which are the templates for finishing the panel below the wall-hung cabinets, storerooms (140, 145) with furniture elements which are the templates of lower cabinets' fronts, a storeroom (150) with furniture elements which are the templates of cabinet bases and a storeroom (160) with furniture elements which are the templates of countertops. The stand according to the invention is not limited by the type of furniture, i.e. it is not restricted exclusively to displaying kitchen furniture as the frame may have any shape which represents furniture surfaces, e. g. a set of office/bathroom/living room furniture in any configuration, whereas the storerooms with templates of furniture elements may be positioned correspondingly to the display surfaces so that loading a furniture element (template) onto the support frame is possible.

[0026] In alternative embodiments, it is possible to fill the storerooms with appropriate sets of furniture, decorative or finishing elements, e.g. with countertop sets equipped with a sink and sample tapware. Storerooms can accommodate any furniture/decorative elements or sets of such elements.

[0027] As mentioned above, the storerooms may store such elements as fronts or countertops. The term 'fronts' refers to all elements placed in the display frame in a basically vertical plane and may include, but is not limited to, templates of fronts of wall-hung cabinets/back panels, lower cabinets' fronts and cabinet bases. The term 'countertops' refers to all elements placed in the display frame in a basically horizontal plane and may include, but is not limited to, templates of kitchen countertops.

[0028] Storerooms can store templates in position and orientation corresponding to the position of a template on the support frame (110) and themselves move templates to a specified position allowing loading a template onto the support frame (110). The term 'loading' may refer both to the transfer of a template of furniture elements from the storeroom to the support frame and the transfer of a template of furniture elements from the support frame (110) to the appropriate storeroom.

[0029] A single automated display stand (100) may have more than one storeroom capable of storing elements of the same type. In the preferred embodiment, storerooms of the automated display stand (100) can accommodate 50 fronts and countertops of each type. Front type should be understood as a group of fronts comprising all elements of the same type, e.g. all wall-hung cabinets' fronts.

[0030] In the presented embodiment, the support frame (110) of the display stand (100) has been adapted to move on rails (170, 171) between the individual loading positions of storerooms for furniture elements. In the loading position, furniture elements are moved between the storeroom and the support frame. Movement is provided by a transport system (not shown), e.g. a drive using hydraulic actuators or electric servomotors. Similarly, the loading system can comprise hydraulic/pneumatic actuators or electric servomotors. In the case of storerooms for fronts, which are arranged along the rails (170, 171), it is possible to move the support frame (110) to the position of a selected element in the storeroom

and load it by means of the transport system located in the support frame (110) (not shown).

[0031] The display stand (100) operates under the control of a controller which contains information about the location of templates of furniture elements and appropriately controls the loading and unloading of templates of furniture elements as well as the movement of the support frame (110).

[0032] Figs. 2a-e show two embodiments of the connection between the template of a front of wall-hung cabinets (222) and the support frame (110). The front of wall-hung cabinets (222) is mounted on the support frame (110) by means of rails (223) placed on the back side of the front (222) over its entire length as well as by means of idler pulleys (111) placed on the support frame (110). Details of the construction has been shown in Fig. 2c. In the embodiment shown in Figs. 2d-e, the idler pulleys (111) are placed in a horizontal position. Ball transfer units (112), which are installed in the axles of the idler pulleys (111), are used to carry the weight of a template of the front of wall-hung cabinets (222).

[0033] Figs. 3a-k show examples of further stages of the process of loading fronts and a countertop onto the support frame (110). In the shown embodiment, the support frame (110) does not have the templates of furniture elements loaded at the beginning of the loading process. In the event that the support frame has at least one template loaded at the beginning of the loading process, it may be necessary to unload such an element (by means of the stand (100)) to the appropriate location in the appropriate storeroom unless it constitutes an element of the next display.

[0034] The eventual loading order of the individual elements may be other than the one shown and it may depend on the position of selected elements as well as on the elements on the support frame. In the first stage of the process shown in Fig. 3a, the support frame (110) moves on rails (170, 171) to a position allowing loading a selected template of a front of wall-hung cabinets (121) in the support frame (110) from the storeroom for templates of wall-hung cabinets (120). The direction of movement of the support frame (110) has been shown by means of an arrow (381). Fig. 3b shows the process of loading the selected model wall-hung cabinets' front (121) in the support frame (110), whereas Fig. 3c shows the final stage of loading the selected template of a front of wall-hung cabinets (121) in the support frame (110). The direction of movement of the selected template of a front of wall-hung cabinets (121) has been shown by means of an arrow (382).

[0035] In the next stage of the process (shown in Fig. 3d), the support frame (110) moves on rails (170, 171) to a position allowing loading a selected countertop template (161) in the support frame (100) from the storeroom for countertop templates (160). The direction of movement of the support frame (110) has been shown by means of an arrow (383). In order to load the selected countertop template (161), the whole storeroom for countertops (160) has to move to the position allowing loading a selected countertop template (161) in the support frame (110). The process of movement of the storeroom for countertops (160) has been shown in Fig. 3e. The direction of movement of the storeroom for countertops (160) has been shown by means of an arrow (384). Fig. 3f shows the process of loading the selected countertop template (161) in the support frame (110), whereas Fig. 3g shows the last stage of loading the selected countertop template (161) in the support frame (110) in which the selected countertop template (161) has already been loaded in the support frame (110). The direction of movement of the selected countertop template (161) has been shown by means of an arrow (385).

[0036] Fig. 3h shows the last stage of loading a selected back panel template (131). The support frame (110) is in a position allowing loading of the selected back panel template (131) in the support frame (110) from the storeroom for back panels templates (130), and the selected back panel template (131) has been loaded in the support frame (110). The direction of movement of the selected back panel template (131) has been shown by means of an arrow (386).

[0037] Fig. 3i shows the last stage of loading a selected lower cabinets' front template (141). The support frame (110) is in a position allowing loading the selected lower cabinets'front template (141) in the support frame (110) from the storeroom for lower cabinets' fronts templates (140), and the selected lower cabinets' front template (141) has been loaded in the support frame (110). The direction of movement of the selected lower cabinets'front template (141) has been shown by means of an arrow (387).

