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(54) PRODUCT COUNTER

(57) The present invention relates to a product counter (1) which comprises a fixed structure having an access opening to an area of the product counter, the interior of said area comprising at least one product support tray (15) having the ability to move inside said area; a refrigeration system for the area of the product counter; a closure system of the opening of the counter made up of a laminar component (2) which can be rolled around

a drive shaft arranged inside a casing, at least said laminar component being configured to be deployed, allowing said opening of the counter to be closed at the perimeter, and a sealing system comprising a movable component (3) each having sealing means, said movable component being configured to seal said laminar component against the fixed structure.

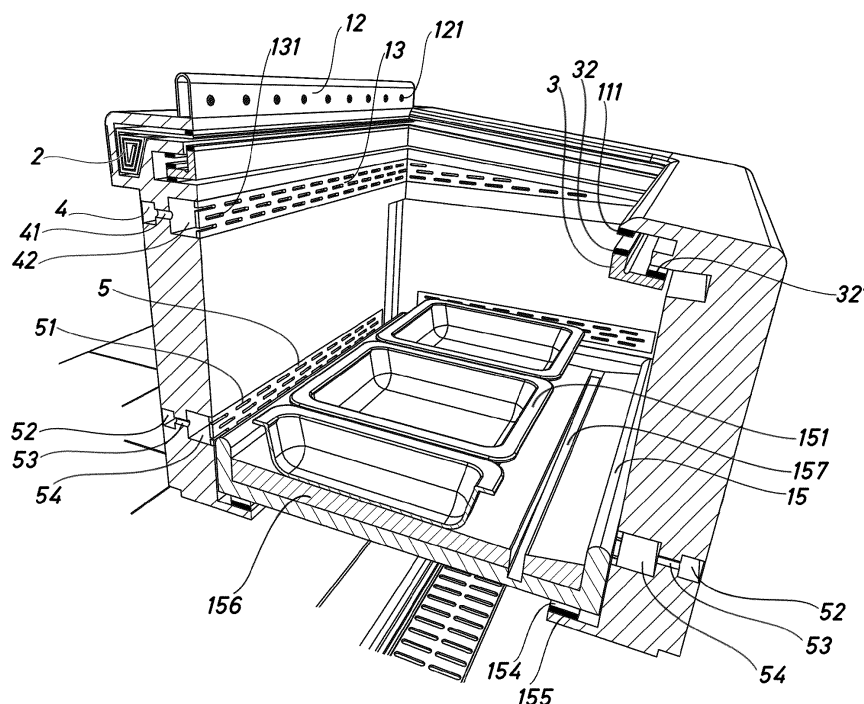


Fig.8

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Description

TECHNICAL SECTOR

[0001] The present invention relates to the sector of product counters in general. In particular, the present invention relates to counters for displaying products, which may or may not be edible, which need to be adapted frequently to particular temperature and/or humidity conditions for the preservation thereof, such as fresh products, for example, meat, fish, fruit or vegetables, among many others.

BACKGROUND OF THE INVENTION

[0002] In general terms, establishments that sell products that frequently require particular temperature and/or humidity conditions for the conservation thereof, such as refrigeration and/or freezing, for example, usually require a counter for the display thereof to the customer and also at least one separate climate control chamber, such as a refrigeration and/or freezing chamber, where said products are stored at the end of the working day and are suitably conserved throughout the night. Thus, for example, in a supermarket, it is usually necessary each day for various people to arrange the products on the corresponding counters and at the end of the day to remove and keep said products in a climate control chamber, for example in refrigeration and/or freezing mode, located in an additional separate or secured space within the supermarket. Depending on the size of the supermarket and the volume of products to be moved back and forth, the replacement and removal tasks usually require a significant amount of time and many supermarket staff to perform said tasks of moving products from the counter to the climate control chamber and vice versa. In addition, in carrying out said daily product replacement and removal tasks, said products are handled excessively by staff which minimises the product conservation time and also puts at risk the hygiene necessary for these types of products. Finally, having, on the one hand, counters solely for displaying the products, and, on the other hand, chambers dedicated exclusively to conserving said products overnight, takes up a considerable amount of space in the supermarket or establishment which may be expensive to maintain, bearing in mind that the cost per square metre of renting premises is usually very expensive or rising.

EXPLANATION OF THE INVENTION

[0003] An object of the present invention is to disclose a high-performance, improved, more efficient counter which overcomes the above-mentioned drawbacks of the prior art.

[0004] In particular, the present invention discloses a product counter which comprises a fixed structure which comprises an opening for access to an interior area of

the counter for the arrangement of products, said area being delimited at least by the interior walls of said fixed structure and a perimeter edge of said opening, the interior of said area comprising at least one product support tray; a climate control and/or refrigeration system for the area of the counter where the product tray is positioned suitable for providing particular temperature and humidity conditions depending on the conservation needs of the products displayed, said climate control and/or refrigeration system being configured to be controlled manually and/or automatically depending on the temperature required for the products arranged inside the counter; a system for closing the access opening of the counter made up of at least one laminar component that can be rolled around at least one drive shaft arranged inside at least one casing, at least said laminar component being configured to be deployed through an outlet opening of at least said casing allowing said opening of the counter to be closed at the perimeter, and a sealing system of the counter which comprises a movable component having first and second sealing surfaces each of which comprises sealing means, said movable component being configured, on the one hand, to pressure seal said laminar component between the sealing means of said first surface and sealing means arranged on a first surface of the fixed structure and, on the other hand, to pressure seal the sealing means of said second surface against other sealing means arranged on a second sealing surface of the fixed structure. Thus, a counter is disclosed which is capable of displaying fresh products during the day, and owing to the closing and sealing system thereof, and to the climate control system thereof incorporated in the area of the counter, the products can be kept and preserved within the closed counter area without having to be removed. The climate control and/or refrigeration system will be suitable preferably for providing refrigeration and/or freezing conditions of the area inside the counter where the product tray is positioned, which also allows the fresh products to be kept in the interior area of the counter, both when the counter is in open / display mode, and in closed / sealed mode. If the products displayed need, for example, to be refrigerated when the counter is in open mode, a display case, protective glass or similar may preferably be arranged above the perimeter edge of the opening of the counter, with the object of containing the climate control and/or refrigeration and thus preventing excessive dissipation of the cold air outside the interior area of the counter. In addition, the double sealing system of the counter by means of the movable component having first and second sealing surfaces prevents cold or hot air from the climate control system from being dissipated to the outside of the counter when said counter is completely closed and sealed, and also prevents cold / hot air from the climate control system from accessing the interior of the casing where the rollable laminar component is housed.

[0005] Reducing the need to arrange and remove daily unsold products from the counter implies a financial sav-

ing in labour and/or improved efficiency from the staff present in the establishment. In addition, the above also implies a reduction in the handling of the products by the staff of the establishment that sells said products, thus increasing the hygiene of the products for sale. Finally, the counter according to the present invention allows space to be saved in the establishment or premises as no climate control chamber or refrigeration chamber is required. It will be understood throughout the present invention that a refrigeration system or chamber is also capable of provided freezing temperatures.

[0006] Preferably, the product support tray of the product counter may have the ability to move inside said area by means of at least one motor means.

[0007] Preferably, according to an embodiment of the counter, the fixed structure of the counter may comprise at the lower portion thereof an additional opening delimited by a lower ramification arranged along the entire perimeter of said fixed structure, the product support tray also comprising a lower surface having sealing means configured for the pressure sealing of said additional opening against sealing means of an upper surface of said lower ramification along the entire lower perimeter of the counter. Said lower opening allows the inside of the counter to be aired and sterilised at the lower portion thereof, when the counter has been closed and refrigerated / frozen with products inside overnight. In addition, according to this embodiment, the product tray comprises sealing means on the lower surface thereof to allow lower sealing against the sealing means of the lower ramification of the counter and thus allow the climate control and/or refrigeration inside the counter to be maintained.

[0008] Preferably, according to another embodiment of the counter, the fixed structure of the counter also comprises a grille-type opening suitable for the natural ventilation of the interior of the counter when said counter is in open or display mode.

[0009] Preferably, the fixed structure also comprises at the lower portion thereof an additional opening delimited by a lower ramification arranged along the entire perimeter of said fixed structure, the product support tray also comprising a lower surface having sealing means configured for the pressure sealing of said additional opening against sealing means of an upper surface of said lower ramification along the entire lower perimeter of the counter.

[0010] Preferably, the above-mentioned sealing means may consist of an elastomer sealant or similar.

[0011] Preferably, the product support tray may comprise predetermined positions for each type of product, each predetermined position comprising electronic scales incorporated in each position, and each set of scales having the ability to communicate wirelessly with a control system and/or data processing system remote from the counter.

[0012] Preferably, the counter may also comprise at least one instrument for measuring the temperature inside the counter and having the ability to communicate

wirelessly with a control system and/or data processing system remote from said counter.

[0013] Preferably, the product counter according to the present invention also comprises a water spraying and/or sprinkling system for the products in the product tray, said water spraying and/or sprinkling system being arranged in a portion of the perimeter edge of the opening of the counter. More preferably, the water spraying and/or sprinkling system for the products in the product tray will be arranged in a portion of said product tray.

[0014] Preferably, the product counter also comprises a series of height-adjustable feet, each of said feet comprising a movable inner cylinder having the ability to slide inside an outer base guide cylinder.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] For a better understanding of the invention, the accompanying drawings are an explanatory but non-limiting example of various embodiments of the product counter according to the present invention.

Fig. 1 is a perspective view of a first embodiment of a horizontal product counter according to the present invention in closed and sealed mode.

Fig. 2 is an exploded view of the components that form part of the horizontal product counter according to the first embodiment shown in Fig. 1.

Fig. 3 is a perspective view of a first embodiment of a horizontal product counter according to the present invention in open mode.

Fig. 4 is a plan view of the first embodiment of a horizontal product counter according to Fig. 3 in open mode.

Fig. 5 is a cross section in perspective along the axis A-A' of Fig. 4.

Fig. 6 is a detail on a larger scale of a cross section in perspective along the axis D-D' of Fig. 4.

Fig. 7 is a cross section in perspective similar to the cross section along the axis A-A' of Fig. 4, but illustrating a second embodiment of the horizontal product counter according to the present invention.

Fig. 8 is a cross section in perspective along the axis C-C' of Fig. 4, but illustrating a third embodiment of the horizontal product counter according to the present invention.

Fig. 9 shows a detail of the horizontal counter of Fig. 8 in open operating mode.

Fig. 10 shows a detail of the horizontal counter of

Fig. 8 in closed operating mode.

Fig. 11 is a cross section from a first perspective along the axis C-C' of the horizontal product counter of Fig. 4 with a small variation.

Fig. 12 is a cross section from a second perspective along the axis C-C' of the horizontal product counter of Fig. 11.

Fig. 13 is a cross section from a first perspective along the axis E-E' of the horizontal product counter of Fig. 4.

Fig. 14 is a cross section from a second perspective along the axis E-E' of the horizontal product counter of Fig. 4.

Fig. 15, 16 and 17 show another embodiment of a closure mechanism that can be applied to any product counter according to the present invention using two synchronised cylindrical drive motors and a can-vas.

Fig. 18 is a cross section in perspective of a fourth embodiment of a hybrid horizontal product counter which comprises a first sloping horizontal counter module similar to the third embodiment according to Fig. 8 and connected to a second horizontal counter module similar to that of the first embodiment according to Fig. 1 to 4.

Fig 19 is a cross section in perspective of an embodiment of an adjustable foot which can be applied to any embodiment of the product counter according to the present invention.

Fig. 20, 21 and 22 show a cross section in perspective of a fifth embodiment of a horizontal product counter according to the present invention.

Fig. 23 is a cross section in perspective of a sixth embodiment of a horizontal product counter according to the present invention.

Fig. 24 is a cross section in perspective of a seventh embodiment of a horizontal product counter according to the present invention.

Fig. 25 is a cross section in perspective of an embodiment of a vertical product counter according to the present invention.

Fig. 26 is a perspective view of the first embodiment of the horizontal product counter according to Fig. 1 optionally comprising a sheet of glass or display case for refrigeration.

Fig. 27 is a perspective view of an example of a possible installation of a horizontal product counter according to the present invention.

5 PREFERRED EMBODIMENTS OF THE INVENTION

[0016] Fig. 1 to 6 and 13 to 14 show various views of a first embodiment of a horizontal product counter -1- according to the present invention. As can be seen in the exploded view in Fig. 2, the counter -1- comprises a fixed structure -11- which comprises an access opening to an interior area of the counter -1- for the arrangement of products, said area being delimited at least by the interior walls -150- of said fixed structure -11- and the perimeter edge of said opening.

[0017] The counter -1- comprises in the interior thereof at least one product support tray -15-. The product support tray -15- according to this embodiment comprises a product support level, and may also comprise upper product support levels as will be seen later in other embodiments. The product support tray -15- may be either static (not shown), or alternatively may optionally have the ability to move inside said area by means of at least one motor means as shown as a minimum in Fig. 5 to 6. Said motor means may be, for example, a cylindrical drive actuator / elevator -141- embedded in the inner ends -14- of the interior wall -150- of the counter -1-, said cylindrical drive actuator / elevator -141- being preferably rigidly connected to the tray -15- by the corresponding special connection means -153-. Said motor means may be electric, pneumatic or hydraulic, among others. Alternatively, said motor means may consist of a system of gears moving vertically in both directions (not shown) and composed of teeth and bearings capable of withstanding low temperatures (in the case of the refrigeration or freezing of fish, for example). Said gear system may comprise lubrication by means of greases that can withstand low temperatures and are compatible with foodstuffs, in the event of contact. In addition, actuation of the gears may take place by means of bolts made of steel or similar which may be actuated by ejectors, such as, for example, gas spring ejectors or similar. Actuation of the movement of the tray -15- may be manual or automatic.

[0018] The product tray -15- may also comprise predetermined positions -152- for the arrangement of particular types of products, each predetermined position comprising respective electronic scales incorporated in the position -152- which allow the weight of the particular product to be ascertained at any time. In addition, the product may have, or incorporate, or contain by any other means, for example, an RFID tag (not shown) on which information about the weight measured by the electronic scales corresponding to the position of the product in question can be recorded instantaneously. Next, based on the information about the weight at that instant of each product arranged in the respective positions -152- of the tray -15-, the price of each product can be shown instantaneously using a remote control system and/or remote

data processing system, by means, for example, of an electronic display (not shown) or similar arranged on the product or in a similar way, such as, for example, on the outside (not shown) of the counter -1-. As many displays as there are products on sale may be arranged, and may be housed away from the counter at a particular height, preferably a height of 1.80 metres, and may also be hung from the floor structure. The data on the various RFID tags may read / written using RFID readers -110-. Appropriate sales management of each type of fresh product may be carried out using said information, with the possibility of sending said information by any known means, such as for example, by cable or by radio, to a remote location for the corresponding data processing. In addition, it is also possible to arrange ultraviolet lights, either outside or inside or both, to combat parasites or insects that may congregate in the vicinity of the products displayed during the day or during the night.

[0019] In addition, the counter may also comprise at least one instrument (not shown) for measuring the temperature inside the counter and having the ability to communicate wirelessly with a control system and/or data processing system remote from said counter.

[0020] As can be seen in Fig. 3 to 6, the fixed structure -11- over the entire perimeter of the zone close to the edge of the opening of the counter -1- has a profile with double ramification or projections (upper and lower), on the one hand, the lower surface of the upper ramification possibly comprising optionally an elastomer sealing course -111- over the entire perimeter thereof and, on the other hand, the lower surface of the lower ramification possibly comprising optionally another elastomer sealing course -112-, both courses being adapted to the shape of the inside of the counter. In the same way, according to the embodiment of Fig. 3 to 6, the fixed structure -11- comprises at the lower portion thereof an opening delimited by a lower perimeter ramification of said fixed structure -11-, the upper face of said lower ramification possibly comprising optionally an elastomer sealing course -155- over the entire perimeter thereof. In addition, the lower surface of the product support tray -15- may also comprise an elastomer sealing course -154- (and/or as a limit stop or shock absorber) over the entire perimeter thereof configured for pressure sealing against said lower ramification along the entire lower perimeter of the counter -1-. According to this embodiment, the distance between the two ramifications and the width of the tray -15- may delimit the volume to be sealed, as will be seen below. Said elastomer sealing course may be attached to the various surfaces mentioned above mechanically or chemically.

[0021] In addition, as can be seen in Fig. 3 to 6, the counter -1- comprises a casing arranged in a zone close to the edge of the upper opening, which comprises in the interior thereof a laminar component -2- which can be rolled around a drive shaft (not shown in this embodiment), said laminar component -2- being configured to be deployed through an outlet opening of said casing,

allowing said opening of the counter -1- to be closed at the perimeter. In addition, the ends of said outlet opening of the casing coincide with the double ramification over the entire upper perimeter of the counter -1-, thus allowing guiding of the laminar component -2- as it is deployed. Said laminar component -2- may be a louvered roller blind having metal slats or of another type, having self-sealing joints, or alternatively a sealing sheet which prevents the transfer of heat and cold. Optionally, said casing may comprise an access door -100- to the interior of the casing for carrying out maintenance of the laminar rollable component. In addition, as can be seen in Fig. 6, said movable component -3- comprises a gutter or water collection channel -33-, arranged over the entire perimeter of the upper face of the second surface or lower surface of the movable component -3-, with the object of draining small drops of water resulting from condensation from the laminar component -2-, both when the counter -1- is in open mode and when said counter is completely sealed, also known as 'secured' mode.