[0038] Fig. 3j shows the last stage of loading a selected cabinet base template (151). The support frame is in a position allowing loading a selected cabinet base template (151) in the support frame from the storeroom for cabinet bases templates (150), and the selected cabinet base template (151) has been loaded in the support frame (110). The direction of movement of a selected cabinet base template (151) has been shown by means of an arrow (388).

[0039] Fig. 3k shows the stage of sliding out the support frame (110) to the display position. The direction of movement of the support frame (110) has been shown by means of an arrow (389). The following elements are loaded in the support frame (110): the selected template of fronts of wall-hung cabinets (121), the selected back panel template (131), the selected countertop template (161), the selected lower cabinets'fronts template (141) and the selected cabinet base template (151).

[0040] Fig. 4 shows the automated display stand (410) in the display position in the second embodiment. The support frame (410), which is adapted to move on rails (470 and 471), in this embodiment has two side support elements (414 and 416) which allow mounting selected moving elements (481 and 486) from storerooms 480 and 485 respectively. There are lighting elements (490)

on the ceiling of the stand. There are internal lighting elements (491), which illuminate the templates, in the upper part of the support frame.

Claims

1. A display stand (100) for displaying furniture, comprising

   at least one storeroom (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) and
   a support frame (110) adapted to mount templates (121, 131, 141, 151, 161),

   characterised in that

   the support frame (110) and at least one storeroom (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) move relative to each other, and additionally,
   the display stand (100) is equipped with mechanisms for moving the templates (121, 131, 141, 151, 161) between the storeroom (120, 125, 130, 135, 140, 145, 150, 160) for templates (121, 131, 141, 151, 161) and the support frame (110).

2. The stand according to claim 1, **characterised in that** it includes at least two storerooms (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161), whereby the templates (121, 131, 141, 151) in the first storeroom (120, 125, 130, 135, 140, 145, 150) are oriented perpendicularly to the templates (161) in the second storeroom (160).

3. The stand according to claim 1 or 2, **characterised in that** it includes at least three storerooms (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) whereby the storerooms (120, 125, 130, 135, 140, 145, 150, 160) are arranged on the opposite sides of the support frame (110).

4. The stand according to any of the claims from 1 to 3, **characterised in that** the support frame (110) is adapted to move on guiding rails (170, 171) relative to the storerooms (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161).

5. The stand according to any of the claims from 1 to 4, **characterised in that** the storeroom (160) with templates (161) is adapted to move relative to the support frame (110).

6. The stand according to any of the claims from 1 to 5, **characterised in that** the mechanism for moving the templates (121, 131, 141, 151) is a set of rollers (111) mounted on the support frame (110) on which rails (223) which are mounted to the templates (121, 131, 141, 151) move.

7. The stand according to any of the claims from 1 to 6, **characterised in that** it is equipped with a controller unit, user interface and actuators adapted in such a way that they control the movement of the support frame (110), storerooms (120, 125, 130, 135, 140, 145, 150, 160), loading of templates (121, 131, 141, 151, 161) onto the support frame (110) and unloading of templates (121, 131, 141, 151, 161) from the support frame (110) to the storerooms (120, 125, 130, 135, 140, 145, 150, 160).

8. A method for displaying furniture whereby

   information on the desired combination of templates (121, 131, 141, 151, 161) is entered by means of a user interface;
   the support frame (110) is slid to the loading position which makes it possible to load the templates (121, 131, 141, 151, 161) from the storerooms (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) onto the support frame (110);
   the templates (121, 131, 141, 151, 161) from the storerooms (120, 125, 130, 135, 140, 145, 150, 160) with templates (121, 131, 141, 151, 161) are loaded onto the support frame (110);
   and then the support frame (110) is slid to the display position (406).

9. The method according to claim 8, **characterised in that** the templates (121, 131, 141, 151, 161) are loaded onto the support frame (110) with the smallest possible number of movements and/or the shortest path of the support frame (110).