[0022] Alternatively, according to another embodiment, said laminar component -2- may also be a piece of canvas -2'- as shown in Fig. 17 which comprises an opening -21'- of dimension -A- similar to the upper opening of the counter -1-. As shown in Fig. 15 and 16, said piece of canvas -2'- is arranged between and around two synchronised cylindrical drive motors (-201'-; -202'-), such that, when the product counter -1- needs to be opened (see Fig. 15), the two motors (-201'-; -202'-) both rotate in one direction (in this embodiment, in an anti-clockwise direction) so as to position the opening -21'- of dimension -A- just beneath the opening (shown in Fig. 15 and 16 as -190-) of the counter -1-. On the other hand, when the product counter -1- needs to be closed (see Fig. 16), the two motors (-201'-; -202'-) both rotate in the other direction (in this embodiment, in a clockwise direction) so as to position the zone where there is no opening -21'- of dimension -A- just beneath the opening -190- of the counter -1-. Said closure mechanism may be applied to any product counter according to the different embodiments of the present invention.

[0023] In addition, as can be seen in Fig. 3 to 6, the counter -1- comprises a movable structural sealing component -3-, preferably having an extruded profile, which runs along the perimeter of the interior area of the counter -1-, having a central opening or hole of dimensions similar to the opening of the counter -1-. Said movable structural sealing component -3- has the ability to move through the interior of said area of the counter -1- by means of at least one electric, pneumatic or hydraulic motor, such as, for example, a cylindrical drive actuator / elevator -112- embedded in the inner ends of the interior wall -150- of the counter -1- and preferably rigidly connected to said movable structural sealing component -3- by the corresponding special connection means -31-. Said movable structural sealing component -3- comprises a double moulding system for sealing the upper double ramification of the fixed structure -11- of the counter -1- made up

of a first surface (in this case, an upper surface) and a second surface (in this case a lower surface) following the trajectory marked by the area to be sealed, each of the respective surfaces comprising sealing means, such as, for example, a continuous elastomer sealing joint (-32-, -32'-) on the respective upper faces thereof over the entirety of the respective perimeters thereof. Said movable structural sealing component -3- is configured, on the one hand, to pressure seal said laminar component -2- between the elastomer sealing joint -32- of said first surface and the elastomer sealing joint -111- of the upper ramification of the fixed structure -11- and, on the other hand, to pressure seal the elastomer sealing joint -32'- of said second surface against the elastomer sealing joint -112- of the lower ramification of the fixed structure -11-. Said double sealing system of the counter -1- according to the present invention prevents cold or hot air from the climate control system (which will be explained below) from being dissipated to the outside of the counter -1- when said counter is completely closed and sealed, and also prevents cold / hot air from the climate control system from accessing the interior of the casing where the laminar component -2- is housed. Optionally, said structural sealing component or movable component -3- may comprise on the surface opposite the upper surface, where the elastomer course -32'- is arranged, an elastomer joint -113- to act as a limit stop against a projecting portion of the fixed structure -11- of the counter -1-, that is, when the counter -1- is in open mode.

[0024] As can be seen in Fig. 5 and 6, said product counter -1- also comprises a climate control and/or refrigeration system for the interior area of the counter -1- where the product tray -15- is located suitable for providing particular temperature and humidity conditions depending on the conservation needs of the products displayed. The climate control and/or refrigeration system may supply heat in particular cases and in other cases may provide refrigeration and/or freezing conditions for the interior area of the counter where the product tray is located. Said climate control and/or refrigeration system, according to this embodiment, is arranged along the upper perimeter of the internal walls of the counter -1- beneath the upper opening, with the object of maintaining ideal temperature conditions for the product while said product is on sale. Alternatively, said climate control and/or refrigeration system may be arranged on a portion of the perimeter track of the area to be conserved, as will be seen in other embodiments of the counter according to the present invention. The climate control and/or refrigeration system may be used to introduce cold and/or hot air into the area where the products are displayed once the counter is in the 'secured' position. Said climate control and/or refrigeration system may also be used to refrigerate the products displayed, when the counter -1- is in open mode or display mode.

[0025] The climate control and/or refrigeration system may comprise, for example, cold and/or hot air ducts -4-

embedded respectively in the outer wall -4- of the fixed structure -11-, which take the cold and/or hot air respectively through nozzles -41- made through the fixed structure -11- to a second duct -42- prior to leading the cold and/or hot air respectively to the area of the counter -1- through a grating -13- having air outlet holes -131-.

[0026] In addition, according to this first embodiment of the counter, the fixed structure -11- of the counter -1- may comprise at the lower portion thereof an additional opening delimited by a lower ramification arranged along the entire perimeter of said fixed structure -11-. Said lower opening allows the interior area of the counter -1- to be ventilated, and also provides an outlet for any trail of drops resulting from condensation owing to the climate control and/or refrigeration inside the counter -1- during the time said counter has remained closed, sealed and under climate control and/or refrigeration conditions. Thus, said lower opening allows good hygiene to be maintained inside the counter -1-. Any drips produced inside the counter -1- can be collected in a drainage channel -180-. Because of said lower opening, provision is made for the product support tray -15- to possibly also comprise a lower surface with sealing means, such as an elastomer course -154- similar to that described above, and configured for pressure sealing said additional opening against sealing means, such as an elastomer course -155- similar to that described above, of an upper surface of said lower ramification along the entire lower perimeter of the counter -1-.

[0027] In addition, the counter -1- may comprise a series -12- of water sprayers -121- for sprinkling the products arranged on the product tray -15- when the counter -1- is in open mode and in closed mode if considered necessary to keep the product fresh.

[0028] Fig. 7 shows a second embodiment of a counter -1- similar to the counter of the first embodiment above, but which also comprises a casing -114- arranged in the lower portion of the counter -1- for alternatively keeping additional trays -15- with other products. Said casing -114- may also be refrigerated and/or frozen and may be accessed through an access door -1140-. In this second embodiment, similar components have been numbered with the same reference numerals and a detailed explanation thereof will not be given as said components are similar to those of the first embodiment.

[0029] Fig. 8 shows a third embodiment of a product counter -1- in which the counter -1- is slightly sloping from the side opposite the casing -100- which comprises the laminar component -2- for closing the counter -1-. Said side opposite the casing -100- is arranged so as to be the product display side from which users can view the products. According to this embodiment, as said product display side is sloping, a user will have a greater and better angle for viewing the products displayed inside the counter -1-. In addition, this embodiment of a counter -1- according to Fig. 8 comprises two (upper and lower) climate control and/or refrigeration systems for the interior of the counter -1-. Both the upper and lower climate con-

trol and/or refrigeration systems may respectively comprise cold and/or hot air ducts (-4-, -52-) embedded in the outer wall -4- of the fixed structure -11- and which take the cold and/or hot air through respective nozzles (-41-, -53-) made respectively through the fixed structure -11- to a respective second duct (-42-, -54-) prior to leading the hot and/or cold air respectively to the area of the counter -1- through a respective grille (-13-, -5-) having respective air outlet holes (-131-, -51-). The upper climate control and/or refrigeration system may serve, both for the products displayed on the product support tray -15- while the counter -1- is in open mode, and for the upper climate control and/or refrigeration of the interior of the counter -1-, when said counter is closed and sealed, that is, in closed or 'secured' mode. Given that in open mode or product display mode the product tray -15- will be arranged in the highest position thereof in the interior of the counter -1-, the lower climate control and/or refrigeration system will serve mainly for climate control and/or refrigeration of the interior of the counter -1-, when said counter is in closed and sealed mode, that is, in closed or 'secured' mode. Both the upper and lower climate control and/or refrigeration systems may be arranged along the entire perimeter of the interior walls of the counter -1-, or each of said upper and lower climate control and/or refrigeration systems may simply be arranged in a portion of the perimeter track of the area where the temperature must be conserved.

[0030] As can be seen in the different embodiments of a counter -1- according to Fig. 8 to 13, the product support tray -15- according to the present invention occupies the entire horizontal surface of the area to be refrigerated except for a space at the sides, over the entire perimeter thereof, for the inclusion of the cylindrical drives of the vertical movement actuators. Preferably, said tray -15- may be made of stainless steel or similar, and will comprise a double slope system (maximum of 2%) that does not coincide with the limit to be sealed. In addition, the tray -15- may comprise a water channelling and drainage system -157-. Although the tray -15- may support products directly, alternatively the tray -15- may support a series of additional trays -157-. Optionally, the trays -15- shown in the above embodiments may incorporate a removable water collector or similar, such as that described with reference number -6000- in relation to Fig. 21 to 24. Although the product tray -15- according to this embodiment comprises a product support level, said tray may also comprise additional upper product support levels as will be seen below in other embodiments.

[0031] Fig. 9 and 10 show a detail of a side of the product counter -1- according to the embodiment in Fig. 8 in open mode and 'secured' mode respectively, in which details can be seen of the different components explained above, such as, for example, the gutter or water collection channel -33-, the elastomer joints (-111-, -32-, -32'- and -154-), and details of the tray -15-.

[0032] Fig. 11 and 12 show an embodiment of a horizontal product counter -1- that is very similar to the first

embodiment of Fig. 1 to 6 and 13 to 14, but with the climate control and/or refrigeration system only in the upper position inside the climate control and/or refrigeration area.

[0033] Fig. 18 shows a fourth embodiment of a hybrid horizontal product counter -6- which comprises a first sloping horizontal counter module similar to the third embodiment according to Fig. 8 connected to a second horizontal counter module similar to that of the first embodiment according to Fig. 1 to 4. According to this embodiment, the first and second counter modules -6- respectively comprise a closure system for the opening of the respective modules thereof according to the alternative embodiment of Fig. 15 to 17, in which the laminar component -2- is a piece of canvas -2'- arranged between and around two synchronised cylindrical drive motors (-201'-, -202'-). According to Fig. 18, the first sloping module of the hybrid counter -6- is in 'secured' mode and the second module of the hybrid counter -6- is in open mode. In addition, the first module comprises an alternative embodiment of a product support tray -62- having two tiered levels.

[0034] Fig. 19 shows an embodiment of an adjustable foot -88- which may be applied to any embodiment of the product counter (-1-, -6-) according to the present invention. Said height-adjustable foot -88- may be implemented by a system of gears -84- or in any other way which allows the height of the counter (-1-, -6-) to be increased with respect to the floor level, for example, for the maintenance or cleaning thereof. Said adjustable foot -88- consists of a movable internal cylinder -83- capable of sliding inside an outer base guide cylinder -86- (fixed portion of the adjustable foot -88-). The reference numeral -85- shows the track which an adjustable foot according to this embodiment of Fig. 19 may take. The reference numeral -81- shows an upper limit stop which comprises an elastomer joint -82- to prevent sudden contact between the outer cylinder -86- and the movable inner cylinder -83-. In addition, said adjustable foot -87- may comprise an anti-vibration system -87-.

[0035] Fig. 20, 21 and 22 show a fifth embodiment of a horizontal product counter according to the present invention, which comprises an upper and lower climate control and/or refrigeration system and in which the product support tray -1000- comprises an upper product support level and a lower product support level -1004-. The lower level -1004- is similar to that of other embodiments described above and comprises a double slope surface -1005- having a drainage channel -1006- and incorporating a removable water collector or similar. The upper level comprises three telescopic feet (-1001-, -1002-, -1003-) with the respective extensions thereof (-1001'-, -1002'-, -1003'-) in which a pair of supports -2000- may be arranged for a series of trays -2001- respectively. Likewise, the lower level -1004- may also comprise a series of trays -3001-. In addition, the counter according to this fifth embodiment, shown in Fig. 20 to 22, incorporates an additional product tray support -9- in the fixed portion

thereof, in the upper zone where the casing which incorporates the laminar counter closure component is located. Said support -9- comprises two extensions -91- and -92- to allow, for example, any of the trays of the lower levels to be supported, for example the tray -2000'- as shown in Fig. 22.

[0036] Fig. 23 shows a sixth embodiment of a horizontal product counter according to the present invention, which comprises an upper and lower climate control and/or refrigeration system and in which the product support tray -5001- also comprises an upper product support level -5002- and a lower product support level. The lower level is similar to that of other embodiments described above and comprises a double slope surface having a drainage channel. The upper level -5002-, according to this embodiment, may comprise at least one product support tray -5000-, said tray being of the same type as those described above, comprising a double slope surface and a drainage channel -5003- having a slope and incorporating a removable water collector -6000- or similar. In addition, said sixth embodiment incorporates, in the fixed portion thereof, in the upper zone where the casing which incorporates the laminar counter closure component is located, a raised sprayer -4000- to allow water to be sprinkled on the upper product tray level -5002-. Said sprayer -4000- may comprise various spray outlets -4001- for efficient spraying of the entire extent of the upper product tray level -5002-.

[0037] Fig. 24 shows a seventh embodiment of a horizontal product counter similar to the previous embodiment, but incorporating the sprayer -5000'- directly in the upper level, which may or may not directly form part of said upper level.

[0038] Fig. 25 shows an embodiment of a vertical product counter -7- according to the present invention. The counter -7-, according to this embodiment, may comprise in the interior thereof a series of vertical product supports -74- of which the ends define a closed edge -740-, said edge alternatively possibly being open. Said vertical product supports -74- may be either static (not shown), or may optionally have the ability to move horizontally inside the counter area -7- by means of at least one motor means. Said motor means may be, for example, a cylindrical drive actuator -76- embedded in the inner ends of the lower wall of the counter -7-, said cylindrical drive actuator -76- preferably being rigidly connected to the series of vertical supports -74- by the corresponding special connection means -77-. Said motor means may be an electric, pneumatic or hydraulic motor, among others. Alternatively, said motor means may consist of a system of gears in a horizontal direction (not shown) similar to that described above with respect to the embodiment of the horizontal product counter -1-. In addition, each vertical support -74- may be made of stainless steel or similar, and will comprise a double slope system (maximum of 2%) and may also comprise a water channelling and drainage system -75-. Although each vertical support -14- may support products directly, alternatively each of

said vertical supports -14- may support a series of additional product trays. Optionally, each vertical support -14- may incorporate a removable water collector -80- or similar, such as that described above with reference numeral -6000- in relation to Fig. 21 to 24. In addition, this embodiment of a vertical counter -7- may optionally also comprise adjustable feet -81- similar to the adjustable feet described above with reference numeral -88-.

[0039] The product supports -74- may also comprise predetermined positions (not shown) for the arrangement of particular types of products as described above with respect to previous embodiments of a horizontal counter. Moreover, the counter according to this embodiment may also comprise at least one instrument for measuring temperature and having the ability to communicate wirelessly with a control and/or data processing system remote from the counter.

[0040] According to this embodiment of a vertical counter -7-, the fixed structure -71- over the entire perimeter of the zone close to the edge of the opening of the counter -7- has a profile with double ramification or projections similar to that described with respect to the embodiment of the horizontal counter -1-, with the possibility of comprising the corresponding elastomer sealing courses, both adapted to the shape of the unit to be refrigerated.

[0041] Similarly, according to this embodiment, the fixed structure -71- may comprise in the more interior portion thereof a perimeter ramification, the face of said ramification which faces the series of supports -74- possibly comprising a sealing elastomer course -78- over the entire perimeter thereof. In addition, the surface of the product supports -74- which faces said ramification may also comprise a sealing elastomer course -79- (and/or as a limit stop or shock absorber) over the entire perimeter thereof configured for pressure sealing against said ramification along the entire lower perimeter of the counter -7-.

[0042] Furthermore, the counter -7- comprises a structural sealing component -90-, similar to that described above for the embodiment of the counter -1-, which also runs along the perimeter of the temperature conservation area, having a central opening or hole of dimensions similar to the opening of the counter -7-. Said structural sealing component -90-, in a way similar to the embodiment of the counter -1-, may comprise a double moulding system for sealing the double ramification close to the opening of the counter -7-. Said structural sealing component -90- also has the ability to move horizontally through the interior of said counter area -7- by means of at least one electric, pneumatic or hydraulic motor, such as for example, a cylindrical drive actuator -85- embedded in the ends of the upper and lower walls of the counter -7-. Preferably, said cylindrical drive actuator -85- will be rigidly connected to said structural sealing component -90- by the corresponding special connection means. Said structural sealing component or movable component -90- comprises a double moulding system for sealing the double ramification of the fixed structure -71- made up of a first and

second sealing surface following the trajectory marked by the refrigeration area to be sealed, each of said sealing surfaces comprising respective sealing means, such as for example, a respective continuous elastomer sealing joint (-93-, -93'-) over the entire respective perimeters of said surfaces of the structural sealing component -90- respectively. Said elastomer sealing joints (-93-, -93'-) are configured for the respective pressure sealing by contact with the respective identical materials (elastomer sealing joint -94- of the first ramification close to the opening of the counter -7- and elastomer sealing joint -94'- of the second ramification). Optionally, said structural sealing component or movable component -90- may comprise an elastomer joint -95- to act as a limit stop against another elastomer joint -96- arranged on a projecting portion -72- of the fixed structure -71- of the counter -7-, that is, when the counter -7- is in open mode.

[0043] Furthermore, the vertical counter -7- according to this embodiment may comprise a lower profile -83- open along the perimeter thereof to allow the passage of any drips that may be produced on the upper product supports -74-. In addition, the lower part of the counter -7- could also comprise a small channel -84- for collecting water from any possible dripping from the product supports -74-. In addition, said lower profile -83- may comprise at the ends thereof an elastomer limit stop against the projecting component -72- of the fixed structure -71-.