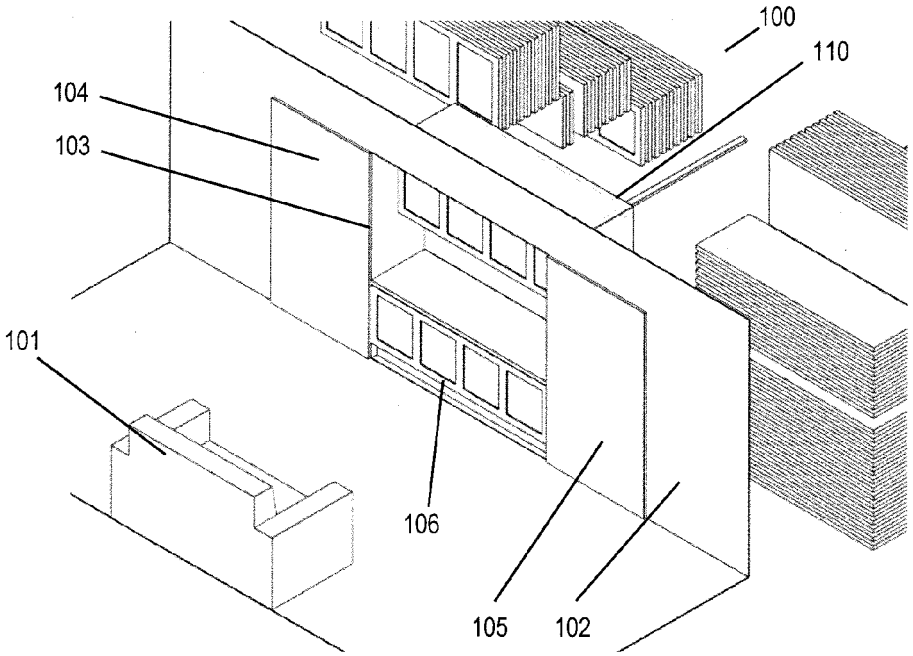

100
110
104
103
101
106
105
102

Fig. 1a

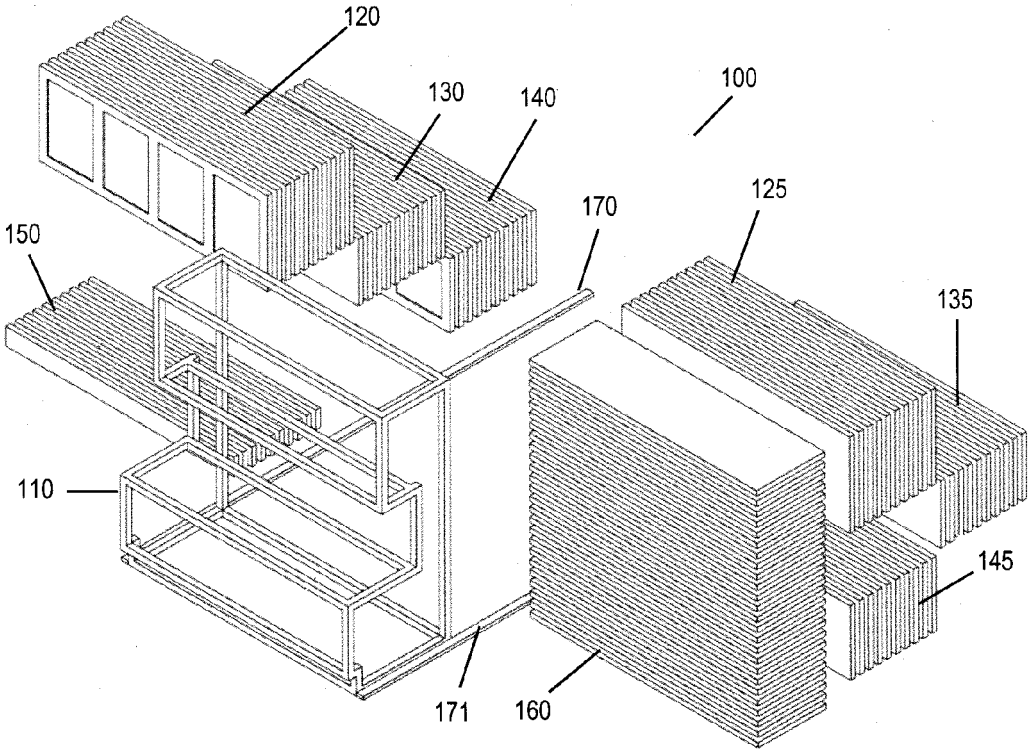

120
130
140
100
125
170
150
135
110
145
171
160

Fig. 1b

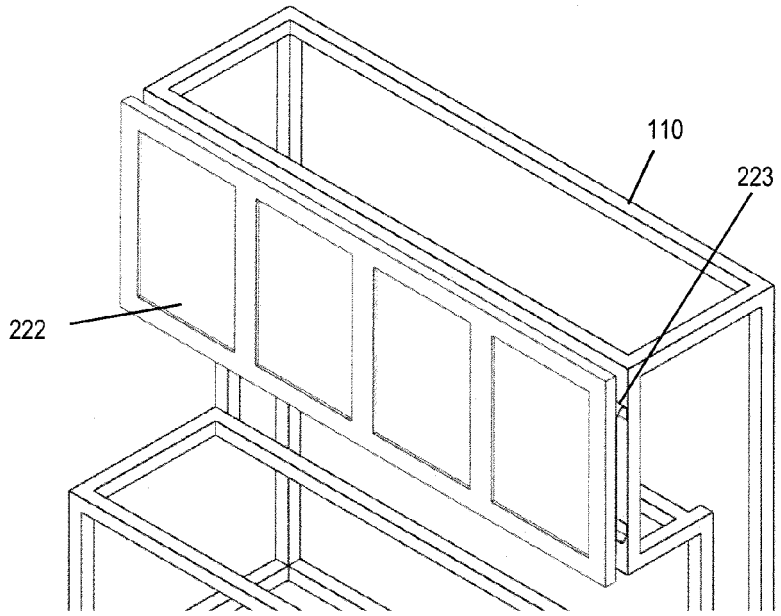