[0044] The vertical product counter -7- according to the embodiment shown in Fig. 25 may comprise a grille-type opening -97- suitable for the natural ventilation of the interior of the vertical counter -7- when said counter is in open or display mode.

[0045] Moreover, according to this embodiment, the counter -7- may comprise a closure system similar to that described earlier with respect to the embodiment of the counter -1-. In this case, a closure system has been shown as described above with respect to Fig. 17 to 19, consisting of a piece of canvas -2'- which comprises an opening of dimension -A- similar to the upper opening of the counter -7-, said piece of canvas -2'- being arranged between and around two synchronised cylindrical drive motors (-201'-; -202'-) such that, when the product counter -7- is to be opened, the two motors (-201'-; -202'-) both rotate in one direction so as to position the opening -21'- of dimension -A- just beneath the opening of the counter -1-. Alternatively, said counter -7- may comprise a closure system having a single casing (not shown in this embodiment) arranged in a zone close to the edge of the upper opening, which comprises in the interior thereof a laminar component -2- (for example a louvered roller blind having metal slats or of another type, having self-sealing joints, or alternatively a sealing slat which prevents the transfer of heat and/or cold) which can be rolled around a drive shaft, said laminar component -2- being configured to be deployed through an outlet opening of said casing, allowing said opening of the counter -7- to be closed at the perimeter.

[0046] As can be seen in Fig. 25, said vertical product

counter -7- may comprise a respective climate control and/or refrigeration system -73- for each product support level -74-. Said respective climate control and/or refrigeration system -73- will be similar to that described earlier for the previous embodiments.

[0047] Fig. 26 shows an embodiment of a horizontal counter as explained earlier, optionally comprising a sheet of glass or display case -160- for climate control and/or refrigeration of the products, the sheet of glass or display case -160- being arranged on the side opposite the product sprayer which will be the side from which the customer will be able to view the products displayed inside the counter.

[0048] Fig. 27 shows an example of a possible installation of various types of horizontal product counters (-1'-, -1"-, -1"-) according to the present invention. In addition, in said example of a possible installation, it can be seen that the different counters (-1'-, -1"-, -1"-) will be arranged above the corresponding drainage channel -180- so that any drips produced by the counters are drained efficiently. In addition, all the necessary electricity supply cabling for the various counters and the corresponding motors thereof will be grouped together and concentrated in a channel -170- arranged efficiently, preferably beneath each respective counter. Finally, as shown in this example of an installation in Fig. 27, it will be possible to provide for the installation of a control and/or information screen -10- relating to each of the counters arranged in a particular premises or establishment, which will be able to configure and/or execute the various closure and sealing systems of each of the counters.

[0049] Although the invention has been set out and described with reference to embodiments thereof, it should be understood that these do not limit the invention, and that it is possible to alter many structural or other details that may prove obvious to persons skilled in the art after interpreting the subject matter disclosed in the present description, claims and drawings. Therefore, the scope of the present invention includes any variant or equivalent that could be considered covered by the broadest scope of the following claims.

Claims

1. Product counter which comprises:

- a fixed structure which comprises an opening for access to an interior area of the counter for the arrangement of products, said area being delimited at least by the interior walls of said fixed structure and the perimeter edge of said opening, the interior of said area comprising at least one product support tray;
- a climate control and/or refrigeration system for the area of the counter where the product tray is positioned suitable for providing particular temperature and humidity conditions depending

- on the conservation needs of the products;
- a system for closing the access opening of the counter made up of at least one laminar component that can be rolled around at least one drive shaft arranged inside at least one casing, at least said laminar component being configured to be deployed through an outlet opening of at least said casing allowing said opening of the counter to be closed at the perimeter;
 - a sealing system which comprises a movable component having first and second sealing surfaces, each of which comprises sealing means, said movable component being configured, on the one hand, to pressure seal said laminar component between the sealing means of said first surface and sealing means arranged on a first surface of the fixed structure and, on the other hand, to pressure seal the sealing means of said second surface against other sealing means arranged on a second sealing surface of the fixed structure.
2. Product counter according to claim 1, **characterised in that** the fixed structure also comprises at the lower portion thereof a ventilation opening for the counter delimited by a lower ramification arranged along the entire perimeter of said fixed structure, the product support tray also comprising a lower surface having sealing means configured for pressure sealing said additional opening against sealing means of an upper surface of said lower ramification along the entire lower perimeter of the counter.
 3. Product counter according to claim 1, **characterised in that** the fixed structure also comprises a grille-type opening suitable for the natural ventilation of the interior of the counter when said counter is in open mode or display mode.
 4. Product counter according to any one of the preceding claims, **characterised in that** the sealing means consist of an elastomer sealing joint or similar.
 5. Product counter according to any one of the preceding claims, **characterised in that** the product support tray has the ability to move inside said area by means of at least one motor means.
 6. Product counter according to any one of the preceding claims, **characterised in that** the product support tray comprises predetermined positions for each type of product, each predetermined position comprising respective electronic scales incorporated in each position, each set of scales having the ability to communicate wirelessly with a control system and/or data processing system remote from the counter.
 7. Product counter according to any one of the preceding claims, **characterised in that** it also comprises at least one instrument for measuring the temperature inside the counter and having the ability to communicate wirelessly with a control system and/or data processing system remote from said counter.
 8. Product counter according to any one of the preceding claims, **characterised in that** it also comprises a display case arranged above the perimeter edge of the opening of the counter.
 9. Product counter according to any one of the preceding claims, **characterised in that** it also comprises a water spraying or sprinkling system for the products on the product tray, said sprinkling system being arranged in a portion of the perimeter edge of the opening of the counter.
 10. Product counter according to any one of the preceding claims, **characterised in that** it also comprises a water sprinkling system for the products on the product tray, said sprinkling system being arranged in a portion of said product tray.
 11. Product counter according to any one of the preceding claims, **characterised in that** it also comprises a series of height-adjustable feet, each of said feet comprising a movable inner cylinder having the ability to slide inside an outer base guide cylinder.

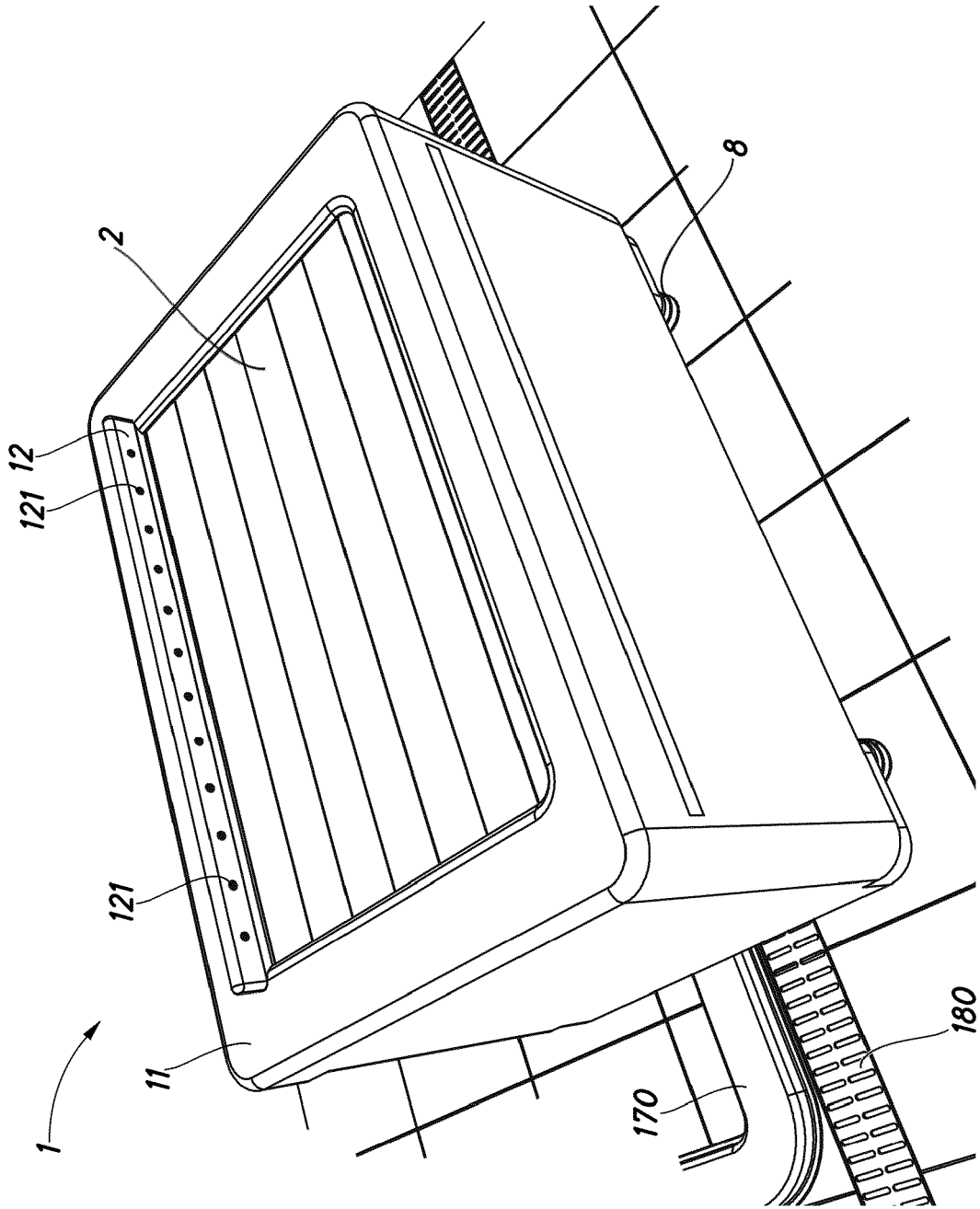


Fig.1

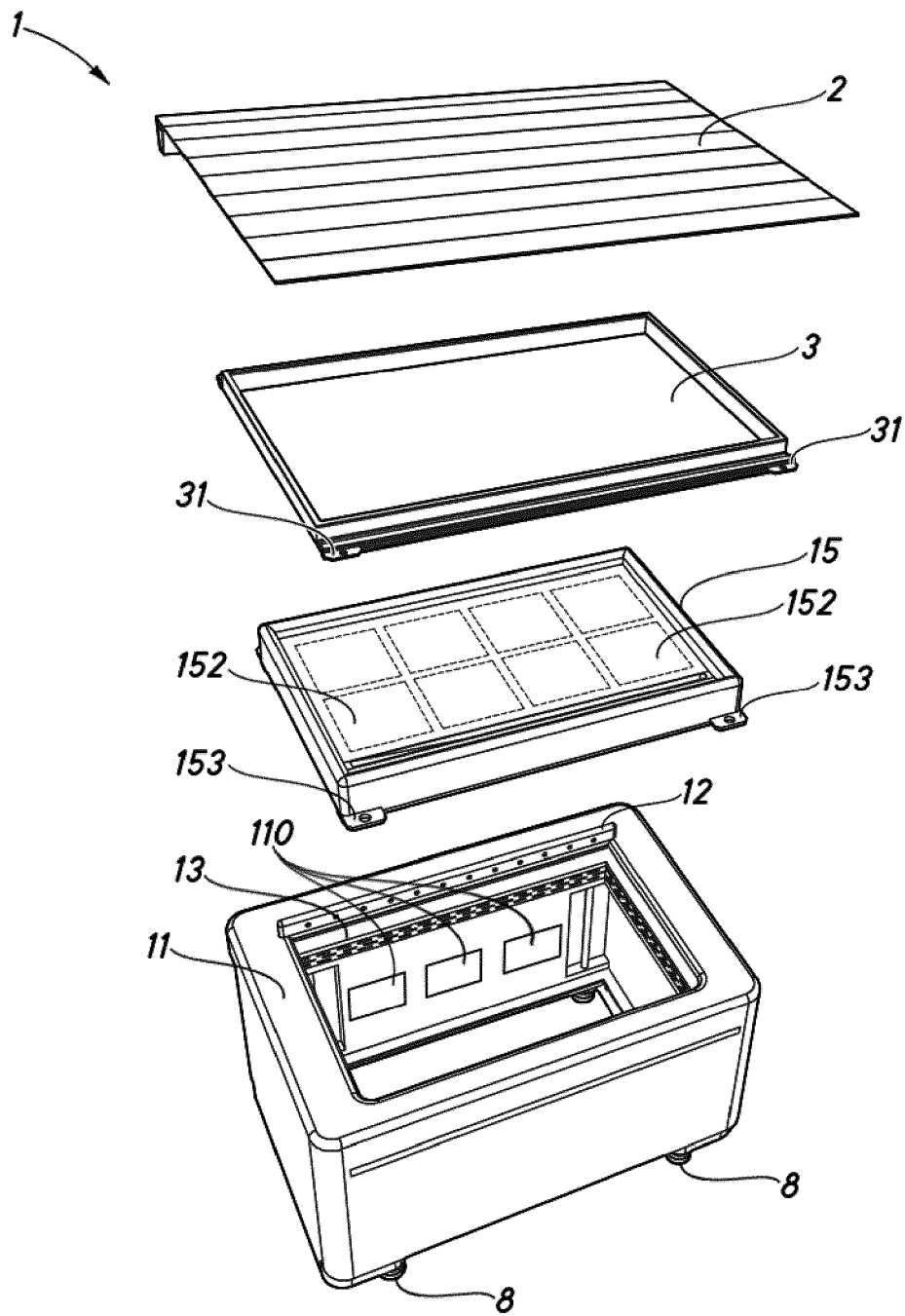


Fig.2

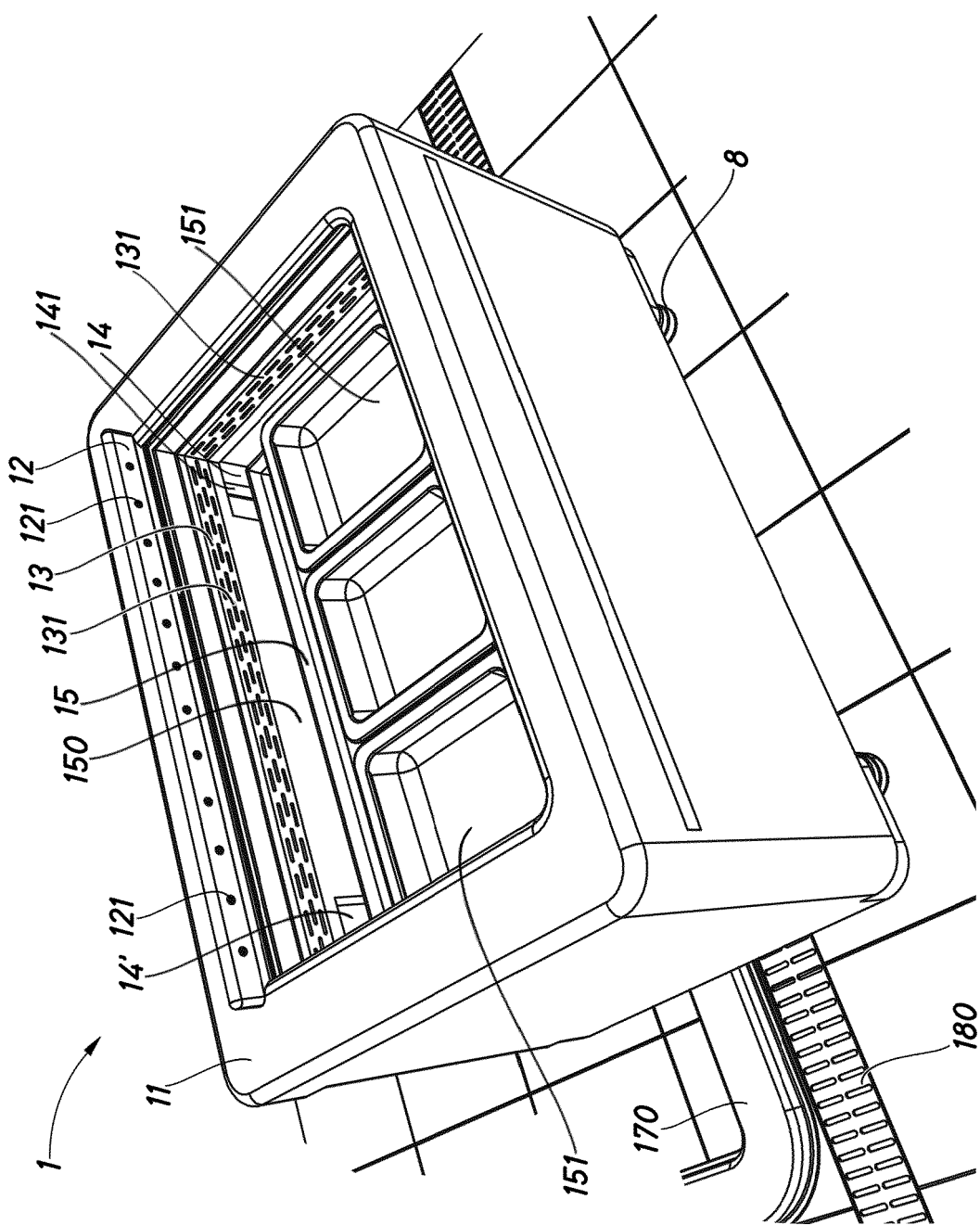


Fig.3

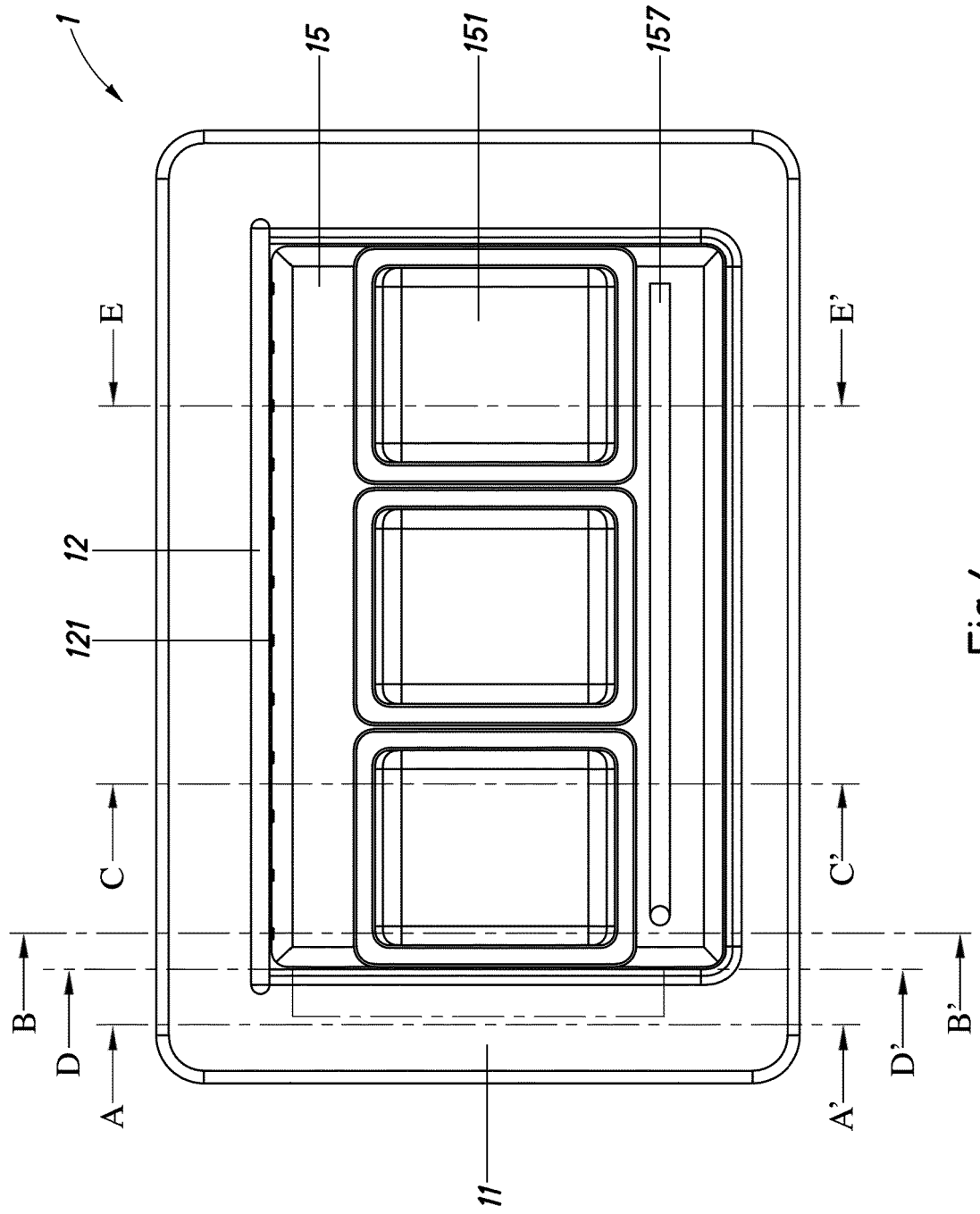


Fig.4

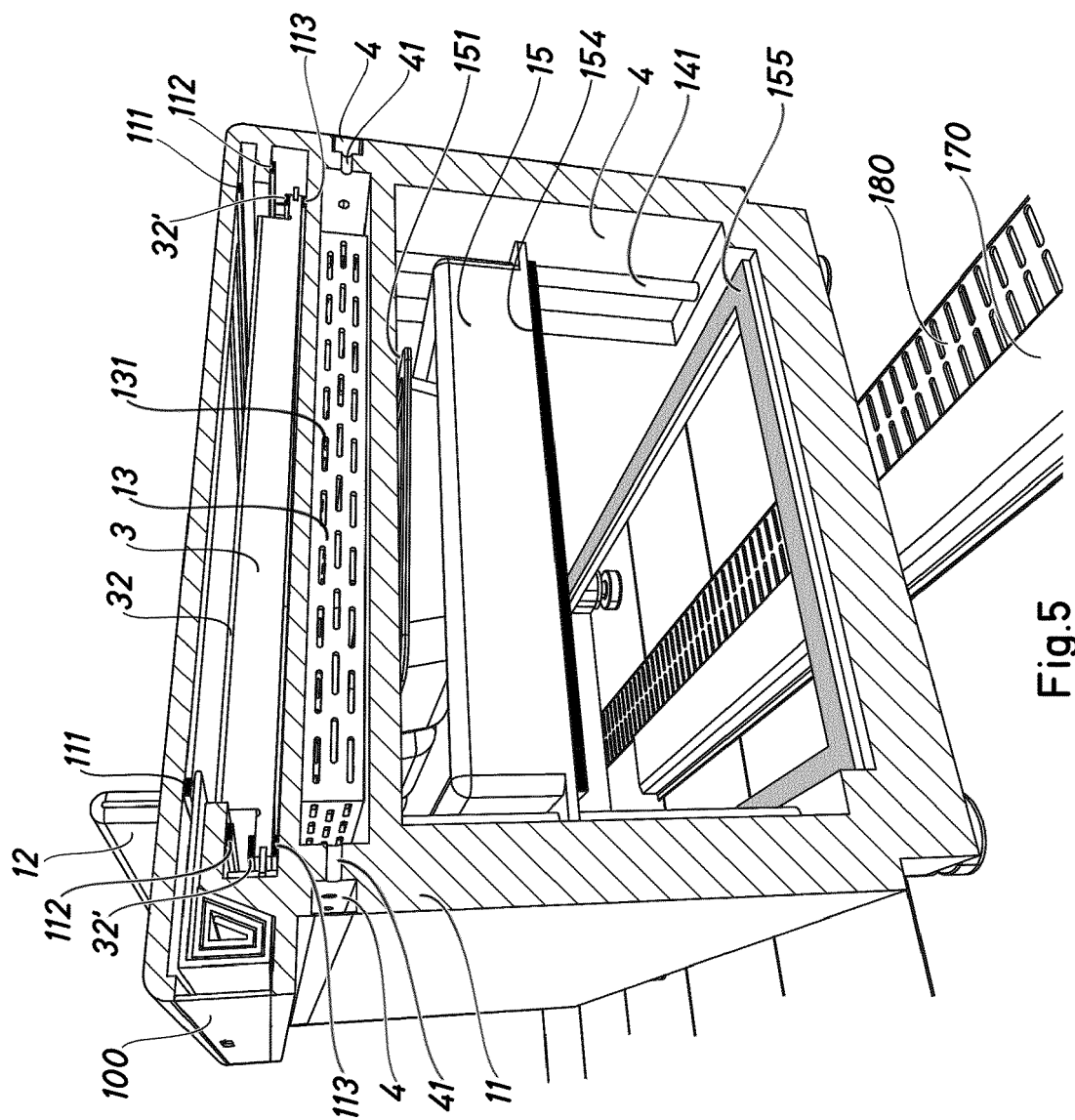
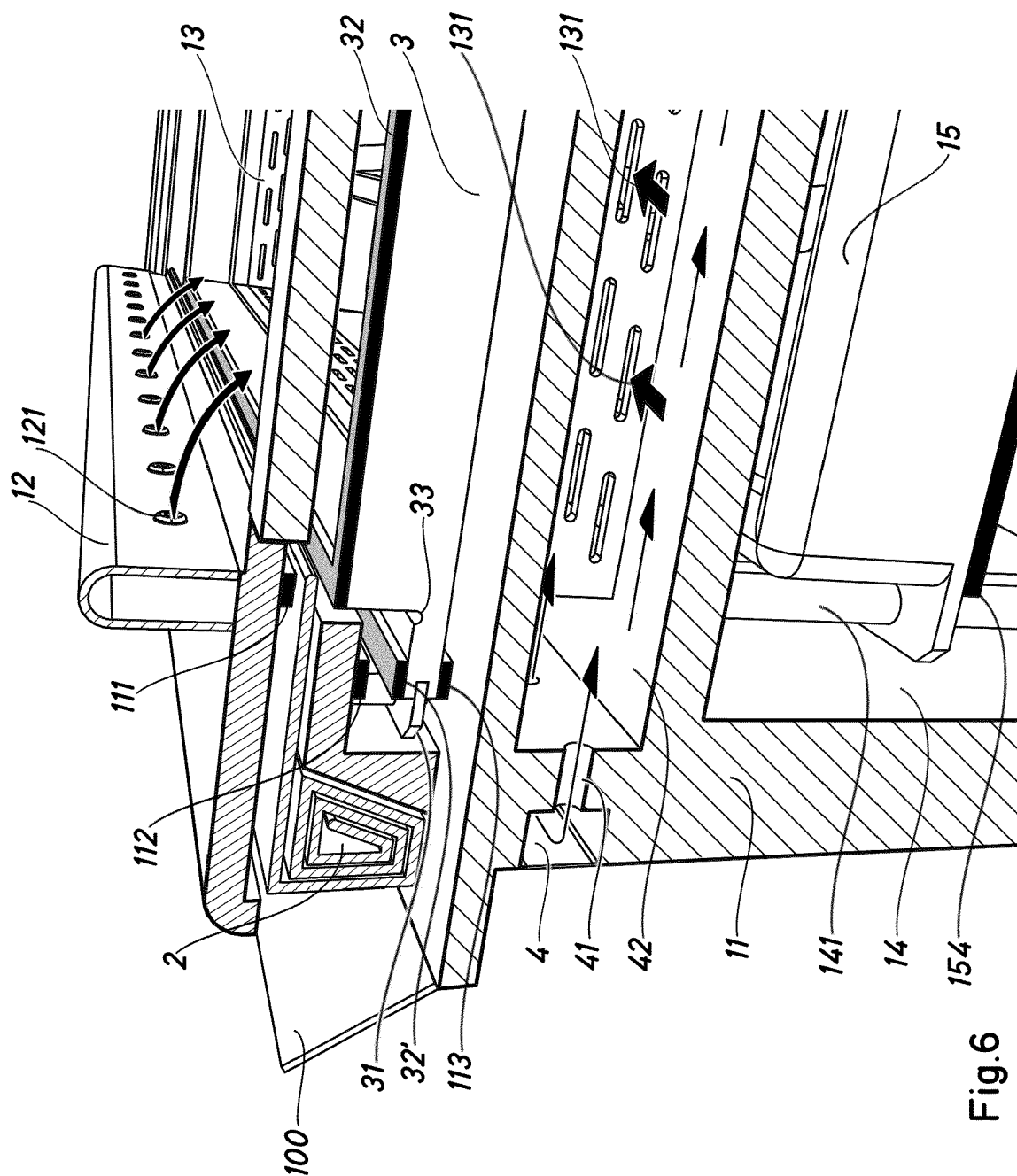