Fig. 2a

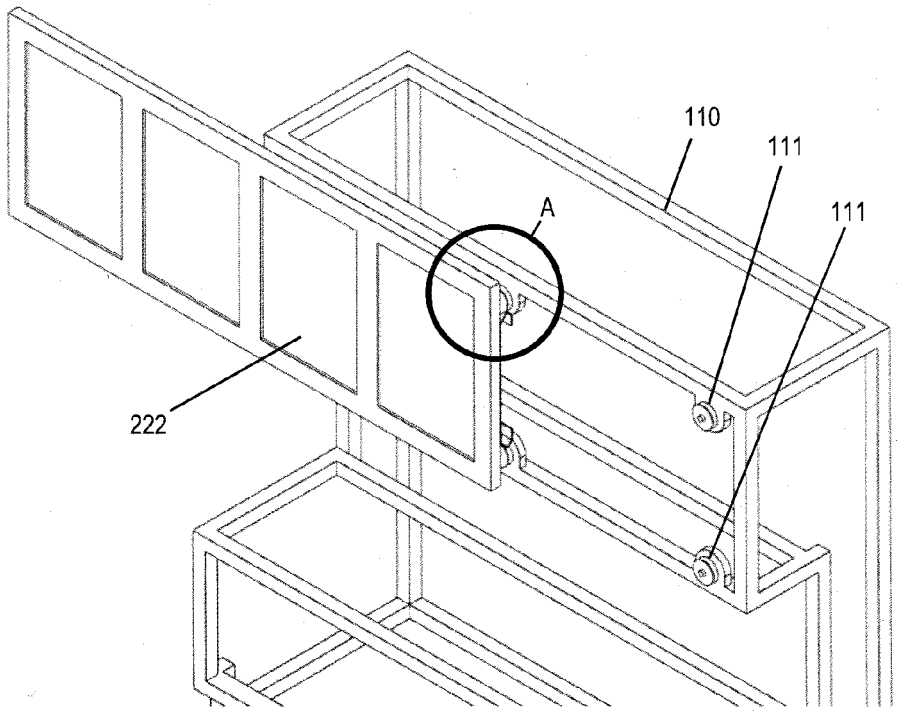


Fig. 2b

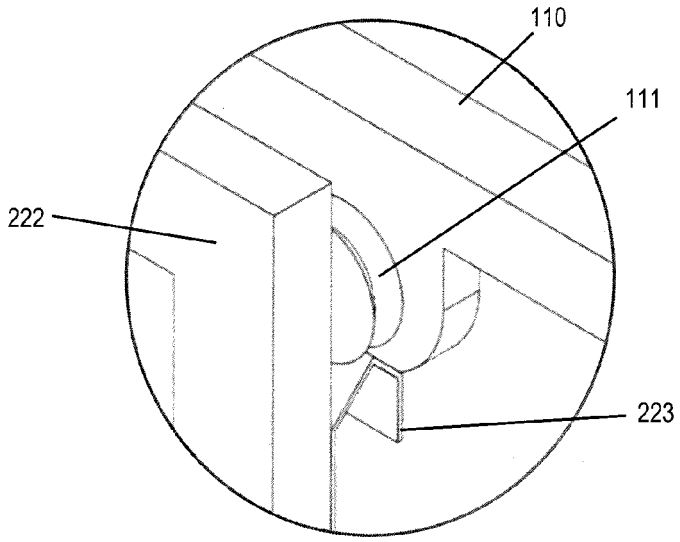


Fig. 2c

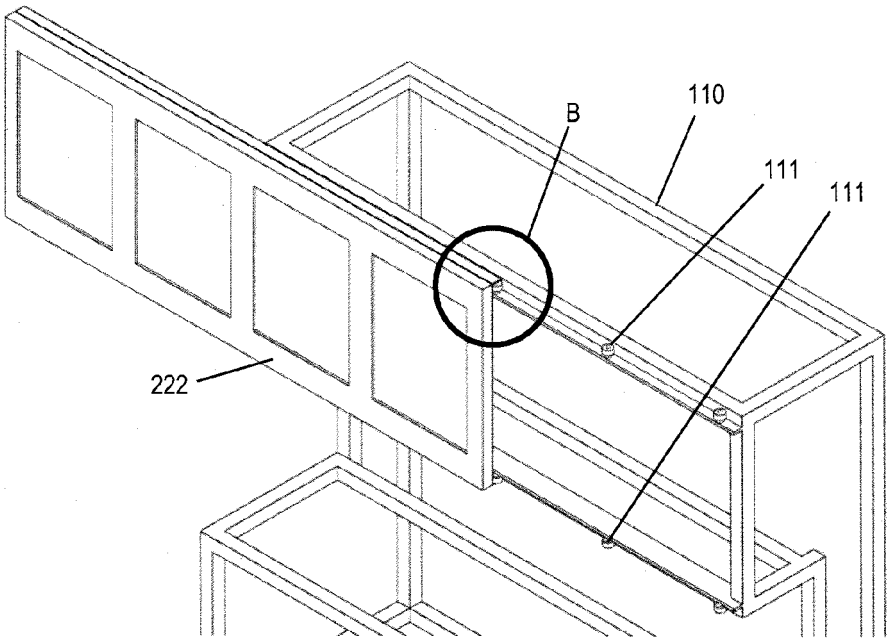
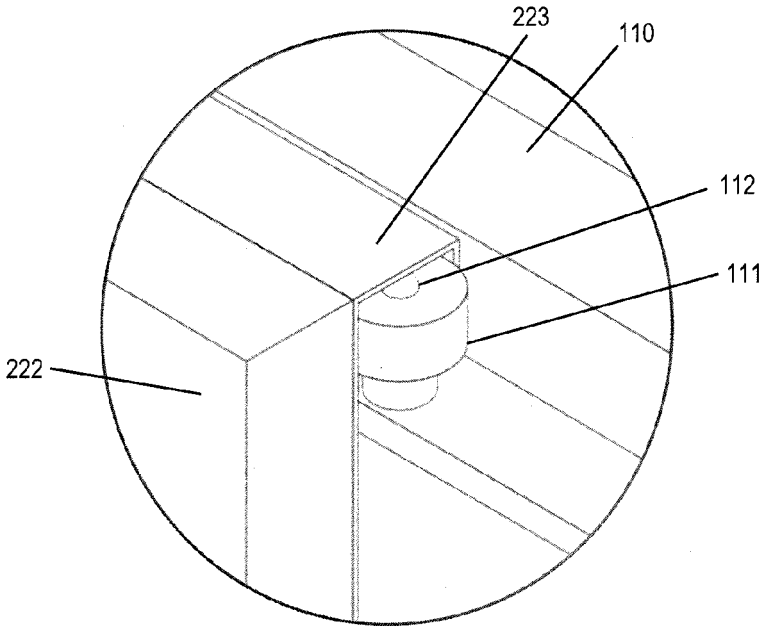