Fig.5



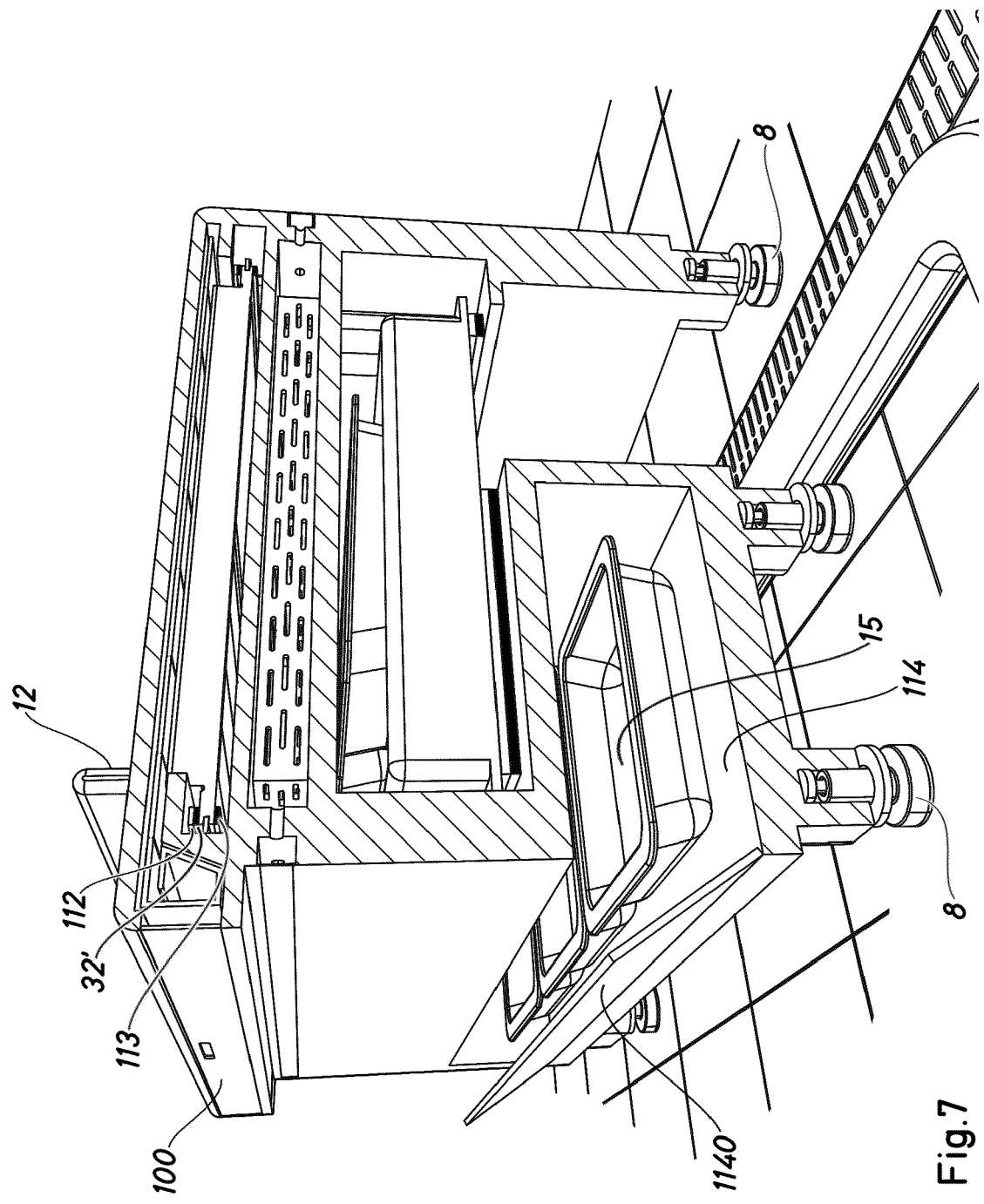


Fig.7

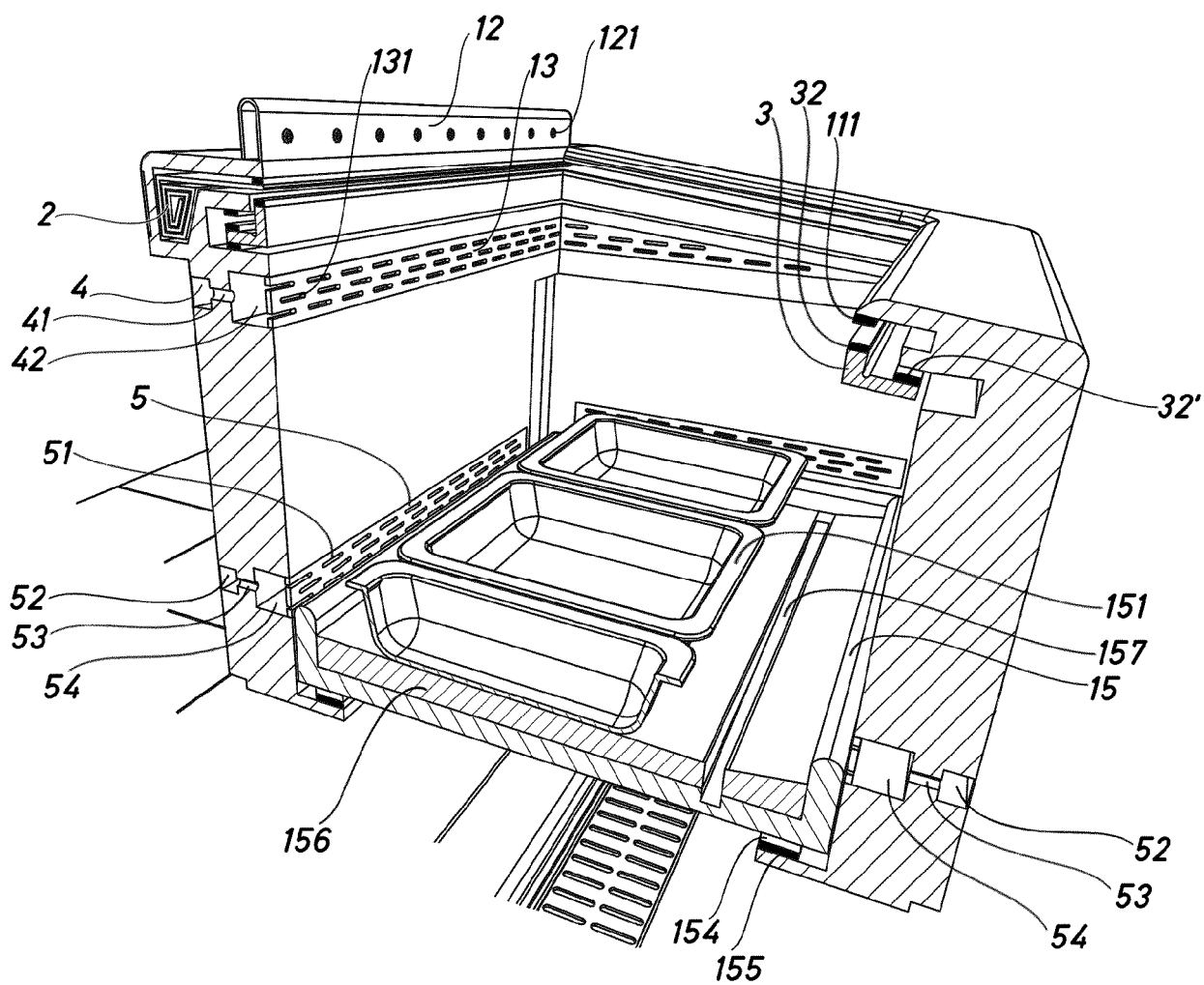


Fig.8

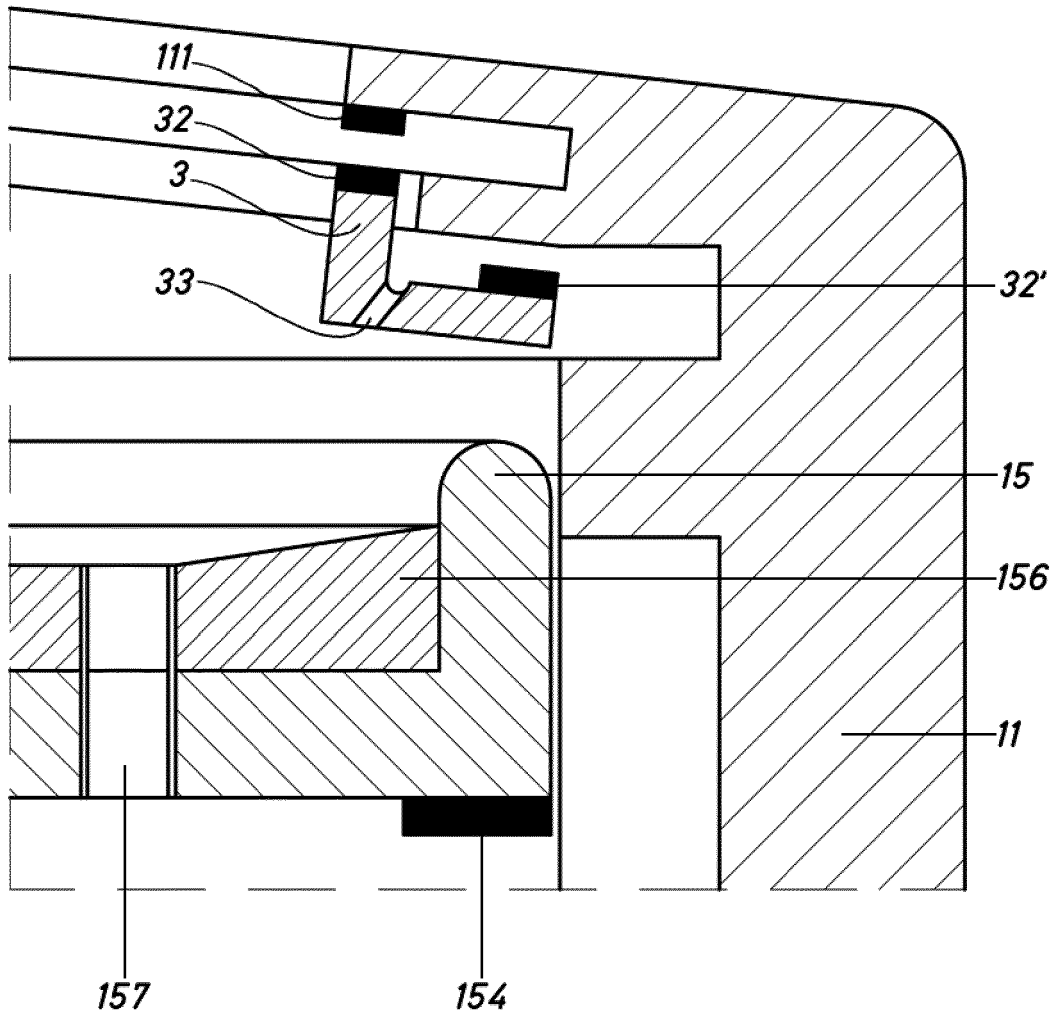


Fig.9

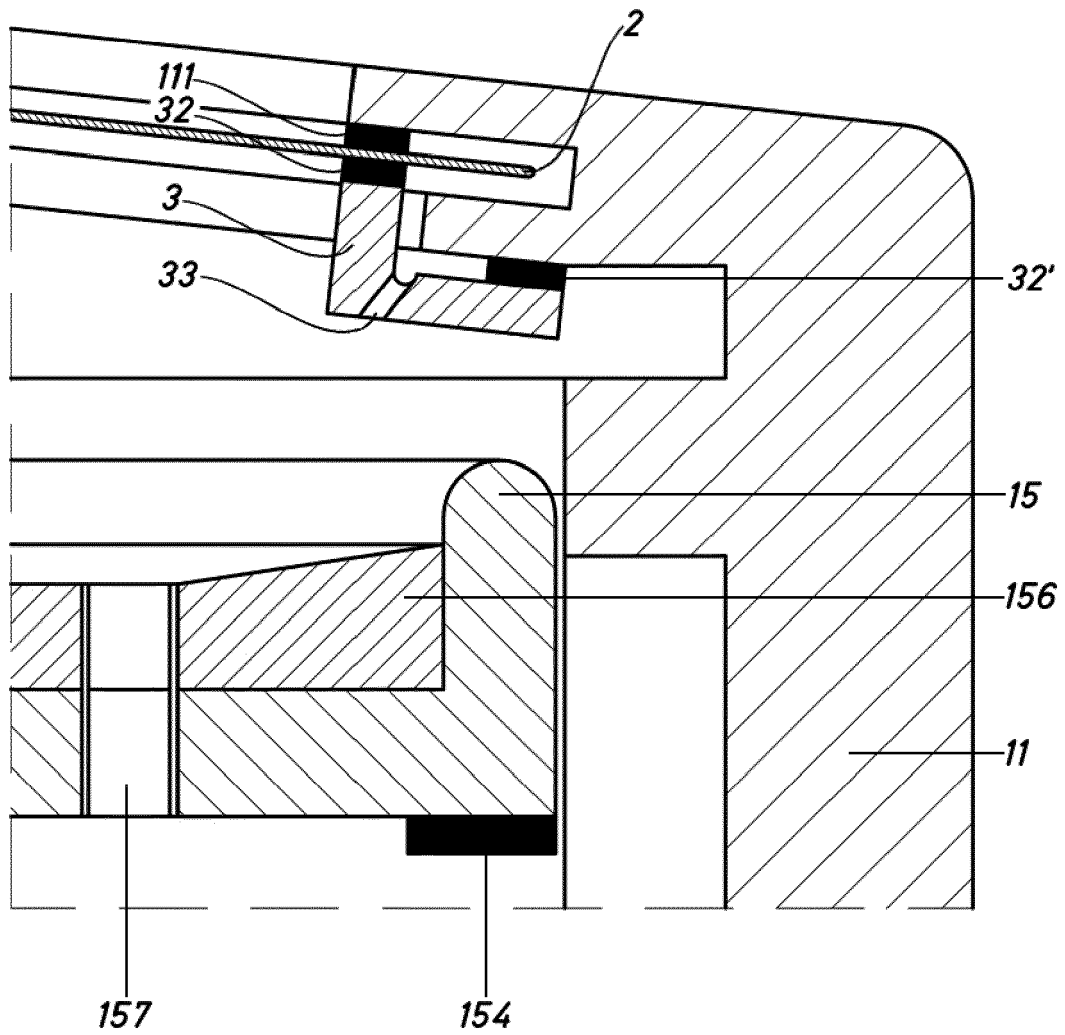


Fig.10

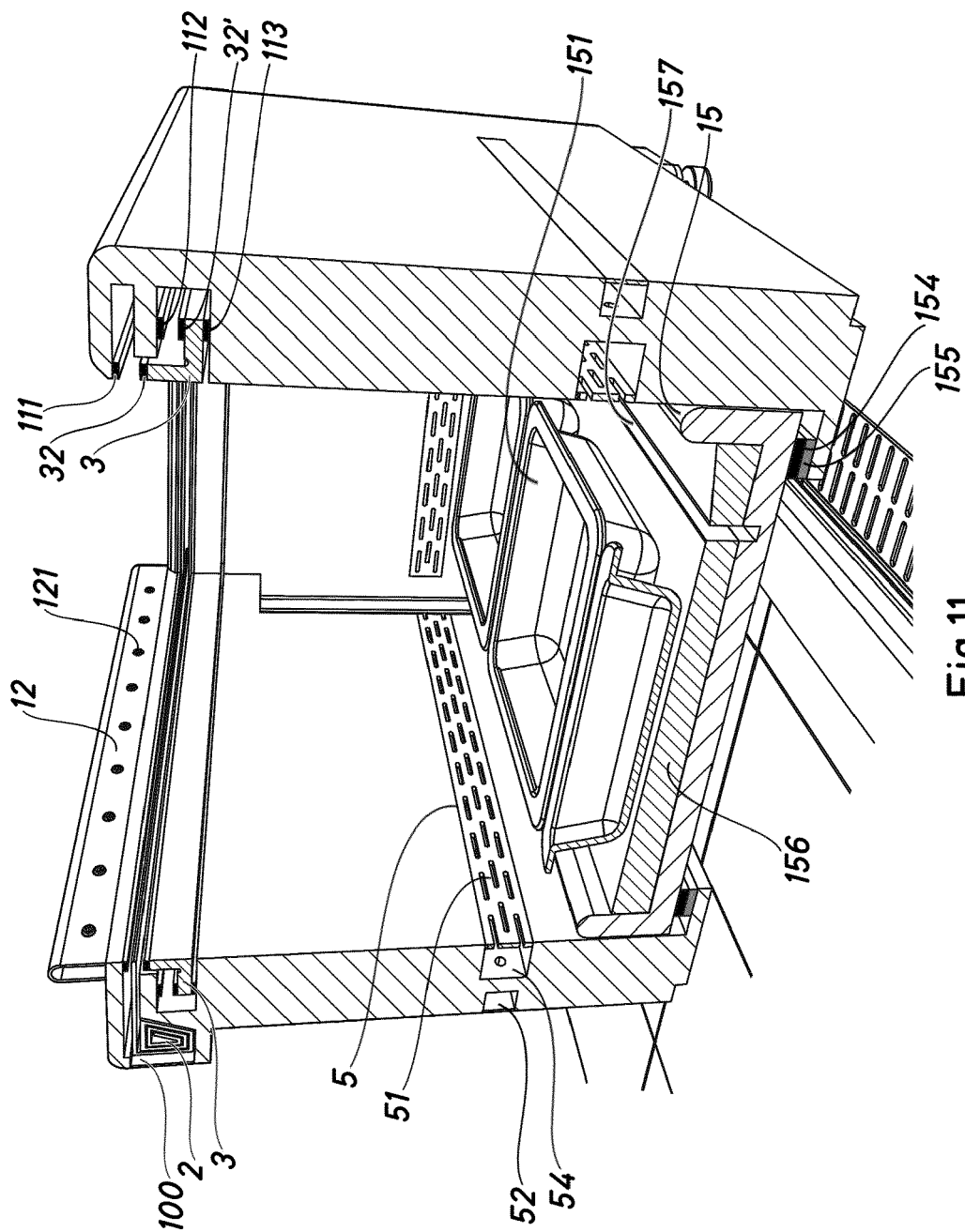


Fig.11

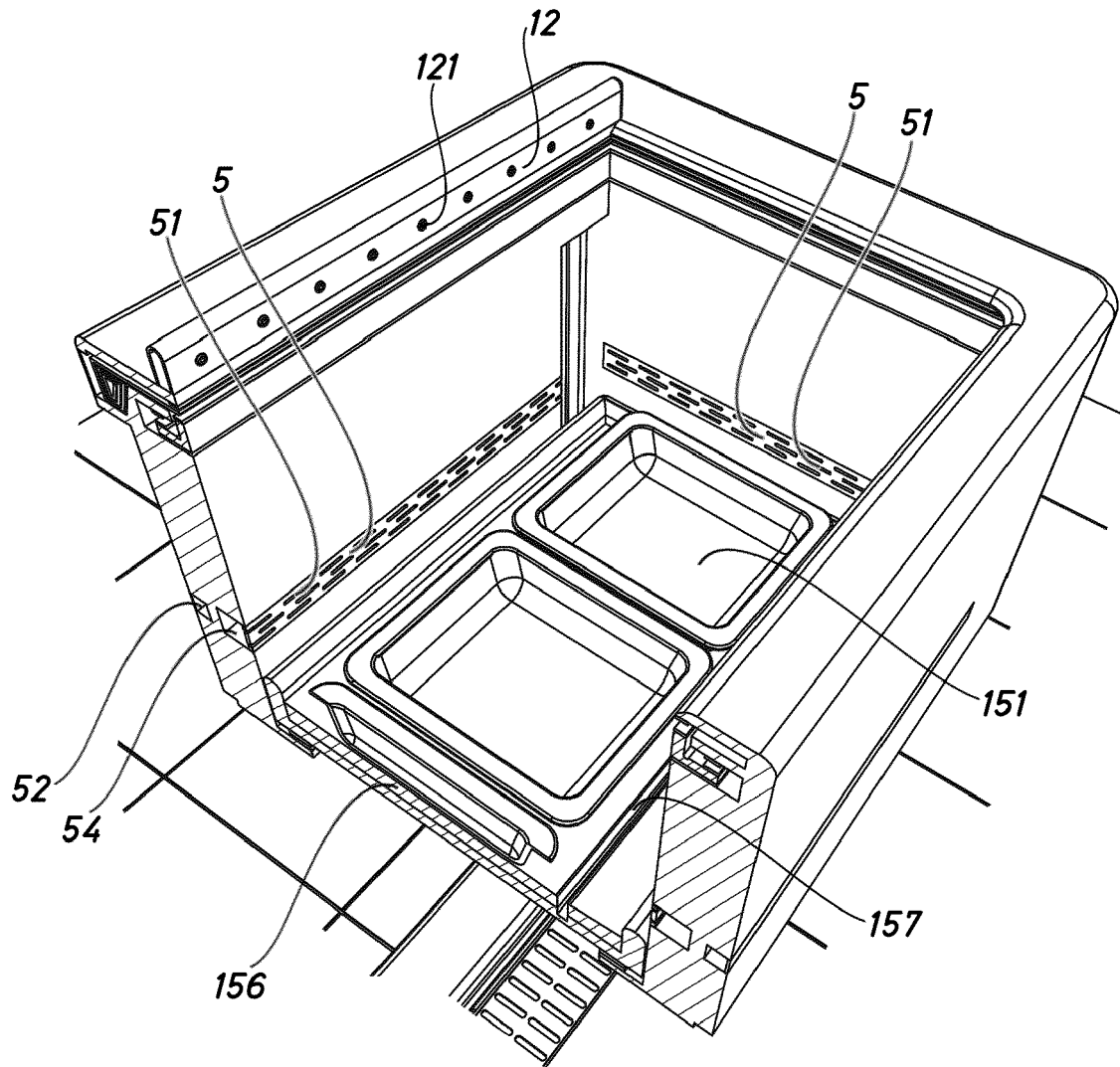
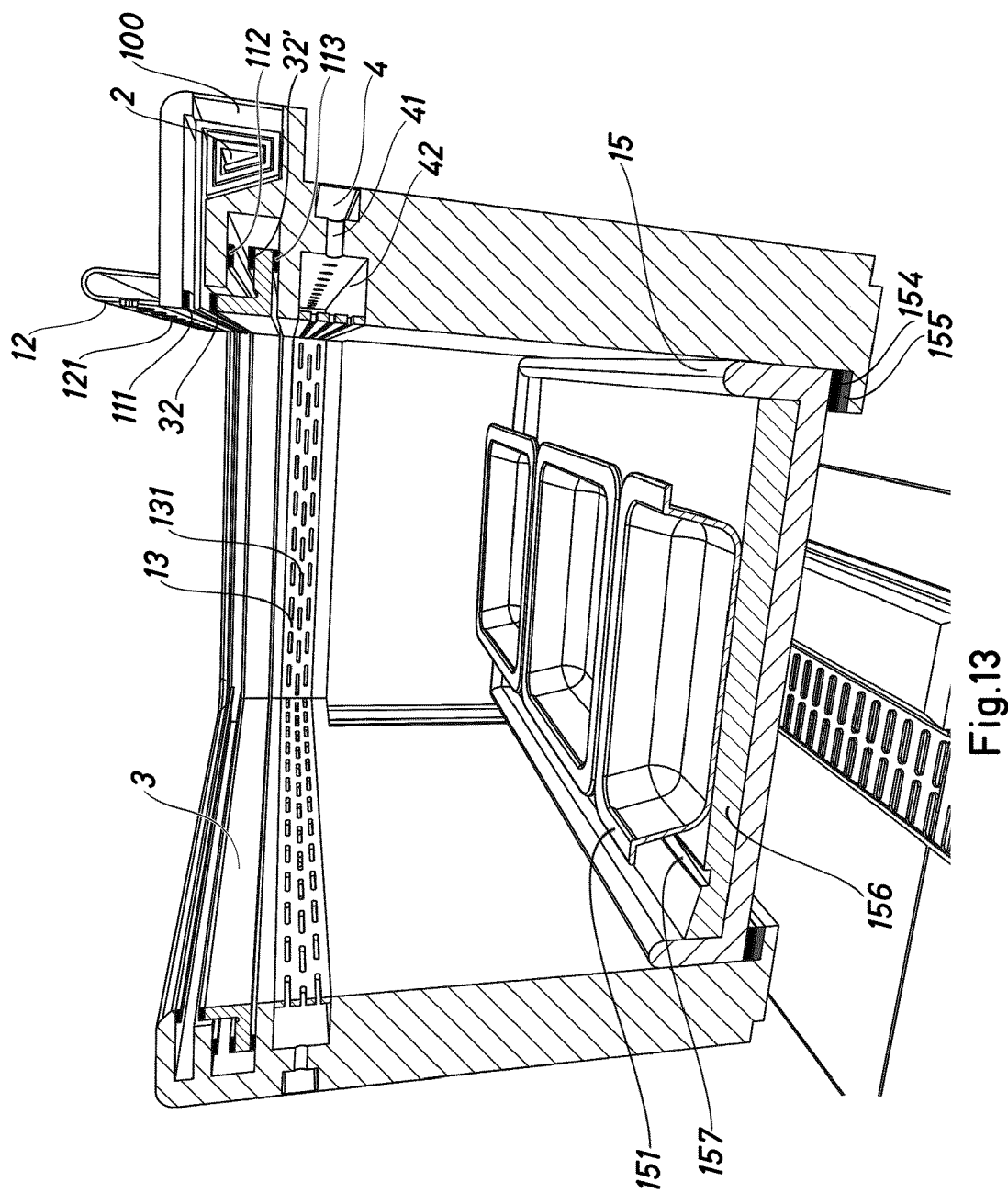


Fig.12



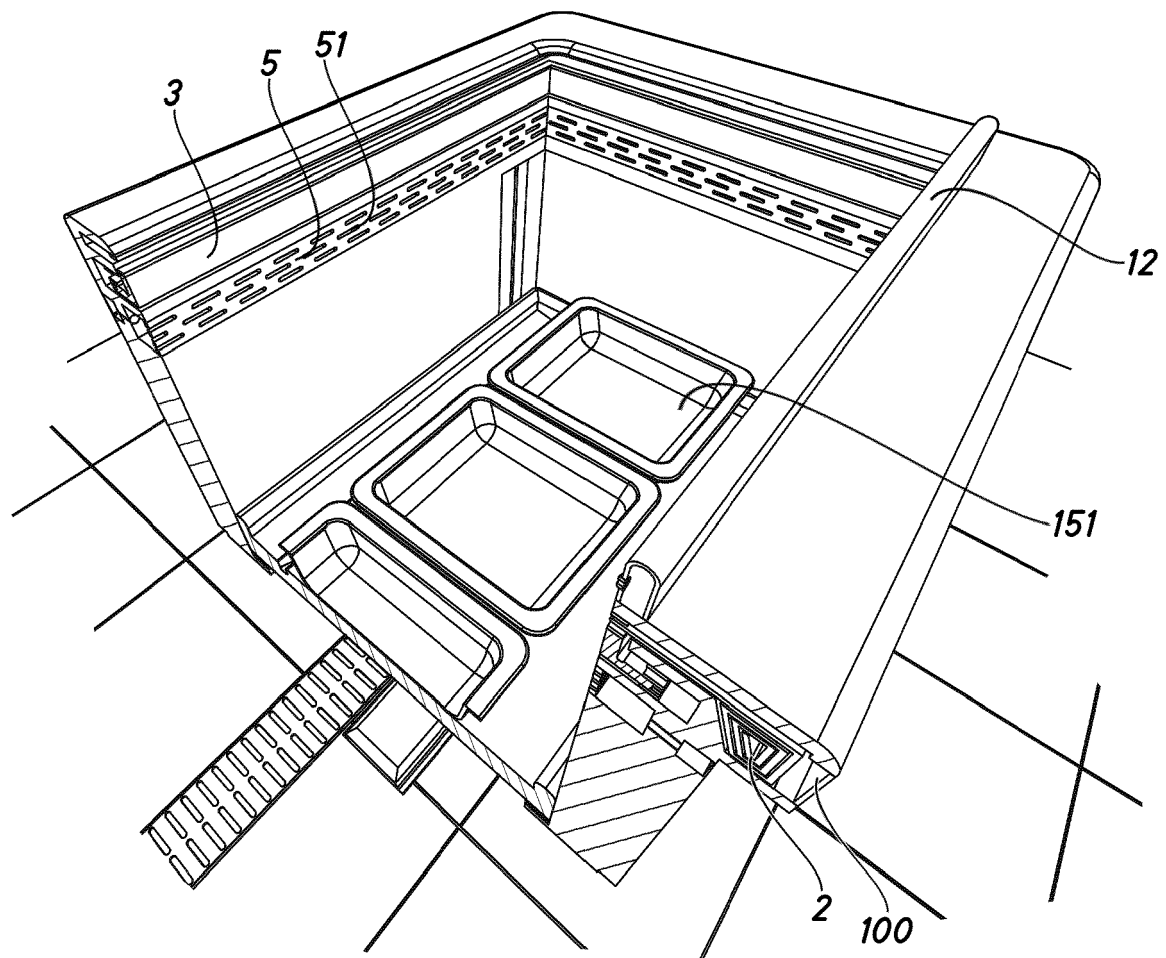


Fig.14

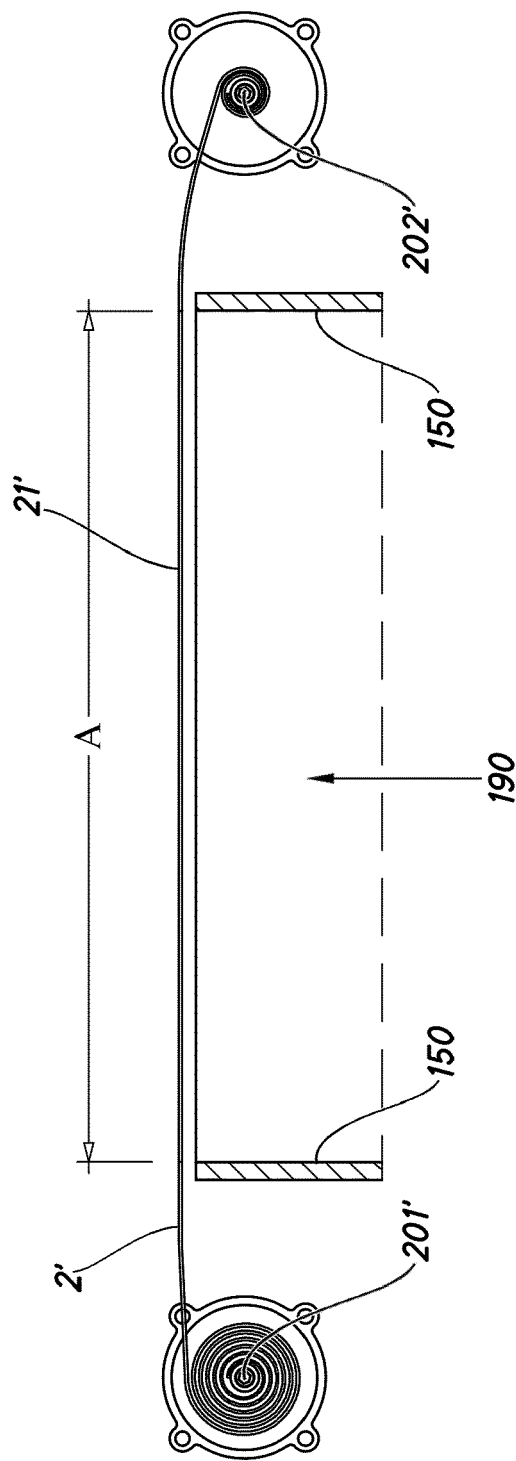


Fig.15

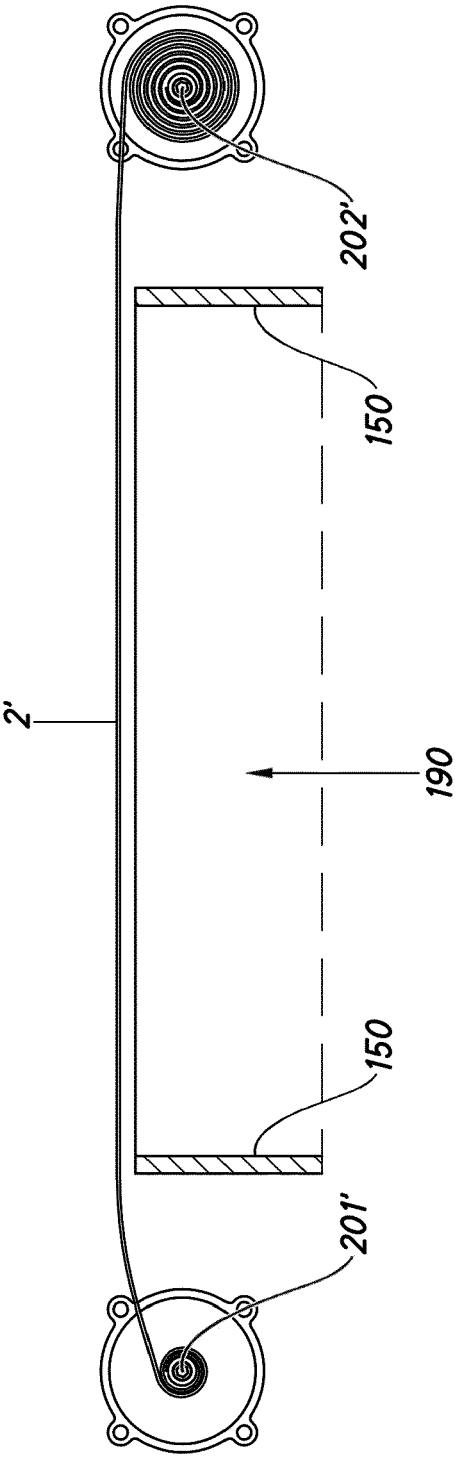


Fig.16

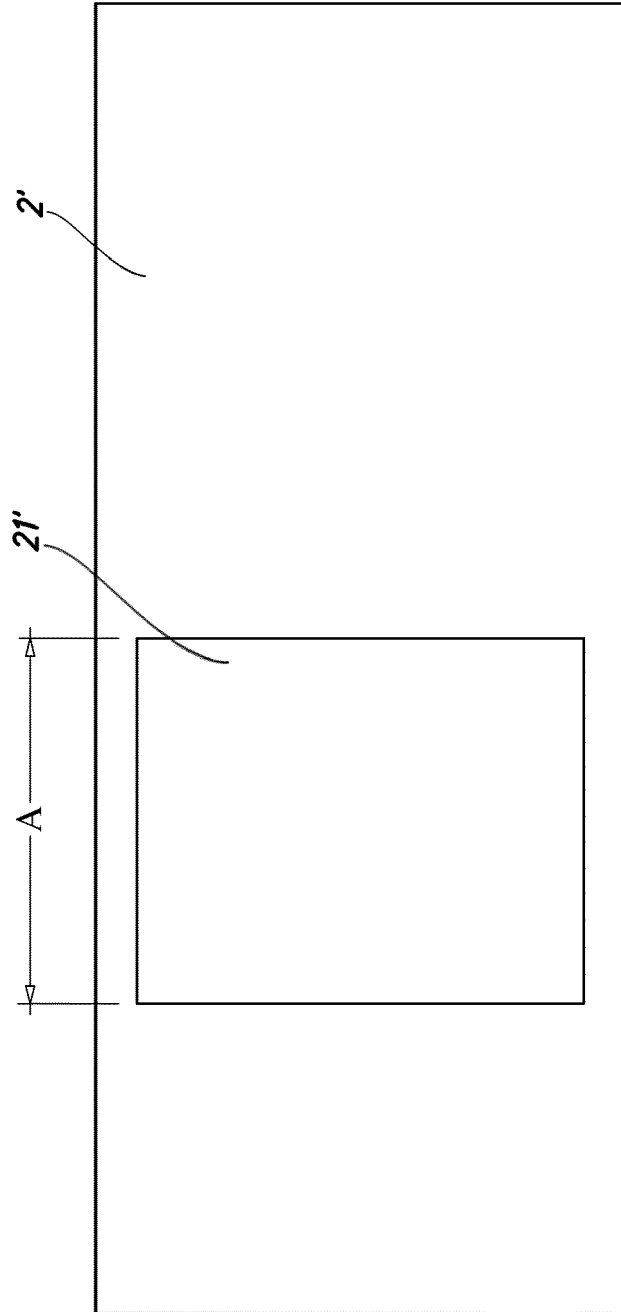


Fig.17

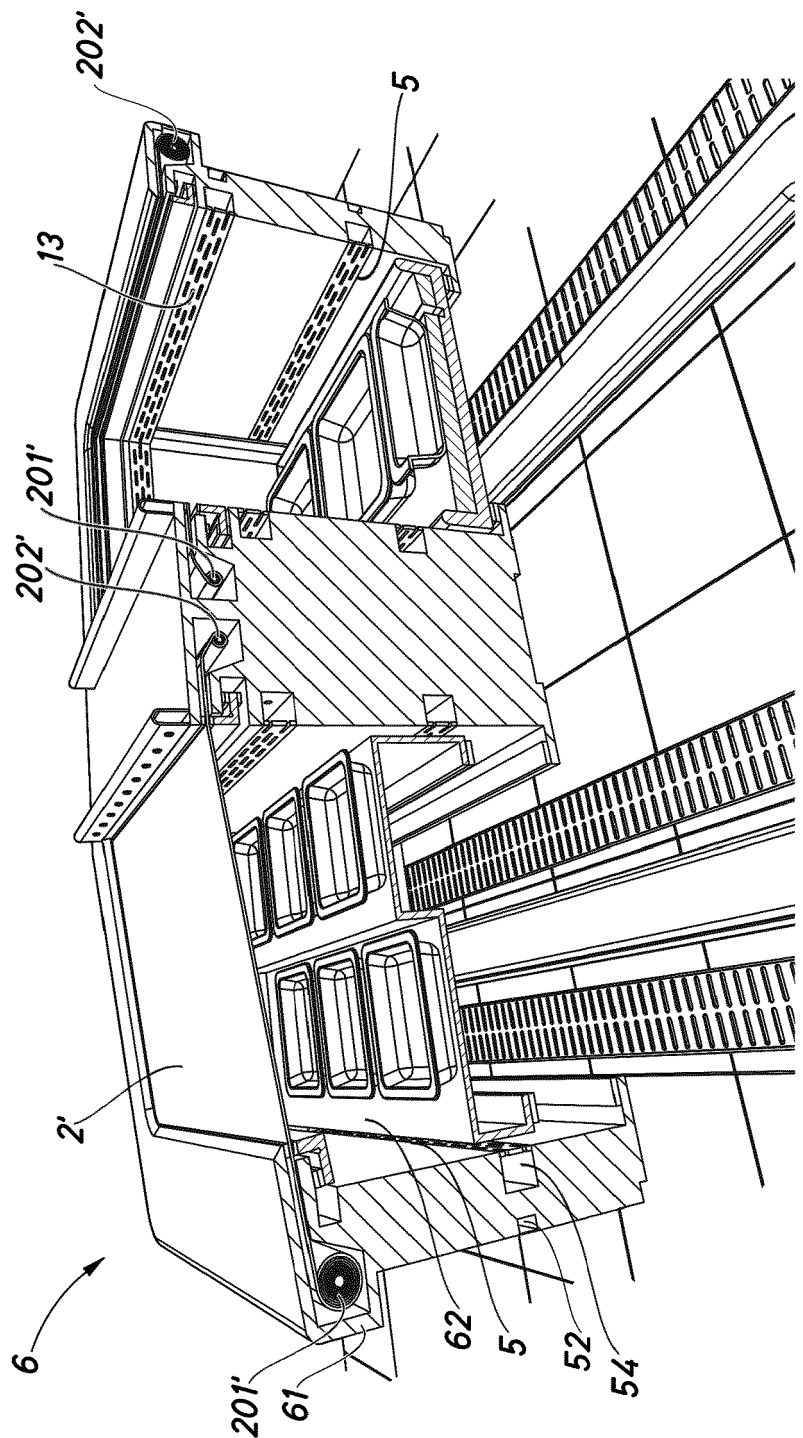


Fig.18

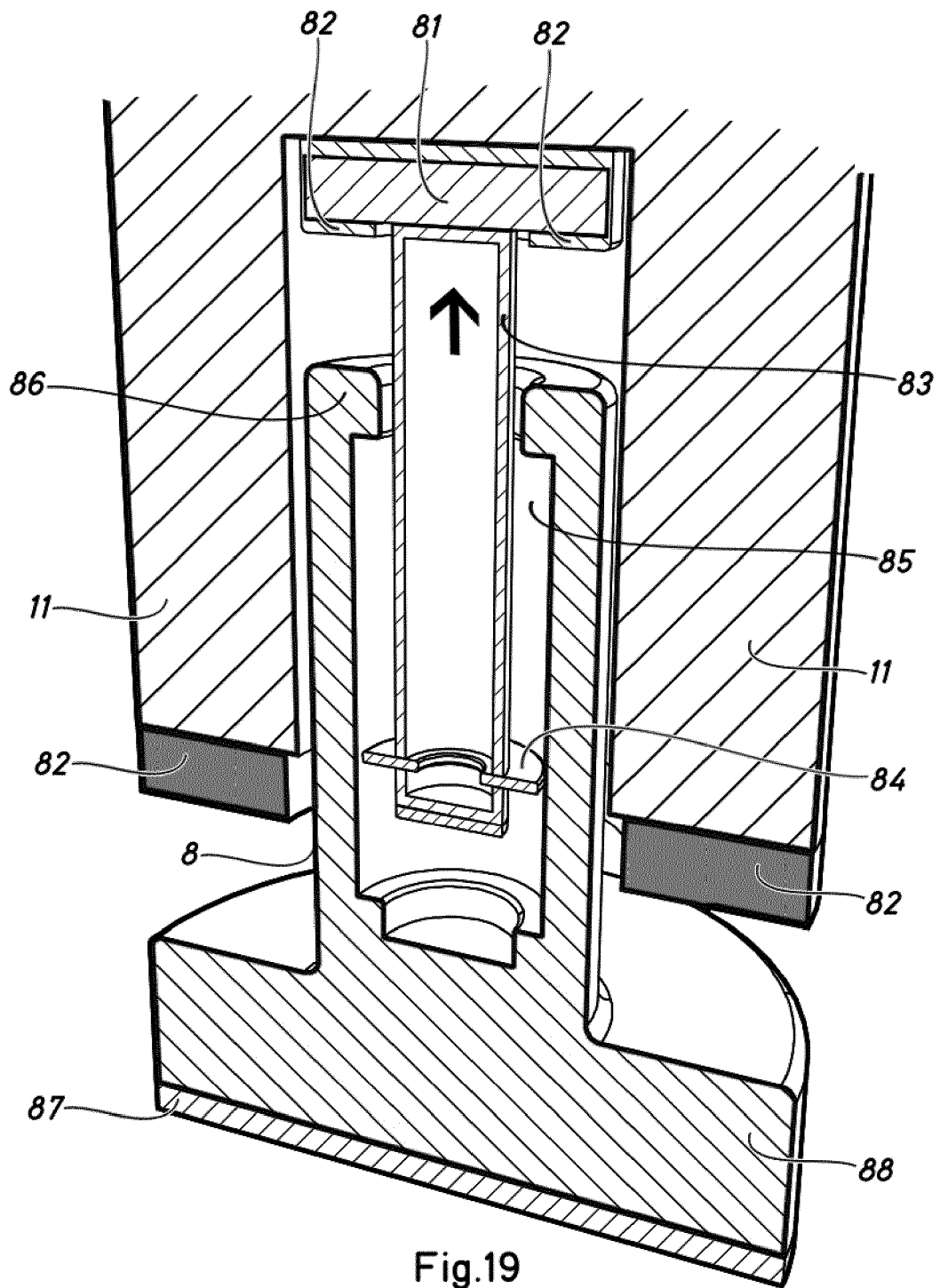


Fig.19

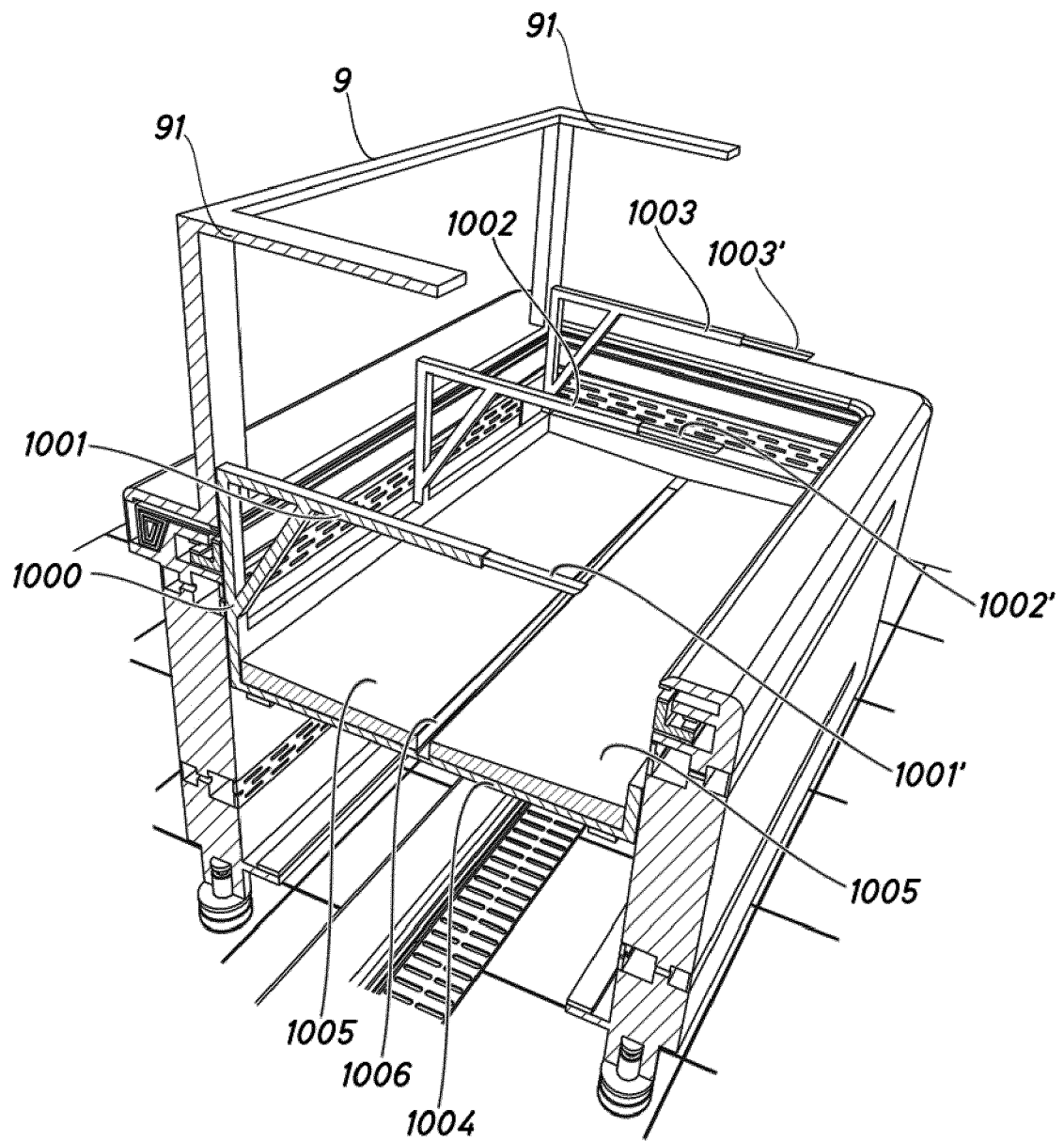


Fig.20

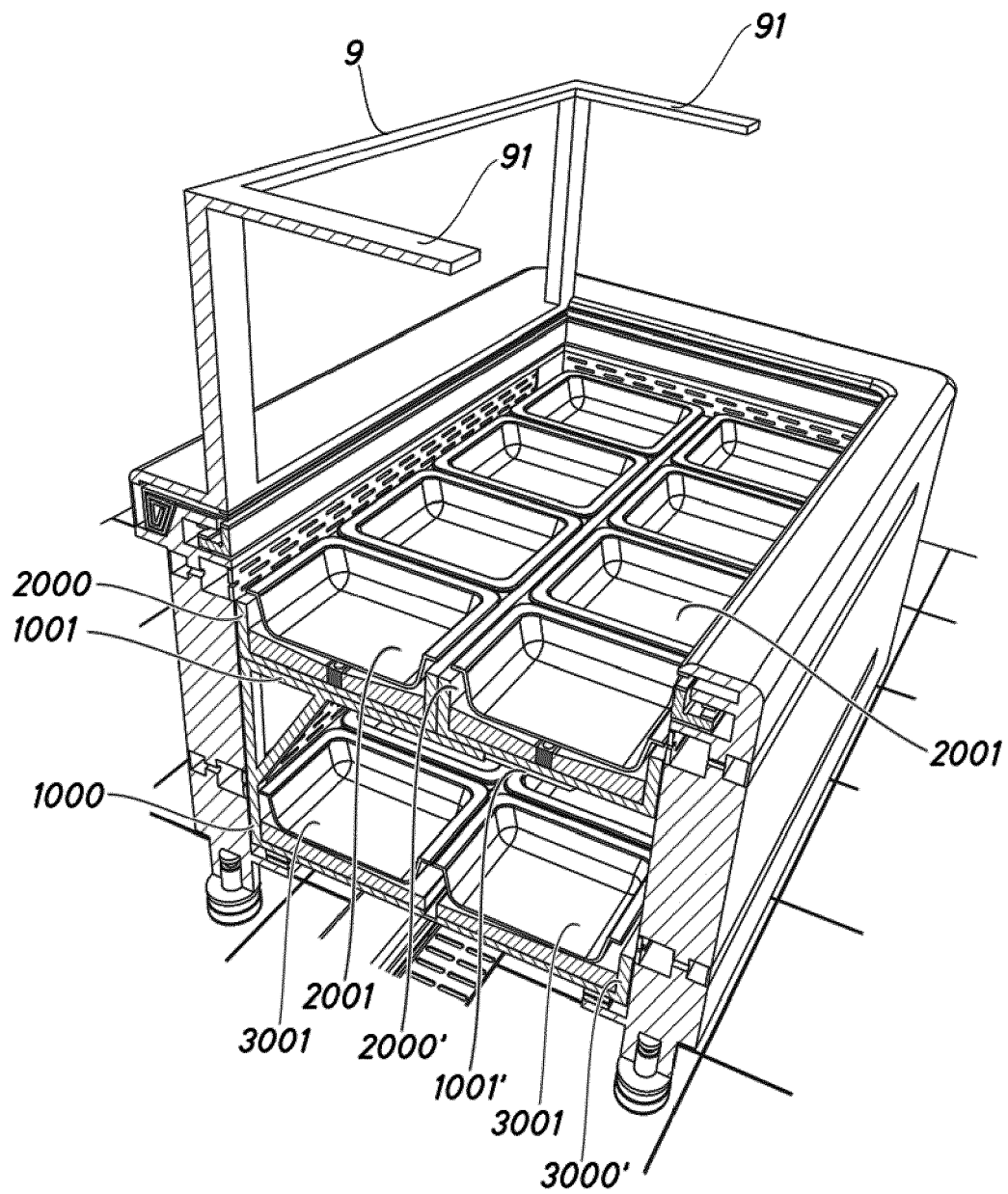


Fig.21