Fig. 2d



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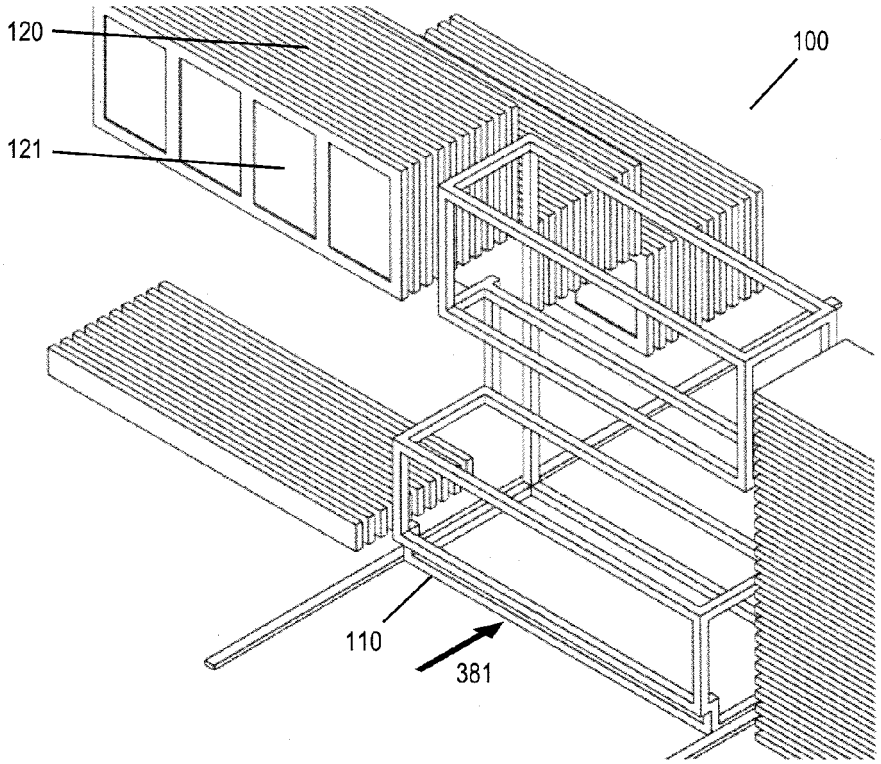