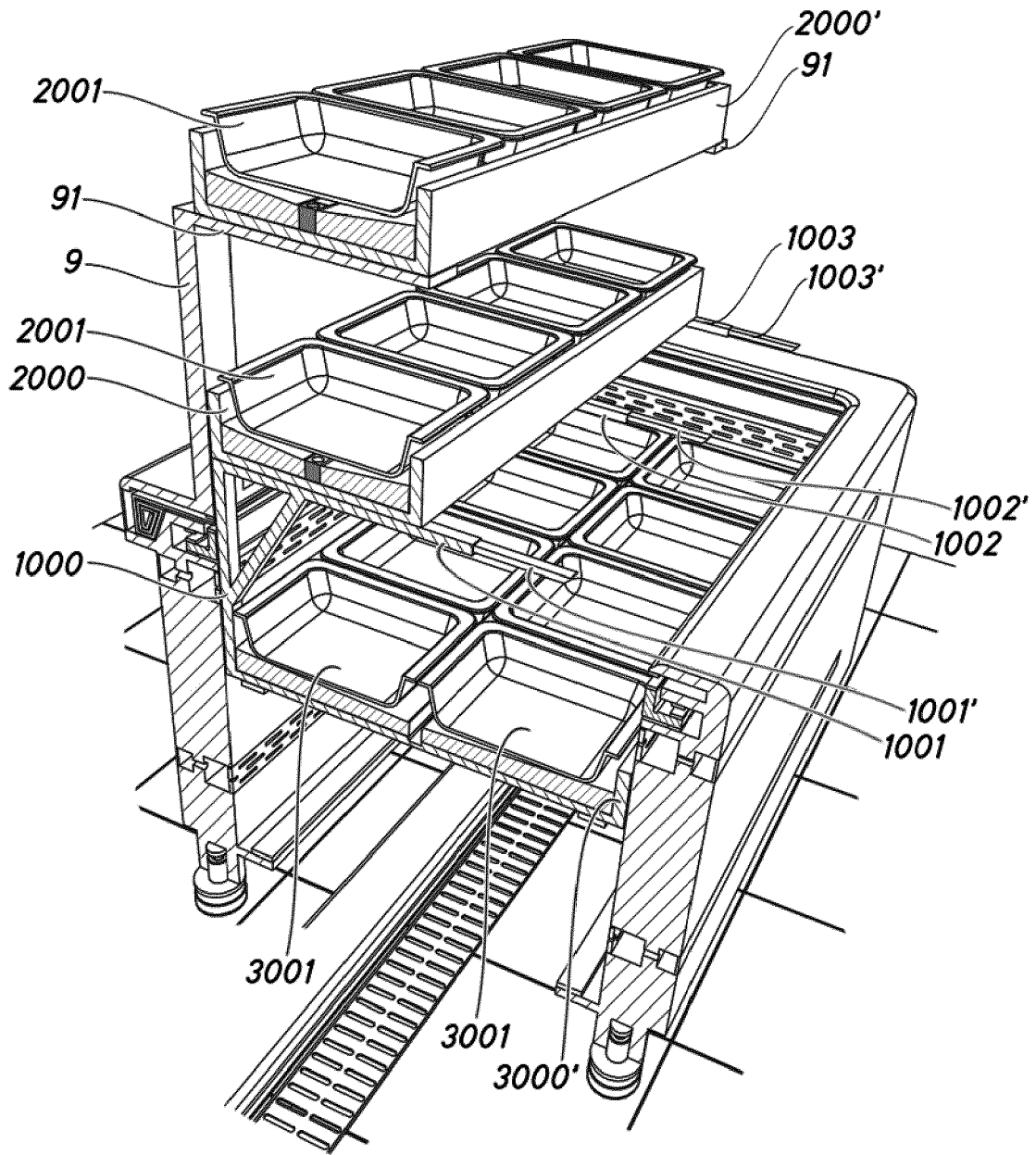


Fig.22

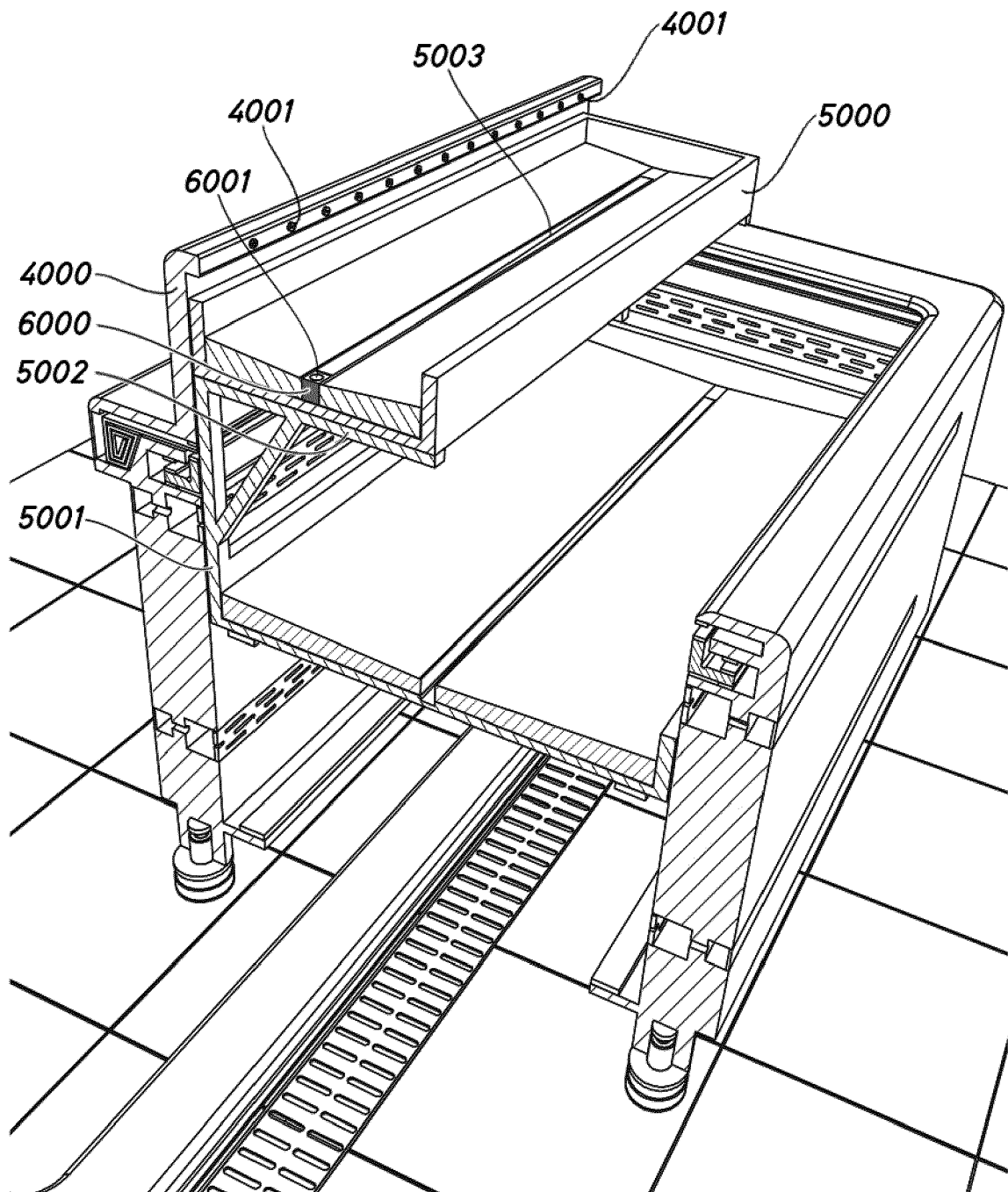


Fig.23

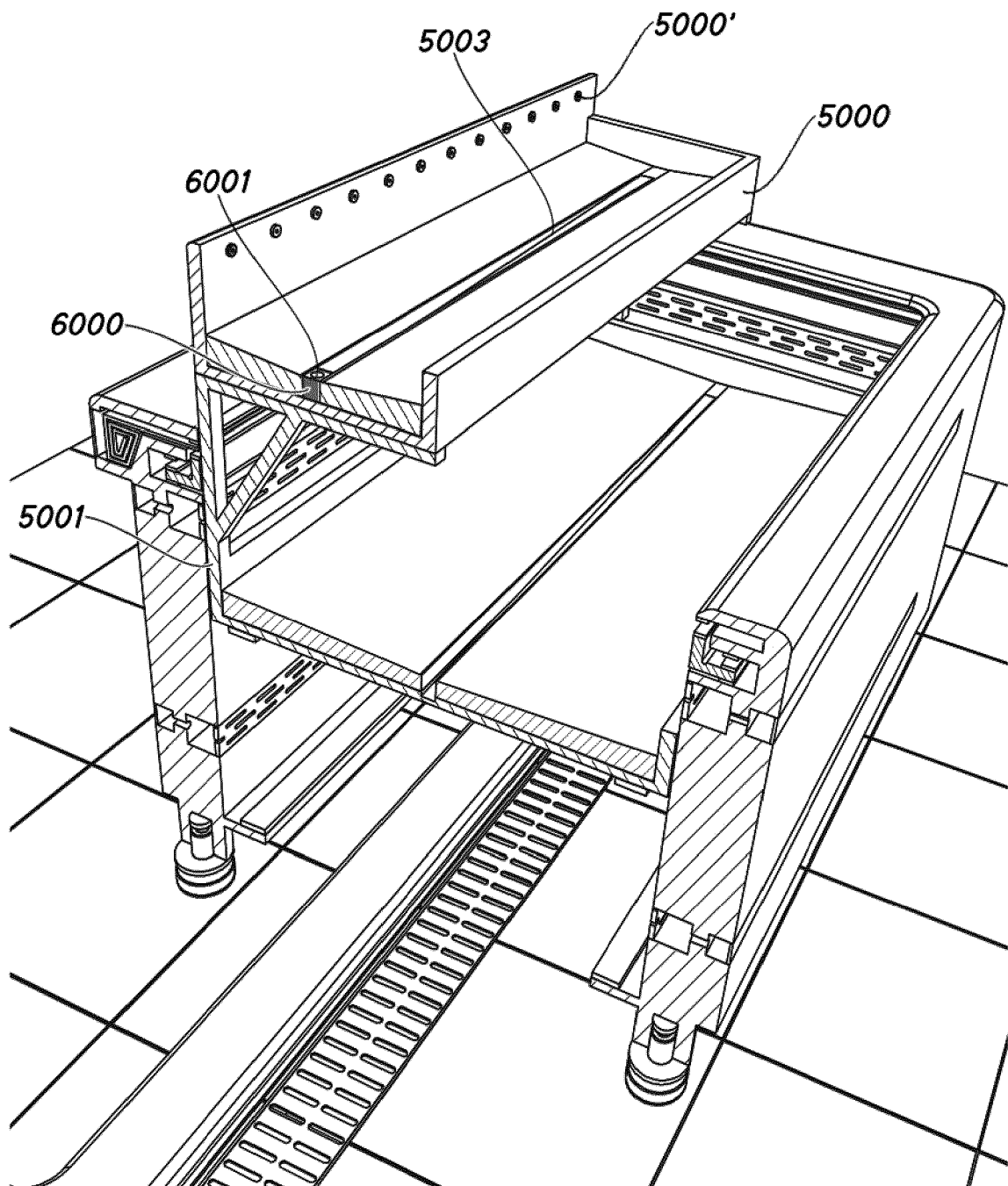


Fig.24

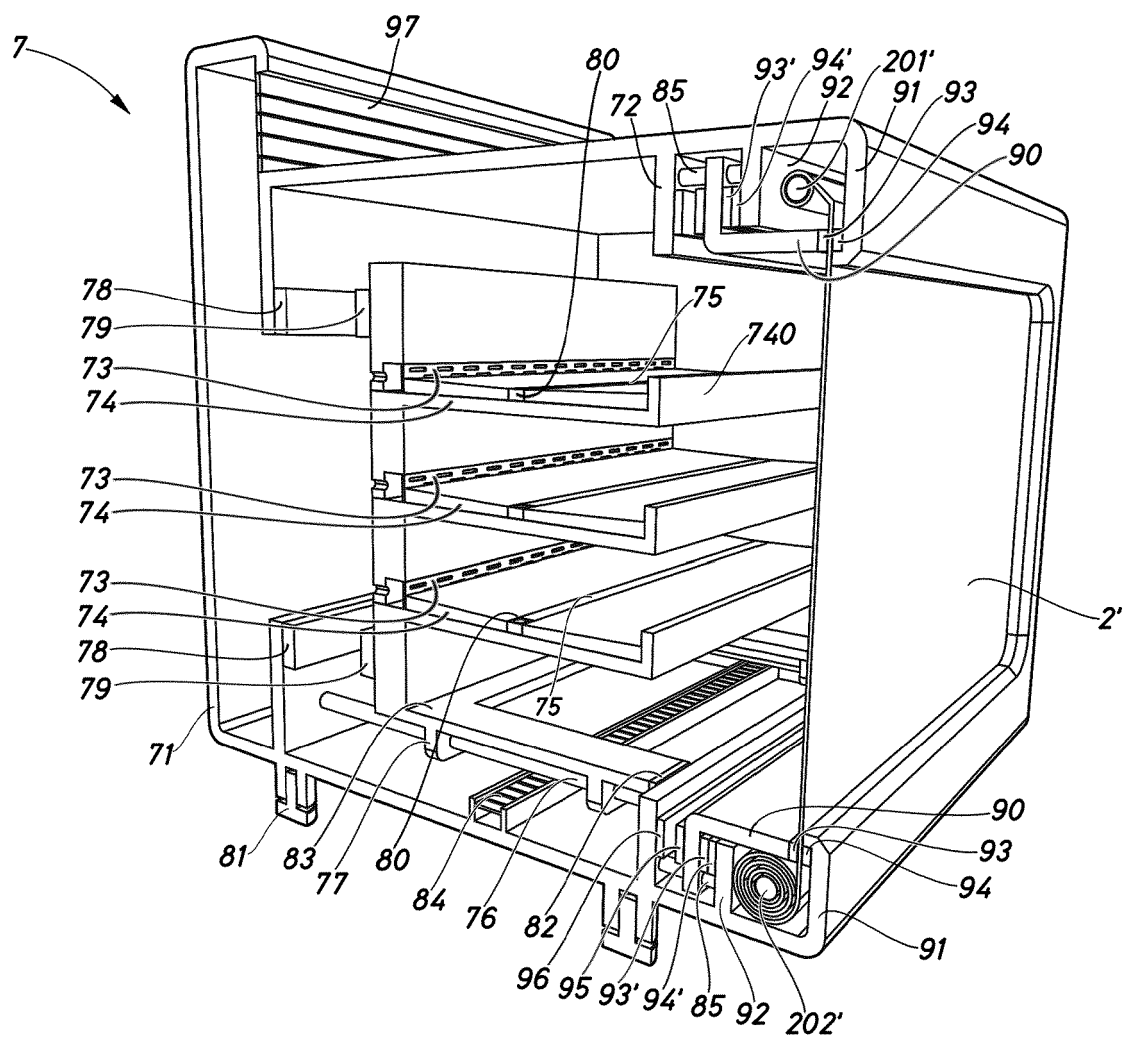
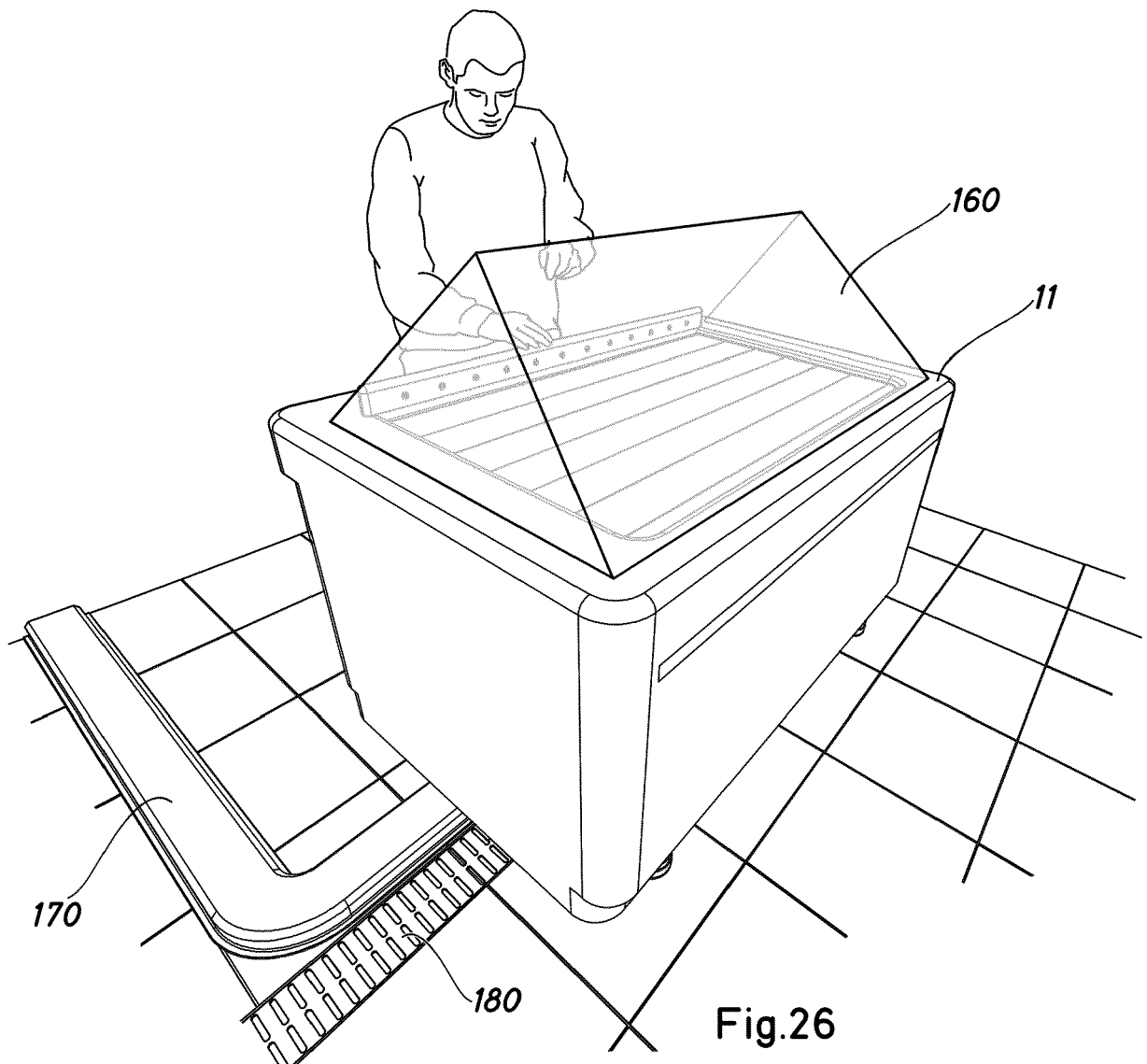


Fig.25



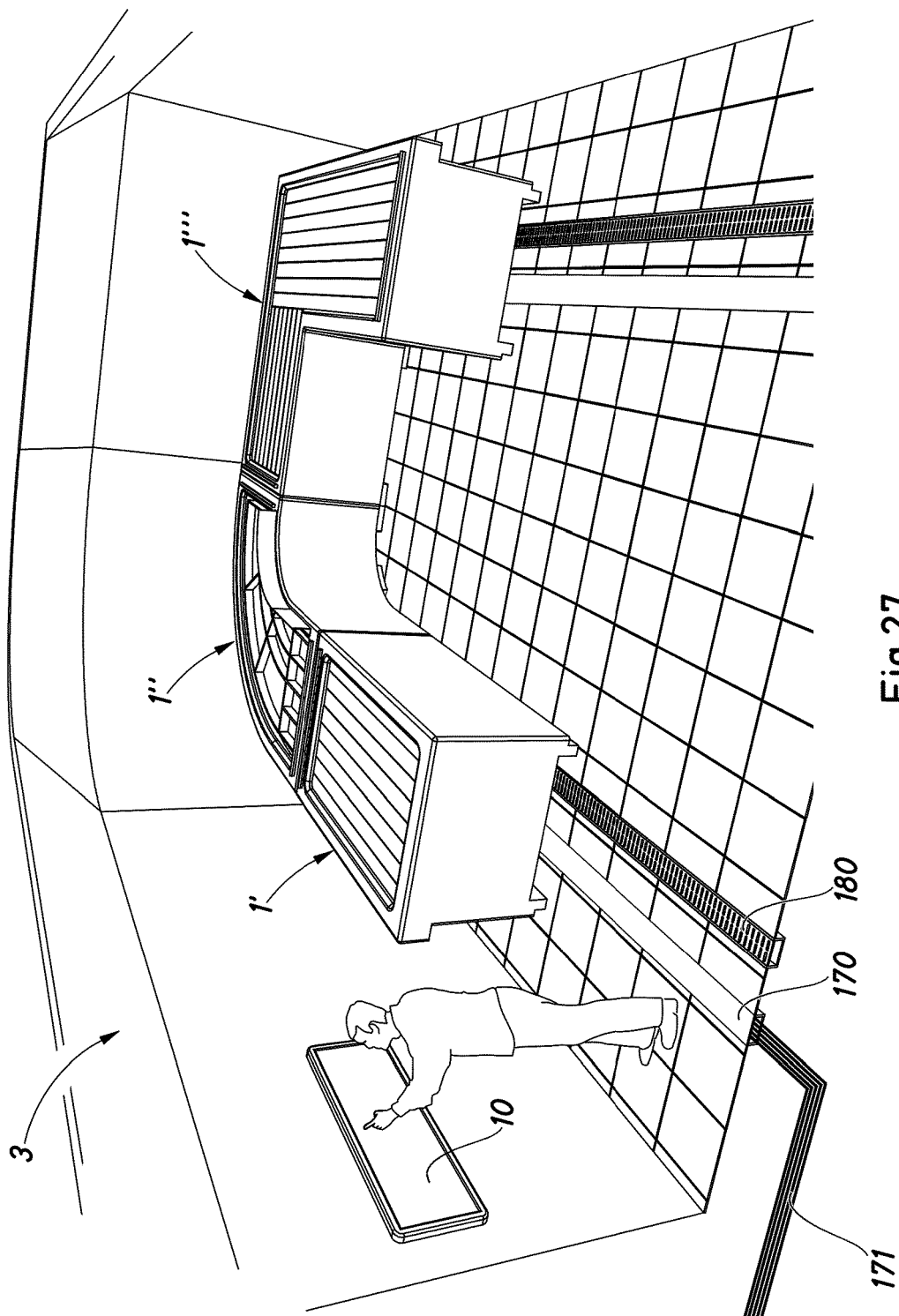


Fig. 27



EUROPEAN SEARCH REPORT

Application Number
EP 17 38 2652

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 11 29 971 B (SIEMENS ELEKTROGERAETE GMBH) 24 May 1962 (1962-05-24) * the whole document * -----	1-11	INV. A47F3/04 F25D23/02
			TECHNICAL FIELDS SEARCHED (IPC)
			A47F F25D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 February 2018	Examiner van Hoogstraten, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)

16-02-2018

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DE 1129971	B	24-05-1962	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82