Fig. 3a

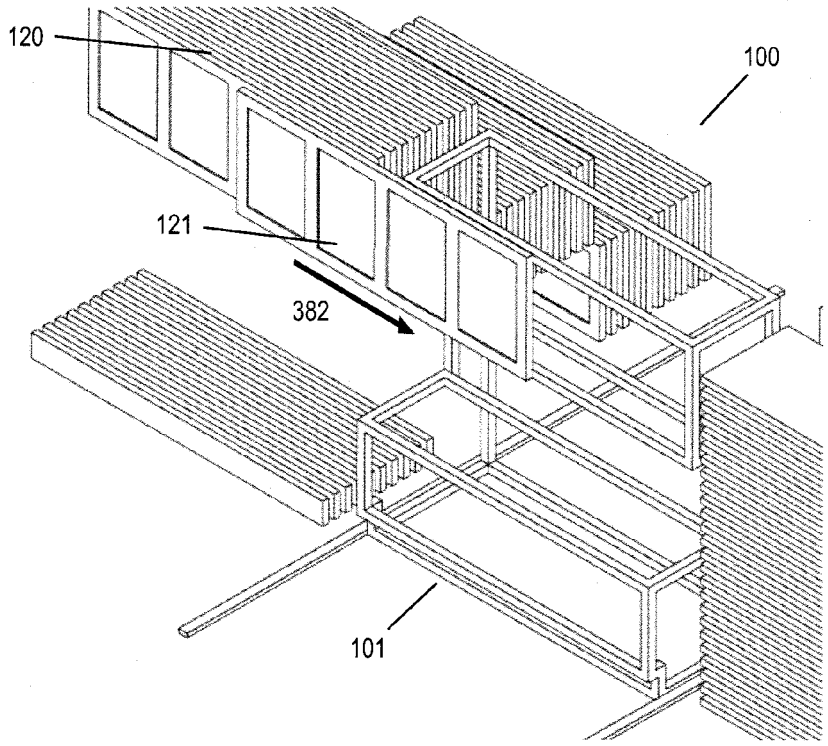

Fig. 3b

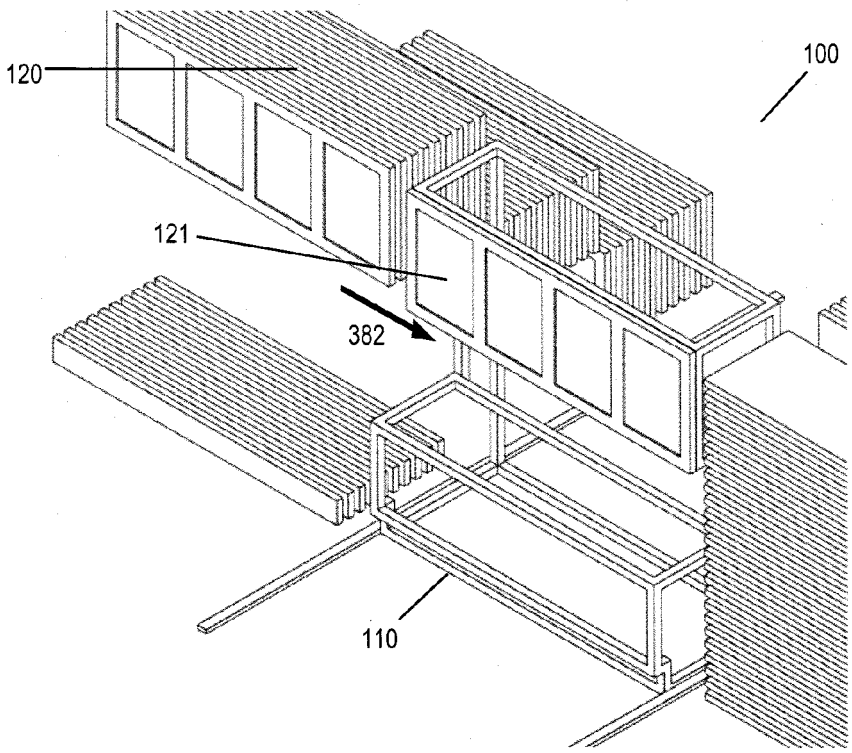

Fig. 3c

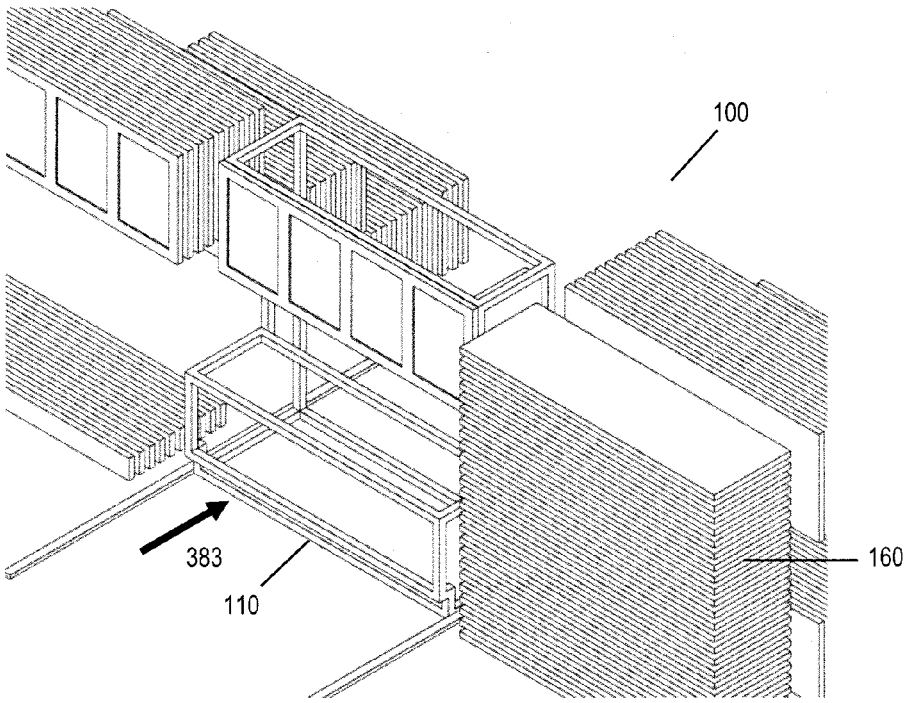

Fig. 3d

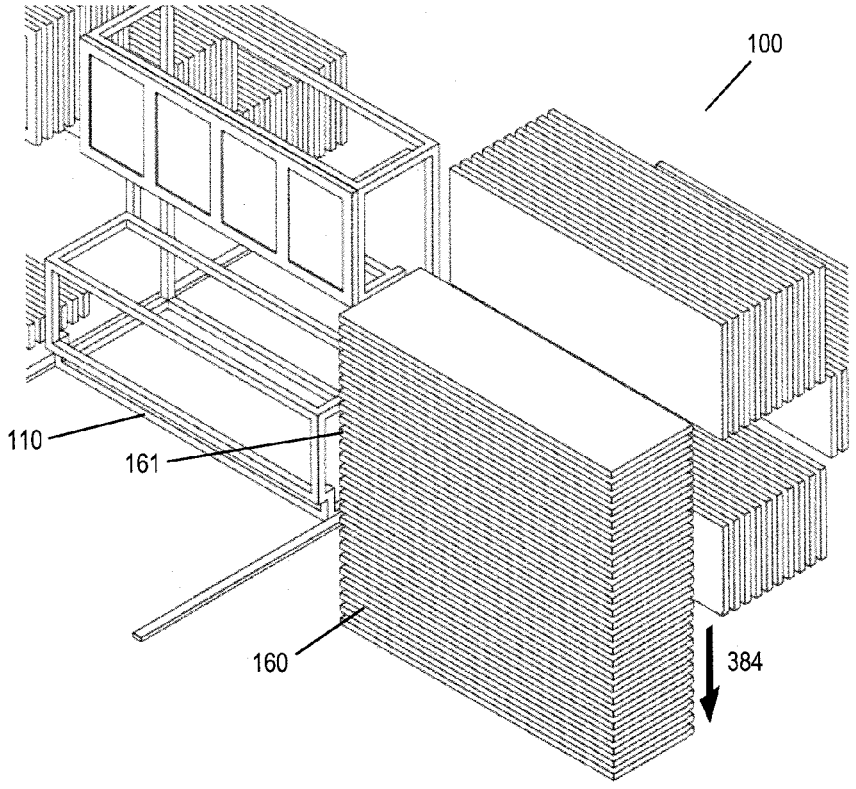

Fig. 3e

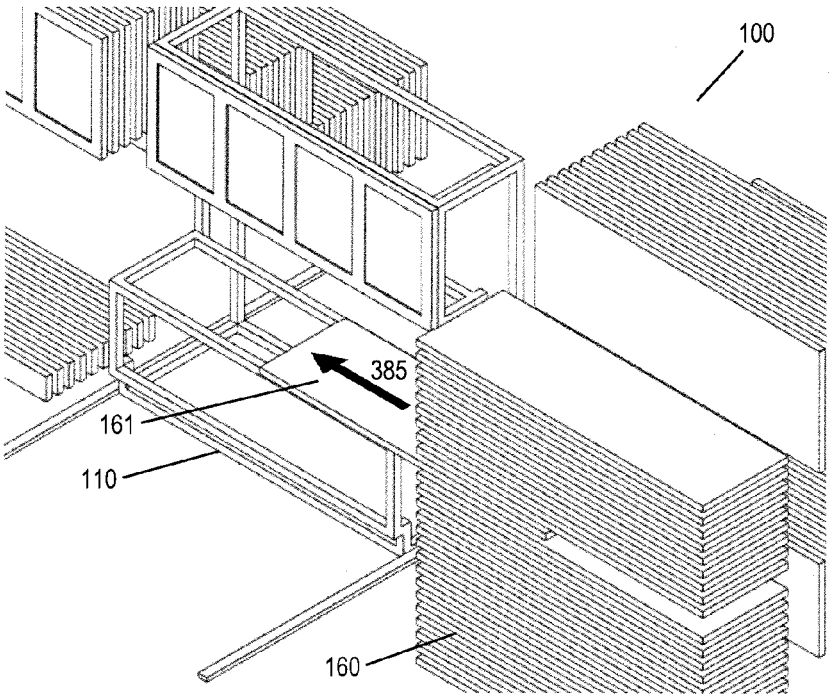

Fig. 3f

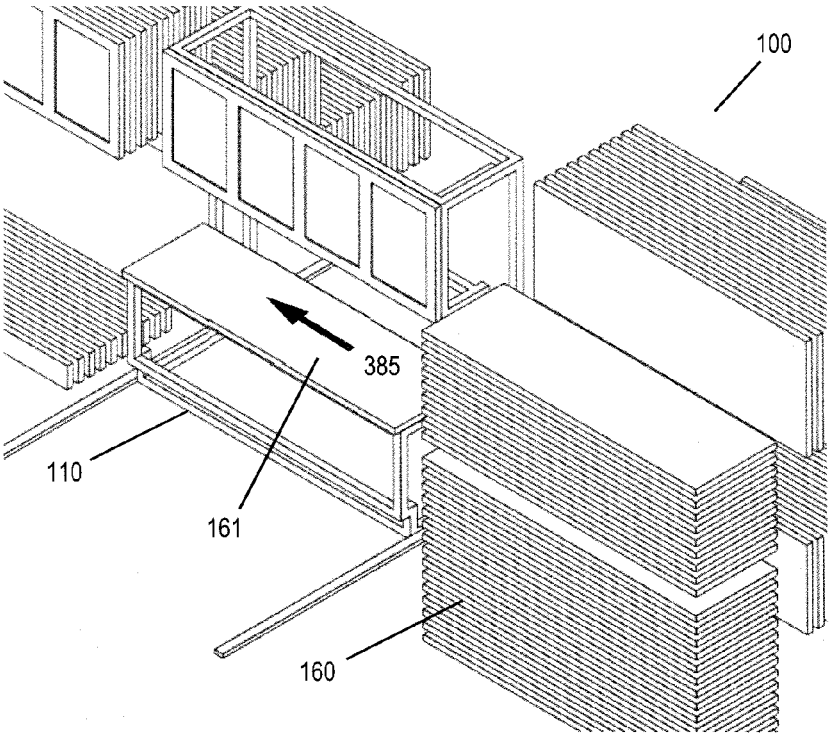

Fig. 3g

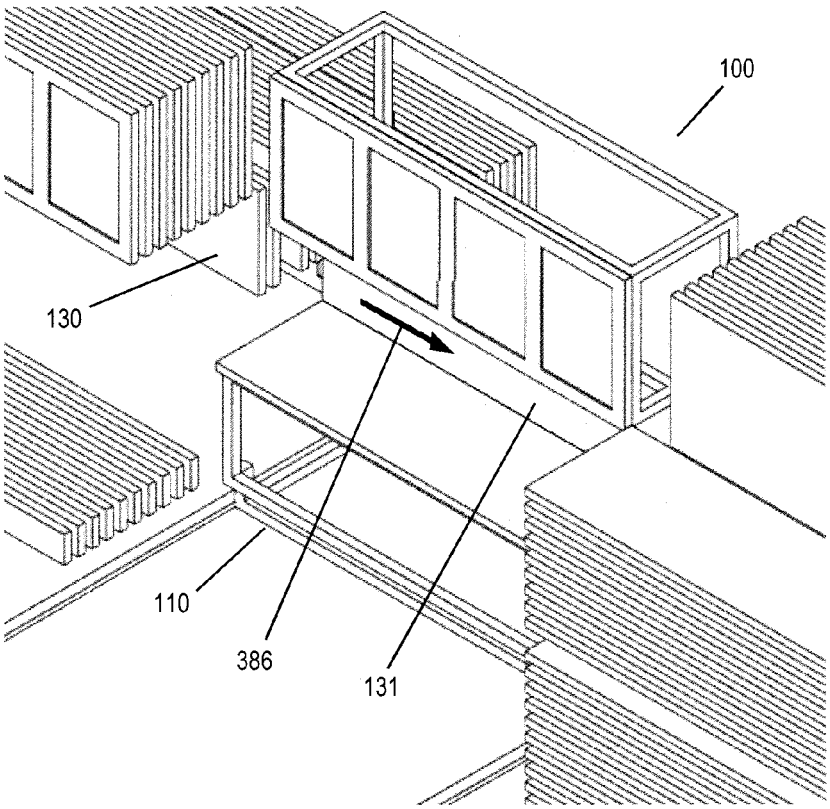

Fig. 3h

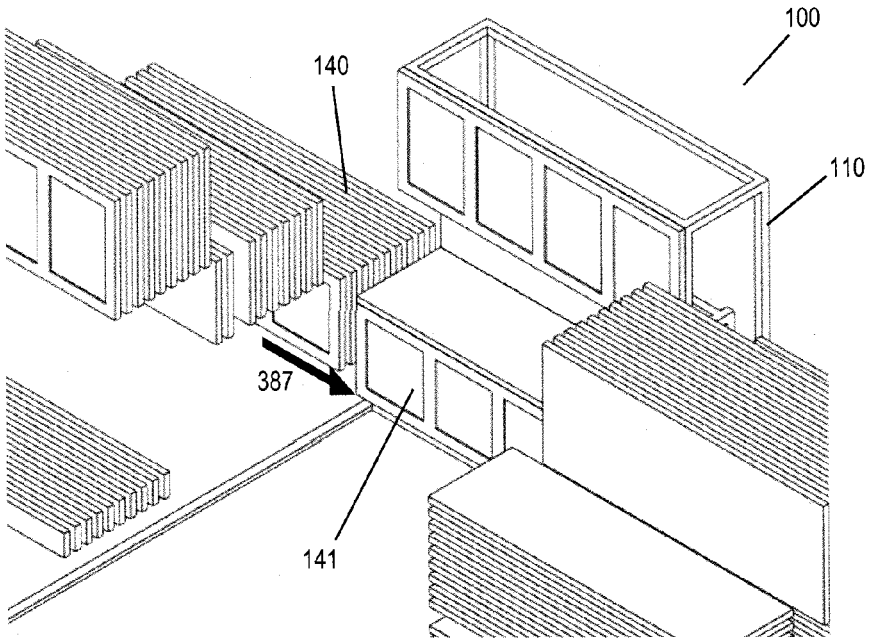

Fig. 3i

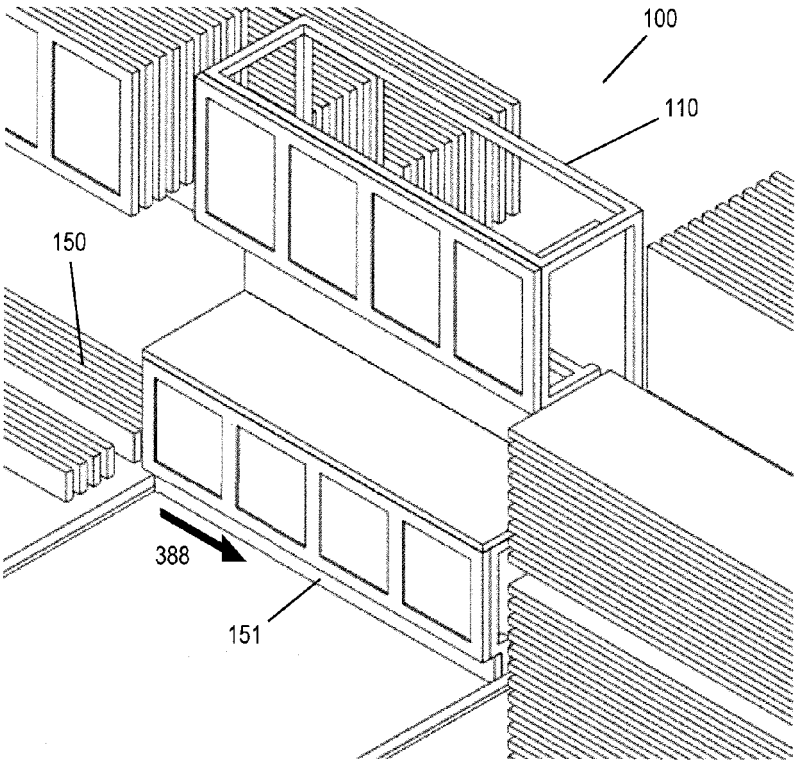

Fig. 3j

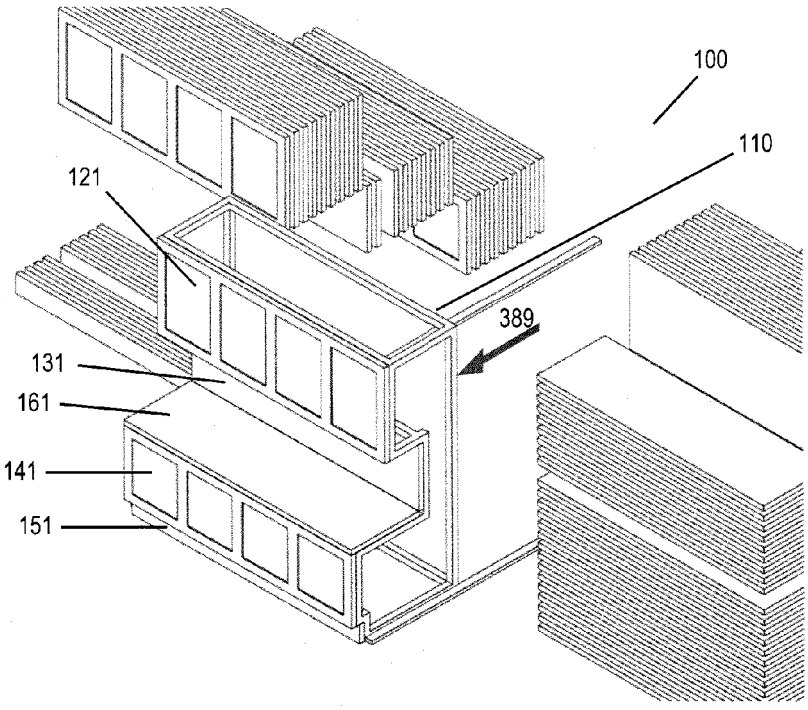

Fig. 3k

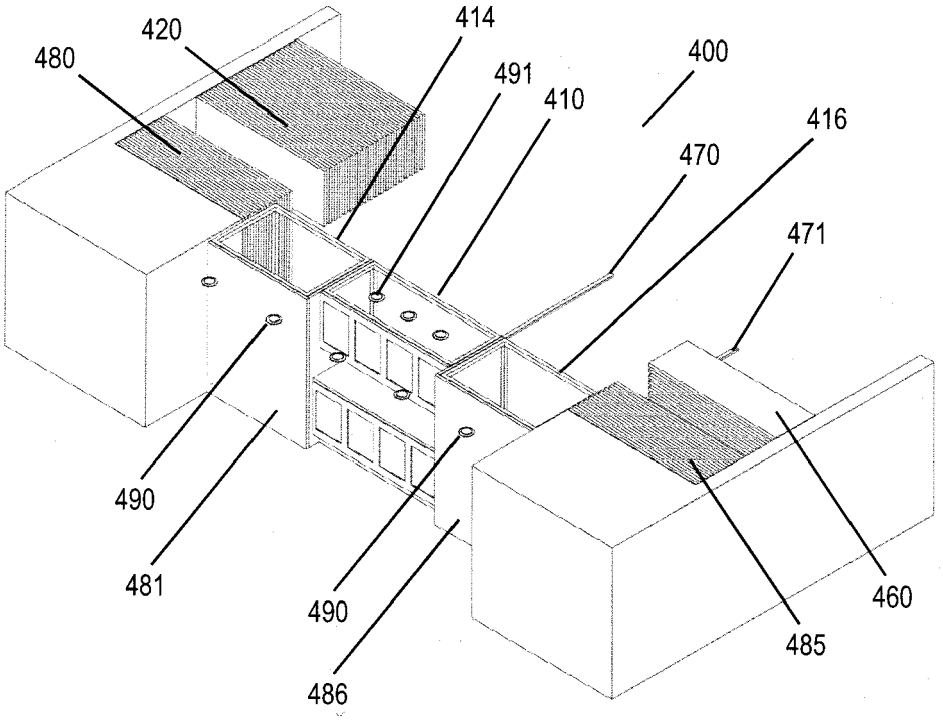

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 9953

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A47F
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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	26 July 2016	de Cornulier, P

CATEGORY OF CITED DOCUMENTS

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